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B P I S A E

RESEARCH ACTIVITIES

PLEASE CIRCULATE TO ALL INTERESTED EMPLOYEES OF THE BUREAU

PLANT INDUSTRY STATION, BELTSVILLE, MD.

NOVEMBER 1950

FOR ADMINISTRATIVE USE ONLY

Advances Through Science

Farm mechanization was one of the agricultural advances through science highlighted in a talk by R.M. Salter, Bureau chief, at Southwestern Louisiana Institute, November 2.

Dr. Salter pointed out that during the past 10 years farmers have tripled the number of tractors used and more than doubled the number of trucks. In recent years small-sized machinery has been developed to fit the needs of small farms. Intensive effort is being given to the development of equipment for mechanizing production of such special crops as sugarcane and sweetpotatoes. The fact that an estimated 60 percent of Louisiana's sugarcane crop will be harvested mechanically this year indicates the progress along these lines.

Citing sugarcane as one of many crops, once in danger of being eliminated from agriculture and then saved through plant breeding, Dr. Salter reminded the Louisiana audience that disease cut production to one-sixth in the twenties. Breeders developed resistant varieties and now production is half again as large as it was before the mosaic epidemic.

"The change in planting time to late summer and early fall instead of spring has contributed substantially to improved yields and quality of cane," Dr. Salter said. "Furthermore the timing of the operation corresponds with what was a slack period in plantation activities. This is another example of how advances in crop and soil management are adding to the efficiency of modern agriculture."

Dr. Salter observed that Americans tend generally to accept agricultural advances as a matter of routine. "We marvel at the wonders of science in other fields but take for granted the food on our dining table. We forget that behind our abundant supply of nutritious 'daily bread' is an agricultural research force that is unequalled anywhere else in the world."

Abaca Studied in Costa Rica

Since the middle of October a group of Bureau scientists has been in Costa Rica laying the groundwork for extensive research in abaca production. The project on this strategic marine cordage fiber has been set up at the request of the Reconstruction Finance Corporation.

In the group who went to Costa Rica to study preliminary phases of the research were B.B. Robinson (C&OFC&D), Ray C. Roberts (SS), Matthew Drosdorff (F&VC&D), Robert W. Pearson and W.W. Pate (Soils), and C.H. Batchelder, entomologist. When the project is fully established the staff will include an agronomist, an entomologist, a soil scientist, and a pathologist under the leadership of Dr. Robinson. He will also coordinate the research of a team of soil specialists who will survey abaca soils.

An immediate objective of the investigations is to find the cause and control of a condition known as tip-over disease, which has recently reduced abaca yields in Latin America. Long-term goal of the project is to develop improved agronomic practices that will lead to increased supplies of the fiber in the Western hemisphere.

A far Eastern fiber crop, abaca was introduced into Latin America in 1925 by the late L.H. Dewey and the late H.T. Edwards of this Bureau. The importance of this introduction to U.S. national defense was showing during World War II when the United Fruit Company--under contract with RFC--produced abaca on about 26,000 acres in Costa Rica, Panama, Guatemala, and Honduras. The U.S. Munitions Board now recommends that these plantations be maintained permanently and expanded to 50,000 acres. The new research project in Costa Rica is expected to help stabilize this production.

Polypliod Form of McIntosh Apple Found

A chimeral form of McIntosh apple with tetraploid fruits has been found by Dr. Haig Derman among plants treated with colchicine six years ago as one-year nursery trees. Polyploidy was not indicated prior to fruiting.

Cytological examination of a shoot tip reveals a mixture of tissues of different genetic constitution. The epidermis and hypodermal regions of the stem were diploid and the remaining tissues were tetraploid.

Dr. Derman expects to obtain a completely tetraploid McIntosh through the adventitious budding technique he has developed. He finds that polyploidy in the apple can be detected most reliably by three fruit criteria:

- (1) Increased size--about twice the normal size;
- (2) Flattened shape;
- (3) Irregular contour as a result of the diploid-tetraploid mixture of tissues.

The small percentage of apple plants showing polyploidy and the long time elapsing before it can be recognized suggest the treatment of a dozen or more trees of each variety and perhaps the use of some dwarfing stock to induce earlier fruiting.

Background on the Pace Report

In May, Congressman Stephen Pace (Ga.), chairman of a special committee of the House Committee on Agriculture, appointed a study group of 10 agricultural leaders to look into ARA operations, survey agricultural research, and suggest needed changes in research and marketing activities supported wholly and in part by Federal funds.

Reporting back to Mr. Pace, July 10, the study group made a number of recommendations, among them that: (1) all agricultural research be conducted under the direction of one official in USDA; (2) fiscal operations be simplified; (3) the functions of the advisory committees be extended; (4) new devices be adopted for recognizing research achievements; (5) an inventory be made of marketing research facilities outside USDA; and (6) USDA publish a monthly magazine summarizing research results in non-technical language.

To provide Congress with an up-to-date picture of USDA's research in progress for use in planning action on these and other recommendations, Mr. Pace then asked the Department to furnish as quickly as possible a concise statement on each project, giving its history, objectives, major accomplishments, and future needs.

This was the impetus for the so-call^{ed}/Pace report that has been given top priority the past three months in this Bureau and other agencies, which conduct research. To prepare this Bureau's part of the report, each project leader drafted a statement on the work under his supervision. When completed, these covered 140 Bureau projects and 18 projects conducted jointly with other agencies. These and similar statements from other agencies concerned have been assembled in an over-all report. A very limited number is being mimeographed for Congress and the industry committees. The report is divided into 39 chapters primarily on the basis of the jurisdiction of the advisory committees. In most cases this is in terms of commodities. Mr. Pace has requested publication of the report as a Congressional document. When this is done, separates will probably be printed for each chapter. It is hoped these will be of considerable value to research workers and advisory committees in charting future plans.

Reagents for Detection of Peach Phony Disease

Trichloroacetic acid in methyl alcohol has proved to be a particularly good reagent for early detection of phony peach virus disease, reports Glenn KenKnight (F&VC&D). At Fort Valley, Ga., KenKnight has tested a wide range of acids in addition to the dilute hydrochloric acid in methyl alcohol used originally by L. M. Hutchins for this purpose. Many crystalline acids, both organic and inorganic, produce characteristic color reaction when applied to root tissue. Among the solvents used by Mr. KenKnight were alcohols, acetone, and benzene. Reaction time varied from seconds to days depending on the reagent and other factors. With organic acids, the addition of zinc chloride, potassium bromide, or sodium chloride hastened the reaction. Water slowed it.

Dean, Alexander, and Ableiter Honored

Lyman A. Dean (Soils) was one of two winners of the Stevenson awards announced at the recent meeting of the American Society of Agronomy in Cincinnati, Ohio.

The award of \$500 was in recognition of Dr. Dean's study of the nutrient status of soils in commercial potato producing areas of the Atlantic and the Gulf Coast and the development and application of isotopic tracer techniques for use of p^{32} in soil, plant, and fertilizer research. His findings on the fertility of potato soils raised a question as to the need for continuing the high proportion of phosphorus in mixed fertilizers used for potato production. One result of the study was the adoption of uniform methods for assessing fertility status of soils in a number of States.

Before coming to USDA in 1943, Dr. Dean carried on work with radioactive phosphorus prepared by cyclotron bombardment. A native of Massachusetts, a graduate of the University of Hawaii, Dr. Dean earned his Phd at the University of Wisconsin and then spent a year as a National Research Fellow at the Rothamsted Experiment Station in England. He was on the staff of the University of Hawaii and the Hawaiian Experiment Station before coming to Beltsville.

At present Dr. Dean is responsible for Federal supervision of the regional laboratory at Fort Collins, Colo., engaged primarily in research on phosphorus in calcareous soils and the regional laboratory at Ames, Iowa, studying organic phosphorus. He is also one of the leaders in the atomic energy project at Beltsville.

Lyle T. Alexander (Soils) and J. Kenneth Ableiter (SS) were named as Fellows Elect of the American Society of Agronomy for 1950. This recognition is given for contributions and in crop and soil science generally.

National Turf Field Day

More than 200 people were at Beltsville, October 16, to inspect turf research conducted by the U.S. Golf Association in cooperation with the Division of Forage Crops and Diseases, Fred Grau (USGA) reports.

The demonstrations of new strains and combinations showed important strides are being made toward providing foolproof and weedfree turf that can be grown with little or no help from chemicals. The new grasses under trial have been selected on the basis of drought and disease resistance, relative immunity to insects and to the heavy wear on the golf course, and tolerance to close mowing.

Among the promising new strains shown were C-115, a bent grass, selected by Dr. Grau in 1946 at Dahlgren, Va., zoysia turf produced from seed of the Z-52 strain of *Zoysia japonica*; Arlington (C-1) and Congressional (C-19) creeping bents that have maintained excellent green and fairway turf with no water other than rainfall and without fungicides; the new bluegrass, Merion (B-27); and the new Bermuda (U-3).

In tests in which chemicals were used in an effort to control crabgrass, results indicated that a single application of maleic hydrazide killed much of the turf and permitted an increase in crabgrass.

Round-up on Weed Control Gains

Spotlighting outstanding accomplishments in his talk on "Some Broad Aspects of the Weed Control Program," before the American Society of Agronomy in Cincinnati, Ohio, November 1, Roy L. Lovvorn (WI) noted the following gains:

Corn - discovery of the pre-emergence principle of weed control has opened new horizons in weed research. Results of hundreds of corn strains subjected to pre- and post-emergence applications show the chemicals have little or no effect on germination, protein content, or genetic constitution of the corn but give good control of both grassy and annual broadleaf weeds.

Other grains - studies of the life cycle response of grain crops to 2,4-D as measured by yields, chemical composition, germination, milling, and baking have furnished the background for a sound weed control program... covering from 25 to 30 million acres in the North Central States and Canada in 1950.

Fruits and vegetables - chemicals are now used to control weeds in sweet corn, peas, carrots, dill, parsnips, asparagus, potatoes, lima beans, snap beans, onions, and apples and other tree fruits, and strawberries.

Pastures - 2,4-D is now used to control perennials and broad leaf annuals in pasture crops. The dinitro compounds show promise for killing weeds in new alfalfa seedlings as well as in established stands of dormant alfalfa. In the West the use of IPC to control annual grasses in Ladino clover appears encouraging.

Woody plants - single applications of one pound of 2,4,5-T per acre has resulted in 75 to 90 percent control of 90 to 95 percent of the mixed hardwood species growing along canals and drainage ditches, right of ways, and fence rows on the Atlantic seaboard. Mesquite is being controlled in Texas with aerial sprays of less than a pound an acre of the ester form of 2,4,5-T. Total cost of this treatment is a little more than \$3 an acre. It is estimated that one million acres will be sprayed in 1951.

Aid in Planning Experimental Design

Bureau scientists at field locations will have an opportunity to discuss problems of experimental design and statistical analysis with David D. Mason (Biometrical Service) on two field trips scheduled for coming months. One, about mid-December, will take Dr. Mason to Wisconsin and Michigan. Another, early next spring, will probably include California, Arizona, New Mexico, and Texas. Trips to other parts of the country will be planned to meet requests that come in for assistance. Incidentally, these requests may be sent directly to Dr. Mason at Beltsville.

Dr. Mason has recently been elected chairman of the Department committee on experimental design that was set up by ARA Administrator Cardon in 1945. Composed of representatives from USDA agencies that do research, the committee's functions are to stimulate interest in the proper use of experimental design in USDA research, to aid scientists in obtaining adequate statistical services, and to promote the interchange of new ideas and review of methodology.

Nematode Resistant Tomato on the Way

S. H. Yarnell of the regional vegetable breeding laboratory at Charleston, S. C. cites work on nematode resistance in tomatoes as an excellent illustration of cooperation in the vegetable breeding program.

The story begins in the late thirties with H. Loran Blood's assignment to explore for tomato breeding material in South America. The vast array of material collected by Dr. Blood included several lots of the related wild species Lycopersicon peruvianum. The collection was rather widely distributed to cooperative workers.

By 1941 D. M. Bailey of the Tennessee station had reported nematode resistance in peruvianum but under Tennessee conditions Dr. Bailey was not able to effect a cross with commercial species.

A short time later, however, Paul G. Smith at the California station announced that he had succeeded in growing -- by means of an embryo culture -- three F₁ plants of the cross Michigan State Forcing X L. peruvianum. The plants were self sterile and appeared to be sterile in crosses with commercial types.

When Dr. Smith's work was discontinued because of the war, he sent cuttings to V. M. Watts at the Arkansas station. Dr. Watts succeeded in making self-fertile plants from crosses between the nematode resistant hybrid and other commercial varieties but under Arkansas conditions he was unable to select pure resistant stocks.

In an effort to find a way out of this difficulty he sent seed of the lines to W. A. Frazier at the Hawaii station and there Dr. Frazier and his associate, R. K. Demmett, isolated resistant lines that were essentially pure for this character. They returned part of the seed to Dr. Watts who is now bringing the fruit up to commercial size.

Cotton Substation in Mexico

The Bureau is participating in a tropical cotton breeding program recently launched at the cotton substation of the Mexican agricultural department near the village of Iaguala, about 125 miles south of Mexico City.

The program, set up by the major U.S. seed breeders, the Cotton Belt agricultural experiment stations, USDA, and the National Cotton Council, is designed to increase the supply of extra-long staple cotton varieties for improving cotton's competitive position.

It is believed the tropical location may reduce the time required to develop triple hybrids, interspecific crosses, and better Egyptian types from 10 to 6 or 7 years.

L. R. Lytton of the cotton field station at State College, N.M., is supervising field work on the project.

Still Need for Potato Improvement

With too many potatoes being produced every year--the surplus is about 85 million bushels this year--why should we spend more time and money breeding new varieties to further increase the yields?

The same question, observes F. J. Stevenson (F&VC&D), could be asked about the use of fertilizer and of new sprays and equipment. Speaking to extension workers at Weston, W. Va., recently, Dr. Stevenson pointed out that a sure way to eliminate the surplus is to cut the fertilizer in half and discontinue disease controls.

Growers spend millions of dollars each year to protect the crop from diseases and insects. The development of resistant varieties is just another method of control. New varieties are produced not so much to increase yields as to help the farmer in his battle against crop enemies and to reduce the cost of production.

Research in potato improvement goes back a century to the great famine in Ireland and Northern Europe which was the result of a severe epidemic of late blight. The present Federal-State potato breeding program was organized on a cooperative basis between USDA and 9 State experiment stations in 1929.

Of the 39 varieties distributed to growers from this program, none meets the needs of growers in all of the cooperating States. Two of the earliest introductions--Katahdin and Chippewa--now widely grown are credited with saving the potato industry in large areas in Maine during severe epidemics of net necrosis on the Green Mountain variety in 1938 to 1942 and again in 1944. Sebago has also made a good record. Teton, which has shown a high degree of resistance to bacterial ring rot, is grown most extensively in Pennsylvania. This variety made the highest acre-yield ever reported in that State--859½ bu. Kennebec, released in 1948, is highly resistant to late blight, has unusually good market and cooking quality when grown in the North. The most recently named variety is Pungo, released in July 1950. It appears well suited for fall and spring crops in eastern Virginia.

Have You Seen?

Supplement 195 of the Plant Disease Reporter entitled, "Plant Pathological Investigations in the United States II." It gives the high points in plant disease studies conducted by this Bureau in vegetables, including potatoes, hardy fruits, citrus and other subtropical fruits, nuts ornamental crops, and fruits and vegetables in transit, storage, and at the market. It also contains articles covering Bureau research in forest pathology and nematology.

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The Bureau leaflet showing how the national cooperative soil survey provides a basis for sound land classification explains briefly how the information is used in effective planning on individual farms, in advisory and action programs, in determining land values, locating roads and other purposes.

Rose Growers Visit Beltsville

One day of the 1950 meeting of the American Rose Society--Oct. 3--was spent at Beltsville. Approximately 350 delegates were on hand for a program in the auditorium and for visits to turf and floriculture experimental plots at Plant Industry Station. Here are highlights from talks by members of the floriculture section.

"Black spot remains the most important rose disease. Because it produces defoliation, blackspot is apparently indirectly responsible for much of the winter injury, canker, die-back, and general lack of vigor in rose plantings. The disease can be controlled through properly timed applications of good sulfur or copper fungicide." W. D. McClellan.

"Despite the increase in prevalence and importance of plant virus diseases during the past 20 years, no virus disease of roses has assumed major importance in the United States. The rose wilt and die-back disease in Australia, New Zealand, and Italy seems to be of major rank. Movement of roses from these countries is restricted by quarantine to protect American roses." Philip Brierly.

"The rose breeder's task is complicated by the fact that his breeding material is hybrid and the seedlings show wide variability. It is not now possible to predict the result of any cross-pollination in roses. A complete record of all crosses made might show that some varieties produce more good seedlings than others. Another difficulty in rose breeding rises out of the differences in basic chromosome numbers of various species. Although most of the known species are diploids, there are also triploids, tetraploids, and pentaploids." S.L. Emsweller.

Pattern for Retirement

H.A. Allard (TM&SC'46) has combined special assignments from the Smithsonian with visits to his son, Howard F. Allard (RPI) in Latin America. On two visits of several months each to the Dominican Republic, Dr. Allard collected more than 10,000 plant specimens. Last year he made collections of both plants and insects in the jungle area around Tengo Maria, Peru, where his son is now stationed. Many of the 6,000 plant specimens and 5,000 insect specimens represent new species. Research conducted by Dr. Allard and his son in the Dominican Republic on freezing mangoes and later reported in Foreign Agriculture of OFAR was the stimulus for a small mango freezing industry that has recently been set up by a commercial company in Florida.

Aamodt, Savage, Schoenleber on Mission

Three Bureau staff members are assisting an agricultural mission to Uruguay under the auspices of the International Bank and the Food and Agricultural Organization. O.S. Aamodt (FC&D) went down in advance to make a preliminary study of the pattern and problems of Uruguayan agriculture and to consult with government officials concerned. Dr. Aamodt remained three weeks after the mission arrived early in October. D.A. Savage (FC&D) of the Southern Great Plains Field Station, Woodward, Okla. is serving as range specialist, and Leonard G. Schoenleber (FE) is consultant on agricultural engineering problems.

Twelfth Alfalfa Improvement Conference

O.S. Aamodt (FC&D), permanent secretary of the Alfalfa Improvement Conference, reports that the 1950 meeting at Lethbridge, Alberta, Canada, July 31 to August 2, was unusually successful.

The meetings, discussions, and demonstrations were held in the laboratories of the Dominion Experimental Station and at the Science Service laboratories recently established to pool the skills, training, and efforts of agricultural scientists at an ideal center for a combined attack on prairie farm problems.

Excellent symposia were presented on (1) the present status of alfalfa improvement in the United States, Canada, and Latin America; (2) plant pathology in relation to alfalfa improvement; (3) insects in relation to seed setting; and (4) recent developments in genetics and breeding.

The Canadian hosts arranged interesting and informative field trips, which showed the intense program of alfalfa improvement carried on by geneticists, pathologists, and entomologists of that country.

Bureau workers in addition to Dr. Aamodt, who attended the Conference, were J.W. Carlson, Logan, Utah; C.O. Grandfield, Manhattan, Kansas; H.O. Graumann, Lincoln, Nebraska; C. H. Hanson, Raleigh, N.C.; F. R. Jones, Madison, Wisc.; and O.F. Smith, Reno, Nevada. Total attendance was about 140.

2,4-D Reduces Drop of Pineapple Oranges in Florida

Florida oranges show marked varietal differences in response to stop-drop treatments with 2,4-D, says F.E. Gardner of the citrus laboratory at Orlando. In the past two years results of tests by Dr. Gardner, Philip G. Reece, and George E. Horanic show that applications of 2,4-D in October reduced fruit drop of the Pineapple variety by more than 40 percent. This resulted in a saving of 1.7 boxes of fruit per tree. The treatments were without effect on the Valencia variety.

The 1949 tests showed that 2,4-D could be added to wettable sulfur sprays, used in the citrus orchard for rust-mite control without loss of effectiveness. Fall applications of weak solutions of 2,4-D before young growth begins have resulted in no observable effect on the foliage at the time but has caused a few deformed leaves the following spring. These appear only on occasional trees and apparently are no cause for alarm.

Cotton and Chew Get New Mexican Assignments

John Cotton, agronomist, and Chester Chew, pathologist (C&OFC&D) have recently been assigned to work with L.M. Blank and A.R. Leding at State College, N.M. Cotton, with the Bureau since 1935, is a native of Louisiana and a graduate of LSU. Until his transfer he was stationed at Baton Rouge. Chew who joined the Bureau in 1941, was on the staff of the fiber technology laboratory in Washington before the war and at Plant Industry Station after he returned from service. For the past year he has been doing graduate work at Illinois.

New Additions to BPISAE Research Staff

Warren C. Shaw has joined the Division of Weed Investigations as project leader in charge of screening chemicals for herbicidal value. His headquarters are at Beltsville. Dr. Shaw comes to the Bureau from North Carolina State College where he was on the faculty of the agronomy department. He is a native of North Carolina, a graduate of N.C. State, and holds a Phd from Ohio State University.

Another new member of the Weed Control Division is John H. Holstun, jr., who is conducting research on weeds in cotton at the Delta Branch Experiment Station, Stoneville, Miss. Mr. Holstun is a graduate of Alabama Polytech.

William H. Allaway has joined the Soil Survey Division as analyst of soil uses and productivity. Dr. Allaway, a native of Nebraska, comes to the Bureau from Iowa State College where he was formerly a student and a staff member since 1945.

New writer in the Information Division is Robert B. Rathbone, Kansan and graduate in industrial journalism from Kansas State College. Mr. Rathbone comes to Plant Industry Station from the North Dakota Extension Service, where he has been assistant editor for the past $4\frac{1}{2}$ years. He served $3\frac{1}{2}$ years in the Navy, formerly worked on Kansas weekly and daily newspapers.

Welfare Association Revamped

Marion W. Parker (F&VC&D) and Earl Sharer (Admin.) represent the Bureau on the new 33-member board of the USDA Welfare Association. The board was established this past summer to enable the association to function more effectively in conducting the large business that has been developed. Under recently revised by-laws the president is assisted in administering the association by three vice-presidents--one in charge of welfare activities, another responsible for cafeterias and related activities, and still another responsible for employee recreational activities. According to the new by-laws, all persons employed by or on behalf of USDA and stationed in or near the District of Columbia shall be considered members of the Association...eligible to receive the benefits and privileges it affords.

Weather and Cotton

Hardy Tharp (C&OFC&D) represents the Bureau on an inter-departmental committee, which has the job of planning greater utilization of Weather Bureau information in cotton production. The committee is now studying suggested forms for preparing a calendar of activities by States. Among other things this will list weather services available and suggest operation procedures.

A picture story in color showing the close relationship between weather and cotton production was featured on the back of the daily weather map for Oct. 17, 1950.

Chapters in a New Book

Six members of the Division of Forage Crops and Diseases have contributed chapters to a book on forage crops now in preparation by Prof. H. D. Hughes of Iowa State College. The chapters are : "Orchard Grass," by W.M. Myers; "Soil, Climate, and Use in Choosing Forage Crops," by O.S. Aamodt; "The Bromegrasses" by L.C. Newell and Kling L. Anderson; "Hay and Pasture Seedlings for the Northern Great Plains and Intermountain States," by L.C. Newell and F.D. Keim (Nebraska), and "Legumes and Grass Seed Production," "Crimson Clover," and "Ladino and Other White Clovers," by E.A. Hollowell.

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The American Society of Agricultural Engineers awarded a blue ribbon to M.P. 689, "Your Farmhouse...Heating" at the 1950 meeting. The 24-page booklet was prepared by Harry Garver, Jane Tuttrup, and Eleanor Ullman of the Agricultural Engineering staff.

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The 1950 meetings of the American Phytopathological Society will be held in Memphis, Tenn., Dec. 1-3.

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V. R. Boswell (F&VC&D) spoke on "Origin and History of Some Important Plant Foods" at a meeting of the Maryland section of the Institute of Food Technology in October.

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* DEATHS *
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Ruth Colvin Starrett McGuire, cytologist of the Division of Sugar Plant Investigations, died at her home in Silver Spring, Md., Sept. 2, after an illness of more than a year.

A native of Indiana, Mrs. McGuire was a graduate of the University of Indiana (BS'14, MS'16). She also did graduate work in plant pathology and cytology at Northwestern, George Washington, and the University of Maryland. After a short period of teaching in Indiana, she entered this Bureau in 1918. as a scientific assistant.

Mrs. McGuire's research resulted in many scientific contributions on the anatomy, development of flowers and seed, and the cellular and nuclear structure of sugarplants. Among these were significant discoveries on nuclear behavior and the chromosome complement of the cells of sugarcane strains, sugar sorghum, and sugar beets. During World War II, Mrs. McGuire was assigned to the Emergency Rubber Project to conduct cytological investigations on the Russian dandelion, kok-saghyz, then under study as a possible source of natural rubber.

Mrs. McGuire leaves her husband, Charles R. McGuire, 1901 Lansdowne Way, Silver Spring Md., her mother, Mrs. Mary Colvin, Flora, Ind., and a brother, Merle M. Colvin, Pittsburgh, Pa.

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 * RETIREMENTS *
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Harry R. Fulton (F&VC&D), plant pathologist whose research on the cause and control of disease in citrus and other subtropical fruits has been of major importance in the development of these crops in the United States, retired September 30 after almost 35 years of service.

He joined the Bureau staff in November 1915. Prior to that he had been a staff member of the Louisiana Experiment Station, Pennsylvania State College, and North Carolina State College. He is a native of Mississippi, a graduate of the University of Mississippi, and holds master's degrees from the University of Missouri and Harvard.

As project leader of research on citrus diseases Mr. Fulton directed investigations that solved many disease problems for growers. His work leading to the control of stem-end rot and blue mold during shipping and marketing of citrus fruits has resulted in enormous savings. During the past 10 years Mr. Fulton has served as special assistant in charge of reports and other manuscripts for the Division of Fruit and Vegetable Crops and Diseases.

He is a fellow in the American Association for the Advancement of Science, a former president of the Washington Botanical Society, a former councilor and editor of Phytopathology, a member of Sigma Xi, Phi Kappa Phi, and the Cosmos Club. He and Mrs. Fulton reside at 1732 Lanier Place, N.W., Washington, D.C.

Robert L. Piemeisel (SPI), widely recognized for his basic research on the ecology of Western range lands, retired September 30. His connection with this Bureau dates back to 1912 when he was appointed an agent for the Office of Alkali and Drug Plants. His full-time service began in 1924 after he had served in the Navy during World War I and continued graduate work at the University of Minnesota. For the next five years Mr. Piemeisel did research first in the Office of Plant Geography and Physiology and later in Plant Exploration. In 1928 he spent a year in Africa collecting forage breeding materials suitable for crops in the South.

Since 1929 Mr. Piemeisel has been stationed at Twin Falls, Idaho, assigned to basic research on the ecology of Western range lands. He planned and conducted the fundamental studies on ecology of weed hosts of the beet leafhopper, which is the vector of curly top virus in sugar beets. He has also studied factors that favor or retard the development of perennial plants, especially native and introduced grasses that replace the weed hosts of the leafhopper in the desert breeding grounds of this insect.

Roy W. Saunders (C&OFC&D) retired September 30 after almost 30 years of service. A native of Texas, Mr. Saunders received his college training at Texas A&M. His first work for USDA was in 1919 when he was appointed an emergency demonstration agent. He served as a county agent in Texas during the 20's and came into the Bureau in 1931 to promote one-variety cotton communities. He was appointed agronomist in charge of one-variety cotton research at Greenville, Texas, in 1934 and continued in that post until his retirement.

Fred Reul Jones (FC&D) one of the leading U.S. authorities on the mycology of legume diseases, retired September 30, after 33 years of service, all of which has been in cooperation with the Wisconsin Experiment Station.

Dr. Jones is a native of Maine and a graduate of the University of Maine. He was appointed a Bureau agent in 1916 while he was still a graduate student at the University of Wisconsin. The following year when he completed his requirements for a Phd, he was employed on a full-time basis.

In his research on forage diseases Dr. Jones has made many valuable findings. Noteworthy among these is his discovery of bacterial wilt in alfalfa, which has made it possible for plant breeders to attack the problem through the selection of resistant varieties.

Dr. Jones is a member of Sigma Xi, Alpha Zeta, the Phytopathological Society, the Mycological Society of America, and the American Society of Agronomy.

Edmund W. Knobel (SS), soil scientist who began his USDA career as an agent while he was working with the Missouri State Soil Survey, retired Sept. 30 after 39 years of service.

One of the ablest in mapping soil types and phases and in the use of the plane table, Mr. Knobel is widely known for the excellent quality of his soil maps. His assignments during the past 35 years have taken him into most of the Southern States, through the Middle West, and into the Great Plains. During the war he made special studies on the distribution of soils suitable for the production of castor beans and sweetpotatoes.

Mr. Knobel was born in Missouri and is a graduate of the University of Missouri.

Leroy Moomaw (Soils) retired September 30 after serving 32 years as superintendent of the Dickinson (N.D.) Experiment Station. A Missourian, Mr. Moomaw joined the Bureau as a scientific assistant in forage crops in 1915, shortly after his graduation from the University of Missouri. There followed three years in central and northern Montana where he did research on forage crops and then a year in France as a second lieutenant in the field artillery in World War I.

During his long tenure at the Dickenson Station, Superintendent Moomaw directed research that resulted in many improvements in dry land farming. His outstanding achievement was in demonstrating that crested wheat grass could be grown profitably in the Great Plains and in making the grass seed widely available.

Mr. and Mrs. Moomaw plan to move to the Ozarks region of Missouri where they expect to buy a farm and "do a little grassland farming."

Heri A. Kuyper (SPI) retired as principal translator September 30. Mr. Kuyper, a native of Amsterdam, Holland, joined the Bureau in 1920.

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 * PUBLICATIONS *
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Recent Bureau Press Releases

Copies of the following releases may be obtained from Press Service, Office of Information, U.S. Department of Agriculture, Washington 25, D.C.

<u>Date</u>	<u>Subject</u>
September 1	Spinning Tests show great promise for new cotton - USDA 2145-50
September 3	U.S. Chestnut experience aids Italy - C.S. 2031-50
September 5	Photoperiodists report to florists about poinsettias - USDA 2159-50
September 6	Tests give new pointers on shipping cauliflower - USDA 2171-50
September 7	More seed of improved legume and grass varieties for '51 farm planting - USDA 2183-50
September 8	Keeping quality of sweetpotatoes depends a lot on handling at harvest time - USDA 2197-50
September 11	Research speeds growth of lily bulb industry - USDA 2217-50
September 17	One "stone" kills two "birds" in rice fields - C.S. 2139-50
September 18	Pine disease study by USDA men may help explain soil problems - USDA 2275-50
September 25	Certified alfalfa seed found to be good no matter where it is grown - USDA 2329-50
September 26	New crimson clovers widely used in South - USDA 2331-50
September 28	H.R. Fulton, noted for research on citrus diseases, retires - USDA 2359-50
October 1	Delay sweetpotato harvest for more color and yield - C.S. 2248-50
October 1	Tung trees triple oil yield through research - C.S. 2248-50
October 13	New rust resistant wheats released - USDA 2489-50
October 16	Research gains in guayule rubber plant reported by USDA - USDA 2500-50
October 17	Today's pasture research stresses profitable returns - USDA 2514-50
October 19	New chemical is threat to mesquite, USDA-Texas research shows - USDA 2535-50
October 19	Blackhawk, new soybean for corn belt, is released - USDA 2525-50
October 24	Better apples for the future, result from USDA research - USDA 2571-50
October 26	Soil scientists told of better cultures for lespedezas - USDA 2605-50
November 5	Nature tests the seed - C.S. 2543-50
November 5	Orange and grapefruit men grateful for research - C.S. 2543-50
November 5	Grass in shade - C.S. 2543.

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- Farmers' Bulletin 2015 - Ornamental woody vines for the Southern Great Plains
- Farmers' Bulletin 2020 Commercial growing and harvesting of sweet-potatoes
- Farmers' Bulletin 2022 Rice culture in California
- Circular 278 (Slightly revised) The commercial storage of fruits, vegetables, and florists' stocks
- Circular 443 (revised) Artificial drying of forage crops
- Circular 834 Imported varieties of dates in the U.S.
- Circular 857 Identification of Brassica by seedling growth or later vegetative stages
- Technical Bulletin 1014 Milling and baking experiments with wheat varieties grown in western United States 1936-45
- Leaflet 296 (revision of AWI 82) Prevent tanbark deterioration
- Plant Inventory 142 January 1-March 31, 1940
- Plant Inventory 143 April 1-June 30, 1940
- Plant Inventory 144 July 1-September 30, 1940
- Soil Survey Duncan, Area, Arizona-New Mexico
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