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**WEEKLY STATION REPORTS**

**OF THE DIVISION OF**

**DRY LAND AGRICULTURE**

**BUREAU OF PLANT INDUSTRY**

**U. S. DEPARTMENT OF AGRICULTURE**



REPORT FOR THE PERIOD APRIL 1 to 20, 1935.

HAVRE:

All records of low temperatures for April were broken during the first fifteen days. The evaporation tank was filled the last of March, but it was impossible, because of ice and snow, to get a satisfactory reading until near April 15. A few part days were spent at field jobs, but the work did not open until the 16th. Surface cultivation is quite satisfactory, but stubble is still wet for plowing. Early dates of seeding were made under rather adverse conditions. Moisture conditions are excellent both in stubble and fallow. Winter wheat and winter rye show excellent survival. Crested wheatgrass has started growth, and native grasses are showing signs of life. Range conditions are very poor, as there is no old grass.

Losses of livestock were quite heavy for the first part of April, and will probably continue until the grass has more nutriment.

Maximum temperature, 65°; minimum, -4°; precipitation, 0.21 inch, all as snow, with a total fall of 5.5 inches.

JUDITH BASIN:

The weather during the first half of April was unseasonably cold and disagreeable. Subzero temperatures were recorded on four days of the month with a minimum of -15° April 2. The previous low temperature for April was -5°. The snow that was on the ground at the end of March, together with that which fell the forepart of April, did not entirely disappear until April 12. Winter wheat and grasses are just beginning to green up, but with the exception of Crested wheatgrass they have made practically no growth to date. Spring plowing for small grains was begun on the rotations April 18 and will be completed to-day. With favorable weather conditions some seeding will be done next week.

Surface soil moisture conditions are fair at this time. There is little subsoil moisture, and comparing conditions with those of one year ago it cannot be said that the situation shows very much improvement over last year. April to date has been dry, and a rain followed by a period of warm weather is needed to start plant growth.

Maximum temperature, 61°; minimum, -15°; precipitation, 0.20 inch.

HUNTLEY:

The storm period of the latter half of March extended into April with rain or snow occurring almost daily until the 13th. Most of the moisture entered the soil soon after falling, and loss from run off or evaporation was small. Preliminary soil samples taken during the last week show stubble land to be moist to a depth of 12 inches, and fallow is wet to a depth of 15 to 18 inches.

Field work was resumed April 17 and has been carried on under ideal weather and soil conditions. The preparation of land for small grains is practically completed in the rotation field. Seed beds on all preparations appear to be of good tilth and well supplied with moisture. Weeds have started vigorous growth, and some extra tillage had to be given the early-cultivated plots to free them from seedling weeds.

Winter wheat is starting well on cornland and some of the fallow plots, but on other tillage methods the stands are thin and the crop looks weak. Winter rye is very poor on all plots, and from present indications some reseedling will have to be done, especially in the pasture rotations. Crested wheatgrass is making a good growth both on the old and new seedings. Alfalfa shows some thin spots due to loss of stand from drought, but the surviving plants appear to be starting well.

Maximum temperature, 70°; minimum, -1°; precipitation, 0.99 inch.

#### SHERIDAN:

The unsettled weather with frequent light snow which prevailed over the last half of March continued over the first third of April, with a snowfall of about 9 inches on the 9th. This made a total of 2.66 inches precipitation for the period from March 15 to April 10. Mostly fair weather has prevailed since the 10th. The average temperature for the first half of April was the lowest yet recorded on the station.

The snow which fell in the last storm drifted badly in most places, but the entire slope where the rotation field is located received a fairly even covering to a depth of 5 to 6 inches. Samples taken at random the first of this week showed moisture to a depth of about 23 inches on both fallow and stubble land. This was about 7 inches greater than the penetration on stubble last year, but fallow last year was moist to a depth of 6 feet.

No field work was possible on the station until the 17th. The first date of seeding was sown on the 18th. About 25 acres of land requiring only surface cultivation has been sown to grain for feed and seed, and the varieties of spring grain were sown the 19th and 20th on fallow. The rotation field still remains too wet near the surface to plow, but should be ready to work the first of next week.

Fall sown grain, grass, and weeds made a rapid growth the last week. Alfalfa, however, is very slow in starting, and much of the older seedings appears to have killed out. Some that still appears to be alive below the surface does not show any green at all yet.

Sheep are being sheared to-day.

Maximum temperature, 75°; minimum, 4°; precipitation, 1.32 inches.

#### DICKINSON:

April weather to date has been mostly cool and unsettled with more cloudy days than usual. Precipitation was recorded on 8 days. This is about the average amount to date for April, and the total of 2.44 inches so far in 1935 is also about normal. Strong winds on three days caused a little soil blowing.

Tillage on the rotation plots was started April 9. Snow and frozen soil delayed the work some. Field peas and wheat were seeded April 17, oats on the 18th, and barley on the 19th. An increase field of Victory oats was seeded on corn ground worked only with the duckfoot cultivator. There was barely enough moisture in the soil to make a seed-bed. Dry soil was hit a few times in plowing. Fall plowed land was very cloddy and was cultipacked after double-disking to make a fair seed bed. Most plots have enough moisture to germinate the seed unless the weather continues very dry. Crested wheatgrass has greened up noticeably. Bromegrass has barely started in rows and is still dormant in close seedings. Native grass has made no growth.

Visitors included, C. R. Towne, Extension Forester, Chas. Fifield and Irwin Wilson, School of Forestry, Bottineau, and G. L. Horton, Bureau of Air Commerce, Department of Commerce.

Maximum temperature, 74°; minimum, 10°; precipitation, 0.70 inch.

**MANDAN:**

Agronomy - April to date has been cold and unfit for field work on a number of days. Snow and showers have been frequent. The soil was frozen on the surface on a number of mornings. Field work on the rotation plots has been in progress intermittently for over two weeks. Wheat is being seeded to-day, April 20. This is two days later than the average date of seeding. Moisture conditions are much better than last year, and small grains should start off under favorable conditions. The precipitation for the year to date is slightly above normal. Crested wheatgrass is getting a good start but is behind normal growth for this time of year.

There has not been the severe wind storms that occurred last year. There are spots in the field that are in danger of blowing should a hard wind come up.

Maximum temperature, 71°; minimum, 13°; precipitation, 0.93 inch.

Horticulture - Field work opened up a little later than usual this year. The pruning of orchards has been partially completed. This work was interrupted to plant trees in the orchards, breeding blocks, and nursery while the top soil is still moist from the recent rain. Planting should be completed early next week.

As was the case last year, a considerable amount of dead wood is to be found in some of the orchard plantings. It is thought that most of the injury is due to drought rather than cold.

Propagating and potting of bedding plants was started in the greenhouse in February and continued through March. Seed planting of cabbage, cauliflower, tomatoes, eggplant, pepper, and celery was made on March 16 to 18, and tomato selections on March 28 to 29. Hotbeds and coldframes were made during the early part of April, and the vegetable plants transplanted into them. The first seeding of vegetables in the field was done on April 17 and included onions, parsnips, peas, lettuce, radishes, spinach, beets, and carrots. The soil is still quite dry, as plowing to a depth of 7-8 inches turned up dry soil. All planting of vegetables this year is being done on spring plowed land, the soil being too dry in the fall to permit of a good plowing job. As most of the failures with vegetables last year were due to a late and poor germination (middle of June), it is hoped that there is sufficient moisture in the top soil this year to germinate seeds normally.

Fair to good sets have been obtained from crossing fruits in the greenhouse. Apples especially seem to set fruit very freely, and the number of crossed apple seedlings produced in the last few years is just about enough to fill all available land in the breeding blocks. The number of potted apple trees probably should be materially reduced and the work concentrated on the plums and cherries.

Arboriculture - Shipment of tree stock to shelter-belt cooperators commenced on April 12 and was completed on April 17. Very few species were on hand this spring, and it was necessary to leave some rows vacant in the new plantings. These vacant rows will be filled next spring if suitable stock is grown this year. Conifer stock showed considerable evidence of "browning" and of injured buds.

About 18 acres of land have been plowed and worked down in the new quarter. This land is being seeded with various species at the present time.

A few rows of trees have been planted in the main windbreak, replacing the poplar and willow species which killed out last year.

Dr. E. W. Hardies, who accepted a position with the Soil Erosion Service, and is detailed to this station, reported for duty April 7th.

Visitors at the station included: Ernest Wright, U. S. Forest Service (National Shelterbelt), Lincoln, Nebr.; Roy Calhoun, Forest Service, Missoula, Mont.; H. Basil Wales, E. H. Toole, J. H. Stoeckeler, U. S. Forest Service; R. L. Shotwell, Bureau of Entomology, Bozeman, Mont.; H. J. Clemmer, Regional Director, Soil Erosion Service, Huron, S. Dak.

#### BELLE FOURCHE:

The first half of the month was abnormally cold with a trace or more of snow occurring nearly every day between April 1 and 11. Beneficial wet snows of 0.33 inch precipitation each were received on April 3 and 9, and a total precipitation of 1.02 inches was recorded from March 29 to April 9, inclusive. The snow and freezing temperatures left the surface soil in a loose, friable condition when it dried, and high winds on April 14, 15, and 16 caused extensive drifting of soil on bare fields which had blown previously. Cultivation with duckfoot and lister kept blowing on the dry land rotation project and adjacent station fields under satisfactory control.

The last week was comparatively warm, but high winds made it inadvisable to risk harrowing and seeding small grain plots. Alfalfa and sweet clover were reseeded on the various plots on which poor stands were obtained in the previous year. Plowing for small grain was completed.

Winter wheat has made excellent recovery, even on large fields which have blown badly. In the rotation field there are only two plots of fall grain on which the stands may prove to be unsatisfactory. The recent warm weather has caused alfalfa and brome grass to resume growth. Trees and shrubs are budding extensively.

Maximum temperature, 70°; minimum, 10°; precipitation, 0.79 inch.

#### ARCHER:

To date the weather in April has been unfavorable for farm operations. The total precipitation for the period April 1 - 20 is 0.51 inch. Practically the entire amount, 0.49 inch, occurred in the form of snow during the storm of April 9 and 10. The greater part of the snow was driven by a heavy north wind which caused it to drift badly, therefore, it was of very little practical value to tillage operations. On April 8 heavy dust clouds came from the southeast.

Winter wheat and winter rye which did not emerge last fall are making a weak, scattered showing. Grass which has been favored with moisture is beginning to show up. The wild currant and Tartarian honeysuckle are coming into leaf. The moisture from the snowdrifts brightened up the evergreens and no doubt will give the other trees and shrubs the much needed moisture for spring growth.

The rotation plots were plowed during the past week. The soil was dry, and in some cases approached a dusty condition. At present attempts are being made to break the large hard clods on fall plowing.



Some clods are so hard that they resist the weight of the 15-30 I. H. C. tractor.

John S. Cole, J. F. Brandon, Director W. L. Quayle, and August Nylander, County Rehabilitation Agent, visited the station in April.

Maximum temperature, 65°; minimum, 12°; precipitation, 0.51 inch.

#### NORTH PLATTE:

April weather to date has been cool, dry, and windy. Although measurable precipitation occurred on seven days, the total of 0.97 inch is only 70 per cent of the normal for 20 days of April, and the total of 2:02 for the year to date is 64 per cent of normal. The mean temperature for the period is about 4° below normal. The absolute minimum was 17° on the 11th. Some of the worst soil blowing of the season has occurred since the series of recent rains where the surface was smoothed down and no tilling has been done. Two of the worst dust storms of the season were on April 14 and 16. The wind velocities were not so very high on either of these days, but a pall of fine dust settled in from the upper air that made visibility very low.

Early seeded wheat in this locality has improved in condition during the month, but later seedings have continued to decline. Slightly more than the normal amount of spring grains are being seeded.

#### AKRON:

April weather for the first half has been favorable, except that we have not received appreciable moisture to add to a meager soil supply. Small grains seeded between March 15 and April 1 have emerged satisfactorily. Winds have not been consistently high enough in velocity since the first of April to sweep this region's loosened soil, but nevertheless dirty days with blown-in soil from the south and south-east have been the rule up to the last few days. Precipitation was recorded on three separate dates, but the total has been of no agricultural value. The bulk of the precipitation came as snow with the blizzard of the 10th and was swept off the fields to be piled back of every obstruction. This moisture however was sufficient to hold the soil during the extremely high driving northwest wind, so the blizzard was not 'dirty' in the strictest sense. The pine trees caught a nice portion of this snow. Temperature was not especially low, but reports of heavy livestock losses have been received.

Temperature has warmed appreciably the past few days, and the atmosphere has been freed of dust particles. Vegetation has greened appreciably to brighten the immediate countryside.

Visitors the first half of April were, John S. Cole, Messrs. Robertson and Austin of the College staff, and Mr. Noxon of the State Board of Land Commissioners, and D. J. Harman, County Commissioner of Logan County.

Maximum temperature, 75°; minimum, 20°; precipitation, 0.46 inch.

#### COLBY:

There have been four nice days in April so far. To-day started out to be the fifth, but the indications are that the dust will be thick before night. The rest of the time there has been more or less serious soil blowing every day, and the air has been filled with dust much of every day. On five days it was very windy, but there is considerable

soil blowing even on comparatively still days. The whole country has the appearance of a wind swept waste. Where the wheat still survives it is in need of moisture. Nothing is green in this immediate vicinity, except well watered lawns where the dust has been removed after every severe dust storm. Pastures are showing a bit of green only where there had been snow drifts. Some of the fruit trees are beginning to bloom.

This station has been listed almost solid, except the Dry Land Agriculture project. In this project there is a listed furrow in each alley and one along the edge of each roadway. All the roadways and all the plots which do not have a heavy stubble or which do not call for some other tillage have been ridged with a furrow drill. This seems to keep the soil from piling up or blowing away to any great extent.

The spring small grains were drilled Monday. All the plots were practically dry except the fallow plots. Even the fallow plots did not contain enough moisture to warrant expectation that the seed will germinate without additional moisture.

Governor Landon, Assistant Secretary M. L. Wilson, Dean Umberger, Prof. Throckmorton, and Prof. Grimes visited the station Tuesday morning while on a tour of inspection of the dust storm area. Messrs. Savage, Eshbaugh, Drake, and Ackerman of the Hays station visited here Wednesday.

Maximum temperature, 82°; minimum, 21°; precipitation, 0.23 inch. To measure the evaporation has been a problem, because on some of the very windiest days more than enough dirt has been accumulated to replace the water that evaporated, with the result that the reading following such days is higher than the reading of the previous day.

#### HAYS:

Drought and frequent dust storms thoroughly discussed in previous reports continue. In as much as there has been no change in nature or frequency of the dust storms there is no use of elaborating upon this subject.

The soil on the plots is holding, no damage from wind erosion having occurred since in February, as mentioned in a previous report. The listing of adjoining fields completely arrested soil movement from those fields to the present date. This exposure having been eliminated, it has not been necessary to do further tillage in the Dry Land project for the purpose of preventing soil drifting. There is, however, upon the project the usual accumulation of fine soil from one-quarter to one inch thick, which is a result of the settlings from numerous dust storms.

Wheat on the project continues to deteriorate. The stand of live wheat varies from zero to 75 per cent in spots, with much of the latter badly wilted. With so little moisture in the soil and with such unfavorable climatic conditions overhead, it is a mystery how and why any of the wheat survives. At the present writing it would seem the only place where a yield might be expected is on the 3-year fallow, which still looks very good, but with the accumulation of fine silt over the plot it will be interesting to see what happens later even should good rains come.

The local areas of good wheat existing in the drought-stricken area from Hays south and west, previously reported, are now suffering extremely. Some have already passed out of the picture.

To date no spring grains have been seeded on the project, nor has any cultivation been necessary for destruction of weeds. However, since the time for seeding is growing so late, preparations are now being made as a last resort for seeding oats, barley, spring wheat, and peas early next week. These grains will be seeded with a hoe-drill without any previous tillage except that which has been given for protection of wind erosion since the plots were plowed. The seed will be placed in absolutely dry soil, but by such a method of seeding it is hoped the surface soil will still be left in a fair condition to resist blowing, and should it rain soon the grain will be ready to germinate.

Field work during the week has consisted largely of soil moisture determinations, trimming of winter wheat plots, and staking of plots for spring seeding.

Maximum temperature, 85°; minimum, 24°; precipitation, 0.05 inch.

The maximum wind velocity was 28.2 miles per hour for the 24-hour period ending at 8 o'clock a.m., April 11.

#### GARDEN CITY:

Wind erosion continues to be the greatest problem in this part of Kansas. On April 16 representatives of Agricultural Colleges in Kansas, Colorado, New Mexico, Texas, and Oklahoma met with Governor Alf. Landon of Kansas and Assistant Secretary of Agriculture M. L. Wilson at Garden City. Their meeting was scheduled to be held at the Experiment Station, but after the Governor and Secretary and their party had driven from Colby in a typical but rather mild dust storm they decided to meet at the hotel. The object of the meeting was to make plans for the control of wind erosion. The result was a set of recommendations to Secretary Wallace for the emergency and permanent control of wind erosion.

Dry land plots on the station have been holding well against wind erosion, but have accumulated considerable quantities of soil from adjacent blowing fields. A light rain on the 17th melted many clods and necessitated listing numerous plots that had been holding against blowing with cultivation only. No spring planting is planned until rains supply some soil moisture.

Wind velocity has been rather high during most of the month. The air has been dust filled ten of the past twenty days. April 8 to 11 was the worst continuous dust storm on record. On April 10 the wind velocity averaged 33.3 miles per hour, an all-time record here.

Maximum temperature, 86°; minimum, 23°; precipitation, 0.15 inch.

#### TUCUMCARI:

Winds of record breaking intensity which occurred during most of March continued the first 18 days of April, with but few calm days. The past two days have been cool and calm, following 0.02 inch precipitation. April to date has been highest in wind movement and evaporation of any April on record.

A trip through the wheat growing portion of this county, in company with John S. Cole and B. F. Barnes two weeks ago justified the opinion that even where serious soil blowing had not occurred, the wheat would soon succumb from lack of moisture. Since that time some 10 or 12 days of hard blowing has taken place. Ravages of drought and

soil blowing have taken a heavy toll of the remaining wheat fields during that period. From one-half to one-fourth of the wheat acreage may produce some crop if rain occurs soon, but if moisture is delayed 10 days to two weeks longer the county production will be negligible.

Ranges show but few weak, wind-whipped green sprigs, while the mortality of the native grasses is high. Old ranchers declare a 5-year period of normal precipitation will be required to put ranges back in normal condition, even if grazed exceptionally lightly. The county now is carrying only about one-third the number of cattle of 10 months ago, probably two-thirds of the number the county could normally carry without injury to range, and still far too many head to permit ranges to build up when, if, and after rains occur.

Repairing roads and pruning orchard and other trees have made up the major portion of station work. Field work will be delayed until rain occurs.

Maximum temperature, 88°; minimum, 31°; evaporation, 19 days, 6.621 inches.

#### BIG SPRING:

Weather conditions up to April 18 were characterized as very dry and dusty. The air was filled with dust during fully half of this time, but only on one occasion was it started locally. It started to rain on the night of April 18 and drizzled intermittently during the following day and night; a total of 1.16 inches was recorded for the period. This rain will be of untold value to the ranchers, for the grass has been very slow in starting, and the weeds were covered with so much dust that the cattle hesitated to eat them until they were starved to it. Farming in general will be stimulated throughout this area. Considerable stuff had been planted early, and some of it was up to good stands. It is probable that general planting will be started now, although it is still rather early for best results. Station wheat has been suffering considerably during the past two weeks, and it is very probable that some of it is beyond recovery.

Station work has consisted of knifing lister beds, duckfooting and springtoothing fields to prevent soil blowing, and hoeing weeds. The April 15 date of planting of cotton with three different varieties was made on time.

J. M. Jones, Chief of the Division of Animal Husbandry of the Texas Station, visited the station April 14.

Maximum temperature, 97°; minimum, 40°; precipitation, 1.16 inches.

#### LAWTON:

Weather that was so unfavorable to crops in March continued without relief until April 18. High winds, dust storms, and dry weather reduced the prospects of even a fair yield of wheat to a very low point. Deterioration of station plots of wheat was very rapid and severe. The lack of moisture resulted in a very stunted plant growth and development. A few farmers returned livestock to the wheat fields to salvage what little grazing was present. This condition, however, is not generally true, and a small crop is possible with well distributed rains during the remainder of the growing season.

Early Blackhull was recorded as fully headed April 19 at a height of 16 inches. Quivira, the three selections of Kanred x Hard Federation, P-1066-1x Prelude, Kanred x Marquis, P-1066-1 x Burbank, Kawvale, Tenmarq, Currell, and Mediteranean T.S. 5933-23 were showing the first heads April 16 to 20, at a height of 10 to 16 inches.

Although oats suffered to some extent from the dry, windy weather, the crop is still in good condition. Corn has made only a limited growth, due to considerable cool, windy weather. Dry soil and high winds have so far delayed seeding of alfalfa, sweet clover, and the first date of planting cotton.

A minimum temperature of 31° was recorded April 13. This temperature was accompanied by frost that was injurious to corn and to garden vegetables that were growing on low land. On the upland the frost injury was negligible. The maximum temperature recorded during the period April 1 to 20 was 88°.

Cloudy, threatening weather characterized the week ending April 20, and 0.74 inch of rain was recorded on the 18th. This rain was quite general in the southwestern part of the State, varying from torrential character in many places to gentle showers in others. But little of this rain was lost by run-off in the local vicinity, and the sorely needed moisture is immensely beneficial to vegetation of all kinds.

#### WOODWARD:

Thus far in April there have been only a few traces of precipitation. Wheat has deteriorated from day to day until there is no practical possibility of a paying yield on the heavier land of the station except on fallow. On farms generally over the country wheat varies greatly. There is a better chance of a yield where it was grazed closely during the fall and winter so that rank growth was removed and did not continue to use moisture. Wheat is in far better condition on sandy land where fall rains did not cause so rank a growth. There probably never was a greater difference in favor of late planting than there is this season. For wheat that was heavily grazed or planted late there is a fair possibility of moderately good yields if good rains should start very soon and continue over the next two months. There probably is very little moisture in the soil to carry it even the next ten days without severe injury even in the most promising cases.

Trees and shrubbery continue to linger over coming into leaf and bloom because of the very little moisture they have to draw on. Even the green of new growth has a gray cast because of dust that settles on it every few days.

While the sun has been almost constantly obscured by dust clouds during all the spring, it has on the station been exceptionally easy to hold soil from blowing. On most fields and plots one cultivation has been sufficient. This is because on uncropped fields there is still an abundance of moisture from last fall's rains, and where wheat was planted the covering is very heavy. There have also been no extremely hard winds, although the accumulated dust of several dry years rises in great fogs in even comparatively light winds.

There has never been so much interest in making gardens as there was up to two or three weeks ago. All the seed, grocery, hardware, drug, machinery and bargain stores were heavily stocked with seeds, and people reveled in the anticipations of gardens after several years without them. This mania for planting arose from their experience that a rainy season may confidently be expected after several dry ones. The past two weeks of drought, however, has discouraged all gardeners.

The work of the past month has consisted largely of planting seed and transplanting trees.

Maximum temperature, 90°; minimum, 30°; precipitation, 0.01 inch.

PENDLETON:

April to date has been colder than normal, with only a few bright warm days. The growth of winter wheat has been rather slow and emergence of spring sown crops has been slow on account of cold soil. The crop season is about three weeks later than usual. The pea growers near the foothills have been delayed in their seeding by frequent showers. These frequent showers have kept the soil in ideal condition for plowing for fallow, about 75 per cent of the farmers have completed their plowing for fallow. On the station all the crops seeded in March have emerged with good stands. During April two dates of seeding for spring wheat and one date of seeding for garden peas were put in. Most of the native grasses in the soil erosion control nursery have emerged with good stands, as have the grasses in the grass mixture plots. Crested wheatgrass and alfalfa are now about one-foot high. The following grasses received from the Division of Forage Crops and Diseases winterkilled here this winter: *Andropogon argenteus*, *Andropogon intermedius*, *Andropogon scoparius*, *Andropogon furcatus*, *Bouteloua curtipendula*, and *Bouteloua oligostachya*. Of the grasses sent out by the Division of Forage Crops and Diseases *Andropogon smithii* was the only one to survive and it is spreading like a weed. The slender wheat, crested wheat, tall oat, orchard, smooth brome and tall fescue show no injury.

Visitors - 36 students in soil erosion and agricultural engineering from Oregon State College. Dr. W. L. Powers, Profs. Walker and Branton, O. S. C.

Maximum temperature, 69°; minimum, 20°; precipitation, 1.49 inches.

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REPORT FOR THE WEEK ENDING APRIL 27, 1935.

HAVRE:

The week was quite favorable for field operations. The necessary surface cultivation and plowing have been done for the regular seeding of small grains. Varieties of wheat, oats and barley, and other miscellaneous tests were seeded, and the rotation plots are ready for seeding. Commercial fields are being cultivated, preparatory to seeding of small grains. Alfalfa fields are being irrigated.

Native grasses have started, but there is not enough growth for good grazing. The prairies are showing green, and with the present moisture conditions, grass should make a good growth. Domestic grasses are growing rapidly and are large enough for grazing. There has been very little winterkilling of either winter wheat, winter rye, or alfalfa.

Precipitation for the week amounted to 0.88 inch, 0.55 inch of which fell on the night of the 26th. This brings the total for April to 1.09, which is about 0.15 inch above normal. Temperatures were freezing or below three nights during the week.

Visitors during the week included Director F. B. Linfield and G. Allen Mail, Entomologist, both of the Montana Experiment Station.

Maximum temperature, 74°; minimum, 29°; precipitation, 0.88 inch.

JUDITH BASIN:

Weather conditions the past week have been favorable for seed bed preparation, and seedings have been rushed forward. The seeding of barley, oats, peas, spring wheat, and spring rye has been completed on the rotations as well as have the varietal seedings on the Cereal project. Because of cool temperatures, vegetation has made slow progress during the week. Winter wheat has greened up and is making some growth. Crested wheatgrass is making a good growth and is large enough for pasturing. The cattle were turned on the bromegrass and crested wheatgrass experimental pastures April 25. The native pasture is just beginning to green up and will not be ready for pasturing for some time. A good rain and warm weather are needed to accelerate the development of all crops. Several light showers during the week did not produce sufficient moisture to be of value. At the time this is being written we are having one of those April blizzards which started during the night and are so common to this section of Montana.

Maximum temperature, 70°; minimum, 27°; precipitation, 0.17 inch.

HUNTLEY:

Field work was possible every day but one of the last week. Seed beds for all early crops in the rotations and miscellaneous plantings were completed, and all small-seeded crops were sown in the rotation and pasture experiments. The best plots of winter wheat have shown good growth for the week, but the plots on which the crop was stunted seemingly have made little progress. Winter rye is making a very poor showing, and the plots of that crop in the pasture rotations were replanted. Alfalfa on the 1-year, 2-year, and 3-year-old plantings is starting slowly and shows increasing evidence of injury from drought and exposure. Older plantings are growing more rapidly and appear to be in about as good condition as they were a year ago.

Farmers report winter wheat in some sections to be in excellent condition, whereas in other parts of the county the stand has been almost entirely destroyed by drought and wind injury. The soil moisture situation also varies widely according to information received at the station, but it seems to be agreed that in all localities there is more moisture in the soil this spring than there was last year. Preparations are being made for a rather heavy seeding of spring wheat in some of the more favorable areas.

Maximum temperature, 81°; minimum, 25°; precipitation, 0.21 inch.

#### SHERIDAN:

Field work was delayed by light showers for a part of two half days, but the precipitation was not sufficient to add anything to the moisture content of the soil. Except for the first two days of the week the weather was fairly cool, temperatures averaging just about normal for the season. Plowing of the rotation field was begun the first of the week. Preparation of the rotation plots for early seeding was completed and the seeding done on the 25th and 26th. All plots worked up in good condition for seeding, spring plowing being much better in that respect than for several years. More seedings of grain for feed and seed and the rates of seeding oats and barley were completed.

The older seedings of alfalfa started some growth over the week and show a much better appearance than last week. It still appears, however, that there was some killing-out over winter with most seedings over three-years old. The younger seedings appear to be in fairly good condition. Weeds and downy brome grass have started much ahead of the alfalfa in the older seedings, and cultivation with the spring-tooth harrow fitted with alfalfa teeth has been started with these seedings to control the weeds.

The earliest seedings of barley and oats have just begun to emerge. The greater part of the conifer replacements were planted during the week. Northwest poplar were pulled in the spacing blocks of the shelter belt to make room for new stock to be planted in place of the poplar, which were largely killed by borers.

Maximum temperature, 78°; minimum, 28°; precipitation, 0.27 inch.

#### DICKINSON:

Normal temperatures prevailed, but several days were cloudy and vegetation developed slowly. On April 21 a strong south wind carried a lot of dust all day and caused some soil blowing. A radio report from a plane of the Northwest Airways passing through the area at 13,000 feet elevation said the dust was so thick the pilot could see nothing. On the station the soil blowing was not extensive, and it was not in the district, but part of the wheat in the cereal nursery was uncovered.

Wheat, oats, and barley varieties were seeded April 22 and 23, and an increase field of Steigum barley was seeded on the 24th. Winter wheat on the rotations was seeded to spring wheat on the same date as other plots. Winter wheat varieties are so thin and ragged that they probably will not be left to harvest. Winter rye stands are thin and slow in starting. Crested wheatgrass has been grazed all week by the milk cows. Brome grass is greening up some, but the native pasture is still mostly dry in appearance.

A class in economic geography from the State Teachers College visited the station April 25.

Maximum temperature, 75°; minimum, 28°; precipitation, 0.18 inch. (A rain which began about 7 a.m. on April 27, turned into snow and continued into the night. Total for the storm 1.41 inches. Total April 1-28, 2.29 inches, exceeds the total for any April since 1926.)

MANDAN:

Agronomy - The past week has been cool for this season of the year. Field work was delayed on one or two days because of rain. Sweet clover, bromegrass, peas, barley, and oats were seeded in the rotations during the week. A block of crested wheatgrass was seeded to-day. All crops went in under favorable conditions. Land has been prepared for grass seedings for the Soil Erosion Service. Russian thistles are making a good start all through the fields. Crested wheatgrass is now making a good growth.

Maximum temperature, 72°; minimum, 38°; precipitation, 0.62 inch.

Arboriculture - Seeding of various tree species has been continued during the week and has now been completed, except for small amounts of a few species which will be planted in seed beds. Honey locust and limber pine have been added to the species testing blocks. Several species received from the Division of Foreign Plant Introduction have been planted in the Arboretum. Two rows of blue spruce and one of green ash have been planted in sections B and D of the main windbreak. The precipitation during the week will probably be sufficient to germinate most of the planted tree seed.

Horticulture - Raspberries and grapes have been uncovered. Straw mulch is being hauled from around young trees and the mulched block in the hardiness test. Spring planting is almost completed now. A pail of water is given to each newly planted tree.

Buds are now starting to grow, and it is time to apply the first seasonal spray to all bearing fruit trees. This will be done early next week, weather permitting.

Transplanting and potting of tomatoes, pepper, eggplant, and late cabbage and cauliflower has been in progress in the greenhouse and hot beds during the week. The acre garden was manured, plowed, and put in condition for final plantings. There is now apparently sufficient moisture in the soil for a good germination, unless hot and windy weather sets in.

Lawns on the grounds are now greening up nicely. The irrigation in late September last fall certainly proved to be of immense benefit to the grounds. There is apparently no winter injury among trees and shrubbery planted on the grounds, while the same species in the field tests, receiving no extra water, are badly injured, some being dead almost to the ground.

BELLE FOURCHE:

The first day of the week was quite warm, but the following six days were unusually cool. Cloudy skies and strong winds prevailed most of the time. Heavy rains appeared imminent on numerous occasions, but only a few light sprinkles of rain were received, although substantial amounts of precipitation occurred in surrounding sections. A good rain is badly needed to stop soil blowing.

Strong winds on April 21 and 24 caused a limited amount of soil drifting, but extensive soil movement took place on April 22 and 27, when exceptionally high winds prevailed. Soil blowing was general throughout this section, being especially severe on April 27. In

addition to winter wheat land, many sugar beet fields on the irrigation project and some spring seeded small grain fields blew badly. Some blowing of winter wheat plots in the dry land rotations occurred, but otherwise no soil movement took place on the rotation project. Duck-footing of all small grain stubble was necessary, however, to prevent blowing.

Spring grain plots were harrowed early in the week; and seeding of small grain, field peas, brome grass, alfalfa, and sweet-clover was completed. All alleyways and roads were listed as a precaution against soil blowing.

Maximum temperature, 83°; minimum, 33°; precipitation, 0.01 inch.

#### ARCHER:

The weather during the week was marked by a storm of more than 48 hours duration with a precipitation of 1.81 inches. The first 0.35 inch was in the form of rain. The remainder, 1.46 inches, occurred in the form of snow which began to fall at 10:30 o'clock the night of April 23 and continued falling until some time during the night of April 25.

While the snowdrifts in the shelter belt are about 8 feet deep, there was a good covering of snow on the level. This will give the necessary moisture for proper tillage and the starting of plant growth.

The snow extended as far east as the State line. Beyond this the precipitation occurred in the form of rain. Large numbers of motorists were marooned in the snow between Pine Bluffs and Cheyenne. It was very fortunate that the temperatures were not severe. Livestock reports have not been received, but the mild temperatures give hope that the losses will not be severe.

Maximum temperature, 68°; minimum, 27°; precipitation, 1.90 inches.

#### NORTH PLATTE:

The long looked and hoped for break in the weather occurred during the week. Rain, and more rain for four consecutive days from the 16th to 19th covered a large section of western and central Nebraska. The first day's rain was an old time gully washer accompanied by high wind. The canyons in the Substation pastures discharged large streams of water. Some damage was done to fields by washing, and the excavations for the power house of the Platte Valley Power and Irrigation Company were flooded and considerable machinery inundated. Pastures, small grain, and alfalfa are already showing a response to the moisture. Growth should be very rapid when warmer weather occurs.

Maximum temperature, 82°; minimum, 35°; precipitation, table 4.06 inches, bench 3.33 inches.

#### AKRON:

More than the average April rainfall was received in one storm that lasted the greater part of the week. Started drizzling Tuesday evening and continued off and on to the next morning when at about 9:00 a.m., the precipitation turned to snow which continued with varying intensity until Friday noon. Rainfall before the snow amounted to about 0.80 inch. The snow was heavy and largely lay where deposited. This snow has melted slowly and the soil has absorbed practically the entire precipitation. This week's precipitation of 2.64 inches now makes the agricultural outlook very bright.

Before the rain rotation spring seeded small grain plots were already emerged to excellent stands and rotation corn and sorgho plots were largely made ready for later seeding. Work since Tuesday has been inside, threshing bagged heads of sorghum, cleaning accumulated dust from the grain storage room, etc.

Maximum temperature, 77°; minimum, 29°; precipitation, 2.64 inches.

#### COLBY:

This has been a cool, blustery, and rainy week with almost no rain here. It has been cloudy nearly all week. In certain localities in this section of the State rather heavy rains have been reported. The dust continues, however. It has been fairly windy and dusty all or part of every day. The dust and soil blowing have not been severe except on Easter Sunday and Monday. Easter Sunday was especially windy and dusty during the night. The dust storm coming up Monday afternoon was a rare, picturesque sight. Almost any other year it would have been terrifying, but this year it was looked upon as just another one. Rain clouds were coming up in the west. Ahead coming faster was a high, dense wall of black and gray dust. As it approached, one could note just exactly how far away the front was, as it enveloped everything in its path over a wide area. The wind was straight from the west, not very hard, but the air was heavily laden with dust. The rain clouds did not arrive until much later, when there was a light shower without clearing the air of the dust.

The spring wheat seeded two weeks ago is up to partial stands on the fallow plots, but the oats and barley have not sprouted.

The crabapple and pear trees are in full bloom. Most of the plums have finished blooming, and the cherries are just coming into bloom. Most trees are coming in leaf.

Maximum temperature, 87°; minimum, 32°; precipitation, 0.06 inch.

#### GARDEN CITY:

The dry weather and dust storms continue and prevent normal progress of field work on experimental plots. A large block of the plots has been one-half listed. The middle tool of a three bottom lister is removed for this operation, after the suggestion of A. L. Hallsted. The operation is very effective in preventing wind erosion on the silt loam soil at this station.

The air has been dust filled at least a part of each day during the past week. Measurements show that 20.4 tons of dust per acre have fallen on unprotected parts of the experiment farm in the past 21 days. On lawns where the wind velocity is checked by trees, about 350 tons of dust per acre have settled during the spring. Seven inches of sediment accumulated in the evaporation tank during the first two weeks of April.

Contrary to expectations, the dust brought in by the strong winds in the past few weeks is not extremely fine in texture. Measurements show it to absorb one inch of moisture approximately twice as rapidly as a rough cultivated field and three times as rapidly as a smooth blown field, both of a silt loam texture. A block of drifted dust, puddled when wet, then air dried, broke under 66% as much strain as was required to break a silt loam soil similarly treated.

April 24 and 25, O. R. Mathews visited the station. His mission was to assemble and correlate soil moisture data and discuss plans for future soil studies at this station.

Winter wheat on summer fallowed plots sheltered from north winds by trees maintain a fair promise of producing grain.

Maximum temperature, 82°; minimum, 34°; precipitation, trace.

#### TUCUMCARI:

The week was cool and cloudy, five days being recorded as partly cloudy and two as cloudy, but no precipitation was received. Temperatures were lower, the past three days, than in several weeks. High winds occurred early in the week, with calm weather at the close.

Station work has consisted of watering trees, pruning trees, stalk cutting, and listing. Soil was so dry that immediate listing of remaining land was imperative, if this was to be done irrespective of rain. Surface cultivation was no longer effective in preventing soil movement. Fear that winds would continue and that rain would be delayed clinched the decision to list while listing was still possible. The work is fairly satisfactory but beset with difficulties, such as the necessity for changing lister points on an average of every six hours.

The soil erosion project for this portion of New Mexico is getting under way, but it is problematical just how many farmers will report land so dry and hard that listing is impossible. Many early listed fields have blown level, with continued damage, impressing the advisability of surface cultivation of sandy soil in winter and early spring before listing is performed, where crop residue is insufficient to hold the soil.

Maximum temperature, 82°; minimum, 34°; wind movement, 8.0 m.p.h.

average, the lowest in several weeks; precipitation, none;

April to date, 0.02 inch; 1935 to date, 0.92 inch; past 20 months, 8.40 inches.

#### BIG SPRING:

Weather conditions have been very favorable for all kinds of field work during the past week. Wind velocity has been very low, and the rains of the previous week put the soil in good shape for working. Winter wheat plots, which looked like about half of the wheat was dead before the rains, are now making a good growth and should make some grain with more rain. The April 15 date of planting of cotton is emerging to fair stands at the present writing. An increase field of Sudan grass was planted during the week. Other work consisted of knifing beds in increase fields and killing weeds by various other methods.

The cattle feeding experiments will be closed on May 10, at which time Feeders Day Meeting will be held.

Maximum temperature, 89°; minimum, 43°; precipitation, none.

#### WOODWARD:

This has been a week of several hot days and prevailing high winds. Wheat planted late on fallow and some on sandy lands still have a chance to make light yields. Practically all other wheat is definitely gone.

Trees in many cases are putting out leaves with what seems painful slowness due probably to dry soil and high temperatures. Iris and other flowers now blooming become so dust covered as to

lend little attractiveness.

The fanning mill at the station has been used by farmers nearly every day for months. Much broomcorn seed so light that nearly all the air had to be cut off has been put through it. Broomcorn is one crop that will almost surely bring a big price because of a much depleted stock - unless of course an extraordinarily big crop is raised. Farmers are naturally winnowing every seed that may possibly grow from the trash heaps where broomcorn was seeded.

There seems to be sufficient grain sorghum seed in the country. Those having it report a slow sale, because farmers lack cash and have lost confidence they will have moisture enough to bring it up.

Only 0.01 inch of rain has been received so far this month though the mean since the station started is 2.41 inches and the lowest previously recorded is 1.06 inches.

PENDLETON:

Warmer weather the past week has stimulated growth of all crops. Winter wheat, which was backward for this season of year, has grown rapidly and is now about 15 inches high. Wheat fields all over the county are freer of weeds than usual. Tar weed and Jim Hill mustard are the chief weeds that we have to contend with in this section. On the station all the early spring plowed fallow was cultivated with the revolving rod weeder this week. Considerable time was spent cleaning up weeds in plot alleys, roadways, and fences. Line fences were repaired.

Visitors - Geo. W. Peavy, President Oregon State College; and Messrs. Vogel and Slahoover, Washington State College.

Maximum temperature, 70°; minimum, 30°; precipitation, 0.60 inch.

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