

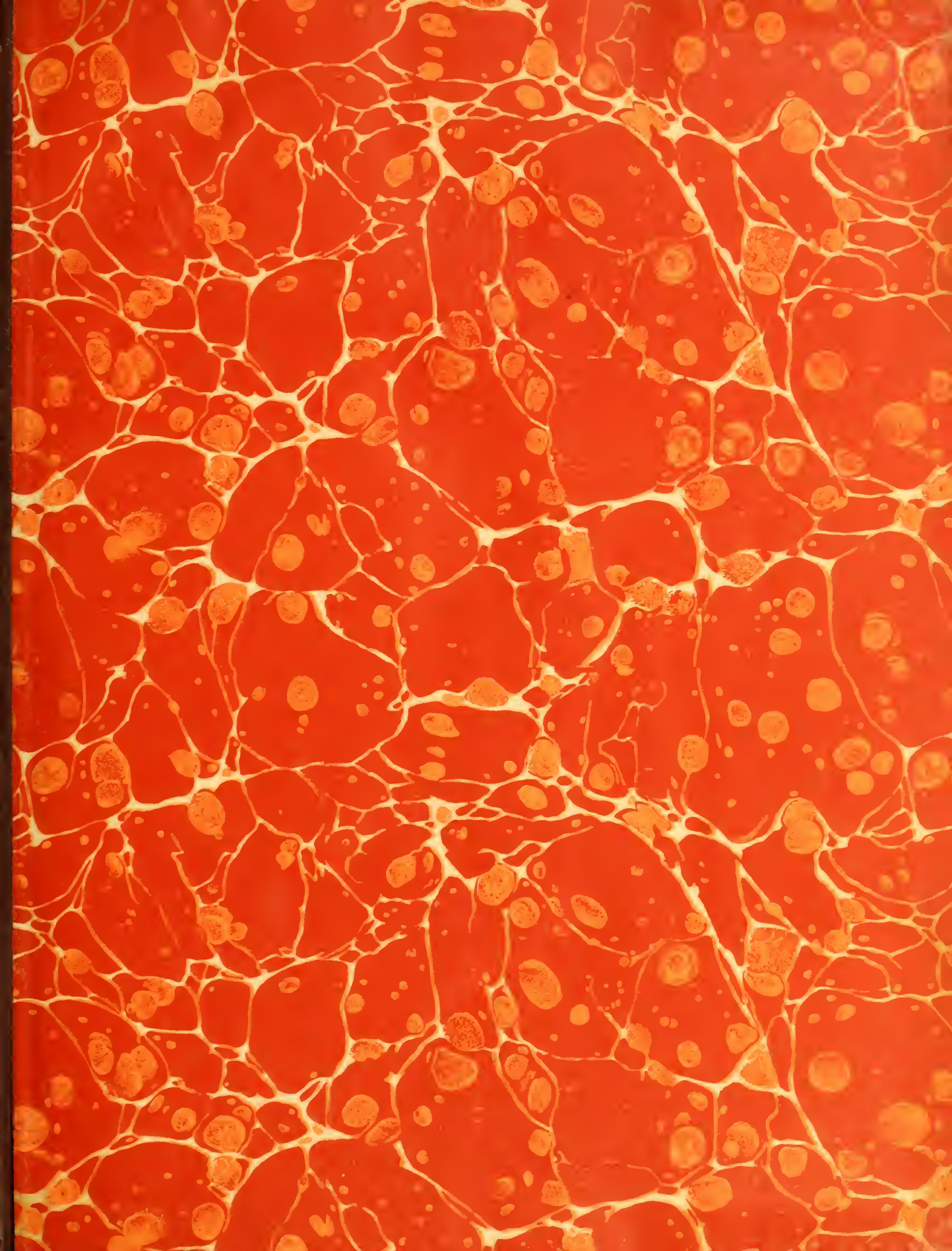
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CEREAL COURIER

Official Messenger of the Office of Cereal Investigations
Bureau of Plant Industry, U. S. Dept. of Agriculture
(NOT FOR PUBLICATION)

Vol. 18

No. 1

January 15, 1926
Personnel (Jan. 1-15) and Field Station (Dec. 1-31) Issue

PERSONNEL ITEMS

Miss Wilmina E. Black, clerk in the office of the State leader of barberry eradication in Colorado, resigned her position at the termination of January 11. Miss Black returned to her school studies.

Dr. A. M. Brunson, associate agronomist in the cooperative corn investigations at Manhattan, Kans., will teach the three-hour course in crop improvement at the Kansas State Agricultural College for the period from February 1, to May 31, 1926, because of the leave of absence of J. H. Parker.

G. D. George, agent in barberry eradication and cartoonist and illustrator in its publicity campaign with headquarters at University Farm, St. Paul, Minn., who came to Washington in November to prepare annual reports, and maps in connection with the barberry eradication campaign, left on January 5 to return to St. Paul.

J. W. Jones, superintendent of the Biggs Rice Field Station, Biggs, Calif., who has been traveling in the Orient in search of rice varieties adapted for cultivation in California, writes from Shanghai on December 4 as follows:

I returned this noon from Nanking where I visited the University of Nanking and the Southeastern University. These are both modern universities and are reported to be the best in China. The University of Nanking is not doing much with rice, but Southeastern University has a large number of varietal tests. I obtained seed from each university, and also some from the Kaingsu Rice Experiment Station at Scochow.

There is an excellent opportunity for rice improvement in China, as most of the varieties are mixtures and often contain red rice.

I leave here in the morning at 11 o'clock on the Tarijo Maru for Hongkong; from Hongkong I would like to go to Canton to visit the Agricultural College of the Canton University. It may not be advisable to go to Canton, but this I will find out when I reach Hongkong. If I can't get into Canton I will continue south to Java.

The rice varieties collected in Japan I left in storage at the Imperial Hotel, feeling that it is much better to bring them back with me so that I can properly care for them en route. The varieties that I collected in Korea I mailed to myself in care of the American Consul at Tokyo and he promised to hold such material for me until my return.

Unfortunately I haven't had any mail for a month. I wrote the American Consul General on November 13 and asked him to forward my mail to Nanking, China, but apparently the letter must have gone astray.

China is in a turmoil at present. Because of the war in the north and the Reds in the south it is a rather unsatisfactory time for collecting samples of rice. However, I hope that some of the material which I have obtained in the Yangtze Valley may be of value to us, for many of the varieties are quite early and a number of them are of the Japanese type.

In certain sections of China it appears that about 1/15 of the tillable land is devoted to growing grass for fuel. This year there was a shortage of rainfall, and as a result in certain areas the rice crop was almost a failure. Much of the rice is irrigated from ponds which are themselves dependent upon summer rainfall. Nearly all the rice land is sown to barley, wheat, broad beans, or vegetables. After the rice crop is removed; these crops on the whole look well in the Yangtze Valley.

Mr. Jones will go to Java and the Philippine Islands before returning to the United States.

W. Douglas Mankin, of Virginia, was appointed unskilled laborer, effective January 2, to assist in the cereal experiments at Arlington Farm, Rosslyn, Va. He has been appointed to take the place of E. J. Eyler, whose appointment was terminated November 5, 1925.

Miss Bessie I. Martin, of North Dakota, was appointed clerk, effective January 2, in the Office of the State Leader of barberry eradication, with headquarters at Fargo, N. Dak. Miss Martin succeeds Miss Charlotte E. Blake whose appointment was terminated September 30, 1925.

The appointment of Donald R. Porter, a collaborator in barberry eradication in Iowa, was terminated December 31, 1925. Mr. Porter has changed his residence from Iowa to Kansas.

T. R. Stanton, agronomist in charge of oat investigations, was invited on January 6 to give an illustrated talk on oats and oat varieties for the eastern Atlantic States with special reference to Maryland, before the Maryland Crop Improvement Association at its annual meeting in Baltimore. A formal paper on the subject was submitted for publication in the joint proceedings of the Maryland Crop Improvement Association and the various affiliated agricultural associations of Maryland, which make up the Maryland Agricultural Society and the Maryland Farm Bureau Federation.

The appointment of Clarence B. Williams, collaborator in cereal investigations in North Carolina, was terminated December 31, 1925.

VISITORS

M. N. Demirjian, of 10 East 39th Street, New York, N. Y., was an Office visitor on January 7. He desired publications and other information on cereal production sent to him in care of the United States Consulate at Aleppo, Syria.

MANUSCRIPTS AND PUBLICATIONS

1* A manuscript, entitled "Methods of Eradicating the Common Barberry (Berberis vulgaris L.)," by Noel F. Thompson and W. W. Robbins, was submitted January 2 for publication in the Department Bulletin series.

2 A manuscript, entitled "The Influence of Temperature upon the Metabolism and Expression of Disease Resistance in Selfed Lines of Corn," by James G. Dickson and James R. Holbert, was approved January 11 for publication in the Journal of the American Society of Agronomy.

3 A manuscript, entitled "A Cytological Study of Puccinia triticina Physiologic Form 11 on Little Club Wheat," by Ruth F. Allen, was submitted January 14 for publication in the Journal of Agricultural Research.

Galley proof of Department Circular 365, entitled "Relative Susceptibility of Spring-Wheat Varieties to Stem Rust," by J. Allen Clark, John H. Martin and E. C. Starman, was read January 6.

The article, entitled "Studies on Ophiobolus graminis Sacc. and the Take-All Disease of Wheat," by Ray J. Davis, appears in the Journal of Agricultural Research, vol. 31, no. 9, pp. 801-825, pls. 1-6, figs. 1-5. November 1, 1925. (Received Jan. 14, 1926.) (These studies were carried on cooperatively by the Office of Cereal Investigations and the Wisconsin Agricultural Experiment Station.)

*The numbers indicate the chronological order in which manuscripts will be submitted throughout the calendar year 1926.

TRANSLATIONS

Ducomet, Vital. Les Rouilles des Céréales en Automne et en Hiver. (The Rusts of Cereals in Fall and in Winter.) Rev. Path. Vég. and Ent. Agr. 12: 21-27. 1925.

Henning, E. Berberis-lagen och Berberis-utrotningen. (The Barberry Law and the Eradication of the Barberry.) Kungl. Landbruk.- Akad. Hdlgr. och Tidsskr. 62: 674-686. 1923.

Kniep, H. Ueber Urocystis anemones (Pers.) Winter. (On Urocystis anemones (Pers.) Winter.) Ztschr. Bot. 13: 293-301. 1921.

Roussakoff, L. F. (Peculiarities of the Microclimate in the Midst of Plants and Development of Cereal Rusts.) Trans. 4th All-Russian Ent. Cong. Moscow Dec. 8-14, 1922, p. 201-216. 1924.

The above list of translations of articles by foreign writers on cereal diseases supplements the list published in earlier numbers of the Cereal Courier:

- Vol. 13: 12-15, 52, 69 and 225-226. 1921.
- " 14: 58, 39 and 99-100. 1922.
- " 15: 11-13 and 46-47. 1923.
- " 16: 16-18 and 127. 1924.
- " 17: 62-63 and 326-327. 1925.

NOTICE

At the annual meeting of the American Phytopathological Society, one of the affiliated societies of the American Association for the Advancement of Science, in Kansas City, December 28-31, 1925, Dr. I. E. Melhus, of the Iowa State College, and Dr. H. B. Humphrey, senior pathologist in charge of rust investigations, Office of Cereal Investigations, were elected President and Vice-President, respectively, of the Society for the ensuing year.

NOTICE

Bureau of Plant Industry Memo. 187, dated December 21, 1925, calls attention to a letter from Mr. Frank R. Lillie, Chairman of the National Research Council, announcing National Research Fellowships in the Biological Sciences. In order that members of the Staff of this Office may be informed as promptly as possible, Mr. Lillie's letter of December 12, addressed to Dr. W. A. Taylor together with the revised poster referred to, is presented herewith.

December 12, 1925.

Dr. William A. Taylor
U. S. Bureau of Plant Industry
Washington, D. C.

Dear Dr. Taylor:

During the past two years you have been addressed on several occasions with reference to the National Research Fellowships in the Biological Sciences. I need not go into detail regarding the nature of these Fellowships, for I am sure you are now thoroughly familiar with their aims and purposes. This letter is to advise you, so that you may in turn advise graduate students with whom you are acquainted, that it is intended to hold the first meeting of the Board in 1926 for the consideration of applications for 1926-27 appointments the last week in February. Applications for this meeting should be in our hands not later than February 1st. For the benefit of those who may not have their work for the doctorate sufficiently completed by the February meeting to know whether or not they will receive the degree in 1926, there will be a second meeting not earlier than June. Notice of this will be sent you later.

The enclosed revised poster should be substituted for the one sent you last year.

Sincerely yours,

Frank R. Lillie, Chairman.

enclosure

NATIONAL RESEARCH FELLOWSHIPS

in the

BIOLOGICAL SCIENCES

(ZOOLOGY, BOTANY, ANTHROPOLOGY AND PSYCHOLOGY)

These fellowships are supported by the Rockefeller Foundation and are administered by a Board appointed by the National Research Council.

The fellowships are open to citizens of both sexes of the United States and Canada who possess a Ph. D. degree or its equivalent. They are intended primarily for relatively recent graduates and not for those already professionally established. The purpose of the National Research Fellowships in the Biological Sciences is the promotion of fundamental research in these subjects through the development of an increasing number of thoroughly trained investigators.

The basic stipends awarded per annum are \$1300 for unmarried fellows and \$2500 for married fellows. These stipends may be increased when there are other dependents or for other cogent reasons. Awards are made for one year, but fellowships may be renewed. Fellows for 1926-27 will be chosen at two meetings of the Board, one the last week of February and the other during June; applications must be filed before February 1st and June 1st respectively in order to insure consideration at the following meeting.

The fellowships are not granted to any institution or university, but the choice of place to work is left to the fellow, subject to the approval of the Fellowship Board. The appointments are for full time and no other remunerative or routine work is permitted.

For further information concerning these fellowships address

CHAIRMAN, BOARD OF NATIONAL RESEARCH FELLOWSHIPS

IN THE BIOLOGICAL SCIENCES

NATIONAL RESEARCH COUNCIL, WASHINGTON, D. C.

A REAL CELEBRATION

The following is a brief extract from the Portland (Oregon) Journal of December 20, 1925:

On the evening of December 22, 1925, at a public bonfire in the main street of Moro, Oregon, there were burned 286 farm mortgages, totaling \$198,000. The bonfire was in celebration of the liquidation of the last dollar of principal and interest borrowed by Sherman County farmers from the State under the legislative act on account of the great freeze of the winter of 1924-25, when every blade of wheat and every plant on every farm were absolutely frozen to death. The celebration is believed to be the only one of its kind on record. The bonfire of mortgages followed an overflow meeting and banquet of citizens.

In the crisis that followed the great freeze Federation wheat played an important rôle. Federation is an Australian variety. The wheat grown in eastern Oregon was selected by D. E. Stephens, superintendent of the Sherman County Branch Experiment Station.

Mr. Stephens, besides introducing the Federation wheat, also introduced Turkey Red, a winter wheat, which, because of increased yields, has added many millions of dollars to the wealth of eastern Oregon.

FIELD STATION CONDITION AND PROGRESS

HUMID ATLANTIC COAST STATES (South to North)

GEORGIA

State College of Agriculture, Athens (R. R. Childs)

VIRGINIA

Arlington Experiment Farm, Rosslyn (J. W. Taylor) (January 14)

The winter grains at present are well protected from freezing temperatures by a blanket of snow. In the latter part of December there was a week of cold weather; although the temperature was only 10 degrees above zero some killing or injury probably was done to winter oats and barley, as the weather previous to the cold spell was warm enough to produce vegetative growth and high moisture content of the plant tissues.

In early December a straw mulch was applied to the plants of several sections of the winter oat nursery, which contained material used for studying the occurrence of the false wild oat, and selections apparently lacking in winter resistance. It has been difficult to get spaced winter oat plants to survive the winter at the Arlington Farm.

NEW YORK

Cornell University Agricultural Experiment Station, Ithaca (W. T. Craig)

HUMID MISSISSIPPI VALLEY STATES (South to North)

LOUISIANA

Rice Experiment Station, Crowley (J. Mitchell Jenkins) (January 8)

The precipitation for December totaled 3.16 inches, which is 1.78 inches less than for the same month last year and 3.32 inches less than the average for the past 15 years for December.

The precipitation for the entire year of 1925 amounted to 49.86 inches, or 19.28 inches more than in 1924 and 5.86 inches less than the average for the past 15 years. Other years having about the same rainfall as the year 1925, or less, are as follows: 1914, 49.68 inches; 1916, 46.04 inches; 1917, 38.06 inches; 1921, 42.69 inches; and 1924, 30.58 inches.

Weather conditions in December delayed farm operations only during brief periods. Farmers were able to complete threshing, and many completed a large portion of their plowing.

During the first week of December the threshing of rice on the Station was completed, the weather being very favorable. Some of the yields are among the largest ever obtained. As they were obtained on lands on which soybeans were grown in rotation with rice for several years, they are considered facts in favor of such a rotation.

In the latter part of the month all rice for seed purposes was recleaned in a fanning mill. The main portion of the crop has been sold for seed and milling purposes; orders also have been received for the entire output of soybean seed.

Some plowing was done the latter part of the month.

On December 21 the Superintendent attended a meeting in Baton Rouge, of those employed in making a Farm Survey of the State; on the 22nd he attended a conference of the Station staff in the office of the Director.

Agricultural Experiment Station, Baton Rouge (H. Stoneberg)

MISSOURI

Agricultural Experiment Station, Columbia (C. A. Helm)

TENNESSEE

Agricultural Experiment Station, Knoxville (L. S. Mayer)

IOWA

Agricultural Experiment Station, Ames (M. T. Jenkins)

Agricultural Experiment Station, Ames (Investigation of Crown Rust of Oats, S. M. Dietz)

Iowa State College, Ames (Barberry Eradication, M. A. Smith)

ILLINOIS

Funk Bros. Seed Co., Bloomington (Corn Root and Stalk Rot Investigations, J. R. Holbert)

Post Office Building, Urbana (Barberry Eradication, G. C. Curran)

INDIANA

Purdue University Agricultural Experiment Station, La Fayette (Corn Root, Stalk, and Ear Rots, G. N. Hoffer)

Purdue University Agricultural Experiment Station, La Fayette (Leaf Rust Investigations, H. S. Jackson and E. B. Mains)

College of Agriculture, Purdue University, La Fayette (Barberry Eradication, W. E. Leer)

OHIO

College of Agriculture, Ohio State University, Columbus (Barberry Eradication, J. W. Baringer)

MICHIGAN

Agricultural College, East Lansing (Barberry Eradication, W. F. Reddy)

WISCONSIN

Agricultural Experiment Station, Madison (Wheat Scab Investigations, J. G. Dickson)

Agricultural Experiment Station, Madison (Wheat Rosette and Take-All Investigations, H. H. McKinney)

Department of Agriculture, State Capitol Annex, Madison (Barberry Eradication, W. A. Walker)

MINNESOTA

Agricultural Experiment Station, University Farm, St. Paul (Wheat Breeding Investigations, O. S. Aamodt)

Agricultural Experiment Station, University Farm, St. Paul (Stem Rust Investigations, E. C. Stakman)

Agricultural Experiment Station, University Farm, St. Paul (Barberry Eradication, L. W. Melander)

GREAT PLAINS AREA (South to North)

OKLAHOMA

Woodward Field Station, Woodward (J. B. Sieglinger) (December 16)

The weather of the first 13 days of December was mild, almost like autumn weather. Beginning with the 14th we have had a taste of winter weather.

Wheat still looks well.

The threshed grain from the sorghum plats has been cleaned and weighed. The yields have been computed for the grain sorghum varietal experiment.

Yields of grain sorghum varieties, grown in single plats at the Woodward Field Station in 1925

<u>Variety</u>	<u>C. I. No.</u>	<u>Grain (Bu. per Acre)</u>
Standard milo	234	31.0
White milo	352	27.4
Early white milo	480	28.5
Dwarf milo	332	27.2
Dwarf white milo	627	27.0
Smith's Milo x Kafir hybrid	---	30.1
Fargo Straight-neck milo	---	26.2
Feterita	182	27.3
Spur feterita	623	23.3
Dwarf feterita	---	18.6
Blackhull kafir	71	31.3
" "	local	30.6
Reed "	628	26.3
Dawn	340	25.5
Sunrise	472	25.7
White	370	18.8
Marum	566	27.0
Pink	432	21.8
Red	34	25.7
Bishops Blackhull kafir	---	28.9
Dwarf negari	620	22.2
Blackhull Kaoliang	310	25.8
Shallu	85	26.8
Schrock Sorghum	616	29.9
Darso	615	29.3
Freed Sorgo	350	18.6

Note. - The kafirs are figured at 60 pounds to the bushel, the other varieties at 58 pounds.

Maximum temperature for December to date, 69 degrees on the 2nd; minimum, 19 degrees on the 15th; precipitation, 0.46 inch, December 3.

KANSAS

Agricultural Experiment Station, Manhattan (D. D. Hill) (December 22)

A summary of the yields of the oat strains grown in triplicated three-row plats in 1945 indicates a very favorable season for the Kanota variety. The average yield of the Kanota checks was 58.0 bushels, and the highest yield in the nursery, 66.9 bushels, was made by an individual Kanota check. The average yield of the checks was exceeded only by three individual check rows, eight Kanota selections, five Fulghum selections, and one Fulghum hybrid. Following are the average yields from replicated row rows of promising varieties other than Kanota or Fulghum.

<u>Kansas No.</u>	<u>C. I. No.</u>	<u>Variety</u>	<u>Yield (Bu. per Acre)</u>
6113	2053	Markton	56.9
5211-C-6-4	1917	Burt Selection	55.0
5328	----	Kherson Selection	54.9
5213-31	----	Red Rustproof (R. Texas)	54.1
5349	980	Glen Innis	53.0
5005	1913	Red Rustproof (R. Texas)	52.0
5105-5-13	----	Red Algerian	50.2
5212	1924	Kherson	50.0
5209	787	Richland	49.9

Albion checks were grown alternately with Kanota. The average yield of eight Albion checks was 39.4 bushels, or approximately 18 bushels less than for the Kanota checks.

More than 300 varieties and selections were grown in triplicate rod rows in 1925, of which the yield varied from 72.9 bushels for a Kanota selection down to 28.5 bushels for Cowra No. 23. The average of 16 Kanota checks was 60.3 bushels, of 16 Albion checks, 40.6 bushels. Of the 49 varieties and selections which made higher yields than the average of the checks, all were Kanota except the following:

<u>Kansas No.</u>	<u>C. I. No.</u>	<u>Variety</u>	<u>Yield (Bu. per Acre)</u>
----	----	Aurora x Fulghum	66.1
----	----	Fulghum x Swedish Select	65.9
----	----	Red Rustproof (Red Texas)	64.2
----	----	Red Rustproof (Red Coast)	63.3
----	1961	Ruakura	63.2
----	1424	Calif. Red Rustproof	62.1
----	794	Calcutta	61.2
----	1075	Fulghum	61.0
5589	----	(Black)	60.6
----	839	Kanota	60.4

Hays Branch Experiment Station, Hays (A. F. Swanson) (December 16)

The weather in November and the first half of December was relatively mild, except for brief periods of freezing temperatures. There was hardly any precipitation; however, there is plenty of reserve moisture in the ground in this section to carry the wheat through the winter. Winter wheat has rooted deeply but has not made much top growth.

Field operations on the cereal project have been brought to a close for the season; all threshing is completed and the seed has been recleaned. Wherever necessary the ground has been roughened to prevent soil blowing and injury to plants. The writer has most of the annual report completed covering the year's experiments.

COLORADO

Akron Field Station, Akron

Agricultural College, Ft. Collins (Barberry Eradication, E. A. Lungren)

NEBRASKA

North Platte Substation, North Platte (G. F. Sprague)

College of Agriculture, University Farm, Lincoln (Barberry Eradication, A. F. Thiel)

SOUTH DAKOTA

College of Agriculture, Brookings (Barberry Eradication, R. O. Bulger)

NORTH DAKOTA

Agricultural Experiment Station, Agricultural College (W. E. Brentzel)

Agricultural Experiment Station, Agricultural College (Barberry Eradication, G. C. Maycuc)

Dickinson Substation, Dickinson (R. W. Smith) (January 2)

The past year was exceptional in several respects with respect to the behavior of cereal crops at the Dickinson Substation. It was the first year that spring wheat showed marked injury from freezing temperature in the month of May. This injury was partly the result of dry soil conditions and subsequent hot weather after a minimum temperature of 20 degrees on May 16.

Some of the unusual results in crop yields are the following: Winter wheat yielded more than spring wheat; hard spring wheat yielded more than durum; early oats yielded more than midseason oats; six-rowed barley yielded more than two-rowed barley; and winter wheat yielded more than winter rye.

In general, crop yields at the Substation and in west central North Dakota were not much below or above the average, but, because of relatively good prices for grain and some other farm products, the money value of the 1925 crop in this part of the State was above the average.

The corn varieties at the Substation were fairly well matured in 1925, except for the later varieties, which rarely mature in this locality. The yields were better than in 1924 but lower than in the two preceding years. The yields of shelled corn for 13 of the leading varieties are given below together with the annual and average yields for the past four years. It will be observed that the early flint varieties have given the highest yield of grain. Northwestern Dent and Payne White Dent ranked highest respectively among the dent varieties with four-year average yields of 32.1 and 30.7 bushels per acre. The average yields for the 13 varieties in 1922, 1923, 1924, and 1925, were 37.2, 55.4, 14.4, and 17.9 bushels per acre, respectively, averaging 31.2 bushels for the four-year period.

Annual and average yields of 13 varieties of corn grown in plats on the Dickinson Substation during the years from 1922 to 1925, inclusive.

Variety	Group	A c r e Y i e l d				Av. Yield (Bu. per Acre)
		1922	1923	1924	1925	
Mandan	Flint	43.8	64.1	23.6	23.2	38.7
Dakota White	do	44.0	65.3	19.6	21.5	37.6
Ivory King	Flour	42.7	49.4	27.1	22.2	35.4
Gehu	Flint	41.0	52.3	22.9	22.4	34.8
White Ree	do	37.4	61.2	17.8	22.2	34.7
Northwestern	Semi-dent	34.1	55.5	17.6	21.0	32.1
Payne White	Dent	37.5	59.6	8.1	17.4	30.7
Rainbow	Flint	42.3	66.2	4.1	7.7	30.1
Mercer	do	35.7	48.3	14.8	14.6	28.4
Burda Yellow	Dent	32.6	53.8	8.6	16.5	27.9
Golden Glow	Dent	35.3	51.4	4.6	11.6	25.7
Minnesota No. 13	Dent	31.0	45.4	10.7	13.9	25.3
Rustler White	Dent	26.1	47.1	7.6	18.9	24.9
Average		37.2	55.4	14.4	17.9	31.2

Northern Great Plains Field Station, Mandan (Flax Investigations, J. C. Brinsmade, Jr.)

Northern Great Plains Field Station, Mandan (Wheat Investigations, E. R. Aisemus)

MONTANA

Judith Basin Substation, Moccasin (R. W. May)

State College of Agriculture, Bozeman (Barberry Eradication, W. L. Popham)

WESTERN BASIN AND COAST AREAS (North to West and South)

IDAHO

Aberdeen Substation, Aberdeen (G. A. Wiebe)

Agricultural Experiment Station, Moscow (Stripe Rust Investigations, C. W. Hungerford)

OREGON

Sherman County Branch Station, Merc (D. E. Stephens)

CALIFORNIA

Biggs Rice Field Station, Biggs (C. F. Dunshee)

University Farm, Davis (V. H. Florell)

Agricultural Experiment Station, Berkeley (F. N. Briggs)

18. Explain the following terms: (10 marks)

- (a) Primary sector - This sector involves the extraction of raw materials from the earth, such as agriculture, mining, and fishing.
- (b) Secondary sector - This sector involves the manufacturing of goods from raw materials, such as textiles, metal products, and food processing.
- (c) Tertiary sector - This sector involves the provision of services, such as retail, education, and healthcare.
- (d) Quaternary sector - This sector involves the provision of knowledge-based services, such as information technology, research, and development.
- (e) Quinary sector - This sector involves the provision of high-level services, such as executive management, government, and education.
- (f) Sectoral composition - This refers to the relative contribution of each sector to the total output of an economy.
- (g) Structural change - This refers to the shift in the relative contribution of each sector to the total output of an economy over time.
- (h) Industrialization - This refers to the process of increasing the manufacturing capacity of an economy.
- (i) Service sector - This refers to the tertiary and quaternary sectors of an economy.
- (j) Raw materials - These are the basic materials used in the production of goods, such as iron ore, cotton, and oil.

19. Explain the following terms: (10 marks)

- (a) Primary sector - This sector involves the extraction of raw materials from the earth, such as agriculture, mining, and fishing.
- (b) Secondary sector - This sector involves the manufacturing of goods from raw materials, such as textiles, metal products, and food processing.
- (c) Tertiary sector - This sector involves the provision of services, such as retail, education, and healthcare.
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- (i) Service sector - This refers to the tertiary and quaternary sectors of an economy.
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20. Explain the following terms: (10 marks)

- (a) Primary sector - This sector involves the extraction of raw materials from the earth, such as agriculture, mining, and fishing.
- (b) Secondary sector - This sector involves the manufacturing of goods from raw materials, such as textiles, metal products, and food processing.
- (c) Tertiary sector - This sector involves the provision of services, such as retail, education, and healthcare.
- (d) Quaternary sector - This sector involves the provision of knowledge-based services, such as information technology, research, and development.
- (e) Quinary sector - This sector involves the provision of high-level services, such as executive management, government, and education.
- (f) Sectoral composition - This refers to the relative contribution of each sector to the total output of an economy.
- (g) Structural change - This refers to the shift in the relative contribution of each sector to the total output of an economy over time.
- (h) Industrialization - This refers to the process of increasing the manufacturing capacity of an economy.
- (i) Service sector - This refers to the tertiary and quaternary sectors of an economy.
- (j) Raw materials - These are the basic materials used in the production of goods, such as iron ore, cotton, and oil.

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CER EAL COURIER

Official Messenger of the Office of Cereal Investigations
Bureau of Plant Industry, U. S. Dept. of Agriculture
(NOT FOR PUBLICATION)



Vol. 18

No. 2

January 31, 1926
Personnel (Jan. 16-31) and Project Issue

PERSONNEL ITEMS

B. B. Bayles, junior agronomist in charge of the cereal nursery at the Sherman County Branch Station, Moro, Oreg., came to Washington January 16 to spend several weeks in the Office in consultation with project leaders and to prepare his annual report.

Charles E. Chambliss, associate agronomist in charge of rice investigations, left Washington January 29 to visit points in the rice-growing districts of the South. He also will attend the meetings of the Association of Southern Agricultural Workers at Atlanta, Ga., February 2 and 3. Mr. Chambliss will return to Washington about March 15.

Miss Mary A. Hopkins, clerical assistant to the State leader of barberry eradication in Illinois since June 16, 1922, resigned her position on January 18. Miss Hopkins is now office manager of the A. B. C. Washing Machine Company of Peoria, Ill.

Jenkin W. Jones, superintendent of the Biggs Rice Field Station, Biggs, Calif., having arrived at Singapore, Straits Settlements, wrote on December 17 that he had been advised by the American Consul General at Hongkong that it would be useless to go to Canton unless someone could meet him there and take him ashore. After waiting for four days for a reply from the Canton Christian College, Mr. Jones decided that it would be best to omit Canton from his itinerary and proceed to Java. He hoped to return to Singapore about January 4 and take a boat direct to Manila; from Manila he planned to sail on January 27 on the President Cleveland for San Francisco, arriving at the latter port about February 24.

George F. Sprague, junior agronomist in charge of cereal experiments at the North Platte Substation, North Platte, Nebr., came to Washington early in January to spend several weeks in consultation with project leaders and to prepare a report on the past year's work at North Platte.

D. E. Stephens, superintendent of the Sherman County Branch Station, Moro, Oreg., reports on January 19 that thus far the winter in eastern Oregon had been very mild. Although the precipitation had been less than normal the mild weather had permitted winter grains to make some growth, and in general the stands of winter wheat were satisfactory. Unless unusually cold weather occurs before the winter is over, the prospects are very favorable for satisfactory yields of winter wheat in the Columbia River Basin, provided, of course, that the growing season is favorable.

Early in January Mr. Stephens gave a radio talk from Station KOAC at Corvallis on Improved Dry-Land Grain Varieties.

On February 11, 12 and 13 there will be held at Moro an economic conference on wheat, sponsored by the extension service of the Oregon Agricultural College. It is expected that 400 or 500 farmers will attend the conference. Probably two representatives from the U. S. Bureau of Agricultural Economics will be present, and possibly Dr. A. E. Taylor, of Stanford University, will address the conference.

Mrs. Wilma C. Stewart, who has been a clerk in the Office since November 16, 1923, resigned on January 31 to accept another position.

VISITORS

L. A. Fitz, formerly with the Fleischmann Laboratories of New York City, now in charge of the Chicago office of the Grain Futures Administration, of the United States Department of Agriculture, was an Office visitor January 19.

MANUSCRIPTS AND PUBLICATIONS

4 A manuscript, entitled "Breeding Winter Oats for the South," by T. R. Stanton, was approved January 30 for publication in the Journal of the American Society of Agronomy. (This paper will be read at the meetings of the Association of Southern Agricultural Workers at Atlanta, Ga., February 2 and 3.)

Galley proof of Department Bulletin 1387, entitled "Experiments in Rice Culture at the Biggs Station in California," by Jenkin W. Jones, was read January 22.

Galley proof of Department Bulletin 1383, entitled "Single-Bath Hot-Water and Steam Treatments of Seed Wheat for the Control of Loose Smut," by V. F. Tapke, was read January 22.

Page proof of Department Circular 365, entitled "Relative Susceptibility of Spring-Wheat Varieties to Stem Rust," by J. Allen Clark, John H. Martin and E. C. Stakman, was read January 25.

The article, entitled "Influence of Soil Temperature and Moisture on Infection of Young Wheat Plants by Ophiobolus graminis," by H. H. McKinney and R. J. Davis, appears in the Journal of Agricultural Research, vol. 31, no. 9, pp. 827-840, pl. 1, figs. 1-7. November 1, 1925. (Received Jan. 26, 1926.) (Cooperation with the Wisconsin Agricultural Experiment Station.)

The article, entitled "Polyploidy in Zea Mays L.," by L. F. Randolph and B. McClintock, appears in the American Naturalist, vol. 60, no. 666, pp. 99-102. Jan.-Feb., 1926. (Cooperation between Cornell University Agricultural Experiment Station and Office of Cereal Investigations.)

ANNUAL REPORT OF PUBLICATIONS AND MANUSCRIPTS

JANUARY 1 TO DECEMBER 31, 1925

In the calendar year 1925, 102 manuscripts were submitted for publication as papers and abstracts in the various series of Department publications, in publications of cooperating State agricultural organizations, and in private journals. Fifty-five of these manuscripts were published in the same period, leaving 47 in press on December 31, 1925.

One hundred and twenty published papers and abstracts were received in the calendar year 1925, the result of manuscripts submitted as follows:

55 in 1925
50 in 1924
6 in 1923
9 in 1922

The list of these published papers and abstracts follows herewith.

On pages 33 to 36, inclusive, appears a list of the 47 manuscripts remaining in press on December 31, 1925.

AGRONOMIC SUBJECTS

Corn

Corn, by H. S. Garrison. The Book of Rural Life 3: 1325-1337. October, 1925.

Effects of Continuous Selection for Ear Type in Corn, by H. S. Garrison and F. D. Richey. U. S. Dept. Agr. Bul. 1341. August, 1925.

Heritable Characters of Maize--XX. Iogap-Striping, a Chlorophyll Defect, by M. T. Jenkins. Jour. Heredity 15: 467-472. November, 1924. (Received Jan. 7, 1925.) (Cooperation between the Office of Cereal Investigations and the Iowa Agricultural Experiment Station.)

Heritable Characters of Maize. XXII. Purple Plumules, by M. T. Jenkins. Jour. Heredity 16: 307-310. August, 1925.

Associations between Number of Kernel Rows, Productiveness, and Deleterious Characters in Corn, by C. H. Kyle and H. F. Stoneberg. Jour. Agr. Research 31: 83-99. July 1, 1925.

Corn Judging and the Productiveness of Corn, by F. D. Richey. Jour. Amer. Soc. Agron. 17: 315-318. June, 1925. (Paper presented before the joint meeting of geneticists interested in agriculture and Section O of the American Association for the Advancement of Science, Washington, D. C., Dec. 29, 1924.)

Comment on Developing a High-Yielding Strain of Corn, by F. D. Richey. Jour. Amer. Soc. Agron. 17: 804-807. December, 1925.

The Productiveness of Successive Generations of Self-Fertilized Lines of Corn and of Crosses between Them, by F. D. Richey and L. S. Meyer. U. S. Dept. Agr. Bul. 1354. December, 1925. (Cooperation between the Office of Cereal Investigations and the Tennessee Agricultural Experiment Station.)

A Statistical Study of the Relation between Seed Ear Characters and Productiveness in Corn, by F. D. Richey and J. G. Willier. U. S. Dept. Agr. Bul. 1321. March 21, 1925.

Wheat, Emmer and Spelt

Physiological Evidence on the Genetic Identity of Natural and Synthetic Strains of Wild Emmer, by O. S. Aamodt and M. N. Levine. Phytopath. 15:554-558. September, 1925. (Cooperation between the Office of Cereal Investigations and the Minnesota Agricultural Experiment Station.)

Segregation and Correlated Inheritance in Crosses Between Kota and Hard Federation Wheats for Rust and Drought Resistance, by J. A. Clark. Jour. Agr. Research 29: 1-47. July 1, 1924. (Received Jan. 31, 1925.)

Wheat, by J. A. Clark and C. E. Leighty. The Book of Rural Life 10: 6005-6017. October, 1925.

Varietal Experiments with Hard Red Winter Wheats in the Dry Areas of the Western United States, by J. A. Clark and J. H. Martin. U. S. Dept. Agr. Bul. 1276. February 12, 1925. (Cooperation between the Office of Cereal Investigations and the Idaho, Kansas, Montana, North Dakota, Oregon, South Dakota, Utah and Washington agricultural experiment stations, the Amarillo (Texas) Chamber of Commerce, and the Wyoming State Board of Farm Commissioners.)

Comparative Value of Kota and Marquis Wheats for Milling and Bread-making, by J. A. Clark and J. H. Shollenberger. The Northwestern Miller 143: 1102-1104. September 9, 1925. (Cooperation between the Office of Cereal Investigations, and Milling Investigations, Grain Division, Bureau of Agricultural Economics.)

Studies on the Inheritance of Earliness in Wheat, by V. H. Florell. Jour. Agr. Research 29: 333-347. October 1, 1924. (Received Feb. 7, 1925.)

Biannual Cropping of Wheat Hybrids, by V. H. Florell. Jour. Amer. Soc. Agron. 17: 354-356. June, 1925. (Cooperation between the Office of Cereal Investigations and the California Agricultural Experiment Station.)

Inheritance in Wheat of Resistance to Black Stem Rust, by H. K. Hayes, E. C. Stakman and O. S. Aamodt. Phytopath. 15: 371-387. July, 1925. (Cooperation between the Office of Cereal Investigations and the Minnesota Agricultural Experiment Station.)

Webster, a Common Wheat Resistant to Black Stem Rust, by E. C. Stakman, M. N. Levine and F. Griffiee. Phytopath. 15: 691-698. November, 1925. (Cooperation between the Office of Cereal Investigations and the Minnesota Agricultural Experiment Station.)

Oats

Improved Oat Varieties for the Corn Belt, by L. C. Burnett, T. R. Stanton and C. W. Warburton. U. S. Dept. Agr. Bul. 1343. October, 1925. (Cooperation between the Office of Cereal Investigations and the Iowa Agricultural Experiment Station.)

A Study of Variability in the Burt Oat, by F. A. Coffman, J. H. Parker and K. S. Quisenberry. Jour. Agr. Research 30: 1-64. January 1, 1925. (Cooperation between the Office of Cereal Investigations and the Kansas Agricultural Experiment Station.)

Variation in the Kherson Oat at Akron, Colorado, by F. A. Coffman and T. R. Stanton. Jour. Agr. Research 30: 1063-1082. June 1, 1925.

Results of Experiments with Oats in New York, by H. H. Love and W. T. Craig. Cornell Univ. Agr. Exp. Sta. Bul. 436. January, 1925. (Cooperation between Office of Cereal Investigations and the New York (Cornell) Agricultural Experiment Station.)

Improved Oat Varieties for New York and Adjacent States, by H. H. Love, T. R. Stanton and W. T. Craig. U. S. Dept. Agr. Circ. 353. August, 1925. (Cooperation between the Office of Cereal Investigations and the New York (Cornell) Agricultural Experiment Station.)

Oats, by T. R. Stanton. The Book of Rural Life 7: 3998-4002. October, 1925.

Oat Improvement in the Western Half of the United States, by T. R. Stanton and F. A. Coffman. (Abstract) Jour. Amer. Soc. Agron. 17: 640-641. October, 1925.

Barley

The Germination of Barley Under Late Spring Malting Conditions in India, by H. V. Harlan. Science 61: 566-567. May 29, 1925.

Barley: Culture, Uses, and Varieties, by H. V. Harlan. U. S. Dept. Agr., Farmers' Bul. 1464. October, 1925.

Tests of Barley Varieties in America, by H. V. Harlan, M. L. Martini and M. N. Pope. U. S. Dept. Agr. Bul. 1334. November, 1925.

Some Cases of Apparent Single Fertilization in Barley, by H. V. Harlan and M. N. Pope. Jour. Bot. 12: 50-53. January, 1925.

Rice

An Unused Southern Wild Plant [Wild Rice], by C. E. Chambliss. The Rice Journal 29: 11-14. September, 1925.

Rice, by C. E. Chambliss. The Book of Rural Life 8: 4709-4713. October, 1925.

Experiments in Rice Production in Southwestern Louisiana, by C. E. Chambliss and J. M. Jenkins. U. S. Dept. Agr. Bul. 1356. October, 1925. (Cooperation between the Office of Cereal Investigations and the Louisiana Agricultural Experiment Station.)

[Report of Station No. 4, Rice Experiment Station, Crowley, La.], by J. M. Jenkins. La. Agr. Exp. Sta. Ann. Rpt. 1924, p. 44-50. [1925] (Cooperation between the Office of Cereal Investigations and the Louisiana Agricultural Experiment Station.)

Branching of Rice Plants, by J. W. Jones. Jour. Amer. Soc. Agron. 17: 619-623. October, 1925. (Cooperation between the Office of Cereal Investigations and the California Agricultural Experiment Station.)

Minor Cereals

Rye, by C. E. Leighty. The Book of Rural Life 3: 4343-4352. October, 1925.

Buckwheat, by C. E. Leighty. The Book of Rural Life 2: 731-735. October, 1925.

Flax

Flax for Seed Production, by A. C. Dillman. The Book of Rural Life 4: 2027-2029. October, 1925.

Seed Flax as a Farm Crop in 1925, by A. C. Dillman, A. C. Arny, C. McKee, T. E. Stoa and A. N. Hume. U. S. Dept. Agr. Circ. 341. February, 1925. (Cooperation between the Office of Cereal Investigations and the Minnesota, Montana, North Dakota and South Dakota agricultural experiment stations.)

General or Miscellaneous

Some Elements of Successful Cooperation in Research, by C. R. Ball. Mimeographed, 43 p. May, 1925. (Address before the Special Conference of Directors of State Agricultural Experiment Stations, St. Louis, Mo., April 20, 1925.)

Grains, by C. R. Ball. The Book of Rural Life 4: 2413-2422. October, 1925.

Why Agronomy Needs Research in Plant Physiology, by C. R. Ball. Jour. Amer. Soc. Agron. 17: 661-675. November, 1925. (In Symposium on "Plant Physiology and Agronomic Science.")

Investigations with Flax and Cereals [at the Northern Great Plains Field Station], by J. C. Brinsmade, Jr. In U. S. Dept. Agr. Bul. 1301, p. 65-67. March 30, 1925. (Cooperation between the Office of Cereal Investigations and the Office of Dry-Land Agriculture Investigations, Bureau of Plant Industry.)

Cereal Breeding at Ames, by L. C. Burnett. Iowa State Dept. Agr. Yearbook (1923) 24: 2-8. [1924] (Received April, 1925.) (Cooperation between the Office of Cereal Investigations and the Iowa Agricultural Experiment Station.)

Experiments With Cereals at the Akron (Colo.) Field Station in the 15-Year Period, 1908 to 1922, Inclusive, by F. A. Coffman. U. S. Dept. Agr. Bul. 1287. March, 1925. (Cooperation between the Office of Cereal Investigations and the Office of Dry-Land Agriculture Investigations, Bureau of Plant Industry.)

Straw, by C. E. Leighty. The Book of Rural Life 9: 5312-5314. October, 1925.

A Handy Pollen Carrier, by C. E. Leighty and W. J. Sande. Jour. Heredity 16: 63-65. February, 1925.

The Furrow Drill for Sowing Winter Wheat in Central Montana, by R. W. May and C. McKee. Mont. Agr. Exp. Sta. Bul. 177. May, 1925. (Cooperation between the Office of Cereal Investigations and the Montana Agricultural Experiment Station.)

The Principles of Summer-Fallow Tillage, by M. A. McCall and H. M. Wanser. Wash. Agr. Exp. Sta. Bul. 183. October, 1924. (Received March 10, 1925.) (Cooperation between the Office of Cereal Investigations and the Washington Agricultural Experiment Station from 1915 to 1920, inclusive.)

Cereal Crops, by R. W. Smith. In Moomaw, Leroy, Dickinson Substation Report for 1922 and 1923, pp. 17-36. N. Dak. Agr. Exp. Sta. Bul. 189, p. 1-46. February, 1925. (Cooperation between the Office of Cereal Investigations and the North Dakota Agricultural Experiment Station.)

The Tillering of Grain as Related to Yield and Rainfall, by R. W. Smith. Jour. Amer. Soc. Agron. 17: 717-725. November, 1925. (Cooperation between the Office of Cereal Investigations and the North Dakota Agricultural Experiment Station.) (Paper presented at the meeting of the Western Section of the American Society of Agronomy held at Laramie, Wyo., July 21-23, 1924.)

Experiments with Small Grains on the Arlington Experiment Farm, by J. W. Taylor. U. S. Dept. Agr. Bul. 1309. March, 1925.

PATHOLOGIC SUBJECTS

Imperfect and Sac Fungi

The Influence of Temperature upon the Metabolism and Expression of Disease Resistance in Selfed Lines of Corn, by J. G. Dickson and J. R. Holbert. Abstract approved in November for publication by Phytopathology as a preprint to be read at the meetings of the American Phytopathological Society, Kansas City, Mo., Dec. 28-31. (Cooperative investigations by the Wisconsin Agricultural Experiment Station, the Funk Brothers' Seed Company, and the Office of Cereal Investigations, Bureau of Plant Industry, U. S. Department of Agriculture.)

Leaf-Spot of Maize, a Disease Distinct from Leaf-Blight, by C. Drechsler. (Abstract) Phytopath. 15: 47. January, 1925.

A Leaf-Spot of Redtop Caused by an Apparently Undescribed Species of Helminthosporium, by C. Drechsler. (Abstract) Phytopath. 15: 51-52. January, 1925.

Leaf-Spot of Maize Caused by Ghiosporium heterostrophus, n. sp., the Ascigerous Stage of a Helminthosporium Exhibiting Bipolar Germination, by C. Drechsler. Jour. Agr. Research 31: 701-726. Oct. 15, 1925. (Dr. Drechsler was formerly with the Office of Cereal Investigations.)

The Influence of Carbon Dioxide and Oxygen on the Growth of Ophiobolus graminis in Pure Culture, by H. Fellows. Abstract approved in November for publication by Phytopathology as a preprint to be read at the meetings of the American Phytopathological Society, Kansas City, Mo., Dec. 28-31. (Co-operative investigations by the Office of Cereal Investigations, Bureau of Plant Industry, U. S. Department of Agriculture, and the Wisconsin Agricultural Experiment Station.)

Influence of Balanced Nutrient Supply on Susceptibility of Corn Plants to Gibberella saubinetii (Mont.) Sacc., by G. N. Hoffer and J. F. Trost. (Abstract) Phytopath. 15: 59-60. January, 1925. (Cooperation between the Office of Cereal Investigations and the Purdue University Agricultural Experiment Station.)

Corn Root, Stalk, and Ear Rot Diseases, and Their Control Thru Seed Selection and Breeding, by J. R. Holbert, W. L. Burlison, B. Koehler, C. M. Woodworth and G. H. Dungan. Ill. Agr. Exp. Sta. Bul. 255, Abridged. May, 1925. (Cooperation between Office of Cereal Investigations and Illinois Agricultural Experiment Station.)

Seed Treatments for the Control of Certain Diseases of Dent Corn, by J. R. Holbert, C. S. Reddy and B. Koehler. Abstract approved in November for publication by Phytopathology as a preprint to be read at the meetings of the American Phytopathological Society, Kansas City, Mo., Dec. 28-31. (Cooperative investigations by the Office of Cereal Investigations, Bureau of Plant Industry, U. S. Department of Agriculture, the Funk Brothers' Seed Company, and the Illinois Agricultural Experiment Station.)

A Pythium Seedling Blight and Root Rot of Dent Corn, by H. Johann, J. R. Holbert and J. G. Dickson. Abstract approved in November for publication by Phytopathology as a preprint to be read at the meetings of the American Phytopathological Society, Kansas City, Mo., Dec. 28-31. (Co-operative investigations by the Office of Cereal Investigations, Bureau of Plant Industry, U. S. Department of Agriculture, the Wisconsin Agricultural Experiment Station, and the Funk Brothers' Seed Company.)

Factors Influencing Lodging in Corn, by B. Koehler, G. H. Dungan and J. R. Holbert. Ill. Agr. Exp. Sta. Bul. 266. May, 1925. (Cooperation between the Office of Cereal Investigations and the Illinois Agricultural Experiment Station.)

Foot-Rot Diseases of Wheat in America, by H. H. McKinney. U. S. Dept. Agr. Bul. 1347. November, 1925. (Cooperation between the Office of Cereal Investigations and the Illinois, Kansas, North Carolina, Oregon, Washington and Wisconsin agricultural experiment stations.)

Preliminary Environmental Studies on the Take-All Disease of Wheat Caused by Ophiobolus graminis Sacc., by H. H. McKinney and R. J. Davis. (Phytopathological notes.) *Phytopath.* 15: 494-495. August, 1925.

The Effect of Tillage, Fertilizers, and Rotations on the Spread of Wheat Foot-Rot, by L. E. Melchers and M. C. Sewell. Abstract approved in November for publication by Phytopathology as a preprint to be read at the meetings of the American Phytopathological Society, Kansas City, Mo., December 23-31. (Cooperative investigations by the Kansas Agricultural Experiment Station and the Office of Cereal Investigations, Bureau of Plant Industry, U. S. Department of Agriculture.)

Sweet Corn Seed Treatment in 1925, by C. S. Reddy, J. R. Holbert and A. T. Erwin. Abstract approved in November for publication by Phytopathology as a preprint to be read at the meetings of the American Phytopathological Society, Kansas City, Mo., Dec. 23-31. (Investigations by the Office of Cereal Investigations, Bureau of Plant Industry, U. S. Department of Agriculture, with the Bloomington (Illinois) Canning Company, and the Iowa Agricultural Experiment Station, cooperating.)

The Effect of Rotation and Tillage on Foot-Rot of Wheat in Kansas, 1920-1924, by M. C. Sewell and L. E. Melchers. *Jour. Amer. Soc. Agron.* 16: 763-771. December, 1924. (Received Jan. 7, 1925.) (Cooperation between the Office of Cereal Investigations and the Kansas Agricultural Experiment Station.)

Fundamentals for Taxonomic Studies of Fusarium, by H. W. Wallenweber, C. D. Sherbakoff, O. A. Reinking, H. Johann* and A. A. Bailey. *Jour. Agr. Research* 30: 833-843. May 1, 1925.

*Assistant Pathologist, Office of Cereal Investigations.

Virus Diseases

A Method of Increasing the Efficiency of Filter Cylinders, by H. H. McKinney. *Phytopath.* 14: 585-586. December, 1924. (Received January, 1925.)

Certain Aspects of the Virus Diseases, by H. H. McKinney. *Phytopath.* 15: 189-202. April, 1925.

A Mosaic on Winter Wheat and Winter Rye, by H. H. McKinney. (Phytopathological notes.) *Phytopath.* 15: 495-496. August, 1925.

A Mosaic Disease of Winter Wheat and Winter Rye, by H. H. McKinney. U. S. Dept. Agr. Bul. 1361. September, 1925. (Cooperation between the Office of Cereal Investigations and the Wisconsin and Illinois agricultural experiment stations.)

The Dilution Method as a Means for Making Certain Quantitative Studies of Viruses, by H. H. McKinney and R. W. Webb. Abstract approved in November for publication by Phytopathology as a preprint to be read at meetings of the American Phytopathological Society, Kansas City, Mo., December 28-31. (Cooperation between the Office of Cereal Investigations, Bureau of Plant Industry, U. S. Department of Agriculture, and the Wisconsin Agricultural Experiment Station.)

Wheat Rosette and Its Control, by H. H. McKinney, R. W. Webb and G. H. Dungan. Ill. Agr. Exp. Sta. Bul. 264. April, 1925. (Cooperation between the Office of Cereal Investigations and the Illinois, Indiana and Wisconsin agricultural experiment stations.)

Rusts

The Inheritance of Resistance to Puccinia graminis avenae, by S. M. Dietz. (Abstract) Phytopath. 15: 54. January, 1925. (Cooperation between the Office of Cereal Investigations and the Iowa Agricultural Experiment Station.)

Alternate Hosts of Puccinia coronata Corda, by S. M. Dietz. (Abstract) Phytopath. 15: 54. January, 1925. (Cooperation between the Office of Cereal Investigations and the Iowa Agricultural Experiment Station.)

The Effect of the Alternate Hosts on Physiologic Forms, by S. M. Dietz. Abstract approved in November for publication by Phytopathology as a preprint to be read at the meetings of the American Phytopathological Society, Kansas City, Mo., Dec. 28-31. (Cooperative investigations by the Iowa Agricultural Experiment Station and the Office of Cereal Investigations, Bureau of Plant Industry, U. S. Department of Agriculture.)

Alternate Hosts of Puccinia coronata II, by S. M. Dietz. Abstract approved in November for publication by Phytopathology as a preprint to be read at the meetings of the American Phytopathological Society, Kansas City, Mo., Dec. 28-31. (Cooperative investigations by the Iowa Agricultural Experiment Station and the Office of Cereal Investigations, Bureau of Plant Industry, U. S. Department of Agriculture.)

[Controlling Black Stem Rust], by E. M. Freeman. Proc. 4th Ann. Meeting Conf. Preven. Grain Rust, University Farm, St. Paul, Minn., Jan. 12, 1925, p. 9-11. [1925]

Factors Affecting the Development of Melampsora lini (Pers.) Desm., by H. Hart. (Abstract) Phytopath. 15: 53-54. January, 1925. (Cooperation between the Office of Cereal Investigations and the Minnesota Agricultural Experiment Station.)

Inheritance of Immunity from Melampsora lini, by A. W. Henry. Abstract approved in November for publication by Phytopathology as a preprint to be read at the meetings of the American Phytopathological Society, Kansas City, Mo., Dec. 28-31. (Cooperative investigations by the Minnesota Agricultural Experiment Station and the Offices of Cereal Investigations and Fiber-Plant Investigations, Bureau of Plant Industry, U. S. Department of Agriculture.)

The Control of Flax Rust, by A. W. Henry and E. C. Stakman. (Abstract) Phytopath. 15: 53. January, 1925. (Cooperation between the Minnesota Agricultural Experiment Station and the offices of Cereal Investigations and Fiber-Plant Investigations, Bureau of Plant Industry.)

Stripe Rust (Puccinia glumarum) of Cereals and Grasses in the United States, by H. B. Humphrey, C. W. Hungerford and A. G. Johnson. Jour. Agr. Research 29: 209-227. September 1, 1924. (Received Feb. 7, 1925.)

Effect of Sulfur Dust on the Development of Black Stem Rust of Wheat in a Natural Epidemic, by E. B. Lambert and E. C. Stakman. Abstract approved in November for publication by Phytopathology as a preprint to be read at the meetings of the American Phytopathological Society, Kansas City, Mo., Dec. 28-31. (Cooperative investigations by the Office of Cereal Investigations, Bureau of Plant Industry, U. S. Department of Agriculture, and the Minnesota Agricultural Experiment Station.)

Rye Resistant to Leaf Rust, Stem Rust, and Powdery Mildew, by E. B. Mains. (Abstract) Phytopath. 15: 58-59. January, 1925. (Cooperation between the Purdue University Agricultural Experiment Station and the Office of Cereal Investigations.)

Barberry Eradication

[Problems and Progress in Barberry Eradication], by C. P. Ball. Proc. 4th Ann. Meeting Conf. Preven. Grain Rust, University Park, St. Paul, Minn., January 12, 1925, p. 18-25. [1925]

A Report of the Barberry Eradication Campaign in South Dakota, by R. O. Bulger. 15th Ann. Rpt. State Entom. S. Dak. (1923-1924): 65-72. [1925] (Cooperation between the Office of Cereal Investigations and the South Dakota Agricultural College.)

The Harmful Barberry--Destroy It, by L. D. Hutton. Bul. Green Section U. S. Golf Assoc. 5: 126-128. June 16, 1925.

Barberry Eradication as a Method of Reducing Stem-Rust Losses of Small Grains, by F. E. Kempton. Proc. Ann. Blister Rust Conf. 10: 36-60. 1925.

Report of Progress in Barberry Eradication to December 31, 1924, by F. E. Kempton and L. D. Hutton. U. S. Dept. Agr., Bur. Plant Industry, Office Cereal Inves., Cereal Courier 17: 13-36. January 31, 1925. [Mimeographed] Also mimeographed separates, p. 1-24.

Report of Progress in Barberry Eradication for the Fiscal Year Ending June 30, 1925, by F. E. Kempton and L. D. Hutton. U. S. Dept. Agr., Bur. Plant Indus., Office Cereal Inves., Cereal Courier 17: 223-251. July 31, 1925. [Mimeographed] Also mimeographed separates, p. 1-29.

Report of Progress in Barberry Eradication for the Calendar Year Ended December 31, 1925, by F. E. Kempton and L. D. Hutton. U. S. Dept. Agr., Bur. Plant Indus., Office Cereal Inves., Cereal Courier 17: 415-443. Dec. 31, 1925. [Mimeographed] Also mimeographed copies, p. 1-29.

The Common Barberry and How to Kill It, by F. E. Kempton and N. F. Thompson. U. S. Dept. Agr. Circ. 356. July, 1925.

Progress of Barberry Eradication in Colorado, by E. A. Lungren. 15th Ann. Rpt. State Entom. Colorado (1923): 15-17. June, 1924. (Received January, 1925.) (Cooperation between the Office of Cereal Investigations and the Colorado Agricultural College.)

Report of Barberry Eradication to December 1, 1924, by L. W. Melander and N. J. Holmberg. Minn. State Dept. Agr. Bul. 40. [January, 1925.] (Cooperation between the Office of Cereal Investigations and the Minnesota State Department of Agriculture.)

[Connection Between Black Stem Rust and the Common Barberry], by E. C. Stakman. Proc. 4th Ann. Meeting Conf. Preven. Grain Rust, University Farm, St. Paul, Minn., Jan. 12, 1925, p. 11-18. [1925]

Barberry Eradication in Nebraska, by A. F. Thiel. Univ. Nebr. Agr. Col. Ext. Circ. 128. June, 1925. (Cooperation between the Office of Cereal Investigations and the University of Nebraska College Extension Service.)

Chemical Eradication of the Common Barberry, by N. F. Thompson. U. S. Dept. Agr. Circ. 332. December, 1924. (Received January, 1925.) (Cooperation between the Office of Cereal Investigations and the Wisconsin Agricultural Experiment Station.)

Grain Rust Control, by W. A. Walker. Wis. State Dept. Agr. Bul. 69, pp. 62-70. Dec. 31, 1924. (Received 1925.) (Cooperation between the Wisconsin State Department of Agriculture and the Office of Cereal Investigations.)

Black Stem Rust and the Progress of Barberry Eradication in Wisconsin, by W. A. Walker and N. F. Thompson. Wis. State Dept. Agr. Bul. 68. May, 1925. (Cooperation between the Office of Cereal Investigations, the Wisconsin Department of Agriculture, and the agricultural extension service of the University of Wisconsin.)

Downy Mildews

Downy Mildew (Sclerospora graminicola (Sacc.) Schroet.) on the Everglade Millet (Chaetochloa magna (Griseb) Scribn.), by W. H. Weston, Jr. and G. F. Weber. Abstract approved in November for publication by Phytopathology as a preprint to be read at the meetings of the American Phytopathological Society, Kansas City, Mo., Dec. 28-31. (Cooperative investigations by the Office of Cereal Investigations, Bureau of Plant Industry, U. S. Department of Agriculture, and the Florida Agricultural Experiment Station.)

Smuts

The Inheritance of Disease Resistance in Wheat and Oats, by E. F. Gaines. Phytopath. 15: 341-349. June, 1925. (Cooperation between the Office of Cereal Investigations and the Washington Agricultural Experiment Station.)

Resistance to Covered Smut in Varieties and Hybrids of Oats, by E. F. Gaines. Jour. Amer. Soc. Agron. 17: 775-789. December, 1925. (Cooperation between the Office of Cereal Investigations and the Washington Agricultural Experiment Station.)

The Loose Smut of Rye (Ustilago tritici), by H. B. Humphrey and V. F. Tapke. Phytopath. 15: 598-608. October, 1925.

Study of the Life History and Ecological Relations of the Smut of Maize, by A. A. Potter and L. E. Melchers. Jour. Agr. Research 30: 161-173. January 15, 1925. (Cooperation between the Office of Cereal Investigations and the Kansas Agricultural Experiment Station.)

Varietal Susceptibility of Oats to Loose and Covered Smuts, by G. M. Reed, M. A. Griffiths and F. N. Briggs. U. S. Dept. Agr. Bul. 1275. April, 1925. (Cooperation between the Office of Cereal Investigations and the Idaho, Iowa, Kansas, Missouri and Washington agricultural experiment stations and the Brooklyn Botanic Garden.)

Sorghum Smuts and Varietal Resistance in Sorghums, by G. M. Reed and L. E. Melchers. U. S. Dept. Agr. Bul. 1284. August, 1925. (Cooperation between the Office of Cereal Investigations and the Kansas and Missouri agricultural experiment stations and the Brooklyn Botanic Garden.)

Relative Susceptibility of Selections from a Fulghum-Swedish Select Cross to the Smuts of Oats, by G. M. Reed and T. R. Stanton. Jour. Agr. Research 30: 375-391. February 15, 1925. (Cooperation between the Office of Cereal Investigations, the Idaho Agricultural Experiment Station and the Brooklyn Botanic Garden.)

Relative Resistance of Wheat to Bunt in the Pacific Coast States, by W. H. Tisdale, J. H. Martin, F. N. Briggs, W. W. Mackie, H. M. Woolman, D. E. Stephens, E. F. Gaines and F. J. Stevenson. U. S. Dept. Agr. Bul. 1299. January 12, 1925. (Cooperation between the Office of Cereal Investigations and the California, Oregon and Washington agricultural experiment stations.)

A Strain of Sorghum Kernel Smut which Infects Milo and Hegari, by W. H. Tisdale, L. E. Melchers and H. J. Clemmer. Abstract approved in November for publication by Phytopathology as a preprint to be read at the meetings of the American Phytopathological Society, Kansas City, Mo., Dec. 28-31. (Cooperative experiments conducted by the offices of Cereal Investigations and Dry-Land Agriculture, Bureau of Plant Industry, U. S. Department of Agriculture, and the Kansas Agricultural Experiment Station.)

Infection of Barley by Ustilago nuda Through Seed Inoculation, by W. H. Tisdale and V. F. Tapke. (Abstract) Phytopathology 15: 59. January, 1925.

Infection of Barley by Ustilago nuda Through Seed Inoculation, by W. H. Tisdale and V. F. Tapke. Jour. Agr. Research 29: 263-284. September 15, 1924. (Received Feb. 2, 1925.)

New Seed Disinfectants for the Control of Bunt of Wheat and the Smuts of Oats and Barley, by W. H. Tisdale, J. W. Taylor, R. W. Leukel and M. A. Griffiths. Phytopath. 15: 651-676. November, 1925.

Non-Parasitic Diseases

Oat Blast, by C. Elliott. Phytopath. 15: 564-567. September, 1925. (Cooperation between the Office of Cereal Investigations and the Laboratory of Plant Pathology, Bureau of Plant Industry.)

PHYSIOLOGICAL AND CHEMICAL SUBJECTS

The Relation of Plant Physiology and Chemistry to the Study of Disease Resistance in Plants, by J. G. Dickson. Jour. Amer. Soc. Agron. 17: 676-695. November, 1925. (In Symposium on "Plant Physiology and Agronomic Science.") (Investigations conducted cooperatively by the Office of Cereal Investigations, the Wisconsin Agricultural Experiment Station and Funk Brothers' Seed Company.)

Physiological Studies on Cereals.--III. The Occurrence of Polypeptides and Amino Acids in the Ungerminated Maize Kernel, by S. L. Jodidi. Jour. Agr. Research 30: 587-592. March 15, 1925. (Cooperation between the offices of Cereal Investigations and Plant Physiological and Fermentation Investigations, Bureau of Plant Industry.)

Physiological and Biochemical Studies on Cereals. IV. On the Presence of Amino Acids and Polypeptides in the Ungerminated Eye Kernel, by S. L. Jodidi and J. G. Mangler. Jour. Agr. Research 30: 989-994. May 15, 1925. (Cooperation between the offices of Cereal Investigations and Plant Physiological Investigations, Bureau of Plant Industry.)

Acidity and Varietal Resistance of Wheat to Tilletia tritici, by A. M. Hurd-Harrer. Amer. Jour. Bot. 12: 359-371. July, 1925.

Carbohydrate Storage in the Endosperm of Sweet Corn, by L. Lampe and M. T. Meyers. Science 61: 290-291. March 13, 1925. (Cooperation between the Office of Cereal Investigations and the Ohio State University.)

Effects of the Method of Desiccation on the Carbohydrates of Plant Tissue, by K. P. Lin. Jour. Amer. Chem. Soc. 47: 470-476. February, 1925. (Cooperation between the Office of Cereal Investigations and the Wisconsin Agricultural Experiment Station.)

Some Effects of Sodium Arsenite When Used to Kill the Common Barberry, by E. R. Schulz and M. F. Thompson. U. S. Dept. Agr. Bul. 1316. April, 1925. (Cooperation between the Office of Cereal Investigations, the University of Wisconsin and the Wisconsin Department of Agriculture.)

LIST OF 47 MANUSCRIPTS REMAINING IN PRESS DECEMBER 31, 1925

6 Studies on Ophiobolus graminis Sacc. and the Take-All Disease of Wheat, by R. J. Davis. Submitted January 24 to the Journal of Agricultural Research. Galley proof, December 14.

7 Experiments with Wheat on Dry Land in Colorado, by F. A. Coffman. Approved January 27 for publication as a cooperative bulletin of the Colorado Agricultural Experiment Station.

8 Experiments with Oats on Dry Land in Colorado, by F. A. Coffman. Approved January 27 for publication as a cooperative bulletin of the Colorado Agricultural Experiment Station.

9 Experiments with Barley on Dry Land in Colorado, by F. A. Coffman. Approved January 29 for publication as a cooperative bulletin by the Colorado Agricultural Experiment Station.

14 A Concentration Gradient in Corn Stalks, by A. M. Hurd-Karrer. Approved February 7 for publication in the Journal of General Physiology; galley proof, December 9; page proof, December 29.

15 The Progress of Barberry Eradication in Colorado, 1924, by E. A. Lungren. Submitted February 12 for publication in the Annual Report of the State Entomologist.

18 The Pasmc Disease of Flax, by W. E. Brentzel. Submitted February 24 to the Journal of Agricultural Research.

20 Experiments with Corn on Dry Land in Colorado, by F. A. Coffman. Approved February 27 for publication as a cooperative bulletin by the Colorado Agricultural Experiment Station.

21 Personnel, Personalities, and Research, by C. R. Ball. Approved March 9 for publication in The Scientific Monthly.

23 Chemical Composition of Etiolated and Green Barberry Sprouts and their Respective Roots, by E. R. Schulz and N. F. Thompson. Approved May 9 for publication in the Botanical Gazette.

27 Rye Resistant to Leaf Rust, Stem Rust, and Powdery Mildew, by E. B. Mains. Submitted March 26 to the Journal of Agricultural Research.

29 Breeding Oats Resistant to Fuccinia graminis avenae, by S. M. Dietz. Approved April 6 for publication as an abstract in the Proceedings of the Iowa Academy of Science.

35 Single-Bath Hot-Water and Steam Treatments of Seed Wheat for the Control of Loose Smut, by V. F. Tapke. Submitted April 28 for publication as a Department Bulletin.

40 Infection of Corn Seedlings by Smut (Ustilago zaeae) in the Greenhouse: Its Value in Studying Smut Resistance, by W. H. Tisdale and C. C. Johnston. Submitted June 10 to the Journal of Agricultural Research.

42 Why Burden the Forms of Domesticated Plants with a Latin Nomenclature? by C. R. Ball. Submitted June 20 for publication in the American Journal of Botany.

44 Physiological and Biochemical Studies on Cereals.--V. Nitrogen Metabolism in Etiolated Corn Seedlings, by S. L. Jodidi. Submitted June 11 to the Journal of Agricultural Research.

45 Relative Susceptibility of Spring Wheat Varieties to Stem Rust, by J. A. Clark, J. H. Martin and E. C. Stalman. Submitted July 1 for publication in the Department Circular series.

46 Experiments in Rice Culture at the Biggs Rice Field Station, by J. W. Jones. Submitted July 1 for publication as a Department Bulletin.

49 The Barberry Eradication Campaign in Montana: Its Object, Nature, and Progress, by H. E. Morris and W. L. Popham. Submitted July 9 for publication as a cooperative bulletin of the Montana Agricultural Experiment Station.

50 Berberine in the Common Barberry, by E. R. Schulz. Approved July 9 for publication in the Journal of the American Pharmaceutical Association.

52 Effect of Smut Infection ^{on} Sap Concentration in Corn Stalks, by A. M. Hurd-Karrer. Approved July 15 for publication in the American Journal of Botany.

53 Physiologic Specialization in the Leaf Rust of Wheat, Puccinia triticina Erikss., by E. B. Mains and H. S. Jackson. Approved July 16 for publication in Phytopathology.

54 Climatic Effects in the Metabolism of the Sugar Beet, by W. E. Tottingham, S. Lepkovsky, E. R. Schulz and K. P. Link. Approved July 22 for publication in any outside chemical journal.

55 Cytological Studies of Puccinia graminis tritici Forms 9, 21, and 27 on Khapli Emmer, by R. F. Allen. Submitted August 7 to the Journal of Agricultural Research.

56 The Inheritance of Resistance to Bunt, Tilletia tritici (Bjerk.) Winter, in Wheat, by F. N. Briggs. Submitted August to the Journal of Agricultural Research.

57 Inheritance of Resistance to Leaf Rust, Puccinia triticina Erikss., in Crosses of Common Wheat, T. vulgare Vill., by E. B. Mains, C. E. Leighty and C. O. Johnston. Submitted August 17 to the Journal of Agricultural Research.

59 Polyploidy in Zea mays L., by L. F. Randolph and B. McClintock. Approved September 11 for publication in the American Naturalist.

60 Segregation and Correlated Inheritance in Marquis and Hard Federation Crosses with Factors for Yield and Quality of Spring Wheat in Montana, by J. A. Clark and J. R. Hooker. Submitted September 19 for publication in the Department Bulletin series.

61 Development in Immature Barley Kernels Removed from the Plant, by H. V. Harlan and M. N. Pope. Submitted September 19 to the Journal of Agricultural Research.

62 Fatuoid or False Wild Forms in Fulghum and Other Oat Varieties, by T. R. Stanton, F. A. Coffman and G. A. Wiebe. Approved October 6 for publication in the Journal of Heredity.

63 The Comparative Hardiness of Winter Wheat Varieties, by J. A. Clark, J. H. Martin and J. H. Parker. Submitted October 15 for publication in the Department Circular series.

65 Factors Influencing Results from Rate-and-Date-of-Seeding Experiments with Wheat in the Western United States, by J. H. Martin. Approved November 2 for publication in the Journal of the American Society of Agronomy.

66 The Moving Average as a Basis for Measuring Correlated Variation in Agronomic Experiments, by F. D. Richey. Submitted November 6 to the Journal of Agricultural Research.

67 Factors Affecting the Development of Flax Rust, Melampsora lini (Pers.) Desm., by H. Hart. Approved November 7 for publication in Phytopathology.

68 Seed Treatment Experiments for Controlling Stripe Disease of Barley, by R. W. Leukel, J. G. Dickson and A. G. Johnson. Approved November 16 for publication in Phytopathology.

69 Making Weather to Order for the Study of Grain Diseases, by J. G. Dickson. Submitted November 13 for publication as Wis. Agr. Exp. Sta. Bul. 379.

70 A Simple Test for Detecting the Nutrient Needs of Corn Plants, by G. N. Hoffer. Approved November 27 for publication as an abstract in the Journal of the American Society of Agronomy.

71 The Relation of Inheritance Studies to Corn Improvement, by A. M. Brunson. Approved December 7 for publication in the Journal of the American Society of Agronomy.

72 Some Differences in the Functioning of Selfed Lines of Corn under Varying Nutritional Conditions, by G. N. Hoffer. Approved December 7 for publication in the Journal of the American Society of Agronomy.

73 Introductory Remarks to the Symposium on "The Present Status of Corn Improvement," by F. D. Richey. Approved December 7 for publication in the Journal of the American Society of Agronomy.

74 Further Experiments in the Control of Bunt of Wheat and the Smuts of Barley and Oats, by R. W. Leukel. Approved December 10 for publication in Phytopathology.

75 Some Factors to be Considered in Extending the Use of the Combine Harvester, by M. A. McCall. Approved December 11 for publication in the Journal of the American Society of Agricultural Engineers.

76 Intergeneric Hybrids in Aegilops, Triticum, and Secale, by C. E. Leighty, W. J. Sande and J. W. Taylor. Submitted December 15 to the Journal of Agricultural Research.

77 Breeding Wheat for Higher Protein Content, by J. A. Clark. Approved December 23 for publication in the Journal of the American Society of Agronomy.

78 Hybrid Vigor in Rice, by J. W. Jones. Approved December 23 for publication in the Journal of the American Society of Agronomy.

79 Growth of Mung Beans on Submerged Land, by J. W. Jones. Approved December 23 for publication in the Journal of the American Society of Agronomy.

80 Relation of the Seed Coat of Peterita to the Rate of Water Absorption and Germination, by A. F. Swanson. Approved December 23 for publication in the Journal of the American Society of Agronomy.

PROJECT REPORTS

CEREAL-DISEASE INVESTIGATIONS

(Dr. A. G. Johnson, Senior Pathologist in Charge)

Imperfect and Sac Fungi

The following summary of results of corn seed treatment experiments was published in *Phytopathology*, vol. 16, no. 1, January, 1926.

Seed Treatments for the Control of Certain Diseases of Dent Corn

By James R. Holbert, Chas. S. Reddy, and Benjamin Koehler

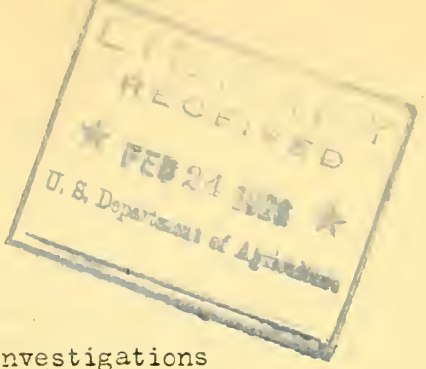
Extensive experiments conducted at various places in Illinois during the past five years have shown that dent corn grown from seed infected with Diplodia zeae and Gibberella saubinetii is greatly improved in both yield and quality by seed treatment, while corn from Fusarium moniliforme infected and scutellum-rotted seed has not been improved. Only under certain soil conditions, not fully understood, have seed treatments increased the yield of corn grown from seed infected with Cephalosporium acremonium. Treated, infected seed has not yielded as well as untreated, nearly disease-free seed. Seed treatment may prove important when it is impossible to secure sufficient nearly disease-free seed. The summarized results follow.

Seed treatment materials	:Total No.:	: Diplodia-		:Gibberella-	
		: replica-	: Good Seed	: infected	: infected
	: tions	:	: seed	: seed	:
	:	:Incr.:	:Decr.:	:Incr.:	:Decr.:
	:	: Bu.:	: Bu.:	: Bu.:	: Bu.:
Uspulun (0.5 p.c.)	: 317	:	: 0.5 _a :	15.6:	: 15.1:
Bayer Comp. "	: 24	:	: 2.1 _a :	19.3:	: 7.0:
Semesan "	: 72	:	: 0.5 _a :	6.4:	: 18.2:
DuPont No. 12 "	: 72	:	: 3.8 :	14.0:	: ---:
Mercury A "	: 36	:	: 1.8 _a :	16.4:	: 19.8:
Corona 620 (o.15 p.c.)	: 120	:	: 3.1 _a :	21.7:	: 17.6:
Germisan "	: 80	:	: 1.7 _a :	17.4:	: ---:
Standard Oil H ₁ (100 p.c.):	42	:	: 0.2 _a :	13.1:	: 17.9:
DuPont No. 12 (Dust)	: 42	:	: 5.1 _a :	9.7:	: 12.1:
" " 18 (Dust)	: 24	:	: 3.7 _a :	10.7:	: 16.6:
Semesan (Dust)	: 12	:	: 6.6 _a :	9.6:	: ---:
Semesan Jr. (Dust)	: 30	:	: 1.3 _a :	20.7:	: 19.0:
Bayer Dust	: 30	:	: 8.5 :	15.8:	: 28.9:
Corona 640 S (Dust)	: 27	:	: 3.1 _a :	8.5:	: 19.8:
S.F.A.No.225 (Dust)	: 12	:	: 8.2 :	16.8:	: ---:
	:	:	:	:	:

_a Odds less than 30:1, others greater.

(Cooperative investigations by the Office of Cereal Investigations, Bureau of Plant Industry, U. S. Department of Agriculture, the Funk Brothers' Seed Company, and the Illinois Agricultural Experiment Station.)

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CEREAL COURIER

Official Messenger of the Office of Cereal Investigations
Bureau of Plant Industry, U. S. Dept. of Agriculture
(NOT FOR PUBLICATION)

Vol. 18

No. 3

February 15, 1926
Personnel (Jan. 16-31) and Field Station (Jan. 1-31) Issue

PERSONNEL ITEMS

B. B. Bayles, junior agronomist in charge of the cereal nursery at the Sherman County Branch Station, Moro, Oreg., who has been in Washington for the past month, left on February 15 for Manhattan, Kans., where he will remain for two weeks in conference with experiment station officials and Department representatives concerning cooperative cereal breeding. Mr. Bayles will then proceed to his headquarters at Moro, Oregon.

R. O. Bulger, State leader in barberry eradication in South Dakota, with headquarters at Brookings, was authorized on February 12 to leave for St. Paul, Minn., to confer with cooperating pathologists and others concerning educational and publicity phases of barberry eradication and to plan a more effective epidemiology program for South Dakota.

J. W. Jones, superintendent of the Biggs Rice Field Station, who has been traveling in the Orient in search of rice varieties since last fall, wrote from Manila, where he had arrived on January 11 from Singapore, that he expected within the week to visit the rice station at Rosales, Pangasinan Province, and other rice areas north of Manila. He hoped to leave Manila on January 27 on the "President Cleveland," due to arrive in San Francisco on February 24.

Mr. Jones has succeeded in collecting specimens of the best available varieties of rice in the countries that he has visited. Some of these, it is hoped, will be of much value in the United States.

G. F. Sprague, junior agronomist in charge of cereal experiments at the North Platte Substation, North Platte, Nebr., who has been in Washington for the past month, left on February 12 for Ithaca, N. Y., where he will confer with Department representatives and officials of the Cornell University Agricultural Experiment Station in regard to corn breeding. Mr. Sprague also will stop at Lincoln, Nebr., for the same purpose before returning to North Platte.

VISITORS

H. W. Albertz, formerly agent in the cooperative corn-disease investigations at Madison, Wis., was an Office visitor on February 3. He has just completed his graduate work at the University of Wisconsin and the University of Illinois for his doctorate at each institution and will now enter Harvard University for post-graduate studies with Dr. E. M. East. Doctor Albertz is especially interested in studies on inheritance of disease resistance in plants.

Rev. King-Li, 40 Bonham Road, Hongkong, China, conferred with the pathologists of the Office on February 12 in regard to the diseases of rice.

MANUSCRIPTS AND PUBLICATIONS

5 A manuscript, entitled "Observations on Corn Smut (Ustilago zeae) at Akron, Colorado," by F. A. Coffman, W. H. Tisdale and J. F. Brandon, was approved February 2 for publication in *Phytopathology*.

6 A manuscript, entitled "Oats and Oat Varieties for the Eastern Atlantic States, with Special Reference to Maryland," by T. R. Stanton, was approved February 3 for publication in the *Proceedings of the American Crop Improvement Association*. (This paper was read by Mr. Stanton on January 6, before the meetings in Baltimore of the American Crop Improvement Association.)

The article, entitled "A Concentration Gradient in Corn Stalks," by A. M. Hurd-Karrer, appears in the *Journal of General Physiology*, v. 9, no. 3, pp. 341-343. January, 1926.

The article, entitled "Berberine in the Common Barberry (Berberis vulgaris L.)," by E. R. Schulz, appears in the *Journal of the American Pharmaceutical Association*, vol. 15, no. 1, pp. 33-39. January, 1926. (Cooperation between the Office of Cereal Investigations and the Wisconsin Agricultural Experiment Station.)

The article, entitled "Nitrogen Metabolism in Etiolated Corn Seedlings," by S. L. Jodidi, appears in the *Journal of Agricultural Research*, vol. 30, no. 12, pp. 1149-1164. Dec. 15, 1925. (Received February, 1926.) (Cooperation between the Offices of Cereal Investigations and Plant Physiological Investigations, Bureau of Plant Industry.)

Mont. Agr. Exp. Sta. Bul. 180, entitled "The Barberry Eradication Campaign in Montana: Its Object, Nature, and Progress," by H. E. Morris and W. L. Popham, was received February 3, bearing date of October, 1925. (Cooperation between the Office of Cereal Investigations and the Montana Agricultural Experiment Station.)

FIELD STATION CONDITION AND PROGRESS

HUMID ATLANTIC COAST STATES (South to North)

GEORGIA

State College of Agriculture, Athens (R. R. Childs)

VIRGINIA

Arlington Experiment Farm, Rosslyn (J. W. Taylor)

NEW YORK

Cornell University Agricultural Experiment Station, Ithaca (H. H. Love)
(February 15)

The weather of the past few weeks has been very favorable to wheat, as there has been snow on the ground over the wheat-growing sections of New York State, deep enough in most cases to keep the fields well covered and protected.

Farmers' Week was held from February 8 to 13 and, while the attendance was not so large as in some years, owing largely to weather conditions, the interest was very gratifying. The Department of Plant Breeding gave a series of lectures and demonstrations and had an exhibit showing the results of the cereal investigations and other lines of work. Cooperators who are growing improved strains of small grains and corn were asked to submit samples in competition. This brought a number of exhibits and created considerable interest. Many visitors asked for information as to sources of seed and as to what varieties they should grow in their particular locality.

As has been mentioned before, we have obtained a number of hybrids from crosses between Cornelian oats and our best yielding white strains which have yielded more than the Cornelian. It is planned now that in addition to the experiments at Ithaca, we shall have under test in two different localities in the State, the ten best selections from these hybrids. We are hoping that this will give us further information so that we may select the best one or two for further multiplication and distribution. The material that is being grown in the greenhouse for the purpose of making hybrids, is making satisfactory growth and will furnish plenty of opportunity for making certain crosses that have been planned.

HUMID MISSISSIPPI VALLEY STATES (South to North)

LOUISIANA

Rice Experiment Station, Crowley (J. Mitchell Jenkins)

Agricultural Experiment Station, Baton Rouge (H. Stoneberg)

MISSOURI

Agricultural Experiment Station, Columbia (C. A. Helm)

TENNESSEE

Agricultural Experiment Station, Knoxville (L. S. Mayer)

IOWA

Agricultural Experiment Station, Ames (M. T. Jenkins)

Agricultural Experiment Station, Ames (Investigation of Crown Rust of Oats, S. M. Dietz)

Iowa State College, Ames (Barberry Eradication, M. A. Smith)

ILLINOIS

Funk Bros. Seed Co., Bloomington (Corn Root and Stalk Rot Investigations, J. R. Holbert)

Post Office Building, Urbana (Barberry Eradication, G. C. Curran)

INDIANA

Purdue University Agricultural Experiment Station, La Fayette (Corn Root, Stalk, and Ear Rots, G. N. Hoffer)

Purdue University Agricultural Experiment Station, La Fayette (Leaf Rust Investigations, H. S. Jackson and E. B. Mains)

College of Agriculture, Purdue University, La Fayette (Barberry Eradication, W. E. Leer)

OHIO

College of Agriculture, Ohio State University, Columbus (Barberry Eradication, J. W. Baringer)

MICHIGAN

Agricultural College, East Lansing (Barberry Eradication, W. F. Reddy)

WISCONSIN

Agricultural Experiment Station, Madison (Wheat Scab Investigations, J. G. Dickson)

Agricultural Experiment Station, Madison (Wheat Rosette and Take-All Investigations, H. H. McKinney)

Department of Agriculture, State Capitol Annex, Madison (Barberry Eradication, W. A. Walker) [February 15]

Epidemiology studies are in progress again this winter. There were very few volunteer pustules of stem-rust urediniospores on grains and grasses in the vicinity of Madison this fall compared to the number in 1924. The majority of the germination tests are being made with potted material.

Plans for educational activities are being carried out as previously outlined. A circular letter will be sent to the rural schools in the southern half of the State. Study material and information will be supplied to all high schools. Panels, slides and a movie film, are being circulated, and specimens of rusted barberries and grains, and bulletins are being supplied to the agricultural high schools.

MINNESOTA

Agricultural Experiment Station, University Farm, St. Paul (Wheat Breeding Investigations, O. S. Aamodt)

Agricultural Experiment Station, University Farm, St. Paul (Stem Rust Investigations, E. C. Stakman)

Agricultural Experiment Station, University Farm, St. Paul (Barberry Eradication, L. W. Melander)

GREAT PLAINS AREA (South to North)

OKLAHOMA

Woodward Field Station, Woodward (J. B. Sieglinger)

KANSAS

Agricultural Experiment Station, Manhattan (D. D. Hill)

Hays Branch Experiment Station, Hays (A. F. Swanson)

COLORADO

Akron Field Station, Akron

Agricultural College, Ft. Collins (Barberry Eradication, E. A. Lungren)

NEBRASKA

North Platte Substation, North Platte (G. F. Sprague)

College of Agriculture, University Farm, Lincoln (Barberry Eradication, A. F. Thiel)

SOUTH DAKOTA

College of Agriculture, Brookings (Barberry Eradication, R. O. Bulger)

NORTH DAKOTA

Agricultural Experiment Station, Agricultural College (W. E. Brentzel)

Agricultural Experiment Station, Agricultural College (Barberry Eradication, G. C. Mayoue)

Dickinson Substation, Dickinson (R. W. Smith)

Northern Great Plains Field Station, Mandan (Flax Investigations, J. C. Brinsmade, Jr.)

Northern Great Plains Field Station, Mandan (Wheat Investigations, E. R. Ausemus)

MONTANA

Judith Basin Substation, Moccasin (R. W. May) (February 1)

Winter wheat does not appear nearly so vigorous and thrifty at this date as it did at the beginning of January. Dry weather and soil blowing during the month damaged the wheat considerably. This is true particularly of late-sown wheat and, in a lesser degree, of wheat sown with an ordinary drill either early or late. Soil blowing was severe on neighboring farms where fields were worked too fine in the fall.

It is too early to estimate the damage to winter wheat, but with more favorable weather from now until spring it is probable that most of the wheat will come through in good shape.

The precipitation for January was only 0.29 inch, or 0.39 inch below average. The weather in January was exceptionally mild for this district, - too much so for the good of the winter wheat. Temperatures average much higher than usual. Temperatures below zero were recorded on only three days in the month. Minimum temperature, 13 degrees on January 21; maximum, 47 degrees on January 28.

State College of Agriculture, Bozeman (Barberry Eradication, W. L. Popham)

WESTERN BASIN AND COAST AREAS (North to West and South)

IDAHO

Aberdeen Substation, Aberdeen (G. A. Wiebe)

Agricultural Experiment Station, Moscow (Stripe Rust Investigations, C. W. Hungerford)

WASHINGTON

Agricultural Experiment Station, Pullman (E. F. Gaines)

OREGON

Sherman County Branch Station, Moro (D. E. Stephens)

CALIFORNIA

Biggs Rice Field Station, Biggs (C. F. Dunshee)

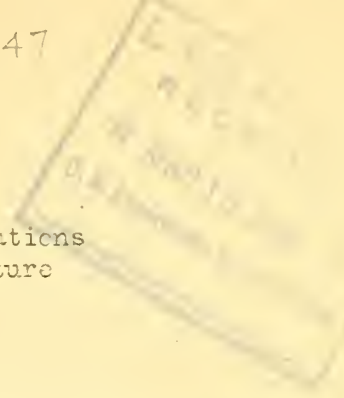
University Farm, Davis (V. H. Florell)

Agricultural Experiment Station, Berkeley (F. N. Briggs)

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CEREAL COURIER

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Bureau of Plant Industry, U. S. Dept. of Agriculture
(NOT FOR PUBLICATION)



Vol. 13

No. 4

February 28, 1926
Personnel (Feb. 16-28) and Project Issue

PERSONNEL ITEMS

Dr. S. F. Acree, research professor of physical-organic chemistry at George Washington University, has been engaged as temporary consulting chemist in connection with the installation of the H-ion apparatus at the Arlington Experiment Farm.

J. W. Jones, superintendent of the Biggs Rice Field Station, Biggs, Calif., returned to the United States on February 24 after an absence of nearly six months in the Orient in search of varieties of rice adapted for cultivation in California. Mr. Jones' collection of seed from Japan, Korea, China, Java, and the Philippine Islands has been turned over to the Federal Horticultural Board for inspection.

J. H. Martin, associate agronomist in charge of grain-sorghum investigations, who is completing graduate studies at the University of Minnesota, looking toward the degree of Doctor of Philosophy, was authorized on February 27 to attend a conference at Manhattan, Kans., of Federal and State officials for the discussion of a generally uniform program of grain-sorghum investigations.

M. A. McCall, agronomist in charge of cereal agronomy investigations, will leave Washington February 28 for Manhattan, Kans., to attend a conference of Federal and State officials relating to grain-sorghum investigations. Mr. McCall also will confer with State and Department officials at the Kansas State Agricultural College, the Funk Brothers' Seed Co., Bloomington, Ill., and the Purdue University Agricultural Experiment Station, La Fayette, Ind., concerning cooperative cereal investigations. He will return to Washington about March 10.

MANUSCRIPTS AND PUBLICATIONS

7 A manuscript, entitled "The Stem Rust Situation in Michigan," by W. F. Reddy, was submitted February 8 for publication in the Michigan Agricultural Experiment Station Quarterly Bulletin.

8 A manuscript, entitled "The Productiveness of Corn as Influenced by Mosaic," by Hugo F. Stoneberg, was submitted February 16 for publication in the Department Circular series.

9 A manuscript, entitled "Black Stem Rust and the Common Barberry in South Dakota," by R. O. Bulger, was submitted February 19 for publication as a cooperative bulletin of the South Dakota Agricultural Experiment Station.

10 A manuscript, entitled "Effects of Wheat Treated with Copper Carbonate Upon the Common House Mouse," by W. W. Mackie and Fred N. Briggs, was approved February 27 for publication in Phytopathology.

Galley proof of article, entitled "Cytological Studies of Puccinia graminis tritici Forms 9, 21, and 27 on Khapli Emmer," by Ruth F. Allen, for publication in the Journal of Agricultural Research, was read February 27.

Page proof of Department Bulletin 1387, entitled "Experiments in Rice Culture at the Biggs Station in California," by J. W. Jones, was read February 19.

The article, entitled "The Progress of Barberry Eradication in Colorado," by E. A. Lungren, appears in the Sixteenth Annual Report of the State Entomologist of Colorado for the year 1924, pp. 75-76. June, 1925. (Received Feb. 23, 1926.) ("Cooperative extension work in Agriculture and Home Economics, Colorado Agricultural College, and United States Department of Agriculture cooperating.")

CORRECTION

The manuscript, entitled "Oats and Oat Varieties for the Eastern Atlantic States, with Special Reference to Maryland," by T. R. Stanton, noted in Cereal Courier 13: 41, is scheduled for publication in the Proceedings of the Maryland Crop Improvement Association, not, as stated, in the Proceedings of the American Crop Improvement Association.

A N N O U N C E M E N T

The Eighth Annual Meeting of the Leaders in Barberry Eradication and Stem-Rust Epidemiology Investigations and Interested Members of Cooperating Agencies of the Office of Cereal Investigations, Bureau of Plant Industry, will be held in Washington March 18 to 25, 1926. Addresses will be made by officials of the U. S. Department of Agriculture on subjects of special interest to those interested in barberry eradication. The program for the various meetings is given below.

PROGRAM

Thursday, March 18

Morning

Chairman, Dr. F. E. Kempton

- 9:30 - Roll Call--Registration - Announcement of Committees.
- 10:30 - Address of Welcome, Dr. C. R. Ball.
- 11:15 - Cereal Disease Control, Dr. A. G. Johnson.
- 11:45 - The Relation of Barberry Eradication to Stem-Rust Control, Dr. H. B. Humphrey.

Afternoon

Chairman, Dr. C. R. Ball

- 1:30 - General Instructions, Announcements, etc., Dr. F. E. Kempton.
- 2:00 - The Work of the Bureau of Plant Industry, Dr. W. A. Taylor.
- 2:30 - Eradication Campaigns, Dr. E. F. Kellerman.
- 3:00 - The Bureau's Business, Mr. H. E. Allanson.
- 3:45 - Pathological Collections and the Plant Disease Survey, Dr. C. L. Shear.

Friday, March 19

Morning

Chairman (To be determined)

- 9:00 - Fiscal Problems,- Round table discussion with State leaders, Mr. W. P. Cox, Mr. G. H. Billings, Mr. H. S. Smith, and others handling field accounts.

Friday, March 19, Continued

Afternoon

1:10 - Trip to Arlington Farm.

Evening

8:30 - Meetings of Committees.

Saturday, March 20

Morning

Chairman, Dr. F. E. Kempton

- 9:00 - Barberry Eradication Problems from the Standpoints of Field and Office, Mr. L. D. Hutton.
 10:00 - The Office and Field Reporting Systems, Mr. L. D. Hutton and State Leaders.

Afternoon

Chairman, Dr. F. E. Kempton

- 1:00 - Reports, Forms, Details of Procedure, Mr. L. D. Hutton and State Leaders.
 3:00 - Finances, Budgets, etc., Dr. F. E. Kempton and State Leaders.

Monday, March 22

Morning

Chairman, Dr. H. B. Humphrey

- 9:30 - The Extension Service, Dr. C. W. Warburton.
 10:00 - Educational Methods, Mr. A. B. Graham.
 10:45 - Visual Instructions, Mr. Reuben Brigham.
 11:15 - Visit to Motion Picture Laboratory.

Afternoon

Chairman, Dr. H. B. Humphrey

- 1:30 - Extension Work in Plant Pathology, Mr. F. C. Meier.
 2:00 - Enlisting the Editor in Barberry Eradication, Mr. C. E. Gapen.
 2:45 - Objects and Principles of Exhibits, Mr. J. W. Hiscox.
 3:30 - Inspection of Office of Exhibits, 7th and B Streets, N.W.

Monday, March 22, Continued

Evening

7:00 - Dinner. (Place and Program to be Announced.)

Tuesday, March 23

Morning

Chairman, Dr. A. G. Johnson

9:00 - Barberry Field Activities.

- A. The Status of the Problem, Dr. F. E. Kempton.
- B. Survey and Eradication.

The Original Survey:

- Illinois, Mr. G. C. Curran.
- Michigan, Mr. W. F. Reddy.
- Ohio, Mr. J. W. Baringer.
- Montana, Mr. W. L. Popham.

The Second Survey:

- Efficiency, Mr. L. W. Melander.
- Checking Jackson County, Iowa, Mr. M. A. Smith.
- Extent of Second Survey, Dr. F. E. Kempton and State Leaders.
- Thoroughness of Second Survey, Its Definition and Application, Dr. F. E. Kempton and State Leaders.

Resurveys:

- Cultivated Bushes and Hedges, Mr. G. C. Mayoue.
- Areas of Escapes and Seedlings, Mr. W. A. Walker.
- Discussion, Mr. J. W. Baringer and Mr. R. C. Bulger.

Eradication:

- Summary of Methods Used with Effectiveness of Each, Mr. L. D. Hutton.
- Discussion, Mr. W. E. Leer and Mr. N. F. Thompson.

Afternoon

Chairman, Dr. F. E. Kempton

1:00 - Informal Discussion of Field Activities in Blister-Rust Control.

- A. Eastern Program, Dr. J. F. Martin.
- B. Western Program, Mr. G. B. Posey.

3:00 - Educational and Publicity Materials, Mr. R. G. Pierce.

4:00 - Blister Rust Quarantines, Dr. J. F. Martin.

Evening

Chairman, Dr. F. E. Kempton

7:30 - Committee Reports with Discussion of:

- A. Publicity and Educational Methods Applicable to Barberry Eradication.
- B. Efficiency of the Second Survey

Wednesday, March 24

Morning

Chairman, Dr. H. B. Humphrey.

- 9:00 - General Instructions and Announcements.
 9:15 - Assembling, Grouping, Propagating, and Monographing Berberis and Related Genera, Mr. B. Y. Morrison.
 9:45 - Testing Berberis Species and Hybrids for Susceptibility to Stem Rust, Mr. R. U. Cotter.
 10:30 - Rusts and Barberry Eradication, Dr. H. B. Humphrey.
 11:00 - Observations on the Stem-Rust Epidemic of 1925, Dr. E. C. Stalman.

Afternoon

Chairman, Dr. H. B. Humphrey

- 1:30 - Stem Rust Investigations and Plans for Epidemiology Survey, Dr. E. C. Stalman, Mr. E. B. Lambert, and Mr. J. J. Christensen.
 3:30 - Quarantines in Relation to Eradication of Barberries, Mr. M. B. Waite.

Evening

- 7:00 - Dinner. (Place and Program to be Announced.)

Thursday, March 25

Morning

- 8:30 - Trip to the Berberis Garden at Bell, Maryland.

Afternoon

Chairman, Dr. F. E. Kempton

- 2:00 - Final Business Session.
 Adjournment.

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P. 47-56 repeated in numbering



CEREAL COURIER

Official Messenger of the Office of Cereal Investigations
Bureau of Plant Industry, U. S. Dept. of Agriculture
(NOT FOR PUBLICATION)

Vol. 18

No. 5

March 15, 1926

Personnel (Mar. 1-15) and Field Station (Feb. 1-28) Issue

PERSONNEL ITEMS

E. R. Ausemus, junior agronomist in charge of cooperative wheat investigations at the Northern Great Plains Field Station, Mandan, N. Dak., left Washington March 4 to return to his headquarters. En route he stopped at Madison, Wis., St. Paul, Minn., and Dickinson, N. Dak., to confer with State and Federal officials concerning cooperative plant-breeding projects.

Charles E. Chambliss, associate agronomist in charge of rice investigations, returned on March 6 from a 5-weeks trip in the interests of rice investigations.

Dr. G. N. Hoffer, pathologist in charge of the investigations of root, stalk, and ear rots of corn, in cooperation with the Purdue University Agricultural Experiment Station, La Fayette, Ind., was in Washington March 5 and 6 conferring with the senior agronomist in charge and project leaders concerning cooperative cereal-disease studies.

M. A. McCall, agronomist in charge of cereal agronomy investigations, returned on March 3 from the Middle West. On March 2 and 3, at Manhattan, Kans., he attended a conference called by Director L. E. Call, of the Kansas Agricultural Experiment Station, to discuss a general coordinate program of sorghum investigation. The organization of the conference was in charge of S. C. Salmon, professor of farm crops at the Kansas Station, and included a discussion of agronomic, genetic, physiological, and statistical problems. General approval of the meeting and its results was expressed. Provision was made for a committee, whose function it shall be to develop a closer cooperation between the different agencies interested in sorghum research. It is intended later to call a similar conference for further discussion of problems, not, however, before two to three years. The officials of the Kansas Agricultural Experiment Station are to be congratulated upon the successful outcome of the first conference.

J. H. Martin, associate agronomist in charge of grain sorghum investigations, came from St. Paul, Minn., to attend the conference.

The Texas Agricultural Experiment Station sent two representatives; the Oklahoma Agricultural Experiment Station, four; The New Mexico Agricultural Experiment Station, one; the Nebraska Agricultural Experiment Station, one; the Missouri Agricultural Experiment Station, one. Several members of the staff of the Kansas Agricultural Experiment Station were present. Representatives of the Offices of Cereal Investigations, Forage-Crop Investigations, and Dry-Land Agriculture Investigations, of the Bureau of Plant Industry, and the Division of Grain Investigations, of the Bureau of Agricultural Economics, were present. All of the field men from the southern stations of the Office of Dry-Land Agriculture Investigations were in attendance, their annual conference having been called for the same dates.

L. W. Melander, State leader of barberry eradication in Minnesota, with headquarters at University Farm, St. Paul, Minn., came to Washington on March 3 to assist in the preparation of the program of the barberry conference to be held in Washington in March.

W. F. Reddy, State leader of barberry eradication in Michigan, arrived in Washington March 12 to confer with project leaders and to attend the conference of barberry leaders to be held in Washington this month.

Dr. W. H. Tisdale, pathologist in charge of smut investigations, who has been stationed at the Boyce-Thompson Institute, Yonkers, N. Y., since September, 1925, engaged in micro-chemical and physiological studies of the corn-smut problem, returned on March 2 to his permanent headquarters in Washington.

Miss Bernice L. Waterman, clerical assistant in the Office of the State leader of barberry eradication in Michigan, since December, 1923, resigned her position on March 1.

MANUSCRIPTS AND PUBLICATIONS

11 A manuscript, entitled "Germination of Rice Seed as Affected by Temperature, Fungicides, and Age," by Jenkin W. Jones, was approved March 3 for publication in the Journal of the American Society of Agronomy.

12 A manuscript, entitled "Studies in Rust Resistance," by E. B. Mains, was approved on March 3 for publication in the Journal of Heredity.

13 A manuscript, entitled "Barberry Eradication in Illinois," by Gordon C. Curran and Benjamin Koehler, was submitted March 10 for publication as a cooperative circular of the Illinois Agricultural Experiment Station.

14 A manuscript, entitled "Wheats for Central Montana," by R. W. May, was submitted March 15 for publication as a cooperative bulletin of the Montana Agricultural Experiment Station.

15 A manuscript, entitled "Oats and Barley in Central Montana," by R. W. May, was submitted March 15 for publication as a cooperative bulletin of the Montana Agricultural Experiment Station.

Galley proof of Department Circular 378, entitled "Comparative Hardiness of Winter-Wheat Varieties," by J. Allen Clark, John H. Martin and John H. Parker, was read March 2; page proof, March 12.

Galley proof of article, entitled "Effect of Smut Infection on Sap Concentration in Corn Stalks," by A. M. Hurd-Karrer, for publication in the American Journal of Botany, was read March 10.

Page proof of Department Bulletin 1383, entitled "Single-Bath Hot-Water and Steam Treatments of Seed Wheat for the Control of Loose Smut," by V. F. Tapke, was read March 6.

Department Circular 365, entitled "Relative Susceptibility of Spring-Wheat Varieties to Stem Rust," by J. Allen Clark, John H. Martin and E. C. Stakman, was received from the Government Printing Office March 9. (In cooperation with the Minnesota, North Dakota, South Dakota, Wyoming, Nebraska, Kansas, Texas, Iowa, Wisconsin and Michigan agricultural experiment stations and the Dominion of Canada Department of Agriculture.)

The article, entitled "The Pasmic Disease of Flax," by W. E. Brentzel, appears in the Journal of Agricultural Research, vol. 32, no. 1, p. 25-37. January 1, 1926. (Received March 11) (The investigations on which this paper is based were conducted in cooperation with the department of plant pathology of the North Dakota Agricultural Experiment Station.)

The article, entitled "Rye Resistant to Leaf Rust, Stem Rust, and Powdery Mildew," by E. B. Mains, appears in the Journal of Agricultural Research, vol. 32, no. 3, p. 201-221, pls. 1-6. February 1, 1926. (Received March 13) (Cooperation between Office of Cereal Investigations and the Purdue University Agricultural Experiment Station.)

NOTICE

Under date of January 30, 1926, it was agreed between the Offices of Cereal Investigations and Foreign Seed and Plant Introduction, of the Bureau of Plant Industry, and the Office of Foreign Plant Quarantines, of the Federal Horticultural Board, that hereafter the handling of imported cereals for seed shall be based on Quarantines Nos. 55 and 59, which Quarantines supersede Quarantine No. 39. This agreement was approved by Dr. W. A. Taylor, Chief of the Bureau of Plant Industry, on February 4, 1926.

In order to prevent the introduction into the United States of the flag smut disease (Urocystis tritici Kcke.), a plant disease not heretofore widely prevalent or distributed within or throughout the United States. Quarantine No. 59 prohibits the importation from India, Japan, China, Australia, Union of South Africa, Italy, and Spain, of all species and varieties of wheat (Triticum spp.) and wheat products, except such as have been so milled or so processed as to have destroyed all flag smut spores.

In order to prevent the introduction into the United States of injurious fungous diseases of rice, including downy mildew (Sclerospora macrocarpa), leaf-smut (Entyloma oryzae), blight (Oospora oryzae), and glume blotch (Melanomma glumarum), as well as dangerous insect pests, new and not heretofore widely prevalent or distributed within and throughout the United States, but existing, as to one or more of such diseases and pests, in Europe, Asia, Africa, Central and South America, and other foreign countries and localities, Quarantine No. 55 forbids the importation into the United States of seed or paddy rice from the foreign countries and localities named; but seed or paddy rice may be imported from Mexico upon compliance with the provisions outlined in the rules and regulations supplemental to Quarantine No. 55.

Notice of Quarantine Nos. 55 and 59 and others can be obtained on request from the Federal Horticultural Board, Washington, D. C.

MEMORANDUM FOR HEADS OF OFFICES (D. P. I. Memo. 205)

March 9, 1926.

Gentlemen:

Mr. James M. Pickens has been made Assistant in Charge of Publications, Bureau of Plant Industry, vice Mr. J. E. Rockwell, who died on January 12, 1926.

Very truly yours,

(Signed) Wm. A. Taylor

Chief of Bureau.

FIELD STATION CONDITION AND PROGRESS

HUMID ATLANTIC COAST STATES (South to North)

GEORGIA

State College of Agriculture, Athens (R. R. Childs)

VIRGINIA

Arlington Experiment Farm, Rosslyn (J. W. Taylor)

NEW YORK

Cornell University Agricultural Experiment Station, Ithaca (H. H. Love)

HUMID MISSISSIPPI VALLEY STATES (South to North)

LOUISIANA

Rice Experiment Station, Crowley (J. Mitchell Jenkins)Agricultural Experiment Station, Baton Rouge (H. Stoneberg)

MISSOURI

Agricultural Experiment Station, Columbia (C. A. Helm)

TENNESSEE

Agricultural Experiment Station, Knoxville (L. S. Mayer)

IOWA

Agricultural Experiment Station, Ames (M. T. Jenkins)Agricultural Experiment Station, Ames (Investigations of Crown Rust of Oats, S. M. Dietz)Iowa State College, Ames (Barberry Eradication, M. A. Smith)

ILLINOIS

Funk Bros. Seed Co., Bloomington (Corn Root and Stalk Rot Investigations, J. R. Holbert)Post Office Building, Urbana (Barberry Eradication, G. C. Curran)
[March 6]

The County Superintendent of the Will County (Illinois) Schools, upon his own accord has requested that bulletins, circulars, and study material on black stem rust be sent to all the school teachers in his county. He wrote as follows: "I have a plan for eighth grade pupils throughout the county to write an essay for the final examination. I assign the topic beforehand so that the pupils may do whatever they wish to prepare for this essay. This year I wish to use the topic, 'The Common Barberry, an Enemy.'" Excellent support of the barberry-eradication campaign is being given by all the county school superintendents in Illinois.

In February a number of men were interviewed for positions in barberry eradication. In past years occasionally a man in poor physical condition has been hired. It is quite important that the eyesight should be normal. If vision is faulty the defect should be corrected with glasses. Inquiry is being made regarding the health of every candidate. Only men in good health should be employed. The mind may be alert and well trained, but physical disability may decrease an individual's efficiency.

Several days were devoted to making publicity plans for the coming season. A form letter and postal card to be sent to the rural box holders was drafted and sent to Washington for multigraphing.

INDIANA

Purdue University Agricultural Experiment Station, La Fayette (Corn Root, Stalk, and Ear Rots, G. N. Hoffer)

Purdue University Agricultural Experiment Station, La Fayette (Leaf Rust Investigations, H. S. Jackson and E. B. Mains)

College of Agriculture, Purdue University, La Fayette (Barberry Eradication, W. E. Leer)

OHIO

College of Agriculture, Ohio State University, Columbus (Barberry Eradication, J. W. Baringer)

MICHIGAN

Agricultural College, East Lansing (Barberry Eradication, W. F. Reddy)

WISCONSIN

Agricultural Experiment Station, Madison (Wheat Scab Investigations, J. G. Dickson)

Agricultural Experiment Station, Madison (Wheat Rosette and Take-All Investigations, H. H. McKinney)

Department of Agriculture, State Capitol Annex, Madison (Barberry Eradication, W. A. Walker)

MINNESOTA

Agricultural Experiment Station, University Farm, St. Paul (Wheat Breeding Investigations, O. S. Aamodt)

Agricultural Experiment Station, University Farm, St. Paul (Stem Rust Investigations, E. C. Stakman)

Agricultural Experiment Station, University Farm, St. Paul (Barberry Eradication, L. W. Melander)

GREAT PLAINS AREA (South to North)

OKLAHOMA

Woodward Field Station, Woodward (J. B. Sieglinger)

KANSAS

Agricultural Experiment Station, Manhattan (D. D. Hill) (March 3)

The month of February was the third warmest recorded at Manhattan, the temperature being only 0.44 degrees less than the record. The mild weather started wheat growth in most sections of the State. The condition of the wheat is reported to be good, with little or no winterkilling.

Seeding of the oat nursery, which was interrupted by unfavorable weather on March 6, is being continued. Approximately 3,000 rod rows and 1,000 shorter rows are being seeded.

The conference on sorghum improvement, held at Manhattan on March 2 and 3, was well attended by experiment station officials from the Southern Plains States. Satisfaction was expressed with the spirit of cooperation and the favorable outlook for sorghum research.

A. F. Swanson, agronomist at the Hays Branch Experiment Station returned to his headquarters on March 7, having spent the last two months at Manhattan.

B. B. Bayles, junior agronomist in charge of plant breeding at the Sherman County Branch Station, Moro, Oreg., who spent several days at Manhattan in conference with station officials, returned to Moro.

Other branch station workers who have returned to their stations, after having spent several weeks at Manhattan are, B. F. Darnes, Colby; E. S. Coles, Garden City; and T. B. Stinson, Tribune.

Hays Branch Experiment Station, Hays (A. F. Swanson)

COLORADO

Akron Field Station, Akron

Agricultural College, Ft. Collins (Barberry Eradication, E. A. Lungren)

NEBRASKA

North Platte Substation, North Platte (G. F. Sprague)

College of Agriculture, University Farm, Lincoln (Barberry Eradication, A. F. Thiel)

SOUTH DAKOTA

College of Agriculture, Brookings (Barberry Eradication, R. O. Bulger)

NORTH DAKOTA

Agricultural Experiment Station, Agricultural College (W. E. Brentzel)

Agricultural Experiment Station, Agricultural College (Barberry Eradication, G. C. Mayoue)

Dickinson Substation, Dickinson (R. W. Smith)

Northern Great Plains Field Station, Mandan (Flax Investigations, J. C. Brinsmade, Jr.)

Northern Great Plains Field Station, Mandan (Wheat Investigations, E. R. Ausemus)

MONTANA

Judith Basin Substation, Moccasin (R. W. May) (March 2)

February was remarkable for its unusually mild temperatures and severe dust storms. The temperatures averaged far above normal and the dust storms were the worst in several years. Soil blowing was severe in both January and February. Winter wheat was damaged by soil blowing.

It is too early to determine how the winter wheat will withstand the winter, but most of it shows life at this date. Wheat sown with furrow drills looks better than that sown with ordinary drills.

Two manuscripts recently have been submitted to Director Linfield, of the Montana Agricultural Experiment Station, for publication as Montana bulletins. "Wheats for Central Montana," was submitted on January 3 and "Oats and Barley in Central Montana," was submitted February 25.

A precipitation of 0.42 inch was recorded in February, which is 0.7 inch below the average. Minimum temperatures, 6 degrees and 12 degrees on February 13 and 14; maximum, 57 degrees and 56 degrees on February 7 and 9.

State College of Agriculture, Bozeman (Barberry Eradication, W. L. Popham)

WESTERN BASIN AND COAST AREAS (North to West and South)

IDAHO

Aberdeen Substation, Aberdeen (G. A. Wiebe) (March 2)

The winter at Aberdeen has been a very mild one. The lowest temperature recorded was 2 degrees below zero. The snowfall has been below normal and hence not as much water will be available for irrigation. During the past year additional storage water has been purchased by our Canal Company; this has strengthened our water right. I think there will be no pronounced water shortage next summer.

It looks as though spring will open rather early this year. Farmers will be in the fields in a few days.

The lamb-feeding experiment which has been conducted on the Aberdeen Substation during the past winter will be concluded on March 6. Feeders' Day will be held on Tuesday, March 9.

Agricultural Experiment Station, Moscow (Stripe Rust Investigations, C. W. Hungerford)

WASHINGTON

Agricultural Experiment Station, Pullman (E. F. Gaines)

OREGON

Sherman County Branch Station, Moro (D. E. Stephens) (February 20)

The weather in January and February was unusually mild in eastern Oregon. The lowest temperature recorded at this station in January was 26 degrees, and 26 degrees has been the lowest yet recorded in February.

A precipitation of 1.36 inches was recorded in February, all in the form of rain. The total precipitation since September 1, 1925, is as follows:

September	0.55
October	.54
November	.93
December	1.63
January	1.19
February 1-20	<u>1.36</u>
	6.75

Although the recorded precipitation was about an inch less than normal for the five-month period beginning September 1, 1925, there has been practically no loss of moisture from run-off and ground summer-fallowed last year is well filled with moisture.

Winter wheat in the Columbia Basin is in excellent condition and has made considerable progress in the past two weeks. Farmers have begun plowing; if the present mild weather continues seeding of spring grain will be in progress next week.

At the Wheat Growers' Economic Conference held at Moro on February 11, 12, and 13, there was an attendance of about 250 people, including farmers, bankers, warehousemen, and railroad officials. Dr. W. J. Spillman and Mr. Eugene Merritt represented the U. S. Department of Agriculture. Although the attendance was less than expected, the conference was a decided success. The proceedings will be published by the Oregon Agricultural College Extension Service in the near future.

(March 4)

Present weather indicates that spring has arrived in eastern Oregon. If the indications are correct, we have had one of the mildest winters ever known in this section. There has been practically no freezing weather or snow during the winter, and volunteer oats and barley have survived with no injury. All ground on the station is ready for seeding, and seeding operations began today. By the middle of next week practically all our spring grains will be sown.

CALIFORNIA

Biggs Rice Field Station, Biggs (J. W. Jones)

University Farm, Davis (V. H. Florell)

Agricultural Experiment Station, Berkeley (F. N. Briggs)

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CEREAL COURIER

Official Messenger of the Office of Cereal Crops and Diseases
Bureau of Plant Industry, U. S. Dept. of Agriculture
(NOT FOR PUBLICATION)



Vcl. 18

No. 6

March 31, 1926
Personnel (March 16-31) and Project Issue

DATES OF CEREAL COURIER

Beginning with the issue of April 10, 1926, the Cereal Courier will appear three times a month, namely, on the 10th, 20th, and last days of the month. The courtesy will be greatly appreciated if, until further notice, all contributors at agronomic, pathologic, and barberry-eradication headquarters will mail field reports promptly on the 15th and last days of the month. The Project Issue is dated on the last day of the month.

PERSONNEL ITEMS

J. C. Brinsmade, Jr., assistant agronomist in charge of the cooperative flax investigations at the Northern Great Plains Field Station, Mandan, N. Dak., who has been in Washington since last November, left on March 30 to return to his headquarters.

J. M. Hammerly, senior scientific aid in corn investigations, went to Loudoun County, Virginia, on March 27 to locate sources of seed corn.

H. E. McKinney, pathologist in the cooperative cereal disease investigations at Madison, Wis., came to Washington on March 17 to confer with the senior agronomist in charge and project leaders.

J. H. Parker, formerly professor in farm crops at the Kansas State Agricultural College, and agent of the Office of Cereal Crops and Diseases, who is now engaged in graduate study at Cambridge University, England, wrote on March 3:

"My lectures this term, which closes next week, have included the second part of Funnett's Genetics; Botany of the Cereals, by Biffen; Statistics, by Yule; and part two of Plant Physiology, by Blackman. All have been very interesting, useful, and thought-provoking. I often find myself translating the particular topic under discussion here to our own cereal researches in Kansas, which I hope will later benefit from this year of study.

"I made some rather careful observations yesterday on my Kanred x Nebraska 28 F₂ and F₃ crosses and parental plants. It is possible at this early date to see marked differences in the growth habits of the early Nebraska 28 and the later Kanred, as well as in the hybrids. The F₂ results are in accordance with those at Manhattan last year, in that there are only a few plants in the population with the early habit of Nebraska 28. In the Cambridge F₃ group there are several families that are certainly going to be early, and the records show that these came from early F₂ plants at Manhattan. I am making a spring planting this week and will hope to get some interesting data on material grown here and compared with similar but much more extensive plantings at Manhattan.

"Mrs. Parker, Jack and I expect to spend ten days or a fortnight in Paris at Easter time. We shall revel in some general sightseeing and good times together, but I shall also make it a point to spend some days at the Sorbonne, Vilmorin and Co., National Institute of Agronomy, etc. We plan to leave our small daughter here with our landlady, with whom she has organized a mutual admiration society.

"I had the opportunity to read page proof the other day of a monograph on Cambridge wheat breeding experiments, by Biffen and Engledow, soon to appear from the Ministry of Agriculture in London. Your wheat specialists and yourselves will find much of interest therein. I am encouraged by their work here, in my contemplation of future wheat improvement problems in Kansas. Biffen is one of those born plant breeders who can reach his goal with a minimum attention to the details of numbering systems, records, probable errors, etc. His broad knowledge of cereals, - botanic, genetic, economic, etc., is greatly to be admired.

"I hope to be able to leave here soon after harvest is over in August, do as much in the way of travel and visitations to plant breeding centers as time and my personal funds permit, and to sail for good old U. S. A. about the middle of September, reaching Manhattan by October 1."

VISITORS

Mr. R. Govaert, of Louvain, Belgium, who has been a student for the past three months with Dr. H. H. Love, professor of plant breeding at Cornell University, was an Office visitor March 29. Mr. Govaert is primarily interested in cereal breeding. He received his Master's degree in 1925 from the State College of Washington under Dr. E. F. Gaines; he also has studied at the

University of Minnesota with Dr. H. K. Hayes.

Dr. J. Arthur Harris, head of the department of botany of the University of Minnesota, was in conference in the Office on March 18 and 20 concerning possible cooperative experiments in the physiology of cereal growth under Southwestern conditions.

Dr. Bela Husz, plant pathologist of the agricultural experiment station at Budapest, Hungary, has been in Washington since early in March, making a study of plant disease collection and the relation of quarantines to plant disease control. As Doctor Husz is interested in cereal diseases he has been a frequent Office visitor.

MANUSCRIPTS AND PUBLICATIONS

16 A manuscript, entitled "The Register of Merit for Strains of Corn," by A. A. Bryan, was approved March 19 for publication in The Iowa Homestead, Des Moines, Ia.

17 A manuscript, entitled "Seed Treatments for the Control of Bunt of Wheat," by Fred N. Briggs, was approved March 30 for publication in Phytopathology.

Galley proof of article, entitled "Introductory Remarks to the Symposium on 'The Present Status of Corn Improvement,'" by Frederick D. Richey, for publication in the Journal of the American Society of Agronomy, was read March 25.

Galley proof of Department Bulletin 1403, entitled "Segregation and Correlated Inheritance in Marquis and Hard Federation Crosses, with Factors for Yield and Quality of Spring Wheat in Montana," by J. Allen Clark and John R. Hooker, was read March 26.

Galley proof of article, entitled "Further Experiments in the Control of Bunt of Wheat and the Smuts of Barley and Oats," by R. W. Leukel, for publication in Phytopathology, was read March 26.

Department Bulletin 1387, entitled "Experiments in Rice Culture at the Biggs Rice Field Station in California," by Jenkin W. Jones, was received from the Government Printing Office on March 25.

The article, entitled "Physiologic Specialization in the Leaf Rust of Wheat, Puccinia triticina Erikss.," by E. B. Mains and H. S. Jackson, appears in Phytopathology, vol. 16, no. 2, pp. 89-120, pls. 6-9. February, 1926. (Received March 26, 1926.) (Cooperative investigation between the Purdue University Agricultural Experiment Station and the Office of Cereal Investigations.)

Department Bulletin 1383, entitled "Single-Bath Hot-Water and Steam Treatments of Seed Wheat for the Control of Loose Smut," by V. F. Tapke, was received from the Government Printing Office March 29.

The article, entitled "Factors Influencing Results from Rate-and-Date-of-Seeding Experiments with Wheat in the Western United States," by John H. Martin, appears in the Journal of the American Society of Agronomy, vol. 18, no. 3, pp. 193-225. March, 1926. (Received March 31.)

EIGHTH ANNUAL BARBERRY-ERADICATION CONFERENCE

The program of the Eighth Annual Conference of the leaders of barberry eradication and stem-rust epidemiology investigations, announced in the Cereal Courier, vol. 18, no. 5, February 28, 1926, came to a satisfactory conclusion on the afternoon of March 25. All the State leaders of barberry eradication were present, as were also the leaders of the stem-rust epidemiology investigations and two representatives of the Conference for the Prevention of Grain Rust.

The barberry eradication campaign, begun in April, 1918, is conducted in the 13 north-central grain-growing States. The common barberry (Berberis vulgaris L.) is the only known plant which harbors and spreads black stem rust of grains and grasses. Stem rust has caused an estimated average annual loss of more than 50,000,000 bushels of small grains in these States in each of the last ten years.

The purpose of the barberry-eradication campaign is to find and remove every barberry bush that will spread black stem rust. Since 1918, more than 11,500,000 common barberry bushes have been destroyed.

So far no large areas have been entirely cleared of barberry bushes, and it is impossible to point to any such areas as entirely free from black stem rust. However, complete eradication of barberry bushes from local communities in the States of the eradication area east of the Mississippi River and north of the Ohio River has controlled stem rust in each of these communities. In the States west of the Mississippi River, a gradual decrease in the amount of stem rust indicates that barberry eradication already is producing favorable results.

The outstanding problems of the campaign, as revealed by the conference, are:

(1) The necessity of removing all fruiting barberry bushes. The seeds are eaten by birds and scattered many miles from the original bushes or hedges. As a result, barberry seedlings not only appear among weeds, grasses, and shrubbery where it is impossible to find them, but in some places new seedlings have continued to appear for from five to seven years after the destruction of all fruiting bushes. To find and eradicate seedlings is very difficult because they often are scattered very thickly in rocky ledges, entwined with the roots of shrubs and trees, and in pastures and fields among grasses and weeds. Two and even three successive inspections may fail to reveal every seedling. It is of the utmost importance, therefore, that all fruiting bushes be removed before additional seeds become spread.

(2) The cooperation of every citizen in the barberry area must be enlisted in finding missed or escaped barberry bushes. Finding these bushes is the great problem; their eradication is now comparatively easy by the use of salt and mercaptene.

(3) It is imperative that a study be made of the epidemiology of stem rust and its relation to the remaining barberry bushes within the area and those outside the area.

Following is a list of the personnel of the barberry eradication campaign:

Washington Offices:

Dr. W. A. Taylor, Chief, Bureau of Plant Industry
 Dr. K. F. Kellerman, Associate Chief, Bureau of Plant Industry
 Mr. H. E. Allanson, Assistant to the Chief, Bureau of Plant Industry
 Dr. C. R. Ball, Senior Agronomist in Charge of Cereal Crops and Diseases
 Dr. A. G. Johnson, Senior Pathologist in Charge of Cereal-Disease Investigations.
 Dr. H. B. Humphrey, Senior Pathologist in Charge of Stem-Rust Investigations
 Dr. F. E. Kempton, Associate Pathologist in Charge of Barberry Eradication
 Mr. L. D. Hutton, Associate Pathologist in Barberry Eradication
 Mr. B. Y. Morrison, Assistant Horticulturist, Horticulture

State Leaders:

<u>Colorado</u> , E. A. Lungren;	<u>Nebraska</u> , A. F. Thiel;
<u>Illinois</u> , G. C. Curran;	<u>North Dakota</u> , G. C. Mayoue;
<u>Indiana</u> , W. E. Leer;	<u>Ohio</u> , J. W. Baringer;
<u>Iowa</u> , M. A. Smith;	<u>South Dakota</u> , R. O. Bulger;
<u>Michigan</u> , W. F. Reddy;	<u>Wisconsin</u> , W. A. Walker;
<u>Minnesota</u> , L. W. Melander;	<u>Wyoming</u> , R. U. Cotter.
<u>Montana</u> , W. L. Popham;	

Stem-Rust Epidemiology Investigations, University Farm, St. Paul, Minn.

Dr. E. C. Stakman, Agent in Charge
 Mr. E. B. Lambert, Assistant Pathologist
 Dr. J. J. Christensen, Agent

Conference for the Prevention of Grain Rust, Minneapolis, Minn.

Donald G. Fletcher, Secretary-Treasurer
 Noel F. Thompson, Associate Pathologist, cooperating

At a banquet given at the Cosmos Club, Wednesday evening, March 24, at which there were 38 guests, Dr. C. R. Ball, Senior Agronomist in Charge of Cereal Crops and Diseases, was toast master. Addresses were made by Hon. R. W. Dunlap, Assistant Secretary of Agriculture, Hon. Sidney G. Anderson, President of the National Millers' Federation, Mr. Franklin M. Crosby, Conference for the Prevention of Grain Rust, Dr. K. F. Kellerman, Associate Chief, Bureau of Plant Industry, and Dr. E. C. Stakman, Agent, Stem-Rust Epidemiology Investigations, University Farm, St. Paul, Minn.

NEW LIST OF OFFICE TITLES

BUREAU OF PLANT INDUSTRY

Wm. A. Taylor, Chief of Bureau.

March 20, 1926

OFFICE	: NAME	: PHONE
Accounts	: Cox, W. P.	: 121
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Associate Chief	: Kellerman, K. F.	: 102
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1870

1871

1872

The following is a list of the names of the persons who have been
 admitted to the membership of the Society since the last meeting.
 The names are given in alphabetical order, and the date of admission
 is given in parentheses. The names of the persons who have been
 re-elected are given in italics. The names of the persons who have
 been elected to the office of Secretary and Treasurer are given in
 bold type. The names of the persons who have been elected to the
 office of President are given in bold type and in italics. The
 names of the persons who have been elected to the office of Vice-
 President are given in bold type. The names of the persons who
 have been elected to the office of Corresponding Secretary are
 given in bold type. The names of the persons who have been
 elected to the office of Recording Secretary are given in bold type.
 The names of the persons who have been elected to the office of
 Librarian are given in bold type. The names of the persons who
 have been elected to the office of Auditor are given in bold type.
 The names of the persons who have been elected to the office of
 Secretary and Treasurer are given in bold type. The names of the
 persons who have been elected to the office of President are given
 in bold type and in italics. The names of the persons who have
 been elected to the office of Vice-President are given in bold type.
 The names of the persons who have been elected to the office of
 Corresponding Secretary are given in bold type. The names of the
 persons who have been elected to the office of Recording Secretary
 are given in bold type. The names of the persons who have been
 elected to the office of Librarian are given in bold type. The
 names of the persons who have been elected to the office of Auditor
 are given in bold type.

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CEREAL COURIER

Official Messenger of the Office of Cereal Crops and Diseases
Bureau of Plant Industry, U. S. Department of Agriculture
(NOT FOR PUBLICATION)

Vol. 13

No. 7

April 10, 1926
Personnel (April 1-10) and Field Station (March 1-31) Issue

PERSONNEL ITEMS

Dr. C. R. Ball, senior agronomist in charge, will attend the Central States Extension Conference at Ames, Ia., April 26-27-28, as the official representative of the Bureau of Plant Industry. This will be a conference of Directors of Extension, State Leaders of County Agricultural Agents, State Leaders of Home Demonstration Work, Home Management Specialists, and Nutrition Specialists, under the auspices of the Extension Service of the U. S. Department of Agriculture in cooperation with State Agricultural Colleges.

Doctor Ball will give an illustrated address before the Conference on "The Work of the Bureau of Plant Industry in Cereal Investigations," on Tuesday evening, April 27.

Dr. H. V. Harlan, agronomist in charge of barley investigations, will leave Washington on April 13 for California to attend the hearings on the establishment of barley grades, to be held at Los Angeles and San Francisco. Doctor Harlan will stop at Sacaton, Ariz., to inspect the cooperative barley nurseries.

The appointment of Bruce Vazeille, unskilled laborer in the cooperative cereal-disease investigations at Berkeley, Calif., was terminated April 5.

VISITORS

Everett J. Eliason, former field agent in barberry eradication in Indiana, now a student in the School of Forestry, Syracuse University, has been an Office visitor during the past week. Mr. Eliason has spent some time in the Office of Tree Diseases in connection with procuring information for his thesis.

Dr. E. B. Quick, professor of biology in Westminster College, New Wilmington, Pa., who has just returned from a botanizing trip in Porto Rico, was an Office visitor on April 9.

MANUSCRIPTS AND PUBLICATIONS

18 A manuscript, entitled "Colored Scutellum in Maize," by George F. Sprague, was approved April 6 for publication in the Journal of Heredity.

The article, entitled "Development in Immature Barley Kernels Removed from the Plant," by Harry V. Harlan and Merritt N. Pope, appears in the Journal of Agricultural Research, vol. 32, no. 7, pp. 669-678. April 1, 1926.

The article, entitled "A Study of Smut Resistance in Corn Seedlings Grown in the Greenhouse," by W. H. Tisdale and C. O. Johnston, appears in the Journal of Agricultural Research, vol. 32, no. 7, pp. 549-663. April 1, 1926. (Cooperation between the Office of Cereal Investigations and the Kansas Agricultural Experiment Station.)

The article, entitled "Cytological Studies of Forms 9, 21, and 27 of Puccinia graminis tritici on Kharli Emmer," by Ruth F. Allen, appears in the Journal of Agricultural Research, vol. 32, no. 3, pp. 701-725. April 15, 1926. (Received April 5) (Cooperative investigations between the Agricultural Experiment Station of the University of California and the Office of Cereal Investigations.)

Department Circular 378, entitled "Comparative Hardiness of Winter-Wheat Varieties," by J. Allen Clark, John H. Martin and John H. Parker, was received April 7 from the Government Printing Office.

The article, entitled "Factors Affecting the Development of Flax Rust, Melampsora lini (Pers.) Lev.," appears in Phytopathology, vol. 16, no. 3, pp. 185-205. March, 1926. (Received April 10)

FIELD STATION CONDITION AND PROGRESS

HUMID ATLANTIC COAST STATES (South to North)

GEORGIA

State College of Agriculture, Athens (R. R. Childs)

VIRGINIA

Arlington Experiment Farm, Rosslyn (J. W. Taylor)

NEW YORK

Cornell University Agricultural Experiment Station, Ithaca (H. H. Love)
(April 7)

The weather in March and the first week of April has been cold, and at this date there is still some snow on the ground. The weather has not been at all favorable for spring growth of wheat, and it will be some days yet before preparations can be made for spring sowing. The material for the rod rows and plats of barley and oats is all ready for sowing and we are waiting on the weather. We shall have a very large oat nursery this year consisting chiefly of selections from hybrids looking toward improved yield, coupled with certain other desired characteristics. In connection with the hybrid nursery which will contain the genetic material, it looks as though we shall have a very large sowing and will have much material on which to take notes in the summer.

There has been considerable demand for improved seed from the farmers over the State, and the men in charge of our better seed program have been very busy furnishing information as to sources of seed and the like.

The plants that were sown in the greenhouse for crossing are now blooming; a number of crosses already have been made. In addition, Doctor Dorsey is collecting a large amount of material for his cytological investigations.

HUMID MISSISSIPPI VALLEY STATES (South to North)

LOUISIANA

Rice Experiment Station, Crowley (J. Mitchell Jenkins)Agricultural Experiment Station, Baton Rouge (H. Stoneberg)

MISSOURI

Agricultural Experiment Station, Columbia (C. A. Helm)

TENNESSEE

Agricultural Experiment Station, Knoxville (L. S. Mayer)

IOWA

Agricultural Experiment Station, Ames (M. T. Jenkins)

Agricultural Experiment Station, Ames (Investigation of Crown Rust of Oats, S. M. Dietz)

Iowa State College, Ames (Barberry Eradication, M. A. Smith)

ILLINOIS

Funk Bros. Seed Co., Bloomington (Corn Root and Stalk Rot Investigations, J. R. Holbert)

Post Office Building, Urbana (Barberry Eradication, G. C. Curran)

INDIANA

Purdue University Agricultural Experiment Station, La Fayette (Corn Root Stalk, and Ear Rots, G. N. Hoffer)

Purdue University Agricultural Experiment Station, La Fayette (Leaf Rust Investigations, H. S. Jackson and E. B. Mains)

College of Agriculture, Purdue University, La Fayette (Barberry Eradication, W. E. Leer)

OHIO

College of Agriculture, Ohio State University, Columbus (Barberry Eradication, J. W. Baringer)

MICHIGAN

Agricultural College, East Lansing (Barberry Eradication, W. F. Reddy)

WISCONSIN

Agricultural Experiment Station, Madison (Wheat Scab Investigations, J. G. Dickson)

Agricultural Experiment Station, Madison (Wheat Rosette and Take-All Investigations, H. H. McKinney)

Department of Agriculture, State Capitol Annex, Madison (Barberry Eradication, W. A. Walker)

MINNESOTA

Agricultural Experiment Station, University Farm, St. Paul (Wheat Breeding Investigations, O. S. Aamcdt)

Agricultural Experiment Station, University Farm, St. Paul (Stem Rust Investigations, E. C. Stakman)

Agricultural Experiment Station, University Farm, St. Paul (Barberry Eradication, L. W. Melander)

GREAT PLAINS AREA (South to North)

OKLAHOMA

Woodward Field Station, Woodward (J. B. Sieglinger)

KANSAS

Agricultural Experiment Station, Manhattan (D. D. Hill)

Hays Branch Experiment Station, Hays (A. F. Swanson) (April 2)

March opened with mild weather. There being sufficient moisture, conditions were ideal for winter wheat and all spring small-grain crops. The month ended with temperatures as low as 12 degrees F. on the 28th, and the ground was covered with snow from four to five inches deep. The cold spell was needed to retard the vigorous growth of winter wheat, which was rapidly becoming too rank early in the season. Early seeded barley that had emerged by March 20 appears to be injured, although some life is apparent in the crown of the plant.

Experiments with dates of seeding barley, oats, and spring wheat were begun on February 15 and have since been continued each 15 days. It is hoped that some valuable information may be obtained as to the effect of low temperatures on various stages of plant growth in spring crops.

The varietal and nursery experiments with spring small grains were all seeded by March 20 under very favorable seed-bed conditions.

COLORADO

Akron Field Station, Akron

Agricultural College, Ft. Collins (Barberry Eradication, E. A. Lungren)

NEBRASKA

North Platte Substation, North Platte (G. F. Sprague) (March 31)

The weather of the past week has been cold and windy. Temperatures of 8 degrees above zero have been recorded, this being one of the lowest temperatures recorded this year.

High winds and soil blowing have been unusually hard on winter wheat. In the nursery no injury is apparent in the normal rate of planting. Where the seed was space-planted, the material appears badly injured and exhibits little likelihood of recovery. In plat seedlings, east and west plantings are in better condition than north and south plantings.

Spring wheat, oats, and barley have been seeded in the varietal plats, and the first seedings in the date-of-planting experiment have been made. No nursery seedings have been made as the ground is frozen too hard for the nursery drill; they will begin as soon as weather conditions moderate.

College of Agriculture, University Farm, Lincoln (Barberry Eradication, A. F. Thiel)

SOUTH DAKOTA

College of Agriculture, Brookings (Barberry Eradication, R. O. Bulger)

NORTH DAKOTA

Agricultural Experiment Station, Agricultural College (W. E. Brentzel)

Agricultural Experiment Station, Agricultural College (Barberry Eradication, G. C. Mayoue)

Dickinson Substation, Dickinson (R. W. Smith) (March 31)

During the past winter the weather here has been unusually mild, and the ground has been practically bare most of the time. Mild, dry weather also prevailed in March. The greatest snowfall was 2 inches which fell on March 27. The total precipitation for the month was only 0.28 inch. The maximum temperature for the month was 71 degrees on the 23rd, and the minimum was 7 below zero on the 7th.

The mild weather permitted the early beginning of field operations. Considerable disking and harrowing was done last week in this vicinity and some wheat has been sown. Some field work has been done at the Substation but no seeding. Colder weather has prevailed since the 25th; no disking or harrowing has been done since that time because of the frozen condition of the ground. A minimum of 1 degree above zero was reached this morning, which is the coldest for the month with the exception of the 7th.

Because of the dry condition of the soil in the fall and the lack of snow protection in winter the winter grain in both plots and nursery is in very poor condition. Much of the crop is dead, and unless rain or snow falls within the next two weeks the number of plants surviving will be very small.

The soil is now too dry to insure uniform germination so that grain now in the soil and that which will be sown as soon as field work is resumed will not all germinate until more precipitation occurs.

Seed is being prepared for sowing the replicated cereal plots.

Northern Great Plains Field Station, Mandan (Flax Investigations, J. C. Brinsmade, Jr.)

Northern Great Plains Field Station, Mandan (Wheat Investigations, E. R. Ausemus) (April 1)

The winter at Mandan has been a mild one. The lowest temperature recorded for the three months of January, February, and March was 18 degrees below zero on January 28. The minimum temperature in the latter half of March was 4 degrees above zero. The maximum was 73 degrees, recorded on March 24. The total precipitation for the three months was 1.31 inches, which is about normal.

Farmers began seeding spring wheat on March 22. Low temperatures in the latter half of March have caused some delay in farm operations.

Three tenth-acre plats of wheat were sown on March 22 by Mr. J. T. Sarvis, of the Office of Dry-Land Agriculture, as an early date of seeding experiment. This is the earliest date that wheat has ever been sown at the Station.

MONTANA

Judith Basin Substation, Moccasin (R. W. May)

State College of Agriculture, Bozeman (Barberry Eradication, W. L. Popham)

WESTERN BASIN AND COAST AREAS (North to West and South)

IDAHO

Aberdeen Substation, Aberdeen (G. A. Wiebe)

Agricultural Experiment Station, Moscow (Stripe Rust Investigations, C. W. Hungerford)

WASHINGTON

Agricultural Experiment Station, Pullman (E. F. Gaines)

OREGON

Sherman County Branch Station, Moro (D. E. Stephens)

CALIFORNIA

Biggs Rice Field Station, Biggs (J. W. Jones)

University Farm, Davis (V. H. Florell) (March 20)

The cereal experiments at Davis were found to be in very good condition. Fall sown plantings were from 12 to 15 inches high. The plant growth was on the whole quite uniform, although there were yellowish spots in certain areas where the water had been standing during the February rains. None of the cereals had started to head except a few rows of Professor Mackie's hybrids which were noted to have begun heading on March 15.

Agricultural Experiment Station, Berkeley (F. N. Briggs)



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CEREAL COURIER

Official Messenger of the Office of Cereal Crops and Diseases
Bureau of Plant Industry, U. S. Dept. of Agriculture
(NOT FOR PUBLICATION)



Vol. 18

No. 8

April 20, 1926
Personnel (April 11-20) and Field Station (April 1-15) Issue

PERSONNEL ITEMS

On Thursday, April 22, Dr. C. R. Ball, senior agronomist in charge, will speak on "The Technical Bulletin as a Writer Sees It," before the class in Bulletin Writing, led by Dr. M. C. Merrill, in the Department Graduate School.

Doctor Ball will leave on Saturday, April 24, for Ames, Ia., to attend the Central States Extension Conference, April 26-27-28, as the official representative of the Bureau of Plant Industry and to give an illustrated address on "The Work of the Bureau of Plant Industry in Cereal Investigations," on April 27.

Martin A. Bell was appointed April 16 as agent in the cooperative cereal experiments conducted at the North Montana Substation, Havre, Mont.

A. C. Dillman, associate agronomist in charge of flax investigations, left Washington April 13 for San Antonio, Tex., to confer with officials regarding cooperative experiments with seed flax and study and take notes on the classification nursery and experimental plats at the San Antonio Experiment Farm. At Athens and Atlanta, Ga., Crowley and New Orleans, La., and Houston, Tex., Mr. Dillman will confer with crushers of cotton seed regarding the practicability of crushing linseed. He will return to Washington about May 3.

Dr. A. G. Johnson, senior pathologist in charge of cereal-disease investigations, and Dr. F. E. Kempton, associate pathologist in charge of barberry eradication, went to Riverton, N. J., on April 19 to inoculate barberry bushes with stem rust for experimental purposes.

H. H. McKinney, pathologist in the cooperative cereal disease investigations at Madison, Wis., who had been in Washington since the middle of March, left for his headquarters on April 10.

E. R. Ranker, of St. Louis, Mo., reported in Washington on April 16, having been appointed associate physiologist to conduct physiological investigations on corn smut. Mr. Ranker has been engaged in post graduate study at the Missouri Botanical Garden.

W. F. Reddy, State leader of barberry eradication in Michigan, who had been in Washington since March 12 left on April 9 for his headquarters at East Lansing, Mich.

N. F. Thompson, associate pathologist with headquarters at the Conference for the Prevention of Grain Rust, Minneapolis, Minn., who came to Washington March 17 left for his headquarters on April 9.

MANUSCRIPTS AND PUBLICATIONS

19 A brief article entitled "Agricultural Aid Via the Air-Service Route," by H. B. Humphrey, was approved April 10 for publication in "Western Flying," an aeronautical journal of Los Angeles, Calif.

20 A manuscript entitled "Report of the Barberry Eradication Campaign in Colorado," by E. A. Lungren, was submitted April 12 for publication in the Seventeenth Annual Report of the State Entomologist of Colorado for the Year 1925, in cooperation with the Office of Cereal Crops and Diseases.

Galley proof of article entitled "Inheritance of Resistance to Leaf Rust, Puccinia triticina Erikss., in Crosses of Common Wheat, T. vulgare Vill.," by E. B. Mains, C. E. Leighty and C. O. Johnston, for publication in the Journal of Agricultural Research, was read April 13.

Galley proof of article entitled "The Inheritance of Resistance to Bunt, Tilletia tritici (Bjerk.) Winter, in Wheat," by Fred N. Briggs, for publication in the Journal of Agricultural Research, was read April 19.

The article entitled "Black Stem Rust Situation in Michigan," by Walter F. Reddy, appears in the Quarterly Bulletin of the Michigan Agricultural Experiment Station 8 (no. 2) 143-151. February, 1926. (Received April 12) (Cooperation between Office of Cereal Investigations, Michigan State College of Agriculture and Michigan State Department of Agriculture.)

B. P. I. Memo. 213.

April 10, 1926.

MEMORANDUM FOR HEADS OF OFFICES

Gentlemen:

My attention has been called to a circular letter being distributed by The MacMillan Company, in which they urge the purchase of books by field men, and suggest further that they will be glad to ship books to the field men upon approval.

While books may be purchased for field use from appropriations available for our investigational activities, these purchases may only be made upon request through the Washington office. All letters of authorization specifically preclude the purchase of books. Where library facilities are not available and a field man requires books for his work, he should take the matter up with the head of his office in Washington, and any books purchased must be upon requisition, supplemented by a statement showing that the book is for field use, and where it is to be filed. If purchased, upon arrival it will be carded by the Bureau Library and turned over to the office for forwarding to the field.

I shall appreciate it if you will see that this memorandum is promptly called to the attention of your field men.

Very truly yours,

Wm. A. Taylor

Chief of Bureau.

NOTICE

It should be noted in the New List of Office Titles of the Bureau of Plant Industry, inserted in the Cereal Courier of March 31, 1926, that the title of Tree Diseases has been changed back to Forest Pathology.

FIELD STATION CONDITION AND PROGRESS

HUMID ATLANTIC COAST STATES (South to North)

GEORGIA

State College of Agriculture, Athens (R. R. Childs)

VIRGINIA

Arlington Experiment Farm, Rosslyn (J. W. Taylor) (April 10)

The extent of winterkilling or injury to the winter grains can now be estimated. Wheat and rye in plat culture in general show no winter injury severe enough to affect yield. On the wheat nurseries, where spacing of the plants for genetic study exists, the killing is severe, apparently depending on the date sown. Late seedings are commonly killed 100 per cent. The greater part of the mortality was due to heaving, for the plants went into the winter with weak root systems. Kanred, Black Winter Emmer, and Aegilops ovata, as well as hybrids of the latter two genera, all of which commonly develop poor root systems in the field at Arlington Experiment Farm, were heaved free from the ground in nearly all spaced seedings. In the plats, Kanred was badly winterkilled. Barley in plats and red rows suffered but little from the winter. Nakano Wase and other tender selections were killed to a limited extent, but the spring stands are better than usual. Winter oats were the hardest hit of all grains both in plats and nursery. The killing in plats ranges up to 40 per cent depending on variety and location. Kanota was killed to a greater extent than Fulghum in each of the three series. Lee, Custis, and the hardy strains of Fulghum withstood the winter as well as Culberson. Winter Turf (C. I. 431) is the only variety to show a full stand, though the Turf selections, Lee, Custis, and others have sufficient stand to produce a maximum crop, provided the spring weather is favorable. In the oat nursery approximately one-third of the crop is killed.

NEW YORK

Cornell University Experiment Station, Ithaca (H. H. Love)

HUMID MISSISSIPPI VALLEY STATES (South to North)

LOUISIANA

Rice Experiment Station, Crowley (J. Mitchell Jenkins) (April 9)

Favorable weather in February permitted farmers to accomplish much field work. Those that had completed plowing spent the time disking and harrowing.

Plowing on the Station was completed on the 9th. The remainder of the month was devoted to cleaning ditches and improving the driveways on the Station grounds. The Police Jury of Acadia Parish donated to the Station 30 yards of gravel for the improvement of the driveways on the grounds. This improvement adds greatly to the convenience of the employees, and to the attractiveness of the premises.

At the invitation of the Extension Department of the University of Arkansas, the Station Superintendent appeared on the program of a two-day Rice School held at Stuttgart, Ark., February 24 and 25. The school was well attended and those present were much interested in the program, as indicated by the many questions asked. Mr. C. E. Chambliss arrived at the Station on February 11 for his usual spring visit and remained until the 25th.

The precipitation for February totaled 2.81 inches, or 1.04 inches more than for the same month last year and 1.06 inches less than the average for the same month in the past 16 years.

The weather in March was very unfavorable for all farm work. Rain fell on 14 days, totaling 11.51 inches for the month. This is the heaviest precipitation ever recorded at the Station for the month of March. The previous record was for March, 1923, when 7.94 inches were recorded. Not only is this a record rainfall for the month of March, but it has been exceeded only three times for any one month in the past 16 years.

The temperature also was low and therefore unfavorable for germination of seed and growth of spring crops. At no time in March was the temperature above 78 degrees F., while in March, 1925, the maximum temperature reached 80 degrees F. or above nine times; the maximum for the month was 35 degrees F.

Farmers are impatient because unable to proceed with seeding operations, thinking of last year's experience with late seeded rice. A few have seeded, and the indications are that stands will be poor, if not total failures.

The value of the heavy rains will be realized later in the season, in the matter of supplying fresh water for irrigation purposes. Analyses of water taken from the Mermentau River and from Lake Arthur, on March 19, indicate a salt content as high as 9 grains per gallon. No doubt this is coming from the lands that were irrigated last year and the year before with water containing a high salt content.

Station operations in March consisted mainly in the cleaning of ditches, the repairing and improvement of equipment, and the completion of the graveling of the driveways on the grounds.

Agricultural Experiment Station, Baton Rouge (H. Stoneberg)

MISSOURI

Agricultural Experiment Station, Columbia (C. A. Helm)

TENNESSEE

Agricultural Experiment Station, Knoxville (L. S. Mayer)

IOWA

Agricultural Experiment Station, Ames (M. T. Jenkins)

Agricultural Experiment Station, Ames (Investigation of Crown Rust of Oats, S. M. Dietz)

Iowa State College, Ames (Barberry Eradication, M. A. Smith)

ILLINOIS

Funk Bros. Seed Co., Bloomington (Corn Root and Stalk Rot Investigations, J. R. Holbert)

Post Office Building, Urbana (Barberry Eradication, G. C. Curran)

INDIANA

Purdue University Agricultural Experiment Station, La Fayette (Corn Root, Stalk, and Ear Rots, G. N. Hoffer)

Purdue University Agricultural Experiment Station, La Fayette (Leaf Rust Investigations, H. S. Jackson and E. B. Mains)

College of Agriculture, Purdue University, La Fayette (Barberry Eradication, W. E. Leer)

OHIO

College of Agriculture, Ohio State University, Columbus (Barberry Eradication, J. W. Baringer)

MICHIGAN

Agricultural College, East Lansing (Barberry Eradication, W. F. Reddy)

WISCONSIN

Agricultural Experiment Station, Madison (Wheat Scab Investigations, J. G. Dickson)

Agricultural Experiment Station, Madison (Wheat Rosette and Take-All Investigations, H. H. McKirney)

Department of Agriculture, State Capitol Annex, Madison (Barberry Eradication, W. A. Walker)

MINNESOTA

Agricultural Experiment Station, University Farm, St. Paul (Wheat Breeding Investigations, O. S. Aamodt)

Agricultural Experiment Station, University Farm, St. Paul (Stem Rust Investigations, E. C. Stakman)

Agricultural Experiment Station, University Farm, St. Paul (Barberry Eradication, L. W. Melander)

GREAT PLAINS AREA (South to North)

OKLAHOMA

Woodward Field Station, Woodward (J. B. Sieglinger) (April 15)

As the result of a week of snow and cold weather in the latter part of March most of the fruit in this section was frozen. The snow and rain supplied much needed moisture. At present the prospects are excellent for a good wheat yield.

Scarborough broomcorn, Sunrise and Reed kafirs, Feterita, and Dwarf milo were seeded today in the first date-of-seeding experiment. The soil is moist and cool.

There has been a very brisk demand for sorghum seed this spring. The varieties supplied by the Station were Reed and Sunrise kafirs and Dwarf milo.

The precipitation recorded for 1926 is as follows: January, 0.54 inch; February, 0.11 inch; March, 1.89 inches; April 1-15, 1.56 inches. Minimum temperature for the first half of April, 23 degrees F. on the 3rd; maximum, 74 degrees on the 4th.

KANSAS

Agricultural Experiment Station, Manhattan (D. D. Hill) (April 14)

The last week of March was one of the coldest on record at Manhattan. The average temperature of the week was 31 degrees, reaching a minimum of 14 degrees on March 27. This was followed by snow and more low temperatures in the first week of April. The ground is now well supplied with moisture, and conditions are extremely favorable for wheat growth.

The oats nursery seedings were just emerging when the cold weather came. Growth has been retarded somewhat, but apparently no serious injury has resulted from low temperatures.

Spring growth had started in the wheat nursery prior to March 27, and a number of varieties suffered temporary injury from freezing back of the new growth. The degree of injury seems to correspond closely with the behavior of varieties in regard to winter hardiness. Minhardi and Minturki apparently were not injured at all, while such varieties as Kanred, Turkey, and Kharkov suffered but slightly. Blackhull, Fulcaster, and Harvest Queen were injured to an intermediate degree, while such varieties as Nebr. No. 28, and Berkeley Rock suffered severely. Most of the Kanred X Hard Federation crosses proved to be particularly susceptible to this type of injury, while a number of the Minhardi, Minturki, and Minessa crosses sent to this station by the Cereal Office in the fall of 1925 proved to be remarkably resistant.

Hardly any winterkilling has occurred at Manhattan the past winter; this unusual condition has provided an opportunity to obtain differences in the reaction of varieties to low temperatures which has not previously existed this year. It is believed that none of the varieties is seriously injured and that the injury is temporary rather than permanent.

Hays Branch Experiment Station, Hays (A. F. Swanson)

COLORADO

Akron Field Station, Akron

Agricultural College, Ft. Collins (Barberry Eradication, E. A. Lungren)

NEBRASKA

North Platte Substation, North Platte (G. F. Sprague) (April 16)

The weather of the first week in April was cold and there were light flurries of snow. The weather of the past week has been hot and dry. A precipitation totaling 0.13 inch was recorded for this period.

Spring wheat and spring rye are just emerging, while oats and barley are just sprouting. The oats and barley were treated with formaldehyde, and some injury has resulted; some of the sprouts on the kernels are dead.

Nursery seedings are nearly completed. The soil is very dry and grain probably will not germinate until spring rains begin.

College of Agriculture, University Farm, Lincoln (Barberry Eradication, A. F. Thiel)

WYOMING

College of Agriculture, University of Wyoming; Laramie (Barberry Eradication)

SOUTH DAKOTA

College of Agriculture, Brookings (Barberry Eradication, R. O. Bulger)

NORTH DAKOTA

Agricultural Experiment Station, Agricultural College (W. E. Brentzel)

Agricultural Experiment Station, Agricultural College (Barberry Eradication, G. C. Mayoue)

Dickinson Substation, Dickinson (R. W. Smith) (April 16)

Cold weather prevented field operations the first week in April. They were resumed when the ground thawed out about April 8. Some seeding has been done but the ground is too dry to permit uniform germination. The only precipitation this month was a light snowfall that supplied about 0.20 inch of moisture. The maximum temperature was 83 degrees F. on April 15, while the minimum was 2 degrees in the first week of the month.

The rotation plats are being seeded. The field for cereal plats is being disked and the seeding will be done as soon as seeding of the rotation plats is completed.

Seed of the various hybrids and varieties for seeding the cereal nursery is being prepared.

Winter wheat and rye are being injured somewhat by the continued dry weather and windstorms. The number of live plants has decreased since spring began.

Northern Great Plains Field Station, Mandan (Flax Investigations, J. C. Brinsmade, Jr.) [April 16]

The precipitation of 1.31 inches, reported in the Cereal Courier of April 10 was for the three winter months of December, January, and February. The total precipitation recorded in January was 0.71 inch, in February, 0.22 inch, and in March only 0.04 inch. Only a trace of precipitation was recorded for the first half of April, so that the total precipitation from January 1 to April 15, inclusive, was only 0.97 inch, or about 1 inch below normal for this period.

The surface soil is so dry that seed sown up to the present time is not likely to germinate until the rainfall is sufficient to soak the surface.

On April 15 a strong southwest wind caused considerable soil blowing but apparently did no serious damage.

Maximum temperature for the first half of April, 84 degrees F. on April 15; minimum, 7 degrees April 2. In the first week of April freezing temperatures interfered with preparation of the soil for seeding. Since about April 9, field operations have progressed rapidly.

The land for the flax nursery plantings was plowed April 14, and the land for the flax varietal plats was given a preliminary disking on the same date.

Northern Great Plains Field Station, Mandan (Wheat Investigations, E. R. Ausemus) [April 16]

The land for the oat and barley varietal plats was disked on April 12, and for the wheat varietal plats on April 14.

The wheat varietal plats were sown today, April 16. This is four days earlier than the average date of planting for the past 10 years, namely, April 20. The soil is very dry. It is not likely that seed sown at present will germinate until there is a good rainfall.

The oat varieties to be grown in the varietal plats were treated with the dry formaldehyde treatment for smut on April 15. It is planned to sow them tomorrow.

The survival of the wheat varieties in the winter-hardiness nursery can not be determined yet. The continued cold weather of the early part of April and the very dry condition of the soil prevent growth of the plants which may have survived.

MONTANA

Judith Basin Substation, Moccasin (R. W. May) (April 15)

Soil blowing in the past winter has been unusually severe. A severe storm in March damaged winter wheat. Until the last week or ten days many farmers thought their wheat was killed. Recent rains and warm weather, however, have caused most wheat to show life again.

Perhaps 85 to 95 per cent of the winter wheat acreage in this section of the State will survive the winter with good stands. Wheat sown with furrow drills has a better appearance than that sown with ordinary drills. As a rule, wheat sown early in the fall appears much more vigorous and has made much more growth than that sown late. The late-sown wheat did not withstand the soil blowing so well as that sown early.

Field operations were begun at the Substation yesterday. If the weather remains favorable seeding of the nursery will be begun next week.

State College of Agriculture, Bozeman (Barberry Eradication, W. L. Popham)

WESTERN BASIN AND COAST AREAS (North to West and South)

IDAHO

Aberdeen Substation, Aberdeen (G. A. Wiebe)

Agricultural Experiment Station, Moscow (Stripe Rust Investigations, C. W. Hungerford)

WASHINGTON

Agricultural Experiment Station, Pullman (E. F. Gaines)

OREGON

Sherman County Branch Station, Moro (D. E. Stephens) (April 15)

Warm weather prevailed in the Columbia River Basin of Oregon in March and the first half of April. There was a deficiency of precipitation in March in most localities. The total rainfall at Moro for the month of March was only 0.1 inch. In the first half of April 0.99 inch was recorded at Moro. These showers were accompanied and followed by unseasonably warm weather, and winter wheat is making rapid growth.

This crop in certain sections is unusually rank, and in low places in some fields considerable lodging occurred after the rainfall of last week. Because of the rank growth, more than the normal precipitation will be needed to mature the crop without drought injury.

All seeding on the Station, with the exception of corn and beans, is completed. The cereal nursery is much larger this year than usual, about six acres of land being used for it.

No unusually low temperatures were recorded in March or the first half of April.

CALIFORNIA

Biggs Rice Field Station, Biggs (J. W. Jones)

University Farm, Davis (V. H. Florell) (April 15)

California and the entire Coast region were favored with abundant rains in the first week in April. At Davis 5.37 inches were recorded from April 4 to 8. The previous season's rainfall at Davis was 12.35 inches, or a total of 17.72 inches, which is already about 0.7 inches above the normal. The rain has been very welcome to the commercial grain growers, since much of the crop was sown late and a good deal of it was not much more than out of the ground. Fall-sown grain, on the other hand, was in very good condition and was not injured by the March drought; in fact, it was benefited by it. Heavy rainfall early in the season frequently causes very rank growth and much lodging in the early grain.

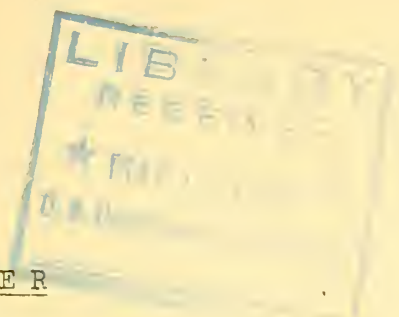
The cereal experiments are in good condition notwithstanding the heavy rains. Wheat varieties show hardly any lodging, while the barleys in some of the experiments are considerably lodged. Most of the African barley introductions are quite badly lodged, and a number of the varieties in the varietal experiment in the nursery. Oats had not developed sufficiently by the date of the storm to become lodged.

The following agronomic notes have been recorded in the plat experiments: Hard Federation, Bunyip, and several of the Hard Federation hybrids are fully headed; on the other hand, the following have not begun heading: Pacific Bluestem, Marquis and Little Club. Smooth Barley, C. I. No. 1367, is fully headed. All other barleys have begun heading except the Cape-Coast hybrids. Nearly all varieties of oats have begun heading.

A number of cereal diseases have begun to appear although as yet there is nothing in the nature of an epidemic. Traces of stem rust of wheat have been seen. Rhynchosporium of barley is more or less abundant, as usual. A few varieties of African barley show a heavy infection of stripe disease.

Agricultural Experiment Station, Berkeley (F. N. Briggs)

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CEREAL COURIER

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Bureau of Plant Industry, U. S. Dept. of Agriculture
(NOT FOR PUBLICATION)

Vol. 18

No. 9

April 30, 1926
Personnel (April 21-30) and Project Issue

PERSONNEL ITEMS

Dr. C. R. Ball, senior agronomist in charge, returned to Washington April 30 from Ames, Ia., where he attended the Central States Extension Conference from April 26 to 28, inclusive. On Tuesday night, April 27, Dr. Ball showed lantern slides covering the following cooperative activities of the Bureau of Plant Industry: Barberry Eradication; Blister Rust Control; Oat Breeding; Control of Stinking Smut of Wheat; and Corn Improvement through Control of Root Rots and Metallic Poisoning. Most of these were shown from the standpoint of both research and extension. On the same day he addressed the Iowa Section of the American Society of Agronomy and on the following day the Genetic and Botanic Seminars, discussing research, advanced training, and opportunity and obligations of scientists.

On Thursday morning, April 28, in Chicago, Dr. Ball was given the privilege of presenting the present nation-wide situation with reference to stinking smut of wheat to the Executive Committee on Extension Organization and Policy of Association of Land-Grant Colleges with a view to a cooperative national campaign for treating wheat before seeding time next fall.

Dr. Ball reports that the Central States Extension Conference was well attended and had a splendid program arranged. Two facts of outstanding interest were the time and thought which extension workers are devoting to a study of methods of carrying extension facts to their constituencies, and the emphasis they are placing on advanced training for extension workers and especially for the leaders. Splendid papers well digested and well presented were given by Drs. C. W. Warburton and C. B. Smith and Mr. A. B. Graham, of the Extension Service, by Dr. W. H. Larrimer of the Bureau of Entomology, and by Mr. N. E. Olsen of the Bureau of Agricultural Economics, as well as by many of the representatives of the States included.

Dr. Ball states that spring work on farms has been greatly delayed in the Ohio and upper Mississippi valleys by unseasonable weather conditions. In northern Ohio and Indiana little spring plowing had been done up to April 25 and a light fall of snow lay on the ground in northeastern Indiana. On Tuesday, April 27, a terrific gale from the northwest filled the air over Iowa with a dust storm typical of the Great Plains area. This was made possible by lack of rain during the spring. Corn planting was just beginning at the Iowa Agricultural Experiment Station. On Dr. Ball's return trip through Indiana and Ohio on Thursday, April 29, plowing had been progressing rapidly during the week.

J. M. Hammerly, senior scientific aid in corn investigations, left Washington on April 25 for Florence, S. C., to select, prepare, and seed corn in cooperative corn experimental plats. He returned to Washington on the 29th. In the vicinity of Florence all farm work is late on account of the wet weather. Corn and cotton are only just being planted. Potatoes are up. The prospect for a peach crop is favorable.

On April 26 the Cotton Producers' Association, Corn Breeders' Association, Stock Breeders' Association, Chamber of Commerce, Business Men's Association, and the Kiwanis Club held a joint meeting in the interests of cooperative marketing. More than 2,500 persons were present. Speeches were made by Ex-Governor Lowden of Illinois, Governor McLeod of South Carolina and Hon. E. D. Smith, United States Senator.

Dr. H. V. Harlan, senior agronomist in charge of barley investigations, returned from California on April 27.

Merritt N. Pope, associate agronomist in barley investigations, will leave Washington May 6 for Sacaton, Ariz., to harvest and study barleys in the cooperative nurseries. He also will go to Berkeley and Davis, Calif., Colby, Kans., Ft. Collins, Colo., and Lincoln, Nebr., in the interests of barley investigations and to consult with experiment station officials.

E. R. Ranker, recently appointed associate physiologist in corn-smut investigations, left Washington April 30 for St. Louis, Mo., where he will consult with officials of the Missouri Botanic Garden in planning and developing physiological equipment for corn-smut studies at the Arlington Experiment Farm near Washington, D. C. Mr. Ranker also will take notes on the cooperative flag-smut nursery at Granite City, Ill. He will return to Washington about June 15.

F. D. Richey, agronomist in charge of corn investigations, left Washington April 26 for Ithaca, N. Y., to confer with officials of the Cornell University Agricultural Experiment Station concerning cooperative investigations on the cytology of maize.

MANUSCRIPTS AND PUBLICATIONS

21 A brief note on "Spacing of Grain Sorghums," by John B. Sieglinger, was approved April 22 for publication in the Journal of American Society of Agronomy.

22 A manuscript entitled "Flax Rust, a Preventable Disease," by A. W. Henry, was submitted April 27 for publication as a circular of the Minnesota Agricultural Experiment Station in cooperation with the Office of Cereal Crops and Diseases.

Galley proof of article entitled "Observations on Corn Smut (Ustilago zeae) at Akron, Colorado," by F. A. Coffman, W. H. Tisdale and J. F. Brandon, for publication in the Journal of the American Society of Agronomy, was read April 22.

Page proof of Department Bulletin 1403 entitled "Segregation and Correlated Inheritance in Marquis and Hard Federation Crosses, with Factors for Yield and Quality of Spring Wheat in Montana," by J. Allen Clark and John R. Hocker, was read April 22.

Page proof of article entitled "Inheritance of Resistance to Leaf Rust, Puccinia triticina Erikss. in Crosses of Common Wheat, Triticum vulgare Vill.," by E. B. Mains, C. E. Leighty and C. O. Johnston, was read April 26.

*The article entitled "The Relation of Inheritance Studies to Corn Improvement," by Arthur M. Brunson, appears in the Journal of the American Society of Agronomy 18 (No. 4): 308-314, fig. 1. April, 1926.

*The article entitled "The Influence of Temperature upon the Metabolism and Expression of Disease Resistance in Selfed Lines of Corn," by James G. Dickson and James R. Holbert, appears in the Journal of the American Society of Agronomy 18 (No. 4): 314-322, figs. 1-4. April, 1926.

*The article entitled "Some Differences in the Functioning of Selfed Lines of Corn under Varying Nutritional Conditions," by G. M. Hoffer, appears in the Journal of American Society of Agronomy 18 (No. 4): 322-334, figs. 1-7. April, 1926.

Notes Concerning the Growth of Mung Beans on Submerged Land, by Jenkin W. Jones, appear. in the Journal of the American Society of Agronomy 18 (No. 4): 366-367. April, 1926.

*The article entitled "Introductory Remarks," by Frederick D. Pichey, appears in the Journal of the American Society of Agronomy 18 (No. 4): 306-307. April, 1926.

*Paper read as a part of the symposium on "The Present Status of Corn Improvement" at the meeting of the American Society of Agronomy held in Chicago, Ill., November 17, 1925.

NOTICE

Dr. Carleton R. Ball, senior agronomist in charge, has been chosen editor in chief for agronomy in Biological Abstracts, and M. A. McCall, agronomist in charge of cereal agronomy, will be associate editor for crops.

Biological Abstracts has been organized to cover the field of biology, which includes botany, bacteriology, and zoology. The first issue probably will appear in June and will pertain to material published in 1926. It will supersede, for Botany, Botanical Abstracts, which will close with volume 15 at the end of 1926, thus including everything published through 1925.

The new publication will be much larger than Botanical Abstracts because of the wider field to be covered; India paper will be used in order to keep the publication within one volume a year.

PROJECT REPORTS

OAT INVESTIGATIONS

(T. R. Stanton, Agronomist in Charge of Oat Investigations)

BREEDING SMUT-RESISTANT OATS

In the breeding nurseries conducted in 1925 at the Aberdeen Substation, Aberdeen, Idaho, and the Dickinson Substation, Dickinson, N. Dak., for development of smut-resistant strains of oats, about 345 F_2 families representing approximately 23,000 individual plants from four different crosses, were grown from smut-inoculated seed. One-half of the seed sown from each F_2 plant was dehulled. As a result of this rather extensive dehulling, considerable data were recorded on the effect of dehulling on smut inoculation and infection.

The smut-immune variety Markton represented one parent of each of these crosses. The other parents were Aurora, Idamine, Swedish Select, and Victory. The Aurora is exceedingly susceptible to smut, for which reason particular attention is being given to the genetics of smut in this cross. The other three varieties are all moderately susceptible, and are important midseason white oats. These originally were crossed on Markton, primarily for the breeding of smut-resistant strains of the types represented.

Many of the F_3 families which ranged from 50 to 100 plants each from these crosses were entirely free from smut. However, not so much smut occurred as was expected, especially under irrigated conditions at Aberdeen, Idaho. In 1926, practically all these smut-free families in the F_3 are being further tested for smut immunity in the F_4 . Plant populations in the F_4 from several of these crosses are being grown at two different stations. Progenies of the Markton-Idamine and Aurora-Markton crosses are being grown at both Aberdeen, Idaho, and Ames, Iowa. Those of the Markton x Swedish Select cross are being grown at both Dickinson, N. Dak., and at Bozeman, Mont. A number of seedings also have been made for a study of the inheritance of smut resistance in the F_4 generation, especially from highly susceptible and highly resistant families in the F_3 .

Similar smut-breeding experiments are in progress at the Sherman County Branch Station, Moro, Oreg., where populations from Markton x Sixty-Day and Markton x Scottish Chief are being grown and observed with regard to their behavior to smut.


In addition, relatively large F_3 populations are being grown this year from two other crosses, namely, Iogrén x Markton and Silvermine x Markton, at the Iowa Agricultural Experiment Station. For the seedings made in 1926, a large percentage of the seed sown was dehulled. As a result of the rather large seedings it was necessary to dehull many thousands of seeds. It is hoped that some unusually promising smut-free strains will result from this extensive crossing on the Markton variety. It is believed that by crossing the color of the Markton oat also may be considerably improved, and that desirable early and midseason strains may be developed which are immune or highly resistant to the smuts of oats. These experiments are being conducted jointly with the smut project of the Office of Cereal Crops and Diseases.

In addition, observations are being made on some of these crosses for the occurrence of oat blast. In the Iogren-Markton and Silvermine-Markton crosses observations on the occurrence of oat blast were made in the F_2 which will be followed up in the F_3 this year. These studies are being made by Dr. Charlotte Elliott of the Pathological Laboratory, Bureau of Plant Industry.

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CEREAL COURIER

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Vol. 18

No. 10

May 10, 1926
Personnel (May 1-10) and Field Station (Apr. 16-30) Issue

PERSONNEL ITEMS

F. A. Coffman, associate agronomist in oat investigations, left Washington on May 10 for an extended trip in the South for the study of cooperative oat experiments. He will visit Statesville and Raleigh, N. C., Hartsville and Clemson College, S. C., Athens, Experiment, and Tifton, Ga., Auburn, Ala., Baton Rouge, La., Fayetteville, Ark., Starkville, Miss., Jackson and Knoxville, Tenn., Lexington, Ky., and Blacksburg, Va. At Tifton, Ga., he will assist in harvesting the cooperative oat breeding nursery. Mr. Coffman also will collect specimens of oat varieties, including false wild oats. He will return to Washington about June 1.

Miss Edna M. Conway, of Mt. Pleasant, Mich., was appointed May 1 as clerk-stenographer to assist the State leader of barberry eradication in Michigan, with headquarters at East Lansing. Miss Conway succeeds Miss Bernice L. Waterman, who resigned her position on March 1, 1926.

A. C. Dillman, associate agronomist in charge of flax investigations, returned on May 3 from points in the southern States where he went in the interests of flax investigations.

Dr. H. V. Harlan, senior agronomist in charge of barley investigations, was authorized to go to Chicago and New York City to assist with the public hearings held pursuant to the announcement of the Secretary of Agriculture looking forward to the establishment of final standards for barley. He returned to Washington on May 7.

James R. Holbert, agronomist in charge of corn root, stalk, and ear rots in cooperation with the Funk Bros. Seed Company, Bloomington, Ill., came to Washington May 3 to confer with officials of the Office concerning corn-disease investigations and manuscripts in preparation. He returned to Bloomington on May 6.

C. E. Leighty, agronomist in charge of eastern wheat investigations, left Washington on May 9 for La Fayette, Ind., to take notes in the cereal nurseries conducted in cooperation with the Purdue University Agricultural Experiment Station. He will then go to St. Louis, Mo., to confer with officials of the Missouri Botanic Garden, and to Columbia, Mo., to discuss cooperative cereal experiments with the officials of the Missouri Agricultural Experiment Station. From there he will proceed to Sacaton, Ariz., to take notes on and harvest cereal varieties in the cooperative nurseries. On his return trip Dr. Leighty will visit Granite City, Ill., near St. Louis, Mo., in the interests of the cooperative flag-smut experiments. He also will go to Knoxville, Tenn., Marshall, Swannanoa, and Lincolnton, N. C., and Athens, Ga., to confer with officials regarding cooperative cereal investigations.

F. D. Richey, agronomist in charge of corn investigations, left Washington May 8 for Burdette, Ark., to supervise cooperative experimental corn plantings. He also will go to Manhattan, Kans., Ames, Ia., and Columbus, Ohio, to confer with officials of agricultural experiment stations and others concerning cooperative corn investigations. Mr. Richey will return to Washington about May 28.

VISITORS

Dr. D. B. Adam, pathologist in the Department of Agriculture of Victoria, Australia, was an Office visitor on May 7, conferring with Drs. Humphrey, Johnson and Tisdale on various cereal diseases. Dr. Adam is especially interested in the take-all disease of wheat.

John L. Richardson, who was employed in the summer of 1925 in barberry survey activities in Illinois, was an Office visitor May 8. Mr. Richardson will be connected with the Illinois barberry forces again this summer.

MANUSCRIPTS AND PUBLICATIONS

24 A brief note entitled "Factors Affecting the Properties of a Virus," by H. H. McKinney, was approved May 5 for publication in the "Brief Notes" Section of Phytopathology.

25 A short article entitled "Red Rice Eradication," by C. E. Chambliss and J. M. Jenkins, was approved May 8 for publication in the Rice Journal of New Orleans.

Galley proof of article entitled "The Moving Average as a Basis for Measuring Correlated Variation in Agronomic Experiments," by F. D. Richey, for publication in the Journal of Agricultural Research, was read May 6.

FIELD STATION CONDITION AND PROGRESS

HUMID ATLANTIC COAST STATES (South to North)

GEORGIA

State College of Agriculture, Athens (R. R. Childs)

VIRGINIA

Arlington Experiment Farm, Rosslyn (J. W. Taylor) (May 8)

Continued dry weather prevails throughout this section. The month of April was the driest experienced since weather data have been taken at Arlington, a period of 14 years. Less than an inch of rain fell in comparison to the average of 3.67 inches. Winter oats need rain badly and barley would be greatly benefited. Wheat and rye appear vigorous and in very good condition. No leaf rust has as yet developed on wheat and rye in the varietal plats.

Barley and rye are now heading, and the earliest oats are showing panicles. Smuts of barley are not so general as usual. Selection No. 52 from Tennessee Winter barley grown from untreated seed already shows a significant percentage of smut. A few heads of loose smut are again present in the Nakano Wase. This smut is being used by Dr. W. H. Tisdale in his studies on the infection of barley by loose smut.

NEW YORK

Cornell University Agricultural Experiment Station, Ithaca (H. H. Love)
(May 5)

The weather in April and the first few days in May has been unfavorable for spring work. It has been unusually cold, and while we have had a few warm days we have had no consistent pleasant spring weather. As a result farmers are much behind with their spring operations and oat seeding is not yet completed. We were able to find a few days in April when the hybrid nursery in our plant breeding garden could be sown. Although it remained cold and wet, the germination has been very good, even with some hull-less hybrids which were sown. For the past ten days we have been trying to get on the land to prepare it for our rod-row nursery and plat work, but have not yet been able to sow any grain. If the weather remains as it is at present, we shall begin seeding May 6.

Although we have been hindered from working in the field, nevertheless, it has meant that Mr. Craig has had more time to devote to hybridizing and many hybrids of wheat and oats have been made.

Some of the plats that were planned to be sown out in the State have already been sown, and the men are out this week looking after some others. Most of the improved varieties of small grains were bought up by farmers for seed, and this year an increased acreage from recommended varieties will be sown.

Prof. C. B. Hutchison, formerly a member of this staff but now with the International Education Board, was a visitor for a few days in April.

Dr. L. J. Stadler, who is on a fellowship from the National Research Council, has transferred here for the summer.

Mr. T. E. Odland, of the College of Agriculture at Morgantown, West Va., is here for the month of May to complete his work for the doctorate. Mr. Odland's thesis subject is "The Inheritance of Length of Rachilla and Other Characters and Their Interrelation in the Avena Cross Early Gothland x Gar-ton 784."

HUMID MISSISSIPPI VALLEY STATES (South to North)

LOUISIANA

Rice Experiment Station, Crowley (J. Mitchell Jenkins) (May 5)

The weather in April was very unfavorable for farm operations. There were only a few days in the month when the land could be properly prepared for seeding. Many farmers fearing worse weather later in the spring began seeding in the mud. Good stands from this method of seeding have been obtained, probably due to frequent rains which have prevented the soil from drying out.

The total precipitation for April amounted to 7.67 inches, against 2.74 for the same month last year. The heaviest precipitation previously recorded at this station for the month of April, was in 1918, when it totaled 7.91 inches.

Analyses of samples of water taken from various depths in the Mermentau River and from Lake Arthur, show a salt content varying from 3 to 7 grains of salt per gallon. This condition indicates that salt is being washed from the fields where it was deposited by irrigation water last year and the year before.

The work of the station has progressed rather slowly during the month. The seeding of rice that was to have been made on March 30 and April 15 could not be made until April 17, and at that time the plats were rough and rather muddy in places. The indications are that there will be a fair stand. Germination is very slow; it was not complete by the end of the month.

Cotton in the rotation experiments was planted April 29. The remaining work of the month consisted of levee construction, ditching, floating and disking of land.

On April 30 the Superintendent attended the dedication of the new buildings of the Louisiana State University. The addresses by distinguished guests were very instructive.

Agricultural Experiment Station, Baton Rouge (H. Stoneberg)

MISSOURI

Agricultural Experiment Station, Columbia (C. A. Helm)

TENNESSEE

Agricultural Experiment Station, Knoxville (L. S. Mayer)

IOWA

Agricultural Experiment Station, Ames (M. T. Jenkins)

Agricultural Experiment Station, Ames (Investigation of Crown Rust of Oats, S. M. Dietz)

Iowa State College, Ames (Barberry Eradication, M. A. Smith)

ILLINOIS

Funk Bros. Seed Co., Bloomington (Corn Root and Stalk Rot Investigations, J. R. Holbert)

Post Office Building, Urbana (Barberry Eradication, G. C. Curran)
[April 30]

Four agents started the original survey of Madison County, Illinois, on April 7. The city of Alton was surveyed first, and more than 70 common barberry bushes were located. On April 16 the rural survey was begun in the western part of the County.

The results of the educational campaign in the country schools has been very successful. In Stephenson County, near Lena, school children found two small bushes growing on the school grounds. Near Custer Park, in Will County, a school boy located an escaped common barberry bush growing in an osage orange hedge a short distance from the school house. Three barberry bushes growing on a farm property have been reported by a country school teacher in DeKalb County. Scores of reports have been received from the rural schools stating that study had been devoted to this subject and the pupils had searched the community for common barberry bushes.

The sowing of wheat and oats in the uniform rust nursery at Urbana was completed on April 20. The Agronomy Department, College of Agriculture of the University of Illinois, very kindly furnished the land for this project.

INDIANA

Purdue University Agricultural Experiment Station, La Fayette (Corn Root Stalk, and Ear Rots, G. N. Hoffer)

Purdue University Agricultural Experiment Station, La Fayette (Leaf Rust Investigations, H. S. Jackson and E. B. Mains)

College of Agriculture, Purdue University, La Fayette (Barberry Eradication, W. E. Leer)

OHIO

College of Agriculture, Ohio State University, Columbus (Barberry Eradication, J. W. Baringer) (April 30)

Five agents of the U. S. Department of Agriculture started on original survey in Perry County on April 1 and completed it at the end of the month. All of these men had had previous experience in barberry eradication in this State. Eight rural properties having cultivated barberries, and one rural property having escaped barberries, were found. In addition, barberries were found on 14 properties in the towns.

The method used in the survey of Perry County was somewhat different from any used heretofore in Ohio. Every farm yard, garden, and orchard was inspected on foot for cultivated bushes. Wherever seeding barberries were found all woodlands, fence rows, roadsides, and stream banks were foot-scouted for escaped bushes for a radial distance of 1-1/2 miles. This is the method which probably will be used in southeastern Ohio until the original survey is completed there. It is believed that this method is not sufficient for use in territory which has not yet been covered by original survey in northeastern Ohio. There it will be advisable to continue the "Every woodlot scouting method" that was used exclusively on original survey last year.

An extensive search for the early occurrence of rust on barberries has been made this spring and the data obtained are summarized herewith. No rust was found in any of the places mentioned.

Date of Observation	County	Location	Nearest City	Name of Observer
April 2	Preble	Lewisburg		John W. Baringer
" 3	Montgomery	West Carrollton		" " "
" 9	Portage	Rootstown		" " "
" 13	Clark	New Carlisle		" " "
" 14	Franklin	Columbus		" " "
" 15	Perry	Thornville		Atwood and Hambleton
" 16	Montgomery	Dayton		John W. Baringer
" 17	Montgomery	West Carrollton		" " "
" 19	Hamilton	Cincinnati		Delbert Swartz
" 21	Logan	Mingo		John W. Baringer
" 24	Franklin	Columbus		" " "
" 26	Montgomery	Dayton		Delbert Swartz
" 27	Perry	New Lexington		B. B. Beck
" 28	Washington	Marietta		John W. Baringer
" 30	Montgomery	Dayton		" " "

The unusually cold weather of the first part of April retarded the unfolding of leaves on barberry bushes. The first general rain of importance after the leaves were cut on the berries, fell on April 22.

MICHIGAN

Agricultural College, East Lansing (Barberry Eradication, W. F. Reddy)

WISCONSIN

Agricultural Experiment Station, Madison (Wheat Scab Investigations, J. G. Dickson)

Agricultural Experiment Station, Madison (Wheat Rosette and Take-All Investigations, H. H. McKinney)

Department of Agriculture, State Capitol Annex, Madison (Barberry Eradication, W. A. Walker)

MINNESOTA

Agricultural Experiment Station, University Farm, St. Paul (Wheat Breeding Investigations, O. S. Aamodt)

Agricultural Experiment Station, University Farm, St. Paul (Stem Rust Investigations, E. C. Stakman)

Agricultural Experiment Station, University Farm, St. Paul (Barberry Eradication, L. W. Melander)

GREAT PLAINS AREA (South to North)

OKLAHOMA

Woodward Field Station, Woodward (J. B. Sieglinger)

KANSAS

Agricultural Experiment Station, Manhattan (D. D. Hill)

Hays Branch Experiment Station, Hays (A. F. Swanson) (May 3)

The rainfall for April was low but winter wheat made a satisfactory growth on the reserve moisture available since last fall. This reserve moisture is now running low, however, and the excessive growth of the wheat crop is being checked. Several more timely rains between now and June 15 would insure a good crop. Oats and barley are making good growth.

A series of pasture experiments on winter wheat have just been brought to a close for the season. The experiments included fall pasturing, moderate seasonal pasturing, severe pasturing, spring pasturing, and late spring pasturing as the wheat came into the first jointing stage. The season afforded an excellent opportunity to control the degree of pasturing, and it is hoped that the influence on yield will give some valuable information applicable to this section. Many farmers are often compelled to pasture their fields in order to carry their livestock through until native pasture is available.

The Station's 14th Annual Round-Up was held May 1; there were approximately 1,200 visitors. The results of the feeding experiments with sorghums in the form of silage and roughage were presented and indicated:

(1) That a pound of kafir or cane fodder (with the heads included) is worth from $1/3$ to $1/2$ more than a pound of kafir or cane silage (with the heads included) for mature cattle;

(2) That a pound of kafir or cane stover (without the heads included) is worth from $1/3$ to $1/2$ more than a pound of kafir or cane silage (without the heads included) for mature cattle;

(3) That an acre of kafir or cane silage with the heads included is worth from 2 to $2-1/3$ times as much as an acre of kafir or cane in the form of fodder (with the heads included) for mature cattle.

(4) That an acre of kafir or cane silage without the heads included is worth from 2 to $2-1/2$ times as much as an acre of kafir or cane in the form of stover (without the heads included) for mature cattle;

(5) That kafir hay is worth more pound for pound and acre for acre than kafir fodder for mature steers but that cane fodder is worth more pound for pound and acre for acre than cane hay for the same kind of cattle;

(6) That cane or roughage is worth more than kafir as roughage pound for pound and acre for acre in all forms except hay as a feed for mature stock cattle;

(7) That cane and kafir as roughage in any form supplemented with a small amount of cottonseed cake are splendid basal rations for winter mature stock cattle;

(8) The chemical analyses of the feeds used in this test and the gains secured indicate that a pound of dry matter of either cane or kafir in the form of silage is worth from 2 to $2-1/3$ pounds of the dry matter of either cane or kafir in the forms of dry roughage for mature cattle.

On Friday, the day before the Round-Up, 235 boys and girls from the western half of Kansas participated in the annual livestock and grain-judging contest. The competition was keen and close. The Hays Chamber of Commerce gave a banquet to the competing teams in the evening; silver loving cups and medals were presented to the winners. The judging contests at this Station have now become permanent events which are being looked forward to with increasing interest.

With a Music Festival in progress this week at Hays many visitors are taking the opportunity of going over the experimental work at the station.

COLORADO

Akron Field Station, Akron

Agricultural College, Ft. Collins (Barberry Eradication, E. A. Lungren)

NEBRASKA

North Platte Substation, North Platte (G. F. Sprague) (May 1)

The month of April was characterized by high winds and dry weather. Evaporation was abnormally high in the last half of April. The maximum temperature recorded was 88 degrees and the minimum 28 degrees, giving a total range of 60 degrees. The precipitation for this period totaled 0.25 inch and the evaporation 3.695. Only 22.0 per cent of the normal April precipitation has fallen and only 34.8 per cent of the normal total to date. This makes a deficit of 2.54 inches since January 1.

Soil blowing has been very severe. Winter wheat varieties are in very poor condition and unless rains come soon will be a complete failure. Available soil moisture is practically all used at this date, and plats which made a vigorous early growth are now suffering for lack of moisture. Because of the dry soil conditions, emergence of spring grain has been very uneven and stands are poor. To aggravate this condition, soil blowing has further reduced stands. Reseeded plats show no signs of germination.

Corn planting will begin next week. From present indications, experiments with corn under irrigation seem to offer the only promise of a crop.

College of Agriculture, University Farm, Lincoln (Barberry Eradication, A. F. Thiel)

WYOMING

College of Agriculture, University of Wyoming, Laramie (Barberry Eradication)

SOUTH DAKOTA

College of Agriculture, Brookings (Barberry Eradication, R. O. Bulger) (April 21)

Educational activities constituted the major project in barberry eradication for South Dakota during the past winter months. These activities were conducted largely through schools and colleges, although some work was done through other organizations.

A lesson plan and material for the study of stem rust and the common barberry were sent to all the rural schools in one-third of the counties in South Dakota. Another lesson plan and material were sent to all the high schools and parochial schools in the State. Some work was done with colleges in the form of lectures to various agricultural classes. Requests for additional material were received from many of the teachers and instructors. Other teachers indicated that they were using the material sent.

About 7,000 circular letters, enclosing circulars and other materials, were sent to special mailing lists and cooperators. At the present time about 6,000 letters, enclosing educational material, are being sent to members of boys' and girls' clubs. A letter is being multigraphed that is to be sent to every rural route box in the counties covered by second survey this year.

A late, dry spring has caused field operations to be started somewhat later than usual. Seeding of small grain is well under way and in some parts of the State it is completed. Trees and shrubs are unusually late in pushing buds just prior to leafing. The stem-rust nursery at Highmore has been seeded; varieties of wheat for the sulphur-dust experiments have been seeded at Highmore and Eureka. Seeding of the varieties for the sulphur-dust experiment at Brookings will be completed this week.

NORTH DAKOTA

Agricultural Experiment Station, Agricultural College (W. E. Brentzel)

Agricultural Experiment Station, Agricultural College (Barberry Eradication, G. C. Mayoue)

Dickinson Substation, Dickinson (R. W. Smith) (April 30)

The month of April has been characterized by dry, windy weather and extremes of temperature. A maximum of 88 degrees was reached today, while a minimum of 4 degrees below zero was reached on April 3. Practically the only precipitation in April was a snowfall on the 3rd, which supplied 0.20 inch of moisture.

Grain at the Substation and in the vicinity is emerging with uneven stands. Rain will be needed soon to prevent damage from soil blowing on windy days. Several dust storms have occurred, the worst being that of April 23. There was practically no grain above ground at that time, but it has been reported that seeded grain was uncovered by the wind.

Varietal plats of grain at the Substation are all sown with the exception of flax and proso. A large cereal nursery was sown this week. There yet remain a number of plant rows of wheat to be sown in addition to the proso nursery. A second seeding will be made tomorrow in the date-of-seeding experiments with flax and wheat. The corn varieties and the corn nursery will be planted about the middle of May.

The seeding of wheat is practically completed in this locality and the seeding of oats and barley is in progress. Because of the dry condition of the soil which prevents doing good plowing and because of the unfavorable prospect, many farmers are sowing grain in stubble without plowing and in some cases without disking or other previous treatment.

Northern Great Plains Field Station, Mandan (Flax Investigations, J. C. Brinsmade, Jr.) (May 1)

As yet there has been no significant break in the prevailing drought. Maximum temperature recorded the last half of April was 89 degrees on April 29; minimum, 30 degrees on April 27. Precipitation for the last half of April, in fact for all of April, was only 0.13 inch. There are only two cases on record at Mandan and Bismarck for the past 51 years in which a lower precipitation was recorded in April. The total precipitation for the four months January, February, March, and April was only 1.10 inches, the lowest precipitation recorded for this period for the past 52 years.

Seedings were made April 20 and April 30 in the flax date-of-seeding-experiment. A few plants have emerged in the plats sown April 20, but apparently only a very small percentage of the seeds have germinated.

The flax and cereal mixtures were sown April 28. The surface soil is so dry that satisfactory germination can not be expected in the plats already sown until we have a soaking rain.

Northern Great Plains Field Station, Mandan (Wheat Investigations, E. R. Auserus) (May 1)

The weather has continued dry the latter half of April with only 0.13 inch of rain. High winds have prevailed for several days causing much soil blowing.

Seeding of the nursery was completed April 30, except for some material not yet received. Furrows were plowed in the alleys and around the nursery to prevent soil blowing. Wheat and oat varieties in the uniform rust nursery were sown April 26.

Varieties of wheat seeded April 16 in the field plats had emerged April 27, but stands are very poor and un-uniform. Many of the seeds will not germinate until we have a good rain. Oat varieties seeded in the field plats April 19, have not emerged. Barley varieties were treated with the wet formaldehyde treatment for smut on April 30 and were seeded today, May 1.

Stand counts on the uniform winter-hardiness wheat nursery were taken April 27. Only 68 plants survived in the entire nursery. As the land was needed for spring seeding the surviving plants were potted and placed in the greenhouse where they could be watered. Later these will be transplanted to the field. Good uniform stands were noted in all the rows on October 16, 1925. Winter rye used as a check survived the winter with a good stand.

MONTANA

Judith Basin Substation, Moccasin (R. W. May) (May 3)

Most of the seeding under the cereal project has been completed. The flax, flax-wheat mixtures, and some of the nursery material remain to be sown. Seed for the last two dates of seeding in the rate-and-date-of-seeding experiment with spring grains also remain to be sown. The first seed sown (April 21) is just emerging today. Emergence is slow and irregular because of dry seed beds.

Most of the winter wheat under the cereal project survived the winter with good stands. The exceptions are that sown with the ordinary drill and some late-sown wheat in the nursery.

A considerable acreage of winter wheat in the immediate vicinity of the Substation is being resown to spring wheat. A good rain would be very beneficial to the winter wheat.

The precipitation recorded in April was 0.41 inch, while the average for April is 1.32 inches. The maximum temperature recorded was 79 degrees on April 29, while the minimum temperatures were 5 degrees and 8 degrees on April 6 and 1, respectively.

State College of Agriculture, Bozeman (Barberry Eradication, W. L. Popham)

WESTERN BASIN AND COAST AREAS (North to West and South)

IDAHO

Aberdeen Substation, Aberdeen (A. E. McClymonds) (April 29)

The weather has been exceptionally warm and dry during the seeding season. This has enabled us to get the crops in earlier than usual. Most of the seeding was done in March and good stands were obtained. Very little rain has fallen, and most of the growth so far has been made on moisture stored in the soil. If this weather continues it will be necessary to irrigate much earlier than usual. This probably will lower the yields on all crops. Besides, the quantity of water stored in the mountains is much smaller than last year and a shortage is expected. Water is being stored in the American Falls reservoir, and as the Station has purchased water rights in this reservoir it may help materially in making this year's crop.

It was necessary to water up some of the cereal nursery plats; some of the land for the nursery was watered before seeding. The nursery seeding is being finished today.

The plat seedings are as follows:

The field and garden peas were seeded in duplicate 1/40th-acre plats on March 23 and emerged on April 15 and 16.

Field Peas

Kaiser
Arthur
Paragon
White Canadian
Green Field Pea
Multiplier
Canadian Beauty
Solo
Carlton

Garden Peas

Junc
Everbearing
Horsford
Hanford Canner
Admiral
Alaska
American Wonder
Lincoln

Oats were seeded in duplicate 1/40th-acre plats on March 25 at the rate of 100 pounds per acre. They emerged on April 14 and 15.

C. I. No.

1718
2022
1627
2020
1834
2053
345

Variety

Golden Rain
Crown
Swedish Select
Victory
Idamine
Markton
Liberty Hullless

Wheats were seeded on March 25 in duplicate 1/40th-acre plats at the rate of 100 pounds per acre. They emerged on April 14 and 15.

<u>C. I. No.</u>	<u>Variety</u>
4733	Hard Federation
4734	Federation
3663	Dicklow
6221	Onas
2826	Bobs
6220	Boadiceae
4067	Pacific Bluestem
3276	Marquis
1697	Early Baart
8181	Garnet

Barleys were seeded on March 27 in duplicate 1/40th-acre plats at the rate of 100 pounds per acre and emerged on April 14 and 15.

<u>C. I. No.</u>	<u>Variety</u>
936	Trebi
190	Beldi Dwarf
531	Hannchen
1148 and 27	Bohemian
910	White Smyrna
--- one plat	Smyrna Sel.
1176	Meloy
959	Alpha
351	Orel
926	Horn
--- from Montana	Faust
1081	Abed Binder

Two hundred and fifty-five head selections of red clover were seeded in spaced plats for the study of seed production and resistance to mildew.

The beet plats were planted on April 6 for the irrigation experiments on beets. They are up to a good stand.

The alfalfa seed production studies will be carried on in the general field this year.

Agricultural Experiment Station, Moscow (Stripe Rust Investigations, C. W. Hungerford)

WASHINGTON

Agricultural Experiment Station, Pullman (E. F. Gaines)

OREGON

Sherman County Branch Station, Moro (B. B. Bayles) (April 26)

Crops at this time look very promising in Sherman County and there is every indication for a good year provided we get some rain in May.

CALIFORNIA

Biggs Rice Field Station, Biggs (J. W. Jones)

University Farm, Davis (V. H. Florell) (April 30)

Cereals in the experiment plats are now fully headed with the exception of "winter habit" varieties and the very late spring varieties. Beginning yesterday the weather has been very cool, which will slow down the rapid development of cereals; it also will favor the complete "filling" of the grain.

During the period of the comparatively high temperatures following the heavy rains early in the month and particularly in the early part of this week, the cereal rusts have become more or less abundant. The most striking occurrence of rust was a very heavy infection of Puccinia glumarum on a few rows of the wheat-identification nursery (rows 163 to 169). A light infection of this rust was observed also on other varieties, among which were Early Baart and Federation. The Helminthosporium diseases of barley also are unusually abundant. The Cape-Coast hybrids which in other years have been so free from diseases are quite heavily infected this year with Helminthosporium.

The hybridizing program for the season is in progress. The awn-study crosses between wheats representing different degrees of awnedness have been completed.

Dr. H. V. Harlan made a brief stop at Davis on April 22 to inspect the African barley nursery. Dr. Ruth F. Allen visited Davis on the same day to make observations on the P. glumarum infection and to obtain specimens.

Agricultural Experiment Station, Berkeley (F. N. Briggs)



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CEREAL COURIER

Official Messenger of the Office of Cereal Crops and Diseases
Bureau of Plant Industry, U. S. Department of Agriculture
(NOT FOR PUBLICATION)

Vol. 18

No. 11

May 20, 1926
Personnel (May 11-20) and Field Station (May 1-15) Issue

PERSONNEL ITEMS

J. Allen Clark, agronomist in charge of western wheat investigations, will leave Washington June 1 to visit field stations in Kansas, California, Oregon, Washington, Idaho, Utah, Wyoming, Nebraska, Minnesota, North and South Dakota, and Montana. He will look over wheat experiments, study wheat varieties and hybrids in breeding nurseries, and observe wheat conditions in general. Mr. Clark will be in the field about nine weeks.

W. T. Craig, agent in the cooperative cereal breeding at the Cornell University Agricultural Experiment Station, Ithaca, N. Y., was authorized on May 25 to take notes on and harvest hybrids in cooperative wheat nurseries and inspect cooperative cereal experiments at Manhattan, Kans., Berkeley and Davis, Calif., Logan, Utah, Lincoln, Nebr., Ames, Ia., and Urbana, Ill.

J. M. Hammerly, senior scientific aid in corn investigations, was in Loudoun County, Virginia, on May 17 and 18 to select ear corn for the Department of Agriculture exhibit at the Sesqui-Centennial International Exposition, to be held at Philadelphia from June 1 to December 1.

Dr. Harry V. Harlan, senior agronomist in charge of barley investigations, has been selected to represent the American Genetic Association on the Division of Biology and Agriculture of the National Research Council, beginning July 1, 1926. Dr. Harlan succeeds Dr. C. E. Leighty.

Dr. G. N. Hoffer, pathologist in charge of investigations of corn rots and metallic poisoning, in cooperation with the Purdue University Agricultural Experiment Station at La Fayette, Ind., has been authorized to attend the annual meeting of the National Fertilizer Association to be held at White Sulphur Springs, W. Va., the week of June 7, and to present a paper entitled "A Simple Method of Testing Corn Stalks to Determine Their Fertilizer Needs."

Dr. H. B. Humphrey, senior pathologist in charge of rust investigations, left Washington May 20 for La Fayette, Ind., where he will confer with experiment station officials and research men regarding rust investigations. He will go for the same purpose to points in Iowa, Minnesota, Nebraska, Kansas, Colorado, California, Oregon, Washington, Idaho, Montana, North and South Dakota, Wisconsin, Michigan, and Ohio. Dr. Humphrey also will inspect the rice nursery at Shafter, Calif., make stem-rust epidemiology studies in the Middle West, confer with barberry-eradication leaders and field men, and collect material for the cereal-disease herbarium. He will be in the field until the latter part of July.

L. D. Hutton, associate pathologist in barberry eradication, will leave Washington about June 4 to confer with State leaders of barberry eradication regarding plans for education and demonstration relative to the eradication of barberry. He will also talk with field men engaged in barberry eradication concerning the conduct of the summer's work, and will make epidemiology studies in cooperation with Dr. H. B. Humphrey, senior pathologist in charge of rust investigations. Mr. Hutton will be in the field about seven weeks.

Dr. F. E. Kempton, associate pathologist in charge of barberry eradication, was in Riverton, N. J., May 13 to inspect barberry bushes that had been inoculated with stem rust in April and to make additional inoculations.

John H. Martin, formerly associate agronomist in western wheat investigations and now associate agronomist in charge of grain-sorghum investigations, returned to Washington on May 17 after an absence of nearly a year. He has been at the University of Minnesota since last fall engaged in a physiological study of the winter-hardiness of wheat and rye, and has completed the requirements for the degree of Doctor of Philosophy, having majored in biochemistry. During the year Mr. Martin also made a study of the grain-sorghum industry in the Southwest.

K. S. Quisenberry, associate agronomist in western wheat investigations, will leave Washington May 30 to visit field stations in Kansas, Utah, California, Oregon, Washington, Idaho, Wyoming, Nebraska, Minnesota, North and South Dakota, and Montana to study winter-wheat varieties and hybrids in cooperative wheat breeding nurseries and to observe wheat conditions in general. Mr. Quisenberry will be in the field about three months.

Dr. E. R. Ranker, associate physiologist in corn smut investigations, has been authorized to proceed from St. Louis, Mo., to Dalhart, Tex., to assist in the sowing of grain sorghums in cooperative smut experiments. He also will go to Manhattan and Lawrence, Kans., Columbia, Mo., Urbana, Ill., and La Fayette, Ind., to confer with State officials regarding laboratory equipment for and development of a physiological program on a study of the resistance to smut in corn. Upon his return to St. Louis, Dr. Ranker will take notes on flag-smut experiments and later he will return to his headquarters at the Arlington Experiment Farm, near Washington, D. C.

Dr. C. S. Reddy, associate pathologist in charge of bacterial diseases of cereals, left Washington May 15 to assist in planting corn in cooperative seed-treatment experiments at Bloomington, Ill., and Ames, Ia. Dr. Reddy will return about May 29.

VISITORS

Dr. H. K. Bartlett, head of the department of botany of the University of Michigan, visited the Office on May 19, bringing for determination a collection of cereals, mostly wheat, obtained by the Michigan University expedition excavating in Egypt.

Prof. A. T. Kirssanoff, Chief of the Division of Agronomy of the Russian State Institute of Experimental Agronomy at Leningrad, Russia, has been an Office caller at intervals during the past week. He left May 20 for a trip through the southern United States to California and other Pacific Coast States, then back across the northern tier of States and eventually into the Canadian Provinces.

MANUSCRIPTS AND PUBLICATIONS

26 A brief note entitled "Virus Mixtures That May Not Be Detected in Young Tobacco Plants," by H. H. McKinney, was approved May 15 for publication in Phytopathology.

The abstract entitled "A Simple Test for Detecting the Nutrient Needs of Corn Plants," by G. N. Hoffer, appears in the Journal of the American Society of Agronomy 18 (No. 1): 29-31. January, 1926.

The article entitled "Effect of Smut on Sap Concentration in Infected Corn Stalks," by Annie May Hurd-Karrer, appears in the American Journal of Botany 13 (No. 5): 286-290. May, 1926.

The article entitled "Inheritance of Resistance to Leaf Rust, Puccinia triticina Erikss., in Crosses of Common Wheat, Triticum vulgare Vill.," by E. B. Mains, C. E. Leighty and C. O. Johnston, appears in the Journal of Agricultural Research 32 (No. 10): 931-972, pls. 1-5. May 15, 1926. (Cooperative investigations between the Indiana and Kansas Agricultural Experiment Stations and the Office of Cereal Investigations, Bureau of Plant Industry, United States Department of Agriculture.)

The article entitled "Inheritance of Resistance to Bunt, Tilletia tritici (Bjerk.) Winter, in Wheat," by Fred N. Briggs, appears in the Journal of Agricultural Research 32 (No. 10): 973-990, figs. 1-5. May 15, 1926. (These investigations were conducted cooperatively by the Office of Cereal Investigations, Bureau of Plant Industry, United States Department of Agriculture, and the California Agricultural Experiment Station.)

Department Bulletin 1403 entitled "Segregation and Correlated Inheritance in Marquis and Hard Federation Crosses, with Factors for Yield and Quality of Spring Wheat in Montana," by J. Allen Clark and John R. Hooker, was received from the Government Printing Office on May 20, bearing date of May, 1926.

FIELD STATION CONDITION AND PROGRESS

HUMID ATLANTIC COAST STATES (South to North)

GEORGIA

State College of Agriculture, Athens (Cereal Agronomy, R. R. Childs)

VIRGINIA

Arlington Experiment Farm, Rosslyn (Small Grain Agronomy, J. W. Taylor)

Arlington Experiment Farm, Rosslyn (Corn Breeding, F. D. Richey)

Arlington Experiment Farm, Rosslyn (Cereal Smuts, W. H. Tisdale)

Arlington Experiment Farm, Rosslyn (Virus Diseases, R. W. Webb)

Arlington Experiment Farm, Rosslyn (Cereal Bacterial Diseases, C. S. Reddy)

NEW YORK

Cornell University Agricultural Experiment Station, Ithaca (Cereal Breeding, H. H. Love)

HUMID MISSISSIPPI VALLEY STATES (South to North)

LOUISIANA

Rice Experiment Station, Crowley (Rice Agronomy, J. M. Jenkins)

Agricultural Experiment Station, Baton Rouge (Corn Breeding, H. F. Stoneberg)

MISSOURI

Agricultural Experiment Station, Columbia (Cereal Agronomy, C. A. Helm)

TENNESSEE

Agricultural Experiment Station, Knoxville (Corn Breeding, L. S. Mayer)
(May 10)

All corn in the experimental plats has been planted and is coming up nicely. Rain is needed very much. A yield test of selections from Neal Paymaster was planted April 20 on range 9. One acre of Jarvis Golden Prolific was planted on Cherokee Farm April 22. The breeding rows, 710 in number, were planted April 27 and 28, and 142 rows of multiple crosses for comparison of

yields were planted April 30. A small lot of F¹ seed of Piedmont sent by Mr. H. S. Garrison was planted May 3 on an isolated¹ plat on the old fruit farm some distance away from the station. This plat is for increase of seed of this variety for more extensive planting next year. It is thought that the Piedmont now being grown in the State has departed considerably from the original type and an analysis of the variety will be made with this in mind.

IOWA

- Agricultural Experiment Station, Ames (Oat Breeding, L. C. Burnett)
Agricultural Experiment Station, Ames (Corn Breeding, M. T. Jenkins)
Agricultural Experiment Station, Ames (Crown Rust of Oats, S. M. Dietz)
Iowa State College, Ames (Barberry Eradication, M. A. Smith) [May 15]

During the last half of April and the first half of May observations were made in northern Missouri, Iowa, and one county of eastern Nebraska for the appearance of stem-rust infections on common barberry. Owing to the lateness of the season, these bushes were not fully leaved out until about May 1. Dry weather prevailed until about May 6.

The first observed infection of stem rust on barberries in Missouri was in Marion County on May 3 and the first in Iowa, in Jefferson County on May 5. The following gives a report of the observations made:

Summary of observations for the appearance of stem rust on common barberries in Missouri, Iowa, and Nebraska, April 15 to May 14, 1926

Date of Observation:	: State and County	: Number of Prop- : erties inspected:	: Infection	
			: Pycnial	: Aecial
April 15	: Nodaway, Mo.	: 13	: -	: -
" 15	: Andrew, Mo.	: 1	: -	: -
" 16	: Buchanan, Mo.	: 1	: -	: -
" 16	: Harrison, Mo.	: 2	: -	: -
" 17	: Putnam, Mo.	: 1	: -	: -
" 19	: Greene, Ia.	: 2	: -	: -
" 20	: Greene, Ia.	: 2	: -	: -
" 20	: Dallas, Ia.	: 4	: -	: -
" 21	: Montgomery, Ia.	: 1	: -	: -
" 22	: Page, Ia.	: 3	: -	: -
" 23	: Story, Ia.	: 1	: -	: -
" 23	: Taylor, Ia.	: 2	: -	: -
" 26	: Jefferson, Ia.	: 2	: -	: -
" 28	: Louisa, Ia.	: 3	: -	: -
" 29	: Louisa, Ia.	: 3	: -	: -
" 30	: Ringgold, Ia.	: 1	: -	: -
" 30	: Lee, Ia.	: 1	: -	: -

Continued

Date of Observation:	State and County	Number of Prop- erties inspected:	Infection	
			Pycnial	Aecial
May 1	:Lee, Ia.	: 1	: -	: -
" 1	:Nodaway, Mo.	: 4	: -	: -
" 3	:Marion, Mo.	: 5	: 2	: 1
" 3	:Lewis, Mo.	: 1	: 1	: -
" 4	:Scotland, Mo.	: 1	: 1	: -
" 4	:Clark, Mo.	: 1	: 1	: -
" 4	:Lewis, Mo.	: 2	: -	: -
" 5	:Louisa, Ia.	: 2	: 1	: -
" 5	:Jefferson, Ia.	: 3	: 3	: -
" 7	:Taylor, Ia.	: 2	: 1	: -
" 8	:Page, Ia.	: 2	: 1	: -
" 9	:Page, Ia.	: 1	: 1	: -
" 8	:Montgomery, Ia.	: 1	: 1	: -
" 6	:Putnam, Mo.	: 3	: 2	: -
" 6	:Harrison, Mo.	: 2	: 1	: -
" 7	:Nodaway, Mo.	: 3	: -	: -
" 8	:Nodaway, Mo.	: 11	: 3	: -
" 9	:Otoe, Nebr.	: 1	: -	: -
" 10	:Hancock, Ia.	: 1	: 1	: -
" 10	:Crawford, Ia.	: 1	: 1	: -
" 10	:Buena Vista, Ia.	: 1	: 1	: -
" 11	:Buena Vista, Ia.	: 1	: 1	: -
" 11	:Cerro Gordo, Ia.	: 1	: 1	: -
" 11	:Blackhawk, Ia.	: 1	: -	: -
" 11	: Sac, Ia.	: 2	: 2	: -
" 12	:Greene, Ia.	: 5	: 1	: -
" 12	:Guthrie, Ia.	: 3	: -	: -
" 13	:Dallas, Ia.	: 5	: -	: -
" 13	:Polk, Ia.	: 1	: -	: -
" 14	:Story, Ia.	: 2	: -	: -

ILLINOIS

Funk Bros. Seed Co., Bloomington (Corn Root, Stalk and Ear Rots, J. R. Holbert)

Box 72, Post Office Building, Urbana (Barberry Eradication, G. C. Curran)

INDIANA

Purdue University Agricultural Experiment Station, La Fayette (Corn Rots and Metallic Poisoning, G. N. Hoffer)

Purdue University Agricultural Experiment Station, La Fayette (Leaf Rusts, H. S. Jackson and E. B. Mains)

Purdue University College of Agriculture, La Fayette (Barberry Eradication, W. E. Leer)

OHIO

Ohio State University, College of Agriculture, Columbus (Barberry Eradication, J. W. Baringer)

MICHIGAN

Agricultural College, East Lansing (Barberry Eradication, W. F. Reddy)

WISCONSIN

Agricultural Experiment Station, Madison (Wheat Scab, J. G. Dickson)

Agricultural Experiment Station, Madison (Virus Diseases, H. H. McKinney)

Department of Agriculture, State Capitol Annex, Madison (Barberry Eradication, W. A. Walker)

MINNESOTA

Agricultural Experiment Station, University Farm, St. Paul (Wheat Breeding, O. S. Aamodt)

Agricultural Experiment Station, University Farm, St. Paul (Stem Rust, E. C. Stakman)

Agricultural Experiment Station, University Farm, St. Paul (Flax Rust, A. W. Henry)

Agricultural Experiment Station, University Farm, St. Paul (Barberry Eradication, L. W. Melander) [May 9]

The regular field season will be started May 10. Two teams of Field men will be on resurvey. Most of the territory to be resurveyed was completed in second survey in 1924. Every attempt is being made to keep the second-survey area as clean as possible. Sprouting bushes in these counties are very few because of the method of killing bushes with salt, but seedlings and missed bushes, which usually are seedlings that have grown to be over six inches tall, are our main problem.

On May 5, in Marion Township, Olmsted County, we found the first infection of stem rust on common barberry. It consisted only of one pustule in the pycnial stage. No other infections were found in Olmsted, Fillmore, and Goodhue counties. While this shows only a trace of rust, it is evident that there has been some chance for teliospore germination and infection of common barberries. Extremely dry weather has prevented teliospore germination, but the leaves of the common barberry are in very good condition for natural infection at the present time.

GREAT PLAINS AREA (South to North)

OKLAHOMA

Woodward Field Station, Woodward (Grain Sorghums, J. B. Sieglinger)
(May 15)

This spring is averaging cooler than usual. Wheat is looking good and about ready to head. The prospects for a big wheat yield are still good.

The second date of sorghums did not give as good stands as the first date, due to moles damaging the stand. Moles are becoming quite a pest in preventing corn and sorghum seed from germinating, as the moles follow the newly seeded rows. On plats the moles can be trapped after some damage to stands, but on a field it is a big proposition to trap them.

The third date of sorghums was seeded yesterday May 14 in soil which was in excellent condition.

Our surplus sorghum seed has been sold out. There has been a greater demand for grain sorghum seed than ever before at this Station.

Most of the varieties of winter barley in the nursery which survived the winter are headed.

Maximum temperature for May to date 83° on the 1st and 8th, minimum 45° on the 12th and 13th. Precipitation for May to date 1.62 inches which occurred in one good rain of 1.36 inches on the 6th and several showers.

KANSAS

Agricultural Experiment Station, Manhattan (Cereal Breeding, D. D. Hill)

Agricultural Experiment Station, Manhattan (Corn Breeding, A. M. Brunson)

Agricultural Experiment Station, Manhattan (Wheat Foot Rots, Hurley Fellows)

Agricultural Experiment Station, Manhattan (Wheat Leaf Rust, C. O. Johnston)

Hays Branch Experiment Station, Hays (Cereal Agronomy, A. F. Swanson)
(May 15)

The weather of the first 15 days of May was partly cool and rainy and partly dry and windy. The precipitation was limited, however; fields of wheat with heavy growth show the need for moisture. Spring crops are still making satisfactory growth because of a good supply of reserve moisture.

Nebraska No. 28, a soft early winter wheat, is heading today. Tennessee Winter barley is now fully headed. This variety survived the winter 100 per cent, which is rather unusual for this section. There was no winterkilling of winter wheat on the cereal project because of low temperatures, drought, or soil blowing. However, in the rate-and-date-of-seeding experiment with winter wheat it was noted that in the September 8 and 15 seedings on ground cropped to wheat last year about 25 per cent of the plants had been killed by the fall

infestation of Hessian fly. By April 30 most of the flies had emerged from these dead plants. In general, however, the spring brood of flies will not be so heavy this year as in former years because of the lack of volunteer wheat last fall.

Corn was planted in the varietal plats on May 12. An early planting was made on May 2 of four varieties of corn ranging from extremely early to late maturity. The influence of climatic factors will be studied in relation to time of pollination. A later planting also will be made.

The first seeding in the date-of-seeding experiment with sorghums is being made today. The second will follow in about 10 days. At this time the sorghum nursery also will be planted.

The demand for pure sorghum seed from selections developed at this station or found to be best adapted to the section, is increasing each year. Last year 124,000 pounds of pure seed were sold from this station. This year the sales will exceed 300,000 pounds. For the last three weeks the station has been turning down from 12 to 15 orders a day for pure seed of Dawn kafir, feterita, and Dwarf yellow milo. Only a limited quantity of Pink kafir and Early sumac is available with the seeding season just opening up. Two years ago the demand for Dawn kafir was so limited that the station was about to discontinue growing the variety. This year there has been a very urgent demand from farmers for seed of this variety and hundreds of pounds could have been sold had it been available. Just why the variety has met with such sudden favor is somewhat difficult to explain.

At this season of the year a number of vocational teachers from high schools in the immediate vicinity of Hays bring their classes to the station for a study of the experimental work.

The land used by the cereal project at this station includes about 70 acres most of which is suitable for experiments. However, there are small areas in which low spots occur. Each year as one of the fields is summer-fallowed for experimental crops, drainage ditches are put in and the low areas filled. By means of a specially constructed float, such as is used in irrigated fields, the different blocks of land are being levelled, and the surplus run-off water from one block to another is more and more eliminated. Considerable work of this sort was done in the last two weeks.

COLORADO

Agricultural College, Ft. Collins (Barberry Eradication, E. A. Lungren)

NEBRASKA

North Platte Substation, North Platte (Cereal Agronomy, G. F. Sprague)

College of Agriculture, University Farm, Lincoln (Barberry Eradication, A. F. Thiel)

WYOMING

College of Agriculture, University of Wyoming, Laramie (Barberry Eradication, E. A. Lungren, Acting in Charge)

SOUTH DAKOTA

College of Agriculture, Brookings (Barberry Eradication, R. O. Bulger)

NORTH DAKOTA

Agricultural Experiment Station, Agricultural College (Flax Diseases, L. W. Boyle)

Agricultural Experiment Station, Agricultural College (Barberry Eradication, G. C. Mayoue)

Dickinson Substation, Dickinson (Cereal Agronomy, R. W. Smith) (May 13)

The drought was broken by a drizzling rain that began May 6 and continued for about 36 hours. It rained again on May 9 making a total of 1.34 inches, which is the best rain recorded here since last summer. It was followed by cool, cloudy weather which reduced evaporation while the water penetrated the soil more than sometimes occurs with dashing rains supplying much greater total precipitation. Crop prospects are naturally much improved as a result of the rain.

Grain sown on fallow had emerged before the rain with fairly good stands, grain sown on cornland had only a partial stand, while that sown on plowed stubble land or in disked stubble was very thin and in some cases had no stand at all. The cereal varieties sown in plats on cornland had only a partial stand, while the rod-row nursery on fallow showed better germination. In both cases most of the remaining seed has emerged since the rain, making a better stand but not uniform in height.

The seeding of the bunt experiment with spring-wheat hybrids was delayed, waiting for cool, moist weather. It was sown immediately after the rain on May 8. Seeding was followed by more rain and cool weather, conditions which should favor a maximum infection. The seed which had been inoculated with bunt consisted of hybrids of Marquis x Kota, Marquis x Quality, and Quality x Kota. Seed of the parent varieties was sown in check rows. On May 11 about 50 additional rows were sown with bunt-inoculated seed of the leading varieties and strains grown in plats and nursery.

Eighteen varieties of corn were planted May 14 in duplicate rows, and 234 ear rows on May 17. The latter were from seed that had been selfed from one to three generations. Flax and proso varieties were sown May 12. On May 15 seedings were made in dates-of-seeding experiments with wheat, flax, oats, and barley. The seeding of cereal varieties is now completed except the proso nursery and the two remaining dates of seeding flax.

The Substation was visited today by Dr. H. L. Walster, of the State Agricultural College.

Northern Great Plains Field Station, Mandan (Flax Breeding, J. C. Brinsmade, Jr.) (May 17)

The first satisfactory rain of the season fell during the four days, May 6, 7, 8 and 9, for which a total precipitation of 1.91 inches was recorded. This rain was especially welcome after a long period of extreme drought (only 0.04 inch in March and 0.13 inch in April), and was sufficient to completely germinate seed sown up to that time.

The crop outlook for this locality, very discouraging just before the rain, is decidedly favorable now. The total rainfall from January 1 to May 15, inclusive, amounted to about three-quarters of an inch more than for the same period in 1925.

As a result of the rain there has been a more complete germination of the flax sown April 20, part of which had emerged by May 1. Flax, wheat, and oats sown April 28 in the mixture experiment, and flax sown April 30 are just emerging.

The land for the flax varietal plat and nursery is being given a final disking and harrowing to-day in preparation for seeding. In the interval of over a week since the rain many weed seeds have germinated and many weeds will have to be eliminated before sowing the flax.

Temperatures were exceptionally high in the first week of May; the maximum temperature was 98°, May 5; minimum, 25°, on May 2.

Northern Great Plains Field Station, Mandan (Cereal Agronomy, E. R. Ausermus) (May 17)

The drought was broken on May 6 by 0.39 inch of rainfall. Showers continued during the following three days, and a total precipitation of 1.91 inches was recorded. The rain was very welcome to the farmers of this region, as much of the spring grains seeded had not germinated because of insufficient moisture. Germination has resulted in good stands.

The cereal experiments are now in fine condition with good uniform stands. With plenty of moisture and the warm temperatures of the past few days the young plants are making very rapid growth.

A plat of winter wheat seeded in stubble in the Rotation Experiments of the Office of Dry-Land Agriculture now shows a good stand. Another plat seeded on summer fallow had only about 1 per cent survival, the remainder being winter-killed. These results on summer fallow are very similar to those obtained in the winter-hardiness nursery in which only 68 plants survived.

MONTANA

Judith Basin Substation, Moccasin (Cereal Agronomy, R. W. May) (May 15)

Almost all of the spring seeding under the cereal project has been completed. The flax varieties and the flax-wheat mixtures were sown today, May 15. The last date of seeding in the spring grain rate-and-date-of-seeding ex-

All grain sown before May 1 emerged very slowly and irregularly, because of the drought. Grain sown immediately preceding the recent rains emerged rapidly and uniformly.

The drought was broken on May 5 and was followed by a week of rainy weather. Precipitation was recorded on each day from May 5 to 13. The total amount recorded was 1.28 inches, while the average for the whole month is 2.54 inches.

The maximum temperature since the first of the month was 77° on May 1; minimum temperature, 51°, on May 8.

Mr. J. M. Stephens, of the Office of Dry Land Agriculture, and Mr. Clyde McKee, of the Montana Agricultural Experiment Station, visited the station on May 7 and 8.

State College of Agriculture, Bozeman (Barberry Eradication, W. L. Popham)

WESTERN BASIN AND COAST AREAS (North to West and South)

IDAHO

Aberdeen Substation, Aberdeen (Cereal Agronomy, G. A. Wiebe)

Agricultural Experiment Station, Moscow (Stripe Rust, C. W. Hungerford)

WASHINGTON

Agricultural Experiment Station, Pullman (Cereal Breeding, E. F. Gaines)
(May 8)

The spring opened unusually early, and much of the seeding in the Palouse country was finished by the first of April.

Most of the inheritance material was seeded on March 27. We are testing this year over 200 winter-wheat varieties and selections for bunt resistance and have about 100 first and second-generation hybrids coming on. We also have 80 selections of spring wheat under test for bunt resistance, and 40 selections of oats are being tested for resistance to covered smut. The largest quantity of third-generation material to be harvested this year is spring grain. We are testing about 250 F_3 families of oat crosses in which Markton was the immune parent. We have about 50 F_2 families of wheat seeded this spring from crosses of immune winter wheats with some of the more prolific spring varieties common to this State. This means major emphasis on F_3 spring-wheat hybrids in 1927, as the pure-winter segregates will be discarded this year.

Rains totaling 0.65 inch, from May 4 to 7, which were general throughout the Inland Empire, increase the prospects for a good wheat crop about twofold. The weather is still cool and there are indications that we shall have more rain.

OREGON

Sherman County Branch Station, Moro (Cereal Agronomy, D. E. Stephens)
(May 9)

The weather in April was unusually warm in eastern Oregon. At Moro there was no precipitation of benefit to crops after April 13. The total precipitation for the month was 1.07 inches. The maximum temperature was 89 degrees on the 28th. This temperature is 3 degrees higher than has before been recorded at Moro in April. There were five days with maximum temperatures above 30 degrees. The minimum temperature was 29 degrees on April 2.

The warm, dry weather of the last half of April resulted in very rapid growth of all crops and caused some drought injury on shallow ground. During the week of May 3 showers, amounting to 0.54 inch at Moro, brought temporary relief. The weather is now cool and cloudy, and crops are in excellent condition; more rainfall will be needed soon, however, to mature the winter wheat, because of the unusually rank growth. Fall-sown Federation wheat in the varietal trial began heading on April 30. Many hybrid wheats in the nursery are nearly fully headed. The Crimean wheats will begin heading next week, or about 10 days earlier than these wheats have ever begun heading in any previous year.

Stripe rust is more prevalent this year than it has been since 1917. Some varieties in the nursery already show 100 per cent infection. Of the wheats in the varietal experiment Federation is the only one so far showing a very heavy infection.

CALIFORNIA

Biggs Rice Field Station, Biggs (Rice Agronomy, J. W. Jones) (May 14)

The weather of the first week in April was extremely wet and delayed field operations until about April 25. The land was all prepared for seeding, except for building levees, when the rains began and packed the ground. Much water-grass germinated and made considerable growth before the land was again dry enough to work. Therefore, it again became necessary to double disk and drag much of the land to put it in condition for seeding. We sowed the plats and nursery between April 30 and May 8 and had all the land seeded, irrigated or submerged, by May 9, about one week earlier than last year.

Probably about 75 per cent of the area to be sown to rice in California this year has been seeded and is now being irrigated. It is estimated that about 145,000 acres will be sown to rice this year. The old crop is moving at a good price and the indications are that there will be but a small carry-over.

I hope to be able to get down to Shafter the latter part of next week to see how the foreign rices are doing.

University Farm, Davis (Cereal Agronomy, V. H. Florell) (May 15)

Cereals in the varietal plats have stretched out a great deal in the past two weeks. Many varieties of wheat and oats are from 5 to 6 feet tall. Some of the tallest exceed 6 feet in height. Most of the wheats are standing quite erect, with the exception of those that are particularly susceptible to lodging. On the other hand, oats as well as barley is badly lodged on the areas of richer soil.

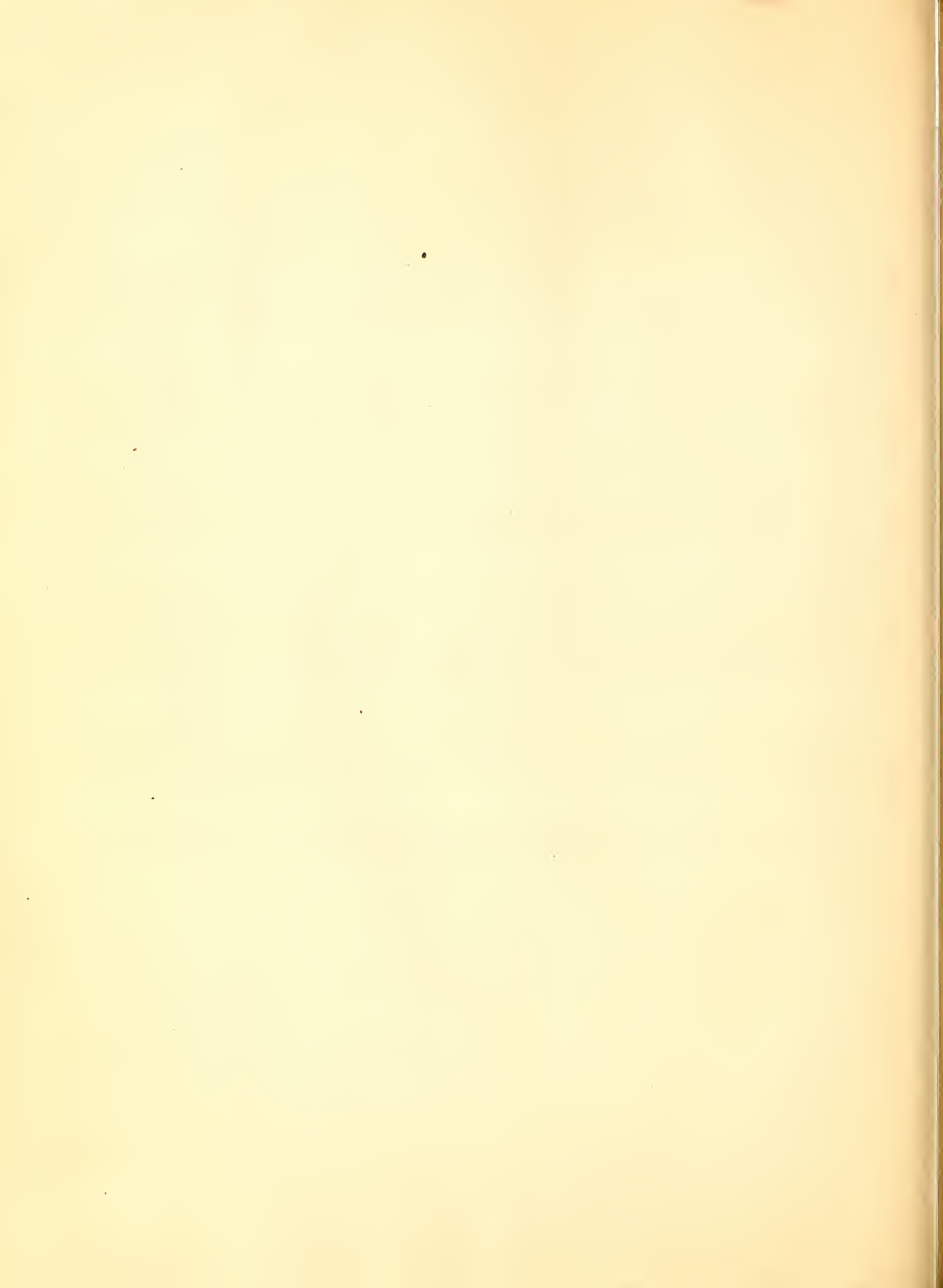
Most of the barleys have begun ripening, and early varieties, such as Smyrna, are nearly fully ripe. The Federation wheat varieties, White and Hard, and other related and early varieties are going into the stiff dough. Fulghum and Kanota oats began to ripen several days ago.

At present the most promising cereal variety is the new Smooth Awn barley, C. I. No. 1567, which was one of the high yielding varieties last year. It is filling well, shows considerable resistance to lodging, and is quite free from cereal diseases.

Wheats especially are becoming quite heavily infected with rusts. In susceptible varieties the leaves show infections ranging from 80 to 100 per cent. The indications are that most of the rust is P. graminis. The culms of the plants are still quite free from sori in most varieties, but in localized areas of the plats in the plat experiments stem infection is becoming heavy.

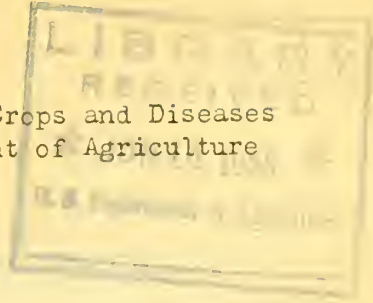
The leaves of all barley varieties are more or less badly spotted with Helminthosporium diseases. The most abundant appear to be spot blotch, net blotch, and H. Californicum. There is some rust on oats, but the infection is still light.

Agricultural Experiment Station, Berkeley (Cereal Smuts, F. N. Briggs)



CEREAL COURIER

Official Messenger of the Office of Cereal Crops and Diseases
Bureau of Plant Industry, U. S. Department of Agriculture
(NOT FOR PUBLICATION)



Vol. 18

No. 12

May 31, 1926
Personnel (May 21-31) and Project Issue

PERSONNEL ITEMS

Dr. Carleton R. Ball, senior agronomist in charge, will leave Washington about June 4 to travel in the States of the barberry-eradication area in order to gather first-hand information regarding the present status of the project in conferences with State leaders in the actual areas where the field forces are operating. Dr. Ball also will discuss with State experiment station officials the present and future problems in cooperative cereal investigations in the States of the barberry-eradication area. He will be in the field until about July 20.

F. A. Coffman, associate agronomist in oat investigations, who left Washington on May 10 to visit points in the South in the interests of oat investigations, wrote on May 24 concerning general crop conditions in North and South Carolina and Georgia:

Crops in North Carolina this spring have started poorly, due to cold, dry weather. Cotton was not all up, and corn was just coming up. A large acreage of oats was sown last fall, but winterkilling reduced stands, making the fields uneven. Some good fields were seen, however. Very little wheat, rye or barley, is sown.

Crops generally in South Carolina are backward, just as in North Carolina. There was little difference between crop conditions in the two States.

Generally speaking, agricultural conditions in Georgia appear better than in either of the Carolinas. Crops in all the southeastern States are held back by drought. As a result of the unusually dry season last year the drought this spring is serious. Corn is very backward in most sections. The acreage of oats this year appears to be fully equal to that of all other small grains combined. This, it is reported, is because of a shortage of feed last fall and the need of feed before corn will be ready this fall.

Merle T. Jenkins, associate agronomist in charge of cooperative corn experiments at Ames, Ia., was elected a member of Sigma Xi by the Iowa State College chapter on May 23.

Dr. W. H. Tisdale, pathologist in charge of cereal smut investigations, went to Manassas, Va., on May 28, accompanied by Mr. F. C. Meier, extension pathologist, and Mr. O. S. Fisher, extension agronomist, of the Office of Cooperative Extension Work. They inspected seed-treatment experiments for the control of loose smuts of wheat and barley. Dr. Tisdale gave a talk to farmers and members of the Kiwanis Club on the subject of grain smuts and their control.

MANUSCRIPTS AND PUBLICATIONS

27 A manuscript entitled "The Growth of Ophiobolus graminis Sacc. in Relation to Hydrogen-Ion Concentration," by R. W. Webb and Hurley Fellows, was submitted to the Journal of Agricultural Research on May 25.

Galley proof of article entitled "Fatuoid or False Wild Forms in Fulghum and Other Cat Varieties," by T. R. Stanton, F. A. Coffman and G. A. Wiebe, for publication in the Journal of Heredity, was read May 22.

The article entitled "Red Rice Eradication," by Chas. E. Chembliss and J. Mitchell Jenkins, appears in The Rice Journal (New Orleans) 29 (No. 5): 23, 30, 1 fig. May, 1926.

The article entitled "Observations on Corn Smut at Akron, Colorado," by F. A. Coffman, H. H. Tisdale and J. F. Brandon, appears in the Journal of the American Society of Agronomy 18 (No. 5): 403-411. May, 1926. (This is a contribution from cooperative investigations between the Office of Cereal Crops and Diseases and the Office of Dry Land Agriculture, Bureau of Plant Industry.)

Wisconsin Agricultural Experiment Station Bul. 379, entitled "Making Weather to Order for the Study of Grain Diseases," by James G. Dickson, was received May 15, bearing date of January, 1926. (This bulletin is based upon investigations conducted cooperatively by the Wisconsin Agricultural Experiment Station and the Office of Cereal Crops and Diseases.)

The article entitled "Hybrid Vigor in Rice," by Jenkin W. Jones, appears in the Journal of the American Society of Agronomy 18 (No. 5): 423-428. May, 1926.

The article entitled "Relation of the Seed Coat of Feterita to the Rate of Water Absorption and Germination," by A. F. Swanson, appears in the Journal of the American Society of Agronomy 18 (No. 5): 428-432, fig. 1. May, 1926. (Cooperation between the Office of Cereal Crops and Diseases and the Kansas Agricultural Experiment Station.)

PROJECT REPORTSWESTERN WHEAT INVESTIGATIONS

(J. Allen Clark, Agronomist in Charge, and K. S. Quisenberry, Associate Agronomist)

Uniform Winter Hardiness Nursery

The uniform winter hardiness nursery was sown at 26 experiment stations in the northern United States and in Canada in the fall of 1925. The nursery was slightly enlarged this year by including six new hybrid strains which had shown considerable promise at Dickinson, N. Dak., and Moccasin, Mont.

The following table presents the data obtained to date. No station reported total killing this year. Six stations, namely, Manhattan, Hays, and Colby, Kans., Lincoln, Nebr., Havre, Mont., and Ottawa, Ontario, reported no killing. The data from Pullman, Wash., and Ithaca, N. Y., are not included in the average since at these stations killing effects are different from those at other stations. The last column of the table gives the rank of the varieties for hardiness based on the average of the data from 18 stations reporting partial killing.

The most hardy varieties this year are Turkey X Minessa, C. I. No. 8028, Kanred X Buffum No. 17, C. I. No. 8030, Minhardi, Buffum No. 17, and Kanred X Minhardi, C. I. No. 8031, in order named. It is of considerable interest to note that two new hybrid strains are slightly more hardy than Minhardi and Buffum No. 17. This is the first year since the experiment was started that any variety or strain has exceeded both Minhardi and Buffum No. 17 in hardiness. This gives some indication as to the possibility of obtaining more hardy wheats by hybridization.

Continued

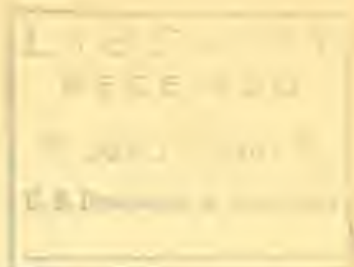
Class and Variety		Survival (per cent)														
C.I.	No.	State or Hybrid No.	Boze- man, Mont.	Mocca- sin, Mont.	Havre- man, Wash.	Pull- man, Wash.	Ithaca- man, Mont.	Ste. man, Mont.	N. Y. man, Mont.	Arne de Bellevue	wa, Onta- rio	bridge- Alber- ta	sholm, Alber- ta	Clare- Alber- ta	Edron- berta	Saskatch- ewan, Saska- toon
Hard Red Winter																
Kharkof	:1442:		90:	86:	100:	74:	25:	8:	100:	98:	85:	82:	52			
Montana No. 36	:5549:	Mont. 36	93:	86:	100:	77:	17:	6:	100:	99:	98:	82:	56			
Kanred	:6700:		51:	81:	100:	66:	22:	10:	100:	100:	67:	85:	57			
Turkey (Sel.)	:6152:	Minn. 1488	94:	94:	100:	71:	18:	62:	100:	100:	72:	83:	63			
Nebraska No. 60	:6250:	Nebr. No. 60	96:	78:	100:	74:	19:	51:	100:	100:	65:	85:	56			
Beloglina	:1543:		93:	93:	100:	65:	17:	54:	100:	99:	70:	88:	72			
Beloglina	:1667:		91:	90:	100:	70:	24:	25:	100:	99:	77:	88:	73			
Blackhull	:6251:		92:	76:	100:	68:	20:	1:	100:	99:	75:	87:	7			
Newturk	:6935:	166B1-6	90:	85:	100:	78:	24:	17:	100:	97:	68:	88:	51			
Iobred	:6934:	Iowa 1949	90:	89:	100:	62:	19:	29:	100:	99:	80:	87:	43			
Malakof (Sel.)	:6680:	Wisc. 11.825	93:	97:	100:	63:	14:	36:	100:	97:	78:	85:	46			
Kharkof (Sel.)	:6938:	M. C. 2212	94:	94:	100:	64:	14:	76:	100:	99:	88:	92:	79			
Minard	:6690:	Minn. 2199	98:	96:	100:	69:	9:	68:	100:	98:	63:	90:	65			
Padui	:6153:	Minn. 1491	97:	98:	100:	81:	7:	64:	100:	97:	77:	90:	60			
Minturki	:6155:	Minn. 1507	99:	92:	100:	72:	5:	59:	100:	98:	57:	90:	76			
"Tenmarq"	:6936:	Kans. No. 439	91:	75:	100:	72:	8:	17:	100:	98:	58:	87:	20			
"Kanred"	:6937:	Kans. No. 440	90:	72:	100:	70:	11:	15:	100:	98:	78:	88:	25			
PLC68 X Preston	:8027:	Kans. No. 446	92:	76:	100:	77:	5:	13:	100:	98:	77:	88:	36			
Kanred	:5146:	Kans. No. 2461	90:	72:	100:	84:	7:	17:	100:	98:	58:	93:	41			
Turkey X Minessa	:8028:	1950A9-14-4	97:	100:	100:	87:	9:	73:	100:	99:	72:	98:	66			
Kanred X Buffum No. 17	:8030:	1910CB1-33-4	95:	99:	100:	87:	18:	75:	100:	96:	58:	98:	59			
Kanred X Minhardi	:8031:	1910G3-87-11	93:	100:	100:	73:	6:	73:	100:	99:	48:	97:	68			
Kanred X Minturki	:8032:	1910406-14-8-6	92:	91:	100:	95:	11:	30:	100:	99:	53:	95:	34			
Minturki X Beloglina-Buffum	:8033:	19115A7-30-5	93:	92:	100:	86:	8:	82:	100:	99:	47:	95:	65			
Minhardi X Minturki	:8034:	19124A1-3-16	96:	98:	100:	82:	6:	83:	100:	99:	43:	97:	64			
Soft Red Winter																
Buffum No. 17	:3330:		95:	94:	100:	70:	3:	92:	100:	100:	70:	90:	76			
Minhardi	:5149:	Minn. 1505	93:	97:	100:	73:	4:	91:	100:	97:	73:	93:	71			
Odessa	:6151:	Minn. 1471	91:	90:	100:	58:	2:	92:	100:	99:	72:	95:	62			
Harvest Queen	:6199:	Kans. 19	88:	82:	100:	81:	2:	5:	100:	99:	92:	67:	17			
Fulcaster	:6471:	Kans. 317	91:	53:	100:	not :	5:	Tr :	100:	98:	65:	48:	4			

Class and Variety	C.I. No.	State or Hybrid No.	Indian Head, Saskatoon	Average: *of 18 Stations	Rank	Survival (per cent)
Hard Red Winter						
Kharkof	1442:		28:	56.7:	21:	
Montana No. 36	5549:	Mont. 36	40:	58.0:	19:	
Kar...ont	6700:		33:	55.8:	22:	
Turkey (Sel.)	6152:	Minn. 1438	53:	64.7:	14:	
Nebraska No. 60	6250:	Nebr. No. 60	56:	59.7:	17:	
Beloglina	1543:		42:	64.9:	13:	
Beloglina	1667:		35:	63.9:	15:	
Blackhull	6251:		5:	44.9:	29:	
Newturk	6935:	166B1-6	36:	59.2:	18:	
Iobred	6934:	Iowa 1949	35:	56.9:	20:	
Malakof (Sel.)	6680:	Wisc. 11.825	47:	62.6:	16:	
Kharkof (Sel.)	6938:	M. C. 2212	69:	68.3:	6:	
Minard	6690:	Minn. 2199	59:	64.9:	12:	
Padui	6153:	Minn. 1491	68:	65.0:	11:	
Minturki	6155:	Minn. 1507	70:	66.1:	10:	
"Tomard"	6936:	Kans. No. 439	5:	46.8:	27:	
"Kanard"	6937:	Kans. No. 440	10:	46.5:	26:	
PL668 X Preston	8027:	Kans. No. 446	9:	50.7:	25:	
Karred	5146:	Kans. No. 2401	12:	52.4:	24:	
Turkey X Minessa	8028:	1950A9-14-4	75:	70.5:	1:	
Karred X Bufu. No. 17	8030:	1910CB1-33-4	69:	70.4:	2:	
Karred X Minhardi	8031:	1910203-87-11	54:	63.7:	5:	
Karred X Minturki	8032:	1910406-14-5-5	27:	55.1:	23:	
Minturki X Beloglina-Bufu.	8033:	19115A7-30-5	72:	67.8:	7:	
Mirhardi X Minturki	8034:	19124A1-3-16	62:	67.6:	8:	
Soft Red Winter						
Bufu. No. 17	3330:		84:	69.7:	4:	
Mirhardi	5149:	Minn. 1505	70:	70.4:	3:	
Oaessa	6151:	Minn. 1471	63:	66.2:	5:	
Harvest Queen	6199:	Kans. 19	6:	46.3:	28:	
Falaster	6471:	Kans. 317	4:	37.9:	30:	

*The following stations are excluded: Manhattan, days and Colby, Kans., Lincoln, Nebr., and Colby, Mont., and Ottawa, Ontario, where no killing occurred, and Pullman, Wash., and Ithaca, N. Y., where killing effects differed from those at other stations.



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CEREAL COURIER

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Bureau of Plant Industry, U. S. Department of Agriculture
(NOT FOR PUBLICATION)

Vol. 18

No. 13

June 10, 1926
Personnel (June 1-10) and Field Station (May 16-31) Issue

PERSONNEL ITEMS

Dr. Carleton R. Ball, senior agronomist in charge, left Washington June 4 for a six-weeks' tour of the States in the barberry eradication area. His first stop was at Urbana, Ill. He will be at Ames, Iowa, from June 10 to 14.

J. Allen Clark, agronomist in charge of western wheat investigations, left Washington June 1 for an extended trip in the interests of western wheat investigations. Mr. Quisenberry, associate agronomist in western wheat investigations, will meet Mr. Clark at various points where wheat-breeding nurseries are maintained to help in the study of varieties.

F. A. Coffman, associate agronomist in oat investigations, returned on June 7 from the South where he studied cooperative oat experiments and conferred with State experiment station officials.

Oscar K. Ditzang was appointed June 9 to assist with cereal experiments at Manhattan, Kans., in cooperation with the Kansas Agricultural Experiment Station.

Dr. Harry V. Harlan, senior agronomist in charge of barley investigations, will leave Washington about June 12 for Aberdeen, Idaho, to study and harvest barleys in the cooperative nursery at the Aberdeen Substation. Miss Mary L. Martini, assistant botanist in barley investigations, will assist in the studies.

L. D. Hutton, associate pathologist in barberry eradication, left Washington June 5 for a seven-weeks' trip in the States of the barberry-eradication area.

Dr. A. G. Johnson, senior pathologist in charge of cereal-disease investigations, and Dr. F. E. Kempton, associate pathologist in charge of barberry eradication, were in Riverton, N. J., on June 2 to 4, inclusive, to inspect barberry bushes that had been inoculated with stem rust for experimental purposes. They also conferred with the assistant landscape gardener of the Sesqui-Centennial International Exposition, Philadelphia, and arranged for the planting of an educational demonstration garden, showing harmful and harmless barberry bushes.

Richard Laubengayer was appointed agent, effective June 1, to assist with experiments in cereal breeding investigations at Ithaca, N. Y., in cooperation with the Cornell University Agricultural Experiment Station.

John H. Martin, associate agronomist in charge of grain-sorghum and broom-corn investigations, will leave Washington, D. C., June 12 for points in Oklahoma, Texas, and Kansas to investigate the use of combine harvesters in threshing small grains.

Mr. Martin, who has just completed graduate studies at the University of Minnesota, has been elected to membership in three honorary societies, namely, Sigma Xi, Gamma Sigma Delta, and Alpha Zeta.

MANUSCRIPTS AND PUBLICATIONS

28 A manuscript entitled "The Control of Sorghum Kernel Smut and the Effect of Seed Treatments on the Vitality of Sorghum Seed," by C. O. Johnston and L. E. Melchers, was submitted June 4 for publication as a bulletin of the Kansas Agricultural Experiment Station in Cooperation with the Office of Cereal Crops and Diseases.

Galley proof of article entitled "Intergeneric Hybrids in Aegilops, Triticum, and Secale," by C. E. Leighty, W. J. Sando, and J. W. Taylor, for publication in the Journal of Agricultural Research, was read June 9.

FIELD STATION CONDITION AND PROGRESS

HUMID ATLANTIC COAST STATES (South to North)

GEORGIA

State College of Agriculture, Athens (Cereal Agronomy, R. R. Childs)
(May 28)

Seed from the three new selections of Fulghum oats received from the Arlington Experiment Farm last fall has been harvested. Two of these selections are slightly earlier than the selection of Fulghum that has been grown at the Georgia State College of Agriculture for several years. Winter Fulghum is maturing somewhat later than Appler, and apparently there is a great deal of variation in this Winter Fulghum strain. Most of the oat varieties in the experimental plats have been harvested and fairly good yields will be obtained from them this year.

VIRGINIA

Arlington Experiment Farm, Rosslyn (Small Grain Agronomy, J. W. Taylor)

Arlington Experiment Farm, Rosslyn (Corn Breeding, F. D. Richey)

Arlington Experiment Farm, Rosslyn (Cereal Smuts, W. H. Tisdale)

Arlington Experiment Farm, Rosslyn (Virus Diseases, R. W. Webb)

Arlington Experiment Farm, Rosslyn (Cereal Bacterial Diseases, C. S. Reddy)

NEW YORK

Cornell University Agricultural Experiment Station, Ithaca (Cereal Breeding, H. H. Love) (June 2)

The weather for the past few weeks has not been very favorable for either fall sown or spring sown grain. It has been rather dry and fairly cool. The drought was broken by a good rain on the night of May 30 and more showers followed on the 31st and on June 1st. Oats and barley in the plats have started off well, however, and while they have not made a rapid growth they are fairly uniform. With these rains and the present warm weather, there should be very rapid development of small grains.

As has been stated earlier, wheat is in very poor condition. We have the poorest prospect in connection with our experimental work that we have ever had. We shall not be able to obtain comparative yields but, of course, shall have some very valuable information on winter hardiness. Wheat in the vicinity of Ithaca is very spotted. On some fields severe winterkilling has occurred and on others a fair stand can be reported.

A number of oat and barley experiments have been sown in various parts of the State. Several of the selections made from the crosses between Cornellian oats and some of our best white-kernelled types have been sown in two important centers in the State. A large number of new wheat and oat hybrids have been made in the greenhouse this spring and seed of these is now ripe. In addition to the material grown in the greenhouse for making hybrids, Dr. Dorsey also has grown a lot of plants from which he has collected material for cytological studies.

Mr. W. E. Craig left on May 30 to visit various cooperating western stations and to harvest wheat in the cooperative nursery at Davis, Calif.

Mr. McConkey of Guelph, Ontario, visited the plats on May 20.

Mr. J. B. Griffing, who has charge of rural education and cotton improvement at the University of Nanking, Nanking, China, and who has been doing special work here for the last year, is leaving again for China. Mr. R. M. Lewis of Kaifeng, who will have charge of our experiments at Kweitch, China, has also been here for the past year taking up special work, and is leaving to spend the summer in Canada before returning to China.

HUMID MISSISSIPPI VALLEY STATES (South to North)

LOUISIANA

Rice Experiment Station, Crowley (Rice Agronomy, J. M. Jenkins) (June 2)

The weather was fair during the greater part of May. The total precipitation of 5.73 inches was recorded mainly in the first 12 days. During the last two weeks of the month the dry, warm weather which followed heavy rains affected the soil so that it became very hard. This soil condition made seed-bed preparation rather difficult and in some cases it was impossible to obtain a smooth seed-bed.

The seeding of rice on the station was completed May 29. The plats that were sown about the middle of the month are up to a good stand. The plats which were sown later in rather cloddy soil will not germinate completely until after rain has fallen.

The flax varieties are maturing nicely, and some will be ready for harvest in the first week of June.

The seeding of rice in southwestern Louisiana went forward rapidly during May, and in most sections seeding has been completed. Many rice fields in Acadia Parish have been submerged. Irrigation plants are operating day and night. In the main, the fields are rather clean. Red rice seems less abundant than in past years, owing perhaps to the excessively dry weather of the past two years.

Now that the rice crop is nearly sown, many farmers are turning their attention to the planting of soybeans.

Prof. W. R. Dodson, Director of Experiment Stations, and Prof. W. R. Perkins, Director of Extension, Louisiana State University, were visitors at Crowley on May 17.

Agricultural Experiment Station, Baton Rouge (Corn Breeding, H. F. Stoneberg)

MISSOURI

Agricultural Experiment Station, Columbia (Cereal Agronomy, C. A. Helm)

TENNESSEE

Agricultural Experiment Station, Knoxville (Corn Breeding, L. S. Mayer)

IOWA

Agricultural Experiment Station, Ames (Oat Breeding, L. C. Burnett)

Agricultural Experiment Station, Ames (Corn Breeding, M. T. Jenkins)

Agricultural Experiment Station, Ames (Crown Rust of Oats, S. M. Dietz)

Iowa State College, Ames (Barberry Eradication, M. A. Smith)

ILLINOIS

Funk Bros. Seed Co., Bloomington (Corn Root, Stalk and Ear Rots, J. R. Holbert)

Box 72, Post Office Building, Urbana (Barberry Eradication, G. C. Curran)
[June 2]

Lesson plans and material for the study of the common barberry and its relation to stem rust were sent this spring to a number of rural schools in Illinois. Some good results have been obtained already from this educational method of spreading the barberry and rust story. This is illustrated by the cooperation received from one rural school in LaSalle County. Barberry material was displayed in the school and a little girl about ten years old immediately became interested. The next day while passing through a wooded area, she found a common barberry bush growing at least a mile from the nearest road on the banks of a creek in an almost inaccessible spot. It was an enormous bush 10 to 12 feet high and moderately rusted. There also were a number of seedlings in the vicinity of the large bush. The original survey of LaSalle County was completed in 1923 and a resurvey was made in 1924. In all probability this bush still would be undiscovered had this school girl not found it.

About 75 per cent of the original survey of Madison County has been completed. Plans are being made to finish the original survey of Pike and Madison counties and to survey Calhoun, Jersey, and Bond counties in June.

Rusted barberberries have been found near Patchtown, Calhoun County. This is the most southern point in Illinois where barberberry infection has been found this year.

INDIANA

Purdue University Agricultural Experiment Station, La Fayette (Corn Rots and Metallic Poisoning, G. W. Hoffer)

Purdue University Agricultural Experiment Station, La Fayette (Leaf Rusts, H. S. Jackson and E. B. Mains)

Purdue University College of Agriculture, La Fayette (Barberry Eradication, W. E. Leer)

OHIO

Ohio State University, College of Agriculture, Columbus (Barberry Eradication, J. W. Baringer) (May 31)

The search for the early occurrence of rust on barberberries which was carried on in April was continued during the first half of May. No rust was found on barberberries in April; the infections observed in May are noted in the following table.

Date of Observation	County	Location	Nearest City	Results	Name of observer
May 2	Clermont	Batavia		No rust	John W. Baringer
" 3	Montgomery	Dayton		Pycnia	" " "
" 4	Franklin	Columbus		"	" " "
" 6	Logan	Zanesfield		"	" " "
" 8	Shelby	Sidney		"	" " "
" 8	Preble	Lewisburg		"	" " "
" 9	Montgomery	West Carrollton		"	" " "
" 9	Clark	New Carlisle		"	" " "
" 13	Trumbull	Mesopotamia		"	Beck and Violet
" 14	Franklin	Columbus		Aecia	Mrs. Maye Joice
" 15	Lorain	Amherst		Pycnia	John W. Baringer

As indicated, rust infection on barberberries became general over various parts of Ohio in the first two weeks of May, but infection at no time was abundant at any of the places at the time observations were made. Last year the first infection on barberberries in Ohio was made on April 13 near Dayton.

A row of Portage wheat is growing within one foot of the barberries upon which aecia were found on May 14 at Columbus, but no stem-rust uredinia could be found on it on May 30. This wheat is now in bloom. It is much farther advanced than wheat on farms in this vicinity.

MICHIGAN

Agricultural College, East Lansing (Barberry Eradication, W. F. Reddy)

WISCONSIN

Agricultural Experiment Station, Madison (Wheat Scab, J. G. Dickson)

Agricultural Experiment Station, Madison (Virus Diseases, H. H. McKinney)

Department of Agriculture, State Capitol Annex, Madison (Barberry Eradication, W. A. Walker)

MINNESOTA

Agricultural Experiment Station, University Farm, St. Paul (Wheat Breeding, O. S. Aamodt)

Agricultural Experiment Station, University Farm, St. Paul (Stem Rust, E. C. Stakman)

Agricultural Experiment Station, University Farm, St. Paul (Flax Rust, A. W. Henry)

Agricultural Experiment Station, University Farm, St. Paul (Barberry Eradication, L. W. Melander)

GREAT PLAINS AREA (South to North)

OKLAHOMA

Woodward Field Station, Woodward (J. B. Sieglinger) (June 1)

The weather of the last half of May gradually became warmer and drier. At present a rain would be of benefit to wheat and farming in general. Wheat is heading and filling, but there is not enough moisture to enable it to fill well.

The earlier of the winter barleys in the nursery are ripening.

On May 26 and 27 a 12-acre field was seeded to kafir. A number of new kafirs were sown in strips at least 4 rows wide so that yield data may be obtained. The field is used to produce silage crops, but some data also may be obtained from the crop.

Sunrise and Reed kafir were seeded on May 23 in the rate-of-seeding experiment, but from present indications they will have to be reseeded, because of damage by moles. Trapping has not been very successful in this block, as the moles seem to make new burrows instead of traveling the old ones.

The fourth date of seeding was made today.

Maximum temperature for the last half of May, 91 degrees on the 23th and 31st; minimum, 49 degrees on the 19th. Precipitation for May, 2.23 inches, most of which was recorded in the first half of the month.

KANSAS

Agricultural Experiment Station, Manhattan (Cereal Breeding, D. D. Hill)

Agricultural Experiment Station, Manhattan (Corn Breeding, A. M. Brunson)

Agricultural Experiment Station, Manhattan (Wheat Foot Rots, Hurley Fellows)

Agricultural Experiment Station, Manhattan (Wheat Leaf Rust, C. O. Johnston)

Hays Branch Experiment Station, Hays (Cereal Agronomy, A. F. Swanson)
(June 1)

No rain has fallen here from the last two weeks, so that the moisture from the 1-inch precipitation of May 15 is about exhausted. Wheat in the immediate vicinity of Hays, on the general farm, and on the experimental projects, is holding out remarkably well, considering the season. The surface moisture is all gone so that the plants are drawing on the deeper reserve moisture. One good heavy rain immediately would be of tremendous help. The wheat kernels are now fully formed and in the milk stage. Oats and barley headed about May 26; the crop will be rather short in growth, however.

A very good stand of corn and sorghum was obtained on the May 20 date of seeding. These crops are now making good growth. All barleys and oats in the nurseries have headed. A number of barleys from a group imported several years ago have proved to be very early. Most of them are of a dwarf nature, however, and probably will not be adapted to this region. Other selections are of good height but a day or two later in heading.

A visitor this morning reported poor wheat prospects within a radius of a few miles out of Hays to 120 miles to the northeast. Wheat prospects are poor in a number of the northern tier of counties in Kansas. In a few sections wheat has been given up entirely. Good rains recently in the south-central section of the State have been of much help.

COLORADO

Agricultural College, Ft. Collins (Barberry Eradication, E. A. Lungren)

NEBRASKA

North Platte Substation, North Platte (Cereal Agronomy, G. F. Sprague)
(June 1)

The weather continues hot and dry. All small-grain crops which survived the period of severe soil blowing are now burning badly.

The winter-wheat varieties were practically killed by soil blowing. The land has been disked and seeded to proso varieties. Spring wheat, oats, and barley varieties are heading, most of them being a foot or less in height.

Corn is in excellent condition, and but little cut-worm injury is noticeable as yet. Farmers in this vicinity have reported considerable damage; in one instance a 100-acre field was completely killed. Corn is receiving its first cultivation and will be thinned next week.

The maximum temperature for the month of May was 97 degrees and the minimum 19 degrees. Evaporation for the month was 7.509 as compared with a 19-year average of 6.37. The normal rainfall from January 1 to May 31 is 6.95 inches, while 2.65 inches have been recorded for this period.

College of Agriculture, University Farm, Lincoln (Barberry Eradication,
A. F. Thiel)

WYOMING

College of Agriculture, University of Wyoming, Laramie (Barberry Eradication) No work under way.

SOUTH DAKOTA

College of Agriculture, Brockings (Barberry Eradication, R. O. Bulger)

NORTH DAKOTA

Agricultural Experiment Station, Agricultural College (Flax Diseases,
L. W. Boyle)

Agricultural Experiment Station, Agricultural College (Barberry Eradication,
G. C. Mayoue)

Dickinson Substation, Dickinson (Cereal Agronomy, R. W. Smith) (June 1)

Another splendid rain fell in this area on May 27 and 28, supplying 1.41 inches of water. This was the second rain of importance in May, bringing the total precipitation for the month up to about 2.80 inches, which is slightly above normal.

Winter rye is beginning to head, and winter wheat is making satisfactory growth, although the stand is thin. All spring grains are in good condition except corn which has grown but little since emerging, because of the cool weather that has prevailed since the first week in May. There was no killing frost in May, although a very light frost was observed one morning.

Seeding in this county is nearly completed, with the exception of corn and flax. Reports indicate that the acreage of corn in this part of the State will be unusually large this year.

Seeding of cereal crops at the Substation is completed with the exception of the proso nursery and one date of seeding in the flax-tillage and date-of-seeding experiment.

Northern Great Plains Field Station, Mandan (Flax Breeding, J. C. Brinsmade, Jr.) (June 3)

The flax classification nursery was sown on May 20, and emerged with good stands May 26. The fourth planting of the flax date-of-seeding experiment, and the flax varietal plats were sown May 21 and emerged with good stands May 28. The flax nursery plantings on flax-sick soil were made May 22. Part of these plantings came up in spots in about a week, but the remainder of the seed in nearly every row has so far failed to germinate. The flax F_2 hybrids from F_1 plants grown in the greenhouse at Arlington Experiment Farm, Virginia, the past winter, were sown May 29. Seed from plants just received from San Antonio, Tex., was sown to-day.

Crops in general look unusually well, but will soon be suffering from want of moisture unless we have rain.

Ralph W. May, in charge of cooperative cereal agronomy at the Judith Basin Substation, Moccasin, Mont., visited the station June 2.

The weather has been variable for the last half of May. There have been a number of light showers amounting to 0.50 inch. The only rain of importance-- 0.34 inch--was recorded on May 21. Temperatures have varied from just above the freezing point to exceptionally warm for this time of year. Maximum temperature for the period was 97 degrees on May 24; minimum, 33 degrees May 18.

Northern Great Plains Field Station, Mandan (Cereal Agronomy, E. R. Ausemas)

MONTANA

Judith Basin Substation, Moccasin (Cereal Agronomy, R. W. May) (May 31)

The precipitation this spring was much below average, but it has been so well distributed that crop prospects are surprisingly good at this date. However, the growth and development of all crops has been retarded by lack of moisture and cool weather. Crops are probably 10 days or two weeks behind in the usual amount of growth. Early-sown winter wheat is just entering the boot stage of development while late-sown winter wheat is very backward.

The earliest spring grain is not over 3 or 4 inches high. Because of the dry, cool weather and the slow growth of weeds, work under the Cereal Project is much farther advanced at this date than usual. Since the last report all spring seeding has been completed, all plats and nursery rows have been trimmed, and the alleys between the winter wheat plats have been weeded.

The seeding of spring grain is nearly completed in this vicinity. Many farmers have even finished plowing land for summer fallow. Nearly all seeding and planting on the experiment station was completed last week, and the greater part of the plowing for summer fallow is done. Work is farther advanced than usual because of soil and weather conditions.

The precipitation recorded in May was 1.91 inches, as compared to 2.54 inches as the normal for the month. Precipitation has been below average each month so far this year. The precipitation recorded since January 1 is 3.65 inches, as compared to 5.75 inches as normal for the same months. Maximum temperature recorded in May was 77 degrees on May 1 and 23, and the minimum temperatures were 31 and 32 on May 7 and 31.

State College of Agriculture, Bozeman (Barberry Eradication, W. L. Popham)

WESTERN BASIN AND COAST AREAS (North to West and South)

IDAHO

Aberdeen Substation, Aberdeen (Cereal Agronomy, G. A. Wiebe)

Agricultural Experiment Station, Moscow (Stripe Rust, C. W. Hungerford)

WASHINGTON

Agricultural Experiment Station, Pullman (Cereal Breeding, E. F. Gaines)
(May 25)

Prospects for a good wheat crop in the Palouse country are much improved. We have had cool, cloudy weather throughout May with precipitation 7 days out of 25. The total precipitation has not been great--0.36 inch--but the cool, cloudy weather has stimulated root growth and the color is very good.

Winter barleys are in head. Rye is beginning to bloom and some of the earlier varieties of fall-sown wheat, like the Federations, also are heading out. There has been very little winterkilling, and the nursery looks especially well. A preliminary examination of the smut nursery indicates a heavy infection from the inoculated seed. We have an unusually good stand this year of the hull-less oat selections, especially the crosses between Large Hull-less and Red Rustproof, which exhibited considerable sterility last year.

We are fortunate in obtaining a good group of workers for the summer. Most of them have had previous experience in the cereal nursery.

OREGON

Sherman County Branch Station, Moro (Cereal Agronomy, D. E. Stephens)
(May 29)

Cool, cloudy weather prevailed in the Columbia River Basin of Oregon almost the entire month of May. In the first week of May a rainfall of 0.56 inch was recorded at Moro. There has been no rain since the 8th. The highest temperature for the month was 81 degrees on the 12th and the lowest 51 degrees on the 25th.

Grain crops are badly in need of moisture. On the shallow soils in southern Sherman County grain has been severely damaged by drought, and many farmers also are complaining of damage from frost. On the deeper soil winter wheat is still in fair condition; it would be greatly benefited by a rain, however. At the station the average soil moisture content in the first 6 feet is now approximately 7 per cent. After harvest the soil contains about 5 per cent moisture. With favorable weather, the 2 per cent moisture left in the soil will mature some kind of a crop, but unless it rains soon the yields of grain probably will be low and the quality poor.

Turkey wheat is now fully headed and some of the spring grains have started to head. Sunset was the first spring wheat in the varietal experiment to show heads. The spring grains have not yet begun to show drought injury, but probably will do so soon if the weather continues dry.

CALIFORNIA

Biggs Rice Field Station, Biggs (Rice Agronomy, J. W. Jones) (June 1)

The weather of the last half of May has been favorable for the germination and growth of rice. The station rice sown broadcast and submerged from May 5 to 10 is emerging and the indications are that the stands on most plats will be satisfactory. The varietal plats sown with a drill and the nursery which are being flooded and drained at frequent intervals have emerged with good stands.

A good deal of the commercial rice crop is being sown and irrigated a week to 10 days later than usual.

On May 17, J. P. Conrad with a class in Agronomy from the University of California visited the station.

Prof. Takuji Koyama, of the Department of Agriculture, Kyushu Imperial University, Fukuoka, Japan, was a station visitor on May 20.

University Farm, Davis (Cereal Agronomy, V. H. Florell) (May 29)

Since May 15 the weather has been moderately cool on the whole, although there have been several uncomfortably warm days. The most recent were May 27 with a temperature of 92 degrees and May 28 with a temperature of 98 degrees. Most of the grains have had opportunity to fill well and also now they are ripening rapidly.

All barleys in the plats, with the exception of the Sacramento variety, are fully ripe. It also should be ripe in a few days. As reported previously most varieties of barley are badly lodged. A few varieties still are standing well, however. These are Sacramento, Atlas, and Smooth-Awn.

In the plat experiment with wheat those of Australian origin and several early hybrids are fully ripe. Since the last report wheats have become heavily infected with the common rusts. All varieties in the plats are more or less badly rusted with both P. triticina and P. graminis. However, Marquis is quite resistant as usual. Other varieties showing resistance are Kharkov and Alcalda (Sonora-Cedar, Calif. No. 873). Rust notes were taken on the wheat classification nursery today. The stem infection now going into the teliospore stage ranges from 10 to 50 per cent infection in susceptible varieties. Comparatively few of these varieties are relatively free from rust.

Oats also are ripening rapidly. Fulghum and Kanota are fully ripe, as are other early varieties in the nursery. Nearly all of the oat hybrids are fully ripe.

The Annual Cereal Day was held May 19. There were about 125 visitors who seemed to be very much interested. The varieties attracting most attention were Atlas (C. I. No. 4118), Smooth-Awn (C. I. No. 1367), and Sacramento barleys; Fulghum and Kanota oats, and Prof. Mackie's Quality Club hybrids.

Agricultural Experiment Station, Berkeley (Cereal Smuts, F. N. Briggs)

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Bureau of Plant Industry, U. S. Dept. of Agriculture
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Vol. 18

No. 14

June 20, 1926

Personnel (June 11-20) and Field Station (June 1-15) Issue

PERSONNEL ITEMS

A letter from Dr. C. R. Ball, senior agronomist in charge, written from Ames, Ia., on June 11 reports very satisfactory progress in the study of the barberry-eradication situation.

"By 10:30 on Monday night, June 7, Mr. Curran and I had covered 400 miles in northeastern Illinois during a terrific northwest gale which was moving scil rapidly and destructively. Corn looked much better than I expected, while some of it had just been planted and the oldest was just getting its first cultivation. The stands were much better than I expected to see. I did not get quite as far south as Bloomington where, Holbert writes, the first two or three days of June produced severe dust storms very destructive to corn. However, Sunday and Monday, June 6 and 7, were bad enough, for dirt of every kind and color was moving and there was burying of parts of some fields and blowing out of others. It does not seem able to rain.

"On the morning of Wednesday, June 9, the Iowa car with Mr. Smith and Mr. Summers picked me up at Waterloo and we drove to Clinton that day. Yesterday morning we went up the river to Sabula and yesterday afternoon we drove from Clinton here. Corn in Iowa in general is much farther along than in northern Illinois. Nearly all of it had been plowed once. In this State also, stands are good with the exception of an area around Belle Plaine. Light rains fell yesterday and according to the papers this morning were fairly general over the State. Both States certainly need moisture. Oats in Illinois are vigorous but late. In Iowa they do not look quite so well.

"In the study of the barberry problem I have gotten exactly what I wanted. I saw the present and future problem at first hand in the Illinois River section of that State and along the bluffs of the Mississippi and the timbered flood plain of the Wapsipinicon. Eternal vigilance and persistence are the solution."

Dr. Ball plans after leaving Iowa to proceed to Manhattan, Kans., from which point, in company with officials of the Kansas Agricultural Experiment Station, he will make an auto trip through southwestern Kansas and adjacent territory.

In this area, which has been considered too dry and uncertain for growing wheat, a large acreage is now being broken out, it being claimed that the tractor and combine, by reducing expenses, will make farming profitable whereas before it was considered impossible. It is Dr. Ball's intention to study the situation at first hand.

Arthur Bartel was appointed on June 11 to assist with cooperative experiments in cereal production and improvement at the Aberdeen Substation, Aberdeen, Idaho, under the direction of G. A. Wiebe.

B. B. Bayles, junior plant breeder at the Sherman County Branch Station, Moro, Oreg., received the degree of Master of Science in absentia at the June commencement exercises of the Kansas State Agricultural College.

C. E. Chambliss, associate agronomist in charge of rice investigations, went to New York City on June 14 to confer with representatives of the United States Department of Commerce and the New York Custom House regarding information on the importation of rices. At Camden, N. J., Mr. Chambliss inspected the plant of the Campbell Soup Company. He returned to Washington on June 18.

LeRoy E. Compton, assistant pathologist in cooperative cereal-disease experiments at the Purdue University Agricultural Experiment Station, was awarded the degree of Master of Science in Agriculture by Purdue University on June 15. The subject of his thesis is "Factors Influencing the Germination of Urediniospores." Mr. Compton also was elected to the scientific honor society of Sigma Xi.

A. C. Dillman, associate agronomist in charge of flax investigations, left Washington June 14 for St. Paul, Minn., to study varieties in the cooperative flax classification nursery. After July 1 he will proceed to Mandan, N. Dak., and Bozeman, Mont., to study cooperative flax experiments and to make field observations.

Dr. Hurley Fellows, assistant pathologist in charge of cooperative investigations of wheat footrots at Manhattan, Kans., arrived in Washington June 20 from Lincolnton, N. C., where he made observations on wheat take-all experiments.

Dr. G. N. Hoffer, pathologist in charge of investigations of corn rots and metallic poisoning, in cooperation with the Purdue University Agricultural Experiment Station at LaFayette, Ind., came to Washington on June 11 after attending the annual meeting of the National Fertilizer Association at White Sulphur Springs, West Va. He conferred with officials of the Office concerning his investigations.

Laurence C. Jones, of Nebraska, was appointed on June 16 to assist with cooperative cereal experiments at the North Platte Substation, North Platte, Nebr., under the direction of George F. Sprague.

Dr. C. E. Leighty, agronomist in charge of eastern wheat investigations, returned to Washington on June 19 from an extended trip in the western and southern States in the interests of wheat investigations.

R. W. Leukel, associate pathologist in charge of nematode investigations, will leave Washington on June 21 for Madison, Wis., where he will take final notes on periodic seedings of stripe-infected barley from treated and untreated seed. He also will harvest, thresh and obtain yield data on a series of plats sown with treated and untreated seed. Mr. Leukel will be in the field until about August 1.

Dr. E. B. Mains, agent in cooperative leaf-rust investigations at the Purdue University Agricultural Experiment Station, LaFayette, Ind., came to Washington on June 17 to make observations on leaf rust of wheat at the Arlington Experiment Farm and to confer with pathologists on cereal-disease experiments. En route from LaFayette to Washington, Dr. Mains also studied conditions at points in Tennessee and North Carolina as part of his annual spring tour of the southeastern States in connection with cooperative leaf-rust investigations. He reports having found only a moderate amount of leaf rust at Knoxville, Tenn., and Marshall, N. C., and only a trace at Swannanoa, N. C., and at the Arlington Experiment Farm.

M. N. Pope, associate agronomist in barley investigations, returned on June 15 from the western States where he had been harvesting and studying barley varieties in the cooperative nurseries. He reports that barley in the nursery at the United States Field Station, Sacaton, Ariz., was badly injured by hail but that enough seed for next year's seeding has been harvested. At Davis, Calif., barley in the nurseries was lodged to a large extent and consequently is not in very good condition. Early in June Mr. Pope made a 900-mile automobile trip in the San Joaquin Valley of California with V. H. Florell, associate agronomist, at Davis, Calif., to gather barley head selections and inspect commercial barley fields.

At Lincoln, Nebr., Mr. Pope found the barley nurseries in charge of Prof. F. D. Keim looking exceedingly fine.

Dr. E. R. Ranker, associate physiologist in corn-smut investigations, returned to Washington June 18 from points in Texas, Kansas, Missouri, Illinois, and Indiana in the interests of cereal smut experiments.

T. R. Stanton, agronomist in charge of oat investigations, left Washington on June 19, for an extended trip in the interests of oat investigations. Before going to Ames to assist in harvesting the classification and breeding nurseries at that place, Mr. Stanton will visit Columbia, Mo., Manhattan and Hays, Kans., Fort Collins, Colo., and North Platte and Lincoln, Nebr., arriving at Ames about July 1. From Ames he will go to St. Paul to attend the meeting of the Corn-Belt section of the American Society of Agronomy, to be held on July 15, 16, and 17. From St. Paul he will proceed westward to Aberdeen, Idaho, making stops at Fargo, Mandan, and Dickinson, N. Dak., and Moccasin and Bozeman, Mont. He will meet Mr. F. A. Coffman at Aberdeen where considerable time will be spent in harvesting and recording data on the large oat breeding and classification nurseries grown at that station. He will return to Washington about August 25.

Dr. W. H. Tisdale, pathologist in charge of smut investigations, went to Leesburg, Va., on June 17 to inspect wheat-smut control demonstrations conducted by the State Extension pathologist and the County Agent of Loudoun County. Mr. F. C. Meier, extension pathologist, of the Office of Cooperative Extension Work, and Mr. E. G. Boerner, in charge of grain inspection, Bureau of Agricultural Economics, accompanied Dr. Tisdale.

VISITORS

Dr. Ernest Dorsey, instructor in plant breeding at the Cornell University College of Agriculture, and agent in the cooperative cereal investigations, was an Office visitor on June 19. He was accompanied by Dr. Alois Tavčar, of Czechoslovakia, who is at Cornell University on a fellowship from the International Education Board, and Mr. Phipps, a graduate student from Australia.

Prof. Teikichi Fukushi, Professor of Botany, Tottori Agricultural College, Tottori, Japan, conferred with the pathologists of the office June 18. Prof. Fukushi spent last summer in post-graduate work in plant pathology at the University of Wisconsin and the past school year with Dr. B. M. Duggar at the Missouri Botanical Garden in connection with studies of tobacco mosaic. Prof. Fukushi expects to visit a number of educational institutions in the eastern States, including Cornell University, where he will be in attendance at the forthcoming International Congress of Plant Sciences, which convenes in August. After that he will proceed to Europe for similar stays at various educational institutions and then later return to Japan.

MANUSCRIPTS AND PUBLICATIONS

The article entitled "Further Experiments on the Control of Bunt of Wheat and the Smuts of Barley and Oats," by R. W. Leukel, appears in *Phytopathology* 16 (No. 5): 347-351. May, 1926.

The article entitled "Chemical Composition of Etiolated and Green Berberis Sprouts and their Respective Roots," by E. R. Schulz and N. F. Thompson, appears in the *Botanical Gazette* 81 (No. 3): 312-322. Illus. May, 1926.

The article entitled "The Moving Average as a Basis for Measuring Correlated Variation in Agronomic Experiments," by Frederick D. Richey, appears in the *Journal of Agricultural Research* 32 (No. 12): 1161-1175. June 15, 1926.

A note on "The Spacing of Grain Sorghums," by John B. Sieglinger, appears in the *Journal of the American Society of Agronomy* 18 (No. 6): 525. June, 1926.

Attention is again called to B. P. I. Memo. 154, dated July 16, 1925.

MEMORANDUM FOR HEADS OF OFFICES

Gentlemen:

A number of requests have been received in the current fiscal year asking that amendments be made to letters of authorization of the previous fiscal year, increasing the amount that may be expended thereunder. These amendments being received after the end of the fiscal year to which they apply, obviously the funds covered by the amendments must have been expended, the individuals incurring obligations beyond the amount covered by their letters of authorization; otherwise these amendments would be authorizing expenditures in one fiscal year of funds appropriated for the past fiscal year.

It is of the greatest importance that individuals having letters of authorization comply strictly with the terms of the letters, both as regards the authority included therein and the funds the letters make available.

It is requested that the attention of your employees be called to the importance of a careful study of and strict adherence to the terms of the letters of authority. Failure to do so will sooner or later cause embarrassment alike for the individuals affected and for the Bureau.

We have had a few cases where field employment under letter of authorization of employees on work coming within the classified service has exceeded the 30 days in any one year, as permitted by the Civil Service rules. This is a rule which can not be waived by the Department, and must be strictly adhered to. Unskilled laborers may be employed under letter of authorization for a period not to exceed 60 days in any one year.

Very sincerely,

Wm. A. Taylor

Chief of Bureau.

FIELD STATION CONDITION AND PROGRESS

HUMID ATLANTIC COAST STATES (South to North)

GEORGIA

State College of Agriculture, Athens (Cereal Agronomy, R. R. Childs)

VIRGINIA

Arlington Experiment Farm, Rosslyn (Small Grain Agronomy, J. W. Taylor)

Arlington Experiment Farm, Rosslyn (Corn Breeding, F. D. Richey)

Arlington Experiment Farm, Rosslyn (Cereal Smuts, W. H. Tisdale)

Arlington Experiment Farm, Rosslyn (Virus Diseases, R. W. Webb)

Arlington Experiment Farm, Rosslyn (Cereal Bacterial Diseases, C. S. Reddy)

NEW YORK

Cornell University Agricultural Experiment Station, Ithaca (Cereal Breeding, H. H. Love)

HUMID MISSISSIPPI VALLEY STATES (South to North)

LOUISIANA

Rice Experiment Station, Crowley (Rice Agronomy, J. M. Jenkins)

Agricultural Experiment Station, Baton Rouge (Corn Breeding, H. F. Stoneberg)

MISSOURI

Agricultural Experiment Station, Columbia (Cereal Agronomy, C. A. Helm)

TENNESSEE

Agricultural Experiment Station, Knoxville (Corn Breeding, L. S. Mayer)

IOWA

Agricultural Experiment Station, Ames (Oat Breeding, L. C. Burnett)

Agricultural Experiment Station, Ames (Corn Breeding, M. T. Jenkins)

Agricultural Experiment Station, Ames (Crown Rust of Oats, S. M. Dietz)

Iowa State College, Ames (Barberry Eradication, M. A. Smith)

ILLINOIS

Funk Bros. Seed Co., Bloomington (Corn Root, Stalk and Ear Rots, J. R. Holbert)

Box 72, Post Office Building, Urbana (Barberry Eradication, G. C. Curran)

INDIANA

Purdue University Agricultural Experiment Station, La Fayette (Corn Rots and Metallic Poisoning, G. N. Hoffer)

Purdue University Agricultural Experiment Station, La Fayette (Leaf Rusts, H. S. Jackson and E. B. Mains)

Purdue University College of Agriculture, La Fayette (Barberry Eradication, W. E. Leer)

OHIO

Ohio State University, College of Agriculture, Columbus (Barberry Eradication, J. W. Baringer)

MICHIGAN

Agricultural College, East Lansing (Barberry Eradication, W. F. Reddy)

WISCONSIN

Agricultural Experiment Station, Madison (Wheat Scab, J. G. Dickson)

Agricultural Experiment Station, Madison (Virus Diseases, H. H. McKinney)

Department of Agriculture, State Capitol Annex, Madison (Barberry Eradication, W. A. Walker)

MINNESOTA

Agricultural Experiment Station, University Farm, St. Paul (Wheat Breeding, O. S. Aamodt)

Agricultural Experiment Station, University Farm, St. Paul (Stem Rust, E. C. Stakman)

Agricultural Experiment Station, University Farm, St. Paul (Flax Rust, A. W. Henry)

Agricultural Experiment Station, University Farm, St. Paul (Barberry Eradication, L. W. Melander)

GREAT PLAINS AREA (South to North)

OKLAHOMA

Woodward Field Station, Woodward (Grain Sorghums, J. B. Sieglinger)
(June 16)

One good rain the first part of the month enabled us to seed most of the sorghums in moist soil. Recently the weather has become drier and hotter, apparently reaching its peak on the 15th, with a decidedly hot breeze from the south, and a maximum temperature of 106 degrees.

Wheat harvesting has started over Woodward County generally. This year's wheat yield will be the highest in the last ten years. There is quite an acreage of Blackhull wheat in the county.

Most of the sorghum and broomcorn plats have been seeded. The earlier dates have been thinned, and thinning of the kafir rates is under way.

Maximum temperature for first half of June, 106 degrees on the 15th; minimum, 56 degrees on the 5th. Precipitation, 1.68 inches.

KANSAS

Agricultural Experiment Station, Manhattan (Cereal Breeding, D. D. Hill)
(June 15)

Extremely dry conditions have existed at Manhattan since early May. The May rainfall of 1.5 inches was but one-third of the normal, and this fell in the early part of the month. There was no appreciable rainfall until June 14 when 0.4 inch was recorded. A heavy shower this morning soaked the ground but it came too late to help small grains.

Dry weather and a severe infestation of chinch bugs served to ripen grain prematurely. Wheat harvest was started on June 13, which is a week earlier than last season. Oats are maturing rapidly, and if warm weather continues the standard varieties, namely, Kanota, Fulghum, and Burt, will be ripe by June 19.

In company with Dr. C. E. Leighty, agronomist in charge of eastern wheat investigations, and C. O. Johnston, assistant pathologist at Manhattan, the writer visited the cooperative soft-wheat nursery on the farm of W. H. Shaeffer in southeastern Kansas on June 7. On that date this section of the State was well supplied with moisture, and the appearance of grain indicated a good yield.

The cooperative barley nursery at Colby was visited on June 13. Extremely dry conditions exist at Colby and many crops will be almost a complete failure. The writer, accompanied by B. F. Barnes, superintendent of the Colby Station, and A. F. Swanson, of the Hays Experiment Station, visited a barley project at Alton, Kans., and from there went to Hays. The cooperative barley nurseries at Hays and Colby are supplying much valuable data in regard to adaptation of barley varieties to Kansas conditions.

Agronomy Field Day at the Agronomy Farm, June 12, attracted more than 1,200 visitors, many of whom inspected the cereal nursery in the afternoon. More than the usual interest was evidenced in the nursery.

J. Allen Clark, agronomist in charge of western wheat investigations, and K. F. Quisenberry, assistant agronomist, were visitors in Manhattan on June 3 and 4.

Agricultural Experiment Station, Manhattan (Corn Breeding, A. M. Brunson)

Agricultural Experiment Station, Manhattan (Wheat Foot Rots, Hurley Fellows)

Agricultural Experiment Station, Manhattan (Wheat Leaf Rust, C. O. Johnston)

Hays Branch Experiment Station, Hays (Cereal Agronomy, A. F. Swanson)
(June 15)

The long drought which had extended over northwestern and north-central Kansas was generally broken on June 13, 14 and 15 by a number of local but heavy showers of rain. In a few localities no rain fell but large areas were covered. Cooler weather has prevailed. The precipitation for the last three days at Hays was approximately two inches; all row crops are now in excellent condition. The cooler weather will be of much help in filling the late wheat, and good yields are in prospect.

The early seeded fields of wheat are now ripe and harvest will be under way in this section just as soon as the ground dries. A number of the early selections of barley in the nursery were harvested today. There should be excellent yields of oats and barley in the varietal plats. Some of the best varieties of wheat probably will yield 25 bushels per acre. Wheat on early fall listed ground the second year after fallow gives indication of producing better yields than wheat sown directly on summer fallow. Usually the reverse has been true.

The writer made a trip by auto from Hays to Colby and east through some of the northern counties where the drought was most severe. A great deal of wheat will be produced from Hays to a point one hundred miles west. While the yield per acre will be only fair, the acreage is very large. There is considerable barley in this area. At a number of places in the north-central counties wheat, oats and barley are almost failures; but the prospects for corn have been greatly improved by recent rains.

Most of the sorghums have been thinned to a uniform stand and the first cultivation has been completed. Harvest is ten days ahead of the usual date so that there has been a considerable rush in keeping up with the work of the project.

COLORADO

Agricultural College, Ft. Collins (Barberry Eradication, E. A. Lungren)

NEBRASKA

North Platte Substation, North Platte (Cereal Agronomy, G. F. Sprague)
(June 15)

Four light showers totaling 1.16 inches of precipitation have been recorded for the period from June 1 to 15. Evaporation from a free water surface for the same period totaled 3.851. The maximum temperature was 96 degrees on the 13th and the minimum 47 degrees on the 14th.

The light showers have caused a little change in the crop outlook. Small-grain varietal plats are badly burned; some will yield nothing, others only a few bushels. In the nursery, winter wheat is badly damaged, but spring wheat, oats and barley are still in good condition.

The thinning of the corn plats has just been completed. Corn is a little backward because of dry weather at planting time. It has been making very rapid growth in the last few days, however.

The first leaf rust pustules were found on June 8, and the first stem rust pustules on June 10. Neither form of rust is very abundant as yet, nor is it likely that either will do much damage. Light infections of loose smut of wheat and oats smut also have been noticed.

College of Agriculture, University Farm, Lincoln (Barberry Eradication,
A. F. Thiel)

WYOMING

College of Agriculture, University of Wyoming, Laramie (Barberry Eradication)
No work under way.

SOUTH DAKOTA

College of Agriculture, Brookings (Barberry Eradication, R. O. Bulger)
(June 11)

Intensive field work in barberry eradication will start in South Dakota on June 21; at that time about 20 agents will be assigned to duty. Second survey will constitute the major activity this season. Rust survey, resurvey, and educational work will be carried on at the same time. Field operations in June so far have consisted largely of stem-rust investigations and educational talks and demonstrations at boys' and girls' club camps. The boys and girls are enthusiastic regarding barberry eradication and in general are quite well informed on stem rust.

In spite of the dry and backward season stem rust is developing earlier than normal. Aecial infection is general and severe. The first uredinial infection was found on oats June 8 near a barberry planting in Brookings County on which the first aecial infection was found. Infection also has been found on oats and wheat in Lake County near infected barberries. Small-grain crops show effects of the drought and late spring in eastern South Dakota. Undoubtedly considerable damage already resulted. Yields will be light even if moisture is forthcoming in the near future.

NORTH DAKOTA

Agricultural Experiment Station, Agricultural College (Flax Diseases, L. W. Boyle)

Agricultural Experiment Station, Agricultural College (Barberry Eradication, G. C. Mayoue)

Dickinson Substation, Dickinson (Cereal Agronomy, R. W. Smith) (June 16)

Rain again fell in this section in the past week. About 1.12 inches were recorded for the period from June 11 to June 15, or a total for the first half of the month of nearly 1.25 inches. This is slightly less than the normal rainfall for that period; it fell slowly, however, and was followed by cool cloudy weather, so that the maximum benefit was obtained from it.

All cereal crops at the Substation are in good condition with the exception of winter grain, which is very thin; corn and proso need warmer weather.

The cereal plats have been trimmed and the roads cultivated and plat stakes are being prepared for the field. The nursery has been cultivated and is being hoed.

The last seeding in the date-of-seeding and flax-tillage experiment will be made today. This will end the seeding of cereal crops until the fall seeding.

The Substation was visited recently by Ralph W. May, of the Judith Basin Substation, Moccasin, Mont., and C. N. Ainslie, Government entomologist from Sioux City, Iowa.

Northern Great Plains Field Station, Mandan (Flax Breeding, J. C. Brinsmade, Jr.) (June 16)

The weather of the first half of June was unusually dry for this time of year. The precipitation, in the form of small showers not over 0.11 inch in any 24-hour period, amounted to only 0.23 inch. Cloudy weather, accompanied by small showers, has enabled crops to hold their own, pending the possible arrival of sufficient rain to mature them. Localities in the country surrounding Mandan have reported satisfactory showers, which evidently have missed the immediate vicinity of Mandan.

Temperatures have been generally cool to moderate. Maximum temperature for the period was 90 degrees on June 9; minimum, 33 degrees on June 1.

High winds in the first half of June caused abnormally high evaporation. Evaporation was especially high for the six days June 18 to 23, inclusive. For the 48 hours, June 19 and 20, the total evaporation was 0.762 compared with a normal of 0.413 for a like period in June. For those two days the wind velocity averaged 13.3 miles per hour, compared with a normal of 6.0 miles per hour.

Flax in the classification nursery and varietal plats sown immediately after the last good rain in May, is making good growth. Flax in the flax-sick soil nursery, sown one day later than the varietal plats, has failed to germinate except for a few scattering patches of plants which came up at once and are already two to three inches high. The flax-spacing experiment, seed-treatment experiment, and other miscellaneous seedings made May 29 to June 4 have so far failed to germinate.

Northern Great Plains Field Station, Mandan (Cereal Agronomy, E. R. Ausemus)
(June 16)

Cereal grains are short and show the effects of the drought. Wheat and oats are heading at the height of 6 to 12 inches.

The first heads appeared in the plats of Hard Federation, Quality, and Garnet on June 11. Heading is very irregular. Plants which emerged immediately after seeding are now heading, while those which came up after the rains of May 6 to 9 are only six to eight inches high.

Some of the early varieties and hybrids in the nursery are beginning to head. The nursery has been trimmed and cultivated and is now being weeded.

Sixty-Day was the first variety of oats to head. Weeds, especially Russian thistles, are very numerous in the oat plats.

MONTANA

Judith Basin Substation, Moccasin (Cereal Agronomy, R. W. May) (June 15)

Drought and hot winds in the first 10 days of June damaged crops severely, particularly winter wheat and alfalfa. The lower leaves of winter wheat "fired" severely. Winter wheat was damaged to such an extent that ideal weather conditions from henceforth could not cause it to produce much above an average crop. Farmers were discouraged and pessimistic before the recent rains fell.

Since June 10 cloudy, rainy weather has brightened the prospects. In the last four days a precipitation of 0.55 inch has been recorded. This was accompanied by cloudy, damp, cool weather throughout the four-day period. These conditions have enlivened all crop prospects except that of hay, which is about ready to cut. However, the precipitation is entirely inadequate for a very long period, considering the dry condition of the subsoil. Precipitation has been much below average in each month since the beginning of the year. Almost ideal weather must prevail throughout the next six weeks if an average crop is produced.

Winter wheat is almost one-half headed. Spring grains are from four to seven inches high. A few of the earliest varieties of spring grain are entering the "boot stage."

The major operations performed under the cereal project since the last report are the following: Weeding the alleys of all the spring-grain plats; weeding of the spring-grain nurseries; cleaning roadways; and recording heading notes on winter wheat. Six days of that period were spent in an inspection trip of several North Dakota stations. Contrary to expectations, crops throughout North Dakota were fully as backward as in the Judith Basin. In eastern North Dakota late frosts had necessitated much reseeded.

Maximum temperatures recorded during the first 15 days of June were 88 degrees on the 4th and 87 degrees on the 8th, while the minimum temperature recorded was 37 degrees on the 6th.

Prof. Louis Vinke, of the Animal Husbandry Department of Montana State College, visited the Substation on June 7 and 8.

State College of Agriculture, Bozeman (Barberry Eradication, W. L. Popham)

WESTERN BASIN AND COAST AREAS (North to West and South)

IDAHO

Aberdeen Substation, Aberdeen (A. E. McClymonds, Superintendent) (June 9)

Cereal crops at Aberdeen are coming on much faster than usual. Apparently they are, at this time at least, two weeks ahead of last year. The weather has been very hot and dry for this time of the year under Aberdeen conditions, and there is a possibility of a water shortage. Today the cereal plats are being irrigated for the third time and, in general, are in good condition. Some of the earlier varieties of oats have headed, and the midseason varieties will be starting in a few days.

Agricultural Experiment Station, Moscow (Stripe Rust, C. W. Hungerford)

WASHINGTON

Agricultural Experiment Station, Pullman (Cereal Breeding, E. F. Gaines)

OREGON

Sherman County Branch Station, Moro (Cereal Agronomy, D. E. Stephens)

CALIFORNIA

Biggs Rice Field Station, Biggs (Rice Agronomy, J. W. Jones)

University Farm, Davis (Cereal Agronomy, V. H. Florell) (June 15)

The cereal experiments in plats have been harvested. Harvesting of the comparative experiments in the nursery is in progress and will be completed in a few days. The present plan is to begin threshing both plat and nursery material as soon as possible, which should be within a week.

A large number of wheat selections were made last year. These will be permitted to stand for a while to allow them to shatter. Since the grain was badly lodged last year and selections also were made for resistance to lodging, most of the selections are very stiff-strawed this season and should give a good shattering test.

Several visitors have been at the station since the first of June. Mr. M. N. Pope arrived on June 1. He spent the day in looking over the barley experiments and then he and the writer made a trip over the main grain areas of the Sacramento and San Joaquin Valleys collecting barley samples from farmers' fields. Both barley and wheat were found to be in very good condition except in a few minor areas. The crop was short and very badly burned on a large area south of Tracy on the west side of San Joaquin Valley. In the Tulare Lake region also there were a few fields where the crop was short and in some cases a complete failure. This probably was because of a shortage of irrigation water.

Club Mariout barley appears to be somewhat more widely cultivated than the Coast, as was the case last year. An excellent field of the Coast selection, "Atlas" 276B, was observed at Westhaven. In a field of 3,000 acres it was estimated that the yield would be in the neighborhood of 30 sacks per acre.

Mr. W. T. Craig, of the Plant Breeding Department of Cornell University, arrived June 7 to make observations and to harvest hybrid wheat material grown here for Dr. H. H. Love. Mr. Craig expects to complete his work today and leave for Ithaca tomorrow.

Mr. J. Allen Clark arrived June 8 to spend about ten days studying hybrid wheat material.

Mr. K. S. Quisenberry arrived on June 13 and also is making observations on the wheat-hybrid material.

Dr. H. B. Humphrey visited the station on June 14 and made observations on the different cereal diseases. Dr. Humphrey was very much surprised to note the extent of the stem rust infection at Davis. Stem rust infection very rarely is an important factor in reducing grain yields to any appreciable extent in the Sacramento Valley, but this year there was very severe infection on most of the susceptible varieties. This was particularly noticeable in the wheat-classification nursery where infection of 100 per cent on leaf and 50 to 75 per cent on stems was not uncommon. Puccinia glumarum also was more abundant than usual. All varieties of barley were more or less badly infected with Helminthosporium Californicum. Prof. Mackie reports that only one variety was found to be immune to this disease. Of the varieties in the replicated plot experiment, Smooth Awn barley, No. 1367, is highly resistant; it promises also to be one of the highest yielding varieties.

Mr. N. Takahashi, Geneticist, Agricultural Experiment Station, Suigen, Korea, visited the station on June 10.

Agricultural Experiment Station, Berkeley (Cereal Smuts, F. N. Briggs)



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CEREAL COURIER

Official Messenger of the Office of Cereal Crops and Diseases.
Bureau of Plant Industry, U. S. Department of Agriculture
(NOT FOR PUBLICATION)

Vol. 18

No. 15

June 30, 1926
Personnel (June 21-30) and Project Issue

PERSONNEL ITEMS

Dr. C. R. Ball, senior agronomist in charge, wrote from Rocky Ford, Colo., on June 21, as follows:

"In general, it gets drier as we go west. On the other hand, crops were put in earlier as we go west, so that they are farther along in Illinois than in Ohio and in Iowa and the Missouri Valley than in Illinois. Corn stands are not so good, however, out in the dry area.

"Rains began more than a week ago over the Mississippi and Missouri valleys. They have been spotted in distribution and in quantity, varying from one to five inches. Out in the Plains where there had been real hot weather,-- 98 degrees or so--there was much hail with the first storms and wheat has suffered accordingly. Losses vary from 10 to 100 per cent.

"At Lincoln, Nebr., the nursery and plats were burned, especially the nursery. Much was ripening prematurely. The same was true at Manhattan, Kans. Everything was ripening early and at once. Nursery harvest was in full blast on June 13 and field harvest was begun. Chinch bugs were bad and tar lines were run to protect the corn. Estimates showed 100,000 bugs passing in one line per hour and 7,000,000 were taken from one hole. The holes were only 15 or 20 feet apart. Where the bugs had got into corn the plants were being sprayed with soap suds.

"Our corn nursery at Manhattan was in fairly good shape. It had some of the best corn I've seen.

"In Greeley County, Kans., we saw one of the wheat expansion areas, where crops were growing on two-year sod and one-year sod, and some had been sown on breaking. Most of the wheat is short and nearly ripe. Thinner stands are taller and greener. Most of the fields will not yield more than 10 bushels, taking them as a whole. Portions of some probably will go better than 20 bushels.

"Between Greeley County and the Arkansas River there is much less development. South of the Arkansas is the great area of expansion. The whole country is coming under the plow in the area we covered. This was from Lakin south and west beyond Ulysses, east to beyond old Santa Fé and north again to Garden City. Fully half the area seemed to be in wheat or breaking. One outfit has several thousand acres in and is breaking two to three thousand acres more. They are just about done for this year, as harvest is on. They use large tractors for all work, running two 12-hour shifts in breaking. In this area most of the breaking is done with disk plows, whereas in Greeley County share plows are used mostly.

"Combines, combines everywhere and not a header seen, so far as new machines are concerned. Trains, sidings, and implement yards are full of combines.

"Holdings vary from 320 acres to several thousand. Much of it seems to be resident ownership, or at least local. The crucial test is likely to come two or three years from now. This is the period of extreme optimism and limited experience. Yields this year in southwest Kansas where we were will be from six or eight up to 20 to 25 bushels. Costs of production undoubtedly are low on large-scale operation. Breakers are paid \$1.50 per acre and expend from 50 cents to \$1.00 in doing it. Most of the areas pay one-fourth as share rent. Land values are from \$12.00 to \$30.00, dependent on quality and on the knowledge possessed by non-resident owners."

J. A. Clark, agronomist in charge of western wheat investigations, who left Washington on June 1, writes from Pendleton, Oreg., on June 26, as follows:

"On the way West, I stopped at the University of Chicago for a conference with Dr. Sewall Wright concerning recent studies of wheat hybrids.

"At Manhattan and Hays, Kans., I examined the wheat-breeding nurseries and varietal plats. Among the new hybrid productions, Newturk, an awnless hard red winter wheat, appeared very promising. Last year Newturk was the highest yielding variety in the plats at Manhattan, and it may do as well again this year. In the nurseries at Manhattan the most promising crosses are those which involve early maturity. Some of the selections from the Kanred x Hard Federation, Kanred x Prelude, and Kanred x Nebraska No. 28 crosses are from three to ten days earlier than Kanred. Some of F. A. Coffman's early Kanred selections also are promising. The next problem in the wheat-breeding program for Kansas is the combining of early maturity and winter hardiness.

"Eight days were spent at Davis, Calif., studying F_4 material of Bobs x Hard Federation, Bobs x Propo, and Hard Federation x Propo crosses, these three crosses having been studied for three years to determine the inheritance of awnedness and the relation of length of awn to yield and protein content of the grain under California conditions. Mr. W. T. Craig, of the plant breeding department of Cornell University, was making similar studies at Davis with F_7 material of Sonora x Early Red Chief, Sonora x Honor, and Sonora x Forward. The three nurseries conducted at Davis by V. H. Florell, W. W. Mackie, and F. N. Briggs in combination, comprising approximately 35 acres, constitute what probably is the largest wheat-breeding nursery in the United States. More than 50 hybrid combinations in bulk and selections from many of them are included in Mr. Florell's nursery. Judging from appearances,

the most promising selections were among the Marquis x Hard Federation crosses.

"A real North Dakota epidemic of stem rust occurred in California this year, completely destroying much of the wheat in the southern part of the State. Some of the selections in Prof. Mackie's nursery proved very resistant, the most resistant selections coming from Early Defiance crosses. Pusa No. 4 also transmits resistance in hybrids in a satisfactory degree.

"The classification nursery grown by Mr. Florell was nearly destroyed by rust, but rust notes had been obtained on all varieties. Marquis was one of the most resistant varieties, this variety and Kota, Kanred, and Erivan having less than five per cent infection. Most of the earlier Australian and Indian varieties also escaped rust.

"Dr. Briggs' most interesting experiments are backcrosses involving smut-resistant hybrid selections derived from Martin and the important commercial varieties, Baart; Pacific Bluestem, Hard Federation, Bunyip, Sonora, and Little Club. The resistance of Martin to bunt or stinking smut is determined by a single factor, and thus is easily transmitted to hybrids. By backcrossing, the desirable characters of the commercial varieties easily can be retained, and the undesirable characters of Martin can be eliminated.

"K. S. Quisenberry joined me at Davis. At Corvallis, Oreg., we met Dr. H. B. Humphrey and Dr. S. M. Dietz. The party next visited the Sherman County Branch Station at Moro, Oreg. Hot, dry weather was causing premature ripening of grain at Moro, which probably will result in low yields and light weight. However, several of the best winter wheat varieties should yield 30 bushels to the acre, and the best spring varieties as much as 22 bushels. Among the winter wheats a new variety known as Regal appears very promising. It is a smut-resistant Turkey selection with purple stems. Several other Turkey selections resistant to smut are equally promising. An increase field of several acres of Regal probably will yield 30 bushels to the acre or better. Mr. Bayles' nursery contains much promising material, principally Federation x Fortyfold and Federation x Early Arcadian wheat crosses. A winter-habit strain of the latter is outstanding in the nursery at Moro and in the nurseries in all the important outlying wheat sections of the State. In these uniform nurseries the most promising selections produced at Moro and at other stations are grown in comparison with standard varieties.

"The Board of Regents of the Oregon Agricultural College and the Agricultural Committee of the State Bankers' Association met at Moro at the time of our visit. Mr. Stephens received from the people a well-deserved tribute for his years of faithful public service. The results in the country around Pendleton, as seen in a trip with County Agent Bennion, also are a tribute to Mr. Stephens' work. Dr. Ball and I took a similar trip in 1915 or 1916. We found 15 varieties grown commercially and hundreds of mixtures of field hybrids. Today, Federation and Hybrid 128 are the principal varieties. Federation, first distributed from Moro in 1919, is one of the principal varieties in the State. In Umatilla County there are 75,000 acres of Federation, most of which could pass certification for seed with less than one per cent of mixture. On my trip with Mr. Bennion we saw one 12,000-acre field of Federation. The land, which formerly grew Red Chaff Club, and for 20 years has averaged 50 bushels to the acre, is expected to produce an even better yield of Federation."

F. A. Coffman, associate agronomist in oat investigations, will leave Washington July 1 on an extended trip in western States in the interests of oat investigations. His first stop will be at Columbus, Ohio, where he will look over the cooperative oat nursery. He will next join T. R. Stanton, Dr. Charlotte Elliott, and V. F. Tapkè, at Ames, Ia., in a study of the cooperative oat nurseries.

Dr. Hurley Fellows, assistant pathologist in charge of cooperative investigations of wheat foot-rots at Manhattan, Kans., returned to his headquarters on June 23. While in Washington he conferred with officials of the Office and revised a manuscript that is to be submitted for publication.

Minter P. German, of Virginia, was appointed field assistant, effective June 21, in the cereal experiments at the Arlington Experiment Farm, Rosslyn, Va.

C. H. Kyle, agronomist in corn investigations, left Washington June 28 for Knoxville, Tenn., and New Orleans and Baton Rouge, La., to look over the cooperative corn experiments and to confer with officials of State agricultural experiment stations and employees of the Office.

J. H. Martin, associate agronomist in charge of grain sorghum and broomcorn investigations, who left Washington on June 12 to study the combine-harvester situation in Oklahoma, Texas, and Kansas, wrote from Cherokee, Okla., on June 18:

"I arrived here June 14. I have seen a hundred or more combines at work, and with the help of others have collected about 50 triplicate head samples of wheat.

"With favorable weather the harvesting with combines will be finished here in about ten days or less. Most of the wheat threshed is reasonably dry and is being shipped immediately. One farmer's elevator at Burlington took in 122 loads of wheat during the forenoon of June 16. The wheat is testing 62 to 66 pounds in most instances but contains some 'yellow berry.' Yields range from eight to 40 bushels to the acre. The average yield for Alfalfa County, Okla., probably will be close to 20 bushels per acre. So far the weather conditions have not been a handicap to harvesting with the combines, but continued weather like today's may cause some losses. Most of the combines in use here are the Case, cutting a 16-foot swath. With these, 40 to 50 acres per day are being harvested.

"The wheat here is about 60 per cent Blackhull, 30 per cent Turkey, 9 per cent Kanred and less than one per cent of Super, Currell, Fulcaster, etc. The Super and Currell have been harvested with the binder. A few farmers north of Cherokee grew Red Rock for several years but discontinued it because it shattered when left to be harvested with the combine. Oats here are mostly Kanota. Considerable winter barley is grown. The sorghums are chiefly Sumac sorgo, Dwarf milo, and Blackhull kafir.

"Most farmers list or double-disk their stubble immediately after harvest. Some follow the combines in the same fields. Many fields were listed today, when harvesting was not possible and when the soil was moist enough to work. Our loss estimated necessarily will have to be made promptly owing to the above mentioned tillage practice.

"I have found only traces of stem rust and not much leaf rust. No barley bushes have been seen. Oats and barley contain some smut, but wheat is clean except for a little loose smut in some fields."

On July 1 Mr. Martin was to be headquartered at Minneapolis, Kans. He reported that rain had fallen and had seriously affected the moisture content of grain coming from combines.

K. S. Quisenberry, associate agronomist in western wheat investigations, who left Washington May 30, wrote from Pendleton, Oreg., on June 24 of his visit to the Sherman County Substation at Moro, Oreg., to study the cooperative winter-wheat nursery. Mr. Quisenberry also looked over the wheat nursery of County Agent Fred Bennion of Umatilla County. The two leading varieties of wheat in the vicinity of Pendleton are Hybrid 123 and Federation.

From June 14 to 16 Mr. Quisenberry assisted J. A. Clark in taking notes on the foreign wheats in the cooperative nursery at Davis, Calif.

On June 11 Mr. Quisenberry conferred with Supt. A. F. Bracken of the Nephi Substation, Nephi, Utah. In spite of the dry weather it is estimated that wheat in that section, mostly the Kanred variety, will yield from 25 to 40 bushels to the acre.

On June 5 Mr. Quisenberry visited the farm of Mr. Earl G. Clark of Blackhull wheat fame, Harvey County, Kansas, and looked over his small varietal test of wheats. On Mr. Clark's farm his new "Super-Hard" looked promising in comparison with Kanred, Turkey, and Blackhull. In the experiment plats at Manhattan and Hays there was little or no difference between Super-Hard and Blackhull. Mr. Clark is very enthusiastic over this new variety of which he has 100 acres. At the time Mr. Quisenberry saw the field it looked as though it might yield 25 to 30 bushels to the acre. Mr. Clark expects to get \$4.50 or \$5.00 a bushel for it.

Dr. C. S. Reddy, associate pathologist in charge of bacterial diseases of cereals, left Washington on June 24 for La Fayette, Ind., Bloomington, Ill., and Madison, Wis., to confer with corn-disease specialists. At Bloomington he will inoculate corn plants in the experimental plats with bacterial parasites. Dr. Reddy will return to Washington about July 10.

Jerome P. Seaton, of Virginia, was appointed field assistant, effective June 21, in the cereal experiments at Arlington Experiment Farm, Rosslyn, Va.

V. F. Tapke, associate pathologist in cereal-smut investigations, left Washington on June 27 for points in Ohio, Indiana, Illinois, Iowa, Minnesota, South Dakota, North Dakota, Montana, Idaho, and Kansas to study the oat-smut situation.

VISITORS

R. S. Kirby, formerly assistant pathologist in this Office, now extension pathologist at the Pennsylvania State College of Agriculture, State College, Pa., was an Office visitor on June 29.

MANUSCRIPTS AND PUBLICATIONS

29 A manuscript entitled "A Second Gene Producing Golden Plant Color in Maize," by Merle T. Jenkins, was approved June 25 for publication in the American Naturalist.

Page proof of article entitled "Fatuid or False Wild Forms in Fulghum and Other Oat Varieties," by T. R. Stanton, F. A. Coffman, and G. A. Wiebe, for publication in the Journal of Heredity, was read June 23.

Circular 240 of the South Dakota Agricultural College Extension Service entitled "Black Stem Rust and the Common Barberry in South Dakota," by Raymond O. Bulger, was received June 21, bearing date of June, 1926. ("The barberry campaign in South Dakota is conducted jointly by the South Dakota State College of Agriculture, the South Dakota State Department of Agriculture, and the Office of Cereal Investigations of the Bureau of Plant Industry of the United States Department of Agriculture.")

Circular 308 of the Illinois Agricultural Experiment Station entitled "Protection of Grain Crop Demands Barberry Eradication," by Gordon C. Curran and Benjamin Koehler, was received June 26, bearing date of June, 1926. (Cooperation between Office of Cereal Crops and Diseases and Illinois Agricultural Experiment Station, Extension Service of the University of Illinois, and Illinois State Department of Agriculture.)

eradication

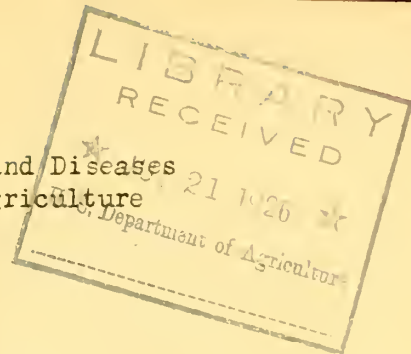
A N N O U N C E M E N T

The Corn-Belt Section of the American Society of Agronomy will hold its summer meeting July 15, 16 and 17 at University Farm, University of Minnesota, St. Paul, Minn., to study and inspect the investigations in agronomy of the Minnesota Agricultural Experiment Station.

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CEREAL COURIER

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Vol. 18

No. 16

July 10, 1926
Personnel (July 1-10) and Field Station (June 16-30) Issue

PERSONNEL ITEMS

Francis Arnett, of Montana, was appointed, effective July 6, to assist with the cooperative cereal experiments conducted at the Judith Basin Substation, Moccasin, Mont., under the direction of R. W. May.

Dr. C. R. Ball, senior agronomist in charge, wrote on June 25 that he planned to visit the barberry-eradication area in South Dakota, Nebraska, Iowa, and Minnesota, where the field forces are at work in the adjoining corners of these four States. Dr. Ball expected that he would be there until about July 14, when he would proceed to St. Paul, Minn., to attend the meetings of the Corn-Belt Section of the American Society of Agronomy from July 15 to 17, inclusive.

In continuation, Dr. Ball wrote: "On Tuesday, June 22, Prof. Alvin Kezer and I visited the Rocky Ford [Colo.] station. We then drove down the valley to Lamar and north to Cheyenne Wells. The Arkansas Valley is badly hailed. Crops, fruit and vegetables hurt to ruined; corn and beets not so much.

"At Cheyenne Wells also there was hail, and in fact most everywhere I went. North from Cheyenne Wells we crossed the Union Pacific, Missouri Pacific, Rock Island, and Burlington railways, reaching the latter at Wray, Colo. Crops mostly fair to poor. Corn is the staple crop north of Cheyenne Wells, wheat not doing well. In the hundred miles north to Wray, wheat increases steadily, and near Wray there is some fallow. Probably the best crops in that stretch were from one to 15 miles north of Burlington.

"There is no great development of new land along this route such as that in Kansas, but there is some new breaking throughout. Often we could see four phases of settlement at one look, namely, old abandoned land (15 years), recently abandoned land (1 to 3 years), cropped land, and fresh breaking, cropped land predominating. Northward from Burlington to Wray corn and wheat are about fifty-fifty in area.

"Turning west at Wray and following the C. B. and Q., there is much sandy land where rye tends to replace wheat. On both sandy and hard land there is some new breaking. It was interesting to see abandoned farms, blown out; cropped farms with badly blown fields; and right alongside, a farmer breaking up more sand land to blow away. Learning by the other fellow's experience is cheap but not attractive.

"At Akron, drought and hail have combined to ruin crops and injure trees and fruit.

"After that, more poor crops, more sand hills, then the irrigated Platte Valley, more sand hills, and then the Greeley district and the dry-farmed ridge between the Big Thompson and the Cache la Poudre rivers, where were some fine crops, and then Fort Collins, 300 miles from Cheyenne Wells.

"North Platte [Nebr.] crops were badly injured by soil blowing and drought on the bench land but lots saved, especially the big nurseries."

Dr. Ball wrote on July 6 as follows: "On July 1 [at the North Dakota Agricultural College], I talked to Mr. Mayoue's men at 8:00 A.M., visited the station officials, inspected the flax-disease project with Mr. Boyle, and was on the road at 2:00 P.M. We drove west and northwest by Valley City and Tower City to Cooperstown and Carrington and next day, July 2, to Jamestown and on to Aberdeen, S. Dak.

"In general, crops got poorer as we went west. The James Valley is badly burned, especially from Jamestown south to Redfield, S. Dak. Much wheat is too poor to harvest, and some is being disked or plowed for sowing corn or other forage. Corn germinated very irregularly.

"East from Redfield crops are a little better and are fair to good around DeSmet and Brookings. Wheat is replaced by oats and corn in this section. Livestock are abundant in the James Valley and southeast, also in North Dakota.

"Monday, July 5, we drove south from Brookings to Sioux Falls and west to Yankton and Springfield. Crops generally are good in the Sioux Valley, but southwest toward the Missouri River the effects of drought are evident and there are some very poor oats and corn in places. Winter wheat is ripe and partly cut and the earliest oats are ripening in the Missouri Valley. From Brookings to Sioux Falls we saw much flax, most of it in blossom, free from weeds, and looking fine.

"Today, July 6, we covered the Missouri Valley from Charles Mix County to Vermilion and have seen some of the most junglesome haunts of the barberry you can imagine, thickets of thorny shrubs, creeping vines, trees, poison ivy waist high, and some climbing. Groves and tree claims are almost as bad. It takes real scouting to find bushes. The measure of bird distribution of seeds is shown by the abundance of asparagus, cherries, plums, mulberries, grapes, and currants coming up in all wooded spots, not to mention barberries. There are some of the latter, but they are scarcer than the others. Found a roadside bush three feet high near Flandreau [Moody County]. The rust already (July 5)

covered all but one corner of a 20-acre oat field beside it. Other fields were clean. From a bush located in a pasture west of Brookings rust had spread west to oats and north and south to wild barley.

" Mr. Thiel has picked me up at Yankton and for two days I shall see northeastern Nebraska."

Art B. Chase, of Oklahoma, was appointed, effective July 1, to assist with the cooperative cereal experiments conducted at the Woodward Field Station, Woodward, Okla., under the direction of J. B. Sieglinger.

The appointment of Minter P. German, field assistant at Arlington Experiment Farm, Rosslyn, Va., effective June 21, was revoked because Mr. German had accepted another position.

Paul E. Hoppe, of Wisconsin, was appointed agent, effective July 1, to assist Dr. J. G. Dickson in investigations of wheat scab and related diseases of corn conducted in cooperation with the Wisconsin Agricultural Experiment Station at Madison, Wis. Mr. Hoppe will fill the vacancy caused by the resignation on July 8 of Dr. George Janssen, who will assume his duties as agronomist at the Arkansas Agricultural Experiment Station, Fayetteville, Ark.

Dr. H. B. Humphrey, senior pathologist in charge of cereal-rust investigations, is in receipt of a letter from G. L. Zundel, extension plant pathologist, State College of Washington, Pullman, Wash., dated June 14, containing the following note on the occurrence of barberry bushes in Washington. "On my recent visit to Skagit County we made a survey of Beaver Marsh, where we found and destroyed 15 barberry bushes. In this locality we found that rust was so heavy that a number of farmers were not planting oats this year. As we went north and west toward the ocean we found that the rust became much less prevalent. I feel certain now that we have eliminated the source of all our trouble."

J. H. Martin, associate agronomist in charge of grain sorghum and broom-corn investigations, who is studying the combine-harvester situation in Oklahoma, Texas, and Kansas, wrote from Minneapolis, Kans., on July 2 that he and two others were getting head samples from fields harvested with combines. He states that the varietal question is of very little consequence to combine operators in the areas in which the study is being made. The hard winter wheats, Turkey, Blackhull and Kanred, are grown almost exclusively. In this area no fields of soft wheat have been seen harvested with the combine. Farmers both here and at Cherokee have discontinued Red Rock wheat because of shattering.

On July 4 Mr. Martin wrote from Minneapolis, Kans., that he had finished collecting head samples and that loss estimates would start on July 6. Nearly all the combines in Ottawa, Cloud, and Mitchell counties are located in the vicinity of Delphos, Ottawa County, 13 miles northwest of Minneapolis, Kans.

Mr. Martin states that the wheat is poor there this year owing to the dry weather. Most fields are yielding eight to 12 bushels to the acre. Only one field was seen that is likely to yield more than 20 bushels and that was on overflowed land.

Miss Bertha J. Miller who has served as clerk in connection with the cooperative cereal-disease investigations at Madison, Wis., since Sept. 18, 1919, has been transferred to the Office of Vegetable and Forage Diseases.

K. S. Quisenberry, associate agronomist in western wheat investigations, wrote on July 5 that he had gone over the wheat experimental plats with G. F. Sprague at the North Platte Substation. Winter wheat is very poor owing to soil blowing earlier in the spring followed by dry weather. The spring wheats in the nursery look well, since they are late enough to have been benefited by recent rains. Mr. Sprague will start cutting winter wheat in the nursery on July 6.

Glenn Smith, of North Dakota, was appointed, effective July 1, to assist with the cooperative cereal experiments conducted at the Dickinson Substation, Dickinson, N. Dak., under the direction of Ralph W. Smith.

T. R. Stanton, agronomist in charge of oat investigations, who left Washington on June 19, wrote as follows from Ames, Ia., on July 1 after returning from Colorado:

"Throughout southern Ohio, Indiana, and Illinois crops generally appeared very backward. Corn was very small and only two fields of wheat were seen that had been harvested. In Missouri, crop conditions were similar, although corn was more advanced; local showers in many localities had benefited crops materially. In the experimental plats at Columbia oats were rather promising, especially the Fulghum and Kanota straws.

"In Kansas, crop conditions appeared to be somewhat better, particularly in the eastern half of the State. Oats had been severely affected by drought, however. In and around Hays, wheat was expected to yield about 15 bushels to the acre. Eastern Colorado also has been hard hit by dry weather, and wheat and other small grains have been badly burned. In the irrigated sections around Denver crops are very promising.

"In Nebraska, crops apparently have suffered more severely from drought than in Kansas or Iowa. If rains occur shortly corn yet may make a very satisfactory crop.

"In Iowa, crop conditions generally are somewhat better than in either Kansas or Nebraska. Recent light rains have greatly improved oats and wheat. Corn is a little late but stands are excellent and the fields are unusually free from weeds.

"Meadows and pastures generally are exceedingly poor. In most sections not more than half a crop of hay is being harvested."

MANUSCRIPTS AND PUBLICATIONS

30 A manuscript entitled "Copper Carbonate Prevents Bunt or Stinking Smut of Wheat," by W. H. Tisdale, was submitted June 19 for publication in the circular series of the Department of Agriculture. Galley proof was read July 9.

31 A manuscript entitled "Effect of Smut on the Sugar Content of Corn Stalks," by Annie May Hurd-Kerrer and Heinrich Hasselbring, was approved July 7 for publication in the Journal of General Physiology.

Galley proof of article entitled "A Cytological Study of Puccinia triticina Physiologic Form 11 on Little Club Wheat," by Ruth F. Allen, was read July 6.

FIELD STATION CONDITION AND PROGRESS

HUMID ATLANTIC COAST STATES (South to North)

GEORGIA

State College of Agriculture, Athens (Cereal Agronomy, R. R. Childs)

VIRGINIA

Arlington Experiment Farm, Rosslyn (Small Grain Agronomy, J. W. Taylor)
(July 8)

Harvesting of the fall-sown grains has been completed, and threshing of both plats and nursery rows is now in progress. Favorable harvesting weather the last three days of June permitted the bulk of the cutting to be done before July 1. The dry, cool spring weather was favorable to fall-sown grains; some excellent yields in all small-grain crops are expected.

The yield of fall-sown barley was the highest ever obtained at the Arlington Farm. This was largely because of the heavy soil on which one series of the barley varieties was grown. The highest individual plat yield was 95.2 bushels per acre made by the check variety, Wisconsin Winter, C. I. 2159.

In the following table the grain yields of the barley varieties are given both as the average yield of the two 1/40-acre plats of each sort and as the gain or loss of the variety in comparison to the average of the four nearest check plats. Orel and Selection No. 66 continue to appear as promising varieties, re-selected or selected by Dr. H. V. Harlan.

Yield of varieties and selections of winter barley grown in duplicate 40th-acre plats at Arlington Experiment Farm, in 1926

Variety	C.I.No.	Actual Yield (Bu. per acre)	Ave. Yield of 4 plats (bu. per A)	Gain or loss from check (bus.)
Scottish Pearl	: 277	: 54.6	: 48.3	: + 6.3
Orel	: 351	: 59.8	: 55.6	: + 4.2
Wisconsin Winter	: 2167	: 55.1	: 55.6	: - 0.5
Tenkau	: 646	: 43.6	: 48.3	: - 4.7
Selection No. 66	: 3546	: 64.5	: 71.9	: - 7.4
Han River	: 2163	: 48.1	: 55.6	: - 7.5
Tennessee Winter	: 257	: 36.4	: 48.3	: -11.9
Alaska	: 4106	: 57.6	: 71.9	: -14.3
Pidor	: 901	: 40.6	: 55.6	: -15.0
Nakano Wase Selection	: 754-A	: 61.7	: 77.2	: -15.5
Selection 52	: 3543	: 41.4	: 61.9	: -20.5
do 61	: 3545	: 50.9	: 71.9	: -21.0
do 12	: 3534	: 49.5	: 71.9	: -22.4
Tennessee Beardless 6	: 2746	: 54.1	: 77.2	: -23.1
Nakano Wase	: 754	: 35.5	: 61.9	: -26.4
Tennessee Beardless 5	: 3384	: 50.6	: 77.2	: -26.6

Continued

Variety	: :C.I.No.:	: :Actual Yield (Bu. per acre):	: :Ave. Yield of plats (bu. per A)	: :Gain or loss from check (bus.)
Nakano Wase	: 2166	: 32.4	: 61.9	: -29.5
Composite Hybrid	: ----	: 23.2	: 77.2	: -54.0
Composite Parent	: ----	: 16.5	: 77.2	: -60.7
Wisconsin Winter $\frac{1}{2}$: 2159	: 62.4	: ----	: ----
	: :	: :	: :	: :

$\frac{1}{2}$ Average yield of 12 check plats

Arlington Experiment Farm, Rosslyn (Corn Breeding, F. D. Richey)

Arlington Experiment Farm, Rosslyn (Cereal Smuts, W. H. Tisdale)

Arlington Experiment Farm, Rosslyn (Virus Diseases, R. W. Webb)

Arlington Experiment Farm, Rosslyn (Cereal Bacterial Diseases, C. S. Reddy)

NEW YORK

Cornell University Agricultural Experiment Station, Ithaca (Cereal Breeding, H. H. Love) (June 30)

The weather of the last two or three weeks has been rather favorable to cereals and especially to the spring-sown grain. The early part of the spring was rather dry, but recently we have had sufficient rain to keep the crops growing steadily. Present indications are that there will be a very good crop of oats and barley on the University farm and that a very uniform test of the many strains under experiment will be had. The wheat, as reported earlier, came through the winter very poorly, and while it has made a very good growth it does not yet seem that we shall be warranted in harvesting the entire series especially so far as yield is concerned.

While the wheat on the farm is poor, we have the best lot of wheat in our plant-breeding garden that we have had for several years. This, of course, is our hybrid material where we are making studies of individual plants. The oat and barley hybrids also are making splendid growth in the garden.

The material that was grown in the greenhouse, consisting of hybrids and plants for making hybrids, a large number of which were made, has practically all been harvested.

W. T. Craig returned on June 29 from Davis, Calif., where he made observations and harvested the wheat-hybrid material grown this year. The wheat was in splendid condition and some very interesting material from the Sonora crosses, as well as from Aegilops and wheat crosses, was harvested and sent to Ithaca for further study.

Prof. E. J. Delwiche, of the University of Wisconsin, was a visitor at Cornell on June 29.

Prof. E. Malinowski, of Warsaw, Poland, who has a fellowship from the International Education Board, has just arrived in Ithaca to spend the summer in connection with the Department of Plant Breeding.

HUMID MISSISSIPPI VALLEY STATES (South to North)

LOUISIANA

Rice Experiment Station, Crowley (Rice Agronomy, J. M. Jenkins)

Agricultural Experiment Station, Baton Rouge (Corn Breeding, H. F. Stoneberg).

MISSOURI

Agricultural Experiment Station, Columbia (Cereal Agronomy, C. A. Helm)

TENNESSEE

Agricultural Experiment Station, Knoxville (Corn Breeding, L. S. Mayer)

IOWA

Agricultural Experiment Station, Ames (Oat Breeding, L. C. Burnett)

Agricultural Experiment Station, Ames (Corn Breeding, M. T. Jenkins)

Agricultural Experiment Station, Ames (Crown Rust of Oats, S. M. Dietz)

Iowa State College, Ames (Barberry Eradication, M. A. Smith) (July 6)

Seventeen field agents were assigned to duty in barberry eradication in Iowa on July 1. The major activity this season will be second survey of the counties in northwestern Iowa bordering on the Missouri River and those adjacent on the east.

An intensive resurvey will be made of Fayette, Clayton and Dubuque counties. A survey on foot of the city of Dubuque is in progress. A similar survey will be made of Cedar Rapids and Sioux City.

Very little stem rust has developed so far. Barberries were moderately infected over the State by May 15. Very dry, windy weather at the time ascospores were being discharged very likely was a factor in the development of only a light sprinkling of uredinial infection which followed. Wheat which is being cut in the central and southern part of the State matured with only a trace of stem rust. Barley, which ordinarily rusts more heavily than either wheat or oats in Iowa, is remarkably free from stem rust this year. Only a trace has been found in the fields examined. Barley is in the hard dough stage now. Early oats are maturing with only a trace of stem rust.

ILLINOIS

Funk Bros. Seed Co., Bloomington (Corn Root, Stalk and Ear Rots, J. R. Holbert)

Box 72, Post Office Building, Urbana (Barberry Eradication, G. C. Curran)
[July 9]

The intensive barberry campaign in Illinois began on June 8. A two-day school for new men was held at Urbana. Dr. C. R. Ball was present at the opening session and started the school with a fine talk. The scouts appreciated the opportunity of meeting Dr. Ball and received many valuable suggestions. Dr. Ball also made an inspection trip, visiting barberry properties in LaSalle County, near Marseilles and Peru, and the Lacon area in Marshall County.

After the barberry school was completed the scouts began original survey of several counties in the vicinity of St. Louis. This region offers peculiar problems in scouting because of its broken nature. For example, Calhoun County has no railroad, is reached from three sides only by ferry, and consists of a ridge of bluffs between the Illinois and Mississippi rivers. The only roads run along the two rivers or up the "hollers" along creeks. Much of the scouting had to be done on foot. Maps showing the location of farmsteads were carried by the scouts who marked the path taken and made a record of it. Every section was thus thoroughly scouted in addition to covering the roads.

An escaped area in Pike County, near Baylis, offered the most difficult scouting yet encountered. In 1840 a hedge of common barberry was set out for fruit. Since then barberries have spread over a nearby 40-acre woodlot. This had been cut over, and the undergrowth was so dense that scouts were compelled to use hedge knives to cut a path to scout the region and to carry in salt to bushes located. To aid in making maps and locating bushes, signs were erected, reading "Barberry Marker, U. S. Property, No. 1." In this manner the tract was divided into $2\frac{1}{2}$ -acre plots.

In July and August field activities will be centered in second survey in northern Illinois. The region from Jo Daviess County to Lake County will be covered. Indications are that many overlooked bushes will be found, especially in escaped areas.

INDIANA

Purdue University Agricultural Experiment Station, La Fayette (Corn Rots and Metallic Poisoning, G. W. Hoffer)

Purdue University Agricultural Experiment Station, La Fayette (Leaf Rusts, E. S. Jackson and E. B. Mains)

Purdue University College of Agriculture, La Fayette (Barberry Eradication, W. E. Leer)

OHIO

Ohio State University, College of Agriculture, Columbus (Barberry Eradication, J. W. Baringer) (June 30)

Uredinia of black stem rust were first noticed on wheat this year near infected barberries at Columbus. The observation was made by Raymond Dobbins.

A number of places in west central Ohio, where local stem-rust epidemics had been noted in former years, were visited in the first week of June this year, but no stem-rust uredinia were observed on grains or grasses. Susceptible grass hosts were found near infected barberries at some of the places visited.

On June 16, stem-rust uredinia were in evidence on wheat in a low field on the Cowgill farm near Lewisburg, Preble County. The Cowgill farm lies in the center of a sizeable area where escaped barberries were once abundant and where sprouts and seedlings still are present. By the latter part of June stem rust and leaf rust were both very heavy on the wheat on this farm; the distance to which the rust had spread was not great, however. This is the only good example of the spread of rust from barberries to grain found in Ohio this year. All of the new field agents who will begin work on July 1 will have an opportunity to see this rust spread.

Wheat cutting is under way in southern Ohio. It is believed that black stem rust will do less damage to grain this year, in the State as a whole, than has been done since the barberry-eradication campaign was started in 1918.

On July 1 it is expected that the force of barberry eradicators in Ohio will number 32.

MICHIGAN

Agricultural College, East Lansing (Barberry Eradication, W. F. Reddy)

WISCONSIN

Agricultural Experiment Station, Madison (Wheat Scab, J. G. Dickson)

Agricultural Experiment Station, Madison (Virus Diseases, H. H. McKinney)

Department of Agriculture, State Capitol Annex, Madison (Barberry Eradication, W. A. Walker)

MINNESOTA

Agricultural Experiment Station, University Farm, St. Paul (Wheat Breeding, O. S. Aamodt) (June 26)

Approximately 5,000 rows of varieties and individual plant selections are being grown under an artificial epidemic of stem rust this year in the wheat-rust nursery.

The spring was unusually dry. Some of the seed when sown received enough moisture to start growth. These plants headed early and are very short. The rest of the seed did not germinate until general rains came in June. The result is that in the same five-foot rows we have some plants in the seedling stage while others are heading and rapidly approaching maturity.

The dry weather has had a most deterrent effect upon the production of an artificial epidemic of stem rust. Even leaf rust seemed to have a very trying time in becoming established in the field. Stem rust had been produced artificially in the field as early as April 27. This year stem rust did not appear until June 10 and then only a few scattered pustules. The weather has been favorable for the past two weeks, however, and the prospects for another successful artificial epidemic are excellent. Parts of the border of winter wheat and Hard Federation which surrounds the rust nursery have as high as 25 to 40 per cent infection at the present time.

Agricultural Experiment Station, University Farm, St. Paul (Stem Rust, E. C. Stakman)

Agricultural Experiment Station, University Farm, St. Paul (Flax Rust, A. W. Henry)

Agricultural Experiment Station, University Farm, St. Paul (Barberry Eradication, L. W. Melander)

GREAT PLAINS AREA (South to North)

OKLAHOMA

Woodward Field Station, Woodward (Grain Sorghums, J. B. Sieglinger)
(July 1)

On the whole, the weather in June was favorable for row crops. Although there was a period of drought, it came at a time least dangerous to plant growth.

All sorghums and broomcorns are seeded with the exception of 16 rows, which will be seeded July 15. Uniformly good stands have been obtained on the experimental plats this year. Thinning is well under way.

Threshing of wheat over Woodward County has started.

John H. Martin visited the Station on the afternoon of June 20.

The maximum temperature for the last half of June was 99 degrees on the 16th; minimum, 55 degrees on the 19th and 20th; precipitation, 1.83 inches. For the entire month 3.51 inches were recorded.

KANSAS

Agricultural Experiment Station, Manhattan (Cereal Breeding, D. D. Hill)

Agricultural Experiment Station, Manhattan (Corn Breeding, A. M. Brunson)

Agricultural Experiment Station, Manhattan (Wheat Foot Rots, Hurley Fellows)

Agricultural Experiment Station, Manhattan (Wheat Leaf Rust, C. O. Johnston)
[June 30]

The spring of 1926 was one of extremes in leaf-rust infection in different parts of the southwest. An extremely heavy infection occurred in nursery seedings at Denton, Tex. Northern Texas and southern Oklahoma experienced generally heavy infections. The amount of rust gradually diminished to the northward. Northern Oklahoma and southern Kansas had a moderate amount of leaf rust early in the season, but very dry weather ripened the wheat early and prevented any material increase. Eastern, northern and northwestern Kansas had very light infections of leaf rust, which came in very late. Central Kansas had a moderate amount of rust, which came in very late but increased rapidly until hot dry weather ripened the wheat. Wheat in all sections of Kansas ripened at about the same time owing to dry weather. Much of the wheat did not ripen normally.

Excellent leaf-rust notes were obtained in nursery seedings at Denton, Tex., and at Harper and Manhattan, Kans., but sowings at Columbus, Hays and Colby, Kans., contained practically no rust. Several forms of leaf rust apparently were responsible for the heavy infection at Denton, for there was little difference between varieties of known differential reaction. A number of pure line selections of Mediterranean made at Denton exhibited considerable resistance, however.

A number of F_1 selections of a Kanred x Fulcaster as well as pure lines of Fulcaster, Mediterranean, Fultz, Currell, Illini Chief, Evans, and Sibley exhibited marked resistance in the Harper and Manhattan Nurseries. Head selections have been made from a number of other varieties which exhibited variable behavior in the Manhattan nursery this spring.

Nursery material has been harvested and threshing is in progress. Much of the Kansas crop is being cut with combine harvesters. The yield in central and southwestern Kansas seems to be running higher than expected and the quality seems to be good.

Hays Branch Experiment Station, Hays (Cereal Agronomy, A. F. Swanson)
(June 30)

Dry hot weather prevails at this time, an excellent condition for the use of the increasing number of combines to be found all over western Kansas. Harvest generally was from 10 days to two weeks earlier than usual. A number of farmers in this section have finished harvesting, and in another week the bulk of the crop will be harvested.

The harvest on the cereal project is completed except for 10 plats of durum wheat that are too green at this date. Most of the nursery has been threshed; plat threshing will begin tomorrow. There are indications that a number of the barley selections in the nursery will do better than 35 bushels to the acre, while a few of the wheats will yield 25 bushels. Considering the abnormally dry spring and summer, the yields may be said to be far better than expected.

With an abnormally early harvest some difficulty was experienced in handling the experimental sorghums. However, nearly all of the thinning has been done, and by some forced efforts the ground has been kept well cultivated and free from weeds. The row crops are making good growth after the excellent rain on June 14 and 15.

Official visitors at the Station in the last two weeks were Dr. C. R. Ball, Prof. R. I. Throckmorton, T. R. Stanton, and Dr. M. N. Levine.

COLORADO

Agricultural College, Ft. Collins (Barberry Eradication, E. A. Lungren)
(June 28)

In June a resurvey was made of the area of escaped barberries near Loveland. Two large escaped barberry bushes were found. These were heavily infected and were spreading rust on June 3. In the same area, seedlings and sprouts also were found infected. No stem rust could be found away from the barberries on that date.

As a result of our educational activity a new area of barberries was found along the Cache la Poudre River west of Timnath, by C. McLain, Smith-Hughes teacher at that place. This area is similar to the one along the same river near Fort Collins, ten miles northwest of Timnath.

The first part of June was spent by the State leader in checking over some properties at Salida. He found eight large common barberry bushes and 150 seedlings on two properties.

Field operations after July 1 will consist of the second survey of Chaffee and Denver counties and the resurvey of an area in Fremont County.

NEBRASKA

North Platte Substation, North Platte (Cereal Agronomy, G. F. Sprague)
(June 30)

With the exception of two winter months when precipitation is normally light, June is the first month since December, 1924, when rainfall equal to or exceeding the normal has been recorded. Precipitation for the last half of the month was 0.70 inch, in the form of light showers. The total precipitation for the month is 3.51 as compared with the normal of 3.25. Evaporation for the last half of June totaled 3.267.

The maximum temperature recorded was 101 degrees on June 28; minimum, 43 degrees on June 20.

Small grains are ripening rapidly. It is likely that harvest will begin shortly after July 4. Corn looks very well and has been growing rapidly.

On June 23 the annual Visitors Day was held. Between 200 and 250 people were in attendance. There was much more than usual interest in the cereal nursery.

Dr. C. R. Ball and T. R. Stanton visited the experimental plats. Prof. Vlodymir Timoshenko of the Ukranian University in Czechoslovakia was a visitor on June 30. He was very much interested in the work here, as conditions in his country are very similar.

College of Agriculture, University Farm, Lincoln (Barberry Eradication, A. F. Thiel)

WYOMING

College of Agriculture, University of Wyoming, Laramie (Barberry Eradication, E. A. Lungren) (June 28)

L. D. Hutton, D. J. Thornton, and E. A. Lungren, State leader in charge, made a resurvey of several properties in Cheyenne on June 16. A few sprouting bushes were found in the park.

Mr. Thornton spent several days on second survey in the northern part of Laramie County. It is planned to complete the second survey of the county this season.

SOUTH DAKOTA

College of Agriculture, Brookings (Barberry Eradication, R. O. Bulger)

NORTH DAKOTA

Agricultural Experiment Station, Agricultural College (Flax Diseases, L. W. Boyle)

Agricultural Experiment Station, Agricultural College (Barberry Eradication, G. C. Mayoue) (July 1)

In the period from January 1 to May 31, approximately 5,000 pieces of mail, including bulletins, circulars, charts, specimens, circular letters and other materials, were distributed to public and private schools. Demonstrations and talks were made in 35 rural schools, 12 city and town schools, eight community meetings, five farmers' meetings, and six State conventions. Circular letters and publicity materials were mailed to all druggists, members of the State Bankers' Association, county superintendents of schools, legislators, and State officials.

Two thousand dodgers giving notifications of radio talks by Dr. C. R. Ball and Dr. E. C. Stakman were mailed to business men and farmers. Notices of these talks also were broadcasted from WPAK, the State College broadcasting station. The State leader made two talks from this station. Many very favorable reports have been received concerning these talks.

Beginning April 3 and continuing to May 20, classes were conducted every Tuesday and Thursday evening for the training of field men. There were two sections of the class, one for the experienced men and the other for men without previous experience. The sections of the class were brought together for special addresses by members of the faculty, the State commissioner of agriculture, and others. Of the 43 men enrolled in the class, 24 were selected.

On May 11, two men were assigned to resurvey and public demonstrations. On June 1, five more were added to the force, and by June 30 there were 14 in the field. Field operations in June consisted largely of stem-rust investigations, educational talks and demonstrations, and resurveys.

Beginning July 1, intensive second survey and an inspection along some of the principal rivers where it is suspected that seedlings may be growing, will be the major part of the field activities during the season. In connection with these activities educational talks and demonstrations will be made, principally at State fairs.

Severe winds along with drought prevailed over this State during a part of April and much of May. Heavy precipitation since May 24 has brought the crop along in good condition except for a few local areas where there has been a small precipitation.

A moderate infection was found on barberries on June 5. Barberries seemed to be more heavily infected this year compared with previous years. The first infection of black stem rust was found on winter wheat on June 11. In the past three weeks there has been some favorable weather for rust development. At this writing, a trace of black rust may be found in some of the fields in the southeastern portion of the State.

Dickinson Substation, Dickinson (Cereal Agronomy, R. W. Smith) (June 30)

Cool, cloudy weather with frequent showers prevailed during the period from June 10 to June 25. Rain fell on 11 days of this time with an aggregate rainfall of 1.34 inches. The weather was warm for the first ten days of the month, and the last five days have been hot. The maximum temperature for the month was 97 degrees on the 27th, and the minimum of 35 degrees was reached on June 1. The total precipitation for the month was 1.92 inches.

Crop conditions were fairly satisfactory until the recent hot weather. Corn and millet are still in good condition, but small grains begin to show the effects of the heat and drought and rain is badly needed.

All except the latest varieties of wheat, oats, and barley are heading, while Quality and other early varieties are almost fully headed.

Plat stakes have been placed, roads cultivated, and plats trimmed. The alleys were sown with two rows of winter wheat and do not require cultivation. The nurseries have been cultivated and hoed.

The Substation was visited yesterday by Dr. C. R. Ball.

Northern Great Plains Field Station, Mandan (Flax Breeding, J. C. Brinsmade, Jr.) (July 1)

Rain on June 18, amounting to 0.35 inch, was sufficient to germinate the remainder of the seed in the flax nurseries which had lain in the ground for nearly a month. The plants that had emerged previous to May 30,--about 15 per cent of the entire stand, are now about six or seven inches high. The plants that emerged later, about June 23, are not over an inch high. Showers on June 18, 19, 20, 21, 23, and 29, amounted to 0.97 inch. The total rainfall in June was 1.20 inches compared with the average June rainfall of 3.71 inches for the past twelve years. The total precipitation for the six months, January to June, inclusive, was only 4.71 inches compared with an average of 8.74 inches for the same period during the past twelve years. The precipitation for the first six months of 1926 was the lowest ever recorded for this period in the 52 years in which records have been taken in this locality.

Cool temperatures generally prevailed up to within a few days of the end of June. The last few days of June were very warm. The average daily evaporation for those four days was 0.329 inch, compared with an average daily evaporation of 0.207. Maximum temperature for the last half of June was 101 degrees on June 27; minimum, 41 degrees on June 24. Growth of crops not already suffering severely from lack of moisture was very rapid during those days. Crops already suffering severely from lack of moisture developed very little, and showed still further the effects of the prolonged drought.

Flax sown on May 11 in the date-of-seeding experiment looks better than that sown on earlier or later dates. The flax varietal plats sown on May 21 look cleaner than in any years since they have been grown on old land, but can not be expected to yield well unless we have more rain soon.

Lytton W. Boyle, assistant pathologist at the North Dakota Agricultural Experiment Station, Fargo, was a visitor on June 24. Dr. C. R. Ball was here on June 30.

Northern Great Plains Field Station, Mandan (Cereal Agronomy, E. R. Ausemus) (July 2)

Cereal crops have stretched out a great deal in the past two weeks. All crops show some improvement since the showers of the latter half of June, but they still are suffering from the prolonged drought.

Small grains in the varietal plats are short and there has been very little tillering of the plants. The wheat varieties are headed, while only the earlier varieties of oats and barley are headed.

Wheat and oats in the nursery are in good condition, although there is considerable firing of the leaves at the base of the plants. Nearly all the varieties and hybrids are fully headed.

The first leaf-rust pustules were found on June 21. No stem-rust pustules have been found on any of the wheat varieties. Only a few of the more susceptible varieties have a light infection of leaf rust. The weather to date has been unfavorable for the development of either form of rust. Light infections of loose smut of both wheat and oats have been noticed in the varieties and hybrids.

MONTANA

Judith Basin Substation, Moccasin (Cereal Agronomy, R. W. May) (July 1)

Crop prospects were much better at the end of June than at the middle of the month, owing to the rains that fell in the last half of June. Winter wheat is in full head, while early sown spring grains are just beginning to head. All crops are needing rain again, but it is showering a little this morning.

The precipitation recorded in June totaled 1.95 inches as compared to 3.23 inches as the normal. Precipitation has been below normal in each month so far this year. The total precipitation from January to June, inclusive, was 5.60 inches as compared to 8.93 inches as the normal for the same period. Though precipitation has been below normal, crop prospects are surprisingly good at this date.

Note-taking, weeding, and staking were the major activities on the cereal project since the last report. We practically completed staking all the plats and nursery rows yesterday.

Visitors at the station since the last report were Dr. C. R. Ball, Mr. Thos. Killand of the Northern Great Plains Field Station, Mandan, N. Dak., and Prof. Louis Vinke of the Animal Husbandry Department of the Montana State College.

Maximum temperatures recorded for the month were 90 degrees on June 26 and 27; minimum, 32 and 35 degrees on June 19 and 20.

State College of Agriculture, Bozeman (Barberry Eradication, W. L. Popham)

WESTERN BASIN AND COAST AREAS (North to West and South)

IDAHO

Aberdeen Substation, Aberdeen (Cereal Agronomy, G. A. Wiebe)

Agricultural Experiment Station, Moscow (Stripe Rust, C. W. Hungerford)

WASHINGTON

Agricultural Experiment Station, Pullman (Cereal Breeding, E. F. Gaines)

OREGON

Sherman County Branch Station, Moro (Cereal Agronomy, D. E. Stephens)

CALIFORNIA

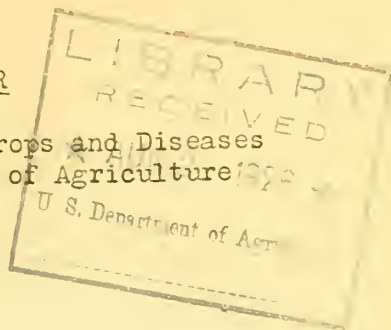
Biggs Rice Field Station, Biggs (Rice Agronomy, J. W. Jones)

University Farm, Davis (Cereal Agronomy, V. H. Florell)

Agricultural Experiment Station, Berkeley (Cereal Smuts, F. N. Briggs)

CEREAL COURIER

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No. 17

July 20, 1926
Personnel (July 11-20) and Field Station (July 1-15) Issue

PERSONNEL ITEMS

Dr. C. R. Ball, senior agronomist in charge, wrote from Sioux City, Iowa, on July 8 as follows:

"Have just had two splendid days in Nebraska with A. F. Thiel and his men. Have seen all the difficulties of a hilly area with long and deep timbered coulees and broad timbered flood plains. The timber is of all types from open forest floor to the most villainous jungles and tangles it ever has been my fortune to see or crawl through. They are composed of dogwood, sumach, currant, plum, grape, Virginia creeper, and poison ivy, in varying proportions,- and all bad. You crawl in on your hands and knees and come out on a stretcher, unless you are a barberry field man, in which case you come out smiling and ready for the next one. Where the barberry can't hide has not been discovered yet.

"Our men are finding a few missed bushes and a few sprouts and seedlings. Where bushes are large and rust-bearing we are finding rusted grain in nearby fields. Otherwise grain is rust free or practically so. Have seen some beautiful demonstrations of rust spread in Nebraska and South Dakota.

"Crops in northeastern Nebraska need rain badly. Corn mostly is well along and not suffering much. Oats, barley, and pastures are short. There is no wheat, though we did see two or three fields of Marquis and one of Turkey near the river.

"Much of the corn is listed, some checked. Nearly all land is worked at an angle of 45 degrees to compass points, and the lines show plainly in grain this dry year. Most corn is being plowed for the last time. Some barley is ripe and some oats nearly so. Latest oats are just past flowering.

"South Dakota along the river is dry. Corn is rolling and crops are short. The little winter wheat is ripe and cut."

On July 15, Dr. Ball wrote from St. Paul, Minn., as follows:

"In the Missouri Valley section of Nebraska and Iowa there is general stem rust, very severe on the little wheat that is grown, and from moderate to heavy on oats.

"This may not be directly traceable to barberries, but it is too early to tell as the field men have not covered the area which I saw. In any case, rust on barberry seemed to be old enough to have started the infections in May, and those open valleys have a full wind sweep from both north and south. One planting had just been found in Woodbury County, Iowa."

F. A. Coffman, associate agronomist in oat investigations, writes from Grant, Nebr., on July 14, that the combine-harvester investigation is progressing favorably. Data are being obtained on nearly a hundred machines. As Perkins County is so large and the machines are so scattered it is not possible for two men to get data on more than eight or ten fields a day.

Harry H. Gardner was appointed agent, effective July 16, to assist with cereal-disease investigations and experiments at La Fayette, Ind., in cooperation with the Purdue University Agricultural Experiment Station. He will conduct field and laboratory research in the development of strains of yellow dent corn that will be resistant to or immune from the attacks of corn root and stalk rots.

C. H. Kyle, agronomist in corn investigations, returned on July 10 from Louisiana and Tennessee. At Baton Rouge he found the cooperative corn experiments in very good condition. The season had been a little late but nevertheless favorable to the growth of corn. The hand pollination on the early planted corn was nearly complete by the 7th of July. At Knoxville corn was exceptionally good and was just beginning to tassel.

VISITORS

Gavril Proytchhoff, of the Ministry of Agriculture, Sofia, Bulgaria, was an Office visitor on July 20. Mr. Proytchhoff has completed graduate study at the University of Minnesota, receiving the M. S. degree in June, 1926. While in the United States he visited the agricultural experiment stations at Manhattan, Kans., Lincoln, Nebr., Ames, Ia., and Madison, Wis. Mr. Proytchhoff expects to sail from New York on July 24 for Bulgaria where he will be stationed at the experiment station at Roustchuk as plant breeder.

MANUSCRIPTS AND PUBLICATIONS

32 A manuscript entitled "The Common Barberry: A Pest," by John L. Richardson, was approved July 13 for publication in The Field (New York).

33 A manuscript entitled "Stinking Smut Cuts Profits. Dust Seed Wheat with Dry Copper Carbonate," by W. H. Tisdale, was submitted July 15 for publication as a folder in the Miscellaneous Circular series.

34 A manuscript entitled "Kill the Common Barberry," by W. E. Leer, has been submitted for publication as an Extension Bulletin of the Purdue University Agricultural Experiment Station, in cooperation with the Office of Cereal Crops and Diseases.

Galley proof of article entitled "Seed Treatment Experiments for Controlling Stripe Disease of Barley," by R. W. Leukel, J. G. Dickson, and A. G. Johnson, was read July 13.

The first part of the article entitled "Fatuid or False Wild Forms in Fulghum and Other Oat Varieties," by T. R. Stanton, F. A. Coffman, and G. A. Wiebe, appears in the Journal of Heredity 17 (No. 5): 152-165, figs. 1-2, frontispiece. May, 1926. (Received July 14) (The second part will appear in the June number.)

An article entitled "Climatic Effects in the Metabolism of the Sugar Beet," by W. E. Tottingham, S. Lepkovsky, E. R. Schulz, and K. P. Link, appears in the Journal of Agricultural Research 33 (No. 1): 59-76, figs. 1-9. July 1, 1926. (Received July 15) (Cooperation between the Office of Crops and Diseases and the Wisconsin Agricultural Experiment Station.) +Cereal

NOTICE

It will be greatly appreciated if all contributors to the Cereal Courier will hereafter send in their notes typewritten in double space instead of single space. Double space typewritten notes make easier the work of the editor and the stencil cutter.

THE DREER RED-LEAVED JAPANESE BARBERRY

By

E. C. Stakman

The Dreer red-leaved Japanese barberry (Berberis thunbergii purpurea) is immune from stem rust.

It no longer will be necessary for plant lovers to shed tears over the passing of the purple-leaved common barberry. This new variety is as colorful, more beautiful, and less dangerous.

Early in the spring of 1925 attention was called to a red-leaved barberry which was being grown for distribution by Henry A. Dreer Inc., of Philadelphia, at their nursery at Riverton, N. J. The stock had been imported from France, where, according to the Dreer Company, it probably originated as a chance seedling. In all respects, except color of leaves, it resembles the Japanese barberry; and the natural assumption would be that it probably was resistant. However, on account of the red or purple color of the leaves, it also seemed possible that it might be a natural hybrid between Berberis thunbergii and B. vulgaris purpurea or some similar type. If it was a hybrid, its appearance would not be a reliable criterion for its reaction to rust. Before introducing the barberry, therefore, the Dreer Company asked the U. S. Department of Agriculture to make tests to determine its reaction to rust.

Experiments were made in the greenhouse at University Farm, St. Paul, Minn., and in the field at the Dreer Nursery, Riverton, N. J. Several physiologic forms of Puccinia graminis from different regions of the United States were used in the inoculations. Mature plants, seedlings grown at Riverton, and seedlings grown from seed sown in the greenhouse at St. Paul were inoculated.

In the greenhouse at St. Paul, R. U. Cotter inoculated 190 plants of the red-leaved barberry with P. graminis secalis; 136 plants with P. graminis tritici; 12 plants with P. graminis agrostis; and 14 with P. graminis poae. Telia on Hordeum jubatum, which were not of the tritici or secalis form, were used to inoculate 40 plants. None of the inoculated plants became infected in any of the series, while the common barberry checks rusted quite heavily.

In the nursery at Riverton, inoculum which previously had been tested for viability, was placed around a considerable number of the bushes in April, 1926, but no rust appeared.

Not only was the barberry resistant to all of the forms of P. graminis used, but it also was found to be resistant to puncture. From unpublished results obtained by L. W. Melander it is known that there is a positive correlation between resistance to puncture and resistance to rust. Experiments were made on the Dreer red-leaved barberry, and the young leaves were tougher even than those of the ordinary Japanese barberry.

In addition, observations on a great many plants in the nursery and on those grown at St. Paul indicate that the plants are not segregating.

There seems to be conclusive evidence, therefore, that the Dreer red-leaved Japanese barberry is not susceptible to rust. Accordingly, it was introduced to the public at the Nurserymen's Convention in June, 1926. [July 13, 1926.]

FIELD STATION CONDITION AND PROGRESS

HUMID ATLANTIC COAST STATES (South to North)

GEORGIA

State College of Agriculture, Athens (Cereal Agronomy, R. R. Childs)

VIRGINIA

Arlington Experiment Farm, Rosslyn (Small Grain Agronomy, J. W. Taylor)
(July 20)

The dry weather was very favorable for curing and threshing operations, and all threshing of plat material was completed on July 19. The threshing of the nursery rows also is ahead of the average time schedule.

The winter oat yields for 1926 were better than expected, the yield being above average. On the richer land unusually high yields were obtained, several plats passing the 100-bushel-per-acre mark. The cool, dry season favored the late oat varieties; and the Winter Turf group heads the list in the average yields for 1926. Lee, Custis, and three other selections from the cross, Winter Turf x Aurora, yielded higher than the check variety. With the exception of Winter Turf, C. I. 431, and Bicknell, C. I. 206-155, all selections or varieties superior to the check average (6-plat) for the present year have been developed at the Arlington Experiment Farm from selections made either by C. W. Warburton or T. R. Stanton.

Average acre yield in bushels of varieties and selections of winter oats grown at Arlington Experiment Farm in 1926

Variety	C. I. No.	Yield (Bu. A)	Yield 6-check plats (Bu. per acre)	Gain or loss compared to check (Bu. per acre)
Winter Turf	431	68.9	60.1	+ 8.8
do	435-4	68.6	59.9	+ 8.7
do	541-4	66.7	59.9	+ 6.8
Selection	1001F1-1B ² / ₂	66.1	60.1	+ 6.0
Lee	2042	62.7	59.9	+ 2.8
Selection	1001H1-4B ² / ₂	64.3	61.9	+ 2.4
Fulghum (Sel.)	699-2011	63.6	61.9	+ 1.7
Custis	2041	61.3	59.9	+ 1.4
Selection	1001D1-2B ² / ₂	62.8	61.9	+ .9
Bicknell	206-155	64.6	64.4	+ .2
Culberson	273-I-14	62.6	64.4	- 1.8
Hatchett	838	47.6	61.9	-14.3
Red Rustproof	1815	49.4	64.4	-15.0
Dwarf Culberson	748	43.6	64.4	-20.8
Fulghum	708	36.1	60.1	-24.0
Kanota	839	26.3	60.1	-33.8
Culberson ¹ / ₁	273	62.4	----	----

¹/₁ Average of 14 check plats ²/₂ Selection from cross of Winter Turf x Aurora

Arlington Experiment Farm, Rosslyn (Corn Breeding, F. D. Richey)

Arlington Experiment Farm, Rosslyn (Cereal Smuts, W. H. Tisdale)

Arlington Experiment Farm, Rosslyn (Virus Diseases, R. W. Webb)

Arlington Experiment Farm, Rosslyn (Cereal Bacterial Diseases, C. S. Reddy)

NEW YORK

Cornell University Agricultural Experiment Station, Ithaca (Cereal Breeding, H. H. Love)

HUMID MISSISSIPPI VALLEY STATES (South to North)

LOUISIANA

Rice Experiment Station, Crowley (Rice Agronomy, J. M. Jenkins)

Agricultural Experiment Station, Baton Rouge (Corn Breeding, H. F. Stoneberg)

MISSOURI

Agricultural Experiment Station, Columbia (Cereal Agronomy, C. A. Helm)

TENNESSEE

Agricultural Experiment Station, Knoxville (Corn Breeding, L. S. Mayer)

IOWA

Agricultural Experiment Station, Ames (Oat Breeding, L. C. Burnett)

Agricultural Experiment Station, Ames (Corn Breeding, M. T. Jenkins)

Agricultural Experiment Station, Ames (Crown Rust of Oats, S. M. Dietz)

Iowa State College, Ames (Barberry Eradication, M. A. Smith)

ILLINOIS

Funk Bros. Seed Co., Bloomington (Corn Root, Stalk and Ear Rots, J. R. Holbert)

Box 72, Post Office Building, Urbana (Barberry Eradication, G. C. Curran)

INDIANA

Purdue University Agricultural Experiment Station, La Fayette (Corn Rots and Metallic Poisoning, G. N. Horfer)

Purdue University Agricultural Experiment Station, La Fayette (Leaf Rusts, H. S. Jackson and E. B. Mains)

Purdue University College of Agriculture, La Fayette (Barberry Eradication, W. E. Leer)

OHIO

Ohio State University, College of Agriculture, Columbus (Barberry Eradication, J. W. Baringer)

MICHIGAN

Agricultural College, East Lansing (Barberry Eradication, W. F. Reddy)

WISCONSIN

Agricultural Experiment Station, Madison (Wheat Scab, J. G. Dickson)

Agricultural Experiment Station, Madison (Virus Diseases, H. H. McKinney)

Department of Agriculture, State Capitol Annex, Madison (Barberry Eradication, W. A. Walker)

MINNESOTA

Agricultural Experiment Station, University Farm, St. Paul (Wheat Breeding, O. S. Aamodt)

Agricultural Experiment Station, University Farm, St. Paul (Stem Rust, E. C. Stakman)

Agricultural Experiment Station, University Farm, St. Paul (Flax Rust, A. W. Henry)

Agricultural Experiment Station, University Farm, St. Paul (Barberry Eradication, L. W. Melander)

GREAT PLAINS AREA (South to North)

OKLAHOMA

Woodward Field Station, Woodward (Grain Sorghums, J. B. Sieglinger)
(July 15)

Growing conditions have been excellent for the first half of July; there has been sufficient moisture and temperatures have been moderate.

Thinning of the sorghums is nearly completed; the July and July 15 dates remain to be done. The roadways are trimmed and disked. Counting stands and hoeing weeds are next on the program. The earlier dates are heading. Four plats, consisting of quick-maturing varieties, namely, Feterita, Early White milo, Freed sorgo, and a Freed sorgo x Kafir hybrid, were seeded today, July 15.

Wheat is turning out several bushels per acre more than was expected.

Maximum temperature for the first half of July, 100 degrees on the 3d; minimum, 58 degrees on the 13th; precipitation, 1.54 inches.

KANSAS

Agricultural Experiment Station, Manhattan (Cereal Breeding, D. D. Hill)
(July 15)

The months of April, May, and June were unusually dry. The total rainfall for these three months is 5.29 inches, which is considerably less than the normal of 12.05 inches. During this period almost the entire precipitation has been in the form of scattered showers of one-half inch or less. An unusually severe infestation of chinch bugs in connection with the drought tended to reduce yields of the small grains, particularly barley and oats.

Threshing in the nursery at Manhattan was completed on July 14. As in most parts of the State, so at Manhattan wheat yields considerably pre-harvest estimates. Yields of some of the higher yielding sorts grown in replicated rows are as follows:

exceeded

<u>Kansas No.</u>	<u>C.I.No.</u>	<u>Row No.</u>	<u>Variety</u>	<u>Yield</u>
---	---	325	Kanred x Hard Federation	37.81
2594	6471	346	Fulcaster	35.94
2536	6935	319	Newturk	35.69
---	---	181	Purple Straw x P1066-1	34.45
---	---	355	Illini Chief x Kanred	33.99
---	---	115	Alberta Red Sel.	33.59
---	---	262	Kanred x Marquis Sel.215043	33.27
---	---	364	Illini Chief x Kanred	32.94
---	---	361	do	32.30
---	---	349	do	31.79
321	6249	16	Nebraska No. 6	31.77
2479	---	121	Turkey x Bearded	31.54
284	---	10	Malakov (Nebr. 1015)	31.53
455	---	274	Kanred x Marquis Sel.215282	31.46
2480	---	124	Turkey x Bearded	31.12
---	---	370	Illini Chief x Kanred	31.09
---	---	31	Blackhull Sel.	30.91
2593	---	382	Indiana Swamp Sel.	30.79
2472	5549	55	Kharkov (Mont. No. 36)	30.78
---	---	340	Kanred x Hard Federation	30.68
			Average 14 Kanred checks	30.61

It is interesting that most of the highest yielding strains this year are, for the most part, new selections or crosses tried for the first time in replicated rod rows. The Kanred x Hard Federation and Illini Chief x Kanred crosses appeared particularly promising this year. About 200 Kanred x Hard Federation crosses were grown in triplicate rod rows, some of which yielded especially well.

The Kansas wheat train, which again will carry the gospel of better wheat farming and improved varieties to the wheat farmers of the State, is scheduled to leave July 19. Members of the Agronomy Department and the extension service accompanied the train.

Dr. C. R. Ball, senior agronomist in charge of the Office of Cereal Crops and Diseases, inspected the various cooperative cereal projects on June 16 and 17.

T. R. Stanton, in charge of oat investigations, was a visitor on June 22 and 23.

Agricultural Experiment Station, Manhattan (Corn Breeding, A. M. Brunson)

Agricultural Experiment Station, Manhattan (Wheat Foot Rots, Hurley Fellows)

Agricultural Experiment Station, Manhattan (Wheat Leaf Rust, C. O. Johnston)

Hays Branch Experiment Station, Hays (Cereal Agronomy, A. F. Swanson)

COLORADO

Agricultural College, Ft. Collins (Barberry Eradication, E. A. Lungren)

NEBRASKA

North Platte Substation, North Platte (Cereal Agronomy, G. F. Sprague)
(July 16)

Harvesting is nearly completed and threshing will begin next week. All small grain yields will be light and the grain of only fair quality.

Corn and sorghums are in excellent condition, and if favorable moisture conditions continue a good crop should result. Corn is beginning to show tassels and shoots, and pollination probably will begin next week. Corn varieties grown under irrigation are a few days later than the same varieties grown under dry conditions. The vegetative development also is greater.

In the immediate vicinity corn is being laid by. All small grains are harvested with the exception of a few fields that will be harvested with a combine.

In the first half of July a number of light showers were recorded on 11 days, varying in amounts from a trace to 0.61 inch. The total rainfall for the period was 2.10 inches.

The maximum temperature was 91 degrees and the minimum 53 degrees.

College of Agriculture, University Farm, Lincoln (Barberry Eradication, A. F. Thiel)

WYOMING

College of Agriculture, University of Wyoming, Laramie (Barberry Eradication, E. A. Lungren)

SOUTH DAKOTA

College of Agriculture, Brookings (Barberry Eradication, R. O. Bulger)

NORTH DAKOTA

Agricultural Experiment Station, Agricultural College (Flax Diseases, L. W. Boyle)

Agricultural Experiment Station, Agricultural College (Barberry Eradication, G. C. Mayoue)

Dickinson Substation, Dickinson (Cereal Agronomy, R. W. Smith)

Northern Great Plains Field Station, Mandan (Flax Breeding, J. C. Brinsmade, Jr.) (July 16)

Exceptionally dry weather has prevailed during the first half of July. There were showers on five days, not over 0.05 inch in any one day, and amounting only to 0.09 inch for the entire period. Maximum temperature, 97 degrees, July 15; minimum, 47 degrees, July 11.

Crops in the locality are very poor, and in many cases will be a total loss. Some places favored by local showers probably will produce small crops.

Flax sown on April 20, May 1, and May 11 bloomed for a very short period and already has practically stopped blooming after setting only a small crop of bolls. Flax that germinated late in the nursery seedings is making little growth, and the stands have been greatly reduced by canker.

J. Allen Clark, in charge of western wheat investigations, Charles H. Clark, formerly in charge of flax investigations, and Ralph W. Smith, in charge of cereal experiments at the Dickinson Substation, were visitors on July 12 and 13. J. Allen Clark returned to the Station July 15. E. R. Ausemus, in charge of cereal agronomy, left this morning (July 16) with Mr. Clark on a trip to visit experiment stations in western North Dakota and Montana.

Northern Great Plains Field Station, Mandan (Cereal Agronomy, E. R. Ausomus
(July 16)

Wheat is all headed, and some of the earlier varieties are beginning to ripen. Oats and barley are badly damaged by the drought and the excessive growth of Russian thistles.

Cereal crops on the station are very poor, with the exception of those grown on summer fallow. This year shows very strikingly the effect of the previous treatment of the land. Wheat throughout the country is about gone except in a few spots. Many farmers are pasturing their wheat fields. Others plan to run the binder over the better patches in an effort to get their seed back.

Corn is in fair condition but is beginning to show the effects of the drought.

The first pustule of stem rust was found on July 8 in the field plat of Hard Federation.

Wheat varieties and hybrids in the nursery are in good condition, although they are suffering to some extent in spots from the lack of moisture.

MONTANA

Judith Basin Substation, Moccasin (Cereal Agronomy, R. W. May) (July 15)

Winter wheat and the earliest spring barleys are beginning to ripen. All other spring grains are in full head. Winter wheat probably will not make an average yield, because of the drought in May and June. Spring grain prospects are excellent at this date owing to good rains on July 1 and 7. The earliest varieties of winter wheat will be ready for harvest about July 20, while the latest varieties will not be ready until after August 1. Some of the barleys may be ready for harvest in the last few days of July.

The precipitation recorded in the first half of July was 3.33 inches. The normal for the month is only 1.95 inches. This is the first month since last October that the monthly precipitation has exceeded the normal. In only two instances since 1908 has the July precipitation exceeded the amount that has already fallen this month. These instances were in 1915 and 1921.

The major field operations since the last report include note-taking, weeding, and roguing. The weeding is fairly well caught up, but much roguing remains to be done.

A county agents' meeting is to be held here on July 19; 150 to 200 visitors are expected. The Annual Farmers' Picnic will be held on July 22 and about 5,000 people are expected. The speakers will include Honorable J. E. Erickson, Governor of Montana, Representative Scott Leavitt, of the Second District, President Alfred Atkinson of the Montana State College, and A. J. Ogaard, agronomy specialist of the Extension Service of the College.

J. C. Taylor, Director of the Extension Service, visited the Substation on July 13.

The maximum temperatures recorded in the first half of July were 87 degrees and 86 degrees on July 14 and 12, while the minimum temperature was 46 degrees on July 3 and 9.

State College of Agriculture, Bozeman (Barberry Eradication, W. L. Popham)

WESTERN BASIN AND COAST AREAS (North to West and South)

IDAHO

Aberdeen Substation, Aberdeen (Cereal Agronomy, G. A. Wiebe)

Agricultural Experiment Station, Moscow (Stripe Rust, C. W. Hungerford)

WASHINGTON

Agricultural Experiment Station, Pullman (Cereal Breeding, E. F. Gaines)

OREGON

Sherman County Branch Station, Moro (Cereal Agronomy, D. E. Stephens)

CALIFORNIA

Biggs Rice Field Station, Biggs (Rice Agronomy, J. W. Jones) (July 17)

The weather has been almost ideal for the growth of rice during the past three weeks. Early varieties sown the first part of April on commercial fields are starting to head. At this time many of the commercial fields look very grassy, as the grass is nearly all headed out and hides the rice.

The July 12 report of the California Cooperative Crop Reporting Service estimates the acreage sown to rice at 150,000 compared with 103,000 acres harvested in 1925. The condition of the crop is about 2 per cent above normal at this time, and the forecast of production for this year is 8,463,000 bushels. The December estimate of last year's production was 4,738,000 bushels.

Rice at the station is doing reasonably well. Some of the early varieties are starting to head, and the midseason varieties are starting to boot. There is a noticeable increase in the growth of rice fertilized with ammonium sulphate when compared with controls. Present indications are that the harvest probably will be earlier this fall than usual.

University Farm, Davis (Cereal Agronomy, V. H. Florell) (July 16)

The harvesting of the cereal experiments is now nearly completed. Making plant selections from the F_5 wheat-hybrid material is now in progress. Most of this will be finished today.

The cereal experiments in plats have been threshed. Threshing of the nursery material will be resumed tomorrow, and should be completed in about a week.

The average yields of grain in bushels per acre of the cereal varieties grown in the plats are given in the following tables.

Average acre yields in bushels of wheat F_5 replicated five times in 50th-acre plats at University Farm, Davis, Calif., in 1926.

<u>Variety</u>	<u>C. I. No.</u>	<u>Bu. per acre</u>
Little Club x Fretes, Calif. 1921 B1	----	60.0
Escondido (Def. Sel.) Calif. Sel.	----	57.3
White Federation	4981	57.3
Bunyip	5125	53.5
Pusa No. 4 (White Chaff) Calif. Sel.	----	52.0
Hard Fed. x Prelude 1985 B6-2-5-3 ^{a/}	----	52.0
Hard Fed. x Bunyip, Calif. No. B537	----	51.8
Thew x Cedar, Calif. No. F103	----	51.2
Onas	6221	51.0
Hard Federation	4733	51.0
Baart x Hard Federation 1969 A1-16-10	----	50.5
Sonora x Cedar, Calif. No. 873	----	50.3
Baart x Hard Federation 1969 C1-16-5	----	49.2
Hard Federation x Prelude 1985 A1-15-1	----	48.2
Hard Fed. x Klein Koren 1986 A4-3-2	----	47.1
do 1986 A1-1-3	----	46.7
Federation	4734	44.2
Defiance Yaqui x Baart, Calif. No. 109	----	43.3
Hard Fed. x Klein Koren 1986 A4-3-1	----	43.2
Hard Federation Sel. ^{a/}	6644	42.2
Defiance Yaqui x Sonora, Calif. No. B236	----	41.7
Marquis	4158	39.2
Sonora x Cedar, Calif. No. 903	----	36.7
Defiance x Ryan, California Hybrid	----	35.5
Baart	1697	33.2
Kharkov	1442	30.7
Sonora	3036	29.2
Pacific Bluestem	4067	26.5
Little Club	4066	15.3

^{a/} Average of 3 plats

Average acre yields in bushels of barley grown in replicated 50th-acre plats at University Farm, Davis, Calif., in 1926

<u>Variety</u>	<u>C. I. No.</u>	<u>Bu. per acre</u>
Vaughn (Smooth Awn)	1367	93.2
Atlas	4118	78.8
Cape x Coast, Calif. No. 1527	----	78.4
Flynn	1311	77.5
Sacramento, Calif. No. 1511	----	75.4
Hero, Calif. Sel.	----	66.7
Hero	1286	66.5
Club Mariout	261	62.9
Smyrna	195	61.5
Coast	690	60.9
Tennessee Winter, Calif. No. 2272	----	59.8
Tennessee Winter, Calif. No. 2330	----	57.5
Tennessee Winter	257	57.1
Mechanical Mixture ^{a/}	4115	67.7
Composite Cross ^{a/}	4116	63.6

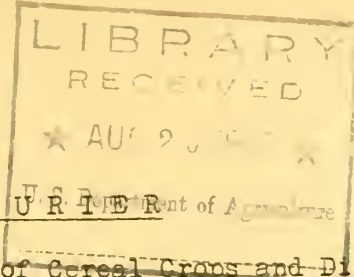
^{a/} Average of 2 plats

Average acre yields in bushels of oats grown in 50th-acre plats replicated four times at University Farm, Davis, Calif., in 1926

<u>Variety</u>	<u>Bu. per acre</u>
Fulghum	79.7
Kanota, Kans. No. 5179	72.3
Cowra, Calif. No. 35	71.9
Wilga	68.0
Sunrise, Calif. No. 208	60.9
Glenn Innes, Calif. No. 8	53.1
California Red, Calif. No. 1003	41.4
Cowra, Calif. No. 34	37.5

Agricultural Experiment Station, Berkeley (Cereal Smuts, F. N. Briggs)

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CEREAL COURIER

Official Messenger of the Office of Cereal Crops and Diseases
Bureau of Plant Industry, U. S. Department of Agriculture
(NOT FOR PUBLICATION)

Vol. 18

No. 18

July 31, 1926
Personnel (July 21-31) and Project Issue

PERSONNEL ITEMS

Dr. C. R. Ball, senior agronomist in charge, returned from an extended field trip on July 27. An indisposition manifesting itself the last few days of his trip has made it necessary for him to undergo treatment for a few days at Providence Hospital in Washington. Members of the Office staff and Dr. Ball's many friends will be glad to know that his recovery is progressing satisfactorily. It is expected that he will return to official duty shortly after August 1.

Dr. Ball reports a highly successful trip throughout the barberry-eradication area. Opportunity was afforded him to study the problems at first hand and to gain a more comprehensive idea of the difficulties and necessities of the campaign. The trip was undertaken primarily to obtain necessary information as a basis for the future administration of the barberry-eradication program. From that standpoint Dr. Ball considers his trip eminently satisfactory.

T. R. Stanton, agronomist in charge of oat investigations, wrote from Ames, Iowa, on July 21, that with the help of Mr. V. F. Tapke the harvest of the oat breeding nursery probably would be completed by July 23.

"Apparently owing to the dry and peculiar season many of the late oat varieties in the identification nursery never headed at all. As a result of showers early in July, however, the strains and varieties that were headed at that time were maturing very slowly but fairly normally until the very warm weather, which was accompanied by a high and sometimes almost hot wind, started on July 15. This continued until July 20 and dried up midseason and late oats to the extent that some of the nursery seedings were not worth harvesting.

"Stem rust also greatly injured the later maturing oats in the nursery. Apparently stem rust of oats is more prevalent here in central Iowa than it has been for some years. The epidemic at the Agronomy Farm has been the worst I have seen in Iowa. On the whole, the season for oats has been a peculiar one.

"In traveling by automobile to St. Paul, Minn., to attend the meeting of the Corn Belt Section of the American Society of Agronomy, it was noted that oats in north-central Iowa were in only fair condition. Many fields were still quite green and undoubtedly were seriously injured by the recent hot spell. Corn in general seemed to be in good condition but needed rain. Many fields were well advanced. A considerable number of fields of "succotash," an oat-barley mixture, were noticed in the dairy section of southern Minnesota.

"The meeting at St. Paul was well attended and much interest was shown in the great variety and general excellence of the cereal and other agronomic experiments in progress at the Minnesota Agricultural Experiment Station. Next year's meeting of the Corn Belt Section of the American Society of Agronomy will be held at Wooster and Columbus, Ohio."

VISITORS

L. A. Fitz, in charge of the Chicago office of the Grain Futures Administration, of the U. S. Department of Agriculture, was an Office visitor July 27.

Dr. M. J. Sirks, Research Geneticist at the State Institute for Plant Breeding, Wageningen, Holland, called at the Office on July 27 and 28.

C. E. Thomas, of the Thomas Company, Gaithersburg, Md., on July 29 brought in some wheat nematode galls taken from wheat grown this year about eight miles southwest of Rockville, Md. This is the second report of the occurrence of wheat nematode on wheat grown in Maryland, the first report being from Dr. R. A. Jehle and Prof. F. W. Oldenburg, of the University of Maryland, who found a single head of nematode-infected wheat in a field near Rockville.

Mr. Thomas, who found the nematode galls in a sample of wheat brought to his elevator, estimated that in the sample examined there was approximately one nematode gall to each hundred kernels of wheat. He also noticed numerous nematode galls on the floor of the truck on which the farmer had been hauling wheat. Indications are, therefore, that there was considerable wheat nematode infection in the field from which this wheat had come.

MANUSCRIPTS AND PUBLICATIONS

35 A manuscript entitled "Effects of Soil Moisture and Temperature and of Dehulling on the Infection of Oats by Loose and Covered Smuts," by C. O. Johnston, was approved July 29, for publication in Phytopathology.

Galley proof of paper entitled "Breeding Wheat for Higher Protein Content," by J. Allen Clark, to be published in the Journal of the American Society of Agronomy, was read July 21.

The article entitled "Personnel, Personality and Research," by Carleton R. Ball, appears in The Scientific Monthly 23: 33-45. July, 1926.

MEMORANDUM

In accordance with provisions of the Retirement Act of July 3, 1926, 3½ per cent will be deducted from salaries beginning July 1. Official notification was issued by the Disbursing Clerk to Washington personnel but apparently through oversight the field employees were not notified.

PROJECT REPORTSREPORT OF PROGRESS IN BARBERRY ERADICATION FOR THE FISCAL
YEAR ENDED JUNE 30, 1926By Dr. F. E. Kempton, Associate Pathologist in Charge,

and

Lynn D. Hutton, Associate Pathologist ^{1/}

The eradication of common barberry is succeeding slowly but surely. The cooperation of property owners and the whole-hearted cooperation and support of State and other organizations interested are bringing this about.

The ninth fiscal year of this campaign has been completed. In these nine years, many unknown facts relating to the spread of stem rust from common barberries, the distribution of barberry bushes and their seeds, methods of survey, and successful methods of eradication have been revealed.

Funds

The Federal appropriations have totaled \$2,155,715. The States and other cooperating agencies have contributed \$564,690. In addition, property owners and others interested have contributed much time and labor and, in many cases, chemicals for eradication. The appropriation for the fiscal year ended June 30, 1926, was \$375,000. In the same period other interested agencies contributed cash and services equivalent to \$90,930.

Cooperation and Organization

Barberry eradication is conducted by the Office of Cereal Crops and Diseases, Bureau of Plant Industry, U. S. Department of Agriculture, in cooperation with the State agricultural colleges of 13 north-central States, namely, Colorado, Illinois, Indiana, Iowa, Michigan, Minnesota, Montana, Nebraska, North Dakota, Ohio, South Dakota, and Wyoming. There also is cooperation with the State departments of agriculture of most of the 13 States, The Conference for the Prevention of Grain Rust, of Minneapolis, Minnesota, and organizations of farmers and business men.

^{1/} Credit is hereby acknowledged to State leaders, collaborators, and agents, who have supplied data, and to Mrs. M. S. Koepfle, who has compiled the data and summarized them into tables.

National leaders of the Office of Cereal Crops and Diseases direct the campaign. A State leader and a corps of field agents in each State carry out the various field operations. A representative is detailed to The Conference for the Prevention of Grain Rust. The various phases of the campaign include investigation, education, survey, and eradication. Collaborators, agents, and cooperators from the agricultural colleges, extension divisions, and interested organizations aid in furthering the survey and educational activities. Collaborators from some adjacent States furnish data in regard to prevalence and spread of stem rust.

Investigations

Stem Rust Epidemiology Studies

Stem rust epidemiology studies are carried forward each year under the immediate supervision of Dr. E. C. Stakman, Agent, University Farm, St. Paul, Minnesota. The members of the barberry eradication force cooperate closely. In these studies an attempt is made to find the source of stem rust inoculum responsible for local and widespread epidemics of stem rust and to determine the extent of spread and the resulting damage.

The stem-rust situation, as given in the various issues of The Rust Reporter of the spring and early summer of 1926 may be summarized as follows: The barberry eradication and epidemiology forces are cooperating more closely than ever this year. There was some stem rust in the wheat-growing regions of Mexico this spring. Stem rust overwintered in the uredinial stage in southern Texas and, for the first time in several years, at Denton, Texas.

Stem rust did very little damage in Texas, Oklahoma, Kansas, Missouri, and Nebraska. While wheat was not harvested in late June in South Dakota and southern Minnesota, it did not seem that the rust could do very much damage except locally. Whether or not a general epidemic will develop in the Red River Valley of Minnesota and North Dakota and in certain other localities of North Dakota and Minnesota depends upon the weather between late June and harvest time.

Stem rust is much later in most places than it was last year. The weather in most places has not been so favorable for the development of rust as it was last year. This much is certain, however: Wherever there are barberry bushes stem rust is exceptionally heavy.

There is an unusual development of stem rust in oats. Where this rust came from is difficult to say. Heavily infected barberries have been reported from many different sources.

Classification of Barberry Species, Varieties and Hybrids

The Office of Horticulture and the Office of Cereal Crops and Diseases cooperate in growing a collection of *Berberis* at Bell, Md. Mr. B. Y. Morrison, Associate Horticulturist, is in charge. Plants are propagated from this collection for testing for susceptibility to stem rust. The various species, varieties and hybrids of barberry that are grown and are likely to be grown in the United States are studied and classified. Over 50 species, varieties and hybrids were added to the collection in the past year. Seeds of a number of other species and hybrids were obtained from various sources. Plants of more than 50 species and varieties were sent to St. Paul, Minn., for testing for stem-rust susceptibility.

Inoculations of Barberry Species, Varieties and Hybrids with Stem Rust

These studies were conducted by Ralph U. Cotter under the direction of Dr. E. C. Stakman, at University Farm, St. Paul, Minn. It is reported that of the 40 species and varieties of barberries inoculated during the past year with two physiologic forms of *Puccinia graminis secalis*, 19 became infected and 30 remained free from rust. The degree of infection on those which became rusted ranged from light to very heavy, although it was not constant under all conditions.

Other inoculations are in progress. A number of tests are necessary, since negative results of trials with one physiologic form or one variety of *Puccinia graminis* are untrustworthy. The red-leaved variety of Japanese barberry which the U. S. Department of Agriculture tested at the request of a Philadelphia nurseryman was found immune from stem rust and accordingly was released for distribution. The investigation of the correlation between resistance to puncture of the leaves of barberry species and their susceptibility to or immunity from stem rust is being continued by L. W. Melander and Ralph U. Cotter.

Educational Activities

The publicity of the first years of the campaign was designed not only to get the support of the public of this new method of plant-disease control but to enlist their aid in destroying common barberries. No plan was included to get a report of the location of destroyed bushes. Therefore, the surveys that followed were somewhat inefficient in that no clue was given to the finding of sprouts, poorly eradicated bushes, and seedlings grown from seeds spread from these bushes.

It was later considered advisable to withhold publicity from certain areas for a time in order that bushes might not be cut down by property owners before the survey reached these areas.

In the spring of 1922, The Conference for the Prevention of Grain Rust was organized, with headquarters at Minneapolis, Minn. This organization immediately began publicity activities. Larger appropriations resulted in enlargement of field activities and the necessity again arose for enlisting the public support and cooperation. For making direct contacts with this Conference and assuming responsibility for the publicity campaign, one man was assigned with headquarters at the Conference. A gradual change then was made from publicity to educational phases. This has brought about a more complete understanding by the public of the seriousness of the stem rust problem and the need of barberry eradication as a means of its control. Through this, whole-hearted cooperation of interested agencies and property owners has been obtained.

In 1925, according to a report by Noel F. Thompson, Associate Pathologist, cooperating with The Conference for the Prevention of Grain Rust, this Conference supplied for distribution, the following publicity material: 3,000 colored plates illustrating the common barberry and stem rust; 3,000 crossword puzzles on stem rust and barberry eradication; 10,000 copies of a statement showing losses of grain caused by stem rust; about 40,000 copies of the circular entitled "Barberry or Grain;" 25,000 colored return postcards; 25,000 announcements of radio talks; about 5,000 copies of mimeographed matter. In addition, a number of specimens of barberry were distributed. Demonstrations, panels, window displays, motion picture films, moving transparencies, window flashers containing photographs of barberry and stem rust, and an automatic display machine were circulated.

Mr. Thompson also reports that State leaders distributed over 200,000 Federal and State bulletins and circulars, 5,000 posters, 10,000 copies of mimeographed State data for use in schools, 15,000 lesson plans for the study of stem rust and barberry eradication, and about 185,000 form letters giving special information to property owners. In the 13 States of the area there were listed in the State census of 1921-22 more than 96,000 schools. In the school year 1925-26 about 33,000 of these were reached with educational material. In 1923-24 the percentage of schools reached was 10.4. In 1924-25, about 11 per cent was reached and, in 1925-26, the percentage was almost 35. If this latter percentage can be maintained, almost all schools can be reached in three years.

News articles, special articles, press releases, and reports were furnished by leaders to newspapers and magazines. A number of articles were released from Washington or from the State headquarters through information offices.

Local publicity and educational activities during the course of the survey are very effective. Most of the State leaders select a field man trained in the preparation of news articles. He, with the aid of the leader and other field agents, supplies timely stories to local papers and places demonstrations at special vantage points.

An attempt is being made to reach some of the boys' and girls' clubs. This seems to be a particular field for future educational endeavor.

Surveys

Three surveys, namely, the original or first survey, the second survey, and a continuing resurvey are in progress. An area of more than 848 counties has been covered in the first survey. About 57 were covered in the fiscal year ended June 30, 1926. There remain about 55 counties to cover by first survey. These are distributed in eastern Ohio, northern Michigan, southern Illinois, and the northern portion of Montana. Most of these counties are difficult to survey and about half of them are known to contain many planted and escaped barberries.

The second survey was begun in 1922. About 53 counties were covered in the fiscal year 1925-26. On 1,005 properties 55,001 bushes were found that had been overlooked in the first survey, and on 109 properties 19,334 seedlings were found that had grown since. The facts brought out in the first survey in regard to distribution of bushes and seedlings made possible the finding of barberries on second survey in hundreds of places where they were missed early in the first survey. In this second survey 169 counties have been covered. This is slightly less than one-fifth of the number of counties covered by the first survey. Since the second survey begun on January 1, 1922, 65,828 bushes were found on 2,145 properties and 29,922 seedlings were found on 174 properties. These bushes and seedlings were scattered in hedge rows, under trees, among tall weeds and grass, in ravines and rocky cliffs, along brushy fence rows and stream banks and sometimes in dense woodlands.

One or more resurveys are made of each property upon which common barberry bushes have been located. Surrounding properties upon which seedlings are likely to appear from seed scattered from fruiting bushes also are inspected. This resurvey is a continuous one, following about two years behind the first survey. It is combined in some cases with the second. Many of the properties upon which barberries are found and all areas of escaped bushes must be reinspected a number of times. This is necessary because it is difficult to find all bushes and scattered seedlings and because seedlings may continue to appear each year for a number of years. In the fiscal year 1925-26, sprouting bushes numbering 16,533 were found on 1,637 properties and 365,025 seedlings were found on 716 properties.

In this continuing resurvey from April 1, 1918, to June 30, 1926, sprouting bushes numbering 291,894 were found on 12,841 properties. Seedlings numbering 2,552,175 were found on 4,173 properties. All of the seedlings and most of the sprouting bushes were destroyed when found.

Transportation

In carrying forward a campaign of this size and scope, a great deal of travel is necessary. Travel for supervision is either by train or automobile as the needs of the work demand. Survey of properties are made on foot. In the survey of cities and towns, other transportation is seldom needed. In the survey of rural properties the great distances to be traversed and the necessity of transporting tools and chemicals for eradication make it necessary to use motor vehicles.

The surveys are carried on during a rather short season of the year, April to November being the maximum in most States, while most of the work is done in midsummer.

For the longer seasonal use 52 light trucks are owned, maintained, and operated. They are used for transporting chemicals and tools as well as the men who do the work. These Government-owned trucks are operated more cheaply over this longer period than similar cars can be rented. The peak load of transportation in midsummer is cared for by rented automobiles, it being more economical to rent cars for this short period than to purchase and maintain additional Government-owned trucks. Of the 52 trucks purchased about July 1, 1923, a total of 20 were traded in as part payment on new ones about May 1, 1925. These trucks had traveled 383,003 miles or an average of 19,150 miles per truck. The cost per mile for operation and depreciation averaged \$.053.

In the spring of 1926, 24 trucks were traded in as part payment for new ones. These had traveled 601,318 miles or an average of 25,055 miles per truck. The average cost per mile for operation and depreciation was \$.05.

Eradication

Either salt or kerosene is used for eradication wherever possible. Barberries growing near trees or other valuable plants usually are dug. Small seedlings are pulled, while larger ones are treated with chemicals. Wherever either salt or kerosene is applied properly, sprouts seldom are found. Results indicate that chemicals should be used in nearly all cases, using much smaller quantities if valuable plants are near by.

In the past fiscal year 330.5 tons of salt and 5,079.5 gallons of kerosene were used. Since the chemical method of eradication was adopted more than 1,170 tons of salt, 20,319 gallons of kerosene, and 1,056 gallons of sodium arsenite solution have been applied to common barberries.

Discussion

The results of this fiscal year show that wherever there are many common barberries stem rust usually may be found spreading to grains and grasses. Local areas of severe stem-rust damage have continued to appear in the 13 States of the barberry area. In most cases, overlooked barberries were located after a careful inspection of infected areas. No doubt, many common barberry bushes and seedlings still exist in the barberry eradication area. These must be found and destroyed. It is evident that barberry eradication is a material aid in the solution of the stem-rust problem. Stem-rust control has resulted from the eradication of all barberries from local areas in the eastern group of the barberry eradication States. General stem-rust epidemics seem to be less severe in the last few years; it is not possible, however, to judge or draw definite conclusions from the results of such a short period of years. Stem rust overwinters in the uredinial stage in the south and no doubt some is blown

into a portion of the barberry-eradication area. This inoculum with that from infected barberries within the area are the two principal sources of stem rust each year in these 13 States. In some years very little stem rust blows in from outside sources, but each year infected barberries within the area have been found spreading stem rust to grains and grasses. It is not possible to eliminate the stem rust overwintering in the southland. The course of the winds can not be modified. The eradication of all barberries in the north-central grain-growing States is possible and, with their destruction, a very obvious and traceable source of stem rust is eliminated. In many areas the elimination of barberries has already so reduced stem-rust losses that it is again possible to grow grain. The finding and destroying of every common barberry bush and seedling in these 13 States will forever rid this area of this worthless pest and materially aid grain production.

Summarized Results

During the fiscal year ended June 30, 1926, approximately 57 counties were covered in original survey. In the second survey, approximately 53 counties were covered. The continued resurvey of the properties upon which bushes had previously been found and adjacent properties to which seeds may have been scattered has followed as closely as conditions permit. Bushes not previously located numbering 136,673 were found on 3,374 properties and 616,297 bushes were destroyed on 3,461 properties. The larger number of those destroyed were bushes found late in the previous season. These totals include 55,001 bushes found on 1,005 properties in the second survey. In the continued resurvey 16,588 sprouting bushes were found on 1,687 properties and 17,046 were destroyed on 1,695 properties. Some of these had been found in the previous year and not destroyed when found. In these surveys 708,373 seedlings were found and 762,222 were destroyed. Some of these had been found late in the previous season. These data are summarized in Tables 1, 2, 5, 6, 9, 10, 13 and 15.

During the entire campaign from April 1, 1918, to June 30, 1926, an area equivalent to about 848 counties has been covered in the first survey. This includes a city survey and a survey of farms. In a second survey, more than 169 of the counties covered in the first survey have been covered. This is not quite one-fifth of the total covered on the first survey. Properties upon which bushes have been found and adjacent properties likely to have seedlings growing upon them were revisited in the continuing resurvey in approximately all counties covered by the first and second surveys to December 31, 1924.

Original bushes numbering 6,506,825 have been located on 72,778 properties. Of these, 6,447,966 have been destroyed on 71,964 properties. In resurvey, 291,894 sprouting bushes were found on 12,841 properties and 291,326 sprouting bushes were destroyed from 12,827 properties. In all surveys 5,340,302 seedlings were found and 5,335,965 were destroyed. The number of bushes and seedlings includes those found and destroyed in the second survey.

A grand total of 12,139,021 bushes, sprouting bushes, and seedlings has been found in all surveys in the entire campaign. Of these, 12,075,257 have been destroyed, and arrangements have been made for the destruction of the remainder. These data are summarized in Tables 3, 4, 7, 8, 11, 12, 14, 16 and 17.

ORIGINAL SURVEY, PROPERTIES, July 1, 1925, to June 30, 1926

Table 1. Data showing, by States, the number of properties on which barberry bushes were found and destroyed in all surveys, and the number of properties upon which seedlings were found and destroyed in the original and second surveys during the fiscal year July 1, 1925, to June 30, 1926

State	Number of properties on which bushes were found		Total number of properties on which bushes were found		Total number of properties on which bushes were found		Total number of properties on which bushes were found		Total number of properties on which bushes were found		Total number of properties on which bushes were found		Total number of properties on which bushes were found		Total number of properties on which bushes were found		Total number of properties on which bushes were found		Total number of properties on which bushes were found				
	Number of counties	In country	In cities	Towns	Escaped	Total	Original	Survey	Original	Survey	Original	Survey	Original	Survey	Original	Survey	Original	Survey	Original	Survey	Original	Survey	
Colorado	0	3	611	69	40	720	26.40		3	2	393	5	3	753	3	251	1,004	8	1	0	1	1	
Illinois	0	34	43	80	214	300	1.67		6	9	24	72	10	59	69	116	116	11	3	56	6	62	
Indiana	0	40	43	80	214	300	1.67		6	9	24	72	10	59	69	116	116	11	3	56	6	62	
Iowa	0	43	40	80	214	300	1.67		6	9	24	72	10	59	69	116	116	11	3	56	6	62	
Michigan	8.90	19	40	80	214	300	1.67		6	9	24	72	10	59	69	116	116	11	3	56	6	62	
Minnesota	1.67	19	40	80	214	300	1.67		6	9	24	72	10	59	69	116	116	11	3	56	6	62	
Montana	13.79	6	19	40	214	300	1.67		6	9	24	72	10	59	69	116	116	11	3	56	6	62	
Nebraska	.50	5	14	0	42	61			3	5	8	11	10	10	20	30	30	8	7	0	0	7	
North Dakota	0	14	280	2	484	722	5.65		30	16	46	30	10	20	30	30	30	30	0	0	0	0	
Ohio	5.65	280	2	484	722	722	5.65		30	16	46	30	10	20	30	30	30	30	0	0	0	0	
South Dakota	0	2	102	229	300	402			74	72	146	74	13	13	26	459	1,010	74	3	29	3	162	
Wisconsin	0	102	1	0	229	402			402	300	702	2	236	236	216	452	452	44	38	11	49	49	
Wyoming	.12	1	0	0	0	1			2	1	3	2	2	1	3	3	3	0	0	0	0	0	
Total	57.03	1,160	1,243	2,214	3,374	3,374			1,759	1,702	3,461	438	237	204	441	441	441	441	441	441	441	441	441

ORIGINAL SURVEY, BUSHES AND SEEDLINGS, July 1, 1925, to June 30, 1926

Table 2. Data showing, by States, the number of barberry bushes found and destroyed in all surveys, and the number of seedlings found and destroyed in original and second surveys during the fiscal year July 1, 1925, to June 30, 1926

State	Number of bushes found--			Number of bushes destroyed:			Number of seedlings					
	In cities: and towns:	In country: Escaped:	Total	Total	Dug	Treated	Total	Found	Dug	Treated	Destroyed	Total
Colorado	10:	13:	36:	46:	28:	26:	54:	155:	0:	155:	0:	155
Illinois	3,593:	45,795:	49,345:	52,933:	11,278:	41,660:	52,933:	3,154:	3,960:	4,194:	4,194:	3,154
Indiana	85:	391:	575:	660:	114:	565:	679:	686:	222:	414:	414:	636
Iowa	135:	1,105:	1,696:	1,831:	376:	1,453:	1,829:	3,535:	1,006:	2,529:	2,529:	3,535
Michigan	152:	12,458:	12,650:	13,032:	860:	12,496:	13,356:	153,696:	148,864:	4,832:	4,832:	153,696
Minnesota	50:	973:	1,768:	1,833:	366:	1,472:	1,833:	4,023:	142:	3,881:	3,881:	4,023
Montana	14:	978:	1,073:	1,087:	467:	436:	903:	2,950:	1,855:	1,095:	1,095:	2,950
Nebraska	12:	701:	1,249:	1,261:	222:	1,008:	1,230:	1,940:	1,930:	9:	9:	1,939
North Dakota	87:	0:	199:	266:	66:	220:	286:	0:	0:	0:	0:	0
Ohio	2,711:	28,106:	30,044:	32,755:	4,953:	28,593:	33,551:	157,213:	9,510:	147,703:	147,703:	157,213
South Dakota	2:	154:	504:	506:	211:	295:	506:	285:	285:	0:	0:	285
Wisconsin	341:	29,776:	30,058:	30,399:	485,284:	23,804:	509,088:	10,711:	13,457:	1,154:	1,154:	14,611
Wyoming	1:	0:	33:	34:	6:	33:	39:	0:	0:	0:	0:	0
Total	7,193:	120,450:	129,480:	136,673:	504,236:	112,061:	616,297:	343,343:	181,231:	165,966:	165,966:	347,197

ORIGINAL SURVEY, PROPERTIES, April 1, 1918, to June 30, 1926

Table 3. Data showing, by States, the number of properties on which barberry bushes were found and destroyed in all surveys, and the number of properties upon which seedlings were found and destroyed in original and second surveys, April 1, 1918, to June 30, 1926

State	Number of properties on which barberry bushes were found--		Number of properties on which seedlings were--		Number of properties on which barberry bushes were found and destroyed in all surveys		Number of properties on which seedlings were found and destroyed in original and second surveys					
	original survey	second survey	original survey	second survey	original survey	second survey	original survey	second survey				
Colorado	31.49	1,549	61	169	1,718	1,649	66	1,715	1	0	1	1
Illinois	72.65	10,691	1,066	2,952	13,643	12,224	1,419	13,643	197	151	46	197
Indiana	92.00	3,616	355	1,273	4,889	4,411	457	4,868	51	22	28	50
Iowa	99.00	7,054	771	2,710	9,764	9,038	724	9,762	64	26	38	64
Michigan	61.30	5,085	1,779	5,433	10,518	8,986	857	9,843	477	416	61	477
Minnesota	87.00	3,165	517	2,041	5,206	4,918	288	5,206	388	356	32	388
Montana	36.38	202	19	98	300	259	37	296	10	7	3	10
Nebraska	93.00	3,196	132	761	3,957	3,663	276	3,939	26	11	14	25
North Dakota	53.00	537	1	332	869	764	105	869	2	1	1	2
Ohio	74.75	7,767	921	2,921	10,688	9,607	1,037	10,644	217	41	176	217
South Dakota	69.00	490	122	625	1,115	807	308	1,115	91	84	7	91
Wisconsin	71.00	7,003	1,276	3,018	10,021	8,988	988	9,976	174	88	76	164
Wyoming	8.12	75	1	15	90	86	2	88	0	0	0	0
Total	348.69	50,430	7,021	22,348	72,778	65,400	6,564	71,964	1,698	1,203	483	1,686

ORIGINAL SURVEY, BUSHES AND SEEDLINGS, April 1, 1918, to June 30, 1926

Table 4. Data showing, by States, the number of barberry bushes found and destroyed in all surveys, and the number of seedlings found and destroyed in original and second surveys, April 1, 1918, to June 30, 1926

State	Number of bushes found--			Number of bushes destroyed			Number of seedlings--			
	In cities and towns	Escaped	Total	Dug	Treated	Total	Found	Dug	Destroyed	Total
Colorado	19,607	2,666	4,847	23,912	538	24,450	155	0	155	155
Illinois	112,532	173,524	215,797	181,247	148,140	329,387	1,532,814	20,932	1,517,882	1,538,814
Indiana	77,473	104,094	119,171	97,832	97,951	195,783	8,726	977	7,699	8,676
Iowa	649,427	59,421	144,527	793,954	20,443	793,948	6,756	1,736	5,020	6,756
Michigan	53,934	327,934	427,721	366,850	91,938	458,788	935,844	861,553	75,286	955,844
Minnesota	592,497	82,290	193,840	735,337	5,705	785,337	24,332	19,726	4,606	24,332
Montana	6,919	1,861	4,388	11,307	1,080	11,109	3,752	2,022	1,740	3,762
Nebraska	73,095	6,418	22,558	90,689	4,895	95,584	9,125	2,855	6,329	9,184
North Dakota	14,491	150	7,586	19,635	2,312	22,447	156	150	6	156
Ohio	213,208	60,217	78,287	296,595	46,350	293,203	196,004	9,726	186,218	196,004
South Dakota	23,670	20,331	56,149	49,011	10,803	59,819	17,543	16,864	679	17,543
Wisconsin	280,099	3,111	395,3,123	3,350,101	43,023	3,373,124	45,850	23,723	17,841	41,564
Wyoming	3,947	1	229	4,146	35	4,007	0	0	0	0
Total	2,126,909	5,980,852	4,279,916	6,506,825	5,973,768	4,474,198	2,788,127	960,329	1,823,461	2,783,790

SECOND SURVEY, BUSHES AND SEEDLINGS, July 1, 1925, to June 30, 1926

Table 6. Data showing, by States, the number of barberry bushes and seedlings found and destroyed on second survey in the barberry eradication campaign during the fiscal year July 1, 1925, to June 30, 1926

State	Number of bushes found--			Number of bushes destroyed:			Number of seedlings--			
	In cities and towns:	In country:	Total:	Dug:	Treated:	Total:	Found:	Dug:	Treated:	Total:
Colorado	8	5	15	2	13	15	155	0	155	155
Illinois	455	45,154	45,795	5,867	40,383	46,250	2,552	2,227	325	2,552
Indiana	67	9	55	58	62	120	6	2	4	6
Iowa	66	577	1,039	1,105	306	1,106	1,940	1,005	935	1,940
Michigan	0	0	0	0	0	0	0	0	0	0
Minnesota	36	420	1,083	1,124	949	1,124	1,970	122	1,848	1,970
Montana	0	0	0	0	0	0	0	0	0	0
Nebraska	12	701	1,249	1,261	1,008	1,230	1,940	1,930	9	1,939
North Dakota	36	0	61	97	61	97	0	0	0	0
Ohio	0	0	0	0	0	0	0	0	0	0
South Dakota	2	141	452	454	245	454	285	285	0	285
Wisconsin	308	3,927	4,231	4,539	2,160	4,538	10,486	9,557	929	10,486
Wyoming	1	0	33	34	33	34	0	0	0	0
Total	991	50,934	54,010	55,001	45,714	54,968	19,334	15,128	4,205	19,333

SECOND SURVEY, PROPERTIES, January 1, 1922, to June 30, 1926

Table 7. Data showing, by States, the number of properties on which barberry bushes and seedlings were found and destroyed on second survey in the barberry eradication campaign from January 1, 1922, to June 30, 1926

State	Number of properties on which bushes were found--		In country		Total in		Total number of properties on which bushes were found--		Total number of properties on which bushes were found--		Number of properties on which seedlings were--		Destroyed
	counties	towns	cities	towns	cities	towns	cities	towns	cities	towns	cities	towns	
Colorado	20.14	2	16	30	32	5	27	32	1	0	1	1	1
Illinois	.64	75	31	59	134	106	28	134	25	24	1	25	1
Indiana	7.15	119	5	55	174	131	40	171	4	2	2	4	2
Iowa	14.00	41	122	213	259	87	171	258	26	3	23	26	0
Michigan	3.00	49	38	75	124	78	46	124	4	4	0	4	0
Minnesota	40.25	65	89	319	384	166	218	384	35	11	24	35	0
Montana	8.73	0	0	1	1	1	0	1	0	0	0	0	0
Nebraska	16.25	50	70	200	250	57	183	240	19	10	8	13	13
North Dakota	26.05	17	0	58	75	19	56	75	1	0	1	1	1
Ohio	2.00	13	0	7	25	24	1	25	0	0	0	0	0
South Dakota	20.05	29	13	96	125	21	104	125	4	4	0	4	4
Wisconsin	10.05	160	277	400	560	272	287	559	55	40	15	55	15
Wyoming	.70	1	0	1	2	1	1	2	0	0	0	0	0
Total	169.01	626	661	1,519	2,145	968	1,162	2,130	174	98	75	173	75

SECOND SURVEY, BUSHES AND SEEDLINGS, January 1, 1922, to June 30, 1926

Table 8. Data showing, by States, the number of barberry bushes and seedlings found and destroyed on second survey in the barberry eradication campaign from January 1, 1922, to June 30, 1926

State	Number of bushes found--			Number of bushes destroyed			Number of seedlings--			
	In cities and towns:	In country:	Total:	Dug:	Treated:	Total:	Found:	Dug:	Treated:	Total:
Colorado	8	48	90	8	82	90	155	0	155	155
Illinois	455	45,154	45,795	5,867	40,383	46,250	2,552	2,227	325	2,552
Indiana	372	24	147	382	132	514	9	5	4	9
Iowa	151	1,074	2,034	504	1,679	2,183	2,487	1,035	1,452	2,487
Michigan	96	339	438	262	272	534	240	240	0	240
Minnesota	354	1,198	3,529	1,647	2,236	3,883	2,681	422	2,259	2,681
Montana	0	0	1	1	0	1	0	0	0	0
Nebraska	480	1,077	3,045	782	2,695	3,477	3,435	2,455	979	3,434
North Dakota	100	0	1,428	100	1,428	1,528	3	0	3	3
Ohio	59	0	31	88	2	90	0	0	0	0
South Dakota	268	141	1,271	253	1,286	1,539	685	685	0	685
Wisconsin	522	4,685	5,128	2,589	3,060	5,649	17,675	13,226	4,449	17,675
Wyoming	1	0	33	1	33	34	0	0	0	0
Total	2,866	53,740	62,962	12,484	53,288	65,772	29,922	20,295	9,626	29,921

RESURVEY, PROPERTIES, July 1, 1925, to June 30, 1926

Table 9. Data showing, by States, the number of properties on which sprouting bushes and seedlings were found and destroyed on resurvey in the barberry eradication campaign during the fiscal year July 1, 1925, to June 30, 1926

State	Number of properties on which sprouting bushes were found--		Total number of properties : cleared of sprouting bushes:		Number of properties on which seedlings were--		Destroyed		
	In cities and towns:	In country:	Total in cities & towns:	Total in country:	Found:	Treated:	Dug:	Total:	
Colorado	12:	14:	29:	4:	26:	13:	2:	11:	13
Illinois	72:	27:	142:	99:	43:	142:	43:	12:	55
Indiana	10:	13:	36:	23:	13:	36:	9:	1:	10
Iowa	36:	85:	175:	80:	131:	211:	28:	40:	68
Michigan	1:	2:	4:	2:	2:	4:	1:	0:	1
Minnesota	27:	49:	150:	72:	78:	150:	38:	16:	54
Montana	8:	2:	14:	9:	5:	14:	4:	1:	5
Nebraska	11:	5:	53:	12:	41:	53:	2:	4:	6
North Dakota	48:	0:	88:	0:	83:	88:	0:	2:	2
Ohio	376:	144:	780:	537:	243:	780:	294:	119:	413
South Dakota	1:	0:	7:	2:	5:	7:	9:	0:	9
Wisconsin	24:	85:	157:	46:	118:	164:	52:	28:	80
Wyoming	11:	0:	16:	13:	3:	16:	1:	0:	1
Total	637:	426:	1,687:	899:	796:	1,695:	483:	234:	717

RESURVEY, SPROUTING BUSHES AND SEEDLINGS, July 1, 1925, to June 30, 1926

Table 10. Data showing, by States, the number of sprouting bushes and seedlings found and destroyed on resurvey in barberry eradication campaign during the fiscal year July 1, 1925, to June 30, 1926

State	: Number of sprouting bushes found--		: Number of sprouting bushes destroyed		: Number of seedlings--	
	: In cities and towns:	: Escaped:	: Total	: Dug	: Treated	: Total
Colorado	37:	66:	111:	8:	104:	112:
Illinois	466:	1,002:	2,021:	331:	1,140:	2,021:
Indiana	13:	82:	126:	55:	71:	126:
Iowa	234:	1,553:	2,769:	702:	2,653:	3,355:
Michigan	2:	25:	29:	22:	7:	29:
Minnesota	48:	1,722:	2,211:	441:	1,818:	2,259:
Montana	66:	0:	85:	27:	58:	85:
Nebraska	62:	45:	362:	29:	395:	424:
North Dakota	347:	0:	281:	0:	628:	628:
Ohio	1,240:	1,457:	3,201:	2,210:	2,231:	4,441:
South Dakota	1:	0:	8:	2:	7:	9:
Wisconsin	53:	1,969:	3,203:	203:	3,179:	3,382:
Wyoming	190:	0:	196:	170:	5:	175:
Total	2,759:	8,221:	13,829:	4,750:	12,296:	17,046:
						365,025:
						142,960:
						272,065:
						415,025

RESURVEY, PROPERTIES, April 1, 1918, to June 30, 1926

Table 11. Data showing, by States, the number of properties on which sprouting bushes and seedlings were found and destroyed on resurvey in the barberry eradication campaign from April 1, 1918, to June 30, 1926

State	In country		Total in:		:cleared of sprouting bushes:		: Number of properties on which		: Destroyed		
	: In cities:	: Having:	: cities & :	: country :	: Dug :	: Treated:	: Total :	: Found :	: Dug :	: Treated :	: Total :
	:and towns:	:escaped:	Total	:country :	:country :	:country :	:country :	:country :	:country :	:country :	:country :
	:bushes :	:bushes :	:bushes :	:bushes :	:bushes :	:bushes :	:bushes :	:bushes :	:bushes :	:bushes :	:bushes :
Colorado	1,438:	110:	132:	1,620:	1,415:	205:	1,620:	98:	19:	79:	98
Illinois	410:	317:	664:	1,074:	505:	569:	1,074:	303:	243:	60:	303
Indiana	162:	121:	230:	392:	271:	117:	388:	41:	12:	29:	41
Iowa	320:	295:	910:	1,230:	668:	562:	1,230:	221:	121:	100:	221
Michigan	137:	114:	289:	426:	369:	57:	426:	189:	135:	4:	189
Minnesota	720:	568:	1,220:	1,940:	1,601:	339:	1,940:	2,222:	2,105:	117:	2,222
Montana	117:	3:	52:	169:	156:	13:	169:	14:	12:	2:	14
Nebraska	202:	20:	374:	576:	344:	230:	574:	32:	14:	18:	32
North Dakota	259:	0:	189:	448:	223:	225:	448:	3:	0:	3:	3
Ohio	1,421:	281:	1,021:	2,442:	2,104:	338:	2,442:	716:	551:	165:	716
South Dakota	340:	33:	331:	671:	512:	159:	671:	74:	32:	42:	74
Wisconsin	894:	641:	917:	1,811:	1,323:	484:	1,807:	253:	158:	95:	253
Wyoming	32:	0:	10:	42:	31:	7:	38:	7:	7:	0:	7
Total	6,452:	2,503:	6,389:	12,841:	9,522:	3,305:	12,827:	4,173:	3,459:	714:	4,173

RESURVEY, SPROUTING BUSHES AND SEEDLINGS, April 1, 1918, to June 30, 1926

Table 12. Data showing, by States, the number of sprouting bushes and seedlings found and destroyed on resurvey in the barberry eradication campaign from April 1, 1918, to June 30, 1926

State	:In cities:		:In country		:Total		:Number of sprouting bushes:		:Number of seedlings--			
	:and towns:	:Escaped	:Total	:Total	:Total	:Dug	:Treated	:Total	:Found	:Dug	:Treated	:Total
Colorado	3,817:	1,999:	3,105:	6,922:	5,144:	1,778:	6,922:	3,479:	712:	2,767:	3,479:	3,479:
Illinois	4,665:	4,945:	10,575:	15,240:	6,485:	8,755:	15,240:	202,834:	77,364:	125,520:	202,834:	202,834:
Indiana	1,495:	16,767:	18,153:	19,648:	17,502:	1,841:	19,343:	3,529:	297:	3,232:	3,529:	3,529:
Iowa	3,778:	7,845:	17,943:	21,721:	10,553:	11,163:	21,721:	42,953:	27,594:	15,359:	42,953:	42,953:
Michigan	513:	1,194:	2,413:	2,931:	2,223:	703:	2,931:	607,429:	547,344:	60,085:	607,429:	607,429:
Minnesota	13,946:	16,691:	35,914:	49,860:	40,561:	9,299:	49,860:	26,661:	3,330:	23,331:	26,661:	26,661:
Montana	3,542:	3:	1,629:	5,171:	5,051:	120:	5,171:	1,009:	362:	647:	1,009:	1,009:
Nebraska	6,034:	127:	9,914:	15,948:	12,413:	3,527:	15,945:	2,960:	1,243:	1,717:	2,960:	2,960:
North Dakota	711:	0:	1,121:	1,832:	196:	1,636:	1,832:	38:	0:	38:	38:	38:
Ohio	5,666:	8,046:	12,276:	17,942:	13,071:	4,871:	17,942:	362,585:	111,527:	251,058:	362,585:	362,585:
South Dakota	20,979:	5,282:	22,010:	42,939:	36,617:	6,372:	42,939:	9,065:	6,462:	2,603:	9,065:	9,065:
Wisconsin	11,164:	75,047:	79,951:	91,115:	19,370:	71,564:	90,934:	1,289,530:	130,293:	1,159,237:	1,289,530:	1,289,530:
Wyoming	546:	0:	29:	575:	475:	21:	496:	53:	53:	0:	53:	53:
Total	76,856:	137,946:	215,038:	291,894:	169,676:	121,650:	291,326:	2,552,175:	906,581:	1,645,594:	2,552,175:	2,552,175:

CHEMICAL TREATMENT, JULY 1, 1925, to JUNE 30, 1926

Table 13. Data showing, by States, the number of properties on which barberry bushes and sproutings barberry bushes were treated with chemicals, and the number of bushes, sprouting bushes, and seedlings treated from July 1, 1925, to June 30, 1926

State	Number treated--											
	With salt			With sodium arsenite			With kerosene			Total		
	Proper- :ties	Bushes :lings	Seed- :lings	Proper- :ties	Bushes :lings	Seed- :lings	Proper- :ties	Bushes :lings	Seed- :lings	Proper- :ties	Bushes :lings	Seed- :lings
Colorado	29	127	1,094	0	0	0	2	3	0	31	130	1,094
Illinois	294	42,800	114,063	0	0	0	0	0	0	294	42,800	114,063
Indiana	79	636	444	0	0	0	0	0	0	79	636	444
Iowa	241	4,095	12,036	0	0	0	4	11	0	245	4,106	12,036
Michigan	226	11,221	4,822	0	0	0	6	1,282	10	232	12,503	4,832
Minnesota	193	3,271	4,515	0	0	0	2	19	0	195	3,290	4,515
Montana	14	492	1,097	0	0	0	0	0	0	14	492	1,097
Nebraska	41	404	1	0	0	0	59	999	49	100	1,403	50
North Dakota	108	848	37	0	0	0	0	0	0	108	848	37
Ohio	695	27,659	184,671	0	0	0	99	3,165	31,220	794	30,824	215,891
South Dakota	65	299	0	0	0	0	1	3	0	66	302	0
Wisconsin	334	26,983	83,972	0	0	0	0	0	0	334	26,983	83,972
Wyoming	4	38	0	0	0	0	0	0	0	4	38	0
Total	2,323	118,873	406,752	0	0	0	173	5,482	31,279	2,496	124,355	438,031

CHEMICAL TREATMENT, April 1, 1918, to June 30, 1926

Table 14. Data showing, by States, the number of properties on which barberry bushes and sprouting barberry bushes were treated with chemicals, and the number of bushes, sprouting bushes, and seedlings treated from April 1, 1918, to June 30, 1926

State	Number treated--											
	With salt			With sodium arsenite			With kerosene			Total		
	Proper- ties	Bushes	Seedlings	Proper- ties	Bushes	Seed- lings	Proper- ties	Bushes	Seed- lings	Proper- ties	Bushes	Seedlings
Colorado	268	2,267	2,922	0	0	49	0	0	271	2,316	2,922	
Illinois	1,949	154,337	1,643,402	34	839	1,169	0	0	1,983	156,395	1,643,402	
Indiana	574	99,772	10,931	0	0	0	0	0	574	99,772	10,931	
Iowa	1,265	31,324	20,376	0	0	282	3	0	1,286	31,606	20,379	
Michigan	533	21,860	7,322	239	8,594	29,911	137	62,137	914	92,641	135,371	
Minnesota	593	14,875	27,305	25	35	44	4	0	627	15,004	27,937	
Montana	43	1,193	2,337	0	0	0	0	0	43	1,193	2,337	
Nebraska	400	6,993	7,443	0	0	1,429	106	1,429	506	8,422	8,046	
North Dakota	309	4,381	44	21	67	0	0	0	330	4,448	44	
Ohio	1,100	39,623	295,306	10	1,069	59,300	265	11,029	1,375	51,721	437,276	
South Dakota	459	17,167	3,266	0	0	13	3	0	467	17,180	3,232	
Wisconsin	1,121	108,762	1,175,376	350	5,324	1,702	1	1	1,472	114,537	1,177,073	
Wyoming	9	56	0	0	0	0	0	0	9	56	0	
Total	8,638	503,165	3,197,530	679	16,473	91,015	550	76,203	9,367	595,346	3,469,055	

CHEMICALS, QUANTITIES USED, July 1, 1925, to June 30, 1926

Table 15. Data showing, by States, quantities of chemicals used in the barberry eradication campaign from July 1, 1925, to June 30, 1926

State	Salt (Tons)		Sodium arsenite (gals.)		Kerosene (Gallons)		
	Furnished by--	Furnished by--	Furnished by--	Furnished by--	Owner	Furnished by--	
	Property: State	Conference: U.S.D.A.	Total	Conference: U.S.D.A.	Total	U.S.D.A.	Total
	owner	agency: P.G. Rust		P.G. Rust			
Colorado	0:	0:	.45:	0:	0:	0:	1.0:
Illinois	0:	1.61:	37.06:	0:	0:	0:	0:
Indiana	0:	0:	2.35:	0:	0:	0:	0:
Iowa	5.61:	0:	14.66:	0:	0:	21.0:	0:
Michigan	0:	0:	52.22:	0:	0:	0:	530.0:
Minnesota	2.01:	.01:	8.66:	0:	0:	17.0:	17.0:
Montana	0:	0:	.45:	0:	0:	0:	0:
Nebraska	0:	0:	1.38:	0:	0:	1,054.5:	1,204.5:
North Dakota	3.61:	0:	.45:	0:	0:	0:	0:
Ohio	.52:	116.78:	17.88:	0:	0:	310.0:	3,299.0:
South Dakota	.22:	0:	2.71:	0:	0:	7.0:	7.0:
Wisconsin	0:	60.80:	.15:	0:	0:	0:	0:
Wyoming	.05:	0:	.06:	0:	0:	0:	0:
Total	12.02:	179.20:	138.48:	.80:	0:	4,081.5:	998.0:
			330.50:				5,079.5

* 2,964 gallons furnished by the State

CHEMICALS, QUANTITIES USED, April 1, 1918, to June 30, 1926

Table 16. Data showing, by States, quantities of chemicals used in the barberry eradication campaign from April 1, 1918, to June 30, 1926

State	Salt (Tons)		Sodium arsenite (Gallons)		Kerosene (Gallons)	
	Property: State	Conference: U.S.D.A.	Property: State	Conference: U.S.D.A.	Property: State	Conference: U.S.D.A.
	owner	agency: P.G. Rust	owner	agency: P.G. Rust	owner	agency: P.G. Rust
	Furnished by--		Furnished by--		Furnished by--	
	Total	Total	Total	Total	Total	Total
Colorado	0:	0:	4,16:	0:	0:	31.0
Illinois	.75:	55.78:	268.39:	31.00:	77.0:	124.0
Indiana	.82:	0:	57.07:	0:	0:	0
Iowa	44.06:	0:	58.03:	0:	0:	403.75
Michigan	.03:	0:	86.34:	3.49:	304.9:	0:11,341.0
Minnesota	2.39:	.84:	31.42:	9.21:	23.25	17.00:
Montana	.12:	0:	4.23:	0:	0:	0
Nebraska	.13:	0:	16.59:	8.55:	0:	0:1,658.50:
North Dakota	12.88:	5.00:	4.78:	0:	7.0:	0
Ohio	2.91:	158.92:	23.06:	0:	30.1:	46.3:5,163,00*
South Dakota	14.11:	0:	4.90:	17.85:	0:	0:
Wisconsin	.25:	120.95:	25.20:	70.00:	190.0:	598.0:
Wyoming	.05:	0:	.16:	0:	0:	0:
						.375 (b)
Total	78.50:	341.49:	584.33:	165.79:	456.65	1,056.45
					7,242.25	13,077.375:
					20,	319.625

(a) Drip Oil

(b) Carbon Bisulphide

*4,903 gallons furnished by State

GRAND SUMMARY, ORIGINAL BUSHES, SPROUTING BUSHES, AND SEEDLINGS, 1918 to 1926

Table 17. Data showing, by States, the number of bushes, sprouting bushes, and seedlings found and destroyed in all surveys in the barberry eradication campaign, April 1, 1918, to June 30, 1926

State	Original bushes		Sprouting bushes		Seedlings	
	Found	Destroyed	Found	Destroyed	Found	Destroyed
Colorado	24,454:	24,450:	6,922:	6,922:	3,634:	3,634
Illinois	329,387:	329,387:	15,240:	15,240:	1,741,698:	1,741,698
Indiana	196,649:	195,763:	19,648:	19,343:	12,255:	12,205
Iowa	793,954:	793,948:	21,721:	21,721:	49,709:	49,709
Michigan	481,705:	458,788:	2,931:	2,931:	1,544,273:	1,544,273
Minnesota	786,337:	786,337:	49,860:	49,860:	50,993:	50,993
Montana	11,307:	11,109:	5,171:	5,171:	4,771:	4,771
Nebraska	95,651:	95,584:	15,948:	15,945:	12,145:	12,144
North Dakota	22,447:	22,447:	1,832:	1,832:	194:	194
Ohio	296,595:	293,203:	17,942:	17,942:	558,589:	558,589
South Dakota	59,819:	59,819:	42,989:	42,989:	26,608:	26,608
Wisconsin	3,404,344:	3,373,124:	91,115:	90,934:	1,335,380:	1,331,094
Wyoming	4,176:	4,007:	575:	496:	53:	53
Total	6,506,825:	6,447,966:	291,894:	291,326:	5,340,302:	5,335,965
Total found	-	-	12,139,021			
Total destroyed	-	-	12,075,257			

ORGANIZATION AND PERSONNEL OF THE BARBERRY ERADICATION CAMPAIGN,
July 1, 1926

Administrative

Washington, D. C. Office of Cereal Crops and Diseases, Bureau of Plant Industry, U. S. Department of Agriculture, Associate Pathologist in Charge, Dr. F. E. Kempton; Associate Pathologist, Lynn D. Hutton.

Field Operations

Education: Associate Pathologist, Noel F. Thompson, cooperating with the Conference for the Prevention of Grain Rust, 300 Lewis Building, Minneapolis, Minn. Cartoonist and Illustrator (part time), G. D. George, University Farm, St. Paul, Minn. Agents: Emil H. Ostrom, Theodore N. Knopf.

Investigations: Studies of barberry species and hybrids. Associate Horticulturist, B. Y. Morrison.

Epidemiology Studies: Collaborating Agent, Dr. E. C. Stakman, University Farm, St. Paul, Minn., Associate Pathologists, Edmund B. Lambert and Ralph U. Cotter; Agents: Wallace Butler, Jonas J. Christensen and James M. Wallace; stenographer-clerk, Laura M. Hamilton.

Colorado: Department of Botany, Agricultural College, Fort Collins. State Leader, Ernest A. Lungren; Cooperating Agent, Roud McCann, Director of Extension; Collaborating Pathologist, Dr. L. W. Durrell and C. D. Léarn; State Law Enforcement Agent, Dr. C. P. Gillette, State Entomologist; stenographer-clerk furnished by the State; Field Agents: Walter S. Ball, William J. Henderson and Bruce J. Thornton.

Illinois: Post Office Building, Urbana. State Leader, Gordon C. Curran; Cooperating Agent, H. W. Mumford, Director of Extension; Collaborating Pathologists, George H. Dungan and Benjamin Koehler; State Law Enforcement Agent, P. A. Glenn, Chief Inspector, State Department of Agriculture; stenographer-clerk, Mrs. Zoe Burgess. Field Agents:

Robert W. Bills
Irvin L. Brakensiek
Kenneth W. Carr
Leland H. Corbin
Earl D. Cornwell
Addison P. Crowell
Lowell C. Cunningham
Homer W. Curtiss
Lester R. Davis

Samuel H. Dorsey
Earl H. Garrison
Juston L. Ham
Reginald C. Harmon
Joseph B. Hawkes
Roy S. Hazelwood
Lem L. Lessman
Alvin L. Mathis
Walter M. Meyer

Orville O. Mowery
Herbert W. Mumford, Jr.
Everett L. Pearce
Russel N. Rasmusen
John L. Richardson
Orville H. Roll
John H. Seward
Orton K. Stark
Burton F. Whitmore

Indiana: Botany Department, Purdue University Agricultural Experiment Station, La Fayette. State Leader, Wayne E. Leer; Cooperating Agent, G. I. Christie, Director of Extension; Collaborating Pathologists, Dr. H. S. Jackson and Dr. E. B. Mains; State Law Enforcement Agent, Frank N. Wallace, State Entomologist, Indianapolis; stenographer-clerk, Josephine M. Waldron; Field Agents:

Richard H. Baugh
Stanley Castell
Ollie H. Cross
Walter M. Cross
Max B. Hardy

Clarkson A. Kenworthy
I. Lester McCoy
Ralph J. Maggart
Amos C. Michael
Lloyd C. Skelton

Buren H. Smith
Warren L. Smith
Virgil A. Telfer
James W. Thompson
John E. Wylie

Iowa: Botany Department, Iowa Agricultural Experiment Station, Ames. State Leader, Marion A. Smith; Cooperating Agents, R. K. Bliss, Director of Extension, M. H. Burns, Extension Plant Pathologist, N. R. Carmichael, Grace-land College, Lamoni, Ia.; State Law Enforcement Agent, Dr. C. J. Drake, State Entomologist; Collaborating Pathologists, Dr. I. E. Melhus, Station Plant Pathologist, and Dr. S. M. Dietz, Assistant Pathologist, Office of Cereal Crops and Diseases; stenographer-clerk, Frances M. Hanson; Field Agents:

Lloyd E. Arnold
Stuart J. Dunn
Lester E. Erwin
Cleon E. Herriott
Royce Johnston
Duke V. Layton

Guy A. Mefferd
Frank H. Mendell
Joseph L. Miquelon
Maurice G. Moggie
Martin W. Seippel
John M. Steddum

James Struve
Ross F. Suit
Eaton M. Summers
Paul M. Walter
Marion E. Yount
Byron B. Zimmerman

Michigan: Agricultural College, East Lansing. State Leader, Walter F. Reddy; Cooperating Agent, R. L. Baldwin, Director of Extension; State Law Enforcement Agent, L. R. Taft, Chief Horticulturist; L. Whitney Watkins, Commissioner of Agriculture; stenographer-clerk, Edna M. Conway; Field Agents:

Fred W. Barratt
John H. Breyfogle
Warner G. Butterfield
John H. Carton
Fred E. Deacon
Harold D. Eckerman
Milton J. Francis
John E. Garver
Laurence D. Glerum
Glenn E. Hitchings
Lewis A. Hornbeck
Russel E. Horwood

Harry E. Hunter
Hugo F. Kanitz
James L. Kidman
Walter N. Kidman
George W. Kuhn
Lloyd B. Kurtz
James A. Lewis
Ernest L. Lioret
George S. McIntyre
Edmund F. Markle
Elwood W. Mason
Francis W. Ross

Andrew M. Rozell
Martin F. Rummel
Chester F. Salisbury
Clyde K. Schickler
George T. Schwartz
Beaman Q. Smith
Paul M. Smith
Roscoe G. Smith
Lowell E. Teeter
Ivan G. Tillotson
Robert E. Warner
Elwyn A. Wenner

Minnesota: University Farm, St. Paul. State Leader, Leonard W. Melander; Cooperating Agent, F. W. Peck, Director of Extension; Collaborating Pathologists, Dr. E. M. Freeman and Dr. E. C. Stakman; N. J. Holmberg, Commissioner of Agriculture; State Law Enforcement Agent, A. G. Ruggles, State Entomologist; stenographer-clerk, Helen B. Thompson; Field Agents:

Einar G. Aakre	Ben C. Dettman	Wallace W. Miller
Clyde C. Allison	William J. Elling	Lee H. Person, Jr.
Arthur M. Angvik	Fritz G. Franze	Leonard T. Peterson
Wayburn H. Bamberg	Monroe E. Freeman	Vincent F. Peterson
Clyde F. Baumhofer	Frank A. Herrick	Francis B. Powers
Coates P. Bull, Jr.	Maurice M. Kelso	Hendrick W. Stroeve
Rufus J. Christgau	Camille L. Lefebvre	Randall C. Swanson
Murdock J. Dawley		Harry G. Ukkelberg

Montana: State College of Agriculture, Bozeman. State Leader, W. L. Popham; Cooperating Agent, J. C. Taylor, Director of Extension; Agent, H. Ellwood Morris, Commissioner of Agriculture; A. H. Bowman, State Law Enforcement Agent, Edward Dickey, Horticultural Inspector; stenographer-clerk, Marguerite Marquis; Field Agents:

Earl H. Bartsch	Jacob W. Forbes	William H. Tharp
Hugh C. Cottam	David E. Fox	John F. M. Travis
George B. Cummins	A. LeRoy Kerlee	Bernard R. Williams
Heber C. Donohoe	Fred E. Long	Frank B. Wisner
	Walter L. Sales	

Nebraska: College of Agriculture, University Farm, Lincoln. State Leader, Albert F. Thiel; Collaborating Agent, W. H. Brokaw, Director of Extension; Collaborating Pathologist and Law Enforcement Agent, Dr. G. L. Peltier; stenographer-clerk, Edna K. Brueggeman; Field Agents:

Leland C. Albertson	Luther A. Frost	Louis F. Luschei
Wilfred D. Alf	John D. Gardner	Julian W. Riddick
Ralph E. Deal	Harvey B. Harris	Ross L. Roberts
Eldie E. Dickerman	Nelson E. Jodon	Percy W. Rohrbaugh
Benjamin F. Dittus	Burton F. Kiltz	Forrest J. Scrivner

North Dakota: Agricultural Experiment Station, Agricultural College Station Fargo. State Leader, George C. Mayoue; Cooperating Agent, G. W. Randlett, Director of Extension; Collaborating Pathologist, H. L. Bolley; State Law Enforcement Agent, Joseph A. Kitchen, Commissioner of Agriculture; clerk, Charlotte E. Blake; Field Agents:

Donald A. Andrist	Earl A. Hendrickson	Joyce O. Roberts
Cyril H. Arnold	Arthur J. Johnson	Ben J. Rumpeltes
Alden M. Baillie	Leon M. Johnson	Leonard N. Severson
George B. Bairey	Elmer G. Marks	Gilmore E. Sondreaal
Clyde M. Barks	Claude L. Miller	John P. Spielman
John E. Bohlig	Allen T. Mortenson	Francis W. Trumbull
Walter W. Clasen	Albert L. Mossler	Walter F. Whedon
George A. Fisher	Goerge B. Newgard	Edward M. Yocum

Ohio: Botany Department, Ohio State University, Columbus, State Leader, John W. Baringer; Cooperating Agent, George B. Crane, Director of Extension; Collaborating Pathologist, W. G. Stover; State Law Enforcement Agent, Richard Faxon, Chief of the Division of Plant Industry; stenographer-clerk, Mrs. Maye E. Joice; Field Agents:

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Hildon E. Ayers	George P. Hahn	Lucius L. Shackson
Byron B. Beck	Edson J. Hambleton	John H. Sitterly
Bruce R. Davisson	Everett M. Hankins	Perry E. Snider
Jesse D. Diller	Leslie K. Hammum	William S. Snyder
Ray T. Everly	Myron W. Hetzel	Delbert Swartz
James H. Florea	George N. Holmes	Pearl W. Thomas
Earl E. Garwick	David A. Isler	Charles R. Tom
R. Clark Gilmore	Howard W. Johnson	Charles O. Violet
Ralph W. Goshen	Halsey H. Lafferty	Howard E. Waugh

State agents cooperating:

M. H. Lichty
F. H. Liles

South Dakota: College of Agriculture, Brookings. State Leader, Raymond O. Bulger; Cooperating Agent, C. Larsen, Director of Extension; Collaborators, Dr. A. N. Hume and Dr. A. T. Evans; State Law Enforcement Agent, H. C. Severin, State Entomologist; stenographer-clerk, Dorothy E. Bossert; Field Agents:

Ralph M. Caldwell	Courtney W. Larson	Donald R. Shepherd
Louis A. Eberlein	Walter H. Michaels	G. Herman Starr
Paul L. Errington	Arthur O. Mortensen	Henry J. Van Metre
Albert T. Hume	Bernard W. Murray	Earl I. Welch
Theodore Kurtz	Joe F. Murray	Frank F. Welch
	Walter N. Parmeter	

State agents cooperating:

L. M. Bennet H. C. Olson
H. A. Krug H. O. Simonson

Wisconsin: Department of Agriculture, State Capitol Annex, Madison. State Leader, William A. Walker; Cooperating Agents, K. L. Hatch, Director of Extension, and R. E. Vaughn, Extension Pathologist; Collaborating Pathologists, Dr. L. R. Jones and Dr. J. G. Dickson; J. D. Jones, Jr., Commissioner of Agriculture; State Law Enforcement Agent, Stanley B. Fracker, State Entomologist; stenographer-clerk, Ida T. Goul; Field Agents:

Don A. Cameron
 Lellen S. Cheney
 John E. Craig
 Carl W. Damsheuser
 Lloyd D. Fraser
 Ben J. Kimpel
 Homer V. Kline
 Lee O. Kline

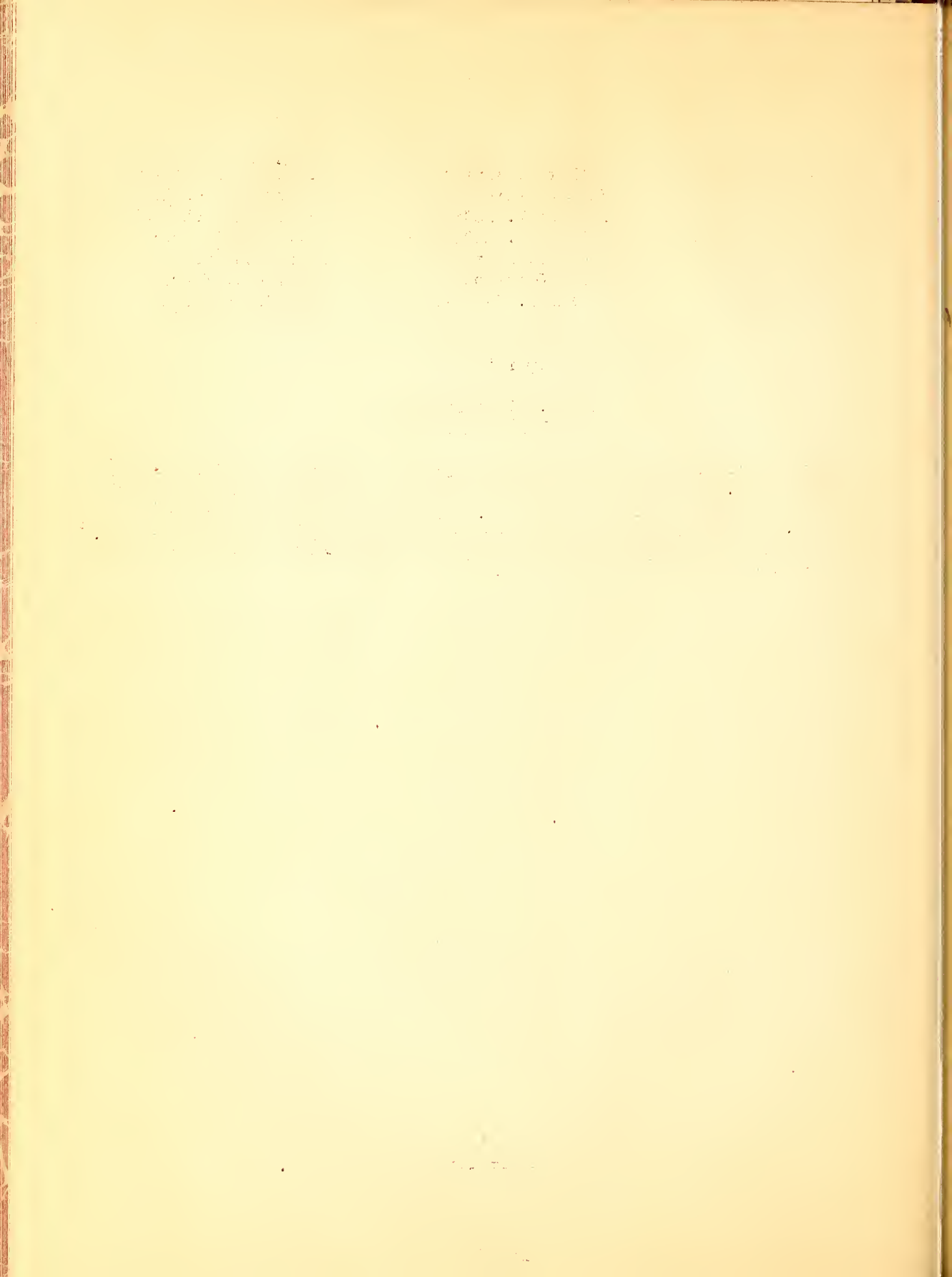
Arthur M. Knutson
 John R. Large
 Forrest D. McCrea
 William J. McCrea
 James R. Kodrall
 Henry Otterson
 Harris B. Parmele

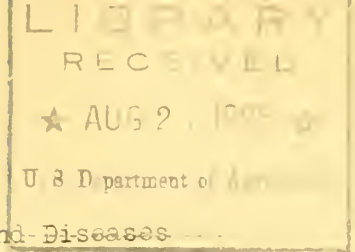
Lester O. Peterson
 Luther F. Rundell
 William S. Schraedl
 Walter J. Seymour
 Harry Stevens
 Charles W. Tegge
 Alan R. Thompson
 Julian H. Webb

State agents cooperating:

Leo L. Ellsworth
 Adolph A. Hendrickson

Wyoming: College of Agriculture, University of Wyoming, Laramie. Acting State Leader, E. A. Lungren; Cooperating Agent, A. E. Bowman, Director of Extension; Commissioner of Agriculture, A. D. Faville; State Law Enforcement Agent, W. R. Corkins, State Entomologist; stenographer-clerk furnished by State. Field activities are combined for the States of Colorado and Wyoming. The same field agents are used in the two States.





CER E A L C O U R I E R

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Bureau of Plant Industry, U. S. Department of Agriculture
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Vol. 18

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No. 19

Personnel (August 1-10) and Field Station (July 16-31) Issue

PERSONNEL ITEMS

Dr. C. R. Ball, senior agronomist in charge, returned to his desk on August 9, having made a very satisfactory recovery from the illness which confined him to Providence Hospital, Washington, for several days.

The appointment of George H. Braun, agent in the cooperative cereal-disease experiments conducted at Berkeley, Calif., was terminated August 10, the work for which Mr. Braun was appointed having been completed.

J. Allen Clark, agronomist in charge of western wheat investigations, returned to Washington on August 2 from an extensive trip in the interests of western wheat investigations. Mr. Clark spoke on July 29 before the agronomic seminar of the North Dakota Agricultural College concerning his summer's work.

F. A. Coffman, associate agronomist in oat investigations, wrote from Aberdeen, Idaho, on July 30 that crops at that place were farther advanced than usual at this time of year. Dr. H. V. Harlan and Miss Martini were very busy keeping up with their work in the barley nurseries. Mr. Coffman found that the oats had been partly harvested before his arrival. He and Mr. Stanton, who arrived on July 26, had been able to catch up with their work, but they expected to be busy harvesting and recording data on hybrids all the following week. The "smut crosses" are very satisfactory, a large number of the Markton x Victory and Markton x Idamine crosses, seeming to be smut immune and having excellent kernel characters. Many of the selections from 357, the parent of Markton, appear also to be immune. V. H. Florell, in charge of the cereal experiments at University Farm, Davis, Calif., visited the Aberdeen Substation on July 25. Dr. Charlotte Elliott was taking notes on oat blast. V. H. Tapke was expected to arrive in a few days to take notes on smuts of oats.

Francis A. Gruenfelder was appointed August 2 to assist J. C. Brinsmade, Jr., in field operations in the cooperative flax investigations at the Northern Great Plains Field Station, Mandan, N. Dak., for a period of three months.

C. P. Hartley, assistant agronomist in corn investigations, resigned his position on July 31.

H. Millard Joslin was appointed junior analytical chemist on August 1 to assist in cooperative investigations between the Bureau of Chemistry and this Office. His duties will be to make chemical analyses of wheat samples to determine the quantity of protein and other constituents and to do other analytical and chemical work as may be required in the nitrogen laboratory.

L. D. Hutton, associate pathologist in barberry eradication, returned to Washington on August 4 from an extended trip in the barberry-eradication area.

Dr. H. B. Humphrey, senior pathologist in charge of rust investigations, returned to Washington July 30 from an extended trip in the interests of stem rust investigations as related to barberry eradication.

VISITORS

Dr. Feliks Kotowski, professor in the College of Agriculture at Warsaw, was an Office visitor on August 7. He is in the United States on a fellowship of the International Education Board. He will be at the University of California for the next year and will deliver a series of lectures at that institution on plant breeding programs and accomplishments in Poland.

MANUSCRIPTS AND PUBLICATIONS

36 A manuscript entitled "The Export Trade in California Barley," by H. V. Harlan and M. N. Pope, was approved August 4 for publication in an English brewing journal.

37 A manuscript entitled "Black Stem Rust and Quarantines," by E. C. Stakman, was approved August 10 for publication.

U. S. Dept. Agr. Circ. 394, entitled "Copper Carbonate Prevents Bunt (Stinking Smut) of Wheat," by W. H. Tisdale, was received from the Government Printing Office July 28.

The article entitled "Intergeneric Hybrids in Aegilops, Triticum, and Secale," by C. E. Leighty, W. J. Sando and J. W. Taylor, appears in the Journal of Agricultural Research 33 (No. 2): 101-141, figs. 1-18. July 15, 1926. (Received August 5)

The article entitled "Germination of Rice Seed as Affected by Temperature, Fungicides, and Age," by Jenkin W. Jones, appears in the Journal of the American Society of Agronomy 18 (No. 7): 576-592. July, 1926. (Received August 7)

The paper entitled "Oats and Oat Varieties for the Eastern Atlantic States with Special Reference to Maryland," by T. R. Stanton, appears in the Report of the Nineteenth Annual Meeting of the Maryland Crop Improvement Association at Baltimore, January 6-7, 1926, p. 280-298. [1926] (Received August 7)

The article entitled "Fatuid or False Wild Forms in Fulghum and Other Cat Varieties," by T. R. Stanton, F. A. Coffman and G. A. Wiebe, is concluded in The Journal of Heredity 17 (No. 6): 213-226, figs. 3-7. June, 1926. (Received August 7)

FIELD STATION CONDITION AND PROGRESS

HUMID ATLANTIC COAST STATES (South to North)

GEORGIA

State College of Agriculture, Athens (Cereal Agronomy, R. R. Childs)

VIRGINIA

Arlington Experiment Farm, Rossllyn (Small Grain Agronomy, J. W. Taylor)
(August 7)

This was a record year for winter wheat throughout this section. Yields of 40 bushels and more to the acre have been reported from several Virginia farmers. The quality of the grain also is above the average. At the Arlington Experiment Farm the record of 1917 was surpassed this year by about two bushels, the approximate average yield of all wheat varieties being 47.5 bushels per acre. The yield of several plats was over 60 bushels per acre. Straw yields were not proportionately so high as grain yields, the vigor of the plants going into the production of grain.

The precipitation during the spring growing season, April, May and June, totaled 5.41 inches, the lowest for this 3-month period ever recorded at the Arlington Experiment Farm. High yields of wheat with below-average precipitation for the spring growing season are expected. Yields of wheat for 1926 are practically unaffected by lodging, and leaf rust was the lightest ever observed. The check variety, Purplestraw C.I. 1915, was outyielded more often than usual. Missouri Bluestem (C.I. 1912) was a high yielder, with an average of 56.3 bushels per acre. Shepherd (C.I. 6163) continued to uphold its excellent yielding record, as did the wheat-rye selection 16-1A; Pennsylvania No. 44, and Rod Row 115.

Yield of winter-wheat varieties grown in triplicate 40th-acre plats, and comparison of average yield of 6 nearest check plats, at Arlington Experiment Farm in 1926

Variety	C.I. No.	Ave. yield (Bu. per acre)	Ave. yield : 6 check plats (Bu. per acre)	Gain or loss : in comparison : to check ave. (Bu.)
Missouri Bluestem	1912	56.3	50.3	+6.0
Shepherd	6163	53.1	47.4	+5.7
Fultz	1923	54.7	50.3	+4.4
Poole	1979	50.5	47.4	+3.1
Wheat-Rye 16-1A	----	52.8	49.9	+2.9
Harvest Queen	6883	54.0	51.2	+2.8
Pennsylvania No. 44	6882	49.6	47.6	+2.0
Rod Row 115	----	49.4	47.6	+1.8
Brown Fife	1933	51.3	50.3	+1.0
Sel. 1915-B	----	52.1	51.2	+ .9
Poole	3489	45.5	45.9	- .4
Fulcaster	6162	47.0	47.4	- .4
Potomac	1733	45.2	45.9	- .7
Rod Row 959	----	46.8	47.6	- .8
Leap	4823	44.4	45.9	-1.5
Red Rock	5976	50.6	52.4	-1.8
Forward	6691	47.1	49.9	-2.8
Illini Chief	5406	48.6	52.8	-4.2
Dietz	1981	42.1	47.4	-5.3
Purplestraw	1957	45.6	51.1	-5.5
Sel. 1923-B	----	43.4	51.2	-7.8
Berkeley Rock	6941	42.1	51.2	-9.1
Genesee Giant	1744	42.8	52.8	-10.0
Mammoth Red	2003	40.8	51.1	-10.3
Fulcaster	1945	40.5	51.1	-10.6
Kanred	5146	16.0	50.3	-34.3

Yield of winter-wheat varieties grown in duplicate 40th-acre plats, and comparison of average yield of nearest check plats, at Arlington Experiment Farm in 1926

Variety	C.I. No.	Ave. yield (Bu. per acre)	Ave. yield : nearest check : plats (Bu. : per acre)	Gain or loss : in comparison : to check ave. (Bu.)
Red Wonder	5730	50.8	45.9	+4.9
Rod Row 62	----	52.1	49.9	+2.2
Jersey Fultz	5774	47.8	45.9	+1.9
Hybrid	3608	46.8	45.3	+ .9
Hybrid	3614	50.3	50.1	+ .7
China	180	49.1	49.3	- .7
Wheat-Rye 10	----	48.8	49.3	-1.0
Dawson	6161	49.1	50.1	-1.0
Stoner	2930	45.5	49.8	-4.3
Fultz-Mediterranean	----	42.5	49.3	-7.3

Yield of winter-wheat varieties grown in single 40th-acre plats at Arlington Experiment Farm, in 1926

<u>Variety</u>	<u>C.I. No.</u>	<u>Ave. yield</u> (Bu. per acre)
Rod Row 676	----	50.6
Nigger	----	47.9
Amber Longberry	1973	46.3
Bearded Purplestraw	5779	48.3
Do.	1911	41.7
Early Harvest	----	42.8

Rye yields were above the average but considerably less than the record yields of 1917. The yields were affected by lodging, because at flowering time many of the rye varieties were down and the spikelets filled poorly. The von Runkler ryes again head the list.

Yield of winter rye varieties grown in 20th-acre plats at Arlington Experiment Farm in 1926

<u>Variety</u>	<u>C.I. No.</u>	<u>Yield</u> (Bu. per acre)
Von Runkler No.2	133	47.9
Von Runkler No.1	173	47.0
Abruzzes	40	44.0
Star	---	43.8
Rimpau	126	42.8
Rosen	195	42.8
Mexican	108	39.6
St. John	130	38.4
Henry	138	35.9
Selection 44	---	34.9
Do. 41	---	33.9
Ivanof	34	28.3

Spelt and emmer yields were more than 65 per cent above the 15-year average. All four spelt varieties yielded over 100 bushels per acre. However, the actual grain yield (when deduction is made for the chaff) of the spelts was considerably less than that of the nearest wheat check plats.

Yield of spelt and emmer varieties grown in single 40th acre plats at Arlington Experiment Farm in 1926

<u>Variety</u>	<u>C.I. No.</u>	<u>Yield</u> (Bu. per acre)
Emmer:		
Black Winter	2337	40.8
Spelt:		
Alstrom	3264	109.3
Do.	1773	114.0
Red Winter	1772	120.6
Bearded Winter	1724	115.6

Arlington Experiment Farm, Rossllyn (Corn Breeding, F. D. Richey)

Arlington Experiment Farm, Rossllyn (Cereal Smuts, W. H. Tisdale)

Arlington Experiment Farm, Rossllyn (Virus Diseases, R. W. Webb)

Arlington Experiment Farm, Rossllyn (Cereal Bacterial Diseases, C. S. Reddy)

NEW YORK

Cornell University Agricultural Experiment Station, Ithaca (Cereal Breeding, H. H. Love)

HUMID MISSISSIPPI VALLEY STATES (South to North)

LOUISIANA

Rice Experiment Station, Crowley (Rice Agronomy, J. M. Jenkins) (July 27)

The lack of rain in June necessitated constant pumping from streams and wells to maintain the required depth of irrigation water on the rice fields.

Analyses of water samples taken on June 29, from Lake Arthur and at different depths in the Mermentau River, showed a salt content of not over 9 grains per gallon. These determinations indicate that fresh water for irrigation purposes will be available for several weeks longer, even if dry weather should continue.

The rice crop over the greater portion of this section is better than it has been in June and July for several years. The dry weather of the past two summers apparently has reduced the number of weeds, and also has had a beneficial effect on the soil.

Crops grow^{ing} on lands that received large quantities of salt in irrigation water two years ago give promise of producing excellent yields, which indicates that much of the salt was removed by the heavy rains of the past winter and spring. Analysis of water taken from one of these fields June 29 showed a salt content of only 27 grains per gallon, which is believed insufficient to cause damage to rice.

The germination of soybeans was not so good as usual, because of the dry weather at planting time. After the heavy rains of spring ceased, north winds dried the soil out so rapidly that by the first of June it was impossible to get a seed bed of uniform moisture. This resulted in very uneven stands in the case of both beans and June seedings of rice. In the case of the latter it was necessary to flood the plats.

Agricultural Experiment Station, Baton Rouge (Corn Breeding, H. F. Stoneberg)

MISSOURI

Agricultural Experiment Station, Columbia (Cereal Agronomy, C. A. Helm)

TENNESSEE

Agricultural Experiment Station, Knoxville (Corn Breeding, L. S. Mayer)

IOWA

Agricultural Experiment Station, Ames (Oat Breeding, L. C. Burnett)

Agricultural Experiment Station, Ames (Corn Breeding, M. T. Jenkins)

Agricultural Experiment Station, Ames (Crown Rust of Oats, S. M. Dietz)

Iowa State College, Ames (Barberry Eradication, M. A. Smith)

ILLINOIS

Funk Bros. Seed Co., Bloomington (Corn Root, Stalk and Ear Rots, J.R. Holbert)

Box 72, Post Office Building, Urbana (Barberry Eradication, G. C. Curran)
(July 31)

Second survey of a number of counties in northern Illinois has revealed a number of interesting facts. Field men are finding escaped barberry bushes everywhere. A great deal of time has been consumed in the scouting of wooded areas. On many farms every fence row is examined for barberry bushes. Very little territory was covered in July, but 5,780 bushes were found. Of this number all but 296 bushes were escapes. During the month 272,830 seedlings were found and destroyed. The barberry bushes in the escaped area near Lacon, Marshall County, were killed with salt in August, 1924. This year hundreds of seedlings were found under the dead bushes. Seedlings usually are found around every old bush which has been treated with chemicals in previous years. For this reason the problem of stamping out the large escaped areas of barberry is very difficult.

One of the best examples ever observed in Illinois of stem rust spreading from barberry was discovered near Belvidere in Boone County. Some large, heavily rusted barberry bushes were growing on a fence line right next to a barley field. In every direction for 20 feet from the bushes the barley was completely ruined with stem rust. In fact, the stalks were broken because of the heavy rust attack. None of the heads was filled. The amount of stem rust present gradually tapered off as the distance from the bushes increased. At the other end of the field no stem rust could be found on the barley. In another field near the same bush there was rye which was badly rusted close to the barberry. A number of heavily rusted grasses also were found. A map and a detailed report of this rust spread is being made. Bankers, farmers, and influential citizens visited the farm and signed a statement that they were convinced of the severe damage these barberries had caused.

INDIANA

Purdue University Agricultural Experiment Station, La Fayette (Corn Rots and Metallic Poisoning, G. N. Hoffer)

Purdue University Agricultural Experiment Station, La Fayette (Leaf Rusts, H. S. Jackson and E. B. Mains)

Purdue University College of Agriculture, La Fayette (Barberry Eradication, W. E. Leer)

OHIO

Ohio State University, College of Agriculture, Columbus (Barberry Eradication, J. W. Baringer) (July 31)

During the period from June 28 to July 7, inclusive, 30 toy balloons were inflated each day with hydrogen and released at Columbus, Ohio. A return tag was tied to each balloon. The purpose was to obtain data on the direction of air currents at the time uredinia of stem rust (P. graminis) became well established on wheat. A coating of glycerine was applied to the surface of each balloon after inflation, to retard gas diffusion.

Our assistant State Leader, Howard W. Johnson, has spent much time in the field since July, investigating the cereal stem rust situation, in many places throughout Ohio, where the spread of stem rust from barberries to grain has been noted during the past eight years. He is recording the situation as it exists this year and is attempting to get information from farmers on the occurrence of stem rust on cereals in recent years when it was not possible for our field men to inspect their grain near harvest time. Mr. Johnson recently wrote as follows: "It makes you feel that you are doing something really worth while when you talk to farmers, as I have done, who tell you that you have saved them thousands of dollars by locating and destroying their barberries." Severe stem rust epidemics on grain are not very plentiful in Ohio this year. According to Mr. Johnson, barberries have been found wherever grain fields laden with stem rust were observed, with two exceptions.

In some places leaf rust on wheat was said to be responsible for premature ripening and light yields. Leaf rust was heavy only in spots, but a light infection prevailed all over the State.

Generally speaking, wheat is yielding well all over Ohio this year. It is believed the total harvest will be above normal. On July 1, 2 and 3 a field trip was arranged for the special benefit of the new field agents in barberry eradication. Opportunity was afforded the whole crew to observe a nice case of the spread of rust from infected barberries to grain. Several areas where an abundance of escaped barberries had been treated in previous years with salt and kerosene were inspected. Demonstration salt treatments and object lesson treatments were staged in a large area of escaped barberries near Burton.

Two carloads of salt were used on escaped barberries in southern Geauga County in July of this year. This makes a total of seven carloads of salt used in the southern half of Geauga County since the survey was started there a year ago. Two more carloads probably will be needed. It is known that barberries are plentiful in certain townships in northern Geauga County, but so far the original survey has not been extended to that part of the county.

It was a pleasure to have Dr. H. B. Humphrey and Mr. L. D. Hutton with us for a few days in the latter part of July. It was much regretted that Dr. C. R. Ball could not come as he had planned.

MICHIGAN

Agricultural College, East Lansing (Barberry Eradication, W. F. Reddy)

WISCONSIN

Agricultural Experiment Station, Madison (Wheat Scab, J. G. Dickson)

Agricultural Experiment Station, Madison (Virus Diseases, H. H. McKinney)

Department of Agriculture, State Capitol Annex, Madison (Barberry Eradication, W. A. Walker)

MINNESOTA

Agricultural Experiment Station, University Farm, St. Paul (Wheat Breeding, O. S. Aamodt)

Agricultural Experiment Station, University Farm, St. Paul (Stem Rust, E.C. Stakman)

Agricultural Experiment Station, University Farm, St. Paul (Flax Rust, A.W. Henry)

Agricultural Experiment Station, University Farm, St. Paul (Barberry Eradication, L. W. Melander) [July 31]

The barberry eradication campaign in Minnesota has progressed very satisfactorily. New bushes have been found in every county but one, in which we are working. The barberry scouts report that the attitude of the people in general in the counties is very good. Every place where barberry bushes can grow is being scouted. This system is yielding many bushes which would not be found in any other way. One of the most outstanding examples was the finding of two escaped bushes on a former island in an old lake bed which is partially dried up and grown up into thickets.

Three rust-spread demonstrations have been held this year. Two were held in Faribault County and one in Wabasha County, near Lake City. The total attendance at these demonstrations was approximately 450. All seemed very interested and convinced that common barberry spreads black stem rust. In southern Minnesota, most of the small grain is cut, so that the possibility of holding additional rust-spread demonstrations is eliminated for this year.

GREAT PLAINS AREA (South to North)

OKLAHOMA

Woodward Field Station, Woodward (Grain Sorghums, J. B. Sieglinger) (July 31)

Rains in July have caused row crops to maintain rapid growth and at present prospects are excellent for high yields of sorghums, corn, and broomcorn.

Work on the grain-sorghum and broomcorn projects is well along, and bagging of seed heads will begin soon.

Arrangements to entertain Assistant Secretary of Agriculture Dunlap, Congressman Garber, and a large number of visitors at the Field Station on August 5 are under way. Though rather early in the season for the sorghums to show to best advantage the project is in good condition for inspection.

Maximum temperature for last half of July, 98° on the 19th, minimum for same period, 63° on the 22d and 25th. Precipitation for the last half of July, 3.64 inches or a total of 5.18 inches for the month.

KANSAS

Agricultural Experiment Station, Manhattan (Cereal Breeding, D. D. Hill)
(August 1)

The rainfall at Manhattan continues to be several inches below normal for the growing season, although the drought was relieved somewhat by a fall of 1.11 inches on July 22. Corn and sorghums, which were in need of moisture, are much shorter than normal and will need considerably more rain to mature a normal crop.

Nursery yields of out varieties indicate this to be another Kanota year. Freezing weather at the time of emergence, continued drought, and a severe infestation of chinch bugs, tended to reduce yields of all varieties to some extent and of the later maturing, less hardy varieties to a considerable extent. Grain from the later varieties is very light and some failed to mature any viable grain. Smut infection is the lowest it has been for several years, owing to climatic conditions unfavorable for development of the smut fungus.

Approximately 100 of the 220 strains grown in replicated row rows were Kanota and Fulghum selections, and of these, 83 outyielded the average of the Kanota checks. Some of these selections have outyielded the checks for three years and appear to be superior to ordinary Kanota. Yields of a few selections and of some of the better known varieties are given in the following table:

Yield of Oats in Replicated Row Rows at Manhattan, Kansas,
in 1926

<u>Variety</u>	<u>C.I. No.</u>	<u>Yield</u> (Bu. per Acre)
Kanota Selection	----	47.68
Burt "X"	----	44.55
Ruakura	1961	44.53
Ala. Red Rustproof	----	41.04
Glenn Innis No. 6	----	41.02
Fulghum	1963	40.04
Fraziers Red Rustproof	1363	39.31
Burt "M"	----	38.44
Fulghum	1833	38.40
Calcutta	794	37.98
Alabama Hybrid 651	----	37.42
Ave. Kanota checks	----	35.53
Red Rustproof (Red Texas) Sel. - (Black)	----	34.69 34.09
Ferguson Navarro	966	29.38
Aurora	----	27.51
Richland	787	24.62
Markton	2053	20.16
Kherson selection	----	18.14
Ave. of Albion checks	----	10.57

Agricultural Experiment Station, Manhattan (Corn Breeding, A. M. Brunson)

Agricultural Experiment Station, Manhattan (Wheat Foot Rots, Hurley Fellows)

Agricultural Experiment Station, Manhattan (Wheat Leaf Rust, C. O. Johnston)

Hays Branch Experiment Station, Hays (Cereal Agronomy, A. F. Swanson) (Aug. 2)

Light showers fell throughout the latter part of July, and while not sufficient for the best development of corn and sorghums, they proved to be of considerable value in keeping the atmosphere cool at a time when a number of the leading varieties were in the stage of pollination.

Many of the early sorghums have been heading during the last ten days so that considerable time is required in putting on bags. Approximately 1,200 plants have been bagged so far. This year, considerable F₂ material is on hand with Dwarf yellow milo as one of the parents of the several crosses.

The following yields of winter wheat were obtained from plats replicated four times, twice on fallow and twice on cropped land.

<u>Variety</u>	<u>C.I. No.</u>	<u>Bu. per Acre</u>
Superhard Blackhull	5054	22.1
Blackhull	6252	20.6
Nebraska No. 28	5147	20.4
Nebraska No. 60	5250	20.4
Kharkof (Hays No. 2)	6686	20.0
Hussar	4843	19.9
Nebraska No. 6	6249	19.7
Kharkof	1442	19.6
Manred	5146	19.4
Kharkof (Mont. No. 36)	5549	18.6
Newturk	6935	18.5
Fulcaster	6471	17.7
Karmont	6700	17.3
Tenmarq	6936	17.2
Sherman	4430	17.0
Harvest Queen	6199	16.8
Improved Turkey	5592	16.6
Altera	5797	15.9
Turkey	1553	14.9
Minturki	6155	13.9

Superhard Blackhull is a selection made by Earl G. Clark, the originator of Blackhull, and was grown for the first time at Hays. The selection differs from Blackhull in that the kernels are hard, dark red, and more vitreous.

Nearly all the threshed grain of the varietal, cultural, and nursery tests of small grains has been recleaned and reweighed so that the matter of calculating the final yields is the next task.

Threshing in this vicinity is about completed. To the east of Hays yields of 40 bushels to the acre have been reported. That section had slightly more snow and rainfall early in the season, which seems to have influenced the yields greatly.

The increased use of combines in Kansas the last two years has materially shortened the length of the threshing season in this State. Old threshermen who have long been in the game are finding custom threshing almost a losing business.

COLORADO

Agricultural College, Ft. Collins (Barberry Eradication, E. A. Lungren)
(July 31)

Second survey in Colorado is progressing very satisfactorily in Denver county. Up to this date, an area beginning two miles north with a west boundary of two miles west of Arvada and extending south as far as 44th Street has been covered. This is in the wheat ridge district. Every property in this area has been visited. The thoroughness of this survey necessitates a great deal of walking, but thus far the results have justified it.

Up to the present time we have found 28 very large bushes on nine properties. Sixteen of these were escaped bushes found scattered along the banks of Clear Creek. In addition, 77 seedlings were found near certain of the above bushes.

In two cases heavy infection was found on barberries spreading rust to wild grasses and wheat.

NEBRASKA

North Platte Substation, North Platte (Cereal Agronomy, G. F. Sprague)
(July 31)

The weather of the last half of July has been extremely dry. Temperatures over 100° were recorded on six days, the maximum being 106°. Four rains totaling 0.10 inch were recorded. The evaporation was 5.026 inches.

Corn gave excellent prospects of a good crop early in July. At the present time corn is very severely burned; in many cases it is past recovery. Financial conditions promise to be very critical for the farmer. The corn crop last year was practically a failure, small grain yields this year were very light, and now there is little hope for corn.

Corn under irrigation is growing nicely and should give very good yields. Most of it has been irrigated twice and will receive another application of water.

In the inbred strains, grown under dry-land conditions in comparison with varieties, conditions similar to last year are apparent. Inbreds are maturing normally, showing little or no drought injury, while the varieties will be almost a total loss.

Plat threshing has been completed, Nebraska No. 60 being the highest yielding winter wheat and Kota the highest yielding spring wheat. Nursery threshing was begun last week, but not much progress has been made as yet.

College of Agriculture, University Farm, Lincoln (Barberry Eradication,
A. F. Thiel)

WYOMING

College of Agriculture, University of Wyoming, Laramie (Barberry Eradication,
E. A. Lungren)

SOUTH DAKOTA

College of Agriculture, Brookings (Barberry Eradication, R. O. Bulger)

NORTH DAKOTA

Agricultural Experiment Station, Agricultural College (Flax Diseases, L. W. Boyle) (July 20)

Crops in general looked very well in the Crockston section, about the middle of July. None of the flax fields which I visited showed a large amount of wilt. Certain commercial fields showed some damage from heat canker but it was not severe. Only traces of rust were evident in certain fields, and there was no evidence of pasmo.

We had about half an inch of rain at Fargo last night which should help the crop considerably. Much of the flax in this section is late seeded, so that prospects are still dependent on the weather to a large extent in view of the drought from which the crop is beginning to suffer. In certain sections of the State I am told that it is past redemption on account of the dry season and the recent period of hot weather.

Agricultural Experiment Station, Agricultural College (Barberry Eradication, G. C. Mayoue)

Dickinson Substation, Dickinson (Cereal Agronomy, R. W. Smith) (August 2)

As a result of the heat and drought cereal crop yields will be disappointing in this locality as well as in most parts of the State. The only good yields at the Substation will be on summer fallowed land.

The varietal plats are all harvested except proso varieties. Oats and barley varieties in rod rows are harvested and more than half of the spring wheat varieties. About 545 rod rows of spring wheat were harvested and bagged today by three men.

Some of the official visitors at the Substation in the past month were J. Allen Clark, K. S. Quisenberry, A. F. Swanson, E. R. Ausemus, and V. F. Tapie.

Hot, dry weather prevailed during most of the month of July. The maximum temperature was 101 degrees on July 31 and the maximum was above 90 degrees on ten days of the month. The minimum was below 50 degrees on seven days, the minimum for the month being 39 degrees on July 22.

The total precipitation for the month was 1.16 inches, coming mostly in small showers; the most recorded for one day was 0.54 inch on July 9.

Northern Great Plains Field Station, Mandan (Flax Breeding, J. C. Brinsmade, Jr.) (August 2)

In the last half of July, rains amounting to 2.10 inches, though too late to benefit wheat, oats, and barley, were of great benefit to flax and corn. Generally high temperatures have prevailed during this period, with a maximum of 101 degrees on July 18, and a minimum of 46 degrees on July 21.

Flax sown May 21 in the varietal plats, which had practically ceased blooming by the middle of July, resumed blooming following the rain July 19, and still continues to bloom.

Flax sown April 20, April 30, and May 11 in the date-of-seeding-and-tillage experiment and flax and wheat in the flax and cereal mixture experiment, have already been harvested.

Flax which germinated late in the nursery plantings, is now in full bloom, and stands a chance of making a good, though late crop.

From July 28 to 31 the writer visited the Experiment Stations at Fargo, N. Dak., and St. Paul, Minn., to note possible differences in wilt infection of flax varieties grown from seed of the same sources as seed used in plantings at Mandan. Results at Mandan, Fargo, and St. Paul were in general similar though some differences were noted. Damont flax, which wilted completely at Mandan, had a notable percentage of surviving plants at Fargo in rows grown from seed of the same origin as that used at Mandan. The earlier germination at Fargo, which enabled the flax to become well established before the occurrence of temperatures favorable to wilt, may account for the difference. The strain of N.D.R. 52, which wilted almost completely on flax-sick soil this year at Mandan, as it has done consistently in previous years, shows considerably more resistance at Fargo than the earlier start would seem to account for.

Wilt-resistant varieties, grown for seven consecutive years on uninfected soil, and on flax-sick soil this year at Mandan, Fargo, and St. Paul, still appear highly resistant at all three stations. A small proportion of wilted plants were noted at St. Paul in the rows from seed previously grown for seven consecutive years on uninfected soil, and a smaller proportion in rows from seed previously grown for seven consecutive years on flax-sick soil. Stand counts made July 30, compared with counts made just after emergence, indicated greater mortality in rows previously grown on uninfected soil than in rows previously grown on flax-sick soil.

Crops appear very poor for over 100 miles east of Mandan. Around Fargo crops are generally good, however. Also at St. Paul, crops appear very good compared with the nearly complete failure at Mandan.

Visitors at the Station during the last half of July included the following: J. Allen Clark, in charge of western wheat investigations; F. E. Cobb, President of the Bottineau (N. Dak.) State Forestry School; G. H. Collingwood, Forester, Office of Cooperative Extension work; E. B. Lambert, Stem Rust Investigations, University Farm, St. Paul, Minn; Donald G. Fletcher, Conference for the Prevention of Grain Rust, Minneapolis; A. F. Swanson, Hays Branch Station, Hays, Kans.; P. C. Newman, Division of Crop and Livestock Estimates, Grand Forks, N. Dak.; A. C. Dillman, in charge of flax investigations; K. S. Quisenberry, western wheat investigations, and V. F. Tapke, cereal smut investigations.

Northern Great Plains Field Station, Mandan (Cereal Agronomy, E. R. Ausemus)
(August 3)

The harvest of the cereal project is completed with the exception of some of the later maturing varieties and hybrids in the nursery. All small grain yields will be light and the grain of fair quality. The yields of the nursery should be much higher than those of the plats. Farmers in this locality are harvesting some of the better fields of wheat, even though they do not expect to get back their seed.

Oats and barley in the varietal plats are almost a complete failure. A few of the earlier varieties have headed, but they have not filled well. Most of the barley varieties have not emerged from the boot. As the result of the drought in the earlier part of the season Russian thistles have made a larger growth than the barleys and have practically smothered the barley plants.

Recent rains have greatly improved the prospects for a corn crop. Corn is well along in the tassel and silk.

In company with J. Allen Clark, agronomist in charge of western wheat investigations, the writer visited the experiment stations at Dickinson, N. Dak., and Moccasin, Mont. Small grain crops are almost a complete failure west from Mandan to Hebron, N. Dak., but improve as one goes west. Many of the fields of wheat, oats, and barley in the area affected most by the drought will not be harvested. Crops were in fine condition in the Judith Basin of Montana.

From Moccasin the writer, accompanied by Clyde McKee, agronomist of the Montana State College, motored to Bozeman. Crops in the irrigated areas and up on the higher land in the Gallatin Valley were very good. On the return trip the Huntley station was visited. The experiments grown on the dry-land areas were suffering considerably from the drought.

MONTANA

Judith Basin Substation, Moccasin (Cereal Agronomy, R. W. May)

State College of Agriculture, Bozeman (Barberry Eradication, W. L. Popham)

WESTERN BASIN AND COAST AREAS (North to West and South)

IDAHO

Aberdeen Substation, Aberdeen (Cereal Agronomy, G. A. Wiebe)

Agricultural Experiment Station, Moscow (Stripe Rust, C. W. Hungerford)

WASHINGTON

Agricultural Experiment Station, Pullman (Cereal Breeding, E. F. Gaines)

OREGON

Sherman County Branch Station, Moro (Cereal Agronomy, D. E. Stephens)
(August 3)

Harvesting operations in eastern Oregon are about completed. The weather has been favorable, with no rainfall. Wheat yields in Sherman County varied from less than five bushels per acre in some localities to more than 30 in others.

The weather in June was very unfavorable for growing crops. There was no rainfall of any benefit, the total for the month being only 0.18 inch. The total seasonal rainfall at Moro (March to July, inclusive) was 1.96 inches, and the total precipitation for the crop year, Aug. 1, 1925, to July 31, 1926, was 3.74 inches.

The mean temperature for June of this year was 67 degrees, the highest since weather records have been kept. During the first half of July there were four days with maximum temperatures above 100 degrees, the highest being 105 degrees on the 11th. No high temperatures have been recorded since the middle of July.

Threshing of all field plats on the Station was finished today, and Mr. Bayles will begin threshing the nursery tomorrow. The yields of the grain were a little higher and the quality much better than we expected. The following table gives the yields of the winter wheats in the varietal trial.

Acre yields in bushels, of winter wheat varieties grown at the Sherman County Branch Experiment Station, Moro, Oregon, in 1926 in triplicate 1/16 acre plats

Variety	C.I. No.	Yield, Bu. per Acre			
		Ser.1	Ser.2	Ser.3	Average
Federation	4734	30.5	35.7	34.1	33.4
Pl068 x Preston	----	29.9	30.5	31.7	30.7
Hybrid 128	4512	26.8	32.3	32.3	30.4
Hybrid 123	4511	27.9	27.6	33.3	29.6
Turkey (Local)	4429	28.9	28.6	29.4	29.0
Argentine Sel. 1569-2	----	28.9	28.9	28.9	28.9
White Odessa	4655		28.6	28.9	28.7
Regal	7364	28.1	28.9	28.6	28.5
Triplet	5428	29.1	27.1	28.6	28.3
Turkey	1571		27.1	28.4	27.7
Kanred	5146	28.1	26.3	28.1	27.5
Fortyfold x Hybrid 128	----	25.0	28.1	28.9	27.3
Alberta Red	2979	27.1	27.1	26.8	27.0
Kharkof 1442-12	----	27.1	26.8	27.1	27.0
Newturk	6935	25.0	25.8	27.3	26.0
Kanred x Marquis, 17818B2-11-5	----	22.4	25.3	26.3	24.7
Turkey x Florence, G326-1	----	21.6	25.3	25.0	24.0
Ridit	6703	20.8	25.0	24.7	23.5
Fortyfold	4156	14.6	15.6	21.1	17.1
Turkey 889-5	----			27.6	27.6
Average					27.3

CALIFORNIA

Biggs Rice Field Station, Biggs (Rice Agronomy, J. W. Jones)

University Farm, Davis (Cereal Agronomy, V. H. Florell)

Agricultural Experiment Station, Berkeley (Cereal Smuts, F. N. Briggs)

CER E A L C O U R I E R

Official Messenger of the Office of Cereal Crops and Diseases,
Bureau of Plant Industry, U. S. Department of Agriculture
(NOT FOR PUBLICATION)

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Personnel (August 11-20) and Field Station (August 1-15) Issue

PERSONNEL ITEMS

Dr. Ruth F. Allen, associate pathologist in the cooperative cereal-disease investigations conducted at Berkeley, Calif., came to Washington August 13 to confer with officials of the Office concerning progress of investigations and the revision of manuscripts.

A. C. Dillman, associate agronomist in charge of flax investigations, wrote from Newell, S. Dak., on August 11 that the growing season had been very favorable in that locality and that crops were above the average. As the result of more than 11 inches of rain in May, June, and July cereal crops are satisfactory and pasturage and hay abundant. Cattle and sheep are in excellent condition.

Conditions on the Bellefourche Irrigation Project appear to be improved compared with those of the past five years. There is a large acreage of idle land, however, much of which might produce good crops if economic conditions were better. Many farmers have made money with sheep in recent years, and there is a larger number of sheep on the Project this year. Alfalfa is the principal crop. Small grains, sugar beets, and corn also are important, and a small acreage of cucumbers is grown for pickling.

The experiment station is in excellent condition. One small field of winter wheat is estimated to be good for 50 or 60 bushels to the acre. Spring wheat, oats, and barley are in excellent condition. There was some stem rust on susceptible varieties of spring wheat but apparently it had not done any appreciable damage. Flax under irrigation was nearly ripe and promised a high yield. It had been irrigated only once.

Flax has been grown for 16 years on two continuously cropped plats, and the crop now standing appears to be as good as any grown during that time. This does not mean that it is equal to other plats which have been improved by crop rotation, including pasturing and fertilizing. Winona (C.I. 179), a wilt-resistant variety developed at the Minnesota Agricultural Experiment Station, is grown on the irrigated rotation plats. The varietal trials include Winona, N.D.R. 114, Linota, Damont, and Long 79.

Mr. Dillman was at Brookings, S. Dak., on August 6. There small grains were poor because of the drought. Corn looked well but perhaps a little backward. A plat of mixed flax and wheat after potatoes promised a good yield, as also did flax and wheat in pure stands on the same soil treatment.

At Mandan, N. Dak., Mr. Dillman found the flax nurseries severely injured by the long drought; it was worth while, however, to see how plants behave under such extreme conditions.

The flax classification nursery at Bozeman, Mont., looked like a flower garden. A series of notes and good botanical specimens of all types were obtained.

Mr. Dillman wrote on August 16 from University Farm, St. Paul, Minn., that continued wet, cloudy weather had delayed ripening and harvesting of flax in that locality. A 3-inch rain the night before had flooded low fields, streets, and basements. Mr. Dillman expects to finish harvesting flax by the end of August and return to Washington early in September.

J. R. Holbert, agronomist in charge of investigations with corn root, stalk, and ear rots, in cooperation with Funk Bros. Seed Company, Bloomington, Ill., came to Washington on August 16 to confer with officials of the Office and complete a manuscript on corn-seed treatments. Mr. Holbert also will go to Wilmington, Del. to inspect corn-seed treatment experiments.

Dr. H. B. Humphrey, senior pathologist in charge of cereal rust investigations, left Washington on August 11 for a month's trip in Canada, New York, and Maine to make observations and take notes on uniform wheat and oat rust nurseries, to obtain information on flax rust and oat blast, and to collect cereal disease specimens. He will be accompanied by Dr. E. C. Stakman, agent in the cooperative cereal-disease investigations conducted at University Farm, St. Paul, Minn.

Dr. F. E. Kempton, associate pathologist in charge of barberry eradication, left Washington August 11 for a trip in the barberry-eradication area to supervise and inspect midsummer field operations.

Dr. C. E. Leighty, agronomist in charge of eastern wheat investigations, left Washington on August 16 for Ithaca, N. Y., to confer with officials of the Cornell University Agricultural Experiment Station on cooperative wheat investigations. He was authorized to attend the meetings of the International Congress of Plant Sciences to be held at Ithaca, August 16 to 23, and to present a paper on Breeding Wheat for Disease Resistance.

R. W. Leukel, associate pathologist in charge of nematode investigations, returned on August 12 from a trip in parts of Maryland, Virginia, West Virginia, and Pennsylvania to locate farms infested with wheat nematode, to find the source of infestation, and to confer with millers, county agents, extension workers and others in an effort to eradicate the infection.

Leo A. Moak was appointed on August 16 to assist in field operations in the cooperative rice investigations at Biggs, Calif., under the direction of J. W. Jones.

Archibald S. Neville was appointed August 16 to assist in the field operations in connection with cooperative cereal experiments at Aberdeen, Idaho, under the direction of G. A. Wiebe. Mr. Neville will fill the vacancy caused by the resignation on August 15 of Merida P. Nichols, who had been employed since June 1, 1922.

M. A. McCall, agronomist in charge of cereal agronomy investigations, left Washington on August 15 for points in Ohio, Indiana, Wisconsin, California, Oregon, Washington, and Wisconsin to confer with Federal and State officials regarding the present status of cooperative cereal agronomy investigations and to plan future experiments.

Dr. Lowell R. Randolph, associate cytologist engaged in cytological and morphological studies of corn in cooperation with the department of botany of the Cornell University, has been granted a year's leave of absence to study at the Botanical Institute of Stockholm, the University of Kiel, and the University of Louvain, under a fellowship granted by the International Education Board. Dr. Randolph will leave Ithaca about September 4.

F. D. Richey, agronomist in charge of corn investigations, left on August 17 for Ithaca, N. Y., to confer with Dr. L. F. Randolph, associate cytologist, who is to spend a year of study in Europe, concerning the final preparation of cooperative manuscripts, and with Dr. R. A. Emerson, collaborator in the genetics of corn, regarding the behavior under New York conditions of varieties of corn introduced from South America and of crosses between these and North American varieties that are being grown at Ithaca in cooperation with this Office. Mr. Richey will go from Ithaca to Chatham, Ontario, and to points in Wisconsin, Minnesota, North Dakota, Montana, Nebraska, Kansas, Iowa, Arkansas, Indiana, and Ohio to confer with Federal and State officials concerning cooperative corn investigations. Mr. Richey will be in the field about five weeks.

J. W. Taylor, associate agronomist in charge of cereal experiments at the Arlington Experiment Farm, left Washington August 12 for points in New Hampshire, Maine, Massachusetts, and Connecticut to confer with officials of the agricultural experiment stations in these States concerning the cultivation of cereals and to collect specimens of wild oats for study in Washington.

The following members of the Office staff are in attendance at the meetings of the International Congress of Plant Sciences at Ithaca, N. Y., August 16 to 23, inclusive, permission to attend at their own expense having been granted by the Secretary of Agriculture:

Dr. Ruth F. Allen
Miss M. A. Griffiths
Dr. G. N. Hoffer
J. R. Holbert
Dr. H. B. Humphrey
Dr. A. G. Johnson

Dr. Annie M. Hurd-Karrer
Dr. E. B. Mains
Dr. E. R. Banker
Dr. C. S. Reddy
F. D. Richey
Dr. E. C. Starran
Dr. W. H. Tisdale

MANUSCRIPTS AND PUBLICATIONS

38 A manuscript entitled "New Barleys in California," by H. V. Harlan and V. H. Florell, was approved August 11 for publication in a California farm journal.

39 A manuscript entitled "Experiments with Cereals at the Fort Hays Branch Experiment Station, Hays, Kansas, During the 12-Year Period, 1912 to 1923, Inclusive," by A. F. Swanson, was submitted August 14 for publication as a Department Bulletin.

40 A manuscript entitled "Rice for Latin America," by Charles E. Chambliss was approved on August 20 for publication in the Spanish edition of the Bulletin of the Pan American Union.

The article entitled "A Cytological Study of Puccinia triticina Physiologic Form 11 on Little Club Wheat," by Ruth F. Allen, appears in the Journal of Agricultural Research 33 (No.3): 201-222, pls. 1-9, August 1, 1926. (Rec. Aug. 13 (Cooperation between the Office of Cereal Crops and Diseases and the California Agricultural Experiment Station.)

FIELD STATION CONDITION AND PROGRESS

HUMID ATLANTIC COAST STATES (South to North)

GEORGIA

State College of Agriculture, Athens (Cereal Agronomy, R. R. Childs)

VIRGINIA

Arlington Experiment Farm, Rosslyn (Small Grain Agronomy, J. W. Taylor)Arlington Experiment Farm, Rosslyn (Corn Breeding, F. D. Richey) (Aug. 19)
(E.S.G.)

Hand pollinating in connection with corn breeding is about completed. This work began later than usual because of unfavorable corn-growing conditions early in the season. The earlier maturing strains reached the blossoming stage in good condition, however, and the weather was favorable for pollinating. The late maturing strains have not fared so well. The unusually hot, dry weather during the first half of August ruined some of the strains and tests, and the continuous showery weather of the week has greatly interfered with hand pollinating.

Arlington Experiment Farm, Rosslyn (Cereal Smuts, W. H. Tisdale)Arlington Experiment Farm, Rosslyn (Virus Diseases, R. W. Webb)Arlington Experiment Farm, Rosslyn (Cereal Bacterial Diseases, C. S. Reddy)

NEW YORK

Cornell University Agricultural Experiment Station, Ithaca (Cereal Breeding, H. H. Love) (August 11)

The very dry period during the early growing season has been somewhat broken by good rains in the last two weeks. These did not come in time to obtain the best results from oats and barley. Nevertheless, some of the later varieties will be benefited.

While, as reported earlier, wheat was very poor this year, we finally decided to harvest part of the advanced test and part of the ten-row lot. The drill plats were sown on another field and came through fairly well; they were all harvested and have been threshed. The red rows of barley and the barley plats were harvested August 9 and 10; the red rows of oats are now being harvest

The hybrid material, which was grown in the plant breeding garden, has all been harvested and seed has been saved for continuing the work. Considerable data were collected dealing with the genetic phases of the small-grain investigations. A considerable number of hybrids which were made between some of the best strain and smut-resistant types were grown. All of this material was inoculated with smut and selections of those not showing smut were made for continuing the work.

The barley and oat tests which were sown in different parts of the State are now being harvested, and some demonstration meetings are being held in connection with these. On August 6 I spent the day in Chemung County holding four demonstrations where the new strains recommended by the department were under test.

A number of visitors have looked over the work during the last few days and have consulted about methods. A number of the members of the New York Co-operative Seed Improvement Association inspected the small grain experiments. Representatives of the Gunson, Gardner and Higbie seed firms visited the plats on August 5. M. A. F. Sutton, of the Sutton Seed Company, Reading, England, visited the plats on August 4.

HUMID MISSISSIPPI VALLEY STATES (South to North)

LOUISIANA

Rice Experiment Station, Crowley (Rice Agronomy, J. M. Jenkins) (Aug. 17)

During July, I traveled over much of the prairie, river, and bayou sections of the State where rice is grown. The promising condition of the crop in the prairie section, as reported for June, was not found in July. Fields appearing free of weeds in June, were found badly infested in July. The present indications are that the average yield of early-maturing rice will be much lower than was indicated last month. In the Mississippi River and Bayous Lafourche and Tesche sections good yields are expected. Much of the crop in all sections is heading; a few fields were ready for harvest the latter part of the month.

Work on the Station progressed satisfactorily during July. Much time was devoted to removing weeds and cleaning irrigation ditches and levees. Many of the very early varieties of rice in the nursery are heading and maturing.

The lack of rain has retarded the growth of soybeans and cotton.

Agricultural Experiment Station, Baton Rouge (Corn Breeding, H. F. Stoneberg)

MISSOURI

Agricultural Experiment Station, Columbia (Cereal Agronomy, C. A. Helm)

TENNESSEE

Agricultural Experiment Station, Knoxville (Corn Breeding, L. S. Mayer) (August 14)

After an excellent spring season in which rains were well distributed and corn made good growth, pollinating was begun early in July and finished this week (Aug. 13). Many thousands of selfs have been made in the various lines already established, particularly in Neal Paymaster. Two very severe wind and rain storms, one on August 1 and another on August 3, blew down and damaged much of the corn. There is now need of rain.

The writer had the privilege of addressing a very well-attended meeting of the Georgia Crop Improvement Association at Athens, Ga., July 29, on "Corn Breeding for the South." Interest in the present-day method of corn improvement through selfing and recombination of pure lines is increasing rapidly throughout the South.

IOWA

- Agricultural Experiment Station, Ames (Oat Breeding, L. C. Burnett)
Agricultural Experiment Station, Ames (Corn Breeding, M. T. Jenkins)
Agricultural Experiment Station, Ames (Crown Rust of Oats, S. M. Dietz)
Iowa State College, Ames (Barberry Eradication, M. A. Smith)

ILLINOIS

- Funk Bros. Seed Co., Bloomington (Corn Root, Stalk and Ear Rots, J. R. Holber)
Box 72, Post Office Building, Urbana (Barberry Eradication, G. C. Curran)

INDIANA

- Purdue University Agricultural Experiment Station, La Fayette (Corn Rots and Metallic Poisoning, G. N. Hoffer)
Purdue University Agricultural Experiment Station, La Fayette (Leaf Rusts, H. S. Jackson and E. B. Mains)
Purdue University College of Agriculture, La Fayette (Barberry Eradication, W. E. Leer)

OHIO

- Ohio State University, College of Agriculture, Columbus (Barberry Eradication, J. W. Baringer)

MICHIGAN

- Agricultural College, East Lansing (Barberry Eradication, W. F. Reddy)

WISCONSIN

- Agricultural Experiment Station, Madison (Wheat Scab, J. G. Dickson)
Agricultural Experiment Station, Madison (Virus Diseases, H. H. McKinney)
Department of Agriculture, State Capitol Annex, Madison (Barberry Eradication, W. A. Walker) (August 10)

The second survey for barberries has been in progress in Pierce, Kenosha, Sauk, Columbia, Rock, and Grant counties. Because of the large number of woodlands and bluffs in these counties, which must be covered thoroughly on foot, only a small portion of the territory has been covered to date.

Many large escaped bushes have been found near Janesville on the banks of Rock River and in "out of the way" places near the city. The bushes had spread from an old established nursery south of the city. New escaped bushes on new properties also have been found in Sauk and Columbia counties in the vicinity of the cities of Baraboo and Portage. Between 100 and 200 bushes have been located on the large bluffs of the St. Croix River in Pierce County. These bluffs average about 300 feet in height and must be scouted on foot from top to bottom. Twenty-five to thirty miles along the river already have been covered.

On one property in Grant County, 35,000 bushes have been removed by digging and pulling, and about 3,500 bushes are now being salted. We were able to pull a large part of these bushes, as they were very shallow rooted in a loose mulch in a thickly wooded area.

Some very heavy epidemics of stem rust on oats appeared in portions of the southern and western part of the State. In most cases, the heaviest rust has been found to be in the general vicinity of barberries. Only a very light attack of rust appeared in Calumet County, where epidemics occurred in previous years. Last year several heavily infected barberry plantings were destroyed in that county, and observations made this season indicate that they were the source of the rust spread.

MINNESOTA

Agricultural Experiment Station, University Farm, St. Paul (Wheat Breeding, O. S. Aamodt)

Agricultural Experiment Station, University Farm, St. Paul (Stem Rust, E. C. Stakman)

Agricultural Experiment Station, University Farm, St. Paul (Flax Rust, A. W. Henry)

Agricultural Experiment Station, University Farm, St. Paul (Barberry Eradication, L. W. Melander)

GREAT PLAINS AREA (South to North)

OKLAHOMA

Woodward Field Station, Woodward (Grain Sorghums, J. B. Sieglinger) (Aug. 17)

The first half of August was becoming very dry, but rains fell before the sorghums and broomcorn were damaged.

Sorghums are heading rapidly and prospects are excellent for high grain yields. Bagging seed heads was well under way until stopped by rains.

On August 5 a picnic and barbecue was held at the Field Station in honor of Assistant Secretary of Agriculture Duniap, and Congressman Farber, under the auspices of the Woodward Chamber of Commerce. The attendance was estimated at 6,000 to 12,000.

The writer attended Farmers' Week at the Oklahoma A. & M. College on August 10 to 12, inclusive, and gave a talk before the Agronomy meeting on "Results of Breeding Grain Sorghums." Farmers' Week was well attended. Crops around Stillwater were damaged by drought. Chinch bugs were plentiful on experimental sorghum at the College Farm.

Maximum temperature for first half of August, 104° on the 5th and 8th; minimum 65° on August 1. Precipitation, 1.16 inches, August 11, 13, 14 and 15.

KANSAS

Agricultural Experiment Station, Manhattan (Cereal Breeding, D. D. Hill)

Agricultural Experiment Station, Manhattan (S. C. Salmon) (August 6)

The two following tables give data on the yield of hard and soft red winter wheats grown at the agronomy Farm of the Kansas Agricultural Experiment Station, Manhattan, Kans., in 1925-1926.

Yield of hard red winter wheat varieties in three plats on the Agronomy Farm, Kansas Agricultural Experiment Station, Manhattan, Kans., 1925-1926

Variety	Kans. No.	C.I. No.	Yield - Bu. per Acre			Average
			Series I	Series II	Series III	
Tenmarq	439	6936	45.3	29.4	39.0	37.9
H. W. Defiance	373	6205	39.2	40.4	33.2	37.6
Improved Turkey	2382	5592	33.9	41.5	34.8	36.7
Marquis x Kanred	443	----	40.9	30.3	35.3	35.5
Turkey	570	1558	33.5	38.8	31.9	34.7
Newturk	2536	6935	34.7	29.6	38.6	34.3
Blackhull	343	6251	30.5	33.7	38.2	34.1
Kanmarq	440	6937	38.5	29.1	33.3	33.6
Turkey	392	7364	31.7	33.3	34.7	33.2
Altera	2048	5797	31.0	27.9	36.5	31.8
1066 x Marquis	442	----	35.3	28.1	31.3	31.6
Kharkof	382	6206	26.0	32.3	33.7	30.7
Nebraska No.6	321	6249	31.1	25.9	33.9	30.3
Iobred	431	6934	33.2	27.2	----	30.2
Sherman	2270	4430	31.7	24.7	32.5	29.6
Superhard Blackhull	----	3054	27.7	25.9	----	26.8
1068 Sel.	----	----	----	29.5	----	29.5
Kanred Checks	2401	5146	1/29.5	1/26.2	1/33.2	29.6

1/ Average of 4 plats. Kanred was badly damaged by chinch bugs because of a thin stand owing to poor seed.

Yield of soft red winter wheat varieties in three plats on the Agronomy Farm, Kansas Agricultural Experiment Station, Manhattan, Kans., 1925-1926

Variety	Kans. No.	C.I. No.	Yield - Bu. per Acre			Av.
			Series I	Series II	Series III	
Fulcaster	317	6471	40.5	39.9	47.5	42.6
Harvest Queen	19	6199	36.7	29.0	37.3	34.3
Currell	---	3326	33.1	31.2	31.7	32.0
Hussar	2519	4843	29.3	31.4	34.8	31.8
Zimmerman	2084	6211	27.9	30.1	31.5	29.8
Nebraska No. 28	34	5147	29.1	29.0	29.4	29.2
Shepherd	435	6163	28.5	27.5	31.0	29.0
Indiana Swamp	2593	5274	39.2	---	---	39.2
Kanred Checks	2401	5146	↓/29.6	↓/26.3	↓/32.8	29.6

↓/ Average of 2 plats. Kanred was badly damaged by chinch bugs as the result of a thin stand owing to poor seed.

Agricultural Experiment Station, Manhattan (Corn Breeding, A. M. Brunson)

Agricultural Experiment Station, Manhattan (Wheat Foot Rots, Hurley Fellows)

Agricultural Experiment Station, Manhattan (Wheat Leaf Rust, C. O. Johnston)

Hays Branch Experiment Station, Hays (Cereal Agronomy, A. F. Swanson)

COLORADO

Agricultural College, Ft. Collins (Barberry Eradication, E. A. Lungren)

NEBRASKA

North Platte Substation, North Platte (Cereal Agronomy, G. F. Sprague)
(August 14)

The weather of the first week in August was hot and very dry. However, beginning August 11 the drought was broken by a rain of 0.62 inch. Since this a total of 2.37 inches of precipitation has been recorded.

The ground now is in excellent condition for plowing. Land in summer fallow was in excellent shape to hold the rain; so far for the first time this season, moisture is being stored instead of lost.

On August 12 work on a new seed house was commenced. This new building has been badly needed for some time, as our storage space was very limited.

Corn, on the upland, planted at the normal rate, is completely burned. That planted in wide-spaced rows is still green and may show a fair yield. Inbreds stood the dry weather very well. Corn grown on the bench under irrigation is in excellent condition, and looks as though it might yield as high as 50 bushels per acre.

Yields on the small-grain variety plats are given below.

Average yield of spring wheat varieties grown in replicated 40th-acre plats at the North Platte Substation, North Platte, Nebr., in 1926

<u>Variety</u>	<u>C.I.No.</u>	<u>Av. Yield</u> (Bu.)
Kubanka	1440	1.8
Akrona	6381	1.8
Nodak	6519	2.2
Ruby	6047	1.1
Marquis	3641	2.7
Java (Dawson)	----	2.0
Java (Kearney)	----	2.0
Progress	6902	1.5
Kota	5878	3.3
Quality	6607	2.7
Hard Federation	4733	2.5
Garnet	8181	1.7
Prelude	4223	1.8
Ceres	6900	2.9
Marquillo	6887	1.5
Reliance	7370	1.5

Average yield of winter wheat varieties grown in replicated 40th-acre plats at the North Platte Substation, North Platte, Nebr., in 1926

<u>Variety</u>	<u>C.I.No.</u>	<u>Av. Yield</u> (Bu.)
Nebraska No. 60	6250	9.3
Newturk	6935	8.0
Kharkof	1442	13.3
Kanred	5146	10.7
Nebraska No. 30	7358	10.7
Minturki	6155	12.3
Karmont	5700	6.0
Nebraska No. 6	5249	8.7
Turkey	7363	6.7
Beloglina	1543	6.0

Average yield of oat varieties grown in replicated 40th-acre plats at the North Platte Substation, North Platte, Nebr., in 1926

<u>Variety</u>	<u>C.I.No.</u>	<u>Av. Yield</u> (Bu.)
Nebraska No. 21	841	1.9
Iowar	847	2.3
Markton	2053	2.9
Fulghum	708	3.5
Furgeson No. 71	1039	2.9
Kherson	459	2.7
Burt (Original)	293	1.6
Burt 916	2054	1.9
Burt x Sixty-Day (Hybrid)	727	2.9
Nebraska Burt No. 4	2029	3.5
Colburt	2019	2.2

Average yield of barley varieties grown in replicated 40th-acre plats at the North Platte Substation, North Platte, Nebr., in 1926

<u>Variety</u>	<u>C.I.No.</u>	<u>Av. Yield</u> (Bu.)
McClymont	2126	1.5
Six-Row	----	1.4
Sandrel	937	1.5
Manchuria	2330	1.2
Composite Cross	4116	1.2
Mechanical Mixture	4115	1.4
Coast	690	1.7
Smyrna	2642	1.7
Butler (Akron Sel.)	----	1.7
Trebi	936	1.5
Cape Coast Hybrid	----	.8
Club Mariout	932	2.1
Snyder (Akron Sel.)	----	1.3
Hannchen	531	1.5
Colsess	2792	.8
Blackhull	878	.6
Himalaya (Hull-less)	620	1.3

College of Agriculture, University Farm, Lincoln (Barberry Eradication, A. F. Thiel)

WYOMING

College of Agriculture, University of Wyoming, Laramie (Barberry Eradication, E. A. Lungren)

SOUTH DAKOTA

College of Agriculture, Brookings (Barberry Eradication, R. O. Bulger)

NORTH DAKOTA

Agricultural Experiment Station, Agricultural College P. O., Flax Diseases,
L. W. Boyle)

Agricultural Experiment Station, Agricultural College P. O., Barberry Eradi-
cation, G. C. Mayoue)

Dickinson Substation, Dickinson (Cereal Agronomy, R. W. Smith) (August 16)

Threshing of the cereal varietal plats was completed this morning; the rotation plats were threshed last week. All yields were low because of drought and hot weather. The spring wheat varieties, which were grown on corn land, yielded from about four to ten bushels per acre. In the rotation plats wheat on fallow yielded about 15 bushels per acre, while that on continuously cropped land yielded almost nothing. The cereal nursery is not yet threshed. Being sown on fallow it should yield considerably better than the varietal plats.

In the spring of 1923, about 180 bushels of Nodak durum wheat, a variety developed at this station, were distributed among farmers in 13 counties of the State. One of these farmers recently sold 50 bags of this variety for shipment to Chile to be seeded there this fall. Last year five bushels of Nodak were sold for trial in Argentina. Inquiry among the farmers who have grown the variety brought out the fact that it has generally given good satisfaction in the durum region of this State.

I. R. Stanton, agronomist in charge of oat investigations, who took notes on the classification oat nursery and harvested the oat smut nursery last week, left for Mandan yesterday.

Northern Great Plains Field Station, Mandan (Flax Breeding, J. C. Brinsmade,
Jr.)

Northern Great Plains Field Station, Mandan (Cereal Agronomy, E. R. Ausemus)

MONTANA

Judith Basin Substation, Moccasin (Cereal Agronomy, R. W. May)

State College of Agriculture, Bozeman (Barberry Eradication, W. L. Popham)

WESTERN BASIN AND COAST AREAS (North to West and South)

IDAHO

Aberdeen Substation, Aberdeen (Cereal Agronomy, G. A. Wiebe)

Agricultural Experiment Station, Moscow (Stripe Rust, C. W. Hungerford)

WASHINGTON

Agricultural Experiment Station, Pullman (Cereal Breeding, E. F. Gaines)

OREGON

Sherman County Branch Station, Moro (Cereal Agronomy, D. E. Stephens)

CALIFORNIA

Biggs Rice Field Station, Biggs (Rice Agronomy, J. W. Jones)

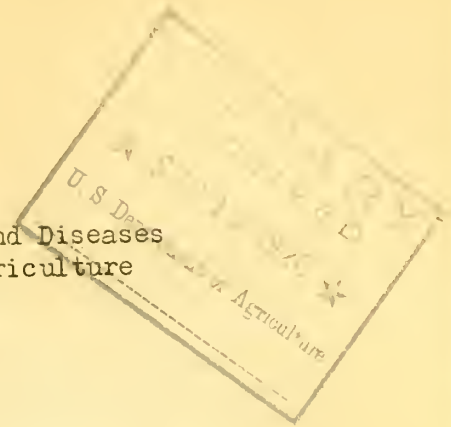
University Farm, Davis (Cereal Agronomy, V. H. Florell)

Agricultural Experiment Station, Berkeley (Cereal Smuts, F. N. Briggs)

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CEREAL COURIER

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Bureau of Plant Industry, U. S. Department of Agriculture
(NOT FOR PUBLICATION)



Vol. 18

No. 21

August 31, 1926
Personnel (Aug. 21-31) and Project Issue

PERSONNEL ITEMS

Dr. Ruth F. Allen, associate pathologist in the cooperative cereal-disease investigations conducted at Berkeley, Calif., who came to Washington August 13 returned to California on August 29.

Charles E. Chambliss, associate agronomist in charge of rice investigations, will leave Washington about September 6 for points in Pennsylvania, Illinois, Missouri, Arkansas, Texas, Louisiana, Georgia, South Carolina, and North Carolina, to confer with experiment station officials and others interested in rice investigations and to inspect the cooperative experiments at the Rice Experiment Station, Crowley, La. Mr. Chambliss will be in the field about two months.

F. A. Coffman, associate agronomist in oat investigations, left Aberdeen, Idaho, on August 21, en route for Washington, D. C. He obtained genetic data on a large number of oat hybrids in addition to the data recorded in extensive smut studies. With the help of T. R. Stanton, V. F. Tapke, and G. A. Wiebe data were obtained on about 30,000 oat plants at Aberdeen this season. Considerable material is being shipped to Washington for further genetic studies. Mr. Coffman will return to Washington about September 4.

W. T. Craig, agent in the cooperative cereal breeding at the Cornell University Agricultural Experiment Station, Ithaca, N. Y., was in Washington on August 26 discussing cooperative work with specialists in the Office.

A. C. Dillman, associate agronomist in charge of flax investigations, wrote from University Farm, St. Paul, Minn., on August 24 that frequent rains with almost continuous cloudy weather for the past two weeks had delayed threshing and the harvesting of flax throughout southern Minnesota. Judging from the appearance of the flax at University Farm, considerable damage has been done by the wet weather. One severe storm shattered the riper flax considerably.

The wet condition of the soil has prevented harvesting, while it has encouraged the growth of late weeds, especially barnyard grass; early harvested flax which was still standing in shocks has sprouted and molded to some extent.

Beginning the week of August 22 the weather has been clear, and progress has been made in harvesting the nursery rows. Most of these are ripe, but the late rains have brought about a second period of bloom which is of some disadvantage.

The appointment of Oscar K. Dizmang, farm laborer in the cooperative cereal investigations at Manhattan, Kans., was terminated August 31, the work for which he was appointed having been completed.

Miss Grace Gilchrist, of the University of Bristol, Bristol, England, came to Washington on August 28 to continue cytological studies in connection with virus diseases carried on last year at Cornell University and the University of Wisconsin. Miss Gilchrist will return to England about the middle of September.

Dr. H. V. Harlan, agronomist in charge of barley investigations, returned on August 23 from his season's work in the cooperative barley nurseries at the Aberdeen Substation, Aberdeen, Idaho.

Dr. J. R. Holbert, agronomist in charge of investigations with corn root, stalk, and ear rots, in cooperation with the Funk Bros. Seed Company, Bloomington, Ill., returned to Bloomington on August 17 after his visits in Washington, D. C., Wilmington, Del., and Ithaca, N. Y.

Doctor Holbert was granted the degree of Doctor of Philosophy by the University of Illinois in June.

Dr. C. E. Leighty, agronomist in charge of eastern wheat investigations, returned from Ithaca, N. Y., on August 23.

Miss M. L. Martini, assistant botanist in barley investigations, returned on August 23 from Aberdeen, Idaho, where she made studies of barley varieties in the cooperative nursery at the Aberdeen Substation.

H. H. McKinney, who for several years has been in charge of virus disease investigations in cooperation with the University of Wisconsin, came to Washington on August 23. His headquarters have been transferred from Madison, Wis., to the Arlington Experiment Farm.

Dr. L. J. Stadler, formerly agent in cooperative cereal experiments at the Missouri Agricultural Experiment Station, who resigned August 31, 1925, to take a year's leave of absence, has been reinstated as agent, his appointment to take effect September 1. Prof. C. A. Helm, who has acted in the absence of Doctor Stadler, resigned from his position as agent on August 31.

Jerome P. Seaton, field assistant in the investigations and experiments connected with cereal production and improvement at the Arlington Experiment Farm, Rosslyn, Va., resigned at the termination of August 31. Mr. Seaton will resume his teaching duties at Purdue University, La Fayette, Ind.

T. R. Stanton, agronomist in charge of oat investigations, returned on August 26 from an extended trip in the interests of oat investigations. Having been advised of the early oat harvest at the Aberdeen (Idaho) Substation, it became necessary for Mr. Stanton to go direct from Ames, Ia., to Aberdeen, joining Messrs. Coffman and Wiebe on July 26 and remaining until August 5. In general, the oat crop on the Substation and in the surrounding territory was unusually satisfactory. In addition to the identification and genetic studies made by Messrs. Stanton, Coffman and Tapke, Dr. Charlotte Elliott, of the Pathological Laboratory, again made extensive studies on oat blast on numerous varieties and selections grown in the classification and breeding nurseries.

From Aberdeen, Mr. Stanton proceeded to Bozeman, Mont., where he inspected selections made from the Swedish Select-Markton cross. These were still very green and it was not possible at that time to make definite observations regarding their relative value.

From Bozeman, Mr. Stanton went to Dickinson, N. Dak., where a week was spent in helping R. W. Smith harvest the cooperative oat breeding nursery and record data on the oat classification nursery.

In the Gallatin Valley crop conditions were unusually fine. Some excellent yields of wheat were being reported. Eastern Montana, however, like western South Dakota, had suffered severely from drought, and in general very low yields were being obtained.

From Dickinson, Mr. Stanton proceeded to Washington, D. C., stopping at Mandan and Fargo, N. Dak., and St. Paul, Minn. In the Red River Valley wheat was not threshing as well as had been anticipated. The extremely hot weather which prevailed during the last few days of the ripening period apparently caused considerable premature ripening. In southern Minnesota and northern Iowa corn looked very promising. Most of the oats in this territory were in the stack. The few fields which remained in shock were being severely damaged by the continuous rains.

V. F. Tapke, associate pathologist in cereal-smut investigations, returned to Washington on August 23 from a trip in the West in the interests of oat-smut investigations.

Dr. W. H. Tisdale, pathologist in charge of cereal-smut investigations, will leave Washington on September 1 for Manhattan, Kans., and Dalhart, Texas, where he will inspect and take notes on sorghums in the cooperative sorghum-smut experimental plats. He also will go to Shafter, Kern County, Calif., to inspect and take notes on rices in the cooperative detention nursery. At Berkeley, Calif., he will confer with F. N. Briggs, assistant pathologist in the cereal-smut experiments conducted in cooperation with the California Agricultural Experiment Station. Doctor Tisdale will return to Washington about October 15.

VISITORS

Dr. G. H. Dungan, assistant chief in crop production, Illinois Agricultural Experiment Station, Urbana, Ill., was a visitor in Washington on August 23, while on a vacation trip.

MANUSCRIPTS AND PUBLICATIONS

41 An abstract entitled "Breeding for Smut Resistance in Oats," by T. R. Stanton, F. A. Coffman, W. H. Tisdale, G. A. Wiebe, B. B. Bayles, and R. W. Smith, was approved on August 23 for publication in the Journal of the American Society of Agronomy. (This is an abstract of a paper read at the Tenth Annual Meeting of the Western Section of the American Society of Agronomy, held at Logan, Utah, July 22 to 24, 1926.)

42 A manuscript entitled "Brief Notes on Rice Growing in Japan," by Jenkin W. Jones, was approved on August 24 for publication in the Official Bulletin of the Sutter Butte Canal Company of California.

43 A manuscript entitled "How to Obtain a Larger Yield and a Better Quality of Rice," by Charles E. Chambliss, was approved on August 24 for publication in the Rice Journal, published in Orange, Texas.

44 A manuscript entitled "Corn Breeding," by F. D. Richey, was submitted August 27 for publication as a Department Bulletin.

Galley proof of Miscellaneous Circular 76, entitled "Bunt (Stinking Smut) of Wheat Cuts Profits," by W. H. Tisdale, was read August 23.

Galley proof of paper entitled "Breeding Winter Oats for the South," by T. R. Stanton, for publication in the Journal of the American Society of Agronomy, was read August 26.

The paper entitled "Breeding Wheat for High Protein Content," by J. Allen Clark, appears in the Journal of the American Society of Agronomy 18 (No. 8): 648-661, figs. 1-5. August, 1926. (This paper was read as a part of the symposium on "Controlling the Quality of Crops" at the meeting of the Society held in Chicago, Ill., November 17, 1925.)

The article entitled "Seed Treatment Experiments for Controlling Stripe Disease of Barley," by R. W. Leukel, James G. Dickson and A. G. Johnson, appears in Phytopathology 16 (No. 8): 565-576. August, 1926. (Investigations conducted cooperatively between the Office of Cereal Crops and Diseases and the Wisconsin Agricultural Experiment Station.)

IMPORTANT FISCAL PRACTICES

Several matters concerning authorizations and expenditures need emphasizing at this time. They are in the direction of sound business practice and not of increased red tape. Careful attention to all of them, now and in the future, is urged on each member of the staff.

1. Always Obtain Authorization Before Making Expenditures.

Letters of authorization must be obtained before travel is performed or expense incurred. To request a letter and then incur expense before it is known that the letter has been issued is expressly forbidden. In such cases the employee may not be reimbursed for the expenditures.

2. Ask for Authorizations Well in Advance.

Ordinarily it takes several days to prepare a request for a letter of authorization, transmit it and obtain approval, obtain transportation requests, record the authorization and put it into the hands of the employee. From 5 to 10 days should be allowed. In cases of actual emergency, letters can be rushed through, by taking advantage of the helpful courtesy of Office and Bureau officers. Some letters, the need for which has been known for weeks, are asked for just before travel or other expenditure is to be begun. This puts a severe strain on the personnel concerned and should be avoided by taking earlier thought of what is needed.

3. Note Carefully What Is Authorized.

Read letters of authorization promptly and carefully to see what they allow you to do. Perhaps you forgot to ask for something you need very much. Perhaps something asked for was omitted unintentionally.

4. Emergencies, Actual and Imaginary.

From time to time hurry-up requests for authorization are received on the basis of an existing emergency. Every effort will be made to obtain exceedingly prompt action in cases of real emergencies requiring immediate action in order to prevent loss or to obtain best results. Such requests, however, must state clearly the cause of the emergency, the nature of the operations planned, and the estimated expense involved. Where it appears that emergency action is asked because the employee, although knowing that the condition existed, has neglected to ask authorization for action, the case will not be treated as an emergency and the authorization will be handled in the ordinary way.

5. Ask in Advance for Amendments Increasing Amount Authorized.

Expenses in excess of the amount authorized must not be incurred. Previous to July 1, 1926, it was customary, after a reimbursement account was received here, to request an amendment increasing the amount authorized, if increase was necessary. This practice is absolutely discontinued. Careful check should be kept on expenditures and increase of amount authorized always asked in advance of the expenditures.

6. Submit Reimbursement Accounts Promptly.

Reimbursement accounts must be submitted promptly after conclusion of expenditure. While the employee is in travel status, they should be submitted immediately at the end of each month unless the trip is nearly concluded at such date. B. P. I. Memo. No. 237, dated August 21, and referring to a previous memorandum, states that:

(a) "You were requested to see that all accounts be submitted monthly, and in no cases to be delayed beyond thirty days after the close of a quarter. Delayed reimbursement vouchers must be satisfactorily explained in order to be approved.

(b) "Hereafter, all white vouchers (Form 5) must be submitted promptly, and not later than within sixty days after the incurring of the obligation. Delays in submitting vouchers will be considered administratively incident to the personnel record of the individual concerned."

While certain maximum periods are suggested above, it is asked and expected that accounts will be submitted within a few days of the conclusion of expenditures. Only in this way can our financial condition be known at all times, and our quarterly or monthly fiscal statement be accurate and reliable.

Your hearty cooperation in these matters is requested.

Carleton R. Ball,
Senior Agronomist in Charge.

WINTER WHEAT VARIETIES AT PULLMAN, WASHINGTON

With Special Reference to Smut Resistance

Dr. E. F. Gaines, Plant Breeder and Collaborator

At the completion of the variety plat threshing at the Agricultural Experiment Station, members of the Division of Farm Crops have compiled data which show that White Odessa and Albit lead all other varieties of wheat in yield both for the 1926 crop and for an average of the past three years. White Odessa has a long head, brown glumes, and soft white kernels and was introduced at the Experiment Station in 1920. Albit is a new hybrid variety produced by crossing White Odessa and Hybrid 123. It has a club type of head, white grain, and in general characteristics closely resembles Hybrid 123. Both varieties have been free from smut during the past three years under conditions in which the seed has been blackened with smut spores before planting.

The accompanying table gives the comparative yield of 16 varieties, including prominent varieties grown in the State, as well as introductions and hybrids produced at the Station. This table indicates varieties which should not be grown, as well as those which lead in yield. It contains the yield for 1926 and the average yield for 1924-26, and also a 6-year and 12-year average for those which have been under test for a longer time. The four varieties leading in yield are among those immune from or highly resistant to smut.

The three-year period over which Albit has been tested is too short for the results to be taken as final. This variety appears sufficiently promising, however, so that it has been decided to increase it for general distribution. The major part of the crop grown on the plot of approximately one acre on the College Farm will be sown this fall for increase, while two sacks will be reserved for distribution in one-pound lots to farmers who are willing to cooperate in further testing the variety on their own farms. Those obtaining seed must agree to sow it on clean summer fallow land in comparison with a standard variety grown on their farms and report to the Division of Farm Crops the results obtained at the completion of harvest in 1927.

Comparative Yields of Winter Wheat

(Average of field and nursery yields)

Variety	Yield in 1926	3-Year average 1924-26	6-Year average 1921-26	12-Year average 1915-26
White Odessa	49.3	47.5	----	----
Albit	48.1	45.8	----	----
Turkey	43.8	43.3	42.0	42.1
Martin	44.3	43.1	43.9	----
Triplet	41.7	42.6	43.6	42.0
Hybrid 128	40.9	41.4	42.0	42.8
Coppei	40.7	41.3	40.3	41.2
Kanred	41.4	41.2	40.2	----
Jones Fife	44.2	39.6	38.4	36.6
Hybrid 123	38.7	39.4	40.5	41.0
Ridit	39.8	38.2	39.7	----
Jenkin	42.8	37.4	36.5	----
Red Russian	41.3	35.2	35.3	35.4
Little Club	36.0	34.5	33.5	35.7
Hybrid 143	34.9	34.3	35.1	36.8
Fortyfold	31.7	33.3	32.9	31.6

Ridit has not been so high in production as some other varieties, but it has been a consistent yielder throughout the tests. It is coming to be used quite extensively on account of its freedom from smut. The first distribution of Ridit was made in a manner similar to that being used with Albit, and in many cases one acre was sown the following year and 20 to 30 acres the second year from the one-pound lot of seed which was furnished.

The yields given in this table should not be taken as an absolute guide in choosing a variety. It is expected that the varieties will not always retain the same order when grown in different parts of the State, and there are other factors in addition to yield that aid in determining the most profitable variety. Bulletin 207, "Wheat Varieties in Washington," now in press, gives more extensive information concerning these and other varieties. This bulletin may be obtained on request from the Director of the Agricultural Experiment Station, Pullman, Wash.

August 19, 1926.

PROGRESS OF CORN-DISEASE INVESTIGATIONS IN INDIANA

By J. F. Trost, Associate Pathologist, in Cooperative Corn-Disease Investigations at Purdue University Agricultural Experiment Station.

At the invitation of Professor Hughes, Mr. Garrard and I returned from St. Paul, Minn., by way of Ames, Iowa, and spent a very instructive and enjoyable day going over the agronomic experiments at Ames. I felt especially fortunate in being able to have short field discussions with both Doctor Lindstrom and Mr. Jenkins. Pollination was well under way at Ames at this time, July 19. The whiff of corn pollen and the hope that we too might be favored with some of the hot, blistering winds which can so effectually aid in picking out physiological weaknesses in morphologically more or less "pure lines," were added incentives to hasten across the dirt roads of Iowa and across Illinois' blistering concrete to our own plats. Our feverish haste in returning resulted in burned-out valves but we managed to gallop into Lafayette in a twin-cylinder Dodge in ample time to begin capping for corn pollination.

Earth, air, fire and water seem at last to have recognized our tendency to deal with deficiencies and excesses. These elements have operated, but not always cooperated, in making an unusually successful pollination season. Due to Mr. St. John's efforts in multiplying and recombining our more thoroughly tested inbred lines, it has been possible this year to obtain comparisons of the behavior of these lines when grown in my own field following a corn-corn-corn rotation with no correction for deficiencies, and in parallel rows on his multiplying plat, where every effort has been made to correct deficiencies.

The scorching, blistering winds held sway from the opening of pollination up to about August 6. During this period there was barely enough dew to enable us to detect a perfectly water-soluble glue on the parchment bags we had obtained through Mr. Richey. There was ample differential firing of the leaves and tassel blasting to aid us in evaluating our selfed lines.

On August 11 our tassel bags bowed their heads to receive 2.2 inches of rain. The 4.2 inch rainfall on August 14 brought water up to the ear shoots of many inbred lines and made us wish we had included marine glue along with the brushing Duco and shellac we had applied to the parchment bags, in order to avoid mutations of unusual vigor in our inbred material for this year.

Shellac proved entirely satisfactory in maintaining tight seams but we had not devised a method of preventing the bags from being floated off the ear shoots by the flood waters. These flood waters, however, drowned out the chinch bugs and were a wonderful agent for distributing spores of Diplodia zeae and certain other organisms and for determining root anchorage.

Mr. M. A. McCall waded into the corn plats on the afternoon of August 19 and seemed to think we were attempting to grow rice at this place. At his request, I am including a few snapshots taken during the receding flood stage. The pictures show part of our daily routine and are not intended as possible entrants in a bathing beauty contest. (They show the men working in water more than knee-deep in the plats. C.R.B.)

On the morning of August 20, Dr. I. E. Baldwin and I accompanied Mr. McCall to one of our physiological plats at Rensselaer, Ind. Indiana weather treated him with another two-inch rainfall during this trip. I shall let Mr. McCall explain the condition of the physiological plat after that fourth downpour and shall merely say that I thoroughly enjoyed the unexpected opportunity of having a two-hour discussion with him while we were waiting for the rain to cease sufficiently to attach his tire chains as a tow rope to Baldwin's Ford. The Ford was a most effective tug boat and I sincerely hope Mr. McCall has forgiven Baldwin for the Indiana mud thrown in his face during that seven mile tow-in.

Pollination is practically completed at this place. We lost some material through inability to pollinate during the height of some of the downpours, but I believe the additional information obtained has been worth the loss. I am finding it necessary to harvest some of my ear-rot-susceptible material at this time when it is scarcely in full milk, owing to the rapid progress of the rots since the rainy season. I expect to devote most of the coming two weeks to selecting analytical samples for Mr. Weaver and to stalk cutting operations on differential inbreds, F_1 recombinations, and F_2 and backcross material.

August 27, 1926.

TILLAGE PRACTICES IN WELD COUNTY, COLORADO

By Alvin Kezer, Chief Agronomist, Colorado Agricultural College, Ft. Collins, Colo.

Dear Dr. Ball:

I have just completed another trip, which I wish you could have made. We went from Fort Collins into Weld County and checked up on the comparative behavior of the furrow-drill planted wheat and common-drill planted wheat in the Nunn dry-land section and the Loveland dry-land section. I was also checking on methods of stopping wind damage.

There were three or four most excellent examples in which I am sure you would have been interested. The furrow-drill was one method; listing cross-wise of the prevailing direction of the wind was another method. On one of the Cline dry-land farms west of Nunn the field had been so cultivated that the surface was pretty well pulverized, too well pulverized, in fact. The field had started to blow. Mr. Cline went in with a 3-row lister and listed out three lister furrows. These strips of three furrows were spaced from 10 to 20 rods apart. These were put at right angles to the prevailing direction of wind in that section, which put them diagonally across the field. Of course, Mr. Cline thought that his wheat would be entirely killed in these strips. As a matter of fact, the listed strips stopped the blowing. In spite of the listing the wheat came through in almost a perfect stand in the strips. It really was an unusual sight to see these strips up through the field. They were a little greener than the rest but with apparently a wider spacing than normal stand but nearly perfect.

On the Hart Brothers farms there were fields where 80 acres had been put in with the furrow drill and right beside this field another 80 drilled with the common drill. On another tract two outfits operated side by side, furrow drill and common drill, so that there were alternate strips of furrow drill and common drill. Everywhere the furrow-drilled wheat apparently was much the better.

On Monday we went to Archer, Wyo., and Hereford, Colo. At the Archer station furrow-drilled wheat has consistently outyielded the common-drilled wheat. At Hereford the furrow-drilled wheat on 700 acres, or a little over, which we saw looked as if it would yield around 25 bushels. At this point the winter conditions had been so severe that the common-drilled wheat did not even come through the winter. We visited again the Akron plats and our furrow-drill wheat there is now very much better than anything else on the station, and even that is not very good.

We only had 11 inches of rainfall in 1925. This did not give much of a carryover, so that all the small-grain plats look extremely bad at that point.

There was another feature in the summer fallow of certain of the Weld County fields in which you might be interested. Two or three of the farmers are using the lister now entirely for summer-fallow purposes. They list the land just as soon as the wheat crop is off. The next spring when the weeds start they list out the middles. They sometimes call this middle-busting. But they were using a 3-row lister drawn by a tractor and breaking back the middles when we were in that region. They probably will harrow this second listing once and then go over once with the duckfoot, after which it will be planted to wheat in the fall.

One of the farmers in the region said that it formerly cost him with a plow-fallow \$8.69, per acre, if I remember his quotation correctly, to bring his wheat crop up to harvest and, if I remember his figures correctly, it now costs him \$4.37 per acre with the listed fallow to bring the wheat up to the harvest period. To put this in a little different way, he is now delivering the threshed grain at a cost per acre very close to the former cost of getting the crop up to the harvest period, namely, he is delivering the threshed grain now for a little over \$8.00 per acre, where formerly it cost him a little over \$8.00 per acre to bring the wheat up to harvest. His yields have not suffered because he has averaged 23 bushels per acre for the last five years. In other words, the cheaper method of performing the fallow is more effective in keeping down and controlling weeds. It is more effective in controlling soil blowing and is even more effective in producing yields.

June 30, 1926.

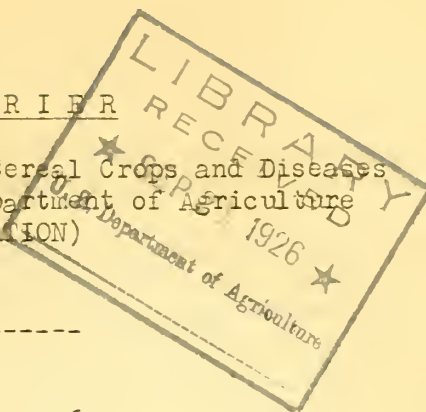
Suggested Relief from Ivy Poison

Our field workers and especially the field assistants in barberry eradication may be interested in the following item from Science Service on the prevention of ivy poison.

"Poison ivy meets its match in the iron compound known as ferric chloride, according to a new booklet on the toxic weed by Dr. James B. McNair, which is being issued by the Field Museum of Natural History. Dr. McNair discovered in the course of exhaustive researches on the chemical nature of ivy poison that this substance is rendered insoluble and thus made harmless by chemical union with iron. A number of soluble iron salts are effective against poison ivy, but Dr. McNair has found ferric chloride to be the most suitable. His treatment calls for a mixture of one part by weight of ferric chloride with ten of alcohol and ten of water, to be washed on the skin and allowed to dry there, before one goes into places where poison ivy grows, and also after such possible exposure. This, it is claimed, will entirely prevent the development of ivy poisoning in the great majority of cases."

CEREAL COURIER

Official Messenger of the Office of Cereal Crops and Diseases
Bureau of Plant Industry, U. S. Department of Agriculture
(NOT FOR PUBLICATION)



Vol. 18

No. 22

September 10, 1926
Personnel (Sept. 1-10) and Field Station (Aug. 16-31) Issue

PERSONNEL ITEMS

F. A. Coffman, associate agronomist in oat investigations, returned to Washington on September 4 from a western trip in the interests of oat investigations.

Irvine T. Deitrich was appointed on September 1 to assist E. R. Ausemus in field operations connected with the cereal experiments at the Northern Great Plains Field Station, Mandan, N. Dak.

Dr. H. B. Humphrey, senior pathologist in charge of cereal-rust investigations, returned to Washington on September 5 from a trip in Canada, New York, and Maine in the interests of cereal-rust investigations. Dr. E. C. Stakman, agent in the cooperative cereal-disease investigations at St. Paul, Minn., who accompanied Dr. Humphrey, returned to Washington on the same date. After a day spent in conference with officials in the Office, Dr. Stakman returned to St. Paul on September 7.

K. S. Quisenberry, associate agronomist in western wheat investigations, returned to Washington on September 1 from an extended trip in the west.

VISITORS

Prof. Alfred Aslander, agronom, of Bollnäs, Sweden, was an Office visitor on September 7 and 8. Prof. Aslander is a teacher in the agricultural school at Bollnäs during the winter and engaged on the chemical control of weeds during the summer. He is especially interested in the latter line of research. He will be for two years at the Botany Department of Cornell University, Ithaca, N. Y., on a fellowship of the International Education Board.

Dr. E. J. Butler, Imperial Bureau of Mycology, 17, Kew Green, Kew, Surrey, England, was an Office visitor on September 10.

Dr. Gunnar Nilsson-Leissner, of Svalöf, Sweden, where his father, Dr. Hjalmar Nilsson, was a former director of the agricultural experiment station, visited the Office on September 7 and 8. Dr. Leissner is particularly interested in plant genetics and plant breeding. He holds a fellowship of the International Education Board and has been at the University of Minnesota the past year and probably will return to St. Paul next year.

Dr. Takamichi Takahashi, Professor of Plant Pathology, College of Agriculture and Forestry, Miye, Japan, was an Office visitor September 10. Dr. Takahashi, who has spent one and one-half years in graduate study in plant pathology at the University of Wisconsin, expects to remain in Washington for about two months to engage in library research.

MANUSCRIPTS AND PUBLICATIONS

The following 14 manuscripts were submitted on September 1 or soon thereafter for publication in the 1926 Yearbook of the Department of Agriculture:

- 45 The Soybean Rotation Controls Weeds and Increases Rice Yields in Louisiana, by C. E. Chambliss.
- 46 New Wheat Varieties for the Western United States, by J. A. Clark.
- 47 Breeding Wheats Resistant to Stinking Smut, by E. F. Gaines.
- 48 New Barley Varieties from Foreign Lands, by H. V. Harlan.
- 49 Flax Rust, by A. W. Henry.
- 50 Breeding Corn Resistant to Disease, by J. R. Holbert and J. G. Dickson.
- 51 Saving the Wheat Crop by Destroying the Common Barberry, by F. E. Kempton and L. D. Hutton.
- 52 Breeding Wheats Resistant to Leaf Rust, by C. E. Leighty.
- 53 Lessons from the Mosaic Disease of Wheat, by H. H. McKinney.
- 54 New Methods in Corn Breeding, by F. D. Richey.
- 55 Some Phases of Stem Rust Specialization, by E. C. Stakman.
- 56 New Varieties of Oats for the Winter Wheat Belt, by T. R. Stanton.
- 57 Wheats Resistant to Loose Smut, by V. F. Tapke.
- 58 New Seed Disinfectants for the Control of Cereal Smuts, by W. H. Tisdale.

Miscellaneous Circular 76 entitled "Bunt (Stinking Smut) of Wheat Cuts Profits," by W. H. Tisdale, was received from the Government Printing Office on August 31.

FIELD STATION CONDITION AND PROGRESS

HUMID ATLANTIC COAST STATES (South to North)

GEORGIA

State College of Agriculture, Athens (Cereal Agronomy, R. R. Childs)

VIRGINIA

Arlington Experiment Farm, Rosslyn (Small Grain Agronomy, J. W. Taylor)

Arlington Experiment Farm, Rosslyn (Corn Breeding, F. D. Richey)

Arlington Experiment Farm, Rosslyn (Cereal Smuts, W. H. Tisdale)

Arlington Experiment Farm, Rosslyn (Virus Diseases, H. H. McKinney)

Arlington Experiment Farm, Rosslyn (Cereal Bacterial Diseases, C. S. Reddy)

NEW YORK

Cornell University Agricultural Experiment Station, Ithaca (Cereal Breeding, H. H. Love)

HUMID MISSISSIPPI VALLEY STATES (South to North)

LOUISIANA

Rice Experiment Station, Crowley (Rice Agronomy, J. M. Jenkins) (August 28)

The tropical hurricane that swept southern Louisiana on August 26 apparently did very little damage in the immediate vicinity and west of Crowley. From Crowley eastward the damage increased, and according to reports, it was very severe in the section from New Iberia to New Orleans. There were high winds on the 25th and 26th, but the velocity probably did not exceed 15 miles per hour at any time. The wind was not strong enough to cause rice to lodge, except where the growth was very heavy. Hardly any grain was shattered. The principal damage was done to rice that was just heading. All of the spikelets appear to be blasted. This condition is especially true in rices in the region southeast and east of Crowley. Rice in a few of our plats that were thoroughly mature was affected in some way, and in a few instances plants were broken off. No other damage was done on the Station aside from the discoloration of the tips of young rice leaves.

Some of the early-maturing varieties in the 10th-acre plats will be ready to harvest early in September. Irrigation water is being removed today from the earlier seeding in the date-of-seeding experiments. Soy beans have made very poor growth this year, apparently because of the dry weather in June and July which followed so closely after excessively wet weather.

Agricultural Experiment Station, Baton Rouge (Corn Breeding, H. F. Stoneber

MISSOURI

Agricultural Experiment Station, Columbia (Cereal Agronomy, L. J. Stadler)

TENNESSEE

Agricultural Experiment Station, Knoxville (Corn Breeding, L. S. Mayer)

IOWA

Agricultural Experiment Station, Ames (Oat Breeding, L. C. Burnett)

Agricultural Experiment Station, Ames (Corn Breeding, M. T. Jenkins)

Agricultural Experiment Station, Ames (Crown Rust of Oats, S. M. Dietz)

Iowa State College, Ames (Barberry Eradication, M. A. Smith)

ILLINOIS

Funk Bros. Seed Co., Bloomington (Corn Root, Stalk and Ear Rots, J. R. Holbert)

Box 72, Post Office Building, Urbana (Barberry Eradication, G. C. Curran)
[August 31]

A radio talk over Station WLS Chicago on August 23 by John L. Richardson of the Illinois force has produced good results. In closing his address Mr. Richardson asked his listeners to write in for barberry-eradication literature and to report the location of barberry bushes. So far, requests for literature have come in from Illinois, Wisconsin, Michigan, and Indiana and many more are expected. This voluntary response proves that the general public is vitally concerned in this barberry eradication campaign.

The good results obtained in the rural-school campaign are becoming more evident every day. The most recent example of this was shown in a letter from a 10-year old girl living near Illinois City in Rock Island County. She had become informed in regard to the barberry in the school room. Her letter reported the location of a bush growing in the timber on her father's farm. She enclosed a twig of the barberry in the letter.

The progress of the second survey in terms of square miles covered has been very slow. Field agents are strip-scouting every section. In wooded and hilly territory the survey moves very slowly. Hundreds of seedlings have been found along the shore bluffs of Lake Michigan in the vicinity of Lake Forest. Shrubs and trees of every description are growing in dense thickets on the steep slopes of these bluffs. The men are encountering all sorts of problems in scouting this region and also in killing the scores of bushes and seedlings they find every day. In August more than 2,000 escaped barberry bushes were found and destroyed.

The cooperation by farmers has been very satisfactory everywhere. In Jo Daviess County, a farmer aided the scouts in locating some barberry bushes growing in an almost inaccessible spot. The continual publicity given this project every year has begun to produce tangible results.

INDIANA

Purdue University Agricultural Experiment Station, La Fayette (Corn Rots and Metallic Poisoning, G. N. Hoffer)

Purdue University Agricultural Experiment Station, La Fayette (Leaf Rusts, H. S. Jackson and E. B. Mains)

Purdue University College of Agriculture, La Fayette (Barberry Eradication, W. E. Leer)

OHIO

Ohio State University, College of Agriculture, Columbus (Barberry Eradication, J. W. Baringer) (August 31)

Dr. F. E. Kempton, associate pathologist in charge of barberry eradication, was in Columbus on August 12 and 13. He made suggestions which were responsible for quite an alteration in our survey plans. He advised that only intensive survey be done henceforth regardless of place or time. The type of survey plan which was being followed in southeastern Ohio was abandoned immediately and the men in that territory were transferred to northeastern part of the State where the intensive plan has been used exclusively since January 1, 1925.

It seems quite certain that the intensive original rural survey of Lake and Mahoning counties will be finished this fall, but there is considerable doubt as to whether either Geauga County or Columbiana County will be completed before snow falls. In the latter county the hills are steep and the roads poor but barberries are relatively few. In Geauga County the land is level and swampy. The roads are fair. In some parts barberries may be seen almost any place one happens to cast a glance. Ten carloads of salt were placed on barberries in Geauga County last summer and this summer. The end of the original survey in Geauga County is not in sight. Complete eradication of the barberries in this county can not be accomplished in less than a quarter of a century even though all the money is available yearly which can be judiciously spent there.

Damage due to black stem rust on wheat in Ohio this year seems to be negligible as far as the State as a whole is concerned. There were several local epidemics which became severe before harvest but they were quite limited in extent of spread. With few exceptions, the local epidemics of stem rust on wheat which were observed this year were traceable to infected barberry bushes, sprouts, or seedlings.

Seemingly there was much more black stem rust on oats this year in Ohio than has been seen here in the past eight years. The oats which ripened late were hit hardest. There was some stem rust on oats in most fields in central, western, and northern Ohio in late July and August. Some fields were noticed in which the rust was quite severe. The relation between the existence of barberries and the occurrence of severe infection on oats was not clear in many cases.

A barberry-eradication demonstration has been arranged for the Ohio State Fair to be held from August 30 to September 4, inclusive. The demonstration was prepared in cooperation with the Ohio Department of Agriculture, Bureau of Plant Industry.

MICHIGAN

Agricultural College, East Lansing (Barberry Eradication, W. F. Reddy)

WISCONSIN

Agricultural Experiment Station, Madison (Wheat Scab, J. G. Dickson)

Department of Agriculture, State Capitol Annex, Madison (Barberry Eradication, W. A. Walker)

MINNESOTA

Agricultural Experiment Station, University Farm, St. Paul (Wheat Breeding, O. S. Aamodt)

Agricultural Experiment Station, University Farm, St. Paul (Stem Rust, E. C. Stakman)

Agricultural Experiment Station, University Farm, St. Paul (Flax Rust, A. W. Henry)

Agricultural Experiment Station, University Farm, St. Paul (Barberry Eradication, L. W. Melander)

GREAT PLAINS AREA (South to North)

OKLAHOMA

Woodward Field Station, Woodward (Grain Sorghums, J. B. Sieglinger)
(September 4)

Growing conditions for sorghums were satisfactory in August. However, a rain would be welcome any time now.

The four earlier dates of broomcorn have been harvested and good brush and a high yield were obtained. The first dates of milo, feterita, Sunrise and Reed kafirs were harvested August 26. Most of the grain sorghums are ripening fast.

On August 27 the writer accompanied E. F. Chilcott to Lawton, Okla., and Chillicothe, Tex. Grain sorghums noticed en route to Lawton consisted of about 40 per cent milo, 20 per cent feterita, 30 per cent kafirs; the remainder was darso and hegari. Nearly all were ripe and some were harvested. Hegari looks very well this year, and both milo and feterita look better than kafir in most places. At the Lawton Field Station the sorghums were better than average; one brood of chinch bugs failed to materialize, according to Superintendent Osborn.

The outstanding sorghum at Lawton was a single row of Dwarf kaferita, feterita-seeded, C. I. No. 812, grown from seed sent to Lawton by the writer. At the Chillicothe Substation all crops were looking very well and high yields of all sorghums will be obtained. From Chillicothe, Tex., H. N. Vinall, of the Office of Forage Crops, and the writer traveled together to Woodward.

At Big Springs the sorghums were better than average. Between Sweetwater and Big Springs, Tex., the sorghum crop is about 90 per cent milo and 10 per cent Sumac.

At Lubbock, Tex., dry weather had injured the sorghums to quite an extent.

On September 1, Mr. Vinall and R. E. Getty visited the Station and inspected the sorghum experiments.

Maximum temperature for last half of August, 99 degrees on the 21st; minimum, 55 degrees on the 27th; precipitation, 0.63 inch, in 5 showers.

KANSAS

Agricultural Experiment Station, Manhattan (Cereal Breeding, D. D. Hill)

Agricultural Experiment Station, Manhattan (Corn Breeding, A. M. Brunson)

Agricultural Experiment Station, Manhattan (Wheat Foot Rots, Hurley Fellows)

Agricultural Experiment Station, Manhattan (Wheat Leaf Rust, C. O. Johnston)

Hays Branch Experiment Station, Hays (Cereal Agronomy, A. F. Swanson)
(September 1)

The weather in August has been exceedingly dry and hot. The season's rainfall is now six inches below normal for a 56-year period.

The writer recently made a trip throughout western Kansas and found almost the entire area dry. Feed crops are short. Except for very few fields none of the sorghums will make grain. These fields were for the most part planted to Freed sorgo, a very early maturing variety. Compared to former years when the season was more favorable, but few farmers in the western third of the State have given any thought to seedbed preparation for wheat. Therefore prospects for next year's wheat crop are not favorable at this writing, but a soaking rain soon may alter them greatly. In the vicinity of Hays a few fields of wheat ground have been listed, and progress is being made in throwing in the ridges. Otherwise the few fields that have been tilled have been disked.

The varietal and nursery sorghums on the Cereal Project were planted on ground which was plowed early last fall where the moisture was conserved. Some yields will be obtained from the better selections. This has been a favorable year to study the influence on drought on a number of selections. A new selection of Dawn kafir, and a Dwarf Freed suitable for combine methods of harvesting appear to be of much promise. The Dwarf Freed selection was found to be well suited to some of the extreme conditions in western Kansas.

Some of the early sorghums on the project are being harvested this week.

The writer was particularly interested in an irrigation plant near Grinnell, Kans., while on his trip. A high powered Aeromotor windmill was supplying water to a 20-acre tract of alfalfa. The well was 80 feet deep with 40 feet of standing water. With ordinary wind the mill was able to lift 30 gallons of water per minute. The water was stored in a large concrete reservoir and permitted to flow over the land as accumulated. Winter irrigation was practiced and the water supplied from time to time during the growing season. Mr. Yale, the owner of the farm, has obtained a satisfactory return from his alfalfa even though the year has been a very dry one.

COLORADO

Agricultural College, Ft. Collins (Barberry Eradication, E. A. Lungren)
(September 1)

During the month of August second survey was conducted in Denver County and adjoining counties. Every property, river, ditch, and stream was scouted in the territory from the Platte River on the east to the foothills on the west, as well as part of the city of Denver, and the suburbs west, north, and south of Denver, namely, Valverd, Edgewater, and Barnum.

Ninety-three bushes were found on 19 new properties and 292 seedlings on two properties. Twenty-seven escaped bushes were found on properties that had been cleared on original survey. Forty-one sprouting bushes were found on 11 properties and 15 seedlings on one property. All the properties were cleared.

Winter wheat had only a sprinkle of rust this year. No damage could be found in the State. Spring wheat had from a trace to 40 per cent of rust. In most cases spring wheat had ripened and escaped rust damage. Rye was free from rust.

There was not sufficient rust on oats and barley to cause any damage.

NEBRASKA

North Platte Substation, North Platte (Cereal Agronomy, G. F. Sprague)

College of Agriculture, University Farm, Lincoln (Barberry Eradication, A. F. Thiel)

WYOMING

College of Agriculture, University of Wyoming, Laramie (Barberry Eradication, E. A. Lungren)

SOUTH DAKOTA

College of Agriculture, Brookings (Barberry Eradication, R. O. Bulger)

NORTH DAKOTA

Agricultural Experiment Station, Agricultural College P. O. (Flax Diseases, L. W. Boyle)

Agricultural Experiment Station, Agricultural College P. O. (Barberry Eradication, G. C. Mayoue)

Dickinson Substation, Dickinson (Cereal Agronomy, R. W. Smith) (September 2)

All cereal threshing at the Substation is completed except the spring nursery. Threshing in this vicinity is well along for this time of year, being a short job on most farms. A considerable variation in yields is reported but the general average is very low. Yields obtained at the Substation will be reported later.

Varieties of winter wheat and rye were sown in plats on August 21 and the winter-wheat nursery was sown on August 24. On that day K. S. Quisenberry and an assistant sowed 625 18-foot rows in 2 hours and 20 minutes, averaging about 268 18-foot rows per hour. Seeding was done with a Columbia garden drill.

It is raining today with a prospect of enough moisture to bring up the winter wheat and rye. The rainfall for August was 1.56 inches. The precipitation for the past 12 months was 11.16 inches, which is more than four inches below normal. The only months when the precipitation was even slightly above normal were October, December, January, and May. The mean temperature for July was 70 degrees, or two degrees above normal, while that for June and August was slightly below normal.

Some of the official visitors at the Substation in August were: F. D. Richey, T. R. Stanton, F. A. Coffman, and K. S. Quisenberry.

Northern Great Plains Field Station, Mandan (Flax Breeding, J. C. Brinsmade, Jr.) (September 2)

The weather conditions in August have operated to prolong the fruiting period of flax not already harvested by the early part of August. Flax sown May 11 in the date-of-seeding-and-tillage experiment was harvested August 2. Flax sown May 21 and on later dates will not be ready to harvest for some time. Flax in the nursery also is late and will not be ready to harvest for some time. Some of the late flax is likely to be damaged by frost, as the first frost may normally be expected about September 10.

The flax and cereal mixtures and all flax already harvested in the date-of-seeding-and-tillage experiment were threshed August 31.

The weather in August was about normal for this time of year. Moderately high temperatures and frequent cloudiness enabled late crops to make good use of moisture from rains late in July and during August. Precipitation for the first half of August was 0.48 inch and for the last half 0.83 inch, or 1.31 inches for the entire month,--about half an inch short of the normal precipitation in August. The total precipitation from January 1 to August 31, inclusive, was only 8.21 inches, more than five inches below normal for this period. The maximum temperature for August was 101 degrees on August 1; minimum, 43 degrees on August 28.

The shortage of hay, in fact, of feed of any kind, is very acute in this locality. Many more cattle have been shipped out already than would be the case in a normal year. Many farmers are depending on Russian thistles to carry their stock through the winter. The appearance of the sugar-beet web worm in considerable numbers was the cause of a rumor that the army worm was doing great damage. The chief complaint of farmers against the web worm was that it was eating the Russian thistles and thus destroying their one remaining source of feed for the winter.

Some of the official visitors at the Station were T. R. Stanton, F. D. Richey, and F. A. Coffman.

Northern Great Plains Field Station, Mandan (Cereal Agronomy, E. R. Ausemus)
(September 3)

Threshing of the wheat varietal plats and nursery, delayed because of rains, has been completed. Nursery yields were somewhat higher than expected while the plat yields were poorer.

The following table gives the yields of the spring-wheat varieties grown in the varietal plats. Even though the season has been exceptionally dry the common wheats as a group outyielded the durums.

Average yield in bushels per acre of spring wheat varieties grown in triplicate 50th-acre plats at the Northern Great Plains Field Station, Mandan, N. Dak., in 1926

Variety	:C. I.: Yield (Bu. per acre)				
	: No. :	Series 1:	Series 2:	Series 3:	Average
Common:	:	:	:	:	:
Kanred x Marquis II-17-40	: 8018:	5.4 :	5.0 :	3.1 :	4.5
Kota	: 5878:	4.8 :	4.4 :	2.9 :	4.0
Power	: 3697:	4.8 :	4.2 :	2.9 :	4.0
Preston	: 3081:	4.2 :	4.2 :	2.3 :	3.6
Garnet	: 8181:	4.0 :	3.5 :	2.9 :	3.5
Hard Federation	: 4733:	5.2 :	1.7 :	2.9 :	3.3
Marquis x Kota Ns 1656.84	: 8004:	3.3 :	3.5 :	2.7 :	3.2
Reliance	: 7370:	3.7 :	3.7 :	2.3 :	3.2
Ceres	: 6900:	3.3 :	2.9 :	2.7 :	3.0
Ruby	: 6047:	3.7 :	2.7 :	2.7 :	3.0
Marquis	: 3641:	3.1 :	3.5 :	2.1 :	2.9
Red Bobs	: 6255:	2.9 :	3.3 :	2.3 :	2.8
Marquillo	: 6887:	2.7 :	3.1 :	2.3 :	2.7
Quality.	: 6607:	3.1 :	2.1 :	1.9 :	2.4
Durums:	:	:	:	:	:
Nodak	: 6519:	4.0 :	2.9 :	2.9 :	3.3
Kubanka	: 1440:	2.9 :	2.5 :	2.3 :	2.6
Monad	: 3320:	3.3 :	2.3 :	2.1 :	2.6
Mondak	: 7287:	3.1 :	2.5 :	1.9 :	2.5
Akrona	: 6881:	2.9 :	2.1 :	2.3 :	2.4
Mindum	: 5296:	2.7 :	1.7 :	1.9 :	2.1
	:	:	:	:	:

MONTANA

Judith Basin Substation, Moccasin (Cereal Agronomy, R. W. May)

State College of Agriculture, Bozeman (Barberry Eradication, W. L. Popham)

WESTERN BASIN AND COAST AREAS (North to West and South)

IDAHO

Aberdeen Substation, Aberdeen (Cereal Agronomy, G. A. Wiebe)

Agricultural Experiment Station, Moscow (Stripe Rust, C. W. Hungerford)

WASHINGTON

Agricultural Experiment Station, Pullman (Cereal Breeding, E. F. Gaines)

OREGON

Sherman County Branch Station, Moro (Cereal Agronomy, D. E. Stephens)
(September 2)

Normal temperatures prevailed during most of the month of August, with no rainfall until the 17th. The highest temperature was 99 degrees on the 24th, and the lowest 45 degrees on the 27th. The total rainfall for the month was 0.54 inch, which fell on five different days. Considerable rainfall will be needed to put the soil in condition for seeding, as the surface foot is unusually dry because of the low precipitation of the late spring and summer months.

All threshing, including the nurseries, on the Station is completed. The following tables give the yields obtained in the spring wheat, barley, and oat varietal experiments.

Average yield, in bushels per acre, of spring-wheat varieties grown in duplicate 1/16th-acre plats at the Sherman County Branch Experiment Station, Moro, Oreg., in 1926

Variety	C. I. No.	Yield (Bu. per acre)		
		Series 1	Series 2	Average
Hard Federation, Selection 71	----	31.7	26.4	29.0
Federation	4734:	28.1	23.8	26.0
Hard Federation	4733:	24.8	26.9	25.9
Onas	6221:	25.9	24.8	25.4
White Federation	4981:	24.8	22.4	23.6
Bunyip	4166:	24.8	22.4	23.6
Sunset	4728:	22.6	23.8	23.2
Baart	1697:	25.0	20.5	22.8
Major	4984:	24.8	18.3	21.6
Currawa	4982:	22.1	19.1	20.6
Boadicea	6220:	20.2	20.9	20.6
Red Bobs	6225:	20.9	20.2	20.6
Pacific Bluestem	4067:	20.5	19.3	19.9
Bobs	2826-1	18.8	20.5	19.7
Marquis	4158:	20.5	16.2	18.4

Continued

Variety	: C. I. : : No. :	Yield (Bu. per acre)			
		Series			
		1	2	Average	
Little Club	: 4066:	19.3	15.6	17.5	
<u>Single plats</u>	: :	:	:	:	
Reliance	: 7370:	20.5	----	20.5	
Garnet	: 8181:	15.2	----	15.2	
Hard Federation Selection 31*	: ----:	31.6	----	31.6	
Baart x Federation, 1728A106*	: ----:	23.9	----	23.9	
Baart x Federation, 1728A105*	: ----:	23.1	----	23.1	
Baart x Federation, 1728A97*	: ----:	21.9	----	21.9	
	: :	:	:	:	
Average	: :	:	:	22.5	
	: :	:	:	:	

*Sown at later date; yields not comparable with those of other varieties.

Average yield in bushels per acre of spring barley varieties grown in quadruplicate 1/16th-acre plats at the Sherman County Branch Experiment Station, Moro, Oreg., in 1926

Variety	: C. I. : : No. :	Yield (Bu. per acre)				
		Series				
		1	2	3	4	Average
Arequipa	: 1256:	42.7	43.0	----	----	42.9
Club Mariout	: 261:	36.5	45.1	41.0	47.8	42.6
Meloy Sel. 3	: ----:	38.6	46.1	----	----	42.4
Horsford .	: 1375:	42.0	39.6	----	----	40.8
Peru	: 2302:	36.5	45.1	40.6	35.5	39.4
Coast (170B)	: 4117:	35.2	36.5	----	----	35.9
Peruvian	: 935:	30.4	35.5	35.5	37.9	34.8
Meloy	: 1176:	34.8	33.1	----	----	33.9
Flynn	: 1311:	31.4	30.7	32.8	36.2	32.3
Trebi	: 936:	33.1	31.1	----	----	32.1
Coast	: 2301:	26.3	34.8	----	----	30.6
	: :	:	:	:	:	:
Average	: :	:	:	:	:	37.2
	: :	:	:	:	:	:

Average yield, in bushels per acre, of spring oat varieties grown in duplicate 1/16th-acre plats at the Sherman County Branch Experiment Station, Moro, Oreg., in 1926

Variety	: C. I. : : No. :	Yield (Bu. per acre)		
		Series		: Average
		1	2	
Threegrain	: 1950:	45.5	: 48.2	: 46.8
Richland	: 787:	41.5	: 46.4	: 43.9
Siberian	: 635:	39.3	: 45.5	: 42.4
Idamine	: 1834:	40.2	: 41.2	: 42.2
Sixty-Day	: 165-1:	36.2	: 42.4	: 39.3
Swedish Select	: 134-1:	36.2	: 38.8	: 37.5
Western Wonder	: 1951:	33.5	: 39.3	: 36.4
Markton	: 2053:	33.9	: 37.5	: 35.7
Average	: : :	: : :	: : :	: 40.5

Sherman County Branch Station, Moro (Cereal Breeding, B. B. Bayles)

CALIFORNIA

Biggs Rice Field Station, Biggs (Rice Agronomy, J. W. Jones) (September 4)

The weather in August was favorable for the rice crop. The early maturing rices at the Station are ripe; the midseason rices are fully headed, and the late varieties are heading. The indications are that Station yields will be fairly good.

Some early rice is now being harvested in commercial fields and a small quantity has been threshed. However, most of the California rice crop will not be ready to harvest until about October 1.

M. A. McCall visited the foreign rice nursery at Shafter on August 26, and the Station here on August 31 and September 1.

Prof. Frank Adams visited the Station September 3.

University Farm, Davis (Cereal Agronomy, V. H. Florell)

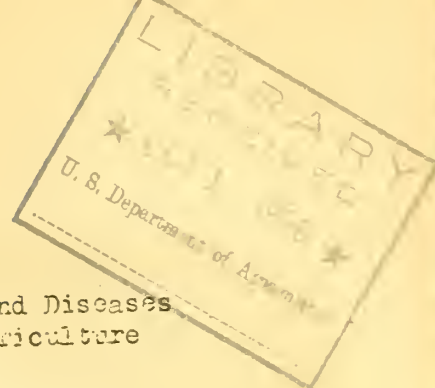
Agricultural Experiment Station, Berkeley (Cereal Smuts, F. N. Briggs)



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CEREAL COURIER

Official Messenger of the Office of Cereal Crops and Diseases
Bureau of Plant Industry, U. S. Department of Agriculture
(NOT FOR PUBLICATION)



Vol. 18

No. 23

September 20, 1926
Personnel (Sept. 11-20) and Field Station (Sept. 1-15) Issue

PERSONNEL ITEMS

Loren L. Davis was appointed on September 16 to assist in the nursery and field experiments in connection with cereal production and improvement investigations conducted in cooperation with the Kansas Agricultural Experiment Station at Manhattan, Kans. Mr. Davis succeeds S. F. Kollar, who resigned on September 15.

A. C. Dillman, associate agronomist in charge of flax investigations, returned to Washington on September 10 from an extended trip in the interests of flax investigations.

Dr. A. W. Henry, agent in the cooperative rust epidemiology studies conducted at University Farm, St. Paul, Minn., came to Washington September 17 to consult with officials of the Office before sailing from New York for Europe, where he will spend a year in study.

Dr. A. G. Johnson, senior pathologist in charge of cereal disease investigations, will leave Washington on September 19 for points in Indiana, Illinois, Iowa, Michigan, Wisconsin, North Dakota, and South Dakota to confer with investigators at field stations and with officials of agricultural experiment stations regarding cooperative cereal-disease investigations. Dr. Johnson will be in the field about three weeks.

The appointment of Laurence C. Jones, who has assisted G. F. Sprague in the cooperative cereal experiments at the North Platte Substation, North Platte, Nebr., since June 16, was terminated on September 15, the work for which he was appointed having been completed.

F. D. Richey, agronomist in charge of corn investigations, returned to Washington on September 15 from a western trip in the interests of corn investigations. He will leave again on September 21 for Toledo, Ohio, where he has been authorized to attend the meetings of the Committee on Corn Improvement under the Purnell Act, of which Committee he is a member. He also will travel in parts of Ohio, Michigan, and Ontario, Canada, where the corn borer is prevalent.

J. W. Taylor, associate agronomist in charge of cereal experiments at the Arlington Experiment Farm, returned to Washington on September 10 from a trip in the New England States in the interests of cereal investigations.

Dr. W. H. Tisdale, pathologist in charge of cereal-smut investigations, wrote from Berkeley, Calif., on September 11 as follows:

"I have spent today with Dr. Briggs and Prof. Mackie. Also spent an hour in Dr. Allen's office looking over some very interesting cytological work.

"Our sorghum smut experiments are fair this year but not so good as last year. At Shafter yesterday I was surprised to find a very high percentage of kernel smut in milo. The same situation we find in the Texas and New Mexico section.

"I inspected the rices in the detention nursery and found them to be exceptionally free from disease. A sooty mold on some of the dying leaves was the only thing of fungous nature with the possible exception of an occasional alternaria leaf spot. Both of these occur in California. The hot-water treatment evidently did what we intended it to do. I see no reason why these rices can not be moved to any point in the rice region and sown without danger of introducing diseases. I would give them a clean bill of health. By the way, some of them look very good, even under the somewhat undesirable conditions at Shafter. Many of them, however, are too late for California but might be of interest to the southern stations."

VISITORS

Dr. Ernst Lehmann, of the University of Tübingen, Tübingen, Germany, was a recent Office visitor.

Dr. A. E. V. Richardson, Director of the Waite Research Institution, University of Adelaide, South Australia, was an Office caller on September 20. He will be in Washington for a week.

Dr. R. Y. Winters, Director of the North Carolina Agricultural Experiment Station, was an Office visitor on September 15.

MANUSCRIPTS AND PUBLICATIONS

The following four papers, the reports of the cooperative committees on registration of wheat, oats, and barley varieties registered under the cooperative agreement between the American Society of Agronomy and the Bureau of Plant Industry, were approved September 14 for publication in the Journal of the American Society of Agronomy:

- (59) "Registration of Standard Wheat Varieties," by J. Allen Clark,
H. H. Love, and E. F. Gaines.
- (60) "Registration of Improved Wheat Varieties," by J. Allen Clark,
H. H. Love, and J. H. Parker.
- (61) "Registration of Varieties and Strains of Oats," by T. R. Stanton,
Fred Griffee, and W. C. Etheridge.
- (62) "Barley Varieties Registered," by H. V. Harlan, E. F. Gaines, and
R. G. Wiggans.

The article on Experiences Among the Japanese Rice Fields, by Jenkin W. Jones, appears in the Sutter Butte Bulletin, vol. 2, no. 2, September 1, 1926. Sutter Butte Canal Co., Gridley, Calif.

Bulletin 298 of the Purdue University Agricultural Experiment Station entitled "Testing Corn Stalks Chemically to Aid in Determining Their Plant Food Needs," by G. N. Hoffer, was received September 11. (Cooperation between the Office of Cereal Crops and Diseases and the Purdue University Agricultural Experiment Station.)

Special Bulletin 109, of the Minnesota Agricultural Experiment Station entitled "Flax Rust, a Preventable Disease," by A. W. Henry, was received September 14. (Cooperation between the Office of Cereal Crops and Diseases and the Minnesota Agricultural Experiment Station.)

FIELD STATION CONDITION AND PROGRESS

HUMID ATLANTIC COAST STATES (South to North)

GEORGIA

State College of Agriculture, Athens (Cereal Agronomy, R. R. Childs)

VIRGINIA

Arlington Experiment Farm, Rosslyn (Small Grain Agronomy, J. W. Taylor)

Arlington Experiment Farm, Rosslyn (Corn Breeding, F. D. Richey)

Arlington Experiment Farm, Rosslyn (Cereal Smuts, W. H. Tisdale)

Arlington Experiment Farm, Rosslyn (Virus Diseases, H. H. McKinney)

Arlington Experiment Farm, Rosslyn (Cereal Bacterial Diseases, C. S. Reddy)

NEW YORK

Cornell University Agricultural Experiment Station, Ithaca (Cereal Breeding, H. H. Love) (September 10)

The weather for harvesting, drying, and threshing grain has been very unfavorable for New York State and this has affected our own work in connection with our strain tests. In some instances the grain has been so badly damaged that it will not be possible to obtain accurate yields. This is in connection with plats and larger lots of grain.

While, as reported earlier, the wheat trials for this past year were badly affected by winterkilling, nevertheless, the results have indicated that two new strains have been found which are very promising. They seem to withstand the winter conditions and have given a very good yield. One of these is a selection from a cross between Valley x St. Louis Grand Prize and the other is a selection made from a farmer's field a number of years ago. This latter has a kernel similar to that of Dawson and does not seem to be so readily susceptible to loose smut, and it may prove to be worthy of introduction.

Seed is being prepared and plans are being made for the seeding of the fall wheat. We shall have about the same quantity of wheat under test as a year ago, so far as our strain and variety test is concerned, and about the usual amount of material for the hybrid nursery.

In connection with the increasing of the improved strains of wheat, it was found on inspection of the fields this year that bunt was present in larger quantities than we have observed in any previous year. The result is that Dr. R. D. Lewis, of the Department of Plant Breeding, and Mr. E. E. Honey, of the Plant Pathology Department, are spending some time treating seed to be used by our cooperators for their increase this year.

During the session of the International Congress of Plant Sciences a large number of visitors took trips around the plats and looked over the methods for handling our trials; they also had opportunity to become acquainted with the genetic and cytological work that we are doing. In addition we have had some other visitors. Dr. A. E. V. Richardson, Director of the Waite Research Institution, University of Adelaide, South Australia, spent several days here recently discussing methods and problems in connection with cereal improvement. Drs. H. B. Humphrey and E. C. Stakman were here during the Plant Congress and took readings on the oat and wheat rust nurseries.

Mr. W. T. Craig has just returned from a motor trip through Washington, D. C., West Virginia, and Pennsylvania. While in Washington he visited the Office of Cereal Crops and Diseases.

HUMID MISSISSIPPI VALLEY STATES (South to North)

LOUISIANA

Rice Experiment Station, Crowley (Rice Agronomy, J. M. Jenkins) (September 9)

Harvesting of early rice progressed rather rapidly in August and much of the crop was threshed. The general impression is that yields are not so good as had been anticipated.

Precipitation was recorded on 18 days in August, totaling 5.72 inches. This is 0.10 inch greater than for the same period last year, and 0.35 inch less than the average for August in the past 16 years. Aside from two heavy rains on August 1 and 26, the precipitation was in the form of light showers which did not materially interfere with the harvest of early rice.

For a while about the middle of August there was some fear that the streams from which much of the irrigation water is obtained, might be contaminated with salt water in the latter part of the irrigation season. This fear was removed by the general rains of the 25th to the 27th, inclusive. Analyses of samples of water taken on the 19th, at the different depths in the Mermentau River and from Lake Arthur indicated a salt content as high as 19 grains per gallon.

In August the Station received many inquiries from farmers and canal owners in Jefferson Davis Parish with reference to the damage being done to rice by the sugar cane beetle. This insect was reported in the northwestern portion of the parish last year, but this season it has been noticed in the greater portion of the parish, as far east as Bogalusa and several miles south of the Southern Pacific Railroad. Very often in the past this insect has damaged the young rice plants in the spring before the irrigation water was applied, and it has been seen generally throughout the rice-growing region of the State, but not until last year was it found in alarming numbers attacking rice in the fall; in fact, last year was the first time the writer ever heard of its presence in rice in the fall. This year it is appearing in great numbers immediately after the fields are drained preparatory to harvest, damaging the rice by chewing off the stems at or below the surface of the ground, causing them to fall. In some localities, it has been estimated that 50 to 75 per cent of the culms have been cut off. The only means of control found so far is to hold the water until the plants are ready for harvest, and begin cutting as soon as the water has been removed. This makes harvesting very unsatisfactory and causes a loss because of the wet condition of the fields. The representative of the Bureau of Entomology devoting his time to rice insects is doing all he can to determine means of control, and is making arrangements for making control tests another year in the regions where this insect is so abundant.

The Seventh Annual Convention of the American Soybean Association was held in the Yazoo Mississippi Delta from August 9 to 11, inclusive. The program included an automobile tour of the Delta region between Charlsdale, Greenwood, Stoneville, Greenville, Scott, and Cleveland, where thousands of acres of soybeans were inspected, and many fields of cotton were seen upon which the beneficial effect of a crop of soybeans grown on the same land the previous year was very pronounced. Meetings were held every evening, and the soybean in all its phases was discussed. The subject attracting most attention was the matter of machinery for harvesting soybean seed.

Prof. W. R. Dodson, Dean of the College of Agriculture and Director of the Louisiana Agricultural Experiment Stations, was at the Station on August 16.

Agricultural Experiment Station, Baton Rouge (Corn Breeding, H. F. Stoneberg)

MISSOURI

Agricultural Experiment Station, Columbia (Cereal Agronomy, L. J. Stadler)

TENNESSEE

Agricultural Experiment Station, Knoxville (Corn Breeding, L. S. Mayer)

IOWA

Agricultural Experiment Station, Ames (Cat Breeding, J. C. Burnett)

Agricultural Experiment Station, Ames (Corn Breeding, M. T. Jenkins)

Agricultural Experiment Station, Ames (Crown Rust of Oats, S. M. Dietz)

Iowa State College, Ames (Barberry Eradication, M. A. Smith)

ILLINOIS

Funk Bros. Seed Co., Bloomington (Corn Root, Stalk and Ear Rots, J. R. Holbert)

Box 72, Post Office Building, Urbana (Barberry Eradication, G. C. Curran)

INDIANA

Purdue University Agricultural Experiment Station, La Fayette (Corn Rots and Metallic Poisoning, G. N. Hoffer)

Purdue University Agricultural Experiment Station, La Fayette (Leaf Rusts, H. S. Jackson and E. B. Mains)

Purdue University College of Agriculture, La Fayette (Barberry Eradication, W. E. Leer)

OHIO

Ohio State University, College of Agriculture, Columbus (Barberry Eradication, J. W. Baringer)

MICHIGAN

Agricultural College, East Lansing (Barberry Eradication, W. F. Reddy)

WISCONSIN

Agricultural Experiment Station, Madison (Wheat Scab, J. G. Dickson)

Agricultural Experiment Station, Madison (Virus Diseases)

Department of Agriculture, State Capitol Annex, Madison (Barberry Eradication, W. A. Walker)

MINNESOTA

Agricultural Experiment Station, University Farm, St. Paul (Wheat Breeding, O. S. Aamodt)

Agricultural Experiment Station, University Farm, St. Paul (Stem Rust, E. C. Stakman)

Agricultural Experiment Station, University Farm, St. Paul (Flax Rust, A. W. Henry)

Agricultural Experiment Station, University Farm, St. Paul (Barberry Eradication, L. W. Melander)

GREAT PLAINS AREA (South to North)

OKLAHOMA

Woodward Field Station, Woodward (Grain Sorghums, J. B. Sieglinger)

KANSAS

Agricultural Experiment Station, Manhattan (Cereal Breeding, D. D. Hill)

Agricultural Experiment Station, Manhattan (Corn Breeding, A. M. Brunson)

Agricultural Experiment Station, Manhattan (Wheat Foot Rots, Hurley Fellows)

Agricultural Experiment Station, Manhattan (Wheat Leaf Rust, C. O. Johnston)

Hays Branch Experiment Station, Hays (Cereal Agronomy, A. F. Swanson)

COLORADO

Agricultural College, Ft. Collins (Barberry Eradication, E. A. Lungren)

NEBRASKA

North Platte Substation, North Platte (Cereal Agronomy, G. F. Sprague)

College of Agriculture, University Farm, Lincoln (Barberry Eradication, A. F. Thiel)

WYOMING

College of Agriculture, University of Wyoming, Laramie (Barberry Eradication, E. A. Lungren)

SOUTH DAKOTA

College of Agriculture, Brookings (Barberry Eradication, R. O. Bulger)

NORTH DAKOTA

Agricultural Experiment Station, Agricultural College (Flax Diseases, L. W. Boyle)

Agricultural Experiment Station, Agricultural College (Barberry Eradication, G. C. Mayoue)

Dickinson Substation, Dickinson (Cereal Agronomy, R. W. Smith) (September 16)

Several showers have occurred this month which have caused the winter grain in plats and nursery to emerge with good stands. More rain is needed to insure a vigorous growth. Rain also will be needed to make the ground in suitable condition for fall plowing.

A minimum temperature of 30 degrees was reached yesterday morning which is the lowest temperature recorded since last April. No apparent damage was done at the Substation, however, by this low temperature.

The yields obtained from the varieties of spring wheat and winter wheat grown in replicated plats this year are given below. The yields of spring wheat are the lowest obtained here during the 20 years that varietal tests have been conducted, with the exception of the years, 1911, 1919, and 1921.

<u>Spring wheat</u>	<u>C. I. No.</u>	<u>Yield (Bu. per acre)</u>
<u>Common</u>		
Garnet	8181	9.9
Quality	6607	9.0
Ruby	6047	8.5
Marquis x Kota (1656.97)	8005	8.4
do (1656.84)	8004	8.1
Marquis x Kanred B9-11	7371	8.0
Red Bobs	6255	7.5
Ceres	6900	7.4
Preston	3081	6.9
Red Fife	3329	6.4
Marquis	3641	6.2
Marquillo	6887	6.2
Haynes Bluestem	2874	6.1
Hard Federation	4733	6.1
Power Fife	3697	6.0

WESTERN BASIN AND COAST AREAS (North to West and South)

IDAHO

Aberdeen Substation, Aberdeen (Cereal Agronomy, G. A. Wiebe)

Agricultural Experiment Station, Moscow (Stripe Rust, C. W. Hungerford)

WASHINGTON

Agricultural Experiment Station, Pullman (Cereal Breeding, E. F. Gaines)

OREGON

Sherman County Branch Station, Moro (Cereal Agronomy, D. E. Stephens)

Sherman County Branch Station, Moro (Cereal Breeding, B. B. Bayles)

CALIFORNIA

Biggs Rice Field Station, Biggs (Rice Agronomy, J. W. Jones)

University Farm, Davis (Cereal Agronomy, V. H. Florell)

Agricultural Experiment Station, Berkeley (Cereal Smuts, F. N. Briggs)

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C E R E A L C O U R I E R

Official Messenger of the Office of Cereal Crops and Diseases
Bureau of Plant Industry, U. S. Department of Agriculture
(NOT FOR PUBLICATION)

Vol. 18

No. 24

September 30, 1926
Personnel (Sept. 21-30) and Project Issue

PERSONNEL ITEMS

The appointment of Arthur Bartel, who has assisted in the cooperative cereal experiments at the Aberdeen Substation, Aberdeen, Idaho, since June 11, was terminated September 21, the work for which he was appointed having been completed.

The appointment of Art B. Chase, who has assisted in the cooperative grain sorghum and broomcorn experiments at the Woodward Field Station, Woodward, Okla., since July 1, was terminated September 7. Mr. Chase returned to his college studies.

J. M. Hammerly, senior scientific aid in corn investigations, will leave Washington about October 9 to harvest the experimental corn plats at Florence, S. C. He will return about October 20.

Dr. A. W. Henry, assistant plant pathologist at University Farm, St. Paul, Minn., and agent, since April 21, 1923, in the cooperative flax-rust investigations, will devote a year to study in European universities under a fellowship granted by the John Simon Guggenheim Memorial Foundation. Dr. Henry's appointment as agent of this Office was terminated September 30. C. V. Kightlinger, assistant plant pathologist, will succeed Dr. Henry as agent, beginning October 1.

H. S. Jackson, in charge of the division of botany of the Purdue University Agricultural Experiment Station, and agent since July 1, 1919, in the cooperative investigations of leaf rusts of cereals, has been granted sabbatical leave by the University to engage in special study at the University of Wisconsin. Mr. Jackson's appointment as agent of this Office was terminated September 18.

W. E. Leer, State leader of the barberry eradication campaign in Indiana, was in Washington recently on a vacation trip and was an Office visitor from September 28 to 30, inclusive.

Glenn S. Smith, who has assisted in the cooperative cereal experiments at the Dickinson (N. Dak.) Substation since July 1, 1926, resigned his position on September 17 to return to college.

MANUSCRIPTS AND PUBLICATIONS

63 A manuscript entitled "Experiments with Fall-Sown Oats in the South," by T. R. Stanton, R. R. Childs, J. W. Taylor, and F. A. Coffman, was submitted September 22 for publication in the Department Bulletin series.

64 A manuscript entitled "Experiments with Dusts for Controlling Stripe Disease of Barley," by R. W. Leukel, James G. Dickson and A. G. Johnson, was approved September 25 for publication in Phytopathology.

Galley proof of article entitled "Registration of Standard Wheat Varieties," by J. Allen Clark, H. H. Love and E. F. Gaines, for publication in the Journal of the American Society of Agronomy, was read September 25.

Galley proof of article entitled "Registration of Improved Wheat Varieties," by J. Allen Clark, H. H. Love and J. H. Parker, for publication in the Journal of the American Society of Agronomy, was read September 25.

Galley proof of article entitled "Seed Treatments for Sweet-Corn Diseases," by C. S. Reddy, J. R. Holbert and A. T. Erwin, for publication in the Journal of Agricultural Research, was read September 27.

Galley proof of article entitled "Registration of Varieties and Strains of Oats," by T. R. Stanton, Fred Griffiee and W. C. Etheridge, for publication in the Journal of the American Society of Agronomy, was read September 27.

In the Journal of the American Society of Agronomy, vol. 18, no. 9, for September, 1926, appears the "Report of Committee to Formulate a Cooperative Program of Corn Improvement under the Purnell Act." The personnel of the Committee is as follows: W. L. Burlison, Chairman; L. C. Burnett,* Iowa; H. K. Hayes, Minnesota; G. N. Hoffer,*Indiana; T. A. Kiesselbach, Nebraska; S. C. Salmon, Kansas; L. J. Stadler,*Missouri; L. R. Waldron, North Dakota; and F. D. Richey,*U. S. Dept. of Agriculture, Secretary.

*On the rolls of the Office of Cereal Crops and Diseases, Bureau of Plant Industry, U. S. Dept. of Agriculture.

The paper entitled "Breeding Winter Oats for the South," by T. R. Stanton, appears in the Journal of the American Society of Agronomy 18 (no. 9): 804-814, fig. 1. September, 1926. (Paper read by title before the section of agronomy at the 27th annual convention of the Association of Southern Agricultural Workers held at Atlanta, Ga., February 3-5, 1926.)

The article entitled "A Second Gene Producing Golden Plant Color in Maize," by M. T. Jenkins, appears in the American Naturalist 60: 484-488. September-October, 1926.

European Corn Borer

F. D. Richey, agronomist in charge of corn investigations, returned to Washington on September 26, after spending four days in the Lake Erie region that is infested with the European Corn Borer. In company with other members of the Joint Committee on the European Corn Borer, appointed by the American Association of Economic Entomologists and the American Society of Agronomy, the Corn Borer experiments of the Ohio Station at Bono, Ohio, were visited on September 22. These experiments comprise varietal (including F_1 hybrid material) and time-and-rate-of-planting studies, and experiments on the effects of fertilizers in hastening the maturity of late planted corn, in addition to experiments of a more strictly entomologic nature.

On September 23 the Committee visited infested fields in Ohio and Michigan and the Corn Borer laboratory at Monroe, Mich., conducted cooperatively by the U. S. Bureau of Entomology and the Department of Farm Crops of the Michigan Experiment Station. Here opportunity was afforded to see the methods used by the Bureau of Entomology in raising parasites for liberation in the infested area. Some 10 or more species of parasites have been introduced, though efforts are being concentrated at present on only two species, *Exeristes roborator* and *Habrobracon brevicornis*. A number of machines developed for use in infested areas were demonstrated at Monroe. These included attachments for different makes of corn binders to enable the corn plants to be cut almost at the surface of the ground, a machine for pulverising the corn stubble by means of rapidly rotating knives, and a so-called combine for harvesting corn. The latter cuts the plants low, husks the ears and delivers them into a wagon, and cuts and shreds the stover, discharging it on the ground or elevating it into a wagon if desired.

On September 24, the older infested regions of Essex and Kent counties, Ontario, and the Dominion Corn Borer laboratory at Chatham, Ontario, were visited. The most severely infested fields seen were those in Ontario, but perhaps even more striking was the scarcity of corn fields. In this region, once the Corn Belt of Canada, the acreage devoted to corn has been reduced about 90 per cent since the advent of the corn borer.

The conference closed with a general meeting in Detroit on September 25, with an attendance of about 180.

The following data on the fields visited, as presented by the U. S. Bureau of Entomology, may be of interest. (Data on Canadian fields supplied by Dominion Entomological Laboratory, Chatham).

Location	Acres	Date Planted	Percentage of infested--		Borers per in- fested stalk	
			Stalks	Ears	Average	Range
Lucas Co., Ohio	9.	May 20	74	17	5.7	- - -
do	6.5	May 20	66	14	4.7	- - -
do	3.5	May 30	54	10	3.2	- - -
Monroe Co., Mich.	7.	May 17	73	15	4.3	- - -
do	9.	May 13	63	9	3.7	- - -
Essex Co., Ont.	10.	June 1	90	65	16.0	2 - 35

Continued

Location	Acres	Date planted	Percentage of infested--		Borers per in- fested stalk	
			Stalks	Ears	Average	Range
Essex Co., Ont.	7.	June 8	100	95	17.0	6 - 31
do	5.	May 24	100	100	32.0	14 - 46
Kent Co., Ont.	11.	May 24	100	95	18.0	6 - 30
do	8.	May 24	100	100	25.0	14 - 44

Bunt Situation in Kansas

Kansas, this year, passed through the most severe epidemic of bunt in the history of the State. It has been conservatively estimated (July and August price of wheat) that the loss in Kansas from stinking smut was \$17,500,000. This includes the actual field loss and the loss from dockage. From 35 to 40 per cent of all the wheat coming on the Kansas City and Hutchinson markets was graded smutty. The dockage on this wheat ran from one cent to 20 cents per bushel. Wheat smut has been favored by environmental conditions at sowing time during the last two or three years. It is believed that small amounts of bunt have been appearing in many fields in the State for the last two years. Only a limited acreage was treated with the copper carbonate or formaldehyde last fall. With a large amount of infection in the seed which was sown under cool, moist conditions, this smut epidemic was anticipated, in fact, predicted. Many individual farmers lost as much as \$5,000 on their wheat crop.

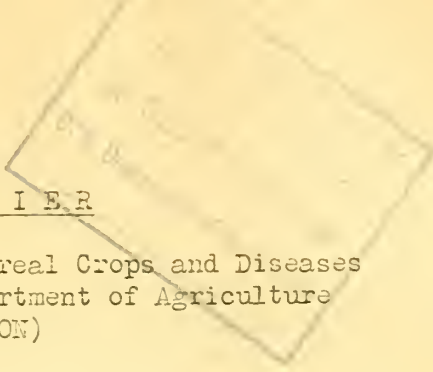
It was very evident during the course of the Kansas Festival Wheat Train, that the drawing card was "wheat smut and its control." More interest was expressed in this than in anything else.

It is estimated that at least 2,000,000 acres will be sown to treated wheat in Kansas this fall. For the most part, the seed for this acreage will be treated with copper carbonate dust although the formaldehyde treatment still is used by many with satisfaction.

It is a common impression among growers that Blackhull is more susceptible and has shown more smut than Kanred or any other hard red winter wheat. Three years of research on varietal resistance conducted several years ago by C. O. Johnston does not indicate that this is true. All Turkey or hard red winter wheats included in his experiments were about equally susceptible. In conversation with many farmers, it was very evident that they were mistaking the black chaff of the Blackhull variety for smut.

L. E. Melchers, Kansas Agricultural Experiment Station, September 18, 1926.

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CEREAL COURIER

Official Messenger of the Office of Cereal Crops and Diseases
Bureau of Plant Industry, U. S. Department of Agriculture
(NOT FOR PUBLICATION)

Vol. 18

No. 25

October 10, 1926
Personnel (Oct. 1-10) and Field Station (Sept. 16-30) Issue

PERSONNEL ITEMS

Dr. A. G. Johnson, senior pathologist in charge of cereal-disease investigations, returned on October 6 from a field trip in the Middle West in the interests of cereal-disease investigations.

John H. Parker, formerly agent in the cooperative investigations and experiments in the breeding and selection of wheat for resistance to stem and leaf rust at Manhattan, Kans., has been reappointed agent effective October 1. Mr. Parker has just returned from a year's study in cereal breeding at Cambridge University, England. Donald D. Hill, who had charge of the experiments in Mr. Parker's absence, resigned his position as agent at the termination of September 30.

Dr. W. H. Tisdale, pathologist in charge of cereal-smut investigations, returned October 5 from the West and Southwest.

MANUSCRIPTS AND PUBLICATIONS

Galley proof of article entitled "The Alternate Hosts of Crown Rust (Puccinia coronata Corda)," by S. M. Dietz, for publication in the Journal of Agricultural Research, was read October 2.

Galley proof of article entitled "The Growth of Ophiobolus graminis Sacc. in Relation to Hydrogen-Ion Concentration," by R. W. Webb and Hurley Fellows, for publication in the Journal of Agricultural Research, was read October 6.

The article entitled "Effects of Wheat Treated with Copper Carbonate upon the Common House Mouse (Mus musculus)" by W. W. Mackie and Fred N. Briggs, appears in Phytopathology 16 (No. 9): 629-632, figs. 1-2. September, 1926.

Purdue University Extension Bulletin 145 entitled "Kill the Common Barberry," by Wayne E. Leer, bearing date of August, 1926, was received October 10.

IMPORTANT NOTICE

Attention is hereby called to Bureau of Plant Industry Memorandum 245,
dated October 7, 1926.

MEMORANDUM TO HEADS OF OFFICES

Gentlemen:

I enclose herewith copy of a memorandum which has just come to hand from the Secretary, in regard to the dissemination of information by the Department. It is requested that you give this your careful personal consideration, and see that it is called to the attention of members of your staff. You will note in particular the last two paragraphs of the Secretary's memorandum.

If additional copies of the enclosed memorandum are desired, I shall be glad to furnish them.

Very sincerely,

Wm. A. Taylor

Chief of Bureau.

Encl.

September 29, 1926.

Memorandum for Chiefs of Bureaus and Offices:

I should like to call your special attention to my memorandum of September 4, 1925, dealing with the dissemination of facts from the Department. In that memorandum I made these statements:

"The Press Service is the normal means of distributing matter to the press. When a bureau originates material that it feels should have newspaper publication, it should get into touch with the Press Service. The latter will be responsible for the form and distribution of the material just as the bureau is responsible for the facts. In some instances it may be desirable to distribute the copy to the press in some regions through field agents, but this should be arranged in advance with the Press Service in order that all publications, no matter where located, may have an equal chance to get the news at the same time.

"All proper facilities, however, should be given to writers who are seeking data on specific matters. We want, it seems to me, to encourage the special writer in supplying the public with useful agricultural information. Bureaus should not hesitate to give him such facts as he desires and as can properly be released. They should guard only against supplying him with news which should be released through the Press Service to all papers at the same time."

While I appreciate the observance in most instances of the policies referred to, certain recent incidents lead me to feel that renewed emphasis should be placed on these matters, particularly on the part of members of your staff having contact with the press. For example, one of the largest press associations in the United States lately complained that an article sent out by the Press Service for release at a certain time was handed by a member of the Department to a competitor of this press service with an earlier release date. Such departures from sound practice, inadvertent though they are, will speedily destroy the Department's standing among all publications.

May I urge your personal cooperation to the end that the possibility of any such occurrence in the future be absolutely eliminated?

Sincerely yours,

W. M. JARDINE

Secretary.

CEREAL-RUST INVESTIGATIONS IN CANADA

Dr. H. B. Humphrey, senior pathologist in charge of cereal-rust investigations, who with Dr. E. C. Stakman, agent in the cooperative cereal-disease investigations at St. Paul, Minn., recently visited points in Canada in the interests of cereal rusts, gives the following account of their observations:

Dr. Stakman and I left Washington, D. C., on August 11 and arrived in Ithaca, N. Y., on August 12. Met Drs. Love, Emerson, Reddick, Whetzel, et al. It rained all day, so that we could not take notes on uniform rust nurseries and the task was postponed until the following Monday. We saw much stem rust on oats, not a little on wheat, and less on barley. There was some P. anomala on barley. All grain was ripe; some was already in the shock. Buckwheat was in bloom and gave promise of an excellent crop.

We arrived at Guelph, Ontario, on August 13. Genuine epidemic of leaf rust was found on nearly all varieties of wheat. Stem rust of oats was more severe than stem rust of wheat. Some good notes were obtained on crown rust and stem rust of oats. Quack, orchard, and redtop showed no rust of any kind. Wheat was very scarce. Oats were nearly all ripe. Many fields were in shock, some being harvested and a few, late sown, were still green. Corn looked promising; just beginning to tassel out.

Ottawa was reached at 7:35 A.M., August 14. Dr. Stakman and I went at once into the nurseries on the Experimental Farm and took leaf-, stem-, and crown-rust notes. Also clipped the specified oat-head samples from each of the several varieties for Dr. Charlotte Elliott's oat-blast studies. One variety, Red Rustproof, had not yet headed.

At Québec, we were joined by Mr. Racicot and Dr. Pépin, Dominion Seed Analyst for P. Q. After visiting Dr. Pépin's laboratories, we went to Cap Rouge experimental station, an unusually interesting farm nine miles above Québec and overlooking the St. Lawrence River. Here we observed an abundance of stem and crown rusts on oats and both stem rust and leaf rust on wheat. Stem rust was especially abundant on the following wheats: Aurora, Reward, Marquis, less so on Huron and Marquillo. Leaf rust was very severe on all but Marquillo. I found a trace of scab on Marquis and Ruby. None on Huron. This station would afford opportunity to get valuable data on varietal resistance to rusts of cereals.

Leaving Cap Rouge, we returned to Québec and later boarded the train for Chicoutimi (She-zhotze-mé), where we arrived at 8:30 A.M. We were met by the local agronome and taken into Saguenay Valley, where we visited several wheat and oat fields.

Stem rust was general except on the latest oats. The farms of this (the Chicoutimi) region are, generally speaking, well kept. Here as at Chambord, Roberval, and St. Prime, one notes the fixity of that type or those types of rural architecture so characteristic of the St. Lawrence Valley. The fields are mostly devoted to oats, barley, wheat, buckwheat, and potatoes. The farmers of the Chicoutimi area are beginning to develop good herds of cattle: Ayrshire, Holstein, and Canadien francais. We were told that the farmers are slow to adopt new practices. They seem more or less indifferent to seed certification of potatoes. They are equally indifferent to adoption of any recommendation as to crop rotation. Mr. Plourde, agronome at Roberval and St. Prime, took us to the farm home of M. Fortin, one of St. Prime's most progressive farmers. M. Fortin has been cooperating with the agronome by putting his farm at the disposal of Mr. Plourde in an effort to demonstrate the value of recommended crop practices. Mr. Plourde informed us that these demonstrations are being taken seriously by the farmers of that section. And it was here that we saw the best farms, the most evidence of contentment and prosperity. The settlement of the Lac St. Jean area dates back to 1855 to 1860. The Peribonka project is younger (see Hémon's Journal and Maria Chapdelaine). Cheese-making is the leading dairy industry. Swine husbandry is limited almost entirely to production of Yorkshires. Here also one sees in considerable majority that fine-spirited, medium-weight breed of horses registered under the name Canadien francais.

Returning to Québec from Roberval on August 27, we left forthwith for Sainte Anne de la Pocatière. We arrived there about noon and spent the afternoon reading the rust nurseries. Here, again, we found an abundance of stem rust and leaf rust on wheat and considerable stem rust and a percentage of crown rust on nearly all varieties of oats (see forthcoming Annual Report on Stem Rust Investigations). This was in marked contrast to what we found on the same varieties last year. Mr. Racicot was inclined to attribute the stem rust to a rather copious infection of some barberry bushes a few miles up the St. Lawrence Valley. Personally, I am inclined to believe that there may have been another and more remote source. There was here little more than a trace of stem rust on the durums in the Ste. Anne de la Pocatière nursery.

Leaving Ste. Anne de la Pocatière on the 27th, we arrived in Charlottetown on the night of the following day. There we were joined by Mr. Newman, the Dominion Cerealist, and by Messrs. Clarke and Hurst of the Prince Edward Island Experiment Farm. We spent the forenoon in the examination of the station's several nurseries of wheat, oats, and barley and enjoyed the special advantage of Mr. Newman's explanation of the origin of the several hybrids of wheat and oats and the relative merits of those which were outstanding. At Charlottetown, just as at Cap Rouge, Ste. Anne de la Pocatière, and, later, at Fredericton and La Ferme, the variety Huron was noticeably freer from stem rust than was Marquis, Ruby, Reward, or Haynes Bluestem. Dr. Stakman was inclined to attribute this to a possible anatomical difference between Huron and these apparently more susceptible sorts. Garnet, at Charlottetown, was behaving true-to-form in its characteristic precocity, it being about 10 days more advanced than other varieties sown on the same day.

In the afternoon, Dr. Stakman and I took the readings on the uniform rust nurseries. We found only a trace of stem rust on the durums but enough on the common varieties to secure high percentage readings. Oats, except Richland, Iowa 109 and 444, were infected from 5 to 45 or 50 per cent. Crown rust was present, though by no means serious.

In the Province of Prince Edward Island, oats and wheat are the most popular crops. This year there is an estimated acreage of 31,000 acres of potatoes and a predicted yield of 9,300,000 bushels.

The oat acreage of the Province of Prince Edward Island probably will not exceed 20,000 acres. Fox farming has for years been a popular phase of the animal husbandry of the Island. The farmers in the east end of the Island in recent years have reclaimed a considerable farm acreage by engaging in the production of bent grass seed of the species Agrostis tenuis and A. canina.

On our way over to Charlottetown we paid a brief visit to Nappan, Nova Scotia, where we found stem rust on wheat and oats in epidemic form, and much more abundant than last year. It seemed evident that the source of initial inoculum must be very close at hand. A search of the yard about the Station buildings revealed the presence of two large susceptible varieties of Berberis, but we could find no infection scars on any of the leaves.

Leaving Charlottetown on the morning of the 30th, we reached Fredericton that night. The next day we read the rust nurseries and clipped the required 1,800 oat heads for Dr. Charlotte Elliott. Here, again, we found an abundance of stem rust on the usually susceptible varieties of wheat and oats. On the durum wheats there was the barest trace of stem rust. Leaf rust varied from a trace to 90 per cent, depending on the variety. Here, again, Garnet was earlier than the other Ottawa selections and Huron showed about its usual amount of stem rust (approximately 35 per cent). Marquillo (Hayes) compared with an Ottawa selection of that same strain showed less stem rust (apparently more resistance). Reward, Red Quality, Parker, and Marquis were all severely rusted. We did not have opportunity to get out into the country to examine the still very green oatfields. I collected some smut (covered) from some of the selections in the oat nursery. Oat blast was abundant on practically all late-maturing varieties both here and at Charlottetown. It was very easily seen that Richland, Kanota, Alaska, and other early varieties were all but free of any sign of the trouble. Some late varieties showed as much as 15-25 per cent of floret blast. There was a small amount of scab in certain wheats and a noticeable percentage of glume blotch (Septoria nedorum) on some varieties. From Fredericton, Dr. Stakman went to Boston. I returned to Québec where I joined Mr. Newman for a trip to the Abitibi (A-beetz-e-bé) country. We arrived at La Ferme the following day (September 2) at 12:50 P.M. and went at once to the Experimental Farm where we met Mr. Fortier, the Director, who told us that the farm was established 11 years ago. We spent the afternoon making observations and taking notes on the occurrence of rusts and other cereal diseases.

Notes on the Occurrence of Stem Rust on Oats and Wheat at La Ferme, Québec
Station

Oats:

Banner 44 M. C.	0
Longfellow O 478	t ± R to S-
Alaska	35 S
Gold Rain	30 S
Cartier	45 S
Montcalm	10 S-
La Salle	t ± S-

Wheat:

Beaver Lodge	15 S-
Prelude	75 S
Huron	30 S-
Kota	30 R
Brownie	65 S
Early Triumph	75 S
Kitchener	70 S
Bluestem (Haynes)	40 S
White Russian	50 S
Marquis	50 S-
Belgian Compactum	50 S
Camrose Compactum No. 3	65 S
Camrose Compactum No. 2	60 S
Poulard	t R
Alaska	55 S
Golden Ball	t R
Velvet Dawn	75 S
Kahla	20 S-
Kubankæ	20 S-
Emmer	10 R
T. polonicum	25 S-
T. spelta	20 S-

Material was collected and sent to University Farm, Minnesota, for identification of the physiologic forms of the several rusts. In the barley nursery, I found one variety (Star) badly affected with stripe (Helminthosporium gramineum). No trace of the disease could be found in any of the remaining varieties.

Leaving the Abitibi country, Mr. Newman and I returned to Montreal, arriving there shortly after ten o'clock A.M. We proceeded from Montreal to Ste. Anne de Bellevue, where we visited the experimental field plats of Macdonald College, Québec's leading agricultural college. Most of the cereal plats had been harvested, but no difficulty was experienced in estimating the amount of rust on the several varieties of wheat and oats. Some late-sown plats of oats were found heavily infected. Stem rust was found also on a variety of emmer and on one durum variety. Considerable attention is being devoted to corn improvement, but the man in charge was not available to explain the experiments. The majority of the students at Macdonald are Anglo- and Scottish-Canadian men and women. There are, however, several French-Canadians in the student body and doubtless would be many more but for the proximity of Oka College, an excellent agricultural institution conducted by the Trappists.

Following our visit of Macdonald College, we took our separate routes homeward, Mr. Newman to Ottawa and I to Washington.

FIELD STATION CONDITION AND PROGRESS

HUMID ATLANTIC COAST STATES (South to North)

GEORGIA

State College of Agriculture, Athens (Cereal Agronomy, R. R. Childs)

VIRGINIA

Arlington Experiment Farm, Rosslyn (Small Grain Agronomy, J. W. Taylor)

Arlington Experiment Farm, Rosslyn (Corn Breeding, F. D. Richey)

Arlington Experiment Farm, Rosslyn (Cereal Smuts, W. H. Tisdale)

Arlington Experiment Farm, Rosslyn (Virus Diseases, H. H. McKinney)

Arlington Experiment Farm, Rosslyn (Cereal Bacterial Diseases, C. S. Reddy)

NEW YORK

Cornell University Agricultural Experiment Station, Ithaca (Cereal Breeding, H. H. Love)

HUMID MISSISSIPPI VALLEY STATES (South to North)

LOUISIANA

Rice Experiment Station, Crowley (Rice Agronomy, J. M. Jenkins)

Agricultural Experiment Station, Baton Rouge (Corn Breeding, H. F. Stoneberg)

MISSOURI

Agricultural Experiment Station, Columbia (Cereal Agronomy, L. J. Stadler)

TENNESSEE

Agricultural Experiment Station, Knoxville (Corn Breeding, L. S. Mayer)

IOWA

Agricultural Experiment Station, Ames (Oat Breeding, L. C. Burnett)

Agricultural Experiment Station, Ames (Corn Breeding, M. T. Jenkins)

Agricultural Experiment Station, Ames (Crown Rust of Oats, S. M. Dietz)

Iowa State College, Ames (Barberry Eradication, M. A. Smith)

ILLINOIS

Funk Bros. Seed Co., Bloomington (Corn Root, Stalk and Ear Rots, J. R. Holbert)

Box 72, Post Office Building, Urbana (Barberry Eradication, G. C. Curran)
(October 1)

During September a number of men resigned. The force was reduced to 12 men. The second survey of Lake, McHenry, and Jo Daviess counties was stopped. It is planned to continue the survey of these counties next year. At the end of September, field men were confining their activities to Stephenson, Winnebago, and De Kalb counties.

Weather conditions have been decidedly unfavorable for scouting this month as much rain has fallen.

A number of valuable leads on common barberry plantings were secured at barberry demonstrations put on at fairs in the territory being surveyed. At the fair held at Sandwich in De Kalb County agents received more than 12 leads concerning the possible location of bushes in that county. Many leads for other nearby counties also were gathered.

Along the densely wooded slopes and bluffs of Lake Michigan in Lake County scouts have found thousands of small barberry seedlings. In a few years these seedlings would have developed into mature bushes. It has been necessary to inspect every foot of ground for miles along the shore of Lake Michigan in Lake County.

Frank O. Lowden, former governor of Illinois and a member of the Executive Committee of the Conference for the Prevention of Grain Rust, made a study of agricultural conditions in Denmark this summer. Recently Mr. Lowden was interviewed on his farm near Oregon, Ill., concerning the black stem rust situation in Denmark. He said: "I understand that Denmark completed a thorough barberry-eradication campaign several years ago and since that time has not been bothered with losses from stem rust attacks. During my recent visit in that country I visited farms in all sections and not once were stem-rust losses mentioned to me. The Danish farmers complained of other pests, but evidently very little if any loss was incurred by stem rust."

INDIANA

Purdue University Agricultural Experiment Station, La Fayette (Corn Rots and Metallic Poisoning, G. N. Hoffer)

Purdue University Agricultural Experiment Station, La Fayette (Leaf Rusts, H. S. Jackson and E. B. Mains)

Purdue University College of Agriculture, La Fayette (Barberry Eradication, W. E. Leer)

OHIO

Ohio State University, College of Agriculture, Columbus (Barberry Eradication, J. W. Baringer) (September 30)

The summer crew of 32 barberry eradicators has been reduced to five by resignations. Nearly all those who resigned have resumed their studies at various colleges and universities or have accepted positions as teachers.

It is planned to bring the field operations for this season to a close at the end of October. Since Jan. 1, 1926, about 6.78 counties have been covered by original survey. No resurvey and no second survey has been done this year. It is hoped that the survey of some unfinished portions of three townships in Geauga County can be completed by October 31. The unseasonable rainy weather in late September hindered field operations considerably. Survey activities in Columbiana County had to be discontinued on account of the impassable condition of the numerous creek bottom roads.

In September escaped barberries were found and treated on 64 farms in Columbiana, Geauga, Lake, and Mahoning counties. Forty-nine of these farms are located in Geauga County. Recently the twelfth car load of salt, which is to be used for treating barberries in Geauga County, was unloaded.

MICHIGAN

Agricultural College, East Lansing (Barberry Eradication, W. F. Reddy)

WISCONSIN

Agricultural Experiment Station, Madison (Wheat Scab, J. G. Dickson)

Department of Agriculture, State Capitol Annex, Madison (Barberry Eradication, W. A. Walker)

MINNESOTA

Agricultural Experiment Station, University Farm, St. Paul (Wheat Breeding, O. S. Aamodt)

Agricultural Experiment Station, University Farm, St. Paul (Stem Rust, E. C. Stakman)

Agricultural Experiment Station, University Farm, St. Paul (Flax Rust, C. V. Kightlinger)

Agricultural Experiment Station, University Farm, St. Paul (Barberry Eradication, L. W. Melander)

GREAT PLAINS AREA (South to North)

OKLAHOMA

Woodward Field Station, Woodward (Grain Sorghums, J. B. Sieglinger)
(October 2)

In spite of wet periods, harvesting of grain sorghums and broomcorn has progressed. Most of the broomcorn is harvested; the last date-of-seeding experiment and some second pullings remain. The sorghums in the rate-of-seeding experiments are headed and the kafir has been bound. The varietal plats were being headed until stopped by rain.

The fields will be above average this year, though the quality of grain is likely to be injured because of damp weather.

John H. Martin, project leader, visited the Station on September 18 and 19.

Minimum temperature, 35 degrees on the 26th; maximum for September, 100 degrees on the 23rd; precipitation 3.34 inches.

KANSAS

Agricultural Experiment Station, Manhattan (Cereal Breeding, J. F. Parker)

Agricultural Experiment Station, Manhattan (Corn Breeding, A. M. Brunson)

Agricultural Experiment Station, Manhattan (Wheat Foot Rots, Hurley Fellows)

Agricultural Experiment Station, Manhattan (Wheat Leaf Rust, C. C. Johnston)

Hays Branch Experiment Station, Hays (Cereal Agronomy, A. F. Swanson)

COLCRADO

Agricultural College, Ft. Collins (Barberry Eradication, E. A. Lungren)

NEBRASKA

North Platte Substation, North Platte (Cereal Agronomy, G. F. Sprague)

College of Agriculture, University Farm, Lincoln (Barberry Eradication, A. F. Thiel)

WYOMING

College of Agriculture, University of Wyoming, Laramie (Barberry Eradication, E. A. Lungren)

SOUTH DAKOTA

College of Agriculture, Brookings (Barberry Eradication, R. O. Bulger)

NORTH DAKOTA

Agricultural Experiment Station, Agricultural College P. O. (Flax Diseases, L. W. Boyle)

Agricultural Experiment Station, Agricultural College P. O. (Barberry Eradication, G. C. Mayoue)

Dickinson Substation, Dickinson (Cereal Agronomy, R. W. Smith) (September 7)

The new Kansas nursery thresher arrived recently and the greater part of the material from the wheat nursery has been threshed. Rain today has interrupted threshing operations but the remainder of the nursery material, including the oat varieties, is under cover so that threshing will be resumed when the weather permits.

The nursery yields are exceptionally good, in some cases approaching 40 bushels per acre in the case of wheat varieties. The nursery was sown on clean summer fallow.

Yield, in bushels per acre, of oat varieties grown in replicated plots at the Dickinson Substation in 1926

<u>Variety</u>	<u>C. I. No.</u>	<u>Yield (Bu. per acre)</u>
Kherson	459	17.6
Nebraska No. 21	841	14.3
Gopher	2027	14.0
Markton	2053	12.5
Iowar	847	11.4
Richland	787	10.6
Iogren	2024	9.5
Silvermine	559	8.4
Avalanche	1440	7.9
Big Four	658	6.7
Lincoln	738	6.7
Victory	560	6.6
Siberian	741	6.1
Swedish Select	134	5.9
Banner Selection	1997	5.7
Liberty Hull-less	845	5.7*
Golden Rain	493	5.4
Early Mountain No. 8	2036	4.9
White Russian	551	4.7
Corriente	2148	4.4

Emmer

Yaroslav Emmer	1526	9.6*
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*Computed at 32 pounds per bushel.

(October 1)

During the past month the weather has been changeable and frequent showers have interfered somewhat with field work. The total precipitation for the month, including a rain of 0.66 inch last night, was 2.14 inches, or nearly an inch above normal. About half an inch of snow fell on the 24th, and on the following morning the temperature dropped to 12 degrees, which was the lowest point for the month. The first killing frost occurred on the 19th, with a minimum temperature of 26 degrees. A few earlier light frosts did no appreciable damage.

The winter grain in plats and nursery is in fairly good condition and will be much improved by the recent rain. Stand notes have been taken in both plats and nursery.

Corn varieties have been husked and the selfed ears in the corn nursery have been harvested.

The Substation was visited recently by Mr. C. W. Ainslie, government entomologist from Sioux City, Iowa.

Northern Great Plains Field Station, Mandan (Flax Breeding, J. C. Brinsmade, Jr.) (October 1)

The flax varietal plats and the remainder of the date-of-seeding-and-tillage experiment were harvested on September 15. Two varieties, N. D. R. 119, and Red Wing appeared outstandingly good. Slope, which has formerly been one of the best yielders, was the poorest appearing variety in the test. Linota, which also has been one of the best yielders, looked very poor in comparison with N. D. R. 119 and Red Wing. Part of the flax in the nurseries was harvested September 18 and during the week of September 20 to 25, inclusive. Most of the remainder will not be ready to harvest for some time. Apparently, the late flax was not killed, nor were the plants noticeably injured by frost except for the blighting of blooms and buds and occasionally some of the leaves. The extent of the injury to bolls not yet mature can not be determined at this time.

Yields of flax from the flax and cereal mixtures were practically negligible and yields of wheat and oats would hardly justify harvesting. Summarized data averaged from 9 sample squares out of plats of each combination are as follows:

Crop and rate of seeding <u>in pounds per acre</u>	Weight (air-dry) of all <u>weeds in pounds per acre</u>	Acre yield	
		Flax	Wheat
Flax 15 - Wheat 10	2729	0.2	1.4
Flax 15 - Wheat 20	2221	.1	2.9
Flax 15 - Wheat 30	1895	.1	2.9
Flax 25 - Wheat 10	2057	.3	1.4
Flax 25 - Wheat 20	2040	.1	2.5
Flax 25 - Wheat 30	1760	.1	2.5
Flax 25 (alone)	2709	.4	
Wheat 60 (alone)	994		4.9
			Oats
Flax 20 - Oats 8	2033	.3	1.2
Flax 20 - Oats 16	2005	.1	1.7
Oats 48 (alone)	1425		3.1

Yields from the flax date-of-seeding-and-tillage experiment are insignificant. The best average yield for any date of seeding of which the crop is already threshed, determined from sample squares out of each plat, was 2.3 from a plat sown May 11. Better yields may be expected from plats sown later.

The new thresher for threshing plats is even less readily accessible for cleaning out between varieties than the thresher formerly used. On this account and also in view of the small crop, it seems desirable to use the Cornell nursery thresher for threshing the varietal plats. An attachment has been designed which it is hoped will enable us to use the full force of the blower for cleaning out the chaff, and at the same time prevent loss of seed, which in the past has been the chief difficulty with this machine. This attachment will be tested in the next few days when the weather permits.

The month of September was chiefly characterized by windy, cloudy weather with considerable rain for this time of year. The maximum temperature for September was 88 degrees on September 1. The first frost of the season occurred the night of September 18, when a temperature of 31 degrees was recorded. The minimum temperature was 16 degrees on September 24, which established a new record for low temperatures in September since the Station was established. The lowest September temperature previously, recorded was 22 degrees on September 19, 1918. The precipitation in September amounted to 2.38 inches, or about one inch more than normal for September.

Northern Great Plains Field Station, Mandan (Cereal Agronomy, E. R. Auserus) [October 1]

The winter-hardiness nursery which was seeded on September 18 is now emerging. Germination is slow because of the low temperatures during the latter part of September.

Corn was injured by the extremely low temperatures recorded on September 24, when the thermometer registered 16 degrees above zero. This is the lowest temperature recorded in the Station records for the month of September. There probably will be a shortage of seed corn as a result of the very early heavy freeze.

Average yields of 71 wheat varieties and hybrids grown in three row rows, replicated three times, at the Northern Great Plains Field Station, Mandan, N. Dak., in 1926.

Variety or hybrid	C. I. No.:	Hybrid No.	Yield
Kanred x Marquis	:	: 1718B8-11-22	: 23.9
Do	:	: 1718B8-11-7	: 22.7
Do	:	: 1718B8-11-29	: 21.2
Reliance	: 7370	: 1718B8-11	: 21.1
Marquis x Kota	: 8004	: Ms. 1656.34	: 21.1
Kanred x Marquis	:	: 1718B8-11-23	: 20.0
Do	:	: 1718B8-11-63	: 19.9
Do	: 3191	: II-18-48	: 19.6
Do	:	: 1718B9-14-42	: 19.4
Marquis x Kota	: 8188	: Ms. 1656.169	: 19.3
Kanred x Marquis	:	: 1718B9-14-22	: 19.1
Do	:	: 1718B9-14-28	: 18.7
Do	: 8019	: II-18-44	: 18.7
Do	: 7371	: 1718B9-11	: 18.4
Do	:	: 1718B9-11-48	: 18.4
Marquis x Kota	: 8186	: Ms. 1656.83	: 18.4
Kanred x Marquis	:	: 1718B8-11-64	: 18.1
Marquis x Kota	: 8005	: Ms. 1656.97	: 17.6
Marquillo	: 6887	: II-15-44	: 17.5
Kanred x Marquis	: 8018	: II-17-40	: 17.2
Marquis x Kota	: 8008	: II-19-9	: 16.7
Do	: 8185	: Ms. 1656.31	: 16.5
Do	: 8187	: Ms. 1656.99	: 16.3

Continued

Variety or hybrid	C. I. No.	Hybrid No.	Yield
Marquis x Erivan	:	: 1733A6-14-2	: 16.3
Marquis x Kota	: 8009	: II-19-11	: 16.2
Kanred x Marquis	:	: 1718B9-11-27	: 16.2
Do	: 7372	: 1718B9-14	: 16.2
Marquis x Erivan	:	: 1753B3-12-4	: 16.1
Kanred X Marquis	: 8017	: II-17-37	: 16.0
Ceres	: 6900	: Ns. 1658	: 15.9
Marquis x Kota	: 8184	: Ns. 1656.79	: 15.8
Kota	: 5878	:	: 15.5
Kota x Kanred	:	: 1980B12-4	: 15.3
Kanred x Marquis	:	: 1718B9-11-13	: 15.3
Do	: 7374	: II-13-8	: 15.1
Marquis x Kota	: 6898	: Ns. 1656	: 15.1
Erivan	: 2397	:	: 15.1
Marquis*	: 3641	:	: 14.9
Kubanika	: 1440	:	: 14.8
Marquis x Kota	: 8189	: II-19-46	: 14.4
Kubanika No. 8 x Mindum	:	:	: 14.4
Kanred x Marquis	:	: 1718B5-14	: 14.2
Marquis x Kota	: 8133	: Ns. 1656.47	: 14.1
Kota-Hd. Federation x Kanred-Marquis	:	: 23270B2-1-2	: 13.8
Marquis x Kota	: 8190	: II-19-57	: 13.7
Nodak	: 6519	:	: 13.6
Marquis x Erivan	:	: 1734A1-9-1	: 13.6
Marquis x Preston	: 8193	: II-15-24	: 13.0
Pentad	: 3322	:	: 12.9
Progress	: 6902	:	: 12.8
Mindum	: 5296	:	: 12.7
Marquis x Preston	: 8192	: II-15-8	: 12.7
Mondak	: 7287	:	: 12.6
Garnet.	: 8131	:	: 12.6
Ladoga	: 6679	:	: 12.6
Kota-Hd. Federation x Kanred-Marquis	:	: 23270B2-5-1	: 12.4
Axminister	: 8196	:	: 12.4
Marquis x Sunset	:	: 20167A1-16-6	: 12.3
Kota x Hard Federation	: 8232	: 20149A1-25-2-2	: 11.9
Quality	: 6607	:	: 11.7
Hard Federation	: 4733	:	: 11.6
Kota-Hd. Federation x Kanred-Marquis	:	: 23270A3-2-1	: 11.6
Do	:	: 23270A1-10-1	: 11.5
Kota x Hard Federation	: 8193	: 20148A1-16-8-4	: 11.5
Do	:	: 20148A1-16-1-3	: 11.2
Do	:	: 20148A1-16-5-1-1-1	: 10.9
Do	:	: 20148A1-16-1-5	: 10.6
Do	: 8197	: 20148A1-15-4-3	: 10.2
Kota x Ruby	: 8014	: II-19-29	: 10.0
Kota x Hard Federation	: 8213	: 20149E5-16-10	: 9.9

Continued

Variety or hybrid	C. I. No.:	Hybrid No.	Yield
Kota x Hard Federation	: 8209	: 20149D3-3-1	: 9.6
Do	:	: 20148A1-16-5-1-1-2	: 9.5
	:	:	:
* Average of three checks			

MONTANA

Judith Basin Substation, Moccasin (Cereal Agronomy, R. W. May) (October 1)

It rained or snowed on 10 days in September and the weather was cloudy and cold for the greater part of the month. This has greatly delayed plat threshing but has permitted us to complete the nursery threshing. All seed from the nursery has been cleaned, weighed, and recorded, and the samples for protein tests have been shipped into Washington. The fall seeding of plats and nursery rows has been completed. There were sown 97 plats and 1175 nursery rows.

The precipitation recorded in September was 2.85 inches, as compared to 1.37 inches as the normal for the month. The precipitation recorded in July and August also was much above normal. The precipitation recorded in July, August, and September totaled 7.91 inches, as compared to 4.65 inches as the normal for the same months. This has given the surface soil an abundance of moisture. Wheat sown in the latter part of August has made good growth and looks exceptionally fine.

Minimum temperatures recorded during the month were 4 degrees and 12 degrees on September 24 and 25, respectively. Maximum temperatures were 74 degrees and 72 degrees on September 5 and 15, respectively.

State College of Agriculture, Bozeman (Barberry Eradication, W. L. Popham)

WESTERN BASIN AND COAST AREAS (North to West and South)

IDAHO

Aberdeen Substation, Aberdeen (Cereal Agronomy, G. A. Wiebe)

Agricultural Experiment Station, Moscow (Stripe Rust, C. W. Hungerford)

WASHINGTON

Agricultural Experiment Station, Pullman (Cereal Breeding, E. F. Gaines)

OREGON

Sherman County Branch Station, Moro (Cereal Agronomy, D. E. Stephens)

Sherman County Branch Station, Moro (Cereal Breeding, B. B. Bayles)
(October 2)

Six successful dry-land nurseries were grown in eastern Oregon in 1926 by the Sherman County Branch Station in cooperation with county agents. Yields of the winter wheat varieties grown in these nurseries are listed in the following table in their seeding order. Each variety was grown in three series of three rows each. Only the center rows were harvested. The bunt resistant varieties are checked. The winter of 1925-26 was very mild in eastern Oregon, 20 degrees F. being the lowest temperature recorded. As a result of this mild winter Federation and the other earlier spring types were not injured and gave better yields than later winter varieties. The winter x spring selections, 1993A2-13 and 1992A3-5-4 are more winter hardy than Federation and show considerable promise for the sections where Federation is now fall sown. The Hybrid 128 x White Odessa hybrids were received from E. F. Gaines, Pullman, Wash., in 1923 and have the same parentage as the variety recently named Albit.

Yield of winter-wheat varieties grown in six dry-land nurseries in eastern Oregon in 1926

Variety	Yield (bu. per acre)							
	County and Town							
	Sherman	Wasco	Morrow	Umatilla				
	Moro	Kent	Juniper	Lex-	Eight-	Pendle-		
			Flat	ing-	Mile	ton	Ave.	Ran
			ton					
a/Turkey x Bd. Minn. 48	:22.3:	7.8:	17.8:	22.0:	17.0:	36.6:	20.6:	25
a/Turkey 889-5	:20.8:	4.7:	19.9:	22.1:	17.0:	36.5:	20.2:	27
a/Argentine C. I. 15692	:23.9:	6.6:	18.6:	19.7:	11.1:	37.4:	19.6:	31
a/Regal C. I. 7364	:25.5:	7.6:	20.2:	18.3:	17.2:	31.4:	20.0:	29
a/Ridit C. I. 6703	:23.2:	4.7:	17.1:	20.9:	22.0:	28.3:	19.4:	32
a/Turkey x Florence G326W1	:23.6:	6.7:	17.1:	20.4:	19.9:	30.3:	19.7:	30
a/Do G326W8	:25.6:	7.3:	18.0:	22.2:	21.0:	30.6:	20.8:	24
Kharkov C. I. 1442-12	:21.5*	5.9:	20.2:	21.1:	17.1:	36.5:	20.4:	26
a/Hybrid 128xWhite Odessa 23984-1	:19.5:	5.5**	17.8:	19.5:	19.3:	27.4:	18.2:	34
a/Do 23985-1	:19.2:	5.4:	18.4:	20.2:	20.6:	30.1:	19.0:	33
a/Do 231044-1	:23.4:	3.5:	20.5:	20.3:	19.9:	32.4:	20.0:	29
a/Do 231049-1	:22.9:	5.2:	19.5:	19.9:	18.4:	32.1:	19.7:	30
a/White Odessa C. I. 4655	:28.9:	6.1:	19.2:	21.4:	19.8:	33.5:	21.5:	20
P1068 x Preston Ks. 634	:27.0:	13.9:	16.0:	21.3:	24.4:	32.7:	22.6:	15
Do Ks. 6896-3-6	:26.1:	9.1:	20.1:	21.4:	19.9:	35.9:	22.1:	18
Do Ks. 5914-26-3	:19.9:	11.7:	20.8:	21.5:	20.9:	33.3:	21.4:	21
Kanred C. I. 5146	:18.1:	10.5:	17.9:	22.4:	17.8:	42.3:	21.5:	20
Blackhull C. I. 6251	:25.0:	17.8:	20.2:	24.3:	20.4:	44.1:	25.3:	4
Kharkov C. I. 1442-12	:21.5*	5.8:	18.8:	20.6:	17.6:	36.5:	20.1:	28
Newturk C. I. 6935	:21.6:	10.0:	18.4:	19.9:	24.4:	31.3:	20.9:	23
Kanred x Marquis 1718B2-11-5	:21.3:	13.5:	22.1:	22.2:	30.9:	38.4:	24.7:	6

a/*Average of several checks. **Yield of 231055-1 substituted

Continued

Variety	Yield (Bu. per acre)							
	County and Town							
	Sherman	Wasco	Morrow	Umatilla				
	Moro	Kent	Juni-	Lex-	Eight-	Pendle-	Ave.	Rank
		per	ing-	Mile	ton			
		Flat	ton					
Triplet C. I. 5408	:24.2:	6.9:	21.9:	22.2:	28.4:	42.1:	24.3:	7
Triplet Sel. 4R	:26.4:	4.3:	22.6:	21.9:	26.7:	37.9:	23.3:	11
Fortyfold C. I. 4156	:15.1:	8.2:	14.9:	16.7:	29.2:	33.6:	19.6:	31
Bluestem C. I. 4067	:19.5:	12.3:	15.8:	20.5:	31.0:	31.6:	21.8:	19
Federation C. I. 4734	:29.6:	12.0:	24.8:	23.6:	29.9:	47.0:	27.8:	2
Arcadian x Hard Federation	:	:	:	:	:	:	:	:
1992A3-5-4	:28.2:	12.2:	23.7:	22.4:	31.8:	46.6:	27.5:	3
Fortyfold x Federation 1993A2-13	:24.1:	11.1:	26.9:	23.3:	32.2:	52.3:	28.3:	1
Fortyfold x Hard Federation	:	:	:	:	:	:	:	:
1995A1-1	:18.4:	6.7:	19.3:	19.9:	32.8:	43.3:	23.4:	10
Kharkov C. I. 1442-12	:21.5*	4.0:	17.2:	17.6:	20.5:	36.5:	19.6:	31
Jenkin	:21.4:	3.7:	20.4:	22.1:	29.0:	40.9:	22.9:	14
Jenkin Sel. 157	:22.7:	6.2:	21.8:	21.1:	28.5:	41.2:	23.6:	9
Jenkin Sel. 160	:23.7:	8.2:	20.4:	21.6:	26.5:	38.0:	23.1:	13
Little Club	:23.7*	3.1:	24.4:	21.6:	22.5:	38.2:	23.1:	13
Hybrid 63	:24.7:	7.1:	20.6:	23.9:	31.1:	41.9:	24.9:	5
Hybrid 143	:23.7:	12.7:	23.5:	21.7:	23.8:	37.1:	23.8:	8
Hybrid 128	:23.6:	4.6:	22.3:	22.5:	23.7:	42.7:	23.2:	12
Fortyfold x Hybrid 128 1998A1-1	:23.5:	3.2:	22.9:	20.4:	24.2:	40.0:	22.4:	16
Do 1998A3-3	:20.4:	6.8:	21.7:	23.5:	25.7:	42.3:	23.4:	10
Do 1998A4-3	:19.3:	5.0:	20.6:	24.9:	18.7:	37.6:	21.0:	22
Do 1998A5-1	:23.1:	2.4:	20.2:	23.4:	22.9:	41.4:	22.2:	17

***Yield of Hybrid 143 substituted

The following table gives the yields of spring-wheat varieties grown at the same locations as the winter-wheat nurseries except in Wasco County. The varieties in this table also are listed in the order in which they were seeded. Pacific Bluestem and Marquis were the lowest yielding varieties.

Yields of spring wheat varieties grown in six dry-land nurseries in eastern Oregon, 1926

Variety	Yield (Bu. per acre)										Rank
	County and Town										
	C.I.	Sherman	Wasco	Morrow	Umatilla						
	No.	Moro	Kent	Wamic	Lex-	Eight-	Pendle-				
					ing-	Mile	ton	Ave.			
					ton						
Baart	:1697:	26.7:	8.0:	14.0:	15.7:	16.5:	27.7	: 18.1:			11
White Federation	:4981:	26.4:	11.3:	15.5:	19.5:	18.1:	29.6	: 20.1:			2
Hard Federation	:4733:	22.8:	11.6:	15.0:	17.4:	17.0:	31.5	: 19.2:			4
Federation	:4734:	22.9:	9.6:	14.4:	16.7:	20.2:	31.6	: 19.2:			3
Bunyip	:4166:	25.9:	5.6:	13.5:	19.7:	18.7:	27.7	: 18.5:			8
Onas	:6221:	28.0:	8.5:	16.2:	18.9:	19.0:	30.7	: 20.2:			1
Major	:4984:	22.9:	8.9:	14.9:	16.9:	16.4:	28.1	: 18.0:			12
Pacific Bluestem	:4067:	19.4:	6.2:	11.2:	12.8:	13.7:	27.7	: 15.2:			20
Marquis	:4158:	25.2:	5.3:	12.7:	14.3:	12.0:	25.2	: 15.8:			19
Baart x Federation 1728A97:		:19.3:	9.4:	17.4:	18.1:	17.9:	27.5	: 18.3:			9
Do 1728A105:		:22.0:	8.0:	15.6:	18.6:	16.5:	28.5	: 18.2:			10
Do 1728A106:		:20.7:	8.5:	16.9:	17.3:	16.8:	27.6	: 18.0:			12
Hard Federation	:4733:	21.3:	11.9:	16.8:	17.4:	16.8:	27.7	: 18.7:			4
Hard Federation Sel. 19	:	:22.4:	9.3:	18.4:	17.0:	16.2:	28.4	: 18.6:			6
Do 13	:	:20.9:	7.9:	15.8:	18.2:	18.5:	30.2	: 18.7:			5
Do 31	:	:21.9:	8.6:	13.7:	18.8:	19.0:	30.1	: 18.6:			7
Do 50	:	:21.0:	9.3:	12.8:	15.9:	16.6:	27.6	: 17.2:			17
Do 57	:	:22.4:	7.8:	14.4:	16.3:	15.9:	27.2	: 17.3:			16
Do 58	:	:22.9:	8.1:	14.4:	17.3:	16.6:	28.2	: 17.9:			13
Do 59	:	:21.6:	8.8:	12.8:	16.0:	13.7:	28.5	: 16.9:			18
Do 60	:	:23.9:	7.3:	15.4:	16.6:	18.1:	30.5	: 18.6:			6
Do 65	:	:22.2:	7.2:	15.3:	16.0:	14.8:	28.9	: 17.4:			15
Do 71	:	:23.8:	8.5:	13.9:	17.3:	17.4:	29.6	: 18.4:			8
Do 73	:	:23.9:	8.3:	15.8:	15.4:	14.7:	28.4	: 17.8:			14
Hard Federation	:4733:	24.2:	10.6:	15.8:	17.1:	17.6:	30.1	: 19.2:			4
Hard Federation Sel. 77	:	:25.2:	8.1:	12.8:	16.1:	18.2:	28.3	: 13.1:			11
Do 79	:	:26.0:	9.0:	14.6:	15.6:	17.8:	32.9	: 19.3:			3
Do 81	:	:26.3:	8.3:	14.5:	17.4:	16.2:	30.5	: 17.2:			17
Do 82	:	:21.4:	8.6:	15.5:	18.7:	16.7:	31.5	: 18.7:			5
Do 84	:	:23.5:	9.3:	15.4:	16.7:	14.4:	29.9	: 18.2:			10

CALIFORNIA

Biggs Rice Field Station, Biggs (Rice Agronomy, J. W. Jones) (September 20,

The Butte County Rice Day was observed on September 14. From 75 to 100 people were present and seemed well satisfied with the meeting and what they saw. The following speakers were on the program from 1:15 to 2:30 P.M.: C. W. Bloom, Rice Day Chairman; Frank Adams, State Rice Committee-Chairman of meeting; E. D. Merrill, Dean, College of Agriculture, University of California; E. L. Adams, President, California Rice Growers' Association; J. W. Jones, Associate Agronomist in charge of the Biggs Rice Field Station; H. E. Drobish, Butte County Agricultural Agent.

On September 17 the Annual Rice Day was held at Cortena and about 75 people were present. I talked at the Cortena meeting on our work at the Station, my trip to the Orient, and on the methods available for improving our rice varieties.

The weather in September was favorable for the ripening of rice, except that the nights have been too cool. We have most of our rice land drained on the station and will start to harvest about the first of October.

Many growers are now harvesting the early-maturing varieties, and draining the fields which were sown to Caloro and Early Wataribune. Indications are that the yields this season will be better than usual on most of the rice lands. Rice is filling well and is a little earlier than usual.

Some early rice has been threshed and sold at about \$3.75 per hundred.

Dr. W. H. Tisdale inspected the detention rice nursery at Shafter on September 10 and did not find any serious diseases present. In fact, he says the rice is very clean. One pseudo mold was observed on the ripe rice; it is present also at the station here this season.

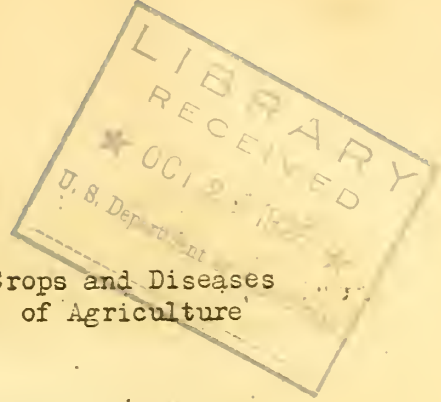
Leo A. Moak resigned on September 18 to continue his high school studies.

University Farm, Davis (Cereal Agronomy, V. H. Florell)

Agricultural Experiment Station, Berkeley (Cereal Smuts, F. N. Briggs)



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CEREAL COURIER

Official Messenger of the Office of Cereal Crops and Diseases
Bureau of Plant Industry, U. S. Department of Agriculture
(NOT FOR PUBLICATION)

Vol. 13

No. 26

October 20, 1926

Personnel (Oct. 11-20) and Field Station (Oct. 1-15) Issue

PERSONNEL ITEMS

The appointment of Irvine T. Deitrich, who was appointed September 1 to assist in the cereal experiments at the Northern Great Plains Field Station, Mandan, N. Dak., was terminated September 11, Mr. Deitrich having decided to return to college.

J. M. Hammerly, senior scientific aid in corn investigations, returned on October 15 from South Carolina where he had harvested the cooperative corn experiments on the Pee Dee experiment station farm near Florence. He reports that it was the finest crop ever grown by this Office at that place.

One of the finest cotton crops ever known in that section was grown this year, but prices are below the cost of production, which is very discouraging to the farmers of the cotton-growing section. At the time Mr. Hammerly was harvesting corn J. H. Beattie and A. M. Jackson, of the Office of Horticulture, were gathering one of the finest crops of peanuts ever grown on the Pee Dee experiment farm. The weather had been very dry for the past two months.

J. R. Holbert, agronomist in charge of corn root, stalk, and ear rots in cooperation with Funk Bros. Seed Company at Bloomington, Ill., wrote on October 11: "I am very glad to tell you that we succeeded in getting all of our 12,000 pollinations in the curing racks last Saturday noon. The majority of these were harvested in the rain and mud. I am sure that you are sufficiently well acquainted with Illinois soils to have a vivid imagination of the condition of our corn fields during the last two weeks. I appreciate the loyalty of Mr. Frye, Mr. Dodge and Mr. Reddy in working with me under such unfavorable weather conditions. If we had waited for favorable weather I believe that we would have lost approximately 75 per cent of our material.

"Dr. Dickson and Professor Jones visited us on one of the worst days. Professor Jones can tell you about his visit when he comes to Washington the latter part of this month. Personally, I want to say that it was a **great** inspiration to me to have a man of his age and ability stay out a whole day in a down-pouring rain to study the experimental work."

Dr. F. E. Kempton, associate pathologist in charge of barberry eradication, returned on October 16 from a tour of supervision and inspection of the barberry-eradication field activities.

Dr. C. E. Leighty, agronomist in charge of eastern wheat investigations, left Washington October 20 to seed the experimental wheat nursery at Swannanoa and Marshall, N. C., and to confer with cooperators in these experiments.

Dr. W. H. Tisdale, pathologist in charge of cereal-smut investigations, will resign his position about December 15 to take up research work in the fungicide and insecticide department of the Dupont, de Nemours Company, Wilmington, Del.

Dr. E. R. Ranker, associate physiologist in cereal smut investigations, was authorized to present a paper entitled "A Modification of the Official Salicylic-Thiosulphate Method for the Determination of Total Nitrogen in Plants, Plant Solutions, and Soil Extracts. Some Inaccuracies of the Devarda Method when Applied to Biological Materials," before the Convention of the Association of Official Agricultural Chemists, to be held in Washington October 18 to 21.

MANUSCRIPTS AND PUBLICATIONS

The article entitled "The Export Trade in California Barley," by Harry V. Harlan and Merritt N. Pope, appears in The Brewing Trade Review 40 (No. 485): 353-355. October 1, 1926. [London]

The article entitled "Registration of Standard Wheat Varieties," by J. Allen Clark, H. H. Love and E. F. Gaines, appears in the Journal of the American Society of Agronomy 18 (No. 10): 920-922. October, 1926.*

*Attention is called to the following typographical errors in the columns headed Registration No. on pages 920 and 921. On page 920 Fultz should be 48 instead of 8; on page 921 Wisconsin Pedigree No. 2 should be 148; Kanred, 149; Beloglina, 150; Bacska, 151; Preston, 152; Kota, 153; Pioneer, 154; and Goens, 172.

(The authors are members of the 1924 Subcommittee for the Registration of Wheat Varieties under the cooperative agreement between the American Society of Agronomy and the Bureau of Plant Industry.)

The article entitled "Registration of Improved Wheat Varieties," by J. Allen Clark, H. H. Love and J. H. Parker, appears in the Journal of the American Society of Agronomy 18 (No. 10): 922-935. October, 1926. (The authors are members of the 1925-1926 Subcommittee for the Registration of Wheat Varieties under the cooperative agreement between the American Society of Agronomy and the Bureau of Plant Industry.)

The article entitled "Registration of Varieties and Strains of Oats," by T. R. Stanton, Fred Griffie and W. C. Etheridge, appears in the Journal of the American Society of Agronomy 18 (No. 10): 935-947. October, 1926. (The authors are members of the 1926 Subcommittee for the Registration of Oat Varieties under the cooperative agreement between the American Society of Agronomy and the Bureau of Plant Industry.)

The article entitled "Registration of Barley Varieties," by H. V. Harlan, E. F. Gaines and R. G. Wiggins, appears in the Journal of the American Society of Agronomy 18 (No. 10): 947-948. October, 1926. (The authors are members of the 1925-1926 Subcommittee for the Registration of Barley Varieties.)

65 A manuscript entitled "A Cytological Study of Orange Leaf Rust, Puccinia triticina Physiologic Form 11, on Malakoff Wheat," by Ruth F. Allen, was submitted October 20 for publication in the Journal of Agricultural Research.

FIELD STATION CONDITION AND PROGRESS

HUMID ATLANTIC COAST STATES (South to North)

GEORGIA

State College of Agriculture, Athens (Cereal Agronomy, R. R. Childs)

VIRGINIA

Arlington Experiment Farm, Rosslyn (Small Grain Agronomy, J. W. Taylor)Arlington Experiment Farm, Rosslyn (Corn Breeding, F. D. Richey)Arlington Experiment Farm, Rosslyn (Cereal Smuts, W. H. Tisdale)Arlington Experiment Farm, Rosslyn (Virus Diseases, H. H. McKinney)Arlington Experiment Farm, Rosslyn (Cereal Bacterial Diseases, C. S. Reddy)

NEW YORK

Cornell University Agricultural Experiment Station, Ithaca (Cereal Breeding, H. H. Love)

HUMID MISSISSIPPI VALLEY STATES (South to North)

LOUISIANA

Rice Experiment Station, Crowley (Rice Agronomy, J. M. Jenkins)Agricultural Experiment Station, Baton Rouge (Corn Breeding, H. F. Stoneberg)

MISSOURI

Agricultural Experiment Station, Columbia (Cereal Agronomy, L. J. Stadler)

TENNESSEE

Agricultural Experiment Station, Knoxville (Cereal Breeding, L. S. Mayer)

IOWA

Agricultural Experiment Station, Ames (Oat Breeding, L. C. Burnett)

Agricultural Experiment Station, Ames (Corn Breeding, M. T. Jenkins)

Agricultural Experiment Station, Ames (Crown Rust of Oats, S. M. Dietz)

Iowa State College, Ames (Barberry Eradication, M. A. Smith)

ILLINOIS

Funk Bros. Seed Co., Bloomington (Corn Root, Stalk and Ear Rots, J. R. Holbert)

Box 72, Post Office Building, Urbana (Barberry Eradication, G. C. Curran)

INDIANA

Purdue University Agricultural Experiment Station, La Fayette (Corn Rots and Metallic Poisoning, G. N. Hoffer)

Purdue University Agricultural Experiment Station, La Fayette (Leaf Ruts, E. B. Mains)

Purdue University College of Agriculture, La Fayette (Barberry Eradication, W. E. Leer)

OHIO

Ohio State University, College of Agriculture, Columbus (Barberry Eradication, J. W. Baringer)

MICHIGAN

Agricultural College, East Lansing (Barberry Eradication, W. F. Reddy)

WISCONSIN

Agricultural Experiment Station, Madison (Wheat Scab, J. G. Dickson)

Department of Agriculture, State Capitol Annex, Madison (Barberry Eradication, W. A. Walker)

MINNESOTA

Agricultural Experiment Station, University Farm, St. Paul (Wheat Breeding, O. S. Aamodt)

Agricultural Experiment Station, University Farm, St. Paul (Stem Rust, E. C. Stakman)

Agricultural Experiment Station, University Farm, St. Paul (Flax Rust, C. V. Kightlinger)

Agricultural Experiment Station, University Farm, St. Paul (Barberry Eradication, L. W. Melander)

GREAT PLAINS AREA (South to North)

OKLAHOMA

Woodward Field Station, Woodward (Grain Sorghums, J. B. Sieglinger)
(October 15)

The weather of the first half of October was damp and cloudy. The broom-corn plats are harvested. The sorghum varietal plats have been headed and bound with the exception of Shallu, Schrock sorghum, and Bishop kafir which are not fully ripe.

J. H. Martin and B. E. Rothgeb arrived from Liberal, Kans., on October 9 to inspect the grain sorghums in the interest of grain-sorghum harvesting and storage project.

A winter barley nursery was seeded October 14.

Minimum temperature for the first two weeks in October, 46 degrees on the 5th; maximum, 88 degrees on the 1st; precipitation, 6.09 inches.

KANSAS

Agricultural Experiment Station, Manhattan (Cereal Breeding, J. H. Parker)
(October 11)

The writer returned to Manhattan on September 29 at the close of a leave of absence of a little more than a year, having been a research student under Prof. Sir Rowland Biffen at Cambridge, England. He also visited other plant breeders and plant breeding stations in England, Wales and on the continent.

Donald D. Hill, who has been acting in charge of cooperative crop improvement at the Kansas State Agricultural College, has accepted a position as instructor in agronomy and assistant agronomist at the Oregon Agricultural College and Experiment Station. This appointment will be made effective about February 1, 1927, at which time Mr. Hill expects to have completed the requirements for a master's degree at the Kansas State Agricultural College. At Corvallis, Mr. Hill will have the position formerly held by C. C. Ruth.

O. T. Bonnett, who has been engaged in County Agent and Smith-Hughes agricultural high school work, is now enrolled as a graduate student in agronomy and is making a study of barley selections adapted to western Kansas conditions.

Winter Wheat Experiments at Manhattan

The rod row plantings in the winter-wheat nursery were made on September 23, 24, and 25. Head rows and space plantings of Kanred x Nebraska No. 28 and other hybrid material were completed on October 7. A special late-spaced seeding of certain varieties, selections and crosses for winter-hardiness trial will be made later this month. Professor Salmon finished the seeding of the winter-wheat variety plats at the Agronomy Farm on September 25. Good stands have been obtained in both nursery and farm plats.

The new greenhouses on the experiment station are nearing completion. They comprise two units of 29 x 100 feet each. One unit will be used by the department of botany and plant pathology and one unit by the agronomy department. In this house emphasis will be placed on experiments with small grains and especially on winter hardiness in wheat. Professor Salmon is supervising the installation of a refrigeration plant which will provide for the determination of cold resistance of winter-wheat varieties and hybrids under controlled conditions. Mr. Hill's thesis will be in this field and it is expected that in the future, the winter-wheat breeding program can be speeded up considerably through the use of this new equipment in determining winter hardiness of varieties, selections and crosses.

Weather and Crop Conditions in Kansas

The month of September was the wettest September on record in the eastern third of Kansas and one of the driest in the western third. The long hot spell with temperatures of 100 degrees or higher in many places was abruptly terminated on the 23rd by a cold wave that brought killing frosts to the northwestern counties on the 25th and a reading of 18 degrees at Atwood and St. Francis in the northwestern part of the State. This killing frost extended as far east as Washington County along the Nebraska line and south to Grant County in the western third. There were heavy rains, culminating in great downpours, from the 11th to the 15th which produced the highest floods on record in the Neosho valley and which brought the Kansas River and its tributaries to stages which were nearly bank full.

Wheat seeding made excellent headway and was almost finished in the western half by the close of the month, but was delayed by wet fields in the eastern part of the State. Stands of the new crop were good except in some western counties, where it suffered on account of drought.

Excessively heavy rains, totaling 3 to 6 inches fell over the eastern third of Kansas and the south-central counties in the first week of October. The western third of the State remains dry, except for light scattered showers. There was a general lack of sufficient sunshine in the eastern part of the State. Farm work in this territory was practically suspended on account of water-soaked fields. In some eastern counties wheat sowing has only started, in others it is half to three-fourths finished. Cheyenne County reports wheat drying so badly that some fields are being reseeded.

Weather Conditions at Manhattan, Kans.

The rainfall at Manhattan in September, 1926, amounted to 7.55 inches, or more than twice the average precipitation of 3.30 inches. The heaviest rainfall occurred on September 12, when 3.47 inches fell. Measurable rain fell on 10 days. The highest temperature was 100 degrees on September 2, the lowest 35 degrees on September 26. Sunshine was deficient, there being only six clear days. There were seven cloudy days and 17 partly cloudy days. On the 25th, light frost was noticed in the low grounds but no particular damage was reported.

Agricultural Experiment Station, Manhattan (Corn Breeding, A. M. Brunson)

Agricultural Experiment Station, Manhattan (Wheat Foot Rots, Hurley Fellow)

Agricultural Experiment Station, Manhattan (Wheat Leaf Rust, C. O. Johnston)

Hays Branch Experiment Station, Hays (Cereal Agronomy, A. F. Swanson)

COLORADO

Agricultural College, Ft. Collins (Barberry Eradication, E. A. Lungren)

NEBRASKA

North Platte Substation, North Platte (Cereal Agronomy, G. F. Sprague)

College of Agriculture, University Farm, Lincoln (Barberry Eradication, A. F. Thiel)

WYOMING

College of Agriculture, University of Wyoming, Laramie (Barberry Eradication, E. A. Lungren)

SOUTH DAKOTA

College of Agriculture, Brookings (Barberry Eradication, R. O. Bulger)

NORTH DAKOTA

Agricultural Experiment Station, Agricultural College (Flax Diseases, L. W. Boyle)

Agricultural Experiment Station, Agricultural College (Barberry Eradication, G. C. Mayoue)

Dickinson Substation, Dickinson (Cereal Agronomy, R. W. Smith) (October 16)

In the past week the weather has been comparatively mild, in contrast to the cold weather prevailing the latter part of September. The low temperature of 12 degrees reached on September 25 caused partial freezing of the potato crop remaining in the ground.

Field work on the cereal project is practically completed for this season with the exception of weighing the stover in the corn varieties after it has become air dry.

Yields and other agronomic data from the various cereal experiments are being assembled. The results obtained from testing 46 spring-wheat varieties in a portion of the smut nursery are given in the following table. The seed of each variety was inoculated with bunt and sown on May 10, immediately after the first rain of importance in the spring. With some varieties the number of plants studied was small and further test with all the varieties will be needed for conclusive results. The results obtained will give some idea, however, of the reaction of the different varieties to bunt.

The highest percentage of bunt observed was 84 per cent obtained from one of the Ulka selections, not shown in the table.

Several hundred rows were sown to hybrids of Kota x Marquis, Kota x Quality, and Marquis x Quality. The bunt data obtained from them are not yet assembled. The results indicate that in the hybrids studied resistance appears to be dominant, the percentages obtained approaching that of the resistant parent more nearly than that of the susceptible parents.

Percentages of bunt obtained from counts of individual heads of 46 spring-wheat varieties grown from inoculated seed at the Dickinson Substation, Dickinson, N. Dak., in 1926

<u>Variety</u>	<u>No. heads bunted</u>	<u>Total heads counted</u>	<u>Bunt (Per cent)</u>
Mondak	0	107	0
K-99	0	79	0
Kubanka, C. I. 1440	0	103	0
Akrona	0	72	0
Pentad	0	135	0
Kahla	0	32	0
Nohola	0	49	0
Florence	0	232	0
Turkey x Florence	0	183	0
Garnet	0	74	0
Reward	0	44	0
Haynes Bluestem	1	149	0.7
Mindum	1	125	0.8
Marquis x Kota (1656.81)	2	218	0.9
Ruby	1	115	0.9
Larcombe No. 3	1	113	0.9
Quality (check rows)	13	1025	1.26
Marquis-Kota (1656.84)	3	233	1.3
Marquis x Pioneer	3	232	1.3
Red Fife	6	231	2.6
Marquis x Monad	5	178	2.8
Marquis (check rows)	198	5200	3.81
Marquis-Kota (1656.47)	9	193	4.7
Preston	7	137	5.1
Monad	9	166	5.4
Marquillo	15	269	5.6
Marquis-Kota (1656.83)	9	132	6.8
Power Fife	17	249	6.8
D-46	6	79	7.6
Marquis-Kanred B9-11	19	240	7.9
Marquis-Kota (1656.97)	23	278	8.3
Nodak	7	76	9.2
Kota-Kanred 12-4	32	310	10.3
Marquis-Kanred B9-14	25	227	11.0
Marquis-Kota 1656	23	206	11.2
Reliance	19	158	12.0
Webster	41	308	13.3
Hard Federation	44	277	15.9
Marquis-Kota (1656.10)	38	234	16.2
Cedar	43	235	18.3
Red Bobs	47	247	19.0
N. D. R. 74	37	190	19.5
Progress	59	291	20.3
Kota (check rows)	884	4273	20.7
Ceres	43	195	22.1
Ulka	99	298	33.2

Yields of spring-wheat varieties grown in 3 rod-row blocks replicated three times at the Dickinson Substation, Dickinson, N. Dak., in 1926

<u>Variety</u>	<u>Hybrid No.</u>	<u>C. I. No.</u>	<u>Yield (Bu. per Acre)</u>
Ceres	1658	6900	31.4
Marquis x Kanred	1718B 5-10	----	31.1
Reliance	1718B 8-11	7370	30.7
Kota Natural Hybrid		7377	29.7
Marquis x Kanred	1718B 9-11	7371	29.4
Do	1718B 9-14	7372	29.3
Kota x Kanred	12-4	----	29.2
Marquis x Kanred	II 18-44	8019	28.3*
Do	II 17-40	8018	28.2
Marquis x Kota	II 19-9	8008	28.1
Do	II 19-11	8009	27.0
Marquis x Kota	1656.84	8004	26.6
Larcombe No. 3			26.3
Kota		5878	25.8
Kota x Hard Federation	8A1-16-4-3	8197	24.4
Kota x Ruby	II 19-29	8014	24.1
Marquis x Kota	1656.97	8005	22.4
Do	1656.81	8185	22.3
Marquis		3641	21.3
Marquis x Kota	1656.47	8183	21.1
Marquis x Kanred	II 18-8	7374	21.1
Marquis x Kota	1656.10		19.8
Do	1656.83	8186	19.7
Do	1656	6898	19.6*
Kota x Hard Federation	8A1-16-5-3		19.4
Marquis x Kota	1656.79	8184	18.9

*Yield not entirely comparable, seed of one replication being partly lost and yield obtained from other two replications.

Yields of flax varieties grown in replicated plats at the Dickinson Substation, Dickinson, N. Dak., in 1926

<u>Variety</u>	<u>C. I. No.</u>	<u>Yield (Bu. per Acre)</u>
Long 79 (Argentine Sel.)	280	3.4
Winona	179	3.3
Redwing	320	3.2
Chippewa	178	3.1
Reserve	19	3.0
Linota	244	2.8
N. D. R. 52	8	2.5
Stark	185	2.4
Slope	274	2.4
N. D. R. 114	13	2.4
N. D. R. 119	326	2.3
N. D. 40013	241	1.8

Northern Great Plains Field Station, Mandan (Flax Breeding, J. C. Brinsmade, Jr.)

Northern Great Plains Field Station, Mandan (Cereal Agronomy, E. R. Ausemus)

MONTANA

Judith Basin Substation, Moccasin (Cereal Agronomy, R. W. May) (Oct. 17)

All the field operations under the cereal project were recently completed. Francis Arnett, who was employed as field assistant by the Office of Cereal Crops and Diseases for the past few months, completed his work and returned to college on October 15.

The yields obtained this year from varieties of winter wheat, spring wheat, oats, barley, and flax are shown in the following tables. As a rule the yields were considerably above average. Yields from the other experiments will be reported later.

Yields of winter-wheat varieties grown in quadruplicate and duplicate plats at the Judith Basin Substation, Moccasin, Mont., in 1926.

<u>Variety</u>	<u>C. I. No.</u>	<u>Yield (Bu. per acre)</u>
(Four Plats)		
Newturk	6935	32.2
Turkey (Nebraska No. 6)	6249	31.5
Beloglina	1543	30.7
Turkey	1558	29.9
Kharkof	1583	29.1
Karmont	6700	29.0
Kharkof (Hays No. 2)	6686	28.9
Kharkof (Montana No. 36)	5549	28.3
Kanred	5146	28.1
Minturki	6155	26.9
(Two Plats)		
Newturk	6935	39.0
Kharkof x Newturk 163E1-3	----	36.3
Minard	6690	34.0
Kharkof (awnless selection)	1442-343	33.6
Beloglina	1667	33.1
Turkey (Nebraska No. 60)	6250	32.7
Turkey (parent of Newturk)	----	32.7
Kanred x Marquis (bulked)	----	32.5

Yields of spring-wheat varieties grown in replicate plats at the Judith Basin Substation, Moccasin, Mont., in 1926

<u>Variety</u>	<u>C. I. No.</u>	<u>Yield</u> (Bu. per Acre)
(Common)		
Kanred x Marquis 1718B9-14	7372	34.1
Reliance	7370	32.6
Kanred x Marquis 1718B5-14	----	32.0
Baart	1697	31.3
Federation	4734	31.6
Kanred x Marquis 1718B9-11	7371	31.5
Ceres	6900	30.7
(Unnamed)	3774	30.7
Marquis	3641	30.0
Red Bobs	6255	30.0
Supreme	8026	29.7
Marquillo	6887	29.1
Hard Federation	4733	27.8
Garnet	----	27.3
Quality	6607	27.2
Ladoga	6679	26.6
Kitchener	4800	25.9
Kanred x Marquis (bulked) ^{a/}	----	25.7
Ruby	6047	25.4
Kanred x Marquis 1718B2-14 ^{a/}	----	24.2
Power	3697	23.7
Hard Federation x Marquis (bulked) ^{a/}	----	22.3
Kota	6248	21.9
(Durum)		
Mondak	7287	30.0
Nodak	6519	29.3
Peliss	1584	28.4
Kubanka	1440	28.4
Peliss Sel. ^{a/}	1584-14	27.7
Peliss Sel. ^{a/}	1584-91	26.1
Akrona	6881	25.3

^{a/} Duplicated plats

Yields of oat varieties grown in replicated plats at the Judith Basin Substation, Moccasin, Mont., in 1926

<u>Variety</u>	<u>C. I. No.</u>	<u>Yield</u> (Bu. per acre)
Alexander	1592	69.7
Banner	751	66.8
Markton	2053	65.2
Lincoln	733	65.2
Iogren	2024	63.5
Silvermine	714	62.3
Swedish Select	134	62.1
Victory	742	60.2
Richland	787	57.6
Sixty-Day	165-4P4	57.2

Continued

<u>Variety</u>	<u>C. I. No.</u>	<u>Yield</u> (Bu. per acre)
Sixty-Day	165	56.4
Wisconsin Wonder ^{a/}	1152	52.0
Liberty Hull-less	845	40.2

^{a/} Duplicated plats

Yields of barley varieties grown in replicated plats at the Judith Basin Substation, Moccasin, Mont., in 1926

<u>Variety</u>	<u>C. I. No.</u>	<u>Yield</u> (Bu. per acre)
Horn	926	58.6
Hannchen	531	52.1
Mechanical Mixture ^{a/}	4115	50.5
Meloy	1176	50.4
Composite Cross ^{a/}	4116	50.0
Alpha	959	49.6
Svanhals	187	48.9
Coast	690	44.8
Faust ^{a/}	---	44.8
Hurst	1304	44.7
Hero	1286	43.6
Club Mariout	261	40.6
White Smyrna	195	40.5
Manchur ^{a/}	354	38.8
Himalaya	620	38.0

^{a/} Duplicated plats

Yields of flax varieties grown in replicated plats at the Judith Basin Substation, Moccasin, Mont., in 1926

<u>Variety</u>	<u>C. I. No.</u>	<u>Yield</u> (Bu. per acre)
Reserve	19	12.2
Newland	188	12.1
Stark	185	11.9
Winona	179	11.7
Linota	244	11.0
Long No. 79 (Argentine Sel.)	280	10.7
N. D. R. No. 114	13	9.6
Slope	274	9.2
N. D. R. No. 52	275	8.7
N. D. F. 40013	241	8.3
Chippewa	178	8.0

State College of Agriculture, Bozeman (Barberry Eradication, W. L. Popham)

WESTERN BASIN AND COAST AREAS (North to West and South)

IDAHO

Aberdeen Substation, Aberdeen (Cereal Agronomy, G. A. Wiebe)

Agricultural Experiment Station, Moscow (Stripe Rust, C. W. Hungerford)

WASHINGTON

Agricultural Experiment Station, Pullman (Cereal Breeding, E. F. Gaines)

OREGON

Sherman County Branch Station, Moro (Cereal Agronomy, D. E. Stephens)

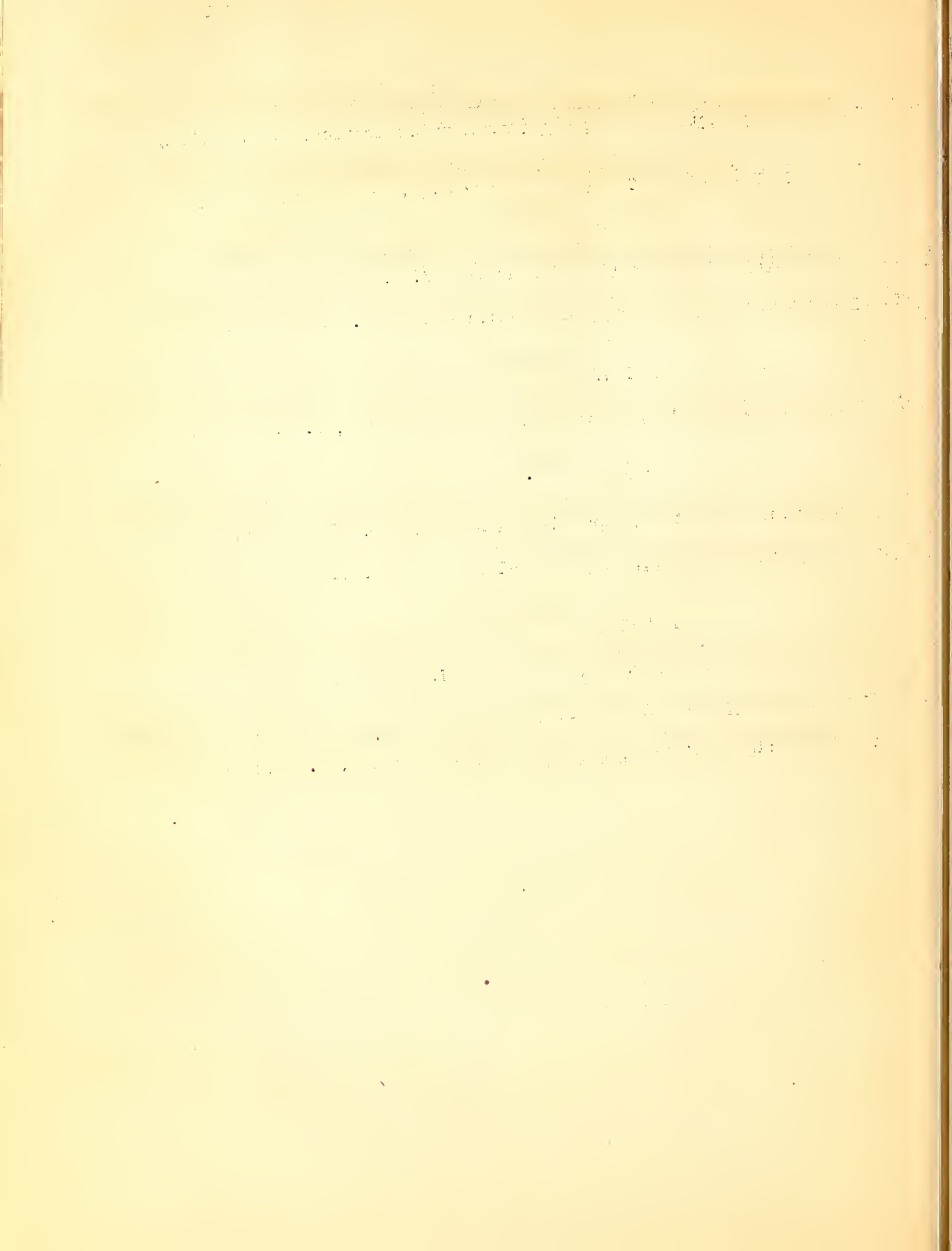
Sherman County Branch Station, Moro (Cereal Breeding, B. B. Bayles)

CALIFORNIA

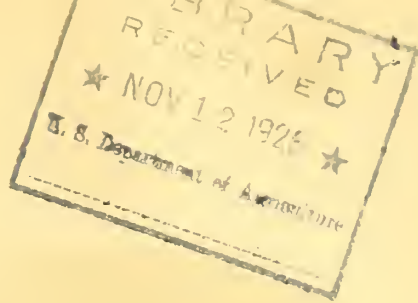
Biggs Rice Field Station, Biggs (Rice Agronomy, J. W. Jones)

University Farm, Davis (Cereal Agronomy, V. H. Florell)

Agricultural Experiment Station, Berkeley (Cereal Smuts, F. N. Briggs)



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C E R E A L C O U R I E R

Official Messenger of the Office of Cereal Crops and Diseases
Bureau of Plant Industry, U. S. Department of Agriculture
(NOT FOR PUBLICATION)

Vol. 18

No. 27

October 31, 1926
Personnel (Oct. 21-31) and Project Issue

P E R S O N N E L I T E M S

Charles E. Chambliss, associate agronomist in charge of rice investigations, returned on October 22 from an extended trip in the South and the Middle West in the interests of rice investigations. Most of the time was spent at the Rice Experiment Station, Crowley, La., in study and observations of the rices in the experiment plats.

Two hundred acres of rice on the farm of Mr. Joy Morton, five miles east of Lewistown, Ill., on the Illinois River bottom lands, looked very promising. Mr. Morton, the oldest son of former Secretary of Agriculture, J. Sterling Morton, is interested in this venture purely from philanthropic motives in order to determine whether or not rice is suited for Illinois River bottom lands.

Mr. Chambliss spent four days at Elsberry, Mo., 67 miles north of St. Louis, which now may be called the center of rice production in Missouri. Last year's acreage in this locality was 2,500; this year, 9,000 acres were seeded to rice. In all probability, if present plans do not miscarry, there will be between 18,000 and 20,000 acres in 1927. Missouri rice farmers received good prices for their rice last year, and it is expected that they will do as well this year. The crop looked very promising at the time of Mr. Chambliss' visit.

Kenneth D. Doak was appointed agent, effective November 1, to assist Dr. E. B. Mains, in the absence of Dr. H. S. Jackson, in the investigation of leaf rusts of wheat, barley, rye, and corn, conducted in cooperation with the Purdue University Agricultural Experiment Station, at La Fayette, Ind.

Dr. E. B. Mains, agent in cooperative leaf-rust investigations at the Purdue University Agricultural Experiment Station, La Fayette, Ind., wrote on October 15 as follows: "We have just finished seeding a wheat nursery consisting of 32,000 rod rows, and, as you can readily see, this will keep us very busy next summer. We are obtaining some very good results from this work. I sent in a report to Dr. Leighty in regard to the rust behavior and the yield of a number of the selections. One selection in particular gave an average yield of about 48 bushels last year and appears to be of very good quality as well as rust resistant."

MANUSCRIPTS AND PUBLICATIONS

The article entitled "How to Obtain a Larger Yield and a Better Quality of Rice," by Chas. E. Chambliss, appears in The Rice Journal 29: 11-13. October, 1926.

The article entitled "New Barleys in California," by H. V. Harlan and Victor Florell, appears in the Pacific Rural Press 112 (No. 16): 413. October 16, 1926.

TRANSLATIONS

Miura, Shikutaro. On the Grain of Barley or Wheat, Infected by Smut Fungus Through the Flower. Ann. Phytopath. Soc. Japan 1: 16-26. 1918. (Translated by M. Yoshikawa, Office of Crop Physiology and Breeding, B.F.I., 1926.)

Nacumov, N. A. Novelties of the Local Mycoflora. Mikologiya [Mycology], Leningrad, I, 16 pp., 1 pl., 15 figs. 1926. (Pages 2-5 translated from the Russian; copy presented by Dr. E. J. Butler, Kew, England.)

Voronikhin, N. N. Phaeostagonosporopsis zeae (Schw.) Woronich., a New Parasite of Maize in Transcaucasia. La Défense des Plantes, Leningrad, II, 6, pp., 331-334. 1925. (Translated from the Russian and copy presented by Dr. E. J. Butler, Kew, England.)

The foregoing list supplements the lists published in earlier numbers of the Cereal Courier, as follows:

- V. 13: 12-15, 52, 69 and 225-226. 1921
- 14: 38, 39 and 99-100. 1922
- 15: 11-13 and 46-47. 1923
- 16: 16-18 and 127. 1924
- 17: 62-63 and 326-327. 1925
- 18: 4-5. 1926.

Copies of these translations may be found in the Library of the Bureau of Plant Industry, West Wing.

PROJECT REPORTS

Rust Investigations

(Dr. H. B. Humphrey, Senior Pathologist in Charge)

Preliminary Report on Locations of Buckthorn (Rhamnus cathartica) in the
Upper Mississippi Valley States in 1926

By S. M. Dietz, Associate Pathologist, and
L. D. Leach, Agent, in Crown Rust Inves-
tigations.

The State leaders of barberry eradication and their field assistants were responsible for the volume of data accumulated on new locations of buckthorn (Rhamnus cathartica) in 1926. The great increase in the number of reported locations in 1926 in comparison to those in the years 1923-1925, inclusive, probably is the result of the increased ability of the field assistants to recognize this shrub.

The following table shows the number of locations and bushes in ten upper Mississippi Valley States in 1926, with a summary for 1923 to 1925, inclusive.

New locations of Rhamnus cathartica reported in 1926

State	: <u>Number of locations</u>			: <u>Number of</u>		: <u>Length of hedge in</u>
	: <u>City</u>	: <u>Country</u>	: <u>Total</u>	: <u>bushes counted</u>	: <u>feet; bushes not counted</u>	
Illinois	: 14	: 47	: 61	: 70,501	: -----	
Indiana	: --	: 1	: 1	: 1	: -----	
Iowa	: 69	: 27	: 96	: 4,155	: 10,505	
Minnesota	: 24	: 78	: 102	: 15,138	: 1,510	
Montana	: 3	: 0	: 3	: 173	: -----	
Nebraska	: 3	: 3	: 6	: 705	: -----	
North Dakota	: 46	: 31	: 77	: 7,337	: -----	
Ohio	: 0	: 1	: 1	: 500	: -----	
South Dakota	: 12	: 46	: 58	: 7,353	: 100	
Wisconsin	: 1	: 2	: 3	: 1,037	: -----	
	: :	: :	: :	: :	: :	
Total 1926	: 172	: 236	: 408	: 107,000	: 12,115	
Total 1925	: 138	: 95	: 233	: 37,243	: 5,350	
Total 1924	: 122	: 113	: 235	: 3,961	: 11,337	
Total 1923	: 617	: 169	: 786	: 34,030	: 32,503	
	: :	: :	: :	: :	: :	
Grand Total	: 1,099	: 613	: 1,712	: 237,234	: 61,390	
	: :	: :	: :	: :	: :	

WESTERN WHEAT INVESTIGATIONS

(J. Allen Clark, Agronomist in Charge, and K. S. Quisenberry,
Associate Agronomist)

For 12 years milling and baking tests have been made on samples of wheat varieties grown in the replicated plot experiments at independent and cooperating field stations of the Office. These tests have been made possible through cooperation with the Milling Investigations Section and Research Laboratory of the Grain Division, Bureau of Agricultural Economics. These tests are to be continued.

It has been felt for several years that some quality test should be made on the large number of hybrids, selections, and introductions grown in nursery experiments. Because of the quantity of seed required and the expense of conducting large numbers of milling and baking tests, it has not appeared practicable to run complete milling and baking tests on nursery material. It has seemed desirable, therefore, to select a single quality factor for testing the nursery material and to wait until new strains are increased and included in the plot experiments before milling and baking tests are applied. Of the factors used to determine the milling and baking value of wheats, the crude protein content is probably the most reliable. It also is more important commercially than any other single factor, as premiums are paid for high protein wheat. Crude protein content, therefore, has been selected as a quality factor to be determined on new strains being tested in large numbers in nurseries. These tests have been started on samples from several stations and were made possible through cooperation with the Nitrogen Laboratory, Bureau of Chemistry. H. Millard Joslin has been appointed junior analytical chemist to assist in these cooperative investigations.

The results which are now becoming available make it possible to advance or discard material from the nurseries on the basis of yield, crude protein content, and on the pounds of crude protein per acre.

The results are here illustrated by material from the 1925 winter-wheat nursery at Moccasin, Mont., and from the 1926 spring-wheat nursery at Mandan, N. Dak.

Yield, crude-protein content, and pounds of protein per acre obtained from the 12 leading hybrids and 5 parent varieties grown in the winter-hardiness breeding nursery at Moccasin, Mont., in 1925

Variety or cross	:C. I.:		:Yld.per: Crude		:Protein
	: No. :	Hybrid No. :	acre ^{1/} :	protein ^{2/} :	
			: Bu.	: Per cent:	: Pounds
Turkey (6152) x Minessa	:	:1950A9-11-8	: 37.3 :	16.6 :	371
Kanred x Minhardi	:	8040:20102G3-87-2	: 37.1 :	14.5 :	323
Kanred x Minessa	:	8045:19103B3-9-3	: 33.9 :	15.6 :	317
Padui x Bel.-Buff (5545)	:	:19130A11-12-10	: 33.6 :	15.6 :	314
Do	:	:19130D12-8-4	: 30.6 :	16.5 :	303
Kanred x Odessa (6151)	:	:19105A3-13-6	: 31.1 :	15.4 :	287
Kanred x Bel.-Buff (5545)	:	:19107A1-14-4	: 32.1 :	14.9 :	287
Turkey (1558) x Odessa (5580)	:	:7415-9-12	: 30.1 :	15.9 :	287
Kanred x Minturki	:	:1910406-14-3-18	: 30.5 :	15.6 :	286
Do	:	:1910406-14-8-9	: 29.1 :	16.2 :	283
Kanred x Odessa (6151)	:	:19105A3-13-3	: 30.6 :	15.3 :	281
Bel.-Buff(5545) x Odessa(5580)	:	:19133B11-16-1	: 26.1 :	17.6 :	275
Minhardi	:	5149:	: 26.9 :	16.3 :	263
Turkey	:	6152:	: 22.5 :	16.0 :	216
Odessa	:	6151:	: 22.4 :	15.4 :	207
Minturki	:	6155:	: 21.6 :	15.7 :	203
Kanred	:	5146:	: 15.7 :	14.5 :	137
	:	:	:	:	:

^{1/}Average of 3 rows

^{2/}Single determination on bulked sample

Yield, crude-protein content, and pounds of protein per acre obtained from the 12 leading hybrid productions and 5 varieties grown at the Northern Great Plains Field Station, Mandan, N. Dak., in 1926

Variety or cross	:C. I.:		:Yld.per: Crude		:Protein
	: No. :	Hybrid No. :	acre	:protein	
			: Bu.	: Per cent:	: Pounds
Kanred x Marquis	:	:1718B8-11-22	: 23.9 :	13.6 :	195
Do	:	8191: II-18-48	: 19.6 :	16.3 :	192
Do	:	:1718B8-11-7	: 22.7 :	13.9 :	189
Reliance	:	7370:1718B8-11	: 21.1 :	14.9 :	189
Kanred x Marquis	:	8019: II-18-44	: 18.7 :	16.3 :	183
Do	:	:1718B8-11-63	: 19.9 :	15.0 :	179
Do	:	:1718B8-11-29	: 21.2 :	13.8 :	176
Do	:	:1718B9-11-48	: 18.4 :	15.7 :	173
Marquis x Kota	:	8004:1656.84	: 21.1 :	13.6 :	172
Do	:	8188:1656.169	: 19.3 :	14.5 :	168
Marquis x Erivan	:	:1733A6-14-2	: 16.3 :	17.0 :	166
Kanred x Marquis	:	7371:1718B9-11	: 18.4 :	14.9 :	164
Marquillo	:	6837: II-15-44	: 17.5 :	15.5 :	163
Kanred x Marquis	:	8018: II-17-40	: 17.2 :	15.7 :	162
Kota	:	5878:	: 15.5 :	17.0 :	158
Ceres	:	6900:	: 15.9 :	15.8 :	151
Marquis	:	3641:	: 14.9 :	15.2 :	136
	:	:	:	:	:

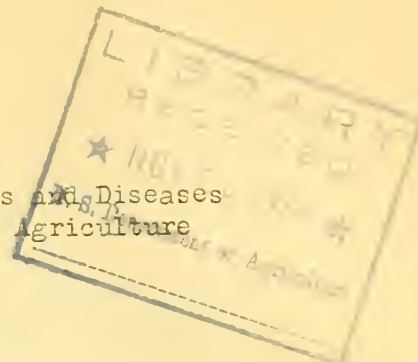
The varieties were grown in 3 rod-row blocks replicated 3 times. The yields were determined from the average of the 3 center rows. Protein tests were made from a sample of each center row, and the results are the averages. The protein per acre is computed by multiplying the yield per acre in bushels by the percentage of crude protein content and multiplying the product by 60, the standard bushel weight.

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CEREAL COURIER

Official Messenger of the Office of Cereal Crops and Diseases
Bureau of Plant Industry, U. S. Department of Agriculture
(NOT FOR PUBLICATION)



Vol. 13

No. 28

November 10, 1926
Personnel (Nov. 1-10) and Field Station (Oct. 16-31) Issue

NOTICE

Beginning with the December issue, the Cereal Courier will appear semi-monthly, the issues being dated the 15th and last days of each month. This semimonthly appearance will be continued until April 1, 1927, on which date the trimonthly issues will be resumed and continued throughout the growing season. Contributors will kindly continue to send in notes on the 15th and last days of each month.

PERSONNEL ITEMS

H. H. McKinney, pathologist in charge of cereal virus disease investigations, will leave Washington November 18 for an extended trip into the Tropics. Mr. McKinney will join the Allison Armour Expedition at Southampton, England. From there the expedition will go to Spain, where it will be joined by Dr. David G. Fairchild, senior agricultural explorer in charge of Foreign Plant Introduction of the Bureau of Plant Industry, and others.

Several months will be spent in collecting plant materials in the Cape Verde Islands, Sierra Leone, Nigeria, Liberia, Kamerun, and other colonies along the west coast of Africa. The expedition plans to return to the United States by way of Venezuela, Panama, and the West Indies. It is expected that the entire trip will require about seven or eight months. Mr. McKinney will collect living material of plants affected with the different virus diseases.

VISITORS

Dr. L. R. Jones, professor of plant pathology at the University of Wisconsin, was an Office visitor last week.

L. A. Schaal, formerly on the barberry-eradication force in Minnesota, and now connected with the Office of Vegetable and Forage Diseases at Greeley, Colo., called at the Office on November 5.

MANUSCRIPTS AND PUBLICATIONS

66 A manuscript entitled "Variants in Ustilago nuda and Certain Host Relationships," by W. H. Tisdale and Marion A. Griffiths, was submitted November 10 for publication in the Journal of Agricultural Research.

The article entitled "Seed Treatments for Sweet-Corn Diseases," by C. S. Reddy, J. R. Holbert, and A. T. Erwin, appears in the Journal of Agricultural Research 33 (No. 3): 769-779, figs. 1-4. October 15, 1926. (The investigations here reported were conducted cooperatively by the Office of Cereal Crops and Diseases, the Bloomington Canning Co. and the Funk Brothers Seed Co., of Bloomington, Ill., and the Wisconsin and Iowa agricultural experiment stations.)

The note entitled "Factors Affecting the Properties of a Virus," by H. H. McKinney, appears under the heading "Phytopathological Notes" in Phytopath. 16 (No. 10): 753. October, 1926. (Cooperation between Office of Cereal Crops and Diseases and Wisconsin Agricultural Experiment Station.)

The article entitled "Arroz para la América Latina," by Charles E. Chambliss, appears as No. 24 de la Serie de Impresos sobre Agricultura in the Boletín de la Unión Pan Americana 60 (No. 12): 1198-1214, figs. 1-12. Diciembre, 1926. (Received November 9.)

FIELD STATION CONDITION AND PROGRESS

HUMID ATLANTIC COAST STATES (South to North)

GEORGIA

State College of Agriculture, Athens (Cereal Agronomy, R. R. Childs)

VIRGINIA

Arlington Experiment Farm, Rosslyn (Small Grain Agronomy, J. W. Taylor)

Arlington Experiment Farm, Rosslyn (Corn Breeding, F. D. Richey)

Arlington Experiment Farm, Rosslyn (Cereal Smuts, W. H. Tisdale)

Arlington Experiment Farm, Rosslyn (Virus Diseases, H. H. McKinney)

Arlington Experiment Farm, Rosslyn (Cereal Bacterial Diseases, C. S. Reddy)

NEW YORK

Cornell University Agricultural Experiment Station, Ithaca (Cereal Breeding, H. H. Love)

HUMID MISSISSIPPI VALLEY STATES (South to North)

LOUISIANA

Rice Experiment Station, Crowley (Rice Agronomy, J. M. Jenkins)

Agricultural Experiment Station, Baton Rouge (Corn Breeding, H. F. Stoneberg)

MISSOURI

Agricultural Experiment Station, Columbia (Cereal Agronomy, L. J. Stadler)

TENNESSEE

Agricultural Experiment Station, Knoxville (Corn Breeding, L. S. Mayer)

IOWA

Agricultural Experiment Station, Ames (Oat Breeding, L. C. Burnett)

Agricultural Experiment Station, Ames (Corn Breeding, M. T. Jenkins)

Agricultural Experiment Station, Ames (Crown Rust of Oats, S. M. Dietz)

Iowa State College, Ames (Barberry Eradication, M. A. Smith)

ILLINOIS

Funk Bros. Seed Co., Bloomington (Corn Root, Stalk and Ear Rots, J. R. Holbert)

Box 72, Post Office Building, Urbana (Barberry Eradication, G. C. Curren)
[November 3]

The second survey of De Kalb County was completed in October. The original survey of this County was made in 1922. This year few sprouting barberry bushes were found, but on many of the old properties escaped bushes and seedlings were located. No doubt many of these escaped bushes were seedlings when the first survey was made four years ago. Common barberries were found on almost 50 new properties. This indicates that the original survey was not thorough enough.

In De Kalb County the field agents received splendid cooperation from a number of prominent citizens. D. S. Brown, banker of Genoa, has always been much interested in the movement to eradicate the common barberry. When the campaign first started in Illinois several years ago Mr. Brown made a farm-to-farm survey of Genoa Township. He visited every rural school in the township. As a result of this fine work the scouts found only one barberry bush in Genoa Township. Mr. Brown still is intensely interested in this project and is giving the field men every possible assistance.

On October 21, the State leader spoke at Oregon on barberry eradication before the Ogle County school teachers' institute. More than 300 teachers were present. The teachers were informed that literature and lesson-study material would be sent out to the schools this winter and their cooperation in presenting the subject to the students was solicited.

During October the field force consisted of eight men. Most of these have been carrying on second-survey activities in Stephenson and Winnebago counties. Progress has been very slow because of the large number of wooded areas which must be strip-scouted. By November 1 about 90 per cent of Winnebago County had been completed. Only a little more than 20 per cent of Stephenson County had been finished.

INDIANA

Purdue University Agricultural Experiment Station, La Fayette (Corn Rots and Metallic Poisoning, G. N. Hoffer)

Purdue University Agricultural Experiment Station, La Fayette (Leaf Rusts, E. B. Mains)

Purdue University College of Agriculture, La Fayette (Barberry Eradication, W. E. Leer)

OHIO

Ohio State University, College of Agriculture, Columbus (Barberry Eradication, J. W. Baringer)

MICHIGAN

Agricultural College, East Lansing (Barberry Eradication, W. F. Reddy)

WISCONSIN

Agricultural Experiment Station, Madison (Wheat Scab, J. G. Dickson)

Department of Agriculture, State Capitol Annex, Madison (Barberry Eradication, W. A. Walker)

MINNESOTA

Agricultural Experiment Station, University Farm, St. Paul (Wheat Breeding, O. S. Aamodt)

Agricultural Experiment Station, University Farm, St. Paul (Stem Rust, E. C. Stakman)

Agricultural Experiment Station, University Farm, St. Paul (Flax Rust, C. V. Kightlinger)

Agricultural Experiment Station, University Farm, St. Paul (Barberry Eradication, L. W. Melander)

GREAT PLAINS AREA (South to North)

OKLAHOMA

Woodward Field Station, Woodward (Grain Sorghums, J. B. Sieglinger)
(November 2)

The weather of the last half of October was good for harvesting and drying.

The first killing freeze of the fall occurred November 1 with a temperature of 26 degrees.

All the broomcorn and grain-sorghum plats were harvested before the freeze, with the exception of some straight-neck milos which will be left to observe how well they stand up after frost.

The heads of over 200 sorghum plats were hauled under shelter and are ready for threshing, which will be started at once.

Maximum temperature for last half of October, 90 degrees on the 17th; minimum to date, 26 degrees on November 1. There was no precipitation during the last half of October; 6.09 inches were recorded for the month.

KANSAS

Agricultural Experiment Station, Manhattan (Cereal Breeding, J. H. Parker)

Agricultural Experiment Station, Manhattan (Corn Breeding, A. M. Brunson)

Agricultural Experiment Station, Manhattan (Wheat Foot Rots, Hurley Fellows)

Agricultural Experiment Station, Manhattan (Wheat Leaf Rust, C. O. Johnston)

Hays Branch Experiment Station, Hays (Cereal Agronomy, A. T. Swanson)
(November 2)

The total precipitation for October was 0.60 inch, with the temperatures considerably above normal. There was a fair amount of moisture in September. Consequently early-seeded wheat made rather rapid growth in October and considerable of the limited surface moisture has been used up. During the last 10 days early-seeded wheat has shown just a little of the effects of lack of moisture. The rapid crop growth has been checked, however, by much lower temperatures in the last few days. Most of the wheat has made sufficient growth in this section to withstand considerable soil blowing. In the north-western tier of counties in Kansas, conditions have been very severe and on many farms the hope of a wheat crop for next year is not promising.

Field operations on the cereal project have been completed so that the writer will be able to give full time in preparing the annual report. Many of the tabulations for the small grains have been completed already.

Sorghum yields will be very variable. Many of the grain yields will be shown in zero this year, but in isolated cases where the crop was favored by special cultural methods some satisfactory yields will be recorded.

The successful cotton-growing experiment at the Hays experiment station has attracted much attention. An early variety of cotton known as B 9-1, procured from the Texas Agricultural Experiment Station, produced a gross yield of 300 pounds to the acre. It is believed that the crop will gin approximately one-half bale of cotton to the acre, but this has not yet been ascertained. The crop was free from disease and insect injury and withstood the drought much better than corn and with no more attention.

COLORADO

Agricultural College, Ft. Collins (Barberry Eradication, E. A. Lungren)
(October 30)

In September and the first part of October, an extensive educational campaign was started in Colorado. Names of teachers of science, biology, and agriculture were obtained from the county superintendents in each county. The names and addresses of many grade school teachers also were obtained. As a result, more than 300 names, including those of 53 Smith-Hughes teachers, were obtained.

Packets of material were made up to aid teachers in presenting the subject of stem rust and its relation to the common barberry. A lesson plan for teaching the subject also was included with the material.

As a result of this educational program, already two reports have been received from students who found some escaped barberry bushes near Loveland and near Aspen.

Plates 1 and 2, a bulletin, and a specimen of barberry have been mailed to all the grain elevators and millers in the State.

NEBRASKA

North Platte Substation, North Platte (Cereal Agronomy, G. F. Sprague)

College of Agriculture, University Farm, Lincoln (Barberry Eradication,
A. F. Thiel)

WYOMING

College of Agriculture, University of Wyoming, Laramie (Barberry Eradication, E. A. Lungren)

SOUTH DAKOTA

College of Agriculture, Brookings (Barberry Eradication, R. O. Bulger)
(November 1)

The second survey for barberries in South Dakota was closed for the season on October 30. Only four of the original crew of 20 men were employed during October. It was possible to hire two men who had had some experience in barberry eradication to make a crew of six for the month. The men who resigned either resumed their school studies or accepted positions.

Approximately five counties were covered in second survey and a small amount of clean-up was carried on in the Missouri River area. Barberries were found on 101 properties aggregating 993 bushes, making an average of only 9 plus bushes per property. This is because of the fact that so many isolated bushes were found escaped from cultivation. These results seem to indicate the necessity of going over every foot of timber and every fence row in South Dakota. Whether natural timber along rivers contain enough barberries to be of first importance in eradication is a question for decision before field operations are started next year.

In spite of the unusually dry season, stem rust was present again this year. Oats in certain districts in the eastern part of the State are believed to have suffered a 10 per cent loss. In the western part of the State, rainfall in certain sections was above normal, and stem rust did only a trace of damage. This fact also seems to substantiate the belief that local inoculum was the source of most of the rust.

NORTH DAKOTA

Agricultural Experiment Station, State College Station, Fargo (Flax Diseases, L. W. Boyle)

Agricultural Experiment Station, State College Station, Fargo (Barberry Eradication, G. C. Mayoue)

Dickinson Substation, Dickinson (Cereal Agronomy, R. W. Smith)
(November 1)

During the month of October the weather was comparatively mild, with a maximum temperature of 72 degrees on the 6th and a minimum of 15 degrees on the 23rd and 24th. Precipitation was recorded on 11 days, but the total for the month was only 0.32 inch in addition to the rain of 0.66 inch on the night of September 30.

Winter grain still is in fairly good condition, much better than at this time last year, but it would be benefited by more rain before winter sets in.

The yields shown in the following table for the flax-wheat mixtures experiment again fail to indicate any advantage from growing the mixed crop.

The Substation was visited recently by Supt. J. M. Stephens, Superintendent of the Northern Great Plains Field Station, Mandan, N. Dak.

Yields obtained from flax-wheat mixtures grown in duplicate 1/56th-acre plats on the Dickinson Substation, Dickinson, N. Dak., in 1926

	Rate of seeding (Lbs. per acre)	Acre yield (bushels)		Relative Yield
		Flax	Wheat	
1.	Flax 15 Wheat 10	3.2	1.5	78.2
2.	Flax 15 Wheat 20	1.8	2.0	60.3
3.	Flax 15 Wheat 30	1.1	3.2	64.8
4.	Flax 25 Wheat 10	1.9	1.1	49.4
5.	Flax 25 Wheat 20	1.5	1.9	53.6
6.	Flax 25 Wheat 30	1.7	2.3	62.3
7.	Flax 25 ----	5.6	---	100.0
8.	---- Wheat 60	---	7.1	100.0

Yields of the leading wheat varieties and hybrids grown in single row rows, replicated three times, at the Dickinson Substation, Dickinson, N. Dak., in 1926

Hybrid or Variety	C. I. No.	Hybrid No.	Yield (Bu. per A.)
Kanred x Marquis (Reliance Sel.)	----	171838-11-16	35.0
Do	----	171838-11-40	34.2
Do	----	171838-11-63	33.5
Do	----	171832-14-2	33.2
Do	----	171838-11-29	32.6
Do	----	171838-11-7	32.5
Do	----	171838-11-17	32.2
Do	----	171838-11-36	31.7
Do	----	171838-11-22	31.5
Ceres		6900:1653	31.4a/
Kota x Kanred	----	20156B11-1-1	31.2
Kanred x Marquis	----	171838-11-23	31.0
Reliance		7370:171838-11	30.7a/
Kanred x Marquis	----	171832-14-18	29.9
Do	3191	II-18-46	29.8
Do	----	171838-11-64	29.8
Kota x Kanred	----	20156B2-1-7	29.8

Continued

Hybrid or Variety	:C.I.: Hybrid No. : No.:	:Yield (Bu. per Acre)
Kota x Kanred	: ----:20156E5-1-7	: 29.3
Kanred x Marquis	: ----:1718B8-11-20	: 29.2
Kota x Kanred	: ----:1980C5-3-25	: 28.7
Do	: ----:20156E5-1-2	: 28.6
Kanred x Marquis	: ----:1718B8-11-18	: 28.6
Do	: ----:1718B9-14-28	: 28.0
Kota x Kanred	: ----:1980C5-7-10	: 27.5
Do	: ----:20156A11-1-11	: 27.4
Kanred x Marquis	: ----:1718B9-14-42	: 27.0
Kota x Marquis	: ----:14-33-1	: 26.8
Kota x Kanred	: ----:20156A7-1-3	: 26.6
Larcombe No. 3	: 8196: ----	: 26.3
Kota x Kanred	: ----:1980B12-8	: 26.2
(Foreign introduction selection 4589-1: ----		: 26.2
Kota x Kanred	: ----:20156A3-1-1	: 25.8
Kota x Hard Federation	: 8198:20148A1-16-8-4	: 25.7
Kanred x Marquis	: ----:1718B8-11-5-7	: 25.6
Kota x Marquis	: 8185:1656.109	: 25.5
Do	: 8190: II-19-57	: 25.3
Kota x Hard Federation	: ----:20148A7-124-1-1	: 24.9
Do	: ----:20148C15-2-1-1	: 24.6
Do	: ----:20148A1-16-4-2-9	: 24.6
Erivan	: 2397: ----	: 24.1
Kota x Hard Federation	: ----:20148A1-27-1-3	: 24.1
Garnet	: 8182: ----	: 23.8
Kota x Hard Federation	: ----:20149E5-16-3	: 23.7
Do	: ----:20148A1-16-4-2-1	: 23.5
Marquis x Sunset	: ----:20167B5-7-4	: 23.3
Marquis (average of all checks)	: 3641: ----	: 23.1
Kota x Hard Federation	: ----:20148A3-98-4	: 23.0
Do	: ----:20149C6-4-1	: 22.9
Marquis x Sunset	: ----:20167A1-16-6	: 22.8
Marquis x Pioneer	: ----:17-52-B-1	: 22.7
Do	: ----:58-4-1-1	: 22.6
Kota x Hard Federation	: ----:20143D10-1-2	: 22.5
Kota (average of all checks)	: 5878: ----	: 22.5
Marquillo	: 6887: II-15-44	: 22.0
Marquis x Monad (common sel.)	: ----:60-1-5	: 22.3
Marquis x Kota	: 8189: II-19-46	: 22.0
Marquis x Preston	: 8192: II-15-8	: 21.6
Marquis x Kanred	: 7374: II-18-18	: 21.1
Alberta No. 3 (Red Dobs Sel.)	: 3022: ----	: 20.0
Early Triumph Do	: 6795: ----	: 19.7
Administer	: 8195: ----	: 18.2
Alberta No. 2	: 8021: ----	: 18.1
Reward	: 8182: ----	: 17.3
Quality	: 6607: ----	: 16.3

a/ Grown in 3 row blocks replicated 3 times

Northern Great Plains Field Station, Mandan (Flax Breeding, J. C. Brinsmade, Jr.)

Northern Great Plains Field Station, Mandan (Cereal Agronomy, E. R. Ausemus) (October 22)

The work at the station is coming along nicely. All of the field operations are completed with the exception of the threshing of Mr. Brinsmade's flax nursery. This has been delayed because of the extreme droughty conditions of the summer which caused this material to mature very late.

Average yields of 70 wheat hybrids and varieties grown in single row rows replicated three times which outyielded the average of the Marquis and Kota checks at the Northern Great Plains Field Station, Mandan, N. Dak., in 1926

Cross or Variety	Hybrid No.	Yld. (Bu. per A.)
Kanred x Marquis	:1713B2-14-13	: 13.7
Kota x Hard Federation	:20148A3-98-4	: 13.6
Kanred x Marquis	:1713B5-14-3	: 13.2
Kota x Galgalos	:22253A6-25	: 17.2
Kota x Hard Federation x Kanred x Marquis	:23270B2-4-4	: 16.9
Pentad	: ----	: 16.8
Kota x Hard Federation x Kanred x Marquis	:24311A2-35	: 16.6
Do	:24311A1-20	: 16.5
Kanred x Marquis	:1713B9-14	: 16.3
Kota x Hard Federation x Kanred x Marquis	:24311A2-49	: 16.0
Do	:24311B1-11	: 15.9
Do	:23270A3-6-3	: 15.9
Red Bobs Sel. 26 (C.I.No. 6255-26)	: ----	: 15.9
Kota x Galgalos	:22254B4-2	: 15.7
Kota x Hard Federation x Kanred x Marquis	:24311A1-27	: 15.6
Do	:24311A1-28	: 15.6
Kota x Hard Federation (C.I.No. 3207)	:2014901-6-1	: 15.4
Do	:20143A10-260-1	: 15.2
Do	:20149E5-16-3	: 15.1
Do	:20149E5-16-5	: 15.1
Kubanka No. 3 x Pentad	:(Aamodt 34, 1925)	: 15.1
Kota x Hard Federation	:20143A1-16-1-10	: 14.9
Kanred x Marquis	:1713B5-14	: 14.8
Kota x Hard Federation x Kanred x Marquis	:23270B2-1	: 14.8
Do	:24311B1-27	: 14.8
Do	:23270A3-6-4	: 14.8
Marquis x Erivan	:1733B4-6-1	: 14.8
Kubanka No. 3 x Pentad	:(Aamodt 35, 1925)	: 14.8
Kota x Marquis	:(Aamodt 2, 1925)	: 14.7
Kota x Hard Federation x Kanred x Marquis	:23270A3-10-1	: 14.7
Mindum x Pentad	:(Aamodt 51, 1925)	: 14.7
Mindum (C.I.No. 5296)	: ----	: 14.7

Continued

Cross or Variety	Hybrid No.	Yld. (Bu. per A.)
Kota x Hard Federation	: 20148A2-11-1-2	: 14.5
Kota x Marquis	: (Aamodt 4, 1925)	: 14.5
Mindum x Pentad	: (Aamodt 54, 1925)	: 14.5
Kota x Hard Federation	: 20148A3-126-17	: 14.4
Kanred x Marquis	: 1718B2-14-2	: 14.4
Kota x Hard Federation x Kanred x Marquis	: 23270L2-1-1	: 14.2
Do	: 23270L2-4-1	: 14.2
Marquis x Sunset	: 20167A4-14-2	: 14.2
Erivan (C.I.No. 2397)	: -----	: 14.1
Kota x Galgalos	: 22254B6-17	: 14.0
Kota x Hard Federation x Kanred x Marquis	: 20149A1-25-2-3	: 14.0
Kubanka No. 5 x Pentad	: (Aamodt 28, 1925)	: 14.0
Kota* (C.I.No. 5375)	: -----	: 14.0
Kota x Hard Federation x Kanred x Marquis	: 23270C1-5-1	: 13.9
Do	: 23270C7-7	: 13.8
Marquis x Sunset	: 20167A3-32-1	: 13.8
C. I. 3774	: -----	: 13.8
Sunset (C.I.No. 4728)	: -----	: 13.7
Marquis x Sunset	: 20167A4-14-3	: 13.7
Kota x Hard Federation	: 20148A7-15-1	: 13.7
Kubanka No. 8 x Pentad	: (Aamodt 30, 1925)	: 13.7
Marquis x Erivan	: 1738L6-25-3	: 13.6
Kota x Hard Federation x Kanred x Marquis	: 23270A3-10-3	: 13.5
Do	: 23270L2-4-3	: 13.5
Do	: 241A1-19	: 13.5
Galgalos	: -----	: 13.5
Mindum x Pentad	: (Aamodt 42, 1925)	: 13.5
Kota x Marquis (C. I.No. 3007)	: 1556.124	: 13.4
Do (C.I.No. 3002)	: 1650.7	: 13.4
Arminster (C.I. 8183)	: -----	: 13.4
Hard Federation x Prelude	: 1955A2-9-13-1	: 13.4
Do	: 1952A4-16-19-1	: 13.4
Kota x Marquis (C.I.No. 3003)	: 1556.65	: 13.3
Kota x Hard Federation	: 20148D4-34-2	: 13.3
Kubanka No. 8 x Pentad	: (Aamodt 33, 1925)	: 13.3
Kota x Hard Federation x Kanred x Marquis	: 23270A2-9-2	: 13.2
Do	: 23270C1-19-2	: 13.2
Do	: 23270L2-4-2	: 13.2
Kubanka No. 8 x Pentad	: (Aamodt 36, 1925)	: 13.2
Marquis ** (C.I.No. 3641)	: -----	: 13.2

*Average of 5 check rows

**Average of 6 check rows

MONTANA

Judith Basin Substation, Moccasin (Cereal Agronomy, R. W. May)
(November 1)

Weather conditions throughout the greater part of October were very favorable for fall-sown wheat. Temperatures were above normal during most of the month and there was an abundance of soil moisture. However, the precipitation recorded in October was only about one-third of the normal. The precipitation recorded was 0.33 inch, while the normal precipitation for the month is 1.05 inches.

The maximum temperatures recorded for the month were 74 degrees on the 14th and 70 degrees on the 6th, 16th, and 24th. The minimum temperatures recorded were 24 degrees on the 31st and 27 on the 22nd and 28th.

The yields obtained from winter wheat, spring wheat, oats, barley, and flax in various experiments are shown in the following tables.

Average yields obtained from a furrow-drill and rate-of-seeding experiment with winter wheat at the Judith Basin Substation, Moccasin, Mont., in 1926

Rate of Seeding	Type of drill and average yields (Bu. per acre)	
	Furrow drill	Ordinary drill
2 pecks	26.9	21.2
3 pecks	28.6	23.0
4 pecks	30.1	24.8
5 pecks	30.7	26.7
Average	29.1	23.9

Yields obtained from a date-and-rate-of-seeding experiment with Marquis, Hard Federation, and Mondak spring wheats sown at the rate of 3, 4, and 5 pecks per acre on April 21, May 6, and May 19, 1926, respectively, at the Judith Basin Substation, Moccasin, Mont.

Date of Seeding	Variety, Rate of Seeding (pecks) and Yield (Bu. per acre)												
	Hard Federation			Marquis			Mondak			Ave. of 3 varie-			
	3pks	4pks	5pks	Ave.	3pks	4pks	5pks	Ave.	3pks	4pks	5pks	Ave.	ties
April 21	24.6	23.7	22.5	23.6	32.1	33.7	33.7	33.2	32.1	33.3	35.4	33.6	30.1
May 6	28.7	31.7	32.5	31.0	28.7	32.1	32.9	31.2	22.5	21.2	22.9	22.2	28.1
May 19	21.2	23.7	24.2	23.0	22.9	25.0	24.2	24.0	19.2	18.3	17.9	18.5	21.8
Average	24.8	26.4	26.4	25.9	27.9	30.3	30.3	29.5	24.5	24.3	25.4	24.8	26.7

Average yields obtained from a furrow drill-harrowing experiment with spring wheat at the Judith Basin Substation, Moccasin, Mont., in 1926

Treatment	: Type of drill and yield (Bus. per acre):		Average from both drills
	Furrow drill	Ordinary drill	
Harrowed	27.3	25.8	26.5
Not harrowed	26.1	28.8	27.1
Average	26.2	27.5	

Yields obtained from a date-and-rate-of-seeding experiment with Sixty-Day, Markton, and Silvermine oats sown at the rate of 4, 5, and 6 pecks per acre on April 21, May 6, and May 19, 1926, at the Judith Basin Substation, Moccasin, Mont.

Date of Seeding	: Variety, Rate of Seeding (pks.) and Yield (Bu. per acre):									Grand Ave. of 3 varieties			
	Sixty-Day			Markton			Silvermine						
	4	5	6	Ave.	4	5	6	Ave.	4	5	6	Ave.	ties
Apr. 21	64.0	64.0	63.7	65.6	67.2	66.4	63.3	65.6	64.3	64.8	63.7	66.1	65.8
May 6	57.8	60.1	66.4	61.4	65.6	64.0	68.7	66.1	67.2	70.3	71.9	69.3	65.8
May 19	60.1	63.3	61.7	61.7	a	a	a	a	a	a	a	a	
Ave. of first two dates	60.9	62.1	67.6	63.5	66.4	65.2	65.0	65.9	66.0	67.6	70.3	68.0	65.8

a/ No yields of Markton and Silvermine were obtained for the May 19 date of seeding because of damage by hail.

Yields obtained from a date-and-rate-of-seeding experiment with White Smyrna and Horn barley sown at 5, 6, and 8 pecks per acre on April 21, May 6, and May 19, 1926, at the Judith Basin Substation, Moccasin, Mont.

Date of Seeding	: Variety, Rate of Seeding (Pecks) and Yield (Bu. per acre):									Grand Average
	White Smyrna				Horn					
	5	6	8	Average	5	6	8	Ave.	Average	
April 21	34.4	35.4	42.2	37.3	57.3	58.9	57.3	57.8	47.6	
May 6	53.6	43.4	52.1	51.4	54.7	51.0	55.2	53.6	52.5	
May 19	44.3	47.4	46.4	46.0			a/			
Ave. of first two dates	44.0	41.9	47.2	44.4	56.0	55.0	56.3	55.7	50.1	

a/ No yields of Horn were obtained for the May 19 date of seeding because of damage by hail.

Yields of flax-wheat mixtures at the Judith Basin Substation, Moccasin, Mont., in 1926

Crop and Rate of Seeding (Lbs. per acre)	Yield (Bu. per acre)		Relative Yield (per cent)
	Flax	Wheat	
Flax 15 Wheat 20	3.6	15.8	100
Flax 15 Wheat 30	3.5	17.4	106
Flax 25 Wheat 20	4.8	13.8	101
Flax 25 -----	11.4	--	100
----- Wheat 60	--	23.3	100

State College of Agriculture, Bozeman (Barberry Eradication, W. L. Popham)

WESTERN BASIN AND COAST AREAS (North to West and South)

IDAHO

Aberdeen Substation, Aberdeen (Cereal Agronomy, G. A. Wiebe)

Agricultural Experiment Station, Moscow (Stripe Rust, C. W. Hungerford)

WASHINGTON

Agricultural Experiment Station, Pullman (Cereal Breeding, E. F. Gaines)

OREGON

Sherman County Branch Station, Moro (Cereal Agronomy, D. E. Stephens)

Sherman County Branch Station, Moro (Cereal Breeding, B. B. Bayles)

CALIFORNIA

Biggs Rice Field Station, Biggs (Rice Agronomy, J. W. Jones) (October 25)

We have had almost ideal weather during the rice harvest season this fall. We finished cutting the station rice on October 12 and completed all threshing on October 27. There has not been time to tabulate the yields for this season.

Almost all of the commercial rice is now harvested and probably 90 per cent of it is threshed and in the warehouses. The yields obtained on commercial fields appear to be about normal, that is, an average of about 2,500 pounds per acre.

The rice market is quiet and the prices bid are much lower than they were early in the fall.

Yields on some fields were reduced by water grass and cat-tails and in others by the annual sedge, which was more abundant than usual this year.

University Farm, Davis (Cereal Agronomy, V. H. Florell)

Agricultural Experiment Station, Berkeley (Cereal Smuts, F. N. Briggs)

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CEREAL COURIER

Official Messenger of the Office of Cereal Crops and Diseases
Bureau of Plant Industry, U. S. Department of Agriculture
(NOT FOR PUBLICATION)

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U. S. DEPARTMENT OF AGRICULTURE

Vol. 13

November 20, 1926

Personnel (Nov. 11-20) and Field Station (Nov. 1-15) Issue

No. ~~28~~²⁷

PERSOINEL ITEMS

Olaf S. Aamodt, associate pathologist in charge of cooperative wheat-breeding experiments at University Farm, St. Paul, Minn., came to Washington on November 17 to spend some time in conference with officials of the Office and to complete the preparation of manuscripts for publication.

The appointment of Leo A. Hoak, who, since August 16, has assisted Jenkin W. Jones in field operations at the Biggs Rice Field Station, Biggs, Calif., was terminated September 18, the work for which he was appointed having been completed.

Miss Norma L. Pearson was appointed agent, effective November 15, to assist Dr. James G. Dickson at Madison, Wis., in cooperative cytological studies of scab of wheat and other cereals.

Merle T. Jenkins, associate agronomist in charge of cooperative corn experiments at Ames, Ia., came to Washington November 10 to confer with officials of the Office and to complete the preparation of a manuscript for publication.

VISITORS

The following were among the visitors at the Office during the sessions of the American Society of Agronomy and the American Association of Land Grant Colleges:

Dean L. E. Call, Pres. F. D. Farrell, S. C. Salmon and R. J. Throckmorton, of the Kansas Agricultural College.

Dean E. J. Iddings, College of Agriculture, University of Idaho.

Dr. J. R. Fain, Georgia Agricultural Experiment Station.

Dr. G. N. Hoffer, Purdue University Agricultural Experiment Station.

Dr. F. D. Kern, Pennsylvania Agricultural Experiment Station.

Dr. H. H. Love and Director R. W. Thatcher, New York (Cornell) Agricultural Experiment Station.

Dr. P. C. Mangelsdorf, Connecticut Agricultural Experiment Station.

Dr. L. J. Stadler, Missouri Agricultural Experiment Station.

Dr. R. Y. Winters, Director, North Carolina Agricultural Experiment Station.

Andrew Boss, Dean W. C. Coffey, Dr. E. M. Freeman and Dr. H. K. Hayes, of the University of Minnesota.

W. W. Burr, Nebraska Agricultural Experiment Station.

H. D. Hughes, Iowa Agricultural College.

I. J. Jensen, Montana Agricultural Experiment Station.

E. C. Johnson, Director, Washington Agricultural Experiment Station.

L. E. Kirk, University of Saskatchewan, Canada.

Professor Ritchie, Canton College, China.

L. R. Waldron, North Dakota Agricultural Experiment Station.

MANUSCRIPTS AND PUBLICATIONS

67 A manuscript entitled "Barberry Eradication and Sources of Black Stem Rust in Colorado," by L. W. Durrell and E. A. Lungren, was submitted on November 12 for publication as a bulletin of the Colorado Agricultural Experiment Station.

68 A manuscript entitled "Barberry Eradication Campaign," by L. W. Melander, was submitted November 4 for publication in the Biennial Report of the Minnesota State Department of Agriculture.

The following manuscripts were approved on November 15 for publication as abstracts in Phytopathology:

69 Smut Resistance in Corn, by Marion A. Griffiths.

70 The Differentiation of a Physiologic Variety of Puccinia coronata by Means of Urediniospore Reaction to Relative Humidity, by E. L. LeClerg.

71 The Effect of Leaf Rust, Puccinia triticina, on the Seed Production of Wheat, by E. B. Mains.

72 Sulphur and Copper Carbonate Dusts as Efficient Fungicides for the Control of Sorghum Kernel Smut and Millet Smut, by L. E. Melchers and C. O. Johnston.

73 Strains of Ustilago nuda and Certain Host Relationships, by W. H. Tisdale and Marion A. Griffiths.

74 Certain Factors Influencing the Development of the Mosaic Disease in Winter Wheat, by Robert W. Webb.

75 A manuscript entitled "Changes in the Composition of the Sap of the Wheat Plant during Certain Stages, as Shown by Titration Curves," by Annie May Hurd-Karrer, was approved November 15 for publication as an abstract by the Physiological Section, Botanical Society of America.

76 A manuscript entitled "A Study of the Distribution of Tilletia tritici and T. laevis in 1926," by W. H. Tisdale, C. E. Leighty and E. G. Boerner, was approved November 18 for publication in Phytopathology.

Page proof of Dept. Bul. 1451 entitled "Methods of Eradicating the Common Barberry (Berberis vulgaris L.)," by M. F. Thompson and W. W. Mackie, was read November 17.

AMERICAN SOCIETY OF AGRONOMY

The Nineteenth Annual Meeting of the American Society of Agronomy was held at the New Willard Hotel, Washington, D. C., on November 18 and 19. The meeting was called to order by President C. G. Williams, of Wooster, Ohio. The sessions on Thursday morning were devoted to the reading and discussion of papers on corn borer research, pastures, legumes and soil investigations. A symposium on the "Publication of Results of Agronomic Research," led by R. W. Thatcher, Director of the New York (Cornell) Agricultural Experiment Station, included a paper by Dr. C. R. Ball, Senior Agronomist in Charge of the Office of Cereal Crops and Diseases, entitled "The Technical Bulletin as a Writer Sees It."

The meetings on November 19 were sectional for crops and soils. The symposium on "Plant Breeding," led by Dr. H. K. Hayes, of the department of agronomy, University of Minnesota, and included a paper entitled "Breeding Wheat for Resistance to Physiologic Forms of Black Stem Rust," by O. S. Aamodt. The discussion of this paper was led by Dr. C. E. Leighty. A paper entitled "The Relation of Triploid Factors and Chromosome Groups in Wheat and Oats," by E. F. Gaines, was read by title only as Doctor Gaines was unable to be present.

The banquet and business meeting of the Society was held on Thursday evening, November 18, at the Hamilton Hotel at 14th and K Streets, N. W. Nearly 150 members were present. The following five members were made Fellows of the Society: E. H. Love, of New York; C. G. Williams, of Ohio; B. L. Hartwell, of Rhode Island; C. A. Mooers, of Tennessee; and Emil Truog, of Wisconsin. Dr. W. L. Burlison, of Illinois, was elected president for the coming year, and W. W. Burr, of Nebraska, was elected fourth vice president.

BARBERRY CONFERENCE

The annual meeting of the Conference for the Prevention of Grain Rust is to be held at St. Paul, Minn., December 7. The Governor, the Commissioner of Agriculture, the President of the State Farm Bureau Federation or corresponding farmers' organizations, and a representative of the State experiment station of each of the 13 north-central grain-growing States included in the barberry eradication area are members of the Conference. Many of these will be in attendance.

The Federal and State leaders of barberry eradication will hold meetings on December 8 and 9.

FIELD STATION CONDITION AND PROGRESS

HUMID ATLANTIC COAST STATES (South to North)

GEORGIA

State College of Agriculture, Athens (Cereal Agronomy, R. R. Childs)

VIRGINIA

Arlington Experiment Farm, Rosslyn (Small Grain Agronomy, J. W. Taylor)

Arlington Experiment Farm, Rosslyn (Corn Breeding, F. D. Richey)

Arlington Experiment Farm, Rosslyn (Cereal Smuts, W. H. Tisdale)

Arlington Experiment Farm, Rosslyn (Virus Diseases, H. H. McKinney and R. W. Webb)

Arlington Experiment Farm, Rosslyn (Cereal Bacterial Diseases, C.S.Reddy)

NEW YORK

Cornell University Agricultural Experiment Station, Ithaca (Cereal Breeding, H. H. Love)

HUMID MISSISSIPPI VALLEY STATES (South to North)

LOUISIANA

Rice Experiment Station, Crowley (Rice Agronomy, J. M. Jenkins)

Agricultural Experiment Station, Baton Rouge (Corn Breeding, H. F. Stoneberg)

MISSOURI

Agricultural Experiment Station, Columbia (Cereal Agronomy, L. J. Stadler)

TENNESSEE

Agricultural Experiment Station, Knoxville (Corn Breeding, L. S. Mayer)

IOWA

- Agricultural Experiment Station, Ames (Oat Breeding, L. C. Burnett)
Agricultural Experiment Station, Ames (Corn Breeding, M. T. Jenkins)
Agricultural Experiment Station, Ames (Crown Rust of Oats, S. M. Dietz)
Iowa State College, Ames (Barberry Eradication, M. A. Smith)

ILLINOIS

- Funk Bros. Seed Co., Bloomington (Corn Root, Stalk and Ear Rots, J. R. Holbert)
Box 72, Post Office Building, Urbana (Barberry Eradication, G. C. Curran)

INDIANA

- Purdue University Agricultural Experiment Station, La Fayette (Corn Rots and Metallic Poisoning, G. N. Hoffer)
Purdue University Agricultural Experiment Station, La Fayette (Leaf Rusts, E. B. Mains)
Purdue University College of Agriculture, La Fayette (Barberry Eradication, W. E. Leer)

OHIO

- Ohio State University, College of Agriculture, Columbus (Barberry Eradication, J. W. Baringer)

MICHIGAN

- Agricultural College, East Lansing (Barberry Eradication, W. F. Reddy)

WISCONSIN

- Agricultural Experiment Station, Madison (Wheat Scab, J. G. Dickson)
Department of Agriculture, State Capitol Annex, Madison (Barberry Eradication, W. A. Walker)

MINNESOTA

Agricultural Experiment Station, University Farm, St. Paul (Wheat Breeding, O. S. Aamodt)

Agricultural Experiment Station, University Farm, St. Paul (Stem Rust, E. C. Stakman)

Agricultural Experiment Station, University Farm, St. Paul (Flax Rust, C. V. Kightlinger)

Agricultural Experiment Station, University Farm, St. Paul (Barberry Eradication, L. W. Melander)

GREAT PLAINS AREA (South to North)

OKLAHOMA

Woodward Field Station, Woodward (Grain Sorghums, J. B. Sieglinger) (November 16)

The weather of the first half of November was cool and there was a light snowfall. There was more wind than usual for this time of the year.

Threshing and fanning of the grain-sorghum plats was accomplished and the yields have been computed.

Yields from the grain sorghum varietal experiment seeded June 7, 1926

Variety	Bushels per acre $\frac{1}{2}$			Average
	C. I. No.:	Plat 1	Plat 2	
<u>Milo</u>	:	:	:	:
Double Dwarf	----	35.36	32.95	34.16
Dwarf	332	31.34	36.16	33.75
Dwarf White	627	23.53	36.96	32.75
Smith's Milo x Kafir	808	27.72	27.32	27.54
Fargo Straight-Neck	309	30.94	21.70	26.32
Early White	480	24.51	28.13	26.32
<u>Feterita</u>	:	:	:	:
Feterita	132	22.10	26.25	24.18
Spur	623	26.12	24.64	25.38
Dwarf	810	26.52	20.09	23.31

$\frac{1}{2}$ 56 pounds to the bushel

Continued

Variety	Bushels per acre ^{1/}			
	C. I. No.:	Plat 1	Plat 2	Average
<u>Kafir</u>	:	:	:	:
Reed	: 628	: 44.20	: 44.20	: 44.20
Bishop	: 814	: 41.38	: 45.80	: 43.59
Sharon	: 813	: 41.79	: 40.98	: 41.39
Pink	: 432	: 42.19	: 39.38	: 40.79
Dawn	: 340	: 39.38	: 40.98	: 40.18
Dwarf Sunrise	: 472-D	: 38.17	: 41.79	: 39.98
Sunrise	: 472	: 42.32	: 37.23	: 39.78
Standard	: 71	: 42.99	: 34.96	: 38.98
Red	: 34	: 39.78	: 29.33	: 34.56
<u>Miscellaneous</u>	:	:	:	:
Darso	: 615	: 42.59	: 44.20	: 43.40
Schrock	: 616	: 44.20	: 42.19	: 43.20
Kaferita, kafir seed	: 811	: 36.56	: 34.15	: 35.36
Kaferita, feterita seed	: 812	: 35.36	: 30.94	: 33.16
Shallu	: 85	: 34.96	: 29.33	: 32.15
Dwarf hegari	: 750	: 35.76	: 28.53	: 32.15
Blackhull kaoliang	: 310	: 32.95	: 30.54	: 31.75
Freed sorgo	: 350	: 31.34	: 30.94	: 31.14
Dwarf hegari	: 620	: 34.55	: 24.91	: 29.73
	:	:	:	:

^{1/} 56 pounds to the bushel

Maximum temperature for the first half of November, 73 degrees on the 7th; minimum, 25 degrees on the 4th and 10th, precipitation (snow and rain) 0.34 inch.

KANSAS

Agricultural Experiment Station, Manhattan (Cereal Breeding, J. H. Parker)
(November 17)

Estimates of stands have been made in nursery rod rows and accurate counts have been made in all spaced plantings of hybrids and uniform winter hardiness varieties. Greenhouse plantings are about completed. The refrigeration machine has been installed and Prof. Salmon and Mr. D. D. Hill expect to make the first freezings of winter wheat varieties the last of November or the first of December.

October Weather Conditions in Manhattan

The month of October averaged warm and wet. The last half of the month was one of the most pleasant on record with plenty of sunshine. The rainfall was 4.4 inches, about half of which fell on October 12. The average rainfall for October for 65 years is 2.18 inches. In October, 1926, measurable rain fell on 8 days. There were 13 clear days, 6 cloudy days and 7 partly cloudy days. The average temperature was 53.56 and the 65 year mean is 56.11. The highest temperature was 83° on the 27th and the lowest was 27° on the 24th.

Weather and Crop Conditions in Kansas

During the week ending November 2 sunshine and generally dry weather prevailed until the close of the week when a cold snap ended the growing season in the southeastern and south central counties and freezing weather occurred over all the State. Wheat was up in the central and northeastern counties and stands in these sections were reported as good to excellent. In the southeastern counties wet fields had further delayed seeding, while in the northwestern and extreme southwestern counties, dry weather had resulted in poor stands or no stands at all. Grain sorghums were being cut. The supply of rough feed was reported as very short in the northwestern and extreme southwestern counties, ample elsewhere.

During the week ending November 9 the weather was dry with moderate temperatures and plenty of sunshine until the closing days of the week when there was a sudden drop in temperature with high north winds, rain and snow in the northwestern counties. Temperatures of 18° prevailed in the western part and 25° in the eastern part of the State. Stands of wheat in the eastern half of the State were generally reported as good and in the northeastern quarter as excellent. Over the western third, the reports indicate the outlook for wheat as poor, and in the southwestern counties wheat was deteriorating.

Prof. S. C. Salmon and the writer attended a meeting of the Kansas and Nebraska Cereal Chemists at Kansas City on October 30. Prof. Salmon presented a very interesting paper entitled "Producing Better Wheat in Kansas."

Dean Call, Prof. R. I. Throckmorton, and Prof. S. C. Salmon are in Washington this week attending the meetings of the American Association of Land Grant Colleges and the American Society of Agronomy.

Agricultural Experiment Station, Manhattan (Corn Breeding, A. M. Brunson)

Agricultural Experiment Station, Manhattan (Wheat Foot Rots, Hurley Fellows)

Agricultural Experiment Station, Manhattan (Wheat Leaf Rust, C.O. Johnston)

Hays Branch Experiment Station, Hays (Cereal Agronomy, A. F. Swanson)

COLORADO

Agricultural College, Ft. Collins (Barberry Eradication, E. A. Lungren)

NEBRASKA

North Platte Substation, North Platte (Cereal Agronomy, G. F. Sprague)

College of Agriculture, University Farm, Lincoln (Barberry Eradication, A. F. Thiel)

WYOMING

College of Agriculture, University of Wyoming, Laramie (Barberry Eradication, E. A. Lungren)

SOUTH DAKOTA

College of Agriculture, Brookings (Barberry Eradication, R. O. Bulger)

NORTH DAKOTA

Agricultural Experiment Station, State College Station, Fargo (Flax Diseases, L. W. Boyle)

Agricultural Experiment Station, State College Station, Fargo (Barberry Eradication, G. C. Mayoue)

Dickinson Substation, Dickinson (Cereal Agronomy, R. W. Smith)

Northern Great Plains Field Station, Mandan (Flax Breeding, J. C. Brinsmade, Jr.)

Northern Great Plains Field Station, Mandan (Cereal Agronomy, E. R. Ausemus)

MONTANA

Judith Basin Substation, Moccasin (Cereal Agronomy, R. W. May)

State College of Agriculture, Bozeman (Barberry Eradication, W. L. Popham)

WESTERN BASIN AND COAST AREAS (North to West and South)

IDAHO

Aberdeen Substation, Aberdeen (Cereal Agronomy, G. A. Wiebe)

Agricultural Experiment Station, Moscow (Stripe Rust, C. W. Hungerford)

WASHINGTON

Agricultural Experiment Station, Pullman (Cereal Breeding, E. F. Gaines)

OREGON

Sherman County Branch Station, Moro (Cereal Agronomy, D. E. Stephens)

Sherman County Branch Station, Moro (Cereal Breeding, B. B. Bayles)

CALIFORNIA

Biggs Rice Field Station, Biggs (Rice Agronomy, J. W. Jones) (November 12)

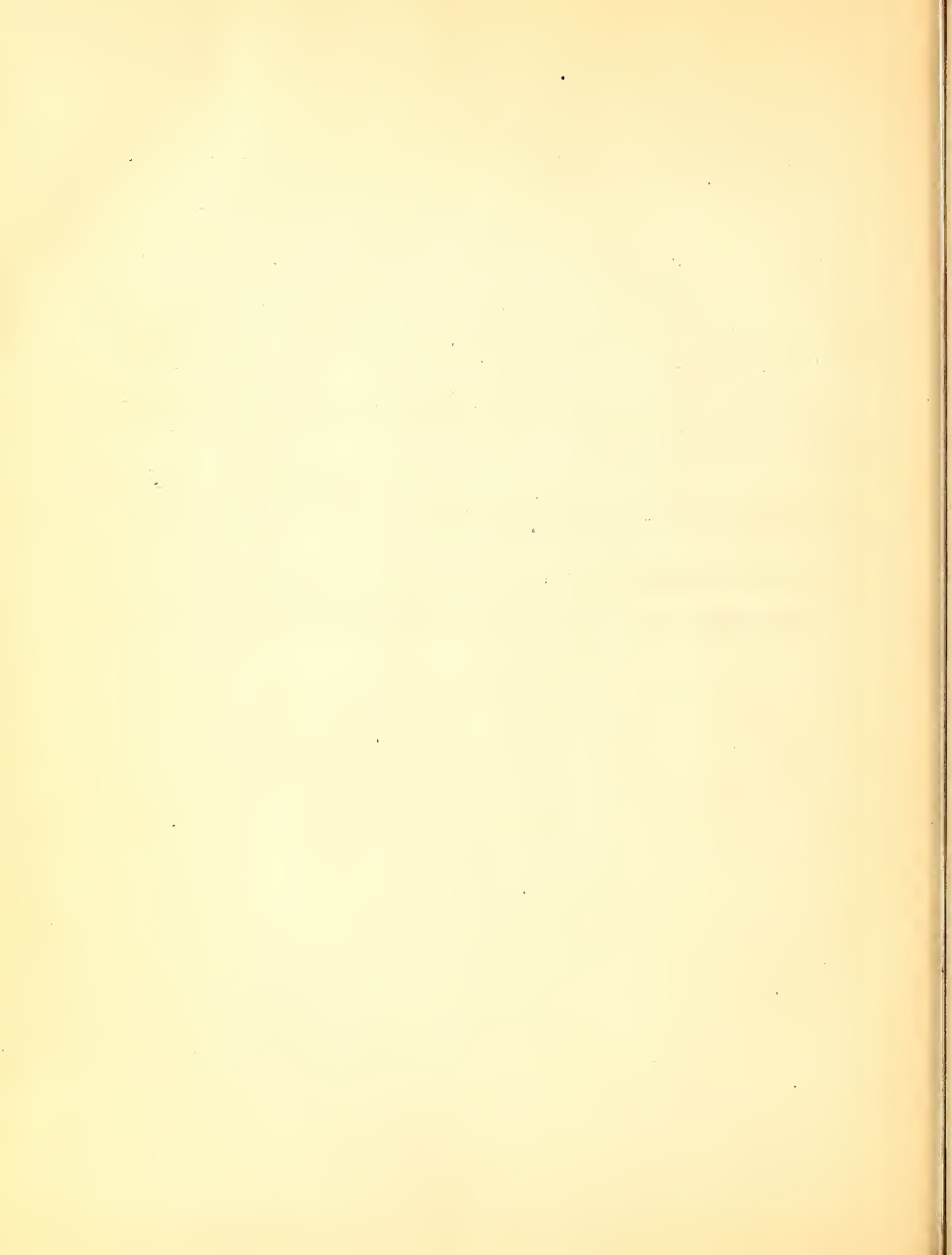
I returned from Shafter last night. Of the 1,126 varieties and strains of rice sown in the detention nursery 956 matured seed and panicles of each were harvested. The 170 varieties and strains which did not mature seed were largely tropical rices obtained in Java and the Philippine Islands.

The remnant rices were cut by a farmer near Shafter for turkey feed, and the panicles of the various rices harvested were placed in a box and shipped to Biggs by freight.

We have had a light rain here and in the San Joaquin Valley during the past 48 hours which will improve the grazing, and be of benefit to those who are preparing the land for winter grains.

4 University Farm, Davis (Cereal Agronomy, V. H. Florell)

Agricultural Experiment Station, Berkeley (Cereal Smuts, F. M. Briggs)



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CEREAL COURIER

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U.S. Department of Agriculture

Official Messenger of the Office of Cereal Crops and Diseases
Bureau of Plant Industry, U. S. Department of Agriculture
(NOT FOR PUBLICATION)

Vol. 13

No. 30

November 30, 1926
Personnel (Nov. 21-30) and Project Issue

PERSONNEL ITEMS

The following members of the Office have been authorized to attend the annual winter conference of barberry eradication leaders and stem rust epidemiology officials to be held at University Farm, St. Paul, Minn., on Wednesday and Thursday, December 8 and 9:

Dr. C. R. Ball, senior agronomist in charge; Dr. H. B. Humphrey, senior pathologist in charge of rust investigations; and Dr. F. E. Kempton and Lynn D. Hutton, associate pathologist in charge of barberry eradication and associate pathologist in barberry eradication, respectively.

M. T. Jenkins, associate agronomist in charge of cooperative corn experiments at Ames, Iowa, returned to his headquarters on November 20 after spending ten days in the Washington Office.

MANUSCRIPTS AND PUBLICATIONS

77 A manuscript entitled "The Technical Bulletin as a Writer Sees It," by Carleton R. Ball, was approved November 23 for publication in the Journal of the American Society of Agronomy.

78 A manuscript entitled "Studies on Viruses: Preliminary Investigations on Quantitative and Purification Methods," by H. H. McKinney, was submitted November 24 for publication in the Journal of Agricultural Research.

79 A manuscript entitled "Factors Affecting Certain Properties of a Mosaic Virus," by H. H. McKinney, was submitted November 24 for publication in the Journal of Agricultural Research.

80 A manuscript entitled "Breeding Wheat for Resistance to Physiologic Forms of Stem Rust," by Olaf S. Aamodt, was approved November 27 for publication in the Journal of the American Society of Agronomy.

81 A manuscript entitled "Breeding Plants for Disease Resistance," by C. E. Leighty, was approved November 27 for publication in the Journal of the American Society of Agronomy.

82. A manuscript entitled "The Development of Disease-Resistant Strains of Corn," by J. R. Holbert, was submitted November 29 for publication in the Proceedings of The International Congress of Plant Sciences.

83 A manuscript entitled "Comparative Studies of Winter Hardiness in Wheat," by John H. Martin, was submitted November 30 for publication in the Journal of Agricultural Research.

84 A manuscript entitled "A Study of the Inheritance of Winterhardiness, Growth Habit, and Quality of Seed in Crosses Between Spring and Winter Wheats," by H. K. Hayes and Olaf S. Aamodt, was approved November 30 for publication as an abstract in the Anatomical Record.

The article entitled "The Growth of Ophiobolus graminis Sacc. in Relation to Hydrogen-Ion Concentration," by Robert W. Webb and Hurley Fellows, appears in the Journal of Agricultural Research 33 (No. 9): 845-872, figs. 1-8. November 1, 1926. (The studies reported in this article were conducted cooperatively by the Office of Cereal Crops and Diseases and the Wisconsin Agricultural Experiment Station.)

Circular 73 of the North Dakota Agricultural College Extension Division entitled "Barberry Eradication in North Dakota," by George C. Mayoue, was received November 29, bearing date of September, 1926. (Cooperation between Office of Cereal Crops and Diseases and the North Dakota Agricultural College Extension Division.)

PROJECT REPORTSOAT INVESTIGATIONS

(T. R. Stanton, Agronomist in Charge)

Breeding Winter Oats

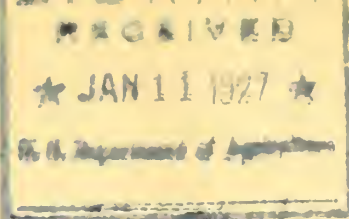
Material progress was made in the breeding of fall-sown oats at the Arlington Experiment Farm during the season of 1925-1926, owing primarily to severe winterkilling which served to eliminate a large percentage of the more tender strains. Most of the large number of selections from crosses of Fulghum on Culberson, Dwarf Culberson, Hatchett, and of other cold-resistant varieties, which had been carried for several years in order to determine their winter resistance, succumbed entirely.

Some of the winter form Fulghum selections showed excellent winter resistance and made very satisfactory yields. However, considerably more variation than was expected occurred in the relative winter resistance of these strains. It is possible that further selection will be necessary to isolate the more winter-hardy of these strains. A few of these selections were grown at Athens, Ga., in 1926 with excellent results. It is believed that they are of more promise for north Georgia than the Lee and Gustis. The latter undoubtedly are best adapted to the more northern portion of the winter-oat belt where the Winter Turf and Culberson have been the dominant varieties. A number of the selections from the Winter Turf-Aurora crosses continued very promising. A few of these even may be superior to the Lee.

Of the 1,250 plant selections grown in 6-foot rows, only a relatively small percentage survived the winter. Most of those surviving the winter were believed to be of sufficient promise to warrant further testing.

During the flowering period, about 75 new winter oat crosses were made at the Arlington Experiment Farm for the synthetic production of still harder winter oat varieties. These crosses include different combinations between all those varieties and strains which have shown a high degree of cold resistance. It is hoped that by crossing these hardy sorts still more winter-resistant strains may result. Most of these crosses are not sufficiently wide to warrant definite studies on the inheritance of certain plant and kernel characters. The plan is to grow and observe them primarily for their reaction to severe cold under Arlington Farm conditions.

To determine the relative cold resistance of different varieties and strains of fall-sown oats, uniform winter-oat hardiness nurseries were sown during the current season at Arlington Experiment Farm, Rosslyn, Va., Blacksburg, Va., Clemson College and Hartsville, S. C., Athens and Experiment, Ga., A. & M. College, Miss., and Fayetteville, Ark. These varieties and strains include Dicknell, Custis, Lee, Tech, three Culberson, two Fulghum, five Red Rustproof, and two Winter Turf strains. The results of widely scattered varietal experiments have shown that such types as Winter Turf, Culberson, Tech, etc., have been among the most cold resistant. However, during recent years a number of new varieties and strains have been developed which appear to be almost as winter-hardy as these older and well established types. In order to determine the value of these new strains, especially with regard to their cold resistance, it has been necessary to grow them in uniform winter-oat hardiness nurseries, representing various conditions of soil and climate. Owing to the importance of the problem, the agronomists of the different stations have been more than willing to cooperate with this Office in conducting these nurseries and recording data, believing that the results will materially benefit all concerned.



CEREAL COURIER

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Vol. 18

No. 31

December 15, 1926

Personnel (Dec. 1-15) and Field Station (Nov. 16-30) Issue

PERSONNEL ITEMS

Dr. C. R. Ball, senior agronomist in charge, Dr. F. E. Kempton, associate pathologist in charge of barberry eradication, and L. D. Hutton, associate pathologist in barberry eradication, have returned from St. Paul, Minn., where they have been in attendance at the conferences of barberry eradication leaders and stem rust epidemiology officials.

Dr. W. H. Tisdale, pathologist in charge of cereal smut investigations, who has been on the Office staff since 1916, resigned his position on December 15 to accept a position with the E. I. du Pont de Nemours & Co., Wilmington, Del.

G. A. Wiebe, associate agronomist in charge of cooperative cereal experiments at the Aberdeen Substation, Aberdeen, Idaho, was authorized to proceed to Sacaton, Ariz., to seed the barley nursery at the United States Field Station. On December 10 Mr. Wiebe wrote that it had rained from the time of his arrival on the 6th. He expected to be able to begin seeding operations on Monday, the 13th, provided the rain had ceased.

MANUSCRIPTS AND PUBLICATIONS

The article entitled "Seed Treatments for the Control of Bunt of Wheat," by Fred N. Briggs, appears in Phytopathology 16 (no. 11): 829-842. November, 1926. (Received December 4, 1926.) (Cooperative investigation between the Office of Cereal Crops and Diseases and the California Agricultural Experiment Station.)

The note entitled "Virus Mixtures That May Not Be Detected in Young Tobacco Plants," by H. H. McKinney, appears in the section, Phytopathological Notes, in Phytopath. 16 (No. 11): 893. November, 1926. (Received December 4.) (Cooperation between Office of Cereal Crops and Diseases and the Wisconsin Agricultural Experiment Station.)

BARBERRY ERADICATION CONFERENCES

Barberry eradication has aided greatly in the control of stem-rust losses of cereals. This was the concensus of opinion of those who attended the two important conferences in barberry eradication held at the College of Agriculture, University Farm, St. Paul, Minn., December 7 to 10, inclusive.

The Conference for the Prevention of Grain Rust

The Conference for the Prevention of Grain Rust held its fifth meeting on Tuesday, December 7. This meeting was composed of representatives of commercial groups of the Twin Cities and representatives of agricultural and allied interests of the 13 north-central States comprising the barberry eradication area. Federal and State leaders of barberry eradication were in attendance.

The Chairman of the Conference was Governor Theodore Christianson of Minnesota. He presided throughout the entire morning session and remained for luncheon with the members of the Conference. The members representing the 13 States of the area, namely, Colorado, Illinois, Indiana, Iowa, Michigan, Minnesota, Montana, Nebraska, North Dakota, Ohio, South Dakota, Wisconsin, and Wyoming, were present and took active part in the discussions. The business men of the Twin Cities showed a special interest in continued attendance. State superintendents of public instruction were among those invited for the first time to help plan the future of the campaign. This conference approved accomplishments of barberry eradication, and plans for a campaign that by its intensity and continuation will clean up the remaining barberry bushes and the millions of scattered seedlings.

The continued use of publicity and educational materials and demonstrations was recommended, and the formation of a definite plan of instruction through the use of existing educational facilities was approved.

The Conference of Barberry Eradication Leaders

The ninth annual meeting of the Federal and State leaders of barberry eradication, the stem-rust epidemiology forces, and members of cooperative agencies, was held December 8 to 10, inclusive.

The operations and results of barberry eradication for the past nine field seasons were reviewed. The various phases of the campaign, survey and eradication, publicity and education, related investigations, cooperation, supervision of office and field activities, and other details were discussed. The methods employed and the results obtained in each type of survey and under the varying conditions in the various areas of the 13 States and in each State were brought out.

The completion of the areas remaining for original survey, with the time and method of survey were considered.

The second-survey methods came in for much discussion, because there are such extensive woodlands and pasture areas to which barberries may be spread. The main discussion revolved about the question whether or not every foot of all these areas should be covered. Somewhat different methods have been employed in different States and parts of States, but greater uniformity is insured in future.

Continuing resurvey is necessary to find and destroy sprouts and the many seedlings that continue to appear near bushes that have borne fruit.

Additional surveys seem to be necessary to clear some areas of barberries overlooked or appearing from seeds after the second survey. Recommendations were made for checking the efficiency of survey.

A very lively and satisfactory discussion of the publicity and educational phases of the campaign took place.

The different types of publicity used and the means of determining the effectiveness of each were discussed. Continuation of the use of newspaper articles, circular letters, postcards, bulletins, circulars, posters, cartoons, lantern slides, motion pictures, window displays, field and fair demonstrations, and exhibits was recommended.

Plans were approved for making the present educational phases more uniformly extensive and intensive. Various leaders presented plans for "teaching the teachers" and for gaining the cooperation of school officials and teachers in training the school children in barberry eradication.

Statistics presented showed the school grades in which the greatest number of pupils may be reached. It was recommended that the full cooperation of State and county superintendents of public instruction and other school officials be sought. The preparation of lesson and demonstration materials for teachers is necessary. Teachers should be reached through normal schools, colleges, summer schools, and other teacher-group meetings. It was suggested that for permanency of instruction, the barberry-eradication story should be given proper mention in text books and educational journals, and to that end the cooperation of authors and publishers should be sought.

Complete cooperation with agricultural college officials, officials and members of farm organizations and other agricultural agencies, business men, and property owners was stressed. The close cooperation of the public is essential for the completion of barberry eradication. It was recommended that State leaders in their respective States interest a larger selected group in the aims and results of the campaign and thus obtain greater aid in spreading the gospel of barberry eradication.

FIELD STATION CONDITION AND PROGRESS

HUMID ATLANTIC COAST STATES (South to North)

GEORGIA

State College of Agriculture, Athens (Cereal Agronomy, R. R. Childs)

VIRGINIA

Arlington Experiment Farm, Rosslyn (Small Grain Agronomy, J. W. Taylor)

Arlington Experiment Farm, Rosslyn (Corn Breeding, F. D. Richey)

Arlington Experiment Farm, Rosslyn (Cereal Smuts, W. H. Tisdale)

Arlington Experiment Farm, Rosslyn (Virus Diseases, H. H. McKinney and R. W. Webb)

Arlington Experiment Farm, Rosslyn (Cereal Bacterial Diseases, C. S. Reddy)

NEW YORK

Cornell University Agricultural Experiment Station, Ithaca (Cereal Breeding, H. H. Love)

HUMID MISSISSIPPI VALLEY STATES (South to North)

LOUISIANA

Rice Experiment Station, Crowley (Rice Agronomy, J. M. Jenkins)
(December 10)

The weather during the month of November was rather favorable for general farm work. Rain occurred on 10 days. The total precipitation for the month was 4.86 inches, which is 1.50 inches greater than for the same period last year and 0.98 inch greater than the average for November during the last 16 years. The first frost of the season occurred on November 5 and the first ice, on the 19th.

Many farmers have taken advantage of the good weather for plowing. The threshing of the rice crop of southwestern Louisiana was completed during November.

Work at the station has progressed satisfactorily. The late maturing rices in the new introductions were harvested after frost. Some plats of sugarcane were not harvested until November 26.

Mr. G. M. Banks, Superintendent of the Rice Experiment Station, Stuttgart, Ark., was a visitor on November 20.

The weather for the last two weeks has been summer-like and very pleasant. On two days during this period the temperature has been as high as 81 degrees F. Until today, there has been no rain so far this month.

Agricultural Experiment Station, Baton Rouge (Corn Breeding, H. F. Stoneberg)

MISSOURI

Agricultural Experiment Station, Columbia (Cereal Agronomy, L. J. Stadler)

TENNESSEE

Agricultural Experiment Station, Knoxville (Corn Breeding, L. S. Mayer)

IOWA

Agricultural Experiment Station, Ames (Oat Breeding, L. C. Burnett)

Agricultural Experiment Station, Ames (Corn Breeding, M. T. Jenkins)

Agricultural Experiment Station, Ames (Crown Rust of Oats, S. M. Dietz)

Iowa State College, Ames (Barberry Eradication, M. A. Smith)

ILLINOIS

Funk Bros. Seed Co., Bloomington (Corn Root, Stalk and Ear Rots, J. R. Holbert)

Box 72, Post Office Building, Urbana (Barberry Eradication, G. C. Curran)

INDIANA

Purdue University Agricultural Experiment Station, La Fayette (Corn Rots and Metallic Poisoning, G. N. Hoffer)

Purdue University Agricultural Experiment Station, La Fayette (Leaf Rusts, E. E. Mains)

Purdue University College of Agriculture, La Fayette (Barberry Eradication, W. E. Leer)

OHIO

Ohio State University, College of Agriculture, Columbus (Barberry Eradication, J. W. Baringer)

MICHIGAN

Agricultural College, East Lansing (Barberry Eradication, W. F. Reddy)

WISCONSIN

Agricultural Experiment Station, Madison (Wheat Scab, J. G. Dickson)

Department of Agriculture, State Capitol Annex, Madison (Barberry Eradication, W. A. Walker)

MINNESOTA

Agricultural Experiment Station, University Farm, St. Paul (Wheat Breeding, O. S. Aamodt)

Agricultural Experiment Station, University Farm, St. Paul (Stem Rust, E. C. Stakman)

Agricultural Experiment Station, University Farm, St. Paul (Flax Rust, C. V. Kightlinger)

Agricultural Experiment Station, University Farm, St. Paul (Barberry Eradication, L. W. Melander)

GREAT PLAINS AREA (South to North)

OKLAHOMA

Woodward Field Station, Woodward (Grain Sorghums, J. B. Sieglinger)
(December 3)

With the exception of the last sown plats in the date-of-seeding experiment (which were too green) the grain-sorghum plats have been threshed, the grain has been cleaned, and the yields have been computed. The yields from the rate-of-seeding experiments are as follows:

Dwarf Milo, C. I. No. 332. (Seeded June 15.)

Rate and Spacing	Yield (Bu. per acre)			
	Replications			Average
	A	B	C	
6 inch, 44-inch rows	47.0	45.8	58.7	50.3
4 inch, alternate 44-inch & 88-inch rows	49.6	38.6	51.4	46.5
12 inch, 44-inch rows	48.2	49.8	54.6	50.9
8 inch, alternate 44- & 88-inch rows	48.2	39.1	50.1	45.8
18 inch, 44-inch rows	56.3	47.0	55.4	52.9
12 inch, 44- and 88-inch rows	50.1	43.9	48.8	47.6
24 inch, 44-inch rows	50.2	48.6	57.9	52.2
16 inch, alternate 44- & 88-inch rows	45.4	45.5	54.9	47.9
30 inch, 44-inch rows	40.6	49.8	65.9	52.1
20 inch, alternate 44- & 88-inch rows	35.4	40.2	58.4	44.7

Feterita, C. I. No. 182. (Seeded June 15.)

Rate (all rows 44 inches apart)	Yield (Bu. per acre)		
	1	2	Average
6 inches	31.3	29.3	30.3
12 inches	32.9	27.7	30.3
18 inches	36.2	31.3	33.8
24 inches	27.3	39.0	33.2
30 inches	29.3	40.2	34.8

Sunrise Kafir, C. I. No. 472. (Seeded May 28.)

Rate (all rows 44 inches apart)	Yield (Bu. per acre)		
	1	2	Average
6 inches	42.3	43.4	42.9
12 inches	39.4	40.2	39.8
18 inches	30.9	34.6	32.8
24 inches	28.9	30.5	29.7
30 inches	26.1	30.5	28.3

Reed Blackhull Kafir, C. I. No. 628. (Seeded May 28.)

Rate (all rows 44 inches apart)	Yield (Bu. per acre)		
	1	2	Average
6 inches	50.9	44.6	47.8
12 inches	40.2	38.2	39.2
18 inches	35.4	35.8	35.6
24 inches	33.0	28.5	30.8
30 inches	27.3	26.8	27.1

Note:- All grain sorghums are now computed at 56 pounds to the bushel.

The weather of the last half of November was cold, dry, and windy; minimum temperature, 18 degrees on the 18th; maximum, 72 degrees on the 25th; precipitation, 0.25 inch on the 16th; total precipitation for November, 1.09 inches.

KANSAS

- Agricultural Experiment Station, Manhattan (Cereal Breeding, J. H. Parker)
Agricultural Experiment Station, Manhattan (Corn Breeding, A. M. Brunson)
Agricultural Experiment Station, Manhattan (Wheat Foot Rots, Hurley Fellows)
Agricultural Experiment Station, Manhattan (Wheat Leaf Rust, C.O. Johnston)
Hays Branch Experiment Station, Hays (Cereal Agronomy, A. F. Swanson)

COLORADO

- Agricultural College, Ft. Collins (Barberry Eradication, E. A. Lungren)

NEBRASKA

- North Platte Substation, North Platte (Cereal Agronomy, G. F. Sprague)
College of Agriculture, University Farm, Lincoln (Barberry Eradication, A. F. Thiel)

WYOMING

- College of Agriculture, University of Wyoming, Laramie (Barberry Eradication, E. A. Lungren)

SOUTH DAKOTA

- College of Agriculture, Brookings (Barberry Eradication, R. O. Bulger)

NORTH DAKOTA

- Agricultural Experiment Station, State College Station, Fargo (Flax Diseases, L. W. Boyle)
Agricultural Experiment Station, State College Station, Fargo (Barberry Eradication, G. C. Mayoue)

Dickinson Substation, Dickinson (Cereal Agronomy, R. W. Smith) (December 1)

During the past two weeks cold, cloudy weather has prevailed. Only two clear days were recorded during that time and but nine clear days for the entire month. Clear weather usually predominates at this time of the year. The snowfall for the month was above normal, snow being recorded on eight different days with a total of 7.45 inches, or 0.77 inch of precipitation. The normal for the month is about 0.47 inch. The mean temperature for the month was 23.5 degrees, which is about 5 degrees below normal. The snow is now about four inches deep. Only during the past week has the snow been deep enough to afford much protection to the winter grain. A maximum temperature of 63 degrees was reached on November 6, while a minimum of 11 degrees below zero was recorded this morning.

Below are given the yields and other data obtained from the rate-and-date-of-seeding experiment with Marquis, Kota, and Nodak wheats in 1926,

Supt. Leroy Moomaw and wife left this morning for Washington, D. C.

Data obtained from an experiment in rate and date of seeding Marquis, Kota, and Nodak wheats sown at four rates on three dates on the Dickinson Substation, Dickinson, N. Dak., in 1926

Date	Marquis					Kota					Nodak				
of	Rate of Seeding					Rate of seeding					Rate of seeding				
Seed-	(Pecks per acre)					(Pecks per acre)					(Pecks per acre)				
ing	3	4	5	6	Av.	3	4	5	6	Av.	3	4	5	6	Av.
	:Acre yield (Bu.)					:Acre yield (Bu.)					:Acre yield (Bu.)				
Apr.17:	7.7:	9.2:	7.6:	6.6:	7.8:	7.6:	7.3:	8.2:	9.0:	8.1:	7.1:	8.0:	9.5:	10.0:	8.7
May 1:	13.5:	10.5:	9.8:	9.2:	10.8:	9.8:	10.2:	10.8:	10.1:	10.2:	6.6:	8.8:	10.1:	10.0:	8.9
May 15:	7.7:	6.6:	6.5:	5.7:	6.6:	7.9:	9.6:	8.1:	8.3:	8.5:	5.3:	6.1:	6.8:	7.2:	6.4
Av.	9.6:	8.8:	8.0:	7.2:	8.4:	8.4:	9.2:	9.0:	9.1:	8.9:	6.3:	7.6:	8.8:	9.1:	8.0

Average test weight and crude protein content of Marquis, Kota, and Nodak wheats grown in a rate-and-date-of-seeding experiment at the Dickinson Substation, Dickinson, N. Dak., in 1926^{a/}

Date of:	Marquis		Kota		Nodak	
Seeding:	Weight	Protein	Weight	Protein	Weight	Protein
	(Lbs.)	(Per cent)	(Lbs.)	(Per cent)	(Lbs.)	(Per cent)
Apr. 17:	59.3	17.06	60.0	18.08	60.7	16.38
May 1:	61.0	18.57	60.7	17.75	59.9	16.67
May 15:	59.2	18.75	61.2	19.05	58.2	17.60
Av.	59.8	17.13	60.6	18.29	59.6	16.88

^{a/} Data compiled by G. E. Mangels, Cereal Chemist at the North Dakota Agricultural College.

Northern Great Plains Field Station, Mandan (Flax Breeding, J. C. Brinsmade, Jr.) (December 1)

The weather during October and November was generally cloudy, with comparatively mild temperatures and low precipitation. Maximum temperature in October was 75 degrees, on the 19th; minimum, 9 degrees October 29; precipitation 0.18 inch. Maximum temperature in November was 63 degrees on November 5. No temperature below zero was recorded until November 30 when a temperature of -15 degrees was recorded. Precipitation in November was 0.32 inch. The total precipitation to date since January 1 is only 11.09 inches, which is nearly 5 inches below normal. There probably is less moisture in the soil at this time than in any year on record in this locality. The Heart and Missouri rivers are lower than ever recorded before at this time of year.

Threshing of the flax nursery and some of the hybrid material was completed November 5. There still remain some plant selections and hybrids and plants in the spacing experiment to be described and threshed.

The flax varietal plats, though they contained fewer weeds than in any year since they have been grown on old land, gave poor yields on account of the drought. Differences between varieties just before harvest were nevertheless very striking. N. D. R. No. 119 and Red Wing appeared outstandingly good in all three replications. Slope appeared very poor in all replications.

Average yields in the flax varietal plats are as follows:

Average yields of nine flax varieties grown in 50th-acre plats replicated three times, arranged in rank of average yield, at the Northern Great Plains Field Station, Mandan, N. Dak., in 1925

<u>Variety</u>	<u>C. I. No.</u>	<u>Av. Yield</u> (Bu. per acre)
N.D.R.No. 119	326	4.7
Red Wing	320	3.8
Winona	179	2.7
Long No. 79	280	2.6
N.D.R.No. 52	275	2.4
Linota	244	1.8
N.D.No. 40013	241	1.6
N.D.R.No. 114	13	1.5
Slope	274	1.3

The date-and-rate-of-seeding-and-tillage experiment produced average yields as follows:

Plats double disked at 10-day intervals before seeding

<u>Date of seeding</u>	<u>Av. Yield</u> (Bu. per acre)	<u>Av. wt. of weeds</u> (Lbs. per acre)
April 20	1.5	1927
April 30	.9	3069
May 11	2.0	1150
May 21	3.7	1613
May 31	4.1	1290
June 10	5.1	1232

Plats plowed just before seeding

<u>Date of seeding</u>	<u>Av. Yield</u> (Bu. per acre)	<u>Av. wt. of weeds</u> (Lbs. per acre)
May 21	2.3	3267
May 31	2.1	3939
June 10	1.7	3454

Plats sown at rates of 16, 24 and 32 pounds per acre

<u>Rate of seeding</u>	<u>Av. Yield</u> (Bu. per acre)	<u>Av. wt. of weeds</u> (Lbs. per acre)
16 pounds	2.5	2134
24 pounds	3.1	1483
32 pounds	3.1	1522

The following conclusions may be drawn from the foregoing:

Late-seeded flax produced better yields this year than early seeded flax, contrary to the usual results.

Plats disked at 10-day intervals before seeding gave better yields than plowed plats sown on the same dates.

Plats sown at the 24-pound rate yielded better than those sown at the 16-pound rate.

Plats sown at the 32-pound rate yielded no better than plats sown at the 24-pound rate.

Northern Great Plains Field Station, Mandan (Cereal Agronomy, E. R. Ausemus)

MONTANA

Judith Basin Substation, Moccasin (Cereal Agronomy, R. W. May)
(November 16)

Weather conditions were unusually favorable for fall-sown wheat during the first half of November. There was an abundance of moisture in the soil, no strong winds or soil blowing, and mild temperatures. As a result winter wheat is much more vigorous than usual at this date. This is particularly true of wheat sown early.

The weather appears to be changing today. It is snowing accompanied with strong wind and falling temperature. The snow which now lies on the ground probably is equal to four or five inches on the level, but the snow is drifting as it falls.

The precipitation recorded during the first half of November totals 0.33 inch, as compared to 0.84 inch as the normal precipitation for the whole month. The minimum temperatures recorded were 17 degrees and 22 degrees on November 3 and 4, while the maximum temperatures were 63 degrees and 63 degrees, the former on November 5 and the latter on November 5 and 12.

State College of Agriculture, Bozeman (Barberry Eradication, W. L. Popham)

North Montana Substation, Havre (M. A. Bell) (November 13) (In cooperation with the Montana Agricultural Experiment Station.)

A 600-row, dry-land, spring-wheat nursery was grown at the Havre Station from seed furnished by J. Allen Clark, Office of Cereal Crops and Diseases. The varieties and hybrid strains were grown in single row rows replicated three times. Check rows of Marquis, Hard Federation, or Kota alternated every tenth row. The nursery contained 99 strains of Marquis-Hard Federation crosses, 27 strains of Kota-Hard Federation crosses, as well as leading hybrid strains of Kota x Galgalos, Marquis x Kota, Kota x Ruby, Wanred x Marquis, Marquis x Erivan, Marquis x Prelude, and Marquis x Sunset. The average yields of the Marquis, Hard Federation, and Kota check rows were the same, namely, 17.2 bushels. There were 109 hybrid strains or varieties which exceeded this yield. Of the 99 Marquis x Hard Federation strains, 78 exceeded the average yields of the parent check rows. The 12 highest yielding strains of this cross and all other varieties and strains which outyielded the parent check rows are given in the following table.

Average yields of some of the leading wheat hybrids and varieties grown in single row rows replicated three times at the North Montana Substation, Havre, Mont., in 1926

Cross or Variety	Hybrid No.	Yield (Bu. per acre)
Marquis x Hard Federation	21202A1-34-9	22.4
Do	21202B2-93-13	21.7
Do	21202A2-5-1	21.4
Marquis x Sunset	2016A1-15-2	21.4
Marquis x Hard Federation	21202A1-34-31	21.0

Continued

Cross or Variety	Hybrid No.	Yield (Bu. per A.)
Marquis x Hard Federation	21202B3-4-11	20.9a/
Hard Federation x Marquis	21203A2-46-2	20.9
Marquis x Hard Federation	21202B1-24-44	20.7
Do	21202B1-24-28	20.6
Do	21202B1-24-67	20.6
Do	21202B3-39-11	20.5
Hard Federation x Marquis	21203A3-101-38	20.4
Marquis x Hard Federation	21202B1-24-63	20.3
Kota x Hard Federation	20143D1-34-2	20.3
Marquis x Sunset	20167A4-14-2	20.3
Supreme (C. I. 8026)	-----	19.7
Kota x Hard Federation	20143C1-129-1	19.6
Kota x Galgalos	22254B6-17	19.6
Kota x Hard Federation	20148E9-2-1	19.5
Peliss Sel. (C. I. 1534-14)	-----	19.5
Marquis x Sunset	20167A4-14-3	19.3
Larcombe's No. 3 (C. I. 8196)	-----	19.3
Ceres (C. I. 6900)	-----	19.2
Alberta No. 3 (C. I. 8022)	-----	19.2
Red Bobs Sel. (C. I. 6255-26)	-----	19.1
Alberta No. 2 (C. I. 8021)	-----	19.1
Hard Federation x Kota	20149E5-16-3	19.0
Kota x Hard Federation	20148A1-16-4-3	18.7
Do	20148A1-27-2-2	18.6
Marquis x Kota (C. I. 8004)	1686-34	18.4
Hard Federation x Kota	20149A1-4-2-3	18.2
Do	20149C1-6-1	18.2
Kota x Galgalos	22254B4-2	18.2
Galgalos (C. I. 2393-40)	-----	18.1
Marquis x Kota (C. I. 8002)	1686-7	18.0
Hard Federation x Kota	20149A1-5-1-3	17.8
Kanred x Marquis (C. I. 8019)	11-18-44	17.8
Kota x Galgalos	22254A4-31-1	17.7
Hard Federation x Kota	20149A1-25-2-2	17.4
Do	20149A2-55-2-2	17.4
Kota x Hard Federation	20148A3-98-4	17.3
Marquis x Prelude	1985A2-2-4	17.3
Marquis (C. I. 3641)	-----	17.2b/
Hard Federation (C. I. 4733)	-----	17.2c/
Kota (C. I. 5878)	-----	17.2d/

a/ Only 2 replications

b/ Average of 27 check rows

c/ Average of 21 check rows

d/ Average of 9 check rows

WESTERN BASIN AND COAST AREAS (North to West and South)

IDAHO

Aberdeen Substation, Aberdeen (Cereal Agronomy, G. A. Wiebe)

Agricultural Experiment Station, Moscow (Stripe Rust, C. W. Hungerford)

WASHINGTON

Agricultural Experiment Station, Pullman (Cereal Breeding, E. F. Gaines)

OREGON

Sherman County Branch Station, Moro (Cereal Agronomy, D. E. Stephens)

Sherman County Branch Station, Moro (Cereal Breeding, B. B. Bayles)

CALIFORNIA

Biggs Rice Field Station, Biggs (Rice Agronomy, J. W. Jones)
(December 1)

A precipitation of 6.85 inches was recorded in November, compared with an average for the past 14 years of 2.81 inches. This rain has been a fine thing for stockmen and it also has been of marked benefit to fall-sown crops.

All of the California rice crop was warehoused this year without damage from wet weather. The quality of the rice is good. The California rice market is somewhat stronger than it was and during the past two weeks the Rice Growers' Association has sold about 50,000 bags at prices ranging from \$2.72 to \$2.96 per hundred. There are in California about one million bags of rice in excess of the regular market for the crop. Therefore, the Rice Growers' Association has a real job in trying to market the crop at a reasonable price for the growers.

University Farm, Davis (Cereal Agronomy, V. H. Florell) (December 1)

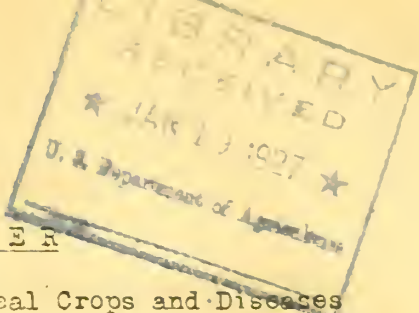
All but two small lots of the nursery experiments at Davis were sown during the period from November 8 to 17. On November 18 a period of rainy weather set in with almost daily precipitation until the 26th. The total precipitation for this period was 4.67 inches. On November 11 and 12 sowing was interrupted by a rain of 0.51 inch. The total precipitation to date for the season is 7.19 inches.

Although the seed bed was dry at the time of sowing it was in excellent tilth. The rains were gentle, and all of the seed sown has emerged with excellent stands. With favorable weather for a few days it will be possible to complete the two small lots left to sow.

The land for the plat experiment has not yet been worked down. It is still in rough fallow and will be prepared as soon as the weather permits. The reason for the delay in sowing this tract is because of a bad infestation of morning glory. An attempt has been made this year to control this weed pest by means of a spray preparation, the effective agent of which is an arsenic compound. The trade name for this spray is K.M.G. (Kills Morning Glory). (Let's hope it kills it.) Most of the area was almost covered with a heavy growth of the weed. About October 20 the field was sprayed, and a second spraying was applied about November 4. The first application appeared to be quite effective in killing the vegetative portions above the ground. Digging tests made during the summer have shown that the poison was absorbed and had worked downwards into the root system about two feet below the surface of the ground. After about 10 days a green growth of the weed began to appear on the edges of the sprayed areas resembling somewhat the rings of the fairy ring fungus. Since the second application very little plant growth has appeared.

Agricultural Experiment Station, Berkeley (Cereal Smuts, F. N. Briggs)

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CEREAL COURIER

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Bureau of Plant Industry, U. S. Department of Agriculture
(NOT FOR PUBLICATION)

Vol. 18

No. 32

December 31, 1926
Personnel (Dec. 16-31) and Project Issue

PERSONNEL ITEMS

O. S. Aamodt, associate pathologist in charge of cooperative wheat-breeding experiments at University Farm, St. Paul, Minn., who came to the Washington Office the latter part of November to prepare reports and manuscripts for publication, was authorized to attend at his own expense the meetings of the American Association for the Advancement of Science and Associated Societies in Philadelphia from December 27, 1926, to January 1, 1927. Mr. Aamodt returned to his headquarters at St. Paul from Philadelphia.

Dr. H. B. Humphrey, senior pathologist in charge of cereal-rust investigations, returned to Washington on December 16 after attending the conference of leaders in barberry eradication in St. Paul and Minneapolis and conferring with experiment station officials in Minnesota, Iowa, and Indiana concerning rust research plans and progress.

Dr. E. C. Stakman, agent in the cereal-disease investigations conducted cooperatively with the Minnesota Agricultural Experiment Station at St. Paul, Minn., came to Washington the week of December 24 to spend a month in the preparation of a cooperative bulletin on rust epidemiology.

VISITORS

Dr. W. W. Robbins, associate professor of botany at the University of California, and botanist of the California Experiment Station at Davis, Calif., was an Office visitor on December 31.

MANUSCRIPTS AND PUBLICATIONS

Galley proof of article entitled "The Technical Bulletin as the Writer Sees It," by Carleton R. Ball, for publication in the Journal of American Society of Agronomy, was read December 21.

Bulletin 196, of the Montana Agricultural Experiment Station, entitled "Montana's Barberry Campaign," by H. E. Morris and W. L. Popham, was received December 21. (Cooperation between Office of Cereal Crops and Diseases and the Montana Agricultural Experiment Station.)

U. S. Dept. Agr. Bul. 1451 entitled "Methods of Eradicating the Common Barberry (Berberis vulgaris L.)," by Noel F. Thompson and W. W. Robbins, was received from the Government Printing Office on December 31, bearing date of December, 1926. (In cooperation with the University of Wisconsin and the Wisconsin Department of Agriculture.)

GREETINGS TO THE STAFF

Nineteen hundred and twenty-six has gone; 1927 has come. A New Year of opportunity! What is past is past, and our action can not be changed. Would we change it if we could? We are concerned for the quality and the influence of what we do. We would wish that the less good might be made good and the good made better. If that would be our wish, though vain, for the old year, let us make it our steadfast purpose for the New Year. Each day as it comes is a New Year Day. Each hour is a new opportunity.

It is ours to say what we shall be. As we set our standards so do we help to make the conditions of our environment. As we raise our standards, so do we lift those of the office, the Department, the community, the public service and the world. It is difficult and tiresome to stand still. We must go forward or slip backward. No one wants to stand still. Growth, development, and fruition are the laws of life. And we are alive! Let us consecrate the New Year to enlargement of purpose, ability, and achievement.

Carleton R. Ball.

January 1, 1927.

AMERICAN ASSOCIATION FOR THE ADVANCEMENT OF SCIENCE AND
ASSOCIATED SOCIETIES

The following members of the Office of Cereal Crops and Diseases attended the meetings of the American Association for the Advancement of Science and Associated Societies held in Philadelphia, Pa., December 31, 1926, to January 1, 1927:

O. S. Aamodt	Dr. F. E. Kempton
Dr. Charlotte Elliott	Dr. C. E. Leighty
Miss Marion A. Griffiths	Dr. J. H. Martin
Dr. H. B. Humphrey	L. E. Melchers
Dr. A. G. Johnson	Dr. C. S. Reddy
Dr. Annie M. Hurd-Karrer	Dr. E. C. Starkman

The following papers were prepared by members of this Office for presentation before the various societies:

The American Phytopathological Society

"Smut Resistance in Corn," by Marion A. Griffiths.

"The Effect of Leaf Rust, Ruccinia triticensis, on the Seed Production of Wheat," by E. B. Mains.

"Sulphur and Copper Carbonate Dusts as Efficient Fungicides for the Control of Sorghum Kernel Smut and Millet Smut," by L. E. Melchers and C. O. Johnston.

"Further Seed-Treatment Experiments for Sweet Corn Diseases," by C. S. Reddy and J. R. Holbert.

"Strains of Ustilago nuda and Certain Host Relationships," by W. H. Tisdale and Marion A. Griffiths.

"Certain Factors Influencing the Development of the Mosaic Disease in Winter Wheat," by R. W. Webb.

Dr. C. E. Leighty gave a short paper entitled "Resistant Varieties of Wheat as a Means of Controlling Stinking Smut" as part of a round-table discussion at the Tuesday Afternoon Conference on Extension Work in Plant Pathology, December 28.

Physiological Section of the Botanical Society of America

"Changes in the Composition of the Sap of the Wheat Plant during Certain Stages as Shown by Titration Curves," by Annie May Hurd-Karrer.

"Fixation of Atmospheric Nitrogen by Green Plants," by E. R. Ranker.

Joint Genetics Sections of the

American Society of Zoologists and Botanical Society of America

"A Study of the Inheritance of Winterhardiness, Growth Habit, and Quality of Seed in Crosses between Spring and Winter Wheat," by H. K. Hayes and O. S. Aamodt.

The American Society of Agronomy

Dr. C. E. Leighty presented to the Winter Meeting of The American Society of Agronomy, at the Friday Morning Session, December 31, a paper entitled "Theoretical Aspects of Small Grain Breeding," as part of The Symposium on "Procedure and Results of Small Grain Breeding," led by T. A. Kiesselbach, of the University of Nebraska.

The American Society for Horticultural Science

"A Modification of the Official Salicylic-Thiosulphate Method for the Determination of Total Nitrogen in Plants," by E. R. Ranker.

"Some Inaccuracies of the Devarda Method When Applied to Plant Materials," by E. R. Ranker.

DUSTING WITH SULFUR TO PREVENT CEREAL RUSTS

Extended Conference at Philadelphia Brings Out Many Important Facts

At the meeting of The American Phytopathological Society on Wednesday afternoon, December 29, several hours were devoted to a special discussion of results obtained by dusting wheat with sulfur in attempts to prevent black stem rust and orange leaf rust. About 50 people attended the conference, including the following from the Office of Cereal Crops and Diseases: Drs. H. B. Humphrey, E. C. Stakman, F. E. Kempton, A. G. Johnson, and C. V. Kightlinger. Prof. H. H. Whetzel, of Cornell University, and Dr. E. C. Stakman, of the University of Minnesota, alternated as presiding officer and Prof. H. L. Bolley, of the North Dakota Agricultural College, made many valuable contributions..

The consensus of opinion was that dusting with sulfur not only would prevent both kinds of rust but would increase the yields of wheat. Dr. Humphrey briefly summarized results obtained by C. O. Johnston in Kansas and E. B. Mains in Indiana. Dr. Stakman summarized results obtained by E. B. Lambert and others at University Farm, St. Paul, Minn., and in cooperation with Prof. Bolley at Fargo, N. Dak., R. O. Dulger at Brookings, S. Dak., and various branch stations in Minnesota. At St. Paul and Morris, Minn., the results of this year's dusting were ~~inconclusive~~ because there was almost no rust.

inconclusive

At Crookston, Minn., however, excellent results were obtained. Five kinds of dust were tried in the experiments, with three different rates of application. The best results, all things considered, were obtained as a result of dusting the plots three times at 5-day intervals beginning July 10. There was 75 per cent of stem rust on the check plots that yielded 22 bushels per acre of No. 3 Dark Northern. On the plot dusted three times, there was 5 per cent of rust at harvest and the yield was 30.8 bushels per acre of No. 1 Hard Spring.

Mr. Kightlinger and Prof. Whetzel, pioneers in the dusting work, summarized the results of experiments that have been under way at Cornell University during the past several years. They have been able to prevent leaf rust of wheat and crown rust of oats effectively and apparently economically. It was suggested that fall dusting of winter wheat was extremely important in order to prevent rust from becoming abundant during the fall and early winter.

It is perfectly clear that black stem rust and orange leaf rust can be prevented by dusting with sulfur. However, whether it would ever be practicable on a large scale remains to be seen.

PROJECT REPORTS

WESTERN WHEAT INVESTIGATIONS

(J. Allen Clark, Agronomist in Charge, and K. S. Quisenberry, Assoc. Agronomist)

Yields of wheats grown in the 1925-26 Uniform Winter-Hardiness Nursery

More than half of the cooperators who grew the uniform winter-hardiness nursery during the season of 1925-26 left the nursery to mature, after the spring survivals were recorded, in order to determine yields. Reports on yields have been received from 14 of the 26 stations cooperating.

These data are presented in the following tables.

The yields are the average of three single rows systematically replicated, and varietal competition including differences in killing has not been eliminated.

In the table, the stations have been divided into two groups, namely eastern and western. It would be well to make more groups, but the small number of stations reporting makes such a procedure undesirable for this report. For each group there is given the average yield of each variety and its rank. An average yield of the varieties at all of the 14 stations also is given with their rank. The last column of the table presents the rank for spring survival at 18 stations where there was partial killing in 1925-26. These ranks were taken from the report on the uniform winter-hardiness nursery published in the Cereal Courier 18 (No. 12): 107-110. May 31, 1926.

The yields of the different varieties and hybrids vary greatly at the different stations, as would be expected. In the eastern group of stations, the highest yielding strains were: Minhardi x Minturki, C. I. 8034; Turkey (Sel.) C. I. 6152; Kanred x Minturki, C. I. 8032; and Beloglina, C. I. 1543. Of these wheats, C. I. 8032 probably has the least winter hardiness.

In the western group the highest yielding strains are: Minturki, C. I. 6155; Turkey x Minessa, C. I. 8028; Minhardi x Minturki, C. I. 8034; and Minturki x Beloglina-Buffum, C. I. 8033. Of this group of wheats, C. I. 8028 was the best strain for winter hardiness in 1925-26.

Considering the average for all stations, the highest yielding variety is Minhardi x Minturki, C. I. 8034, followed in order by Minturki, C. I. 6155; Minturki x Beloglina-Buffum, C. I. 8033; and Turkey x Minessa, C. I. 8028. There does not appear to be a very large correlation between hardiness and yield, except that the non-hardy varieties Fulcaster, Harvest Queen, and Blackhull produced low yields. It is important to note that some of the new hybrid productions appear to have as much or more hardiness than Minhardi, Odessa, and Buffum No. 17, and also that they outyielded these and other varieties.

Average yield in bushels per acre of 30 varieties or strains of winter wheat grown in triplicated row rows as uniform winter-hardiness nurseries at 14 experiment stations in the northern United States and in Canada during the winter of 1925-26

Hard Red Winter	Class and Variety	No.	State or Hybrid Number	Yield (Bu. per Acre)															
				Man-hat:	Hays-hat:	North:	Ames:	St. Paul:	Ottawa:	Av. for:	Rank:	Boze:	Mocca:	Have:	ern:	ern:	ern:	ern:	ern:
Hard Red Winter	Clarkof	1442		28.2	15.9	11.1	58.5	5.1	53.9	28.8	12	53.0	38.4	26.6					
Montana No. 36		5549	Mont. 36	28.2	17.1	11.6	58.3	6.6	55.5	29.6	9	59.6	32.8	18.9					
Karmont		6700		27.1	15.5	11.6	57.8	6.2	55.7	29.0	11	52.2	29.9	25.9					
Turkey (Sel.)		6152	Minn. 1483	30.8	15.3	7.7	64.0	14.7	56.1	31.4	2	58.5	42.2	23.3					
Nebraska No. 60		6250	Neb. No. 60	25.9	18.6	11.1	56.3	5.6	52.9	28.4	16	62.7	30.5	22.3					
Belogolina		1543		24.8	17.2	13.4	59.2	11.9	53.2	30.0	4	44.8	31.7	20.5					
Belogolina		1667		26.4	13.1	8.1	66.2	13.2	51.5	29.8	6	53.2	35.9	19.3					
Blackhall		6251		24.8	20.4	8.0	54.8	0.0	53.7	27.0	22	60.2	25.6	15.9					
Newturf		6935	166D1-6	27.8	18.7	11.4	53.0	11.8	55.4	29.7	7	48.5	33.6	21.8					
Iobred		6934	Iowa 1949	23.4	19.7	8.0	59.2	7.7	53.5	28.6	14	54.8	23.9	15.9					
Ashkof		6680	Wisc. 11,825	16.0	7.9	6.4	53.0	12.7	52.9	24.8	27	53.0	29.7	26.1					
Kharkof (Sel.)		6938	M. C. 2212	13.9	8.6	9.5	54.8	10.8	50.5	24.7	28	59.3	30.1	17.4					
Minard		6690	Minn. 2199	19.5	12.7	8.6	53.3	14.0	55.0	27.2	20	66.6	31.2	23.9					
Padui		6153	Minn. 1491	16.9	7.1	5.9	55.0	13.3	51.3	24.9	26	70.2	31.2	24.0					
Minturki		6155	Minn. 1507	20.2	8.1	9.2	57.7	20.9	55.2	28.6	15	72.1	34.6	13.6					
"Fenwarg"		6936	Kans. No. 439	20.5	18.0	12.9	60.3	2.6	64.5	29.8	5	70.6	28.3	19.9					
"Kanwarg"		6937	Kans. No. 440	16.3	15.5	8.2	54.7	3.1	60.6	26.4	24	64.8	26.5	21.1					
11065 x Preston		3027	Kans. No. 446	21.8	20.2	7.8	59.5	5.6	57.3	28.7	13	65.8	36.9	21.1					
Kanred		5146	Kans. No. 2401	27.9	21.3	6.3	53.5	6.6	62.0	29.6	8	64.9	25.2	18.3					
Turkey x Minnessa		3023	1950A9-14-4	13.6	9.7	5.9	55.0	19.5	55.5	27.4	19	49.3	37.6	27.2					
Kanred x Buffum No. 17		3030	19100B1-33-4	17.0	15.8	7.7	51.5	18.8	53.7	27.4	17	59.5	27.5	23.4					
Kanred x Minhardi		8031	19102G3-87-11	19.1	12.6	13.0	48.2	14.3	53.2	26.7	23	57.9	34.9	26.2					
Kanred x Minturki		8032	19104C6-14-5-6	26.7	16.4	11.2	51.2	7.5	68.5	30.3	3	63.9	23.1	15.4					
Minturki x Belogolina-Buffum		3033	19115A7-30-5	19.2	13.5	11.4	60.3	19.4	53.1	29.5	10	56.6	32.2	26.1					
Minturki x Minhardi		8034	19124A1-3-16	26.2	19.3	10.1	65.0	17.0	62.8	33.4	1	76.6	38.6	19.7					
Soft Red Winter																			
Buffum No. 17		3330		12.7	6.2	3.6	46.7	19.9	46.0	22.5	30	39.1	28.1	20.4					
Minhardi		5149	Minn. 1505	19.2	13.9	9.3	45.3	16.3	52.9	26.2	25	50.9	33.2	23.9					
Odessa		6151	Minn. 1471	6.8	3.6	3.3	51.9	20.7	56.4	23.8	29	35.7	34.6	17.1					
Harvest Queen		6199	Kans. No. 19	16.7	19.2	12.4	49.7	3.5	61.5	27.8	21	46.4	33.6	17.1					
Minard		6153	Minn. No. 717	21.5	25.0	9.7	54.8	0.0	57.2	27.4	18	44.0	16.5	5.7					

