

The First Twenty-five Years of the Northeast Experiment Station, Duluth

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NORTHEAST EXPERIMENT STATION
UNIVERSITY OF MINNESOTA

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THIS bulletin is written for three reasons: (1) To make a permanent record of facts and pictures dealing with the early history of the institution; to tell the story of the transition of the physical plant from forest to farm and campus; to sketch its contribution to its constituent rural population in the first quarter century of operation.

(2) To outline the services of the University of Minnesota to the farm people and rural interests of the region served.

(3) To record in passing the changes that have come in the status of agriculture in the conifer-clad counties of Upper Minnesota during the contemporary period, 1913-1938.

INSTITUTIONAL BEGINNINGS

The Legislature of 1911 authorized the establishment of the Northeast Experiment Station and provided the sum of \$65,000 to purchase the land, erect the buildings, and start the work. The original title, "Northeast Demonstration Farm and Experiment Station," was officially changed to the present briefer and better form in the early twenties, by order of the Board of Regents.

Many properties were suggested as possible sites for the new institu-

tion. Tracts in the St. Louis River Valley and in the red soil area near Lake Superior were inspected among others. The present location was finally chosen as most nearly complying with the provisions of the enabling act which expressly stated the new station must be "at or near Duluth."

All of the present property lies adjacent to the city limits except a small fraction that lies within. Moreover, the prevailing stony clay loam soil with some shallow peat, sandy loam, and stone-free red clay provides a cross section of some rather extensive northern soil types.

The files of the St. Louis County Register of Deeds record title to the main tract of 235 acres as of September 3, 1912. For some reason, the 5-acre tract purchased at the northeast corner was recorded as of July 30, 1912. Both tracts were doubtless secured at the same time, but there may have been some delay in securing Torrens Title to the larger body of land.

The final fraction of about 13 acres, lying to the south and partly within the city limits, was purchased in mid-summer of 1913. The accompanying map indicates the extent of the so-called "Red Drift" area of northeast Minnesota, the region the station aims to serve. It

is this soil and the type of vegetation it supports that prevail at this station.

EARLY PATRONS AND FRIENDS

Through the beginning years, the Northeast Station enjoyed the counsel and guidance of an advisory committee with an officially designated personnel. Speaking collectively, we would pay tribute here to the agricultural committee of the then "Commercial Club" of Duluth for its generous help in starting the work.



FIG. 1. THE RED DRIFT AREA OF NORTHEASTERN MINNESOTA

A number of well-known names are associated with the selection of the station site and its early history. We are told that the late Henry Wallace, founder of Wallace's Farmer, father and grandfather of secretaries of agriculture, accompanied the board and advised with them in their choice of property. A. O. Eberhart was then governor. Other consultants, all now deceased, were the late Charles P. Craig; John G. Williams, later a University Regent for over 20 years; A. B. Hos-

tetter, the first county agent in Minnesota, then employed by the agricultural committee of the Commercial Club, the forerunner of the present Agricultural Council; Bishop James T. McGolrick. George Stone, who now resides in the East, was of the active group. Among others were L. B. Arnold, W. C. Sargent, George Crosby, Fred Ward, Thomas Owens, and H. L. Hartley, men widely known and still more or less actively associated with the agricultural life of the district.

A. F. Woods was Dean and Director of the Department of Agriculture in 1912-13. Professor Emeritus Andrew Boss initiated and directed the work through the early years. By virtue of his prudent counsel, sound judgment, and cautious procedure, the usually expensive process of reclamation was accomplished in orderly fashion and at minimum cost. George Pauley, a widely known and successful poultry breeder at Hibbing, locally supervised the preliminary development work through the fall and winter of 1912-13. The present superintendent took over the local administration April 1, 1913.

PERIODS OF STATION HISTORY

A northern farm must be created before it is operated. So the story of the Northeast Station is told under two titles: (1) Development, the time of evolution from forest conditions; the phase of engineering, reclamation, and construction. (2) Investigational and experimental work; the era of land economics; crop adaptation and soil management. The type of investigational work started also falls into

two divisions under the respective heads of Engineering and Crops-Soils work. The Great Fire of October 12, 1918, 20 years ago, hastened the close of the first period and quickened the coming of the second.

Period I: Development

The April 1913 land inventory indicated five acres "more or less" plowable; 55 acres of contract clearing "allegedly" ready for the plow. We were actually able to break about one-half acre, less than one per cent, that spring. The ground was too full of roots chopped off at the surface. With about three fourths of the total holding, about 190 acres, consisting of virgin woodland and untamed meadow, and with half the contract clearing locally considered an impassable swamp,

glorified, heavy steel, cutaway disk harrow, is still serviceable. The oat crop was good; the corn silage crop very good, even though a frost on the bog, about July 20, temporarily put a cistern pump out of action.

The campus itself was still afforested in May. Building contracts were let sometime in June, and construction began in mid-July or soon after. Nine buildings were erected: the horse, dairy, and hog barns; poultry and milk houses; machine shed; three residences. The farmhouse was first occupied December 11. The present "old" orchard was brushed and logged that autumn, as well as the 20-acre tract now known as field "D," west of the buildings.

The year 1914 was less spectacular. The advisory committee meeting November 22, 1913, had recom-



FIG. 2. FIRST BREAKING OF "NORTH EIGHTY" VIRGIN SWAMP

the raw material for reclamation from stumps, stones, and water was indeed abundant.

The season of 1913 was truly a busy one. The first crop of corn and oats, like the rye the fall previous, was planted in a seedbed prepared by that friend of the pioneer farmer—the Clarke Bush and Bog Plow. This sturdy implement, a

mended stocking the place with Guernseys. The suggestion was approved. Three imported heifers, Dolly, Antona, and Mimosa, were bought June 22, the first grades having arrived February 18, 1914. Letter files indicate that some 70 loads of hay had been harvested the very first year, so considerable feed was available. It will be noted that

feed came first; livestock followed.

March 9-21, 1914, the first Institute was held. It was a modest affair. The still unused hog barn was the auditorium. We recall that Arthur Crassweller, a veteran member of the Duluth Bar and still an ardent gardener, was one of the speakers.

years later. First electrical service came in April, 1917. With 1918 came not only the driest year in the history of the Station but the historic fire of October 12. Since the Northeast Station was perhaps the first institution of its kind on this continent to be ravaged by a forest fire, and the event will always be a

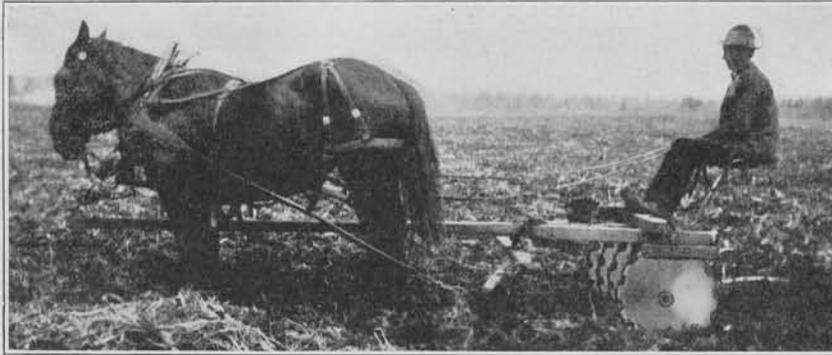


FIG. 3. THE FIRST FARM MACHINE, A BUSH AND BOG PLOW, STILL SERVICEABLE

The water mains were laid that summer and the pressure system installed. Fifteen acres of Field "D" were stumped that year in the dynamite versus stump-puller investigations, and that fall an additional 10-acre tract was logged and brushed. The area was what probably now constitutes Field F-2. With 1915 came the start of the "old" orchard. The first tile was laid in October; the last in June 1916. The immediate values were good; the ultimate ones, better. This project, with its later additions, has been an object lesson through 20 years in proper installation and functioning of tile drainage in the tight clay soils of the north.

The first summer picnic was held July 22, 1915, in the old Island Park. The year 1916 brought the original Assembly Hall, burned 2

major one in its history, we quote from the 1918-19 Report:

"Saturday, October 12, was unseasonably warm, with a considerable wind that grew into a gale by noon. By 3 o'clock the latent fires about the farm and throughout the district were rekindled, the sky was overcast, and routine work was abandoned. The first wave of fire came from the west-northwest about 3:30 p.m. This passed directly to the rear and about the poultry buildings, but with the entire crew fighting the fire and with a providential shift in the wind, these buildings were saved. The second wave struck about 6 p.m. By 7 p.m. the superintendent's residence and assembly hall were on fire, and, shortly after, the horse barn was in flames. The balsam grove directly behind the first two buildings was



FIG. 4. ANDREW BOSS, AT THE LEFT, LOOKS OVER BUILDING SITES, 1913

the immediate cause of their destruction. Escape to Duluth was cut off, from 6 p.m. until after mid-night. Men, women, and children took refuge under blankets in open fields, under bridges, and in streams.

"The physical loss to the station was severe. The total loss in buildings, lumber, fuel, livestock, fences, and miscellaneous equipment was almost \$25,000, with \$9,000 insurance. Pastures were ruined and the short supply of hay, due to the dry season, was a third or more destroyed. Reconstruction of buildings began in November, and by April the superintendent's cottage, horse barn, and herdsman's cottage (a new building) were completed and occupied."

Farm maturity came rapidly following 1918, though the policy of clearing at minimum costs delayed final stumping until June 1925.

Breaking the wild, shallow peat meadows started in July 1925, and was finished in 1926. The last new (mineral) soil was broken in 1927. The final lumber sawing job probably took place some time in 1921. Old records are vague. But there is a definite accounting of 114,000 feet sawed, about 1,000 feet per acre. The total was probably 150,000 feet or more, about all of which was used in farm construction. After December 1926, sawing stump fuel became a lost art, and coal was standard fuel over the entire plant a year later.

The fourth cottage, built in 1918-19, was enlarged in 1927, and the assembly hall was rebuilt in 1921. The large root cellar was constructed in 1922, and the sidewalks were laid in 1923 and 1924. During the latter year the greenhouse was built.



FIG. 5. "OLD BILL" CLEARING THE HORSE BARN SITE, 1913

the large poultry house was moved to the main group of buildings, and additional machine shed space was provided. The agronomy lodge and auditorium, both built in 1930, are the latest additions to farmstead and campus, excepting a new-type haybarn erected in late 1937.

In December 1930, a grant of \$3,000 for campus landscaping was made, a job that was carried out during the three summers following. The addition of one structure, a small administration-laboratory building, would make the building plant complete.

Period II: Investigation

The investigational and experimental work at Duluth has been built upon the following interpretation of the function of a branch station:

(a) To test, regionally, the new creations of the Central Station, such as grain and fruit varieties.

(b) To serve as headquarters for investigations of important crops that thrive better at the Branch than at the Central Station. Potatoes, rutabagas, and alsike clover are examples.

(c) To study purely regional problems—land clearing; stoning; questions of soil fertility and mechanics of drainage in the prevailing soil type; crop practices as modified by local conditions; improvement of entire local plant forms such as blueberries, wild peas, and wild vetch. All are examples of localized, exclusively regional problems.

Project work again divides under two heads like the general development of the station. We have the (1) engineering phase, which covers the standardization of land reclama-

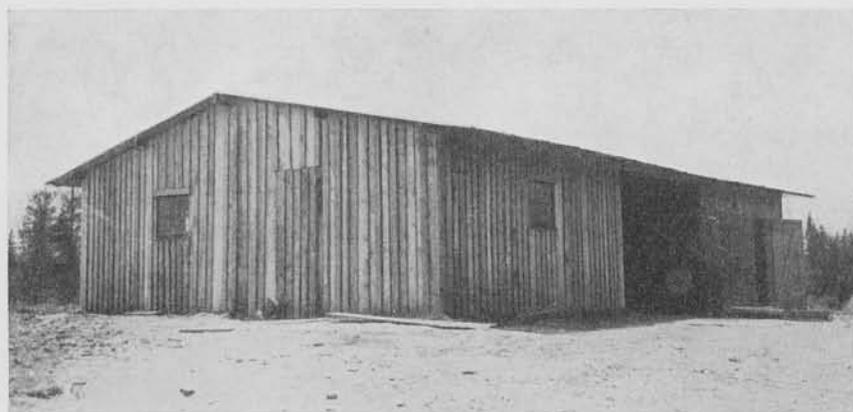


FIG. 6. THE FIRST BUILDING, 1913

tion processes, and (2) crops and soils work, covering all matters pertaining to crop adaptation and soil management.

Farm Engineering Projects.—The brush, timber, and stump removal standardization studies were completed and reported on by 1925. Investigations in stone removal and disposition are still in progress. This work includes (a) annual records of volume per acre removed from certain fields; a stone history; (b) annual readings on relative position of rocks submerged at different depths to determine whether or not they are working to the surface and if so why and how; (c) economic utilization of field stone by crushing. (See Bibliography for publications released.)

Crops and Soils Project.—This heading is here used in a broad sense to include the whole range of crops and soil work, and the related minor livestock enterprises as well. Setting out the old orchard in 1915 probably marks the beginning of regularized crops experimental work at Duluth. Field crop testing started in 1916, with potatoes and

rutabagas, running through 1916 to 1923, inclusive. In 1917 the rate-of-manuring and continuous-cropping rotations were started. With the old orchard and tile drainage enterprises, these have been working through 20 years. This trio of investigations perhaps constitutes the most important contribution of the Northeast Station in the field of productive agriculture. We speak here merely of the start of experimental work. For a complete listing of projects and results, read the list of station publications.

CONTRIBUTIONS AND SERVICES

The first contributions were of an engineering character:

A. The processes involved in the evolution of a timberland home from forest to farm were standardized. These have been approved and used by the United States Department of Agriculture. (See Bulletins 163, 189, 220, and 229, and Special Bulletins 97 and 60.)

B. The station has made the most extensive studies yet published on the mechanics of stone removal, creating a utility of the waste field

stone, and has indicated by 10 year's work that erosion rather than frost exposes field stones. (See Minnesota Bulletin 250.)

C. The station realized a return of from 10 to 16 cords of fuel per acre from waste stump crop, with the cleared acre costing nothing; a by-product of fuel production. (See Minnesota Bulletin 227.)

Later contributions have been of a farm management character:

A. Originated (1) Arrowhead sunflower by selection, an early strain; (2) Arrowhead rutabaga, also by selection and now being improved by selfing. Cultural study headquarters for both crops for upper Lake States area. Location, through three seasons, of federal root standardization project for the central states because of favorable summer climate.

B. For like reasons, United States Department of Agriculture potato breeding work has been carried on at Duluth for several years.

C. Two orchards. No. 1 is the largest in Northern Minnesota. Ex-

cellent apple production through 10 years from nitrogen fertilization.

D. Rate-of-manuring project in twenty-second year. Significant rise in yields over virgin conditions. Probably the most important work in progress.

E. Miscellaneous: July 1 is deadline for clover seeding. Five years' work has proven value of early planting of field crops; Anthony oats popularized on clay loam; favorable returns from use of potash; meadow drouth insurance.

Educational Services:

A. Newspaper contacts: Reach 50,000 homes monthly.

B. Group contacts: Farm Club, Farm Bureau, Smith-Hughes junior and senior classes, civic groups, and Duluth Council of Agriculture.

C. Sixty field crop cooperators in five counties; work started in 1924; continuous since, except 1930.

D. Teaching: Triennial reports, distributed through county agent offices, used as classroom material by over 300 Smith-Hughes departments in Northeast Minnesota and



FIG. 7. "FUEL" WAS THE FIRST CROP

Upper Wisconsin, thus reaching a large body of young men, students "in absentia."

E. Northeast Minnesota Farmers Week continues through four days and four evenings, first week of April; a cooperative effort, covering eight county agent jurisdictions and culminating annually in the Rural Leadership Dinner.

REGIONAL PROGRESS

The Legislature of 1911 must have been motivated by a firm faith in the permanence and growth of agriculture in the northern counties when it established the Northeast Station to serve the "Red Drift" heavy soil portion of the timbered district. With three centuries of

eroded hills of the upper Atlantic states.

We have traced the growth of the station, its physical plant, and its field of work in considerable detail as a matter of historical record. But the story would be incomplete without setting forth the contemporary growth of the industry of agriculture in the so-called "Hinterland" of Duluth, the metropolitan city of the Upper Lake States region. We refer to only the Minnesota portion of the three states, the block of 14 counties, almost one third of Minnesota, extending from the Red River Valley eastward to Lake Superior and from Brainerd north to International Falls, the easterly "Red Drift" portion of which is served by the Northeast Station. We



FIG. 8. BREAKING GROUND FOR THE AUDITORIUM, 1929

continuous farming in New England as an example, there was sound precedent for this belief. And the conifer-clad counties of the Upper Lake States constitute a land of greater productive promise than the

tell the story of an expanding agriculture in the substantial terms of farm wealth that is real: improved acres; units of livestock and crops. There was no census in 1913 or 1937, so we use the closely com-

parable census material of 1910 and 1935.

Hogs have declined since 1920. Beyond supplying the family needs for pork, they do not belong in the northern farm organization as yet.

for 1935. As elsewhere in the state and nation, boom times in the cities and towns drew heavily on the country population, and in 1930 we had 3.9 per cent fewer people caring for 23 per cent more land than



FIG. 9. ATTENDANTS AT THE FIRST INSTITUTE, 1914

As heavy consumers of concentrates, they are out of place in a country where roughage crops prevail. Sheep declined somewhat during the low price period of the early 1930's in favor of cows and poultry.

No population data are available

in 1910. The sustained increase through 25 years of the number of farms; of the total improved acreage; of the areas growing hay, grain, and tilled crops; and of the number of bearing fruit trees is indeed impressive. For in the cor-

Agriculture in 14 Northeast Minnesota Counties

| | 1910 | 1920 | 1930 | 1935 |
|------------------------------------|---------|---------|-----------|-----------|
| Number of farms..... | 14,275 | 22,380 | 25,994 | 33,840 |
| Total improved acreage..... | 412,952 | 772,853 | 1,006,683 | 1,216,225 |
| Acres of corn..... | 16,576 | 20,402 | 45,171 | 109,644 |
| Acres of potatoes..... | 16,499 | 40,584 | 37,036 | 49,685 |
| Acres of grain..... | 64,055 | 196,563 | 177,893 | 203,180 |
| Acres of hay..... | 163,121 | 366,313 | 536,847 | 675,639 |
| Number of bearing fruit trees..... | 14,150 | 40,909 | 45,888 | 72,774 |
| Number of cows..... | 48,731 | 89,913 | 133,660 | 190,622 |
| Number of horses..... | 21,091 | 45,926 | 46,909 | 47,307 |
| Number of sheep..... | 21,418 | 62,828 | 132,526 | 99,801 |
| Number of hogs..... | 18,771 | 42,122 | 39,351 | 29,756 |
| Number of poultry..... | 301,981 | 600,679 | 905,490 | 978,172 |
| Rural population..... | 119,894 | 159,895 | 153,576 | |

responding period the depression ran its course and agriculture was rather generally on the decline over the nation.

The extension and resident teaching force has grown in even greater ratio. In 1912, when the station property was bought, A. B. Hostetter was the lone resident extension worker in one third of Minnesota. His work was supplemented in early 1913 by Fred Ward, the original and pioneer county agent in these parts. Foot transportation prevailed in those days. Mr. Ward reported walking 1,200 miles the first summer in the course of his work. Today there are more than 20 county, home demonstration, and 4-H agents in the 14-county area, six of them in St. Louis County. Back in 1912, the so-called "Putnam" agricultural high schools were operating on state subsidy. In the whole cutover country there were but two: Hinckley and Cloquet. We have 40 Smith-Hughes instructors today, 19 of them in St. Louis County. So the University has done a well-rounded job in the so-called Cutover Country of Minnesota and has furnished a complete service of investigation, teaching, and extension.

PUBLICATIONS

1. Annual Report for 1915
2. Annual Report for 1916
3. Annual Report for 1917
4. Annual Report for 1918-19
5. Annual Report for 1920
6. Annual Report for 1921
7. Biennial Report for 1922-23
8. Biennial Report for 1924-25
9. Biennial Report for 1926-27
10. Field Crops at Duluth—1930
11. Five Crop Years at Duluth: Field Crops (1927-31)
12. Five Crop Years at Duluth: Hay Crops (1927-31)
13. Five Crop Years at Duluth: Potatoes (1927-31)
14. Five Crop Years at Duluth: Roots (1927-31)
15. Five Crop Years at Duluth: Sunflowers (1927-31)
16. Fruit Culture at Duluth
17. Five Years Arrowhead Vegetable Varieties and Fertilizers at Duluth
18. Duluth Field Crops Up to Now: (1932-34)
19. Duluth Hay Crops Up to Now: (1932-34)
20. Duluth Potato Crops Up to Now: (1932-34)
21. Duluth Root Crops Up to Now: (1932-34)
22. Duluth Sunflower Crops Up to Now: (1932-34)
23. Duluth Bush Fruits Up to Now: (1932-34)
24. Duluth Tree Fruits Up to Now: (1932-34)
25. Duluth Vegetable Crops Up to Now: (1932-34)
26. Lime Tests at Duluth, 1934
27. Duluth Field Crops Through Three Seasons (1934-36)
28. Duluth Hay Crops Through Three Seasons (1934-36)
29. Duluth Potatoes Through Three Seasons (1934-36)
30. Duluth Root Crops Through Three Seasons (1934-36)
31. Duluth Sunflowers Through Three Seasons (1934-36)
32. Duluth Bush Fruits Through Three Seasons (1934-36)
33. Duluth Orchards Through Three Seasons (1934-36)
34. Duluth Vegetable Crops Through Three Seasons (1934-36)
35. Minn. Bulletin 163: Investigations in Costs and Methods of Clearing Land, 1916
36. Minn. Bulletin 189: Forced Vs. Delayed Systems of Clearing Stump Land, 1920
37. Minn. Bulletin 220: Effects of Forest Fires on Land Clearing and Crop Production, 1925
38. Minn. Spec. Bulletin 60: Simple Steps in Land Clearing, 1922
39. Minn. Spec. Bulletin 97: Land Clearing Practices in Minnesota, 1925
40. Minn. Circular 16: Minnesota Land Clearing Needs, 1924
41. Minn. Bulletin 227: Fuel From Pine Stumps, 1926
42. Minn. Bulletin 250: Stoning Farm Lands, 1929
43. Minn. Bulletin 299: Costs of Clearing Lands on Minnesota Farms, 1933

Numbers 11-34, inclusive, are mimeographed; all others are printed bulletins. Numbers 11, 17, 18, 19, 20, 21, 22 are out of print. Numbers 38-43, inclusive, were issued by the Division of Agricultural Engineering, with the Northeast Station acting as Junior Cooperator.