

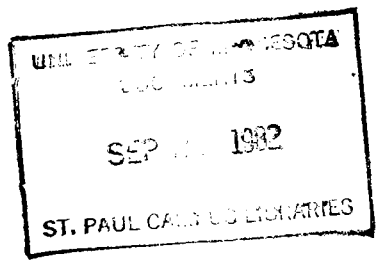
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The University of Minnesota

AGRICULTURAL EXPERIMENT STATION

REPORT OF NORTHEAST DEMONSTRATION FARM AND EXPERIMENT STATION, DULUTH

1915



UNIVERSITY FARM, ST. PAUL

JULY, 1916

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NORTHEAST DEMONSTRATION FARM AND EXPERIMENT STATION, DULUTH

REPORT OF SUPERINTENDENT

The following is a summary of the experimental, demonstrational, and educational work in progress in 1915 at the Northeast Substation of the University of Minnesota, located near Duluth. The work is designated according to the Unit to which it properly belongs under the present plan of organization.

UNIT I: FARM CROPS AND LIVESTOCK

CATTLE

The farm herd is made up of seventeen grade and three purebred Guernseys, including the young stock. It is being enlarged almost entirely by natural increase and only as rapidly as the supply of roughage can be produced on the farm. In caring for the cattle, Professor Haecker's feeding standard is followed. During the summer the pasture feed is supplemented by a grain ration of one pound to five pounds of milk. In the winter the grain ration is one pound of grain to 2.5 pounds of milk for all cows testing above 4.5 per cent. The average test of the herd is 4.68 per cent. The average production is a trifle under 300 pounds of butterfat per cow. Tests are made bi-monthly. All stock of breeding age is disinfected twice a week as a preventive of disease. Only one hour is required for treating the entire herd, and results have abundantly justified the practice.

SWINE

Registered Large Yorkshire hogs are bred. Since conditions are not yet such that pork can be grown profitably, the young are sold for breeding purposes. The average number of pigs in a litter in 1915 was 11, the average number raised, 9. The policy followed is to use clover hay and pasture and ground barley and roots, all northern-grown feeds, as far as possible. In a summer feeding test with clover pasture as a basis, the following data in relation to the value of pasture for hogs were obtained:

TABLE I
VALUE OF PASTURE FOR HOGS

Stock	Date	Weight	Total gain or loss	Gain or loss per day	Ration
		Lbs.	Lbs.	Lbs.	
2-year-old sow, dry	July 15	557	0.25 lb. grain per cwt. per day, plus pasture
	July 27	562	5	0.4	
	August 28	595	33	1.06	
Yearling sow, dry	July 15	290	0.25 lb. grain per day until July 27, after that, 0.5 lb.
	July 27	282	-8	-.66	
	August 28	325	
Fall farrow gilt, dry	July 15	280	Same plan of feeding followed as with yearlings
	July 27	277	-3	-.25	
	August 28	310	33	1.06	

This simple test indicates that dry brood sows may be well maintained on good pasture with practically no grain if they are mature, but that a light grain ration is desirable if they are still growing.

HORSES

Two teams are worked throughout the entire year. The summer ration is slightly above 1 pound each of grain and hay per hundred-weight. The grain ration is cut in two when work lightens. During the winter oat straw is fed when light work is being done. Twice a week each horse is given a bran mash.

LAND-CLEARING

Only a summary of the work of clearing land is given here:

(a) Fifteen acres are involved, divided into three tracts of five acres each, as follows:

Tract 1. Forced or immediate clearing with dynamite.

Tract 2. Stumps split with small charge of dynamite, then pulled with machine.

Tract 3. Land seeded to clover and grasses preparatory to pasturage, after logging, brushing, and burning. Stumps to be removed five years later.

(b) The principal factors that affect cost and methods of clearing are the type of soil and vegetation (kind and condition of stumps).

(c) The returns in forest products, cordwood, polewood, fence

posts, and sawlogs, covered the cost of removal up to the stumping stage.

(d) The stumps averaged about 200 per acre. The average diameter was about 12 inches at the base and 10 inches at cut-off. Sixty-six per cent of the timber was green.

(e) The entire cost of blasting and pulling per stump on Tract 2 was almost identical with the cost of explosives alone on Tract 1.

(f) The final cost of clearing was considerably less on Tract 1, as much less labor was required in piling and burning the stumps.

(g) The soil is a somewhat stony clay loam with a clay subsoil, in some places reddish and in some bluish gray. The timber is about 57 per cent balsam, 16 per cent birch, 13 per cent white pine, 6 per cent cedar, 3 per cent tamarack, 1 per cent white spruce, 1 per cent balm of Gilead, and 3 per cent miscellaneous.

(h) Some relation may apparently be established between the size of the stump and the size of the charge required to remove it.

(i) The lower grades of dynamite (33 per cent, 40 per cent, and stumping powder) were used upon all kinds of stumps except green birch, in which case 60 per cent was most efficient.

(j) The use of the man-power type of puller is limited in this section. It can be used to best advantage on a small new farm where the pioneer farmer has scant means and is forced to capitalize his labor in every detail.

(k) The work is still incomplete, yet it is evident that under conditions existing on the average farm in this section dynamite is usually to be preferred to the stump-puller, either alone or in combination. The plan of clearing followed on Tract 3 will not only be carried out at lower cost, as predicted, but is actually giving a larger net return in pasturage than is realized from the first crops on land where clearing has been forced, owing to the larger labor charge involved in forcing the clearing and to the under supply of humus that prevails.

(l) Various practices may be successfully followed under different conditions. There is no "best practice" for all places.

(m) In starting the development of a farm following the removal of the stumps, the usual shallow covering of vegetable matter makes two steps advisable: (1) Plow shallow the first time and (2) take immediate steps to increase the supply of organic matter by seeding down to clover and grass, using barley or oats in preference to wheat or rye for a nurse crop.

NET VALUE OF PASTURAGE

The study of the net value of pasturage is properly a subproject under land-clearing. Tract 3, containing five acres, was used. Owing

to the location of the land with relation to the farmstead, considerable labor was required to get the stock back and forth. Hence this plan was followed: Two heifers were left on Tract 3 continuously. Six cows were pastured there during the day and placed on similar pasture near the barn at night. This made an average of three cows and two heifers on the land continuously. The total production of the six was divided into two parts, likewise the total cost of grain feed, the latter being deducted from the former. Note the table:

Total production of six cows, 30 days.....	218.68 lbs. butterfat
Total value of same at 29 cents per pound.....	\$63.61
Total value of grain fed.....	\$19.28
Net value, day and-night pasture, to cows.....	\$44.33
Net value, day pasture only, to cows.....	\$22.16
Net value per acre, day pasture only, for cows, 30 days.....	\$4.43
Total gain of young stock daily.....	3.00 lbs.
Total gain young stock, 30 days.....	90.00 lbs.
Total value of gain at 5 cents per pound.....	\$4.50
Total value of gain per acre.....	\$0.90
Total returns in terms of beef and butterfat....	\$5.33

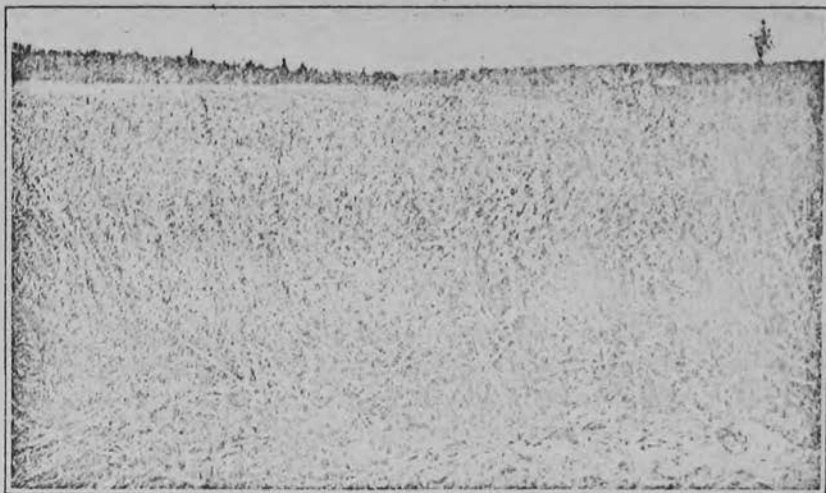
Following this period the entire herd was given free range over this pasture, together with the rest of the timber lot, for a period of ten weeks. Granting that late pasture was poorer (it is usually better) we may consider a total return of \$10 per acre a conservative estimate for the first year after seeding.

FIELD CROPS

Several varieties of field crops were under test in 1915. The yields were as follows:

TABLE II
YIELD OF FIELD CROPS TESTED IN 1915

Crop	Seed per acre	Yield per acre
	Bushels	Bushels
Barley, Minnesota No. 105.....	1.5	51
Oats, white Russian.....	2	47
Oats, Minnesota No. 281.....	2	54
Oats, Minnesota No. 295.....	2	59
Oats, Minnesota No. 6.....	2	65
Peas and oats mixed.....	2.25	50
Oats (field average).....	52



First Crop after Clearing
Oats were sown after disking. The land was not broken

These yields are not large, but they fairly represent what may be expected following first plowing where the stump holes are not yet entirely filled in and healed over and before the original humus supply has been reinforced by a clover sod. If it is desirable to harvest and thresh a crop of peas and oats, select a relatively late variety of oats, as white Russian, and an early to medium variety of peas, in order to time the ripening periods correctly.

The unfavorable season cut the potato yield to such an extent that variety records were of no value. However, comparative plots planted with seed grown in northern and southern Minnesota showed very much stronger plants from the northern-grown seed. Variety tests of rutabagas gave results in this order: Hurst Monarch, Carter's Hardy Swede, American Purple Top.

ORCHARD CROPS

Six varieties of apple trees were set in nursery rows in May, 1914, and transplanted to a permanent location in May, 1915. The trees stand 15 feet apart each way, every second tree being a filler, thus making the permanent plantings 30 feet apart. Some trees winter-killed. Okabena and Duchess made the best showing. The others followed thus: Patten's Greening, Anisim, Wealthy, Hibernial. Intertillage crops were grown between the trees last season, and several varieties of small fruit were planted which should bear in 1916. In setting the border of De Soto and Compass Cherry plums, alternate holes were blasted, using one-tenth of a pound of dynamite. This produced a

hole 3 feet in diameter and nearly 2 feet deep, at the same time breaking up the hardpan underneath. Results should be apparent in 1916.

FENCE POSTS

Alternate fence posts were treated with two coats of creosote applied hot.

The work on Unit 1 for 1916 will be a continuation and expansion of that in 1915, together with the following:

1. Soils tests with phosphates and lime.
2. Comparative study of continuous cropping, manure applications in different amounts, and clovers on virgin timber soils.
3. Field crop tests to include oats, barley, rye, flax, roots, wheat, peas, vetch, grasses.
4. Pasturage work on larger acreage to include both sheep and cattle as agents in clearing.
5. Tests on seeding practise on stump lands.
6. Continuation of drainage work.
7. Starting a forest plantation on broken, stony land.

UNIT II. POULTRY

The poultry section closed its first year in 1915. The time has been devoted to the development of the plant and lands, accumulating stock and equipment, and creating a special market. The working flock consists of Single-Comb White Leghorns and Single-Comb Rhode Island Reds. The flock is being improved by using cockerels out of trap-nested stock and annually removing the inferior birds. By purchasing eggs the year previous and growing the birds, the cost of the cockerels is relatively low, while a pen of culls now under observation (January, 1916) proves the necessity of the second plan. The boarder hen is as profitless as the boarder cow. In 1915, the average percentage of fertility in hatching eggs was 81, and the average percentage of hatch, 73. A test is under way in which the corn meal and beef scrap (expensive purchased feeds) fed in one pen are replaced by barley, peas, and skim milk (farm products) in a second pen. The comparative value of window glass and muslin screen is being tested. The moisture problem is apparently solved by the straw loft. This section also has charge of the apiary, which was established in May, 1915.

UNITS III AND IV

Clearing work is in progress preparatory to later development.

EXTENSION SERVICE

CORRESPONDENCE

Letters are daily received and answered not only from the immediate territory but from all parts of the United States as well. The range of inquiry is very wide, centering mostly, however, on questions of farm development in the cut-over country. Material on local problems is supplied the Press News and other publications.

MEETINGS

The Station is called upon to assist in Short Course work, and for judging at county and local fairs. An annual picnic and summer institute is held at the Station park under the auspices of the Federated Farmers' Clubs and the Northeast Minnesota Horticultural Society, the bee-keepers, and allied organizations. Corresponding to this for the winter months, a short course of two weeks' duration was held for two years, in March. This gives way this year to the "Northeast Minnesota Farmers' Week," to be held in December immediately following the opening of the new Institute Hall. This conference bids fair to develop into an annual clearing house for local agricultural activities.

DISTRIBUTION OF HIGH-CLASS SEEDS AND STOCK

Through the Tri-County Crop Improvement Association which now has members in six counties, and by coöperation with the County Agent of St. Louis County and the several high school instructors in Agriculture, this Station has assisted farmers and farmers' clubs in the purchase and sale of improved livestock and seeds. Some communities are now purchasing and sowing as much as a hundred bushels of pedigreed strains of seed that the Station has tested and found particularly adapted to this region.

UNIVERSITY OF MINNESOTA



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