CHAPTER XIII.

THE NORTHWEST SCHOOL OF AGRICULTURE AND EXPERIMENT STATION.

By Superintendent C. G. Selvig.


THE NORTHWEST EXPERIMENT STATION.

Sometime before 1894 Prof. Willet M. Hays, of Minnesota Experiment Station, St. Anthony Park, had made a study regarding the best location for two other experiment farms in Minnesota besides the one at St. Anthony Park. There were two great areas of the State considered in this survey, viz: the Red River Valley and the adjacent parts of the northwest part of the State, and the lighter soils of the great north central timbered section. By consulting the State geological surveys, and doing some traveling, he had formulated a general plan as to where these farms should be located.

There had been some agitation of this question among the citizens of the Red River Valley, resulting in a delegation being sent to urge the establishment of an experiment farm before the Legislative committee to whom a bill had been referred. Favorable action resulted, for at the Legislative session of 1895, $30,000 was appropriated with which to procure equipment, and for the two following years to conduct two sub-experiment farms. They were placed under the direction of the Board of Regents of the University of Minnesota.

Several tracts of land were considered for the location of the Northwest Experiment Farm by the Agricultural Committee of the Board of Regents, consisting of Wm. W. Liggett, Chairman; J. S. Pillsbury, S. M. Owen, and W. W. Pendergast, and by Prof. W. M. Hays who had made a study of the northern half of the State. It was finally located by the Board of Regents at Crookston, Polk County, on land donated by the Great Northern Railway, through the generosity and liberal mindedness of President J. J. Hill and Samuel Hill. It was considered that problems to be solved upon this area were the problems of many communities in the Red River Valley, especially the problem of drainage. This reason weighed largely in the minds of the Committee, for the land selected was extremely low, there being higher land on the north, east, south, and southwest. A shallow coulee drained a part of the waters to the northwest. The ditch established later followed this natural outlet. It was regarded as advantageous to have such a tract of land for experimental purposes and for investigational use.

The tract donated to be used for the Northwest Experiment Farm contains 476.61 acres, according to a United States Government survey which was made in 1872. It comprises the north half and southeast quarter of Section 19, Crookston Township. Its south line is the northern limit of the city of Crookston. The farm buildings were located in the northwest corner of the section, approximately two miles from the center of the city.
SECURING THE LAND.

This tract of land remained in the possession of the General Government until March, 1878, when the ownership of this tract was transferred to the State of Minnesota, which in turn transferred it on the same date, to the St. Paul & Pacific Railway Company, now a part of the Great Northern Railway system. All of it had remained unimproved in the possession of the railway, excepting about fifty acres which had been broken, cropped, and filled with mustard and other weeds by trespassers, until 1895, when the University of Minnesota was given permission to use it for an experimental farm. In 1903 an agreement was made with the railway by which the University could become the purchaser of the land at any time at $25 per acre, but could have the possession of it free of charge so long as it was used for educational or experimental purposes.

BEGINNINGS IN 1895.

Work at the experiment farm began in 1895, when the city of Crookston and the County of Polk each gave $1,000, which was utilized for drainage and making of roads around and through the Northwest Farm. Prof. W. M. Hays was placed in general charge of the equipment and plans for experimental work, and Mr. T. A. Hoverstad was chosen assistant agriculturist, and was given the local management of this Northwest Farm, at Crookston, as Superintendent.

SOIL AT NORTHWEST STATION.

The surface soil at the Northwest Experiment Farm is a blackish color, usually about twelve inches in depth, although at places it becomes very thin, while at others the dark material extends in slender streaks for 18 to 30 inches down into the lighter subsoil. Two distinct types of soil were mapped on the farm. The larger portion is of Fargo clay loam soil, which contains a very large per cent of organic matter. This renders the soil loamy and easily cultivated, when in a dry condition; but when wet, it is sticky and tenacious, clods badly, and does not scour well, making plowing almost impossible. The other type of soil, called the Fargo fine sandy loam, is easily cultivated, and can be plowed much earlier in the spring and summer after heavy rains, than the heavy type of soil.

PLANS OUTLINED.

The plans outlined for the Northwest Farm included the production for dissemination of the best grains produced by the station; the testing of varieties of grains, roots, trees, and fruits; field management; tillage and weeds; pastures and meadows; forage and pastures from annual crops; prairie forestry; road making; feeding work horses and other stock; breeding animals; and dairying. All of these were to be studied with reference to conditions in this part of the State. These plans involved extended investigations to answer questions which could be properly studied only in this peculiar part of the state.

WORK OF EARLY YEARS.

The work from 1896 up to the installation of the drainage ditch, in 1909, was difficult and the results uncertain, on account of excessive rainfall and lack of drainage during the greater time of this period. The reports of the Northwest Experiment Farm present these difficulties very vividly. In the spring of 1896 the rainfall was so constant and excessive that the season for planting grain crops had practically passed before the seed could be planted. In 1897, floods just before harvest nearly ruined the wheat and oats. The need of an adequate drainage system was early recognized; but the problem was one requiring a considerable expenditure of money and the co-operation of several agencies, which it took some time to secure. A yield of 23 bushels of wheat to the acre is reported for 1897, with an average of 20.9 for three-year period. Oats averaged 47 bushels to the acre in a three year test, and barley varieties averaged from 26.6 bushels to 31.7 bushels to an acre. A considerable number of trees were planted which afford at the present time both windbreak and shade.
ANOTHER VIEW, INCLUDING SUPERINTENDENT'S RESIDENCE.
July 25, 1897, lightning caused a fire which destroyed the barn with several horses and a larger portion of the collection of farm tools and conveyances. The total loss was $6,000. A new barn was constructed for the $3,000 received from insurance on the one destroyed.

The season of 1899 was somewhat unfavorable for field experiments at the Northwest Farm, as seeding was delayed until the latter part of May and the first part of June. A heavy hail storm came just before harvest. Successful work was done with clover and with cultivated forage crops. Corn tests were begun. The forestry planting was considerably increased. In 1900, excessive rainfalls and inadequate drainage again feature the reports, interfering with the small grains. Tests in growing fodder corn proved successful; seedling plums fruited; six thousand trees were planted in the nursery; and a poultry plant was successfully started. A cattle barn was authorized by the Legislature in 1901. During these years, considerable work was done in preparing for a complete system of drainage, which it was hoped could be put into operation in 1905.

DRAINAGE INSTALLATION.

William Robertson was appointed superintendent of the Northwest Farm in 1904, entering upon his work in 1905. The three years preceding 1905, he reported as having been unusually wet in the Red River Valley. Most of his energy was devoted to the matter of securing suitable drainage for the farm.

In 1903, an appropriation of $5,000 was made by the State Legislature for drainage, and in the following summer the highway and railway ditches which had been opened up were supplemented by 1,285 rods of capstan plow ditch. This ditch extended east and west across the farm, thence northwest through a shallow coulee to Lowell Ditch No. 1. These ditches removed some of the surface water, but were not of sufficient capacity to remove the water quickly at the spring thaws, or after heavy rains. The Legislature of 1905 made an additional appropriation of $4,000 to be used in drainage and experimenting with tile drainage.

DRAINAGE WORK BEGUN.

A district survey was made by the Department of Agriculture in the fall of 1895, and a petition was circulated for a county ditch passing the north side of the farm which would also furnish drainage to considerable territory north and east of the farm. In April, 1906, this petition was granted, and Polk County Ditch No. 60 was established. The office of Experiment Stations at Washington, D.C., was invited to co-operate, and John T. Stewart was appointed to supervise the work for the department. Plans were drawn for laying about 50,000 feet of tile and digging of one and one-half miles of open ditch. A portion of the farm was to be supplied with surface drainage for comparison of results. The tiles were laid at different distances apart, and at different depths, and wells were established at different distances from the tiles to determine the effect of tiles upon the water level. Tests were to be made of the alkali content of both the water and the soil at times before and after the drainage was installed, in order to determine the effect of drainage upon this feature. Expense data on the installation was kept.

The seasons of 1906, 1907, and 1908 were given up to the work on ditching and laying tile. Bulletin No. 110 was written describing this work. The year 1908 was one of the driest years on record. Experiments with clover and alfalfa showed favorable results. Five additional varieties of alfalfa were seeded that year, selected as to hardiness and yield.

NEW ADMINISTRATION.

Superintendent William Robertson died in January, 1910. He was succeeded by Mr. Selvig. A fuller account of Mr. Robertson’s work and services is to be found in the school section of this history. In 1911, the work at the Northwest Station became largely experimental and investigational work was conducted under station specialists in direct charge.
of departmental projects. The superintendent was
in direct charge of both the Agricultural school and ex­
p eriment station, and assumed specific charge of the
drainage work and of co-operative work with school
students and farmers in the Red River Valley. This
plan brought extensive additions to the station work,
and has already succeeded in making the station a
clearing house for the solution of vexed questions that
arise in connection with farming in Northwestern Min­
nesota, which it was originally intended the experiment
station should become. With the completion of the
drainage system, this new work was made possible
although many handicaps and drawbacks still had
to be met. The problems of lack of surface drainage,
of foul weeds, or general adaptation to the new work
were met, however, and the station has taken forward
steps which are increasing every year.

EXPERIMENT IN CROP PRODUCTION.

At the present time, the experimental work em­
braces, besides the drainage investigations which
have been outlined, the following lines of work: In
the agronomy section, there is work in cultural meth­
ods with farm crops, including rate of seeding wheat,
oats, and barley, using six rates for each; date of
seeding winter wheat, alfalfa, winter rye, and barley,
using four dates for each; and plowing and sub-soiling,
packing subsoil, a comparison of tractor and horse
plowing and disking, dates of plowing and disking
stubble before plowing.

The work in varietal tests of farm crops includes
variety tests of all farm crops, with the object of
getting the varieties best adapted to northwestern
Minnesota conditions, and co-operative tests, with
various divisions of the College of Agriculture, Uni­
v ersity of Minnesota, St. Paul, and the United States
Department of Agriculture in testing wheat, for mill­
ing purposes; flax, for fiber; wheat hybrids, for rust
resistance; and corn varieties.

FIELD CROP WORK.

The results of the season of 1915 at the Northwest
Experiment Station indicate what is being done there
along crop production lines. The station has been
drained since 1909, and each year’s results are more
and more indicative of the improved conditions re­
garding plant growth.

In 1915, the highest yield per acre of oats was 98.7
bushels in a rate of seeding plot. The lowest in this
series was 80 bushels. The next highest was 95.3
bushels per acre in a fertilizer plot series, with the
lowest yield in that series of 70.3 bushels to the acre.

A 16.3 acre field averaged 77 bushels, and a 28.5
acre field averaged 75.5 bushels, and a field of Early
Roosevelt oats yielded 82.2 bushels per acre.

The highest yield of barley per acre, was 65.2
bushels in the fertilizer plot series. A field of 19.7
acres averaged 43.4 bushels per acre, and a field of
44.85 acres averaged 42.5 bushels per acre.

The highest yield of wheat per acre was 40.8 bush­
els per acre, and in the rotation series the highest
yield was 32.46 bushels, and in the variety series the
highest was 40.8 bushels per acre. These yields are
the result of improved strains of seed, drainage, man­
agement, and soil condition.

Seeds and trees are distributed to co-operators, in
order to determine the varieties of farm crops and
trees best adapted to Northwestern Minnesota. In
this work it will be necessary to distribute improved
strains of seeds of cereals, forage, root, and vegetable
crops, and hardy varieties of trees, grown at this Sta­
tion, to test them on farms located where soil and
moisture conditions are different. The sale of pure
bred seeds and of nursery stock is included in this
project. Tests on fifty farms were in progress in 1915.
This number will be materially increased.

The corn breeding work has for its object the secur­
ing of corn with early maturity.

Several crop rotation plans are being followed, and
a study made of resulting crop yields, soil fertility,
and weed conditions.

Extensive fertilizer tests are being made in co-op­
eration with Division of Soils, University Farm, St.
Paul. These tests comprise an investigation of the
effects of commercial fertilizers, with and without
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manure, for ordinary farm crops grown in rotation. This work is to be extended for tests of typical soils of Northwestern Minnesota, including peat lands.

The weed eradication work is planned so as to determine and test methods of eradicating noxious weeds common to Northwestern Minnesota. This work is to be done on Northwestern Minnesota farms in typical areas. This project will be greatly extended.

HORTICULTURAL DIVISION.

In the Horticultural Division, one of the principal lines of work is with the potato plant, including variety testing, to determine the varieties best adapted to Northwestern Minnesota; a study of tuber and leaf diseases, to determine the best methods of handling these diseases; a test of several methods of planting, to determine the method giving most profitable yield; and seed selection of potato seed, to determine relation to yield, vigor, and resistance to disease.

Extensive fruit, tree, and shrub investigations embracing variety and hardiness tests of tree fruits, small fruits, trees, shrubs and vines are in progress.

Garden crops and field root crops are being grown to determine the best varieties for Northwestern Minnesota.

LIVE STOCK DEPARTMENTS.

In the animal and dairy husbandry work, feeding experiments with horses, cattle, swine, and sheep are in progress. The station herds include animals of the different breeds which are used, in addition, for school stock judging work.

In the poultry department extensive trials comparing artificial with the natural incubation of chickens have been conducted. Cockerel fattening work, egg preservation, goose feeding, wet versus dry mash feeding, the influence of various plans and methods of poultry house construction, have been tested. Several bulletins have been published dealing with poultry raising.

The experiment work at the Northwest Station can now be said to be well organized. A report published early in 1916 dealing with the preceding five years, showed an extensive program of work, much of which gave immediate results, but many projects seemed to require longer periods of time for results to be of any value.