DOMINION OF CANADA

DEPARTMENT OF AGRICULTURE

DOMINION EXPERIMENTAL FARMS

INTERIM REPORTS

OF THE

STATIONS IN NORTHERN ONTARIO AND QUEBEC

KAPUSKASING, ONT.

LA FERME, QUE.

FOR THE YEAR 1921

Tractor ploughing down second growth red clover in October.

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OTTAWA
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PRINTER TO THE KING'S MOST EXCELLENT MAJESTY
1922

EXPERIMENTAL STATION, KAPUSKASING, ONT.

REPORT OF THE SUPERINTENDENT, SMITH BALLANTYNE

FOR THE YEAR 1921

THE SEASON

The spring of 1921 opened early, for this part of the province, work on the land commencing on May 3. There had been only one foot of snow on the ground, and this disappeared early. The month of May was favourable for seeding, and growth was good, although there was frost at nights during the greater part of the month. In May, 3·12 inches of rain fell, which was ample for good germination of seeds; but there were only 1·23 inches in June, and this, with intense heat during the latter part of the month, had the effect of checking the growth of the grain and hay crops. Ten degrees of frost on June 12, and seven degrees on the 14th and 15th, injured barley and peas, which had been sown on muck land, to a considerable extent. As a result of the drought and heat of June, early-sown grain was short in straw and headed out early. The heavy rainfall of seven inches in July stimulated a second growth of grain which had been sown early; but late-sown grain crops were much the best this year, owing to abundance of moisture in July and August, and to the absence of frost in the fall. The heavy rainfalls of July, August, and September were favourable for potatoes, sunflowers, roots, and corn, and very satisfactory crops of potatoes and sunflowers were harvested. The month of October was fine and dry, and with plenty of moisture in the soil the fall work on the land was finished in good time.

METEOROLOGICAL RECORDS, 1921

Month	Temperature			Precipitation			Sunshine Hours
	Max.	Min.	Mean	Rain	Snow	Total	
				Inches	Inches	Inches	
January	47	−37	2·4	0·15	13·75	1·52	101·8
February	33	−44	4·3	0·50	3·0	0·80	122·0
March	57	−30	3·8	4·20	14·6	5·66	125·1
April	83	− 7	33·0	4·80	.....	4·80	187·6
May	92	15	44·7	3·12	.....	3·12	238·6
June	94	20	57·93	1·23	.....	1·23	302·6
July	99	34	67·31	7·00	.....	7·00	276·2
August	80	25	53·71	3·20	.....	3·20	220·6
September	84	25	50·1	6·54	.....	6·54	174·7
October	62	8	52·1	0·56	.....	0·56	80·2
November	56	−28	15·5	.....	15·5	1·55	43·9
December	60	−33	12·7	1·62	18·0	3·42	16·8
Totals	.....	.....	.....	32·92	64·85	39·40	1,890·1

ANIMAL HUSBANDRY

DAIRY CATTLE

The keeping of dairy cows is one of the most profitable branches of farming in northern Ontario at present, owing to the good local demand for milk and all dairy products. Milk sells readily locally at 15 cents per quart, and in some districts the supply is not equal to the demand. The dairy herd at this Station at present consists of two grade Holsteins and ten grade Ayrshire cows, and one pure-bred Ayrshire bull. One grade Holstein cow died in June, from the effects of having eaten a number of nails, and one Ayrshire cow was killed for beef, as her milk production was low. Four Ayrshire heifers freshened during the summer and have been added to the dairy herd. The feed of the dairy herd at present consists of clover hay, oats, peas and vetch silage, roots and meal. The amount of roughage consumed by members of the herd varies with the individuality of the cows. An average of thirteen pounds of hay, fifteen pounds of ensilage, and twelve pounds of roots are fed each cow per day, and she is given one pound of meal to each four pounds of milk produced. Ensilage, meal, and hay are fed twice daily, and roots once. The meal ration consists of ground oats and barley, two parts; bran, two parts; and oilcake and cotton-seed meal, one part. The herd is turned out each day for exercise in the yard, which is on the south side of the stable and is sheltered on the west side by the horse barn. The herd is stable-fed until June 1, as grass is usually not abundant until that date. The pasture this year was very good from the stump land that had been burned over, and seeded later, in 1920. The rains of July, August, and September kept the pastures quite green. The herd was stabled in the fall on November 1. The following table gives the milk production of each cow, from date of dropping calf to January 1, with cost of feed and profit per cow:—

Name of Cow	Grade of breed	Date of dropping calf	Total pounds of milk for period	Daily average milk yield	Value of whole milk at 10 cts. per quart	Amount of meal eaten at $2.08 per cwt.	Amount of hay eaten at $8.41 per ton	Amount of ensilage eaten at $8.31 per ton	Amount of roots eaten at $6.84 per ton	No. of months pasture at $3.00	Total Cost of feed for period	Feed Cost to produce 100 lbs. milk	Profit or Loss on Cow for period, labour and calf neglected
					$	lbs.	lbs.	lbs.	lbs.		$ cts.	$ cts.	$ cts.
White	Holstein	April 21	9,824	38·7	392 96	2,477	1,317	1,650	830	5	81 80	0 83	311 16
White II	"	" 30	8,502	34·7	340 08	2,324	1,317	1,650	830	5	78 62	0 92	261 46
Maggie	Ayrshire	" 29	7,841	32·0	313 64	2,355	1,317	1,650	830	5	79 26	1 01	234 38
Dewdrop	"	Mar. 19	6,690	23·2	267 60	2,089	1,317	1,650	830	5	73 73	1 10	193 87
Peggy	"	" 18	5,936	20·6	237 44	1,925	1,317	1,650	830	5	70 32	1 19	167 12
Julia	"	April 12	6,156	23·5	246 24	2,028	1,317	1,650	830	5	72 46	1 17	173 78
Flora	"	Feb. 28	6,993	22·9	279 72	2,115	1,317	2,022	830	5	74 27	1 06	205 45
Phoeba A	"	April 16	4,013	15·4	160 52	1,354	1,317	1,650	830	5	54 65	1 36	105 87
White A	"	" 17	3,022	11·6	120 88	1,295	1,317	1,650	830	5	57 22	1 89	63 66
Dora A	"	June 5	2,341	11·2	93 64	1,097	1,317	1,650	830	5	53 10	2 27	40 54
Flecky B	"	Aug. 20	2,239	16·8	89 54	1,012	1,317	1,650	830	5	50 60	2 26	38 94
Maggie A	"	July 11	2,921	16·9	116 84	1,151	1,317	1,650	830	5	53 22	1 82	63 62

BEEF CATTLE

Project 1.—The beef herd at this Station consists of fifteen well bred Shorthorn grade cows, six two-year old heifers, six one-year old heifers, and two calves. The herd is headed by the pure bred Shorthorn bull Kentville Marconi—130631—a good type of beef bred Shorthorn, which was bred by the Kentville Experimental Station. This bull is having a good influence in improving the type and quality of the beef herd. The cows of this herd are not milked, but the calves run with their dams on pasture and are raised for baby beef. Cheap pasture is furnished by the stump land of the Farm, which is seeded down to grass and clover. The herd has the run of this pasture from the middle of May to November. The beef cattle are wintered economically on roughage, with a small amount of meal. The average daily ration for the herd of cows consists of ensilage, 12 pounds; straw, 10 pounds; hay, 8 pounds; and meal, 3 pounds. Fresh cows are given pulped roots in addition. The daily ration of the one-year old calves consists of 6 pounds of hay, 10 pounds of ensilage, 5 pounds of roots, and 2 pounds of meal each per day.

WINTER FEEDING OF BEEF CALVES

Project 3.—An experiment was commenced on November 15 with the feeding of beef calves, to determine the more economical ration; clover hay, oats, peas and vetch silage, and meal, versus clover hay, roots, and meal. Six grade Shorthorn calves were divided into two groups of three each. Group No. 1 was fed on a ration of clover hay, O. P. V. silage and meal, and group No. 2 had clover hay, roots and meal. The meal ration of each group consisted of oats two parts, barley two parts, bran two parts, and oilcake one part. The following table gives the amounts of feed consumed, and the gains made, for each of the two months the experiment has been running:—

FEEDING EXPERIMENT. BEEF CALVES

Group	Weight	Monthly Gain	Pounds Hay fed at 42c. per 100 lbs.	Pounds Ensilage fed at 41c. per 100 lbs.	Pounds Roots fed at 34c. per 100 lbs.	Pounds Meal fed at $1.90 per 100 lbs.	Cost of Feed	Total gain for two months	Cost per pound gain
		lbs.	lbs.	lbs.	lbs.	lbs.	$ cts.	lbs.	cents
1	Nov. 15—1,648 lbs..... Dec. 15—1,717 lbs.....	69	660	270	.....	180	7 29		
2	Nov. 15—1,763 lbs..... Dec. 15—1,832 lbs.....	69	660	.....	270	180	7 11		
1	Jan. 15—1,814 lbs.	97	665	400	.....	186	7 53	166	8·9
2	Jan. 15—1,919 lbs.....	87	665	.....	400	186	7 28	156	9·2

In this short feeding period, group 1, fed on clover hay, ensilage, and meal, made greater and cheaper gains than lot 2, fed on clover hay, roots, and meal.

SWINE

COST OF REARING YOUNG PIGS TO WEANING AGE

Project 162.—Nine pure-bred Yorkshire sows are kept at this Station for breeding purposes. An experiment was conducted this year to determine the cost of rearing young pigs to weaning age. The nine sows were bred to a pure-bred Yorkshire boar, and nine spring litters were raised, with an average of nine pigs per litter. Six litters were raised in the fall, and there were forty-nine pigs raised from these litters. Altogether 130 spring and fall pigs were raised to weaning age. During the summer months the sows were allowed out on one acre of pasture, and in the winter months boiled garbage and roots were fed with the meal ration. The following is a statement

of the cost of maintaining the sows and litters, and the cost of rearing young pigs to weaning age:—

4,869	pounds	oat chop at 61.5 cents per bushel	$ 88.13
4,185	"	barley chop at 60.7 cents per bushel	52.73
4,350	"	bran at $28 per ton	60.90
1,485	"	corn meal at $2 per 100 pounds	29.70
750	"	oil meal at $4.35 per 100 pounds	32.62
8,100	"	roots at $6.60 per ton	26.73
Pasture, one acre			10.00
Service fees			15.00
Labour, 730 hours at 35 cents per hour			255.50
Total cost			$571.31

Total number of pigs raised, 130.
Average cost per pig, raised to weaning age, $4.40.

Oats, barley, and roots were home grown, and charged at cost of production. Bran, corn meal, and oil meal were purchased and charged at cost price.

SHEEP

The flock at this Station at present consists of eleven pure-bred Shropshire ewes, eleven ewe lambs, and one Shropshire ram, all registered. This flock suffered severely this year from the ravages of dogs. Thirteen ewes and eight lambs were killed in July, by being worried. A large number of dogs are kept in this vicinity, and as many of them have more or less husky blood, it makes sheep raising in this district a precarious line of farming. A four-acre portion of the sheep pasture has now been

Shropshire Sheep, Experimental Station, Kapuskasing, Ont.

fenced off with a high wire dog-proof fence, which was purchased from the Internment Camp. It is proposed to have the sheep put into this enclosure every night, as a protection against dogs when the sheep are on pasture. The lamb crop this year was quite satisfactory, as twenty-three lambs were raised from fifteen breeding ewes. Nine one-shear ewes had not been bred. The lambs came strong, and no trouble was experienced from diseases. The flock was given the run of the yards during the winter, and hay was fed on the snow, in the yards, when the weather was fine, as the

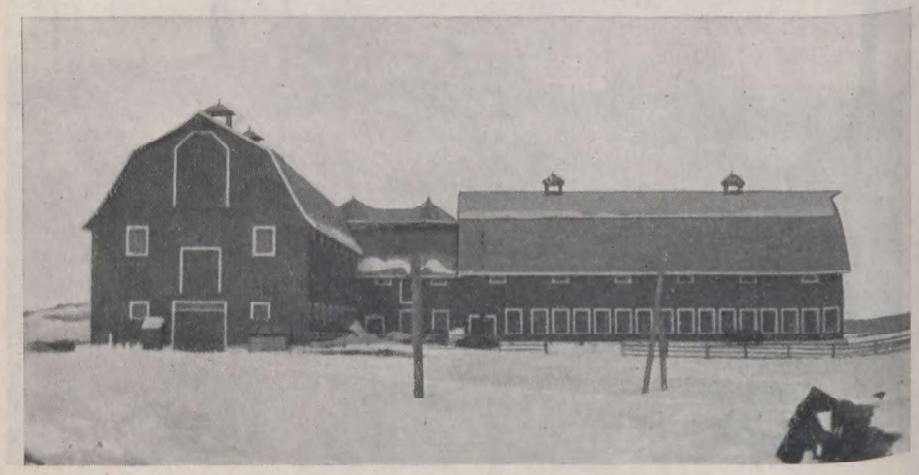
feed is relished by the sheep when fed this way on clean snow. Meal and roots were fed in the pens. This winter the breeding ewes are fed an average of 15 pounds clover hay, 12 pounds of O.P.V. silage, 15 pounds pulped turnips, and 5½ pounds oats per day. As the one-shear ewes of the flock were bred from Kelsey Big Star—20457—at the head of the flock for two years, this fine, blocky ram had to be disposed of, and was sold to a settler. Another good type of a Shropshire ram Ottawa Chieftain—32636 was procured from the Central Experimental Farm in July, and was used with the flock this fall.

COST OF FEEDING LAMBS

Project 163.—An experiment was commenced on December 1 with lambs, to determine the cost of feed, and the gains made by the lambs, during the winter months. Eleven lambs were weighed and placed in a separate pen, and are given the run of a yard. The feed ration at present consists of 15 pounds hay, 10 pounds O.P.V. silage, 15 pounds pulped roots, and 5½ pounds oats per day. The weight of the lambs at the commencement of the experiment was 1,086 pounds.

HORSES

There are at present sixteen horses on the farm, of a good type of Clydesdales, with an average weight of 1,500 pounds. The general health of the horses has been good, with the exception of one case of lymphangitis, and another horse was laid off work for a month, having been kicked by one of the Farm horses. The feed of horses at heavy work has been 20 pounds mixed hay and 15 pounds oats each per day. Bran is substituted for one-half the oat ration at nights and on Sundays. This winter, oats, peas, and vetch silage is being fed once a day, instead of hay. Care is taken that no



Cattle Barns, Kapuskasing, Ont.

mouldy silage is fed, as this has sometimes serious effects when fed to horses. The silage is of good quality and it has given satisfactory results. It is very much relished by some of the horses, while others are not so fond of it. A few carrots are also fed once a day. There has been no breeding work carried on with horses, as only one brood mare is kept, and she is not of the most desirable type.

A total of 10,474 hours' team work was done on the Farm, from April 1 to December 31, as follows:—

	Hours
Land Clearing	722
Fuel	421
Hauling manure	959½
Building operations	474
Live stock bedding	336
Labour sundries	914½
Field husbandry	3,634½
Cereals	111
Horticulture	539
Forage crops	1,385
Land drainage	138½
Fencing	442
Water and light	14½
Roads	365½
Live stock feeds	17

The total amount of feed consumed, from April 1 to December 31, was as follows:

33	tons hay at $12 per ton	$ 396.00
1,553	bushels oats at 61.5 cents per bushel	955.10
13,200	pounds bran at $1.40 per 100 pounds	184.80
1,200	" carrots at 42 cents per 100 pounds	5.05
22,000	" O.P.V. silage at 41 cents per 100 pounds	90.20
	Total cost of feed	1,631.15
	Average cost per horse	101.95
	Average cost per hour horse labour	15.5 cts.

FIELD HUSBANDRY

The early sown grain crops have generally given the highest yields of grain in this district, but this year was an exception as drought and frost early in the season gave a set back to early sown grain, and an ample rainfall during midsummer was favourable for late sown crops.

There were 43·5 acres of oats sown this year, which produced an average yield of 35.1 bushels per acre. The first seeding was done on May 7. This has been the earliest date of seeding of field crops at this Station. The Banner variety of oats was sown at the rate of two bushels and three pecks per acre. Early sown grain made a good germination soon after seeding, but growth was checked early by dry weather which resulted in light yields of grain and crops of short straw. Late sown oats had good length of straw and gave a high yield of grain.

OATS

The following is a statement of the cost of production of oats here this year:—

		Acres
Total area in oats		43.5
		Per Acre
Rent of land		$3.50
Use of machinery		1.00
Ploughing—		
Teamsters, 7.6 hours at 40 cents per hour	$3.04	
Team work, 7 hours at 15 cents per hour	1.05	4.09
Discing—		
Teamsters, 4 hours at 40 cents per hour	1.60	
Team work, 3 hours at 15 cents per hour	.45	2.05
Harrowing—		
Teamsters, 1.3 hours at 40 cents per hour	.52	
Team work, 1.3 hours at 15 cents per hour	.20	.72

OATS—*Concluded*

		Acres.
Root picking—		
Teamsters, 1.3 hours at 40 cents per hour	.52	
Team work, 1.3 hours at 15 cents per hour	.20	
Labour, 4 hours at 40 cents per hour	1.60	2.32
Seeding—		
Teamsters, 1.3 hours at 40 cents per hour	.53	
Team work, 1.7 hours at 15 cents per hour	.25	.78
Seed, twenty-six bushels at $1 per bushel		2.60
Harvesting—		
Teamsters, 3 hours at 35 cents per hour	$1.05	
Team work, 2.7 hours at 15 cents per hour	.40	
Labour, 1.5 hours at 35 cents per hour	.52	1.97
Threshing—		
Teamsters, .4 hours at 35 cents per hour	.14	
Team work, .7 hours at 15 cents per hour	.10	
Labour, 5.7 hours at 35 cents per hour	2.00	
Tractor, 1 hour at 40 cents per hour	.40	2.64
Yield per acre		35.1 bushels
Cost per acre		$21.34
Cost per bushel		60.8 cts.

Owing to the low yield this year the cost of production was high per bushel. Considerable oats took a second growth, and these were quite badly affected by rust.

BARLEY

Seventeen acres of barley were grown this year on new breaking that had produced only one crop, which was sunflowers. This land was underdrained and had been manured for sunflowers, hence was in very good physical condition for the growth of grain crops. Seed was sown on May 19 at the rate of two bushels per acre. The yield was good, the grain was well filled and the straw was clean and of a good length.

The following is a statement of the cost of production of barley:—

		Per Acre
Rent of land		$3.50
Use of machinery		1.00
Ploughing—		
Teamsters, 7 hours at 40 cents per hour	$2.80	
Team work, 6 hours at 15 cents per hour	.90	3.70
Discing—		
Teamsters, 3 hours at 40 cents per hour	1.20	
Team work, 3 hours at 15 cents per hour	.45	1.65
Harrowing—		
Teamsters, 1 hour at 40 cents per hour	.40	
Team work, 1 hour at 15 cents per hour	.15	.55
Root picking—		
Teamsters, 1.5 hours at 40 cents per hour	.60	
Labour, 1 hour at 40 cents per hour	.40	
Team work, 1 hour at 15 cents per hour	.15	1.15
Seeding—		
Teamster, 2 hours at 40 cents per hour	.80	
Team work, 2 hours at 15 cents per bushel	.30	1.10
Seed—		
2 bushels at $1.50 per bushel		3.00

		Per asre.
Harvesting—		
Teamster, 6.5 hours at 35 cents per hour	$2.27	
Team work, 6 hours at 15 cents per hour	.90	
Labour, 5 hours at 35 cents per hour	1.75	4.92
Threshing—		
Team work, 1 hour at 15 cents per hour	.15	
Labour, 6 hours at 35 cents per hour	2.10	
Tractor, .5 hours at 40 cents per hour	.20	2.45
Yield per acre		37 bush.
Cost per acre		$23.02
Cost per bushel		62.2 cts.

Barley is probably the most satisfactory grain that is grown in this district, as it produces a larger yield per acre than other kinds of grain on muck soils, of which there is considerable throughout the clay belt.

WINTER WHEAT

Ten and one-third acres of winter wheat were sown in the fall of 1920 on new breaking which had been ploughed early in July. The soil was a heavy clay and was quite dry when ploughed, but each day's ploughing was rolled the same day it was ploughed, which prevented baking of the soil.

A good seed-bed was made, as the field was given several strokes of the smoothing and spring tooth harrows. A light dressing of manure was applied and seed of Dawson's Golden Chaff was sown on September 1 at the rate of one bushel and 3 pecks per acre, but owing to dry weather in the fall the growth was not good. The winter covering of snow was light, as there was only one foot of snowfall and the alternate freezing and thawing of spring had the effect of killing out sixty per cent of the crop.

In the fall of 1921 there were 12·6 acres of winter wheat sown on new breaking of heavy clay soil that has fairly good natural drainage. This land was broken early in July and as the rainfall was plentiful that month the soil ploughed easily and there was no difficulty in making a fine seed bed. Seed was sown on August 12 this year at the rate of one bushel and three pecks per acre. As it is essential that a good growth is made in the fall early sowing is of great importance. It gives the crop an opportunity to develop a strong root system and a good top for winter protection. Generally, there is not much growth in this district after September 15.

HAY

The season of 1921 was rather unfavourable for the hay crop of northern Ontario, as the rainfall for the month of June was only 1.1 inches, and the weather was extremely hot the latter half of June and the first half of July. Rainfall was more plentiful in July and August, 6.5 inches falling in July and 1.7 inches in August.

The first cutting of hay was light owing to the effects of the drought of June, but a good second crop was cut from red clover and alfalfa, and a fair cutting from alsike. Part of the meadow land of the Station had been pastured quite closely last fall, and a light yield of hay was obtained from the most of this area. The meadows that had not been pastured closely the previous fall produced a good yield. A large percentage of red clover survived to the second crop in these meadows, but killed out considerably after the first crop where closely pastured in the fall.

Eight pounds of red clover, two pounds of alsike and six pounds of timothy were sown per acre.

As these meadows were seeded down for two years, and crops taken each year, one-half the cost of clover and timothy seed is charged to each crop.

The following statement gives the cost of hay production here this year.

Total hay crop area	acres	122
Yield per acre	tons	1.3
Rent of land	per acre	$3.50
Use of machinery	"	1.00
Red clover seed—8 pounds at 51 cents per pound	"	4.08
Alsike seed—2 pounds at 35 cents per pound	"	.70
Timothy seed—6 pounds at 20 cents per pound	"	1.20
One-half total cost of seed	"	2.99
Manual labour—3 hours at 35 cents per hour	"	1.05
Teamsters—5 hours at 35 cents per hour	"	1.75
Teamsters—.5 hour at 40 cents per hour	"	.20
Horse labour—4 hours at 15 cents per hour	"	.60
Cost per acre		11.09
Cost per ton		8.53

It is of great advantage to have home-grown hay in northern Ontario on account of the expense of transporting other hay into these districts, and the growing of grass and clover is considered beneficial in building up the fertility of the soil of the clay belt and in improving its physical texture.

SUNFLOWERS

The season of 1921 was favourable for the production of sunflowers. Good weather favoured seeding operations and seed was sown in a fine seed bed the last week of May.

The germination of the seed was good, and the crop made a good start early in June. Frosts of 10 degrees on the 12th and 7 degrees on the 14th and 15th of June did not appear to check the growth of the plants.

The month of June was very dry, as only 1.2 inches of rain fell, but 7 inches of rainfall in July and 3.2 inches in August provided a good supply of moisture to the growing crop. There was no frost in the fall to do any injury to the crop, which was cut and put into the silo by September 24.

Five acres of sunflowers were sown on fall-ploughed winter-manured sod. One acre which was treated with 200 pounds of nitrate of soda, when the plants were two inches high, gave a yield of 24 tons 416 pounds per acre. Another acre which was treated with 100 pounds nitrate of soda, at the same time, yielded 22 tons 825 pounds per acre. A third acre, which did not receive any nitrate, yielded 19 tons 800 pounds per acre.

These three plots, of an acre each, were sown in drills 36 inches apart, and the plants thinned to six inches apart in the rows. Two acres were sown in drills, 42 inches apart, and the plants thinned to six inches apart in the rows. These two acres gave a yield of 17 tons 825 pounds per acre.

The following statement gives the cost of production of sunflowers:—

Area of field		5 acres Per Acre
Rent of land		$3.50
Use of machinery		1.00
Seed—20 pounds at 10 cents per pound		2.00
Manure—¼ share of 20 tons at $1.50 per ton applied		7.50
Nitrate of soda—60 pounds at $6.25 per 100 pounds		3.75
Ploughing—October, 1920—		
Teamsters, 10 hours at 40 cents per hour	$4.00	
Team work, 10 hours at 15 cents per hour	1.50	$5.50
Discing—May, 1921—		
Teamster, 1.6 hours at 40 cents per hour	.64	
Team work, 1.6 hours at 15 cents per hour	.24	.88
Harrowing—		
Teamster, 3 hours at 40 cents per hour	1.20	
Team work, 3 hours at 15 cents per hour	.45	1.65

		5 acres Per Acre
Area of field		
Root picking—		
Labour, 12 hours at 40 cents per hour	4.80	
Teamsters, 3.4 hours at 40 cents per hour	1.36	
Team work, 3.4 hours at 15 cents per hour	.51	6.67
Seeding—		
Teamster, 2.2 hours at 40 cents per hour	.88	
Teamster, 2 hours at 45 cents per hour	.90	
Team work, 5 hours at 15 cents per hour	.75	2.53
Cultivating and hoeing—		
Labour, 21 hours at 35 cents per hour	$7.35	
Teamsters, 5 hours at 35 cents per hour	1.72	
Team work, 4.6 hours at 15 cents per hour	.69	9.76
Harvesting labour—27 hours at 35 cents per hour		9.38
Hauling to silo—		
Teamsters, 17 hours at 35 cents per hour	$5.88	
Team work, 11.1 hours at 15 cents per hour	1.68	7.56
Silo filling—		
Labour, 32 hours at 35 cents per hour	$11.20	
Tractor, 7 hours at 40 cents per hour	2.80	
Tractor operator, 7 hours at 35 cents per hour	2.45	16.45
Yield per acre		19 tons 1,200 pounds
Cost per acre		$78.13
Cost per ton		3.99

Sunflowers produced the cheapest ensilage this year owing to the large yield per acre. This crop will undoubtedly become of great importance as a feed for live stock and as a substitute for corn in the north.

RATES OF SEEDING SUNFLOWERS

Project 167.—An experiment was made to test the yield and quality of sunflowers sown at various rates of seeding. Plots of one-twentieth acre each were sown in duplicate, at the following rates of seeding, with results as follows:—

No. of Plot	Distance between rows	Distance between plants in rows	Dates of Seeding	Date harvested	Average Height		Yield per acre	
					ft.	in.	tons	lbs.
1	24 inches	6 inches	May 11	Sept. 16	7	7	25	1,200
2	24 "	12 "	" 11	" 16	8	0	22	1,300
3	24 "	18 "	" 11	" 16	8	6	24	1,200
4	30 "	6 "	" 11	" 16	8	0	22	1,400
5	30 "	12 "	" 11	" 16	6	9	14	1,400
6	30 "	18 "	" 11	" 16	7	8	19	900
7	36 "	6 "	" 11	" 16	6	0	10	1,900
8	36 "	12 "	" 11	" 16	7	6	14	1,900
9	36 "	18 "	" 11	" 16	8	0	17	1,200
10	42 "	6 "	" 11	" 16	7	0	12	600
11	42 "	12 "	" 11	" 16	8	0	16	700
12	42 "	18 "	" 11	" 16	8	0	13	1,800

As these are but one year's results they must not be taken as a definite guide to follow in seeding sunflowers. Variations in the soil account to some extent for the differences in the yields.

RATES OF SEEDING ENSILAGE CROPS

Project 166.—To test the yields from various rates of seeding of ensilage crops, sunflowers, corn and a mixture of oats, peas and vetches were sown in one-twentieth-acre plots in duplicate.

Sunflowers and corn were sown in drills 24 inches, 30 inches, 36 inches, and 42 inches apart, and the plants were thinned to six inches apart in the rows. Oats, peas and vetches were sown in mixtures as follows:—

Peas 1 bushel, oats 1 bushel per acre.
Peas 1 bushel, oats 1½ bushel per acre.
Peas 1 bushel, oats 1 bushel, vetch ½ bushel per acre.
Peas 1 bushel, oats 1½ bushel, vetch ½ bushel per acre.
Results were as follows:—

ENSILAGE CROPS—YIELDS.

Crop	Amount sown per acre	Space between rows	Date sown	Yield per acre		Remarks
		inches		tons	lbs.	
Sunflowers		24	May 21	18	1,400	Full stand, even, average height 6½ ft., no bloom.
"		30	" 21	12	1,450	Full stand, average height 6 ft., 1 per cent in bloom.
"		36	" 21	11	760	Slightly uneven, average height 5½ ft., 1 per cent in bloom
"		42	" 21	12	1,100	Good stand, fairly even, average height 5½ feet.
Corn		24	" 21	2	1,320	Average height, 3 ft., 50 per cent stand.
"		30	" 21	2	80	Very poor stand, average height 3 feet, few cobs formed.
"		36	" 21	2	1,000	20 per cent stand, average height 3 ft., few cobs formed.
"		42	" 21	2	1,280	25 per cent stand, average height 3 ft.
Peas	1 bush.					
Oats	1 "			4	1,085	Uniform stand, average height 2 ft. 10 in., growth rather coarse.
Peas	1 bush.					
Oats	1½ "			5	1,650	Uniform, heavy growth of fine quality.
Peas	1 bush.					
Oats	1 "			5	300	Uniform growth of fine quality.
Vetch	½ "					
Peas	1 bush.					
Oats	1½ "			4	905	Growth fair length, and quite fine.
Vetch	½ "					

The highest yield of sunflowers was obtained from the thickest sowing; that is, when sown in drills 24 inches apart. Corn sown in drills 24 inches apart also produced a greater yield than when sown in drills at a greater distance apart.

A greater yield was obtained from sowing a mixture of one bushel of peas and one and a half bushels of oats than from other mixtures of peas, oats and vetches. The addition of vetches decreased the yield and added to the cost of production.

It must be borne in mind that these are but one year's results and the experiment must be continued for a number of years before definite conclusions can be drawn on the subject of the most suitable rate of seeding ensilage crops.

DATES OF SEEDING CORN, SUNFLOWERS, AND A MIXTURE OF OATS, PEAS AND VETCHES

Project 165.—To test the comparative yields of ensilage crops, corn, sunflowers, and a mixture of oats, peas and vetches were sown at different dates in duplicate plots of one-half acre each.

The first seeding was on May 10, and a seeding followed each subsequent week until June 8.

Sunflowers and corn were sown in drills 42 inches apart and the plants thinned to six inches apart in the rows. Oats, peas and vetches were sown at the rate of one bushel of oats, one bushel of peas, and half bushel of vetches per acre.

The following table gives the yields from each date of seeding:—

ENSILAGE CROPS—YIELDS.

Crop	Date of Seeding	Date harvested	Yield per acre		Remarks
			tons	lbs.	
Sunflowers	May 10	Sept. 16	11	700	Crop uneven, 2 per cent in bloom, average height 6½ ft.
Corn	" 10	.....	.....		Killed by frost.
Oats, peas and vetches.	" 10	Aug. 20	3	660	Peas and vetch killed out considerably by frost.
Sunflowers	" 18	Sept. 16	12	540	25 per cent frozen out, average height 7 feet, 5 per cent in bloom.
Corn	" 18	" 16	4	440	20 per cent stand, 80 per cent failed to grow, average height, 6 feet.
Oats, peas and vetches.	" 18	Aug. 20	7	1,180	Excellent crop, full stand.
Sunflowers	" 25	Sept. 16	12	1,300	Good even crop, height 7½ feet, 5 per cent in bloom.
Corn	" 25	" 16	5	1,700	75 per cent stand, height 6 feet, 1 to 5 stalks to hill.
Oats, peas and vetches.	" 25	Aug. 20	2	980	Very light crop, peas and vetch sickly.
Sunflowers	June 1	Sept. 16	13	1,700	Heavy crop, average height 8 feet, 5 per cent in bloom.
Corn	June 1	Sept. 16	6	240	Average height 5½ feet, 75 per cent stand, crop immature.
Oats, peas and vetches.	June 1	" 6	7	580	Peas and vetches very good; oats very light.
Sunflowers	" 8	" 16	12	1,900	Average height 7½ feet, good even stand, 2 per cent. in bloom.
Corn	" 8	" 16	5	1,500	Average 5 feet, crop uneven, did not mature well.
Oats, peas and vetches	" 8	" 6	3	420	Peas and vetches fair crop; no oats developed.

Sunflowers sown on June 1 produced the largest yield per acre, and were as well matured at date of cutting as the plots sown on earlier dates. Sunflowers planted on June 8 gave a higher yield than the plots sown in May. The season was favourable for the growth of corn, but no plots reached maturity beyond the early milk stage. Corn planted on May 10 was all killed out by frost and there was only a 20 per cent stand of the corn planted on May 18. The greatest yield of corn was obtained from the seeding of June 1, and the highest yield of oats, peas and vetches was produced from the seeding of May 18. Peas and vetches killed out considerably with frost in the May 10 seeding, while oats were light in the June 1 seeding, and no oats developed from the last seeding, which was on June 8.

These are the one year's results and further work will be necessary before definite conclusions on the most suitable date of seeding ensilage crops can be secured.

MANGELS

The root crops this year were grown on new breaking that had been summer-fallowed and underdrained in 1920.

The soil was a heavy clay with local areas of muck soil. This land had been top-dressed with manure and sown to winter wheat in the fall, but as only a small percentage of the wheat germinated on account of drought, the wheat was ploughed under and the land prepared for roots.

Two and seven-tenths acres of mangels were sown on May 19 in drills 30 inches apart. As most of the humus had been burned off the clay soil when clearing the land the soil was lacking in organic matter, hence the yield of roots was low.

The following is a statement of the cost of growing mangels:—

		Per acre
Total area		2.7 acres
Rent of land		$3.50
Use of machinery		1.00
Ploughing—		
Teamsters, 9 hours at 40 cents per hour	$3.60	
Team work, 8 hours at 15 cents per hour	1.20	4.80
Discing—		
Teamsters, 7 hours at 40 cents per hour	2.80	
Team work, 7 hours at 15 cents per hour	1.05	3.85

		Per asre.
Harrowing—		
Teamsters, 1 hour at 40 cents per hour	.40	
Team work, 1 hour at 15 cents per hour	.15	.55
Root picking—		
Teamster, 3 hours at 40 cents per hour	1.20	
Team work, 3 hours at 15 cents per hour	.45	
Labour, 6 hours at 40 cents per hour	2.40	4.05
Seeding—		
Teamsters, 4 hours at 40 cents per hour	1.60	
Team work, 3 hours at 15 cents per hour	45	2.05
Seed—		
4.5 pounds at 70 cents per pound		3.15
Cultivating and thinning—		
Teamsters, 6 hours at 35 cents per hour	2.10	
Team work, 5 hours at 15 cents per hour	.75	
Labour, 40 hours at 35 cents per hour	14.00	16.85
Harvesting—		
Teamsters, 11 hours at 35 cents per hour	3.85	
Team work, 10 hours at 15 cents per hour	1.50	
Labour, 33 hours at 35 cents per hour	11.50	16.80
Cost per acre		$56.60
Total yield		937 bush.
Yield per acre		347 bush.
Cost per ton		$6.40
Cost per bushel		16 cents

TURNIPS

Four and a half acres of turnips were sown on land adjoining the mangels. The soil was principally a heavy clay which was not as suitable for turnips as a lighter soil, but it was the best land available this year. Seed was sown on May 31 in drills 30 inches apart. The crop made a slow start owing to the drought of June, and the excessive rainfall of July packed the clay soil to such an extent that the crop did not thrive. Plants were thinned out to 15 inches apart in the rows and were given frequent cultivation. The crop was harvested from the fifteenth to the twentieth of October. The following are the items of the cost of production:—

		Per acre.
Totad area		2.7acres
Rent of land		$3.50
Use of machinery		1.00
Ploughing—		
Teamsters, 9 hours at 40 cents per hour	$3.60	
Team work, 9 hours at 15 cents per hour	1.35	4.95
Discing—		
Teamsters, 70 hours at 40 cents per hour	2.80	
Team work, 7 hours at 15 cents per hour	1.05	3.85
Harrowing—		
Teamsters, 2 at 40 cents per hour	.80	
Team work, 2 hours at 15 cents per hour	.30	1.10
Root picking—		
Teamsters, 3 hours at 40 cents per hour	1.20	
Team work, 3 hours at 15 cents per hour	.45	
Labour, 4 hours at 40 cents per hour	1.60	3.25
Seeding—		
Teamsters, 3 hours at 35 cents per hour	1.05	
Team work, 3 hours at 15 cents per hour	.45	1.50
Seed—		
1 pound at $1	1.00	
Cultivating and thinning—		
Teamsters, 5 hours at 35 cents per hour	1.75	
Team work, 5 hours at 15 cents per hour	.75	
Labour, 59 hours at 35 cents per hour	20.65	23.15

		Per Acre
Harvesting—		
Teamsters, 2 hours at 35 cents per hour	.70	
Team work, 2 hours at 15 cents per hour	.30	
Labour, 34 hours at 35 cents per hour	11.90	12.90
Cost per acre		$56.20
Total yield		1657 bush.
Yield per acre		368 bush.
Cost per ton		$6.12
Cost per bushel		15.3 cts.

FIELD CARROTS

One and a half acres of carrots were grown in the same field as the mangels and turnips. The soil was prepared the same way as for the other roots, and seed was sown in drills 30 inches apart on May 19. The plants were thinned to three inches apart in the rows. The total yield was 400 bushels or 266 bushels per acre. The cost per ton was $8.43 and the cost per bushel was 21 cents.

The low yields per acre of the root crops resulted in a high cost of production. Mangels cost the least per bushel and carrots the most.

POTATOES

The season was favourable for the growth of potatoes this year as the rainfall was sufficient and there were no diseases to do any injury to the growing crop. No potato beetles have appeared in this district yet, so that spraying was unnecessary. This year 2·7 acres were planted, one acre on loamy soil which was in millet last year, and 1·7 acres on fall ploughed sod land of a fairly heavy clay loam.

Manure was applied at the rate of 20 tons per acre; the soil was well worked and drilled up with a double mould board plough. Drills were made 36 inches apart and sets were planted 15 inches apart in the drills. Planting was done on June 4, and the crop was harvested from October 5 to October 10.

The following is a statement of the cost of production of potatoes:—

		Per Acre
Rent of land		$3.50
Use of machinery		1.00
Seed—16 bushels at $1.50 per bushel		24.00
Manure—¼ share of 20 tons at $1.50 per ton applied		7.50
Ploughing—		
Teamsters, 7 hours at 40 cents per hour	$2.80	
Team work, 6 hours at 15 cents per hour	.90	3.70
Discing—		
Teamsters, 4 hours at 40 cents per hour	1.60	
Team work, 3 hours at 15 cents per hour	.45	2.05
Harrowing—		
Teamsters, 3 hours at 40 cents per hour	1.20	
Team work, 3 hours at 15 cents per hour	.45	1.65
Spreading manure—		
Teamsters, 13 hours at 40 cents per hour	5.20	
Team work, 4 hours at 15 cents per hour	.60	
Labour, 8 hours at 40 cents per hour	3.20	9.00
Drilling—		
Teamsters, 27 hours at 40 cents per hour	10.80	
Team work, 23 hours at 15 cents per hour	3.45	14.25
Planting—		
Teamsters, 13 hours at 40 cents per hour	5.20	
Team work, 12 hours at 15 cents per hour	1.80	
Labour, 52 hours at 40 cents per hour	20.80	27.80

		Per asre.
Cultivating—		
Teamsters, 21 hours at 35 cents per hour	7.35	
Team work, 15 hours at 15 cents per hour	1.95	
Labour, 8 hours at 35 cents per hour	2.80	12.10
Harvesting—		
Teamsters, 25 hours at 35 cents per hour	8.75	
Team work, 25 hours at 15 cents per hour	3.75	
Labour, 120 hours at 35 cents per hour	42.00	54.50
Cost per acre		160.90
Yield per acre		184 bags
Proceeds per acre, at $2 per bag		$368.00
Profit per acre		207.10

Potatoes were the best paying cash crop produced this year, as the yield was high and the selling price was good.

The varieties grown were the Green Mountain and the Irish Cobbler.

LAND CLEARING

Project 12.—An experiment was commenced last year to determine the most economical method of land clearing, comparisons being made between clearing land of stumps immediately after slashing, or clearing after the roots of the stumps have rotted.

The first year all timber was cut and burned off an area of five acres of uniform soil at a cost of $40 per acre. One acre was then stumped and ploughed in the fall of 1920 at a cost of $75.60.

The remaining four acres were left to be stumped and ploughed, one acre to be done each succeeding fall.

The cost of stumping and ploughing an acre in 1921 was as follows:—

Teamsters, 77 hours at 35 cents per hour	$26.95
Team work, 70 hours at 15 cents per hour	10.50
Labour, 80 hours at 35 cents per hour	28.00
Total cost	$65.45

As the roots of stumps decay rather quickly here, it is expected that the cost of clearing land towards the end of the experiment will be much less expensive than at the beginning.

There were only two acres of land cleared of stumps this year. This work was done to finish clearing a field to be prepared for winter wheat. Forty-five acres of recently cleared land were broken during the season. The heavy rainfall of July and August kept the soil in good condition for ploughing, and the work was performed with little trouble.

DRAINAGE WORK

The following drainage work was done this year: Ninety rods of an open ditch were finished off to an even grade. Six-inch tile was laid in the lower half of the ditch and four-inch tile at the upper end, and the open ditch, which was running through the middle of a field, was filled in. Another drain was put in along the course of a small creek that ran diagonally across a field. The course of this stream was diverted to run along the side of the field, and an eight-inch tile drain was put in the former course of the stream, which makes the working of the field much more convenient.

LAND DRAINAGE EXPERIMENT

Project 164.—An experiment in land drainage was commenced this fall, with 20 acres of uniform soil. Ten acres were underdrained by four drains, which were put 60 feet apart, and four-inch tile was used. Ten acres adjacent to this drained area will not be underdrained, and the 20 acres will be cropped similarly in a four-year rotation to determine the effect of underdrainage on crop production.

HORTICULTURE

The horticultural work in 1921 consisted of variety tests of vegetables, flowers, and small fruits. The season was favourable for the growth of most vegetables and flowers, but frost in May killed the bloom on small fruits, such as gooseberries and currants.

The orchard, consisting of hardy varieties of apples, pears, plums, and crabs, has made slow progress. The trees of this orchard were set out in 1917, and transplanted to their present location in 1918. One plum tree has commenced to bloom, but no fruit set. None of the other trees of the orchard had any bloom. A cover crop of red clover was sown in July, and made a heavy growth, which was ploughed under in October. One-third of the total number of trees set out have died through winter-killing.

SMALL FRUITS

RED CURRANTS—TEST OF VARIETIES

Project 31.—Seven varieties of red currants were set out in rows six feet apart, with five feet between the bushes in the rows. The bushes began to bloom on May 18, but no fruit set, owing to spring frosts.

BLACK CURRANTS—TEST OF VARIETIES

Project 31.—Fourteen varieties of black currants were set out, in the same manner as the red currants. Each variety commenced to bloom the last week of May, but no fruit set, as the blossoms were all killed by frost.

GOOSEBERRIES—TEST OF VARIETIES

Project 32.—Fifteen varieties of gooseberries were set out, in rows six feet apart, with the plants five feet part in the rows. The bushes commenced to bloom May 15, but no fruit set, as the blossoms were killed by frost.

RASPBERRIES—TEST OF VARIETIES

Project 33.—Eight varieties of raspberries were planted out, in rows six feet apart, and the canes were spaced 18 inches apart in the rows.

Raspberries did well this year, as usual, as bloom appeared in June, after the danger of frost was past.

The following yields from one row 30 feet long were obtained:—

	Pounds	Ounces
Sunbeam	7	13
King	7	—
St. Regis	6	14
Brighton	6	—
Newman	4	6
Cuthbert	4	4
Herbert	1	11
Early June	1	10

The Sunbeam variety produced the greatest yield of fruit. This variety is also very hardy, the fruit being of medium quality. The King variety stood second in productiveness. This variety is very hardy, and the fruit is larger than that of Sunbeam. St. Regis and Brighton gave high yields of good quality. Both varieties are quite hardy. Herbert and Early June are not so hardy as the other varieties, and need winter protection of the canes.

A number of varieties of strawberries were set out this year, but no fruit was allowed to set on the young plants.

VEGETABLES

BEANS—TEST OF VARIETIES

Project 34.—Thirty varieties of beans were tested this year. Seed was sown on May 19, in drills 30 inches apart and 30 feet long. Plants were thinned to six inches apart in the rows. The results obtained from the ten best varieties are as follow:—

VARIETY TESTS WITH BEANS

Variety	Date ready for use	Length of vine	Yield in quarts
		inches	quarts
Round Pod Kidney Wax	July 20	14	37½
Stringless Green Pod	" 20	18	28
Davis White Wax	" 20	12	25
Masterpiece, O-589	" 23	18	20
Extra Early Valentine	" 23	9	19½
Refugee Bruce	" 29	17	19
Broad Long Pod Exhibition	Aug. 8	17½	12
Refugee (Carter's)	July 30	12	10
Plentiful French	" 20	17	10
Broad Windsor		12	10
Broad Long Pod Wonder	August 7	20	9

Round Pod Kidney Wax produced considerably the best yield, and was of good quality, but it was surpassed in quality by Davis' White Wax. Masterpiece 0-589 and Extra Early Valentine gave medium good yields of good quality. Broad Windsor was the best in quality among the broad beans.

BEETS—TEST OF VARIETIES

Project 35.—Ten varieties of beets were sown, in drills 30 feet long, and the plants were thinned to four inches apart.

The results obtained are as follow:—

Variety	Date of sowing	Date when ready for use	Yield
			pounds
Eclipse	May 23	July 18	16
Early Wonder	" 23	" 18	14
Crimson Globe	" 23	" 19	14
Early Model	" 23	" 18	13
Black Red Ball	" 23	" 18	13
New Dandy	" 23	" 18	12
Crosby Egyptian	" 23	" 18	11
Detroit Turnip	" 23	" 18	11
Black Red Ball, No. O-245	" 23	" 18	9½
Detroit Dark Red	" 23	" 18	9

The beets of each variety were rather too large at maturity to be of best quality for table use. If grown more closely together in the row they would probably be of a more desirable size and quality. Eclipse, Early Wonder and Crimson Globe were the most productive varieties, and also were of the finest quality.

CARROTS—TEST OF VARIETIES

Project 38.—Five varieties were grown in drills 30 feet long, and thinned to two inches apart in the rows:—

Name of Variety	Date Sown	Date when ready for use	Yield
			pounds
Improved Danvers	May 23	July 25	10
Chantenay	" 23	July 25	9
Scarlet Nantes	" 23	July 25	9
Oxheart	" 23	July 25	9
Hutchinson	" 23	July 25	9

Improved Danvers gave slightly the greatest yield, but was rather course in quality. Scarlet Nantes was smooth, and of the best quality. Chantenay was smooth, crisp, and of good quality.

CABBAGE—TEST OF VARIETIES

Project 37.—Fourteen varieties of cabbage were grown, in drills 30 feet long. Plants were thinned to 15 inches apart in the rows. Danish Ballhead was the highest yielding variety. It is a flat, round type, firm and of good quality.

Marblehead Mammoth produced a large yield of firm, crisp heads, of good flavour. Petain was the most productive early sort, but it was surpassed in quality by Jersey Wakefield.

VARIETY TEST WITH CABBAGES

Variety	Date of Planting	Date when ready for use	Yield
			pounds
Danish Ballhead	May 16	Sept. 15	92
Marblehead Mammoth	" 16	" 1	90
Improved Brunswick	" 16	" 1	88
Succession	" 16	" 1	87
Copenhagen Market	" 16	" 1	85
Perfection Drumhead Savoy	" 16	" 4	83
Delicatesse	" 16	" 4	83
Kildonan	" 16	" 2	82
Petain	" 16	July 30	80
Jersey Wakefield	" 16	" 28	78
Flat Swedish	" 16	Sept. 1	70
Danish Red Stonehead	" 16	" 7	60
Enkhuizen Glory	" 16	" 1	50
Wong bok	" 16	Aug. 17	20

CAULIFLOWER—TEST OF VARIETIES

Project 168.—Two varieties of cauliflowers were planted, in rows 30 feet long, with plants 18 inches apart in the rows.

Extra early Dwarf Erfurt produced 45 pounds from 20 heads, and was ready for use September 20.

Early Snowball gave a yield of 30 pounds from 20 heads, and was ready for use September 20.

CELERY—TEST OF VARIETIES

Project 39.—Eight varieties were set out in muck soil, in trenches 30 feet in length, with the plants six inches apart in the rows. Giant Pascal grew to an average height of 18 inches and gave the highest yield. The stalks were crisp and of good quality, but of a very green colour.

Winter Queen is a tender sort of good quality, average height 13 inches; Evans Triumph, a compact growing variety, average height 17 inches and Golden Self Blanching a short growing variety of good quality and attractive appearance.

Name of Variety	Date set out	Date ready for use	Yield
			pounds
Giant Pascal	June 23	Oct. 30	35
Winter Queen	" 23	" 29	30
Evans Triumph	" 23	" 27	28
Golden Self-blanching	" 23	" 30	25
French Success	" 23	" 30	25
Sandford Superb	" 23	" 30	22
White Plume	" 23	" 30	20
Golden Yellow	" 23	" 27	16

CORN—TEST OF VARIETIES

Project 40.—Nine varieties of corn were sown, in rows 36 inches apart and thinned to 18 inches apart in the rows. The season was very favourable for corn, as the summer was hot, and there were no early frosts in the fall.

Early Malcolm, Black Mexican, and Sweet Squaw gave good yields, and were of good flavour. Golden Bantam produced the lightest yield, but was the most tender soft, and of the best flavour.

Name of Variety	Date Sown	Date when ready for use	Yield
			pounds
Early Malcolm	May 26	Sept. 10	35
Black Mexican	" 26	" 13	33
Golden Giant	" 26	" 12	31
Evergreen Bantam	" 26	" 12	31
Sweet Squaw	" 26	" 14	30
Kloochman	" 26	Aug. 19	20
Country Gentleman	" 26	Sept. 15	19
Pickaninny	" 26	Aug. 8	17
Golden Bantam	" 26	Sept. 14	15

CUCUMBERS—TEST OF VARIETIES

Project 42.—Five varieties of cucumbers were planted, in hills five feet apart each way. The season was favourable, as there were no insect pests, and there was no injury from frost. Improved Long Green and Early Russian produced the greatest yields, but these varieties were surpassed in quality by Davis' Perfect and West Indian Gherkin.

Variety	Date when planted	Date when ready for use	Yield
			pounds
Improved Long Green	May 4	Sept. 3	10½
Early Russian	" 4	" 3	9
Davis Perfect	" 4	" 3	8
Giant Peru	" 4	" 3	8
West India Gherkin	" 4	" 3	4

LETTUCE—TEST OF VARIETIES

Project 43.—Nine varieties of lettuce were grown, in drills 30 feet in length. The plants were set out six inches apart in the rows.

Name of Variety	Date Sown	Date ready for use	Yield
			pounds
Hanson	May 23	July 30	27
New York	" 23	" 30	27
Iceberg	" 23	" 25	22
Grand Rapids	" 23	" 25	15
Curled Simpson	" 23	" 26	14
Salamander	" 23	" 24	13
Crisp as Ice	" 23	" 20	12
Early Wayahead	" 23	" 23	10
Sutton's Early	" 23	" 24	10
Paris Market	" 23	" 24	10

Hanson is a very vigorous growing variety, but grows loose and lacks quality. New York produced an equally large yield, but was more tender and had better flavour. Iceberg is a compact type, crisp and of fine flavour. Crisp as Ice produced a fairly good yield, of excellent quality. Curled Simpson, Salamander, Suttons Early and Paris Market are compact types of fairly good quality. Early Wayahead went to seed early, and produced a light crop.

ONION—TEST OF VARIETIES

Project 44.—Thirteen varieties were sown, in drills one foot apart and 30 feet in length. Plants were thinned to one inch apart in the rows. The season was favourable for the growth of onions, but the wet weather, late in the season, was not favourable for their maturity.

Name of Variety	Date sown	Date ready for use	Yield
			pounds
Australian Brown	May 23	Aug. 6	44
Ailsa Craig	" 23	" 10	37
Yellow Danvers	" 23	" 1	30
Giant Prizetaker	" 23	" 7	23
Extra Early Flat Red	" 23	" 8	21
Southport Yellow Globe	" 23	" 8	20
Extra Early Flat Red	" 23	" 14	20
Large Red Wethersfield	" 23	" 6	20
Yellow Globe Danvers	" 23	" 12	18
Red Globe	" 23	" 12	15
White Barletta	" 23	" 12	15
White Globe	" 23	" 14	14
Large Red Wethersfield	" 23	" 4	13

Australian Brown gave considerably the highest yield, matured well, and was of good quality. Ailsa Craig produced a large crop, of the best quality, which matured well. Yellow Danvers produced a large yield, of good quality. Giant Prize Taker gave a medium yield. The most of the crop had thick necks. Extra Early Flat produced a medium crop of good quality.

PARSLEY—TEST OF VARIETIES

Project 45.—Two varieties of parsley were sown on May 23, in drills 30 feet long. Plants were thinned to one foot apart in the rows. Moss Curled produced 5 pounds 11 ounces, and Triple Curled 4 pounds 2 ounces. Both varieties were ready for use October 1, and were of good quality. Moss Curled had slightly the better flavour.

PARSNIPS—TEST OF VARIETIES

Project 46.—Two strains from seed grown at the Central Experimental Farm were sown on May 23, in drills 30 feet in length, and the plants were thinned to two inches apart in the rows. Hollow Crown-0-104 yielded 35 pounds 8 ounces, and Hollow Crown-0-104-5 gave a yield of 23 pounds 14 ounces. Both strains were ready for use on August 5. The first variety had the finer flavour.

PEAS—TEST OF VARIETIES

Project 47.—Seventeen varieties of peas were sown on May 21, in drills 30 feet in length. Plants were thinned to one inch apart in the rows. As usual, peas did very well, the climate being well adapted for their growth.

Name of Variety	Date ready for use	Average Height	Yield
			Quarts
Thomas Laxton	July 13	3 feet	21½
McLean Advancer (cult.) (sown May 30)	" 17	3 "	18
English Wonder, O-8929	" 17	18 inches	16
McLean Advancer, O-8929	" 1	3 feet	13
Sutton's Excelsior	" 4	30 inches	13
Gradus (cult.)	" 13	40 "	12
Danby Stratagem	" 23	30 "	11½
Laxtonian	" 13	24 "	11
Danby Stratagem	" 18	30 "	9
Gradus (Carter)	" 6	40 "	8½
Gregory Surprise	" 1	24 "	8½
Pioneer	" 23	18 "	8
Reliance	" 23	24 "	7½
Eight Weeks	" 13	18 "	7
Early Morn	" 7	18 "	4

The highest yield was produced by the Thomas Laxton variety, which was also one of the highest quality. McLean's Advancer (Cult) and English Wonder-0-8929 a strain selected by the Dominion Horticulturist produced high yields, of good quality. These are medium early varieties. McLean's Advancer-0-8927, another strain selected by the Dominion Horticulturist, was the highest yielding early variety, and of fine quality.

Gregory Surprise was equally early, and of good quality, but was low in yield.

POTATOES—TEST OF VARIETIES

Project 49.—Five varieties of potatoes were planted, in rows of one-fortieth acre each, on heavy clay soil which was previously in sod, fall ploughed, and winter manured. Seed was planted on May 31.

The soil is too heavy to give best results with potatoes. The excessive rain in July kept the soil wet for their proper growth, but there were no diseased tops or tubers. Registered Green Mountains gave the highest yield, and produced 24 bushel 37 pounds per acre more than unregistered seed. All varieties matured well, as there was no killing frost until the crop was harvested.

VARIETY TESTS WITH POTATOES

Name of Variety	Yield per acre		Date ready for use	Size	Colour	Shape
	Marketable	Not Marketable				
	bush. lb.	bush. lb.				
Green Mountain, registered	167 26	3 11	Aug. 20	Large	White	Oval.
Early Canada	156 28	4 21	" 1	Large	Red	Oval
Irish Cobbler	149 50	3 50	" 10	Medium	White	Round
Green Mountain	143 15	2 45	" 20	Large	White	Oval
Early Ohio	104 20	4 34	July 25	Medium	Red	Oval

PUMPKINS—TEST OF VARIETIES

Project 50.—Three varieties were planted, in hills 10 feet apart. The plants of each variety were thinned to three plants to a hill. King of Mammoths produced a yield of 60 pounds. These were ready for use on August 20, but the pumpkins developed and were better matured later in the fall.

Connecticut Field produced a yield of 45 pounds of the best quality of the three varieties and was ready for use September 1. Small Sugar produced a yield of 40 pounds and was ready for use on September 1.

RADISH—TEST OF VARIETIES

Project 51.—Three varieties were sown on May 23, in drills 30 feet in length. Plants were thinned out to one inch apart in the rows. None of the varieties was affected by insects. Icicle, a long white variety, produced a yield of six pounds, and was ready to use on June 17. This variety is crisp and has a mild flavour, when first ready for use, but later continues to grow to a considerable size, and becomes strongly flavoured and coarse grained. Scarlet Turnip, a white tipped, round type, of good quality, gave a yield of 5 pounds 2 ounces, and Early Scarlet Turnip, a similar type, yielded 4 pounds 4 ounces. Both varieties were ready for use on June 15.

SPINACH—TEST OF VARIETIES

Project 53.—Two varieties of spinach were sown on May 23 in rows 30 feet in length. Plants were thinned to one foot apart in the rows. The plants of each variety made a fair growth. The New Zealand gave a yield of 3 pounds 1 ounce, and Victoria 2 pounds 5 ounces. Both varieties were ready for use by July 15. The Victoria was the more tender and had the better flavour.

SQUASH—TEST OF VARIETIES

Project 54.—Three varieties of squash were planted out, with three plants of each variety. They were planted in hills, 10 feet apart, with three plants to a hill. The yields were as follows:—

	Pounds
Hubbard	75
Delicious	30
Golden Hubbard	24

All varieties were ready for use by September 20.

TOMATOES—TEST OF VARIETIES

Project 55.—Fourteen varieties of tomatoes were grown this year. Seed was sown in flats, in the greenhouse, on April 4, and plants were set out, in the field, on June 22. Six plants of each variety were set out, in rows 3½ feet apart, with a space of three feet between plants in the row. When fruit commenced to form the plants were tied up to stakes four feet high, with raffia. The following are the yields of ripe fruit of the different varieties:—

	Pounds
Chalk's Early Jewel	30
Bonny Best A-0-719	23
Crimson Canner-0-707	23
Chalk's Jewel-0-710	22
Alacrity-0-709	22
John Baer-0-708	21
Bonny Best A-0-7-9	20½
Alacrity-0-711	20
John Baer	20
Danish Export 0-722	20
Burbank Early 0-731	19
Red Head	19
Alacrity 0-704	18
Earlibell 0-734	15

No fruit was ripe until September 14, but the fall was favourable for the maturity of tomatoes. Chalk's Early Jewel produced the highest yield. The fruit was smooth and of good quality. Bonny Best-0-719 gave the second highest yield and was of better qaulity than any other variety. The fruit was large, smooth, and of fine flavour. John Baer-0-708 produced a crop of good quality. The fruit was small, but very smooth and firm.

TURNIPS—TEST OF VARIETIES

Project 169.—Four varieties of turnips were sown on May 23, in drills 30 feet in length. Plants were thinned to one foot apart in the rows, when two inches high. The following yields were obtained.

	Pounds
Extra Early Purple Top Milan	55
Red Top Strap Leaf	44½
Golden Ball	44
Early Snowball	30

Golden Ball was ready for use on September 17. It had the finest flavour and was smooth, crisp, and tender.

Extra Early Purple Top Milan produced a greater yield, but was coarser in quality.

Early Snowball gave the lightest yield and was rather tough in texture.

FLOWERS

Project 30.—This year was favourable for most annual flowers, where there was a good supply of moisture in the soil early in the season. Some flowers made a backward start, owing to the drought of June, but the abundant rainfall, from early in July until the end of the season, along with an absence of frost in the fall, was favourable to growth and bloom of flowers. The following table gives the names of the annual flowers grown here this year:—

FLOWERS

Variety	No. of Varieties	Date sown	Duration of Bloom	Height	Bloom
Alonsoa Warscewczii Compact	1	April 4	Aug. 3 to Oct. 6	6½ inches	Good
Allysum Little Dorrit	1	" 29	" 3 to " 6	12 "	Very good
Amaranthus Tricolor	1	" 29	" 8 to " 10	9 "	Very good
Antirrhinum	7	" 29	" 4 to " 6	10 "	Good
Asters	10	" 29	" 3 to " 31	16 "	Very good
Balsam	2	" 29	July 27 to " 6	10 "	Good
Bartonia Aurea Yellow	1	" 29	" 27 to " 6	12 "	Good
Candytuft Improved White	1	" 29	Aug. 3 to " 6	9 "	Good
Carnation, Mixed	.....	April 29	Oct. 2 to " 6	18 "	Very fine
Celosia Plumosa, Mixed	.....	" 29	" 2 to " 6	15 "	Very good
Crysanthemum Annual Mixed	.....	" 29	Sept. 20 to " 6	10 "	No bloom
Cosmea, mixed colours	.....	June 6	July 20 to " 6	36 "	Very good
Cosmos	3	" 15	" 7 to " 6	36 "	Very good
Cobeca Scandens, purple	.....	April 29	Aug. 4 to Sept. 30	8 feet	Good
Calendula	.....	June 15	July 30 to Oct. 6	12 inches	Good
Datura	.....	" 15	Aug. 1 to " 6	10 "	Good
Larkspur, rosy scarlet and blue	2	" 20	" 2 to " 6	24 "	Good
Lavatera	.....	" 20	" 10 to " 6	24 "	Good
Linaria, Mixed	.....	" 20	" 1 to " 6	10 "	Good
Lobelia	2	April 27	" 29 to " 6	4 "	Very good
Malope	.....	June 15	" 4 to " 6	20 "	Good
Mignonette, Sweet Scented	.....	" 15	" 24 to " 6	6 "	Very good
Nasturtium	12	" 14	" 1 to " 6	6 "	Good
Nemesia	1	" 14	July 29 to " 6	6 "	Good
Nicotiana	1	April 28	Sept. 1 to " 6	18 "	Good
Pansies, mixed colours	.....	" 29	July 1 to " 30	4 "	Very good
Phlox	6	" 24	" 29 to " 6	6 "	Very good
Poppy, selected Shirley	.....	June 13	Aug. 2 to " 6	12 "	Good
Portulaca, mixed	.....	" 15	" 4 to " 6	12 "	Good
Salpiglossis, mixed	.....	April 28	July 29 to " 6	26 "	Very good
Salvis	.....	" 4	Aug. 15 to " 6	20 "	Very good
Stocks	6	" 29	" 4 to " 6	14 "	Good
Sweet Peas	76	June 1	" 18 to " 6	42 "	Good
Verbena, mixed	.....	" 1	July 21 to " 6	10 "	Very good
Stocks, Virginia Mixed	.....	" 15	Aug. 4 to " 6	9 "	Very good

TREES AND SHRUBS

The following ornamental trees and shrubs have been set out since 1918:—

Name of Tree or Shrub	Number set out in 1918	Number now living	Present Condition
Pinus austriaca	5	1	Fair
Picea pungens	10	5	Healthy
Lilac—Charles Joly	3	3	Vigorous
Lilac—President Grevy	3	3	"
Lilac—Alba Grandiflora	3	3	"
Syringa Villosa	15	15	"
Acer Saccharum	3	2	Fair
Acer Ginnala	15	12	"
Rosa rugosa	15	10	Good
Viburnum Lantana	15	12	"
Populus petrowskyana	50	30	Thrifty
Sorbus Aucuparia	10	10	"
Berberis Thunbergii	15	12	"
Spiræa Arguta	2	2	"

LAWNS AND HEDGES

The grounds about the superintendent's residence have been made smooth, and were seeded down with grass and clover seed in July. A good growth was made, and the land was ploughed again in the fall, to be worked up in the spring, and seeded down with lawn grass.

Hedges of laurel-leaved willows have been set out on the north, west and south sides of these grounds, and a caragana hedge has been planted around the garden. Both hedges are thrifty and hardy.

A hedge of native spruce will be set out along the front of the grounds in the spring.

CEREALS

Project 10.—The cereal plots were sown as soon as the soil was ready to work, which was on May 5. This was the first seeding done on the land. Four varieties of spring wheat were sown, in uniform duplicate plots of one-tenth acre each. The soil was underdrained, heavy clay. Seed was sown in drills, at the rate of one bushel three pecks per acre.

WHEAT

Project 169.—Results with varieties of spring wheat:—

Name of Variety	Date of Sowing	Date of Ripening	No. of days maturing	Average length of straw including head	Strength of straw on scale of 10 points	Average length of head	Actual yield of grain per acre
				inches		inches	bush. lb.
Huron	May 5	Aug. 15	102	28	9	3·1	25 10
Marquis	" 5	" 16	103	29	9	3·0	20 50
Ruby	" 5	" 3	90	27	8	2·7	17 20
Prelude	" 5	July 27	83	26	8	2·5	16 10

Huron stands at the head of the list of varieties for yield per acre this year. Though the straw was slightly shorter than that of Marquis, the heads had a greater average length and the grain was better filled. It matured in 102 days, just

one day earlier than Marquis. In yield per acre Marquis was four bushels and twenty pounds less than Huron, this year, but it gave a slightly higher yield last year. Ruby matured twelve days earlier than Huron, but was quite short in straw. The grain, however, was well filled and of fine quality. Prelude was fully matured in 83 days, but was quite short in straw, and gave the lightest yield. Its earliness will give it a value in newly cleared districts that are liable to be troubled with early fall frosts. The grain was fairly well filled, and of good quality.

OATS—TEST OF VARIETIES

Project 170.—Six varieties of oats were sown in uniform plots, in duplicate. The soil was a heavy clay and had been ploughed early in the fall out of sod. Seed was sown in drills at the rate of two bushels and three pecks per acre. Results from variety tests:—

Name of Variety	Date of Sowing	Date of Ripening	No. of days Maturing	Average length of straw including head	Strength of straw on scale of 10 points	Average length of head	Actual Yield of Grain per acre
				inches		inches	bush. lb.
Registered Banner.....	May 5	Aug. 27	114	39·0	9	8·2	57 15
Banner.....	" 5	" 27	114	35·0	8	8·0	53 20
Gold Rain.....	" 5	" 17	104	33·5	9	7·0	50 8
Victory.....	" 5	" 27	114	34·0	8	6·5	48 26
Daubeney.....	" 5	" 15	102	33·0	8	6·5	46 18
Liberty.....	" 5	" 18	105	35·0	9	9·5	38

None of the yields from the cereael plots was high this year, as early sown grains did not do as well as the late sown. The frosts early in the season, with a very dry June, were adverse to early sown grain. The results from this year's experiments with varieties of oats indicate that the Banner variety is one of the best varieties for this part of the province. Registered Banner gave a higher yield than the unregistered seed—the result of seed selection. Gold Rain was grown for the first time here this year. It is a plump yellow oat that has a good strength of straw, and it matured ten days earlier than Banner.

Victory is a short, plump variety, that matured at the same time as Banner. It has good strength of straw. Daubeney is a desirable early variety. It matured in 102 days. An early maturing oat is desirable in many localities where the clearing is small and where early fall frosts sometimes give trouble. Daubeney does best on rich soil, as the straw is rather short and the yield is light on poor soil.

Liberty is a hulless oat, originated by the Dominion Cerealist. This oat is a promising variety for the district, as the yield is good, the straw is strong and of a good length and very free from rust. The heads had an average length of 9·5 inches. The chaff surrounding the grain is fine and abundant and would make good feed.

BARLEY

Project 171.—Five varieties of barley were grown this year, in one-tenth-acre plots. The soil was underdrained, heavy clay. Seed was sown in drills at the rate of two bushels per acre.

Name of Variety	Date of Sowing	Date of Ripening	No. of days Maturing	Average length of straw, including head	Strength of straw on scale of 10 points	Average length of head	Actual Yield of Grain per acre
				inches		inches	bush. lb.
Manchurian	May 5	Aug. 10	97	26	9	3·1	25 5
Duckbill	" 5	" 19	106	28	9	2·6	23 6
O.A.C. No. 21	" 5	" 9	96	24	9	2·6	22 3
Albert	" 5	" 8	93	23	9	2·2	21 22
Himalayan	" 5	" 6	93	20	9	2·5	17 10

Manchurian was grown here for the first time this year and gave the highest yield. The straw was strong and bright and the grain well filled. It matured in 97 days. The yield from none of the varieties was high, as the drought of June was unfavourable to barley. Duckbill, a two-rowed variety that gave the highest yield last year, stood second this year. The grain was very plump, and was the largest of all the varieties. As the straw grows to a greater length than that of the other varieties it is well suited to soils lacking in fertility. O.A.C. No. 21 has given good average yields and it has been grown here extensively as a field crop. Albert is a very early barley, with short straw and a short compact head. This variety is well suited to rich soils and for late sowing. Himalayan is a hulless barley of high feeding value. It is quite short in straw, hence should be sown on soils well supplied with humus and fertility.

FIELD PEAS

Project 172.—Field peas were sown on May 5, on heavy clay loam which had been fall ploughed from sod. Plots of one-tenth-acre were sown in duplicate, in drills, at the rate of two bushels of seed per acre. Canadian Beauty gave a yield of 24 bushels 10 pounds per acre, which was the highest yield. The grain of this variety is a very fine sample. The peas are large, white, and smooth, and measure about three-eighths of an inch in diameter. Care must be taken in threshing this variety to avoid splitting the grain. The straw had an average length of 38 inches, which was five inches longer than the average length of any other variety.

Golden Vine was the second highest in yield, and produced 20 bushels 10 pounds per acre. The straw had an average length of 32 inches and was well podded, but ripened unevenly, as there was considerable second growth.

Black-Eye Marrowfat yielded 16 bushels 20 pounds per acre. The grain of this variety is larger than that of Golden Vine or Arthur, but smaller than Canadian Beauty. The straw had an average length of 33 inches and also had considerable second growth.

Arthur gave the smallest yield, 14 bushels 30 pounds per acre, but matured in 105 days, which was 14 days earlier than the other varieties. The straw of this variety averaged 31 inches, which was slightly shorter than the other varieties, but there was very little second growth.

Better yields would have been obtained this year from the plots of the variety tests had the peas been sown at a later date. The peas in the oats, peas, and vetch plots, which were sown early in May, made a poor growth, but did very well in plots of later sowing. The heavy rains of July and August stimulated a second growth of the vines. There was no injury from pea weevil, hence the sample of seed of each variety is good.

WINTER RYE—TEST OF VARIETIES

Project 173.—Common winter rye and a Swedish variety named Vasa were sown on August 18, in one-twentieth-acre plots, in duplicate, at the rate of four pecks per acre. The soil was heavy clay, which was new breaking that had been summer-fallowed and top-dressed with manure. As there was a good supply of moisture in the soil each plot made a good germination, and formed a good top for winter protection.

DATES OF SEEDING WINTER RYE

Project 173a.—With the object of testing the yield of rye from different dates of seeding, winter rye was sown in one-twentieth-acre plots, at the rate of four pecks per acre, on new breaking, which had been ploughed in July and top-dressed with manure. The soil was heavy clay and seed was sown in a good seed-bed at intervals of seven days from August 22 to September 19. The growth of each plot was good, with the exception of the plot sown on September 19, which made very little growth. Hand selections of the best heads of the most vigorous plants of the leading varieties of grains have been made, with the object of improving the strain of the varieties that have given the best results here.

FIELD BEANS

Project 174.—Only one variety of field beans was grown this year, Norwegian-Ottawa-710, a large, brown kidney bean, which was planted on May 5, but only 2 per cent of the beans grew. The soil was quite cold at this date of planting, but dry enough to form a good seed bed. As there was considerable frost at nights in May it was unfavourable to early sown beans. The plants that grew produced many pods, with an average length of six inches. None of the beans, however, reached maturity, although the fall was free from killing frost until October.

FLAX

Project 175.—One acre of flax was grown, which matured in 89 days. Seed was sown on May 18, on fall ploughed sod, and the crop was ripe on August 15. The drought of June checked the growth of the crop which had an average height of 15 inches. The fibre was of good quality, and the seed was well formed. The yield was 5 bushels and 30 pounds per acre.

FORAGE CROPS

ENSILAGE CROPS

SUNFLOWERS—TEST OF VARIETIES

Project 20.—Five varieties of sunflowers were tested in duplicate one-twentieth-acre plots. Theye were sown in drills 30 inches apart and the plants thinned to six inches apart in the rows.

All varieties were harvested September 16 and 17. The results are as follow:—

Name of Variety	Date sown	Average height	Percentage matured	Weight of Crop per acre	
				tons	lbs.
Mammoth Russian	May 11	7 feet	0	13	1,280
Seed supplied by G. H. Hutton	" 11	6 "	35	11	1,800
Dr. Saunders' Early	" 11	7 "	10	10	1,000
Friesian	" 11	5 "	75	9	700
Early O-76	" 11	6 " 8 in.	55	9	280

Mammoth Russian produced the heaviest crop, and appeared to be the most suitable variety for ensilage. Five per cent of the plants were in bloom, and the stalks were quite well matured for ensilage, although very little bloom appeared.

Seed from Hutton was second in yield and third in earliness and would be a good variety to grow for seed production or for ensilage.

Early-0-76 commenced to bloom the first week of August, 90 per cent of the plants bloomed, and 55 per cent were well matured when cut for ensilage on September 17. This variety is suitable for seed production.

Friesian commenced to bloom August 1, and was the first to mature. The heads of this variety were larger and better filled with seed than those of other varieties and due to its earliness woul dbe very suitable for seed production.

The variety plots were sown early; the yields from the plots were not high. Much higher yields were obtained from later planted sunflowers.

CORN—TEST OF VARIETIES

Project 21.—Ten varieties of corn were sown in duplicate one-fortieth-acre plots. The soil was heavy clay, ploughed in the fall and top dressed with manure during the winter. Seed was sown in drills 36 inches apart and the plants were thinned to one foot apart in the rows. Results obtained are as follow:—

Variety	Date sown	Average height	State of maturity	Yield per acre
		ft. in.		tons lb.
Bailey	May 21	5 9	Early milk	7 1,760
Quebec No. 28	" 21	4 6	Firm dough	6 760
Longfellow	" 21	4 6	Milk	4 640
North Dakota	" 21	3 6	Milk	3 1,400
Canada Yellow	" 21	3 6	Firm dough	3 740
Leaming	" 21	5	Milk	3 480
White Cap Yellow Dent	" 21	2 6	Milk	3 460
Compton's Early	" 21	3	Milk	3 320
Wisconsin, No. 7	" 21	3 5	Milk	2 560
Twitchell's Pride	" 21	2	Dough	1 600

Bailey produced the highest yield, but was not well enough matured to make good ensilage.

Quebec No. 28 produced a good crop of well matured corn that would make excellent ensilage. The stalks were uniform and of medium height while the ears were well formed and well matured.

Longfellow produced a fairly uniform crop, but lacked maturity.

Canada Yellow matured well, but produced a short, light crop.

Twitchells Pride also matured well, but the stalks were very fine and produced the lightest crop.

The other varieties produced light crops which did not mature well.

FIELD ROOTS

MANGELS—TEST OF VARIETIES

Project 23.—Twenty-six varieties of mangels were sown, in rows 30 inches apart, in duplicate one-twentieth-acre plots. Plants were thinned to one foot apart in the rows.

The soil was a heavy clay new breaking, which had been top dressed with manure and fall ploughed. Seed was sown on May 28.

The average yields of the various types were as follow:—

		Tons	Pounds
Half Sugar Mangels	Per acre	10	1,930
Long Red	"	10	1,836
Yellow Intermediate	"	8	1,995
Yellow Globe	"	7	740

The following tables give the results of these tests:—

No.	Variety	Source of Seed	Yield per acre				Remarks
			tons	lbs.	bush.	lbs.	
1	Perfection Long Red	Rennie	13	1,060	541	10	Good length and size, smooth, uniform.
2	Giant White Feeding	Bruce	12		480		Smooth, uniform, well above ground.
3	Giant White Sugar	Rennie	12		480		Large, uniform, smooth.
4	Improved Tankard Cream	Rennie	11	1,120	462	20	Smooth, fairly uniform, good size.
5	Giant White Half Long	Ewing	11	720	454	20	Fairly even, good size.
6	Yellow Leviathan	Bruce	11	720	454		Very smooth, uniform.
7	Selected Mammoth Long Red	MacDonald	11	600	452		Good length, rather rough.
8	Long Red Mammoth	Ewing	10	1,000	420		Fairly uniform, fair size.
9	Long Red Gatepost	Bruce	10	920	418	20	Fair size, good length.
10	Giant Yellow Intermediate	Bruce	9	1,720	394	20	Uniform, smooth, fair size.
11	Yellow Leviathan	Rennie	9	720	374	20	Fairly uniform, intermediate to short, oval shape.
12	Giant Yellow Half Long	Rennie	9	720	371		Smooth, but uneven in shape.
13	Giant Yellow Intermediate	MacDonald	9	280	365	30	Fairly uniform, and fairly smooth.
14	Prize Mammoth	Steele Briggs	8	1,600	352		Fair size, good length, smooth, but uneven.
15	Giant Half Sugar	MacDonald	8	1,000	340		Good quality, smooth, but not uniform.
16	Yellow Leviathan	Steele Briggs	8	400	328		Small, smooth, fairly uniform.
17	Giant Yellow Globe	Steele Briggs	8	120	322		Uneven in size and shape, smooth.
18	Yellow Globe	MacDonald	7	1,640	312	40	Fair size, oval to round in shape, fairly smooth.
19	Giant Yellow Intermediate	Ewing	7	1,400	308		Rather small, smooth fairly uniform.
20	Yellow Intermediate	C. Exp. Farms	7	720	294	20	Smooth, uniform, fair size.
21	Giant Yellow Globe	Ewing	7	400	288		Mixed shape, fairly smooth.
22	Golden Tankard	Bruce	7	320	286	20	Quite uneven in shape, smooth.
23	Golden Tankard	MacDonald	6	1,360	267	10	Various shapes, small, but smooth.
24	Giant Yellow Oval	Steele Briggs	6	800	255		Small and uneven in shape, smooth.
25	Golden Tankard	Ewing	6	720	254	20	Fairly even in shape, fairly smooth.
26	Golden Fleshed Tankard	Steele Briggs	6	520	250	20	Smooth, small and uneven.

Project 24.—Twenty-seven varieties of swede turnips and four of fall turnips were sown on June 8, in drills 30 inches apart, in duplicate one-twentieth-acre plots. Plants were thinned to one foot apart in the rows. The soil was a heavy clay with a few muck areas and was new breaking which had been top dressed with manure and fall ploughed. Results obtained are as follow:—

VARIETY TESTS WITH TURNIPS

No.	Variety	Source of Seed	Yield per acre				Remarks
			tons	lbs.	bush.	lbs.	
1	Perfection	Steele Briggs	10	1,870	437	20	Round, smooth, uniformly large roots.
2	Durham Bronze Top	Steele Briggs	10	350	407		Large, uniform, smooth roots, short necks.
3	Halls Westbury	Bruce	9	900	378		Oblong, purple top, large uniform roots, long necks.
4	Hartley's Bronze Top	Bruce	9	500	370		Large, smooth, uniform.
5	Select Purple Top	Steele Briggs	9	500	370		Light purple, round, smooth, short necks.
6	Halls Westbury	Ewing	9	340	366	40	Round, smooth, good solid roots.
7	Invicta Bronze Top	Ewing	9	100	362		Large, fairly smooth, short necks.
8	Derby	Rennie	8	1,600	352		Light bronze, round, smooth, good quality.
9	Jumbo	Steele Briggs	8	1,500	350		Oblong, purple top, long necks.
10	Prize Purple Top	Rennie	8	1,300	346		Bronze swede, mixture of types, smooth.
11	Mammoth Clyde Purple Top	Ewing	8	1,100	342		Oblong, medium smooth, rather prongy.
12	Perfecta Swede	MacDonald	8	700	334		Smooth but uneven in type
13	Elephant	Ewing	8	100	322		Oblong, somewhat ridged, long necks.
14	Ditmars	Kentville	7	1,200	304		Bronze, green top, round, smooth, uniform.
15	Halls Westbury	MacDonald	7	900	298		Round, even, and medium size.
16	Halls Westbury	Rennie	7	850	297		Even, medium, long necks, rather prongy.
17	Purple Top	Bruce	7	500	290		Oblong, small, uneven, smooth.
18	New Perfect Swede	Bruce	6	1,860	277	10	Uneven, short necks, prongy.
19	Sutton's Magnum Bonum	MacDonald	6	850	257		Oblong, smooth, small, easily harvested.
20	Monarch Swede	Nappan	6	400	248		Oblong, small, and rather prongy.
21	Hartley's Bronze Top	Rennie	5	1,700	234		Small, smooth, but uneven.
22	Sutton's Champion		5	350	207		Oblong, not uniform, a few rotten.
23	Selected Prize Elephant	MacDonald	5		200		Small, smooth, but prongy.
	FALL TURNIP VARIETIES						
24	Purple Top Greystone	Steele Briggs	13	1,500	550		Flat, round, smooth, large roots, soft flesh.
25	Devonshire Greystone	MacDonald	10	1,900	438		Round, bronze top, smooth, even.
26	Purple Top Yellow Aberdeen	Ewing	10	500	410		Dark purple top, flat round, short necks.
27	Improved Greystone	Bruce	7	500	290		Mixed type, purple tops and green tops, flat round, short necks.

Owing to the dry weather in June there was not a uniform germination of seed, hence the crop was thin and the yields light. The soil of the root crops was lacking in humus, as a large percentage of the vegetable matter in the soil had been burned off in clearing the land.

Average yield of varieties:—

		Tons	Pounds
Swede turnips	Per acre	7	90
Fall turnips	"	10	1,100

Project 22.—Sixteen varieties of carrots were sown on June 1, in drills 30 inches apart, in duplicate one-twentieth-acre plots. Plants were thinned to three inches apart in the rows. The soil was the same as that in which the turnips and mangels were planted. The results obtained are as follow:—

VARIETY TESTS WITH CARROTS

No.	Variety	Source of Seed	Yield per acre				Remarks on Varieties
			tons	lbs.	bush.	lbs.	
1	White Belgian	Bruce	8	1,800	356		A long variety, good size, grows 1 to 12 inches above surface of soil; easy to harvest.
2	Improved Short White	MacDonald	8	1,650	353		Good size, good length, smooth.
3	Giant White Belgian	Ewing	8	400	328		Large size, smooth, good quality, grows just to surface of soil.
4	Mammoth White Intermediate	Rennie	7	1,680	313	30	Good length, uniform, grows 0 to 1 inch above soil surface.
5	Improved Short White	Steele Briggs	7	1,250	305		Large white carrot, fair length, smooth.
6	Danish Champion	Steel Briggs	7	750	295		A yellow fleshed carrot of good quality, fair length, uniform.
7	Intermediate Scarlet	Bruce	6	1,900	278		Good size, short, smooth, difficult to harvest.
8	Improved Short White	Ewing	6	1,400	268		Fair length, good size, smooth, easy to harvest.
9	Large White Belgian	Steele Briggs	6	1,400	268		Very long, fairly uniform, grows 9 inches above soil surface; easy to harvest.
10	Large White Vosges	Bruce	6	750	255		Short, good size, smooth, grows 5 inches above soil surface; easy to harvest.
11	Danvers Half Long	MacDonald	5	1,500	230		Medium sized red carrot, smooth, fair length.
12	Danish Champion	MacDonald	5	1,000	220		A yellow carrot of good quality, medium length.
13	New Yellow Intermediate	Ewing	5	900	218		Skin and flesh yellow, smooth, good length, fair size.
14	Large White Belgian	Rennie	5	400	208		Flesh yellowish white, fair length, grows 1 to 5 inches above soil surface.
15	Long Red Surrey	Steele Briggs	5	400	208		Small, fair, length smooth.
16	Long Orange Belgian	Rennie	4	1,375	187	25	Small, but uniform, grows all below surface of soil.

Conclusions.—The soil on which the carrots grew was lacking in humus, and was not in as good physical condition as the soil on which other root crops were tested. The drought of June also kept the crop backward.

The average yield of the types of carrots was as follows:—

		Tons	Pounds
Improved Short White	Per acre	7	1,433
White Belgian	"	7	736
Intermediate Scarlet	"	6	400
Yellow Intermediate	"	5	225

LEGUMES AND GRASSES

HAY PRODUCTION FROM GRASSES—WITH CLOVERS AND ALONE

Project 27.—The objects of this experiment are to compare hay yields from timothy, orchard grass, and meadow fescue, when sown alone and in mixtures, and when these grasses are sown alone or in combination with red clover, alsike, and red and alsike clover and to compare results when these mixtures are sown with and without a nurse crop.

This is the first year that results have been obtained from this experiment; it will be repeated to obtain average results over a number of years.

Results obtained this year are as follow:—

TESTS WITH GRASS AND CLOVER MIXTURES

No. of Plot	Seed sown	Amount sown per acre without nurse crop	Yield per acre, 1st Cutting		Yield per acre, 2nd Cutting		Total Yield per acre	
		pounds	tons	lbs.	tons	lbs.	tons	lbs.
1	Red clover	10						
	Timothy	8	3	310	3	330	6	640
2	Red clover	10						
	Meadow fescue	15	2	1,460	2	1,490	5	950
3	Red clover	10						
	Orchard grass	15	2	890	2	1,630	5	520
4	Red clover	10						
	Timothy	6	2	510	2	1,610	5	120
	Meadow fescue	10						
5	Red clover	10						
	Timothy	6	2	1,450	2	1,590	5	1,040
	Orchard grass	10						
6	Red clover	10						
	Orchard grass	10	3	110	3	210	6	320
	Meadow fescue	10						
7	Alsike clover	6						
	Timothy	8	3	1,500	1	420	4	1,920
8	Alsike	6						
	Meadow fescue	15	2	120	1	160	3	280
9	Alsike	6						
	Orchard grass	15	2	1,160	1	960	4	120
10	Alsike	6						
	Timothy	6	2	140	1	40	3	180
	Meadow fescue	10						
11	Alsike	6						
	Timothy	6	2	75	1	305	3	380
	Orchard grass	10						
12	Alsike	6						
	Meadow fescue	10	2	90	1	250	3	340
	Orchard grass	10						
13	Red clover	8						
	Alsike	2	1	240	1	580	2	820
	Timothy	8						
14	Red clover	8						
	Alsike	2	1	1,915	2	85	4	–
	Meadow fescue	15						
15	Red clover	8						
	Alsike	2	1	370	1	530	2	900
	Orchard grass	15						

TESTS WITH GRASS AND CLOVER MIXTURES—*Continued*

No. of Plot	Seed Sown	Amount sown per acre, without nurse crop	Yield per acre, 1st Cutting	Yield per acre, 2nd Cutting	Total yield per acre
		pounds	tons lbs.	tons lbs.	tons lbs.
16	Red clover Alsike Timothy Meadow fescue	8 2 6 10	1 1,130	1 1,730	3 860
17	Red clover Alsike Timothy Orchard grass	8 2 6 10	1 655	1 1,725	3 380
18	Red clover Alsike Meadow fescue Orchard grass	8 2 10 10	1 990	1 1,110	3 100
19	Timothy	12	1 670	0 1,330	2 -
20	Meadow fescue	30	0 1,760	0 1,040	1 80
21	Orchard grass	30	1 205	1 115	2 320
22	Timothy Meadow fescue	8 15	0 1,760	0 1,040	1 800
23	Timothy Orchard grass	8 15	0 1,620	0 940	1 560
24	Meadow fescue Orchard grass	15 15	0 1,410	0 1,170	1 580

TESTS WITH GRASS AND CLOVER MIXTURES—*Continued*

No. of Plot	Seed sown	Amount sown per acre, with nurse crop	Yield per acre, 1st Cutting	Yield per acre, 2nd Cutting	Total Yield per acre
		pounds	tons lbs.	tons lbs.	tons lbs.
1	Red clover Timothy	10 8	2 1,400	2 1,520	5 920
2	Red clover Meadow fescue	10 15	2 1,210	2 1,350	5 560
3	Red clover Orchard grass	10 15	2 1,950	3 1,550	6 500
4	Red clover Timothy Meadow fescue	10 6 10	3 50	3 590	6 700
5	Red clover Timothy Orchard grass	10 6 10	3 10	3 630	6 640
6	Red clover Orchard grass Meadow fescue	10 10 10	2 1,150	2 1,730	5 880
7	Alsike clover Timothy	6 6	1 1,965	1,675	2 640

TESTS WITH GRASS AND CLOVER MIXTURES—*Concluded*

No. of Plot	Seed sown	Amount sown per acre with nurse crop.	Yield per acre. 1st Cutting	Yield pera cre 2nd Cutting	Total Yield per acre
		pounds	Tons lbs.	Tons. lbs.	tons lbs.
8	Alsike	6			
	Meadow fescue	15	1 1,545	1 455	3 -
9	Alsike	6			
	Orchard grass	15	1 1,490	1 530	3 20
10	Alsike	6			
	Timothy	6	1 1,920	1 520	3 440
	Meadow fescue	10			
11	Alsike	6			
	Timothy	6	1 410	1 330	2 740
	Orchard grass	10			
12	Alsike	6			
	Meadow fescue	10	1 1,990	1 510	3 500
	Orchard grass	10			
13	Red clover	8			
	Alsike	2	2 1,710	2 990	5 700
	Timothy	8			
14	Red clover	8	"		
	Alsike	2	" 2 1,200	2 1,700	5 920
	Meadow fescue	15	"		
15	Red clover	8	"		
	Alsike	2	" 2 1,150	2 1,750	5 900
	Orchard grass	15	"		
16	Red clover	8	"		
	Alsike	2	"		
	Timothy	6	" 2 1,180	2 980	5 160
	Meadow fescue	10			
17	Red clover	8	"		
	Alsike	2	"		
	Timothy	6	" 3 50	3 390	6 440
	Orchard grass	10	"		
18	Red clover	8	"		
	Alsike	2	"		
	Meadow fescue	10	" 3 1,990	4 1,550	8 540
	Orchard grass	10	"		
19	Timothy	12	" 2 1,800	0 900	3 700
20	Meadow fescue	30	" 2 150	0 1,930	3 80
21	Orchard grass	30	" 1 990	0 1,990	2 980
22	Timothy	8	"		
	Meadow fescue	15	" 2 1,140	0 980	3 120
23	Timothy	8	"		
	Orchard grass	15	" 2 1,260	0 1,460	3 720
24	Meadow fescue	15	"		
	Orchard grass	15	" 1 1,070	0 1,190	2 260

The soil was new breaking, which had been summer-fallowed, and top-dressed with manure. One year's results from this experiment cannot be taken as conclusive. However, results indicate the value of clover, when grown with grasses, in increasing the yield of hay per acre. The grasses, when grown separately or in combination without clover, produced the lightest yields of hay. Red clover grown with grasses produced greater yields than alsike with grasses.

There were two cuttings of hay. The second cutting was heavier than the first, on plots sown with red clover, as the rainfall in June was only 1·2 inches, while it was 7 inches in July, and 3·2 inches in August. Orchard grass produced a greater second growth than meadow fescue or timothy, the latter producing the least.

TIMOTHY AND CLOVERS—GROWN FOR HAY PRODUCTION

Project 28.—The object of this experiment was to test the yield and quality of hay produced by seeding with various amounts of timothy, red clover and alsike clover, and to ascertain to what extent red clover may be profitably replaced with alsike in the standard hay mixtures.

Ten duplicate plots one-half acre each were sown on May 18, 1920, with a nurse crop of two bushels of oats per acre.

Ten plots were sown on clay loam, in a good seed bed following a crop of roots, and the duplicate plots were sown on muck soil of new breaking.

The stand of timothy and clover was excellent on the plots sown on root land. The early seeding in the spring on a fine seed bed following a root crop was ideal for a seeding of clover and grass seed. The crop therefore had an excellent start in the spring of 1921, and although the weather was dry in June the growth was quite rank. The crop was about as heavy as it could stand, but lodged slightly the second week of July.

Unfortunately no weights could be taken of the first cutting, as our scales were not set up in time to weigh the crop. The rains of July and August were favourable for a heavy second growth, and the weights of the second crop were as follow:—

YIELDS OF HAY FROM TIMOTHY AND CLOVERS

Plot No.	Crop	Amount of Seed sown per acre	Weight of second crop per acre	
		pounds	tons	lbs.
1	Timothy	8	1	590
	Red clover	10		
2	Timothy	8	1	1,060
	Red clover	8		
	Alsike	2		
3	Timothy	8	1	1,240
	Red clover	6		
	Alsike	3		
4	Timothy	8	1	1,500
	Red clover	4		
	Alsike	4		
5	Timothy	8	1	1,880
	Red clover	2		
	Alsike	5		
6	Timothy	6	1	1,680
	Red clover	10		
7	Timothy	6	1	1,590
	Red clover	8		
	Alsike	2		
8	Timothy	6	1	1,324
	Red clover	6		
	Alsike	3		
9	Timothy	6	2	522
	Red clover	4		
	Alsike	4		
10	Timothy	6	1	1,492
	Red clover	2		
	Alsike	5		

The highest yield from the second cutting was obtained from a seeding of six pounds timothy, four pounds red clover, and four pounds alsike per acre.

The second growth was heavier from the plots seeded with the lighter seedings of timothy.

The crop was finer and of better quality on the plots seeded with both red clover and alsike.

The duplicate plots sown on muck were a failure, as the seeding failed to make a good germination, owing to the late date of seeding, followed by drought.

This experiment will be repeated for a number of years to obtain average results.

This year ten similar seedings were sown in duplicate to repeat this experiment.

Ten plots were sown with a nurse crop of two bushels of barley per acre, on muck and clay soil that had previously grown a crop of sunflowers. The plots made a very good growth, with a good covering of grass by late fall.

Duplicate plots were sown on clay loam with a nurse crop of two bushels of oats per acre.

These plots made a fairly good growth early in the season, and improved greatly after the nurse crop of oats was removed.

METHODS OF SEEDING ALFALFA

Project 176.—Three half-acre plots were sown on May 28, 1920, with Grimm alfalfa seed which had been treated with nitro culture. The preceding crop was turnips.

Plot No. 1 was sown in rows 12 inches apart, with a nurse crop of one bushel of oats per acre.

Plot No. 2 was sown in rows 12 inches apart, without a nurse crop, and plot No. 3 was sown broadcast at the rate of 20 pounds per acre, with a nurse crop of one bushel of oats per acre.

These plots were sown on a clay knoll which had been limed at the rate of two tons per acre. Plots 1 and 3 were sown with a nurse crop, and there was a very weak growth of alfalfa the first year owing to the drought, but plot No. 2, sown without a nurse crop, made a good growth in the first season.

Two cuttings of hay were taken off each plot this year and the yields were as follow:—

Method of Seeding	Without nurse crop Yields per acre	With nurse crop Yields per acre
In drills, 12 inches apart		1st cutting 1,320 lbs. 2nd cutting 1,080 lbs. Total 1 ton 400 lbs.
In drills, 12 inches apart	1st cutting 1 ton 610 lbs. 2nd cutting 1 ton 444 lbs. Total 2 tons 1,054 lbs.	
Broadcast, 20 lb. of seed per acre		1st cutting 910 lbs. 2nd cutting 880 lbs. Total.... 1,790 lbs.

The plants in all three plots of the experiment made a considerable development during this season. The stands of plots 1 and 3 especially became much thicker than in the spring.

A good growth was made after the second cutting, which was left for winter protection.

This year four half-acre plots on heavy clay loam were sown with Grimm alfalfa, which was treated with nitro culture. Each plot was given an application of two tons per acre of air slaked lime, and seed was sown on May 18.

Plot 1 was sown broadcast at the rate of 20 pounds per acre, without a nurse crop. Seed made a good germination and by October 1 there was a heavy stand of alfalfa of a dark green healthy colour. The growth was 12 inches in height.

Plot 2 was sown broadcast at the rate of 20 pounds per acre, with a nurse crop of one bushel of oats per acre. There was a thick, even stand of short growth by

fall on this plot, with an average height of six inches. The alfalfa was not so vigorous as that of plot No. 1.

Plot No. 3 was sown in drills 12 inches apart, without a nurse crop. The growth of alfalfa on this plot was similar to the growth on plot No. 1.

Plot No. 4 was sown similarly to No. 3, but with a nurse crop of one bushel of oats per acre. The alfalfa made a good uniform growth, which was six inches high at the end of the season. The stand on this plot was not so healthy in appearance as that of plot No. 3.

RED CLOVER SEED PRODUCTION

Project 26.—The object of the experiment is to compare the results, in seed production, of using first or second cutting for seed and to compare seed yields obtained from seeding broadcast, in rows 12 inches apart, and in rows 24 inches apart.

Five plots of half an acre each were sown in duplicate. The soil was heavy clay which was naturally well drained. No manure had been applied to this land, as this was the first crop on new breaking. Seed was sown on May 22, with a nurse crop of six pecks of spring wheat per acre.

Results obtained were as follow:—

No. of Plot	Method of sowing	Amount of seed sown per acre	Average Yield of Seed (½-ac. plots)
		pounds	pounds
1	Broadcast	8	19
2	Broadcast	8	19
3	Broadcast	8	66
4	Rows, 12 inches apart	.....	64
5	Rows, 24 inches apart	.....	61

Two cuttings of hay were taken from plot 1, the growth on this plot was quite heavy. One cutting of hay was taken from plot 2 on July 1. The second crop was allowed to stand for seed production, but only a small percentage of the seed matured. No hay was taken from Plot 3; the first crop was harvested for seed. This plot produced the greatest yield of seed, and had the heaviest stand of crop.

The first crop was used for seed on plot 4 and produced the second highest yield of seed. The first crop was also used for seed on plot 5.

The results from this experiment indicate that larger yields of seed are produced from the first crop of red clover, as a second crop is too late maturing when hay is cut off as late as July 1. Seed did not mature evenly, as the excessive rainfall of July and August caused a continued growth throughout the season.

ALSIKE SEED PRODUCTION

Project 25.—Three plots on muck soil, one-half acre each, were sown in duplicate on May 25, at different rates of seeding, to determine the best method of sowing alsike for seed production. Seed was sown with a nurse crop of two bushels of oats per acre. The results obtained were as follow:—

No. of Plot	Method of Sowing	Amount sown per acre	Yield of Seed
		pounds	pounds
1	Broadcast	5	29
2	Rows, 12 inches apart	.....	38
3	Rows, 24 inches apart	.....	29

Owing to the late seeding and the drought which followed, the alsike clover was very thin on the ground in the spring of 1921. The crop made poor headway during the month of June, but after the heavy rains of July a second growth commenced which kept the crop green until September, hence seed ripened very unevenly. The earliest ripe shelled out considerably before the later seed was ripe. The soil of these plots appeared to be composed of too much muck for the successful growth of alsike at present, but after a few years cultivation this soil may become more suitable for alsike.

This year alsike seed was sown, to test the results from various methods of seeding. Three plots of one-half acre each were sown in duplicate, as follows:—

Plot No. 1 was sown broadcast at the rate of five pounds of seed per acre. Plot No. 2 was sown in drills 12 inches apart and plot No. 3 in drills 24 inches apart. The seed of these plots was sown on May 17 in a good seed-bed of clay loam which had produced a crop of sunflowers the previous season. Seed was sown with a nurse crop of two bushels of oats per acre.

The season was favourable for a good growth of alsike. After the oat crop was removed the clover in each plot made a vigorous growth.

TIMOTHY SEED PRODUCTION

Project 29.—The object of this experiment was to compare the yield of seed obtained from various methods of seeding timothy.

Four plots of one-half acre each were sown in duplicate on muck soil at different rates of seeding. Seed was sown on May 25 with a nurse crop of two bushels of oats per acre.

This was the first crop on new breaking. Results obtained were as follow:—

No. of Plot	Method of Seeding	Amount of Seed sown per acre	Yield of Seed
			pounds
1	Broadcast	10 lbs. timothy, 8 lbs. red clover	
2	Broadcast	10 lbs. timothy	17
3	Rows, 12 inches apart	.....	24
4	Rows, 24 inches apart	.....	29

The timothy on these plots was practically a failure, owing to a poor growth in 1920 and to drought in 1921. The muck soil dried out badly in these plots in both years. The clover of plot 1 made a fair growth and was cut for hay, as the timothy did not develop enough seed to be worth cutting. The thinnest seeding, which was

in plot 4, produced the best growth of timothy, with the longest heads and the greatest weight of seed. Plot 2 with the thickest seeding of timothy produced the shortest growth and the least seed.

This year four plots of one-half acre each were sown in duplicate on muck soil at different rates of seeding. Two bushels of oats per acre were sown as a nurse crop. The seeding of each plot made but a fair growth as the drought of June was unfavourable. A fairly good growth was made after the nurse crop of oats was harvested.

NITRO CULTURE OF ALFALFA

Project 177.—To test the effect of treating alfalfa seed with nitro culture to inoculate the soil with "alfalfa bacteria" two plots of alfalfa were sown. The seed of one plot was treated with nitro culture and the seed of the other plot was not treated. Each plot was one-tenth acre of heavy clay loam and two pounds of Grimm alfalfa seed was sown on each plot without a nurse crop. Both plots made a good growth during the season, but the growth of the plot sown with treated seed had a darker and more vigorous appearance than the plants of the untreated plot. The plants of the plot with the treated seed had an average height of 12 inches at the end of the growing season and the plants of the untreated seed had an average height of 9 inches.

A few nodules were noticed on the roots of the plants of the treated plot, but none was noticeable on the roots of the plants of the untreated seed.

NITRO CULTURE OF RED CLOVER

Project 178.—To test the effect of nitro culture on red clover two plots of one-tenth acre each were sown with red clover seed. The seed of one plot was treated with nitro culture; the seed of the other plot was not treated. The soil was a heavy clay and 20 ounces of seed were sown on each plot on May 25 without a nurse crop.

There was not much difference in the appearance of the growth of the two plots. A few nodules were present on the roots of the plants of each plot after three weeks' growth, and nodules were numerous on the roots of the crop on each plot after three months' growth. The average height of the plants on each plot at the end of the season was 12 inches.

PERENNIAL RED CLOVER

Project 179.—One-tenth of an acre of well-drained clay loam was sown on May 26, in drills 12 inches apart, without a nurse crop, with seed of a strain of red clover which at Ottawa has shown a strong tendency to perennialism, to determine the productiveness of this clover and make further observations on its hardiness and perennial character.

The seed germinated well and made a good growth during the season. A few plants were in bloom at the end of the growing season.

CHEMISTRY

FERTILIZER EXPERIMENTS

Project 11.—In 1920 an experiment was commenced to test the effect of various fertilizers in a four years' rotation. Last year potatoes were grown as the first crop of the rotation. This year barley was sown as the second crop of the rotation. Plots 1, 2, 3 and 4 were divided this year, and one-half of each plot, and all of plots 31 and 32, were given an application of nitrate of soda, at the rate of 150 pounds per acre. Results obtained are as follow:—

No. of Plot	Amount of Fertilizers per acre applied in 1920	Amount of Fertilizers per acre applied in 1921	Yield per acre		Increased yield per acre over check plot	
			bush.	lb.	bush.	lb.
1 A.	Check plot	150 lbs. nitrate of soda	26	32	1	32
1 B.	Check plot		25			
2 A.	500 lbs. basic slag	150 lbs. nitrate of soda	28	16	1	32
2 B.	500 lbs. basic slag		26	32		
3 A.	750 lbs. basic slag	150 lbs. nitrate of soda	29	8	1	32
3 B.	750 lbs. basic slag		27	24		
4 A.	1,000 lbs. basic slag	150 lbs. nitrate of soda	30	40	2	24
4 B.	1,000 lb. basic slag		28	16		
5	Check plot		35			
6	3,000 lbs. quicklime		35	30	0	30
7	4,500 lbs. slaked lime		35	30	0	30
8	6,000 lbs. ground limestone		36	12	1	12
9	Check plot		35			
10	500 lbs. basic slag 3,000 lbs. quick lime		39	18	4	18
11	750 lbs. basic slag 3,000 lbs. quick lime		41	42	6	42
12	1,000 lbs. basic slag 3,000 lbs. quick lime		43	6	8	6
13	Check plot		37	24		
14	200 lbs. superphosphate 200 lbs. basic slag 200 lbs. basic slag		38	36	1	12
15	100 lbs. nitrate of soda 400 lbs. superphosphates 100 lbs. nitrate of soda		38	12	0	36
16	Check plot		39	18		
17	3,000 lbs. quicklime		45		5	30
18	4,500 lbs. slaked lime		45	30	6	12
19	6,000 lbs. ground limestone		43	6	3	36
20	Check plot		41			
21	500 lbs. basic slag 3,000 lbs. quicklime		41	24	0	24
22	750 lbs. basic slag		42	12	1	12
23	1,000 lbs. basic slag 3,000 lbs. quicklime		41	12	0	12
24	Check plot		35			
25	500 lbs. basic slag		35			
26	750 lbs. basic slag		35	30	0	30
27	1,000 lbs. basic slag		42	24	7	24
28	Check plot		29	18		
29	200 lbs. basic slag 200 lbs. superphosphates		30	41	1	23
30	100 lbs. nitrate of soda 400 lbs. superphosphates		33	12	3	12
31	100 lbs. nitrate of soda 200 lbs. superphosphates 200 lbs. basic slag 100 lbs. nitrate of soda 100 lbs. muriate of potash		36	42	7	24
32		150 lbs. nitrate of soda 1,000 lbs. quicklime 400 lbs. superphosphate 100 lbs. nitrate of soda	35	30	6	12
33		150 lbs. nitrate of soda 200 lbs. superphosphates 200 lbs. basic slag 100 lbs. nitrate of soda	36	12	6	42
34	100 lbs. muriate of potash 1,000 lbs. quicklime 400 lbs. superphosphates 100 lbs. nitrate of soda		31	42	1	24

The addition of 150 pounds of nitrate of soda per acre to barley plots in the second year of the rotation increased the yield in each plot where applied, but not sufficiently to pay for the cost of the nitrate. The beneficial effect of the nitrate might have been more marked had the rainfall been heavier in the growing season, as there was a rainfall of only 1.2 inches in the month of June.

Plots treated with fertilizers last year gave increased yields of barley this year as follow:—

Basic slag	500 pounds per acre.	Increased yield per acre,	40 pounds.	
"	750 " "	" " "	1 bush.	30 lb.
"	1,000 " "	" " "	5 "	20 "
Quicklime	3,000 " "	" " "	3 "	6 "
Slaked lime	4,500 " "	" " "	3 "	21 "
Ground lime stone	6,000 " "	" " "	2 "	24 "
A mixture of		Increased yield per acre.		
Basic slag	500 pounds per acre			
and				
Quicklime	3,000 " "	" " "	2 bush.	21 lb.
A mixture of				
Basic slag	750 pounds per acre			
and				
Quicklime	3,000 " "	Increased yield per acre,	4 bush.	3 lb.
A mixture of				
Basic slag	1,000 pounds per acre			
and				
Quicklime	3,000 " "	Increased yield per acre,	4 bush.	9 lb.
A mixture of				
Superphosphate	200 " "	Increased yield per acre.		
and				
Basic slag	200 " "	" " "		
and				
Nitrate of soda	100 " "	" " "	1 bush.	17 lb.
A mixture of				
Superphosphate	400 " "			
Nitrate of soda	100 " "	Increased yield per acre,	2 bush.	15 lb.

Without application of nitrate soda for barley crop

A mixture of				
Superphosphate	200 " "			
Basic slag	200 " "			
Nitrate of soda	100 " "			
Muriate of potash	100 " "	Increased yeild per acre,	6 bush.	42 lb.
Quicklime	1,000 " "			
Superphosphate	400 " "			
Nitrate of soda	100 " "	Increased yield per acre,	1 bush.	24 lb.

Plot No. 33, treated with a complete fertilizer consisting of superphosphate, basic slag, nitrate of soda, and muriate of potash, gave the highest yield of barley over check plot. The application of 1,000 pounds of basic slag per acre produced an average increased yield over check plot of 5 bushels 20 pounds barley per acre. Basic slag and quicklime applications also gave good results in the second year of the rotation. A dressing of 1,000 pounds basic slag, and 3,000 pounds quicklime per acre only gave an increased yield of 6 pounds of barley per acre, over plot with an application of 750 pounds basic slag and 3,000 pounds of quicklime.

The beneficial effects of the application of quick lime, and slaked lime were quite marked in the second year.

A fertilizer experiment was commenced this year to test the effect of fertilizers on a manured area, and on an area that had not been manured. The manured area was divided into plots of one-twentieth-acre, for a four year rotation, first year oats, peas and vetches, second year barley or oats, third year clover, fourth year mixed hay.

The area not manured was divided into one-tenth-acre plots, for a five-year rotation: first year, oats, peas and vetches; second year, barley or oats; third year, sweet clover, to be ploughed down for manure; fourth year, oats; fifth year, red clover. The following table gives the amounts of fertilizers used on each plot and the yields of oats, peas and vetches from each plot this year:—

ONE-TWENTIETH ACRE PLOTS

No. of Plot	Manure applied per acre	Amount of Fertilizers used per acre					Yield of O. P. V. per acre	
		Nitrate of Soda	Acid Phosph's.	Basic Slag	Muriate of Potash	Quick-lime		
	tons	lbs.	lbs.	lbs.	lbs.	lbs.	tons	lbs.
1A	15	330	.....	510	.....	.....	7	1,240
1B	15	220	.....	510	.....	.....	8	200
1C	15	110	.....	510	.....	.....	8	480
Check plot	15	.....	.....	.....	.....	.....	7	980
2A	15	165	.....	510	.....	.....	7	480
2B	15	110	.....	510	.....	.....	6	240
2C	15	55	.....	510	.....	.....	6	40
Check plot	15	.....	.....	.....	.....	.....	5	300
3A	15	330	.....	510	100	.....	8	400
3B	15	220	.....	510	100	.....	7	1,000
3C	15	110	.....	510	100	.....	6	400
Check plot	15	.....	.....	.....	.....	.....	5	360
4A	15	330	300	.....	.....	.....	7	840
4B	15	210	300	.....	.....	.....	6	280
4C	15	110	300	.....	.....	.....	4	1,400
Check plot	15	.....	.....	.....	.....	.....	4	1,200
5A	15	330	.....	765	.....	.....	9	
5B	15	220	.....	765	.....	.....	7	600
5C	15	110	.....	765	.....	.....	7	600
Check plot	15	.....	.....	.....	.....	.....	8	200
6A	15	330	450	.....	.....	.....	12	400
6B	15	220	450	.....	.....	.....	10	400
6C	15	110	450	.....	.....	.....	7	1,400
10A	15	.....	.....	.....	.....	3,000	9	600
10B	15	.....	.....	.....	.....	2,000	10	600

"NO MANURE SERIES" ONE-TENTH ACRE PLOTS

11A	165	.....	765	.....	.....	4	1,370
11B	165	.....	510	.....	.....	4	1,800
12A	165	450	.....	.....	.....	5	1,900
12B	165	300	.....	.....	.....	6	500
13A	165	.....	765	100	.....	5	1,150
13B	165	.....	510	100	.....	6	100
Check plot	.....	.....	.....	.....	.....	5	100
16A	165	.....	510	.....	2,000	6	1,600
16B	165	300	.....	.....	2,000	8	300
Check plot	.....	.....	.....	.....	.....	5	800
17A	165	.....	765	.....	.....	8	900
17B	165	.....	510	.....	.....	9	–
18A	165	450	.....	.....	.....	6	1,650
18B	165	300	.....	.....	.....	6	1,500
19A	165	.....	765	100	.....	8	400
19B	165	.....	510	100	.....	7	1,850
Check plot	.....	.....	.....	.....	.....	6	–
22A	165	.....	510	.....	2,000	8	1,650
22B	165	300	.....	.....	2,000	8	100

The highest yield in the manured series was obtained from plot 6A, with an application of 330 pounds nitrate of soda and 450 pounds acid phosphate. The limed plots in the manured series gave very high yields. The 1A series gave slightly higher yields than the 5A series with the heavier application of basic slag. This may be due to a difference in the depth of the soil, as this is newly broken soil. The heavier application of basic slag, in the 5A series, gave higher yields than the lighter dressings of basic slag with muriate of potash.

In the no-manure series the highest yield was obtained from an application of 165

pounds nitrate of soda, 300 pounds acid phosphate, and 2,000 pounds of quick lime, per acre. The addition of 100 pounds per acre of muriate of potash gave an increased yield of 1,763 pounds per acre, when applied with 165 pounds of nitrate of soda, and 765 pounds of basic slag per acre.

POULTRY

A commencement was made this year with poultry at this Station. One permanent poultry house as per Bulletin No. 87, 16 feet by 32 feet, was built to accommodate 100 hens and three portable colony houses, each 10 feet by 12 feet, were built for 25 hens each. All houses were double boarded on the outside, with a layer of building paper between. The outside boarding was dressed, matched spruce. The north, east, and west sides were double boarded with paper between. The south sides of the houses are composed of cotton, glass, and board. The cotton is at the top, the glass in the middle, and the bottom is boarded two feet high. The roof of each house is double pitched, and the lofts are filled with straw, which helps greatly in keeping the air dry and adds to the warmth of the houses. The floor of the permanent house is cement and the floors of the colony houses are made of two ply of lumber, with building paper between, the lower ply undressed and the upper dressed spruce. No dropping boards are used, and the roosts are hung on hinges, three feet from the floor, and can be swung up toward the roof during the day. Each pen is fitted with trap-nests, and a record is being kept of the egg production of all the stock. At the time of reporting the houses have been quite satisfactory, especially the permanent house. Twenty-seven Barred Plymouth Rock hens, and sixty-eight pullets were secured in October from the Lennoxville Experimental Station, and twenty Barred Rock pullets from the Poultry Division of the Experimental Farm, Ottawa. Twenty-five Barred Rock chickens were also raised here this year. The hens purchased from the Lennoxville Station have been trap-nested, and all have laid from 140 to 175 eggs during the year. The best of these hens will be used in the spring for breeding and should make very satisfactory foundation stock.

SKIM-MILK VERSUS BEEF SCRAP

Project 180.—An experiment was commenced on November 1 with Barred Rock pullets, which were divided into two lots of fifty each, and placed in the permanent poultry house. Both lots are being fed alike, with the exception that pen 1 is given 15 per cent beef scrap in dry mash, and water to drink, and pen 2 is fed on beef scrap, but all the sour skim milk they will drink. Both pens are fed a scratch feed of wheat, barley, and oats in the litter morning and evening, with all the dry mash, roots, and grit they care to eat. Up to the present, February, pen 2, fed on skim-milk, is giving the best egg production.

WATER FOWL

Five Pekin and three White Muscovy ducks, were secured from the Central Experimental Farm in September. These ducks were all fine specimens of their respective breeds, but the Muscovies apparently have not been hardy enough to withstand the winter weather here. Their feet got frozen late in November and they all died shortly afterwards. The Pekin ducks are all quite thrifty and vigorous. A trio of Toulouse geese also were secured in November, and these are in a good healthy condition, and should make good breeding stock.

BEES

Projects 7, 8 and 9.—Three colonies of Italian bees were placed in the cellar of the superintendent's house in November, 1920. Two survived the winter, and came out in fairly strong condition in the spring; the third colony, however, died from dysentery and lack of stores. The colonies were taken from the cellar and placed on hive stands in the bee yard on April 30. An outer case was put around each hive with a space of three inches between the hive and the case. This space was filled with planer shavings which gave protection to the colonies. The outside cases were left on all summer as a protection to the brood chamber. One colony was placed on scales and an accurate record was kept of the daily gain or loss in weight. Notes were taken daily on the weather to determine its effect on the honey flow.

The first nectar obtained in the season was from willows, wild strawberries, and Labrador tea. Alsike clover commenced to bloom on June 10, but there was no increase in the weight of the colonies until June 17. The greatest flow of nectar in June occurred on the 26th, when there was an increase in weight of the colony on scales of 13 pounds, and the greatest flow for the season occurred on July 1, when there was an increase in weight of 16 pounds for one colony recorded; this was at the height of the alsike clover bloom. Another heavy honey flow occurred from August 12 to 28, when fireweed was in full bloom. The honey from fireweed is very clear, and of fine flavour, and equal to that from alsike or white clover.

An effort will be made to make increase in the apiary from the colonies least inclined to swarm, thus improving the strain of bees kept. There was no swarming during the season, although preparations were quite persistent with one colony. The colonies were examined once a week and all queen cells were destroyed. Ample room and good ventilation were also provided. One colony was divided early in July and a new colony started, which built up quite strongly by the end of the season. A queen of select parentage, bred at Duck Island by the Dominion Apiarist, was introduced to this colony. Two new colonies were also started early in July, from two pound packages of bees. These colonies were also given queens bred at Duck Island.

During the season 400 pounds of honey were extracted.

The following is a statement of the honey production and returns for the season:—

Total weight of extracted honey	400 lbs.
Average weight produed per colony (spring count)	200 "
Selling price of extracted honey per pound (after deducting cost of containers)	24 cts.
Total value of honey produced	$96.00
Average value of honey produced per colony (spring count)	48.00

The colonies were left on their stands until November 5, when they were put into the cellar of the new office building, where a temperature of from forty to forty-five degrees is maintained.

EXHIBITS AND FALL FAIRS

An effort has been made to make an exhibit from this Station at a number of fall fairs throughout northern Ontario each fall. This year an exhibit was made at the fall fairs at Sault Ste. Marie, Bracebridge, and Huntsville. Some difficulty has been experienced in accommodating the number of fairs which we would like to attend, on account of two or more important fairs being held on the same date. The exhibit from this Station consisted of models of various kinds of buildings and equipment, and samples of the leading varieties of grain suitable for northern Ontario. Sheaves of grains, grasses, clovers, and alfalfa, were also exhibited.

The fair at Sault Ste. Marie was held on September 19, 20, 21 and 22. A rain on the 20th decreased the attendance slightly on that date, but the fair was favoured by good weather on the 21st and 22nd, and large crowds were in attendance. Ample space was allotted our exhibit immediately inside the entrance of the main Agricultural Hall. Visitors therefore had every opportunity to inspect the exhibit, and much interest was taken in the various models and in the grain and sheaves shown. The exhibit was in charge of the assistant to the superintendent, and many enquiries were made by farmers on general farm topics. City and townspeople were more interested in the models of poultry houses and equipment than in other exhibits, and many questions were discussed on poultry problems.

The Bracebridge Fair was held on September 22 and 23. As the first day of this fair was the same day as the last day of the Soo fair, it was impossible to take in the first day of former.

Ideal weather favoured the Bracebridge fair, and there was a good attendance the first day, a very large attendance the second. Good accommodation was provided for our exhibits in the main building, and as this was the first year that we had an exhibit at the fair, most of the people visited the exhibit a number of times.

The Huntsville fair was held on September 28 and 29, and was favoured by fine weather, on both days. A school fair was also held on the fair grounds the second day of the fair, which helped to make the attendance very large. This was the second year that an exhibit from this Station was shown at Huntsville. The exhibit in general was much appreciated, and the samples of grain, and sheaves of grain were of special interest, as the Huntsville district exhibitors have taken leading prizes at Toronto Exhibition in grain and sheaves.

BUILDINGS AND IMPROVEMENTS

In order to accommodate the ensilage crop this year it was necessary to build one new silo. The silo was built 35 feet high, of 2¼-inch matched spruce, and placed on a four-foot cement foundation 16 feet in diameter. A cone-shaped roof has been built over the silo.

An office building was also erected, 26 feet by 26 feet, with a cement basement, eight feet deep. The building was put up with studding, matched lumber, 16-ounce tar felt paper, and matched siding outside. The inside was finished with matched lumber, and building paper, covered by stripped beaverboard. The floor is British Columbia fir, over inch lumber. The floor, casings, and doors were oiled, and varnished, and the beaverboard was given two coats of paint. The building is heated by a pipeless furnace.

A description of the new poultry houses was given in the report on poultry. The piggery, the hen houses, and the new office building, were all given two coats of paint. A five-ton Fairbanks pit scale was set up this year, but no building has been erected over the scale at yet. Electric lights have been installed in a number of the farm buildings, and all the buildings will be wired shortly, so that the service will be available in all. We have at present the use of a voltage of 110 from the Spruce Falls company's plant.

EXPERIMENTAL STATION, LA FERME, QUE.

REPORT OF THE SUPERINTENDENT, PASCAL FORTIER

THE SEASON

The season of growth in northern Quebec, which covers a period of about five and one-half months, from May 1 to October 31, was warmer and drier than the average of the three previous years for the same period, with less hours of sunshine than the same period of last year, the figures being as follow:—Mean temperature, 54·8 and 52·33; rainfall, 18·14 and 20·10 inches; hours of sunshine, 1116·2 and 1287·5. Snow had completely disappeared by April 30. The first cultural operations were performed early in May and the first seed was sown on the 10th, a few days earlier than last year. The thermometer fell below freezing point on thirteen occasions during May (6° below being recorded on the 17th); also on June 4 and September 14. We had 101 frostless days from June 4 to September 14, 1921, as compared with 80 days in 1920, 73 days in 1919, and 59 days in 1918. The rainfall during May, June and July was sufficient to ensure vigorous growth. However, the fall was very wet, which hindered the harvesting of roots and prevented much fall ploughing. The first snowfall occurred on October 24, and that of early November remained, the ground being scarcely frozen.

METEOROLOGICAL REPORT, 1921-22

Month	Temperature, F.			Precipitation			Hours of Sunshine
	Mean	Maximum	Minimum	Rainfall	Snowfall	Total	
1921	Degrees	Degrees	Degrees	Inches	Inches	Inches	
April	35·8	81	−1	2·39	4·9	2·88	190·8
May	49·0	90	6	1·04	1·1	1·15	214·7
June	60·5	89	29	2·64	.....	2·64	281·1
July	69·8	99	43	2·31	.....	2·31	231·1
August	57·8	83	34	4·58	.....	4·58	194·5
September	53·1	85	31	5·6	.....	5·6	132·8
October	38·7	61	12	1·36	5·0	1·86	62·0
November	17·03	35	−8	1·01	23·0	3·31	47·5
December	8·9	39	−36	1·21	27·5	3·96	21·5
1922							
January	−0·76	30	−35	.....	20·0	2·0	83·5
February	2·0	34	−35	.....	25·0	2·5	102·7
March	19·4	48	−16	0·19	8·0	0·99	165·0
Totals	.....	.....	.....	22·33	114·5	33·78	1,727·2

LIVE STOCK

DAIRY CATTLE

The herd now comprises fifteen head of cattle. There are eight Holsteins and Ayrshires including two registered Ayrshire milch cows; five heifers of ages varying from a few days to twenty-two months, including one registered Ayrshire; and one registered Ayrshire bull.

The following table gives the records of the cows which, to date, have completed their lactation periods:—

RECORDS OF MILCH COWS FOR 1921-22

Name of cow	No. of cow	Date of calving	Duration of lactation	Total production of milk during lactation period	Average daily milk production	Value of milk at $3.20 per 100 lbs.	Quantity of grain consumed	Quantity of roots consumed	Quantity of ensilage consumed	Quantity of hay consumed	Pasture at $1. per month	Quantity of green feed consumed	Total feed cost	Feed cost of production per 100 lbs. of milk	Profit per 100 lbs. of milk over feed	Net profit between calvings (labour and manure omitted)
		1921	days													
Colombe de la Ferme	A. 5	April 13..	311	5,878	18.9	$188 09	1,305	493	5,245	13,343	3½	1,210	$ 83 87	$ 1 43	$ 1 77	$ 104 22
		1921														
Doucette	H. 1	May 22...	273	8,210	30.	262 74	1,424	618	7,375	1,969	3½	1,166	105 40	1 28	1 92	157 34
		1921														
Nellie	A. 2	Jan. 30...	384	9,969	25.7	319 00	2,432	1,329	12,115	3,355	3½	1,413	194 53	1 95	1 24	124 47

COST OF MILK PRODUCTION

Records are kept of the feed consumed and milk produced from the initial to the next calving. Three cows which completed their lactation gave an average of 8,019 pounds of milk, at an average cost of 127.93. The feed cost of production per 100 pounds of milk was $1.59. Feed prices are those prevailing in the region.

COST OF REARING HEIFERS

Project 2.—Feed is computed from birth until initial calving.

The following table gives figures relative to heifer rearing:—

Project 5

COST OF REARING HEIFERS

Name of heifer	Born	Age months	Feed computed up to	Pure milk	Skim-milk	Meal	Hay	Green feed	Ensilage	Roots	Pasture	Total Cost
Bella—9	June 24, 1920	20¼	Mar. 4, 1922.	180	937	780	1,655	458	4,782	408	5	$89 11
Anna—10	June 4, 1921	9	" "	680	2,020	369	696	.....	943	257	.....	50 45
Emma—11	May 16, 1921	9½	" "	681	2,021	369	696	.....	943	257	.....	50 48
Demeiges—12	May 8, 1921	9¾	" "	680	2,022	369	696	.....	943	257	.....	50 46

Whole and skim-milk are estimated at $3.20 and 35 cents per hundredweight respectively, and meal, hay, ensilage, roots and green feed at $33.30, $28.25, $10, $6.75 and $10 per ton respectively; pasture at 75 cents per month.

HORSES

There are nine draught and two carriage horses on this Station. No experiment with horses has been conducted, but cost of maintenance has been computed.

COST OF MAINTENANCE OF DRAUGHT HORSES

Project 3.—We have found that to feed a horse of an average weight of 1,500 pounds during 365 days, 6,753 pounds of hay, 5,767 pounds of oats, 913 pounds of bran and 365 pounds of litter straw are required (value of sawdust used is not estimated), and the cost is $211.70, or 58 cents per diem. Hay and straw are estimated at $28.25 and $10 per ton respectively, oats and bran at $1.74 and $1.58 per hundredweight.

SWINE

On March 4, there were on this Station four sows, one boar, six feeders and two other hogs about three months old, all of the Yorkshire breed. The four sows farrowed last spring and their combined litters comprised forty-six little pigs, of which thirty-eight were raised or sold for breeding purposes.

COST OF RAISING SWINE

We have recorded the food consumed from weaning up to an average weight of 188 pounds. The following table gives the feeds consumed and the cost of raising per 100 pounds live weight:—

12 hogs at $5 each (2 months)	$ 60.00
3,060 pounds skim-milk at 35 cents	10.71
7,224 " meal at $38.20 per ton	137.97
3,936 " roots at $6.75 per ton	13.25
Average weight before killing	188 lbs.
Total cost	$221.96
Feed cost per 100 pounds, live weight	9.84

The cost of raising could have been reduced by over 2 cents per pound with clover or rape pasture. Nevertheless, this cost price of $9.84 per 100 pounds illustrates once again that hog raising should be practised by all farmers. The hogs were sold to local butchers for 16 cents per pound, live weight.

BARLEY MEAL VS. CORN MEAL FOR HOG FATTENING

The object of this experiment is to compare barley meal with corn meal for hog fattening. The following table gives the details of the experiment:—

BARLEY MEAL VS. CORN MEAL FOR FATTENING SWINE

Number of Lot	1 Corn Meal	2 Barley Meal
Number of hogs in the lot	6	6
Total weight at beginning of fattening period	770·0 lbs.	764·0 lbs.
Total weight upon completion of fattening period	1,150·0 lbs.	1,107·0 lbs.
Total gain in 64 days	380·0 lbs.	343·0 lbs.
Average weight at beginning of fattening period	128·3 lbs.	127·3 lbs.
Average weight upon completion of fattening period	191·7 lbs.	184·5 lbs.
Average gain in 64 days	63·3 lbs.	57·2 lbs.
Average gain per hog and per diem	0·99 lb.	0·89 lb.
Total cost of food	$50 38	$47 28
Cost of feed per 100 lbs. of gain	$13 25	$13 78
QUANTITY OF FEED USED		
Lot No. 1. Grain ration. (One part each of ground oats, corn meal and shorts and one half part of oil-cake meal) at $40 per ton	2·261 lbs.	
Lot No. 2. Grain ration. (One part each of ground oats, barley meal and shorts and one half part of oil-cake meal) at $40 per ton	.....	2,116 lbs.
Roots at $6.75 per ton	1,530 lbs.	1,472 lbs.

This experiment shows that barley meal can advantageously replace corn meal. It must be noted that barley meal has been estimated at the same price as corn meal, which leaves a very reasonable margin of profit on barley production, and as the latter is practically equal in value to corn, farmers would be well advised to sow more barley. This experiment will be continued for a few years longer in order to confirm these results.

SHEEP

The Station flock comprises twenty-five ewes over a year old, eighteen yearling ewe lambs (cross-bred) and two pure-bred Cheviot rams.

IMPROVEMENTS OF THE FLOCK THROUGH THE PURE-BRED RAM

Project 50.—With the next generation we shall be in a position to state to what extent the flock has been improved. At the second generation, one can already note visible amelioration, but in the next report the complete result of this experiment will be given.

BREEDING OF EWE LAMBS

Project 5.—The object of this experiment is to determine the value of breeding ewe lambs to have them lamb when one year of age. Five ewe lambs were bred last fall and five more will be bred next fall, to lamb when two years old. The weight of the ewe lambs was recorded when six months old and will be noted at each succeeding season. The lambs will be weighed at birth and when six months old. The percentage of lambing will also be recorded. This experiment is not sufficiently advanced to permit the publication of the results at the present time.

BEST TIME FOR SELLING LAMBS

Project 51.—Twelve lambs were divided into two lots of equal weight. The first lot was fattened for the Christmas market and the second lot received a maintenance

ration up to February, when a grain ration was fed in preparation for the March market. The results are as follow:—

LAMB FEEDING EXPERIMENT

NUMBER OF LOT	1	2
Number of lambs in the lot	6	6
Total weight at beginning of fattening period	672 lbs.	669·0 lbs.
Total weight upon completion of fattening period	738 lbs.	735·0 lbs.
Total gain during period	66 lbs.	66·0 lbs.
Average weight at beginning of fattening period	112 lbs.	111·5 lbs.
Average weight upon completion of fattening period	123 lbs.	122·5 lbs.
Average gain per lamb	11 lbs.	11·0 lbs.
Total cost of feed	$11 80	$35 12
Cost of feed per 100 lbs. of gain	17 88	53 21
Value at 10c per lb. live weight	73 80	
Value at 11c per lb. live weight	.....	80 85
Profit of lot No. 1 over lot No. 2	16 27	
QUANTITY OF FOOD CONSUMED.		
Hay at $30 per ton	336 lbs.	1,524 lbs.
Ensilage at $5 per ton	378 lbs.	2,058 lbs.
Grain ration. (2 parts ground oats, 1 part corn meal, 1 part oil-cake meal) at $45.60 per ton	255 lbs.	312 lbs.

The results of this experiment show that it would be preferable to sell the lambs in the fall. The mutton market in this region is not very good, and we were unable to obtain the price that should have been secured for first quality meat. Prices for other meats are usually $2 to $3 per 100 pounds higher here, but it is quite the contrary for mutton.

FIELD HUSBANDRY

Last spring was most favourable for seeding. The first grain was sown on May 10, and seeding ended June 25. Rainfall during May, June, and July was sufficient to ensure rapid germination and growth, but as the fall was very wet, roots were harvested with great difficulty, and fall ploughing delayed.

The first ripe grain was cut on August 10; Marquis wheat, sown May 11, was cut on August 14, maturing in ninety-five days. An area of 25.6 acres was sown to Banner oats, which yielded an average of 32 bushels per acre. An area of 50.5 acres was also sown to oats, which failed to ripen and which were ensiled or used as forage. These oats had been sown on land stumped in the spring and which could not be prepared for sowing before June 20. The yield was nearly 4 tons of forage per acre. Five acres wer sown to Marquis wheat, which yielded 18 bushels per acre. The soil was black muck and nearly pure clay in equal parts. Operations were very difficult in this soil and yields suffered accordingly. However, a perceptible amelioration is noticed when humus is incorporated through manuring or ploughing under of sod. Barley and peas yielded 12½ and 17 bushels per acre. Owing to the wet weather, half of the peas germinated on the field and could not be harvested. Hay yielded nearly one ton per acre.

Four acres of sunflower, ten acres of peas, oats and vetches, and about ten acres of oats for ensilage were harvested. Sunflowers yielded 13 tons 1,290 pounds per acre; corn, 4 tons 1,416 pounds and P.O.V. mixture, 4 tons 921 pounds. Sunflowers did not suffer from the first frost of September 14, while corn was completely frozen. The comparative tests of sunflowers, corn, P.O.V. mixture and roots, to determine the value of each of these crops, will be continued.

A five-year rotation has been adopted on this Station, although it is not yet established all over the farm, owing to the lack of manure; first year, hoed crops; second year, grain; the three succeeding years, hay and pasture.

Next spring, an experiment to find the best method of maintaining soil fertility will be begun (1) A five-year rotation including the ploughing under of sweet clover followed by summer fallowing. (2) Another five-year rotation, including the ploughing under of sweet clover, followed by buckwheat, one-half to be ploughed under and the remainder to be cut for grain. With the above rotations will be compared a rotation including farm manure, one including chemical fertilizers, another, lime, and finally, for comparison with the preceding rotations, one with neither fertilizer nor manure.

CLEARING

Projects 6, 7 and 8.—An area of 75 acres was cleared last spring and the cost computed. To stump, pile, burn and prepare for ploughing, the cost was $1,779.20, or $23.72 per acre. It must be admitted, however, that the land was relatively easy to clear, fire having performed part of the work. Farmers may be advised to apply fire to the slash section by section, and with all due precautions, in order to have it perform as much of the work of clearing as possible. Fire partly consumes the stumps and roots, which are then easily pulled out with little or no animal traction. Over 50 acres of this land were sown to oats with timothy and clover seed, after the surface had been simply loosened with a disc harrow. The object of this operation is to conserve humus at the surface in order to obtain a good stand. When such clay soils are ploughed immediately after clearing, the very small quantity of humus contained is buried, and it is only after two or three seasons that a good crop can be grown. After two or three hay crops, the sod is thick enough to supply the humus required.

HORTICULTURE

The season was one of the best for horticulture in general. The last spring frost occurred on June 4, and the only crops injured were tomatoes and, slightly, beans. Artificial watering was necessary to supplement the insufficient rainfall.

FRUITS

APPLES

Project 17.—As there was no winter injury, growth of apple trees this season was the best since planting in 1917. Protection with straw of the foot of the trees to delay premature circulation of sap in the spring, and pinching of buds in late summer to ripen the wood, probably explain why the growth of the previous year was not destroyed.

SMALL FRUITS

Projects 18, 19 and 20.—Black, red and white currants have begun to bear, but not in sufficient quantity to warrant specific recording.

Black currants are the most resistant. Gooseberries (Project 21) do not seem very hardy.

VEGETABLES

BEANS

Project 24.—VARIETY TESTS—

This is the first year that results have been available since the inauguration of the bean tests. The beans suffered somewhat from frost, but not enough to affect comparison; yields are not very high yet.

BEANS—TEST OF VARIETIES

Varieties	Origin of seed	Number of days from sowing until ready to eat	Yield per acre
			lbs.
Refugee or 1000 to 1	Bruce	63	5,075
Extra Early Valentine	Rennie	74	4,930
Bountiful Green Bush	Gregory	63	4,205
Pencil Pod Black Wax	McDonald	62	2,465
Stringless Green Pod	Rennie	68	2,320
Wardwell's Kidney Wax	McDonald	62	2,320
Kentucky Wonder, Pole	Rennie	62	2,175
Davis Kidney Wax	McDonald	62	2,030
Hodson Long Pod	Rennie	72	1,885
Stringless Green Pod	Burpee	63	1,885
Masterpiece	O-589	66	1,450
Plentiful French	O-591	64	1,160
Round Pod Kidney Wax	McDonald	74	725
Hodson Wax Long Pod	Harris	66	290
French Asp. Pod	Simpson	65	290

HOW TO PROLONG THE SEASON—

The object of this experiment is to compare sowings of one variety at different dates with sowings of early, medium and late varieties. This year, results show that it is preferable to sow different varieties, which give a higher yield and pods of better quality.

BEETS

Project 25.—VARIETY TESTS—

Six varieties of table beets were tested this year, the results of which are given in the following table.

TABLE BEETS—TEST OF VARIETIES

Varieties	Origin of seed	Number of days from sowing until ready to eat	Yield per acre
			lbs.
Crosby Egyptian	Harris	117	24,360
Eclipse	McDonald	117	22,620
Detroit Dark Red	O-9520	117	21,460
Black Red Ball	O-245	113	13,920
Crimson Globe	McDonald	117	13,920
Black Red Ball	Burpee	117	12,180

Project 25a.—THINNING OF BEETS—

One-third of a 100-foot row was thinned to 2 inches, one-third to 3 inches, and the remainder to 4 inches. The row thinned to 2 inches, yielded 28,456 pounds per acre, that thinned to 3 inches, 22,176 pounds, and that to 4 inches, 12,672 pounds.

CABBAGE

Project 26.—VARIETY TESTS, CABBAGE—

Thirteen varieties of cabbage were tested. As no plant failed to grow, we recorded the yield of the whole row. The yield per acre is given in the following table.

CABBAGE—TEST OF VARIETIES

Varieties	Origin of seed	Number of days from sowing until ready to eat	Yield per acre
			lbs.
Fottler's Imp'd. Brunswick	Ewing	122	54,160
Flat Swedish	Lennox	122	53,434
Enkhuizen Glory	Ewing	122	39,204
Marblehead Mammoth	Ewing	132	35,429
Succession	Ewing	122	34,558
Kildonan	Steele	122	23,813
Ex. Amager Danish Ballhead	O-105-115	122	23,232
Danish Red Stonehead	Ewing	126	22,942
Jersey Wakefield	McDonald	139	21,490
Copenhagen Market	McDonald	106	18,005
Delicatesse	O-842	142	13,358
Wong Bok	Burpee	122	11,906
Pe-Tsai	Burpee	111	10,164

Project 26a.—PROTECTION OF CABBAGE—

The experiment was undertaken with two varieties, one row of each being protected with paper discs and the other being left unprotected. The following table gives the results:—

Varieties	Unprotected	Protected
	Yield per acre	
	lbs.	lbs.
Copenhagen Market	27,878	25,612
Early Jersey Wakefield	22,302	25,960

CAULIFLOWERS

Project 28.—PROTECTION OF CAULIFLOWERS—

Two 100-foot rows of each variety were sown and one row of each variety was protected with tar paper discs. The following table gives the results:—

Varieties	Unprotected	Protected
	Yield per acre	
	lbs.	lbs.
Early Snowball	16,726	17,598
Early Dwarf Erfurt	17,598	10,366

BRUSSELS SPROUTS

Project 52.—VARIETY TESTS, BRUSSELS SPROUTS—

Four varieties were tested and the results are given in the following table:—

Varieties	Origin of seed	Number of days from sowing until ready	Yield per acre
			lbs.
Dalkeith	McDonald	170	2,468
Dwarf Gem	Sutton	170	2,323
Paris Market	Ewing	170	1,742
Amager Market	Ewing	170	290

CITRON

Project 54.—Three varieties tested yielded a little over 200 pounds per acre. These plants are not well suited to the region.

SQUASH

Project 42.—VARIETY TESTS, SQUASH—

Three varieties were tested and the results are given in the following table:—

Varieties	Origin of seed	Number of days from sowing until ready to eat	Yield per acre
			lbs.
Hubbard	McDonald	122	10,143
Delicious	McDonald	122	4,991
Golden Hubbard	McDonald	122	4,025

PUMPKINS

Project 40.—VARIETY TESTS, PUMPKINS—

Three varieties were tested, in hills 9 feet apart each way. The results are given in the following table:—

Varieties	Origin of seed	Number of days from sowing until ready	Yield per acre
			lbs.
King of the Mammoths	McDonald	116	18,837
Large Connecticut Field	McDonald	116	10,143
Small Sugar	McDonald	116	10,143

CARROTS

Project 27.—VARIETY TESTS, CARROTS—

Six varieties were tested, the yields being as follows:—

Varieties	Origin of seed	Number of days from sowing until ready to eat	Yield per acre
			lbs.
Improved Nantes	D. & F.	126	30,740
Chantenay	McDonald	118	27,280
Hutchison	Gregory	119	22,040
Chantenay	O-246	117	24,940
Oxheart	Steele	119	22,040
Improved Danvers	D. & F.	118	12,760

Project 27a.—THINNING OF CARROTS.—

One-third of a 100-foot row was thinned to 1½ inches, one-third to 2 inches, and the remainder to 3 inches. The row thinned to 1½ inches yielded 9,504 pounds per acre, that thinned to 2 inches, 12,672 pounds, and that thinned to 3 inches, 10,560 pounds.

CELERY

Project 29.—Germination of the celery seed was very poor, and we did not obtain enough plants of each variety to make a test.

CORN

Project 30.—VARIETY TESTS, CORN——

Thirteen varieties were tested. Kloochman gave the highest yield and proved one of the earliest. Pickaninny is unquestionably the earliest and of great value in this region. Evergreen, Golden Bantam, Howling Mob and Whipple Early are much too late. The following table gives the yields per acre in pounds and the number of days from sowing to date when ears were ready to eat:—

TABLE CORN—TEST OF VARIETIES

Varieties	Origin of seed	Number of days from sowing until ready to eat	Yield per acre
			lbs.
Kloochman	896	95	5,082
Sweet Squaw	622-626	105	5,082
Early Fordhook	Burpee	116	4,356
Sweet Ottawa	866-869	95	3,872
Early Malcolm	846-856	105	3,146
Pickaninny	871-876	92	2,541
Extra Early Cory	McDonald	116	2,420
Early Mayflower	McDonald	105	2,178
Malakoff	Vaughan	116	2,178
Whipple Early	Harris	123	1,694
Howling Mob	Burpee	123	968
Golden Bantam	McDonald	123	726
Evergreen	McDonald	131	242

CUCUMBERS

Project 31.—VARIETY TESTS, CUCUMBERS—

Four varieties were tested and the results are given in the following table:—

Varieties	Origin of seed	Number of days from sowing until ready to eat	Yield per acre
			lbs.
Improved Long Green	Graham	99	4,840
Giant Pera	Graham	100	3,267
West India Gherkin	Burpee	113	1,815
Davis Perfect	Graham	97	964

LETTUCE

Project 32.—VARIETY TESTS, LETTUCE—

Seven varieties were tested in 30-foot rows, the plants being 15 inches apart in the row.

Varieties	Origin of seed	Number of days from sowing until ready to eat	Yield per acre
			lbs.
Improved Hanson	Ewing	53	49,948
New York	Bruce	61	48,206
Curled Simpson	Ewing	56	30,201
Iceberg	Ewing	56	29,620
Grand Rapids	O-232	53	26,716
Earliest Wayahead	D. & F	52	19,166
Salamander	McDonald	57	12,777

MUSK MELONS

Project 33.—VARIETY TESTS, MUSK MELONS—

Two varieties were tested without very much success, the season being too cold unless artificial protection is provided. Yields are given in the following table:—

Varieties	Origin of seed	Number of days from sowing until ready to eat	Yield per acre
			lbs.
Extra Early Hackensack	Burpee	129	483
Emerald Gem	Burpee	126	403

Onions

Project 35.—Variety Tests—

Eleven varieties were tested in 30-foot rows, the plants being 15 inches apart in the row, but they were severely injured by white maggots. Yields are given in the following table:—

Onions—Test of Varieties

Varieties	Origin of seed	Number of days from sowing until ready to eat	Yield per acre
			lbs.
Red Globe	Graham	134	2,904
Australian Brown	McDonald	134	2,904
Yellow Globe Danvers	O–49–54	134	2,323
Large Red Wethersfield	McDonald	134	2,323
Extra Early Flat Red	McDonald	134	2,323
Red Wethersfield	O–1–4	134	2,323
White Barletta	McDonald	134	2,323
Yellow Globe Danvers	Graham	134	2,323
White Globe	Graham		1,161
Prize Taker	Graham		1,161
Ailsa Craig	Graham		580

Project 35a.—Thinning of Onions—

One-third of a 100-foot row of each variety was thinned to 1 inch, one-third to 2 inches and the remainder to 3 inches. The results are given in the following table:—

Varieties	Thinned to 1 in.	Thinned to 2 in.	Thinned to 3 in.
	Yield per acre	Yield per acre	Yield per acre
	lbs.	lbs.	lbs.
Large Red Wethersfield	9,408	4,182	3,135
Early Flat Red	8,362	5,226	5,181
Yellow Globe Danvers	6,181	3,136	2,090

Project 35b.—Sowing, Transplanting or use of Onion Sets to obtain early, abundant crops

The onion sets gave by far the earliest crop. Yields are given in the following table:—

Varieties	Onion seed sown	Onions planted	Onion sets planted
	Yield per acre	Yield per acre	Yield per acre
	lbs.	lbs.	lbs.
Large Red Wethersfield	5,575	3,832	
Early Flat Red	6,589	4,878	4,529
Yellow Globe Danvers	3,802	6,620	4,529

PARSLEY

Project 36.—VARIETY TESTS—

Two varieties were tested and the yields are given in the following table:—

Varieties	Origin of seed	Number of days from sowing until ready to eat	Yield per acre
			lbs.
Triple Curled	Ewing	138	9,293
Cham. Moss Curled	Ewing	138	3,485

PARSNIPS

Project 37.—THINNING OF PARSNIPS—

The Hollow Crown variety was used for this experiment. One-third of a 100-foot row was thinned to 2 inches, one third to 3 inches, and the remainder to 4 inches. The row thinned to 2 inches yielded 13,075 pounds per acre, that thinned to 3 inches, 10,460 pounds, and that thinned to 4 inches, 5,753 pounds.

PEAS

Project 38.—VARIETY TESTS—

Peas did not succeed this year, owing to an early June drought. The results are given in the following table:—

GARDEN PEAS—TEST OF VARIETIES

Varieties	Origin of seed	Number of days from sowing until ready to eat	Yield per acre
			lbs.
Reliance	Steele	59	5,082
Dandy Stratagem	Carter	58	3,872
Pioneer	Gregory	59	3,872
Laxtonian	Graham	59	3,388
Thomas Laxton	McDonald	62	2,904
Sutton's Excelsior	Harris	59	2,904
Little Marvel	Graham	59	2,420
American Wonder	Carter	60	2,278
Gradus	Carter	62	1,452
McLean's Advancer	O-8927	60	1,452
Gregory Surprise	Gregory	60	1,210
English Wonder	O-8929	59	1,210
Carter's Eight Weeks		59	484

Project 38a.—How to Prolong the season for the Production of Green Peas—

The object of this experiment is to compare the crops of a variety sown at intervals of one week during four consecutive weeks with the crops of early, medium and late varieties. Owing to the drought, yields are not very high. On the plot for harvesting in a ripe condition, a large proportion of the peas failed to ripen because the season was too short. The results are given in the following table:—

Varieties	Date sown	Yield per acre (green)	Yield per acre (ripe)
		lbs.	lbs.
Stratagem	May 12	4,442	348
McLean's Advancer	" 12	6,272	610
Gradus	" 12	2,700	610
Thomas Laxton	" 12	2,265	522
Thomas Laxton	" 20	2,875	348
Thomas Laxton	" 27	4,617	348
Thomas Laxton	June 2	4,792	522

PEPPERS

Project 39.—Peppers have been frosted each year before maturing. We have grown peppers in the past by protecting them artificially.

SALSIFY

Project 41.—Variety Tests—

Long white was the only variety tested and it yielded 3,190 pounds per acre.

TOMATOES

Project 55.—We picked a few ripe tomatoes but it is impossible to give the yields as certain varieties suffered more from the frost than others.

BROAD BEANS

Project 56.—Variety Tests—

The results are given in the following table:—

Varieties	Number of days from sowing until ready to eat	Yield per acre
		lbs.
Long Pod Green	136	10,554
Taylor's Windsor	136	9,293
Beck's Green Gem	136	6,389
Long Pod Conqueror Sharpe	136	5,808
Long Pod Seville	136	5,227
Green Giant	136	5,227
Dwarf Fan bog or Chester	136	4,066
Long Pod Johnson Wonder	136	3,485
Long Pod Aquadulce	136	2,904
Windsor Common	136	2,904
Early Mazagan	136	2,614
Windsor Giant Four Seeded	136	2,614
Long Pod Early	.....	4,937
Windsor Harlington Green	.....	3,194
Windsor Harlington	.....	2,614

EGG-PLANT

Project 57.—One variety was tested, but the season is too cold for these plants.

RADISH

Project 58.—VARIETY TESTS—

Varieties	Origin of seed	Number of days from sowing until ready	Yield per acre
			lb.
Early Scarlet Turnip	D. & F.	45	7,550
Icicle	D. & F.	45	7,550
Scarlet White Tipped	Lennox	45	5,388

SPINACH

Project 59.—VARIETY TESTS—

Two varieties were tested and the results are given in the following table:—

Varieties	Origin of seed	Number of days from sowing until ready to eat	Yield per acre
			lbs.
Victoria	McDonald	50	8,131
New Zealand	McDonald	50	3,485

POULTRY

A flock of Barred Plymouth Rocks is kept on this Station. The poultry work is now being organized and no experiment has been conducted, this year. Fifty pullets from the selected flock at the Lennoxville Experimental Station have been received and pedigree records of these birds will be kept. We have also received four cocks from the Cap Rouge Experimental Station.

It is interesting to note that the fifty Lennoxville pullets, from a selected flock, laid an average of 28 eggs in November, December, January and February, whilst pullets from an unselected flock (bought from a dealer) laid an average of 12.25 eggs only, in the same period.

It has been decided to build another log hen-house to accomodate 100 hens and four colonies in order to increase the flock.

EXTENSION AND PUBLICITY

The station had an exhibit at the Amos exhibition, comprising models of hen-houses, trap-nests, root cellars, hoppers, etc., as well as grain, threshed and in the sheaf, samples of corn, sunflower and P.O.V. mixture ensilage, and vegetables.

The exhibit drew wide attention and many requests for information were received.