DOMINION OF CANADA
DEPARTMENT OF AGRICULTURE
DOMINION EXPERIMENTAL FARMS

EXPERIMENTAL STATION

LA FERME, P.Q.

REPORT OF THE SUPERINTENDENT

PASCAL FORTIER

FOR THE YEAR 1929

Published by Authority of the Hon. Robert Weir, Minister of Agriculture,
Ottawa, 1931

TABLE OF CONTENTS

EXPERIMENTAL STATION, LA FERME, P.Q.

REPORT OF THE SUPERINTENDENT, PASCAL FORTIER

THE SEASON

The winter of 1929 was not quite so severe as that of 1928. There was little snow during the first months, and on January 1 the roads were still open to motor vehicles in Abitibi and the ground was frozen to a considerable depth. From then on, snow was more plentiful and covered the ground until late in the spring. From the beginning of April the temperature was seasonable, as compared with the average of the last twelve years. In April the temperature was 0·92 degrees higher than the average, in May 1·75 degrees lower, and in June 1·80 degrees higher. During the other months of the growing season, the variations were still smaller than the above.

During the period beginning May 1 and extending until October 31, the precipitation was 3·54 inches higher than the average of the last twelve years. There were 25·7 hours of sunshine less than the average recorded during a nine-year period.

METEOROLOGICAL RECORDS AT LA FERME, QUE., 1929

Month	Temperature (F.)						Precipitation				Sunshine	
	Mean		Maximum		Minimum		Rain	Snow	Total precipitation		1929	Average 9 years
	1929	Average 12 years	Highest	Mean maximum	Lowest	Mean minimum			1929	Average 12 years		
	°	°	°	°	°	°	in.	in.	in.	in.	hours	hours
January	−6·38	−2·76	25	30·2	−48	−41·8	.....	22·5	2·25	1·86	96·5	91·8
February	−1·04	1·71	33	36·9	−37	−36·6	.....	5·5	0·55	1·37	119·8	107·6
March	14·99	16·52	44	48·6	−28	−24·8	0·47	10·5	1·52	1·85	139·8	139·9
April	31·76	30·84	56	62·9	− 8	− 4·0	0·96	6·0	1·56	2·41	180·9	165·9
May	44·12	45·87	88	79·3	15	16·0	3·94	5·0	4·44	2·45	211·0	201·0
June	57·14	55·37	85	84·8	28	28·0	4·49	.....	4·49	3·20	210·8	241·3
July	61·43	61·80	86	84·9	31	35·2	2·97	.....	2·97	4·11	271·3	237·4
August	58·14	59·11	81	82·3	36	35·0	2·75	.....	2·75	4·03	187·9	210·2
September	50·91	50·19	81	76·2	28	27·5	5·45	.....	5·45	4·07	133·1	135·2
October	37·92	38·57	57	65·0	18	13·5	3·93	.....	3·93	2·95	68·4	81·7
November	22·91	23·83	59	48·1	−22	−11·0	1·37	18·0	3·17	2·07	41·1	45·4
December	2·53	8·03	29	37·4	−31	−31·0	.....	18·5	1·85	2·41	41·0	42·8
Totals	.....	.....	.....	.....	.....	.....	26·33	86·0	34·93	29·11	1,701·6	1,694·4

EVAPORATION OF WATER COMPARED WITH PRECIPITATION

Observations on the amount of water evaporated and the variation between precipitation and evaporation were made during the period of active growth (June, July, August and September).

Measurements are made at regular intervals of the level of the water in a vat, which has first been filled up to four inches from the top. The variations above or below that point are carefully noted at each reading and the level of the water in the vat is brought down to standard level. In order that this experiment may be conducted under conditions as near normal as possible, this vat is sunk in the soil, so that the top is only four inches above the surface of the soil, and furthermore care is taken to keep the grass mown a few inches above the ground around the vat, so as not to lessen the influence of the wind on evaporation.

The three main lines of work with dairy cattle at this station are as follows: the improvement of the herd by testing and grading by means of a good Ayrshire bull; the cost of milk production and the cost of rearing heifers until calving time.

IMPROVEMENT OF THE HERD BY FEEDING AND SELECTION

In 1928, the average milk production of the 25 best cows in 275 days showed an increase of 1,906 pounds of milk per head, as compared with the 1926 production, which represented the average production of the fifteen best cows. During the last milking period covering an average of 306 days, 15 cows also completed their lactation period and the increase per head, as compared with 1926, was 2,243 pounds of milk. This increase might have been larger, had it not been necessary to eliminate several cows which reacted to the blood agglutination test, this test being used to discover the carriers of the germ of contagious abortion. This increase of 2,243 pounds of milk per cow shows clearly the influence of good feed in addition to cow testing, which enables one to make an intelligent selection of the best cows.

It should be noted here that during this period of improvement, not a single cow or heifer was purchased. Only bulls were introduced in the herd from outside sources, and only when there would have been a danger of in-breeding if the old bulls had been kept.

COST OF PRODUCTION OF MILK AND BUTTER FAT

A careful record is taken of the feed consumed by each cow during the lactation period as well as during the period of rest preceding calving. The milk of each cow is weighed morning and night and it is tested twice a month to determine the percentage of fat.

The cost of feed is based on the cost of production of hay in the district and on the average prices quoted by local trade for those concentrates that are sold in the locality. A few details are given herewith on the method of feeding.

Summer Feeding.—Dry cows and heifers are kept on rather remote pastures and burnt lands. Cows in milk are kept on pastures of better quality, nearer to the buildings, but as these pastures are rather limited, they must be supplemented early by green feed from clover or from O.P.V. Cows in milk also receive a small quantity of concentrates in varying quantity, according to the quantity of milk produced and the condition of the pastures. A cow giving 25 pounds of milk per day generally receives 3 pounds of concentrates. The quantity is increased for very heavy milkers and for those giving very rich milk.

Winter Feeding.—The basal ration includes clover hay, and O.P.V. and sunflower silage. The amount of hay fed varies from one to two pounds per hundred pounds live weight, that of silage is generally about 3 pounds per 100 pounds live weight.

Dry cows as well as heifers in good condition do not generally receive any concentrates, but cows in milk receive one pound of concentrates for 3 or 4 pounds of milk produced; the higher proportion is generally given to heavy milkers and to cows giving very rich milk.

The cows are fed twice a day during the winter, morning and evening. Therefore the total ration of the day is divided in two meals. They also receive salt every day and fresh water is always available, and they are groomed every day. During the year, fifteen cows kept under these conditions, completed a lactation period.

The details recorded during this period as well as the average for a ten-year period are given in the following table:—

Records of Cows Having Completed a Period of Lactation in 1929

Name of cow	Age at beginning of the lactation	Date of calving	Number of days in period of lactation	Total production of milk	Average daily milk production	Per cent of fat	Pounds of fat produced during the period	Value of fat at 40 cts. per pound	Value of skim-milk at 30 cts. per 100 lb.	Total value of product	Meal at $44.24 per ton	Roots at $2.50 per ton	Hay at $13.00 per ton	Green fodder at $2.50 per ton	Silage at $5.00 per ton	Pasture at $1.00 per month	Total cost of feed	Cost of 100 pounds of milk	Cost of production of 1 pound of fat (skim-milk neglected)	Profit on one pound of fat (skim-milk neglected)	Profit per cow (manual labour and calf neglected)
	yrs.		days	lb.	lb.			$	$	$	lb.	lb.	lb.	lb.	lb.	mos.	$	$	$	cents.	$
Fauvette	6·7	21- 4-29	253	6,234	24·64	3·7	230·67	92 27	18 01	110 28	2,452	735	2,921	.....	7,610	3·0	96 18	1 54	·417	—1·7	14 11
Lily	9·6	29-10-28	281	7,860	27·97	4·2	330·12	132 05	22 59	154 64	2,452	.....	2,340	1,440	7,768	2·0	92 67	1 18	·280	12·0	61 97
Primrose of Ottawa	8·0	1- 6-28	235	5,263	22·39	4·0	210 52	84 21	15 16	99 37	1,531	.....	1,578	2,590	7,040	3·5	68 47	1 30	·325	7·5	30 90
Pauline C	7·7	5- 1-29	329	7,410	22·52	4·0	296·40	118 56	21 34	139 90	2,459	630	3,282	390	8,450	3·0	101 13	1 36	·341	5·9	38 77
Glista	9·1	2- 4-28	344	11,226	32·63	3·4	381 66	152 67	32 53	185 20	2 972	.....	2,380	2,590	10,240	3·5	113 55	1 01	·298	10·2	71 65
Pansy	5·6	21-12-28	302	5,773	19·11	4·4	254·01	101 60	16 56	118 16	1,960	247	2,667	.....	7,860	3·0	83 66	1 45	·329	7·1	34 50
Primrose of Ottawa 2nd	5·6	11- 1-29	305	6,957	22·81	4·0	278·28	111 31	20 04	131 35	2,274	525	2,852	.....	7,685	3·0	91 71	1 32	329	7·1	39 14
Dora	2·0	19- 1-29	312	5,776	18·51	4·1	236·82	94 73	16 62	111 35	1,819	525	2,154	.....	5,725	3·0	72 21	1 25	·304	9·6	40 47
Delicia	1·11	10- 3-29	285	4,248	14·91	4·3	182·66	73 06	12 20	85 26	1,368	525	1,626	.....	3,955	3·0	54 38	1 28	·297	10·3	30 88
Jumelle	10·0	12- 3-29	263	7,150	27·18	3·9	278·85	111 54	20 61	132 15	2,786	735	3,070	.....	8,165	3·0	105 92	1 48	·379	2·1	26 23
Mignonne	5·5	1-10-28	375	5,274	14·06	3·8	200·41	80 16	15 22	95 38	1,668	160	2,612	.....	7,840	3·0	76 68	1 45	·382	1·8	18 70
Aurora	4·8	8- 1-29	308	6,602	21·73	4·1	274·37	109 75	19 25	129 00	2,009	525	2,745	.....	7,830	3·0	85 52	1 28	·312	8·8	43 48
Rosette	4·4	8- 6-28	538	11,183	20·78	4·2	469·64	187 85	32 14	219 99	3,106	525	3,715	2,590	9,675	6·5	127 44	1 14	·271	12·9	92 55
Dina	2·4	26- 9-28	314	4,653	14·82	4·3	200·08	80 03	13 36	93 39	1,353	.....	2,125	300	7,098	2·0	63 87	1 37	·319	8·1	29 52
Belle	7·11	24- 5-28	264	6,183	23·42	4·1	253·50	101 40	17 79	119 19	1,598	.....	1,724	2,590	7,375	3·5	71 74	1 16	·283	11·7	47 45
Total	.....	.....	4,708	101,882	324·57	.....	4,077·99	1,631 19	293 42	1,924 61	31,807	5,132	37,791	12,490	114,316	48·0	1305 13	.....	.....	.....	620 32
Average for 15 cows	.....	.....	313·9	6,792·1	21·64	4·0	271·87	108 73	19 56	128 31	2,120·4	342·1	2,519.4	832·6	7,621.1	3·20	87 01	1 28	·324	7·6	41 30
Ten-year average	.....	.....	306·8	6,759·5	21·17	3·9	255·19	106 63	18 83	125 47	1,697·7	417·4	2,234.4	1,639.0	7,276.5	3·60	89 11	1 30	·280	13·8	81 66

COST OF RAISING ONE PIG FROM BIRTH UNTIL READY FOR SLAUGHTERING

27 pigs at weaning age at $5.04		$ 136 08
Feed—		
17,827 pounds mixed grains at $42.52		379 00
16,222 pounds milk at 30 cents per 100 pounds		48 67
612 pounds charcoal, bone and salt		6 12
27 pigs ready for slaughtering		$ 569 87
Cost of 1 pig ready for slaughtering		21 11
Weight of 27 pigs ready for slaughtering	5,742 pounds	
Weight of 27 pigs at weaning age	675·5 "	
Gain during the fattening period	5,066·5 "	

COST OF RAISING ONE SOW UNTIL BREEDING AGE

4 sows at $5.04 at 2 months of age		$ 20 16
Feed—		
2,405 pounds at $40.84 per ton		49 11
80 pounds tankage at $62.96 per ton		2 52
2,419 pounds skim-milk at 30 cents per 100 pounds		7 26
668 pounds clover hay at $13.00 per ton		4 34
Cost for 4 sows		$ 83 39
Cost for 1 sow		20 85

SHEEP

On December 31, 1929, the flock of Cheviot sheep kept at this station included 61 head as follows: 37 ewes, 14 ewe-lambs, 9 lambs, 1 mature ram, all registered. The lambs born in the spring were weighed at birth; the average weight per head was 8·2 pounds. There were only seven pairs of twins out of 37 ewes that lambed.

The work done in this department includes the selection of breeders in order to develop a high-grade flock, including only the best and most typical individuals. In order to facilitate such selection, the wool from each sheep is weighed and shipped to the Canadian Co-operative Wool Growers' Association, at Lennoxville, where each fleece is weighed and graded by experts; by this means, sheep giving the largest quantity of wool of good quality are known. The average weight of fleece from the flock was 5½ pounds.

FIELD HUSBANDRY

SEEDING

The snow disappeared a few days earlier than in 1928; seeding on the fields was started on May 15 and continued in a fairly regular manner. However, conditions would have been better had the soil been drier and warmer.

GROWTH

The germination was slow, especially that of barley, owing to the damp and cold soil. Growth of cereals in general was delayed as well as that of hoed crops. Hoeing and weeding operations were performed under trying conditions. However, the growth of hay was fairly rapid. From the 15th of June on, there was a marvellous growth of clover on young meadows which did not appear to suffer as much from the excessive humidity of the soil as the older meadows and the other crops. It should be noted that the precipitation recorded from May to October inclusive was 3·54 inches higher than the average of the last twelve years.

HARVEST

The hay crop was harvested under good conditions; it was completed on the last day of June. The harvesting of cereals was started at the beginning of September, as well as that of O.P.V. and sunflowers. On the whole, the yields of the various crops were fair.

COST OF PRODUCTION OF CROPS

An exact record is kept of the cost of the operations involved in the production of the main field crops which may be grown in the Abitibi, so as to supply the farmers of the district information which may help them in the choice of crops. The items upon which this cost of production is based are given in the following table:—

COST VALUES IN 1929

Rent and taxes per acre	$4 50	Vetches, per bushel	$4 25
Use of machinery	2 85	Peas, per bushel	3 50
Manure, per ton	1 50	Oats for green feed	1 25
Threshing, oats	0 08	Rye	2 25
Threshing, barley	0 10	Sunflowers, per pound	0 12
Threshing, wheat	0 12	Corn, per pound	0 05
Ensilage, per ton	0 70	Swedes, per pound	0 75
Manual labour, per hour	0 30	Beets, per pound	0 50
Horse labour, per hour	0 10	Timothy, per pound	0 13
Seed—		Red clover, per pound	0 36
Potatoes, per bushel	0 72	Alsike clover, per pound	0 35
Wheat, per bushel	2 00	White clover, per pound	0 60
Barley, per bushel	1 60	Grimm alfalfa per pound	0 50
Oats, per bushel	1 60	Twine, per pound	0 13·5

The cost of manure, which was computed at $2 per ton in the past years, has been reduced to $1.50, which appears to be in better relation to present conditions.

In this study on the cost of production, the cost of manure was distributed among the different crops produced in the rotations in the fairest possible manner. This distribution is based on the probable percentage of utilization of the fertilizers by the various crops after the manure is applied. Of course, such percentage decreases as the crops succeed one another. This distribution is shown in detail for various rotations in the following table:—

——	—	Per cent of manure charged to each year in different rotations
		p.c.
Three-year rotation	1st year	50
	2nd "	30
	3rd "	20
Four-year rotation	1st "	40
	2nd "	30
	3rd "	20
	4th "	10
Five-year rotation	1st "	40
	2nd "	25
	3rd "	20
	4th "	10
	5th "	5
Six-year rotation	1st "	40
	2nd "	25
	3rd "	20
	4th "	10
	5th "	5
	6th "	0

Per cent of mixed chemical fertilizers applied to each year of the rotation—

1st year	55 per cent
2nd "	30 "
3rd "	10 "
4th "	5 "

Per cent of nitrate of soda or sulphate of ammonia applied to each year of the rotation—

1st year	80 per cent
2nd "	20 "

MARKET VALUE OF CROPS

In the valuation of the crops, the prices prevailing in the locality were used. The price of straw is based on the price of hay and the same is done for ensilage and roots. This price is also based on the dry matter content of the various products.

Return Values

Potatoes, per bushel	$1 60
Wheat, per bushel	1 00
Barley, per bushel	0 90
Hay, per ton	14 00
Oats and barley straw	6 00
Wheat and rye straw	3 00
O.P.V. silage (oats, peas and vetches), per ton	5 00
Sunflowers, per ton	4 00
Corn	4 00
Swedes	2 33

COST OF PRODUCTION OF HAY

The hay crop was more plentiful on this station than in the surrounding district, where there are too many old meadows which should be renewed oftener.

The first year hay contained a very large proportion of clover. The mixture of grasses used for seeding included the following species and quantities: timothy, 10 pounds; red clover, 8 pounds; alsike clover, 4 pounds. The total cost of seed is divided by the number of years in meadow, and charged proportionately to each year. The amount charged for manure represents the average share of the third and fourth years of a quantity of 16 tons of farm manure applied to a four-year rotation.

Again this year (1929) the hay crop has proven to be the most profitable of all fodder crops and the cost per food unit has been the lowest of all; it deserves, therefore, a greater attention on the part of the farmers of the district. As clover predominates in all meadows, the soil is greatly benefited and an excellent forage is obtained, highly suitable for dairy cattle. The results obtained in 1929 as well as the average of four years are shown in the following table:—

Cost of Production of Hay per Acre

Items		1929	Four-year average
		$	$
Rent and taxes	$	4 50	4 50
Manure	$	3 60	3 60
Seed	$	2 79	2 25
Use of machinery	$	2 85	2 85
Labour	$	2 83	3 69
Horse labour	$	0 74	1 38
Total cost per acre	$	17 31	17 72
Yield per acre	tons	2·14	1·76
Total value per acre	$	29 96	29 54
Profit per acre	$	12 65	11 56
Cost of production per ton	$	8 09	8 98

COST OF PRODUCTION OF OATS, PEAS AND VETCH MIXTURE

This mixture still gives a satisfactory yield and is one of the main crops of the district. It makes an excellent feed for dairy cattle and young cattle. Next to the hay crop, it gives the largest quantity of dry matter and protein per acre. At the La Ferme Experimental Station it is looked upon as the main source of succulent fodder to be consumed as green fodder; it may also be made into good dry hay.

This crop is especially suitable on newly cleared land, and for the first year of the rotation, where manure is generally applied. The value of the crop is computed from the percentage of dry matter it contains and from the price of hay. With the 1929 crop, 280 pounds equalled 100 pounds of hay, and as hay was valued at $14 per ton, O.P.V. fodder was valued at $5 per ton. The amount charged for manuring is the first year share of a quantity of 16 tons of manure applied to a four-year rotation. The amount of seed used included 2 bushels of oats, ¾ bushel of peas, and ¼ bushel of vetches. The cost of production of one acre of O.P.V. fodder is shown in the following table:—

COST OF PRODUCTION OF ONE ACRE OF OATS, PEAS AND VETCH FODDER

Item		1929	Four-year average
Rent and taxes	$	4 50	4 50
Manure and limestone	$	11 63	12 50
Seed	$	6 18	5 91
Use of machinery	$	2 85	2 85
Manual labour	$	5 76	5 18
Horse labour	$	3 44	2 69
Total cost per acre	$	34 36	33 63
Yield per acre	tons	6·97	5·48
Total value per acre	$	34 85	27 84
Profit or loss per acre	$	+0 49	−5 63
Cost of production per acre	$	4 78	6 13

COST OF PRODUCTION OF SUNFLOWERS

This year again, sunflowers have proved to be inferior to the mixture of O.P.V. as a source of succulent feed. This appears to be due to the higher requirements of plant food by this plant, and also to the excess of rain during last year.

On account of the low percentage of dry matter contained in this crop, 350 pounds of sunflowers were considered as the equivalent of 100 pounds of hay. As the value of hay was $14 per ton, sunflowers were valued at $4 per ton. The results for the year with the average for a four-year period are given in the following table:—

COST OF PRODUCTION OF ONE ACRE OF SUNFLOWERS

Item		1929	Four-year average
Rent and taxes	$	4 50	4 50
Manure	$	9 60	12 00
Seed	$	1 20	1 15
Use of machinery	$	2 85	2 85
Manual labour	$	14 40	12 34
Horse labour	$	4 20	3 62
Total cost per acre	$	36 75	36 46
Yield per acre	tons	4·96	2·79
Total value of crop per acre	$	19 84	11 58
Profit or loss per acre	$	−16 91	−24 88
Cost of production per ton	$	7 41	13 07

COST OF PRODUCTION OF SPRING WHEAT

The yield of wheat was not as high as it should have been, mainly on account of the heavy soil, the excessive rain and the lack of available plant food at the beginning of the growing season.

The amount charged for manure represents the second year share of a quantity of 16 tons and the fifth year share of a quantity of 8 tons applied to a six-year rotation. It includes, furthermore, a share of an application of two tons of ground limestone, the cost of which was equally distributed between the various years of the rotation. The results obtained this year as well as for the four-year average are shown in the following table:—

COST OF PRODUCTION OF AN ACRE OF SPRING WHEAT

Item		1929	Four-year average
Rent and taxes	$	4 50	4 50
Manure and limestone	$	7 95	10 19
Seed	$	3 00	3 47
Use of machinery	$	2 85	2 85
Twine	$	0 27	0 29
Manual labour	$	4 65	4 12
Horse labour	$	3 20	2 62
Threshing	$	1 11	1 44
Total cost per acre	$	27 53	29 48
Yield per acre (grain)	bush.	9·3	13·6
Yield per acre (straw)	tons	0·27	0·67
Value per acre (grain)	$	13 98	17 17
Value per acre (straw)	$	0 81	2 27
Total value	$	14 79	19 44
Loss per acre	$	−12 74	−10 04
Cost per bushel, value of straw deducted from the total cost	$	2 87	2 00

COST OF PRODUCTION OF BARLEY

Of the three cereals, wheat, oats and barley, the latter is the most easily affected by unfavourable climate conditions. The yields were greatly affected by excessive rainfall during the last few years. At heading time, if the weather is wet and cold, the crop generally turns yellow and remains yellow, sometimes for a week or longer, if the weather keeps cold. This change of colour is attributed to the lack of nitrates, the form under which the nitrogenous fertilizers are absorbed by the plants.

It is hoped that higher yields may be obtained in years with normal precipitation. However, there are also other causes for these low yields, which are mentioned in the part dealing with wheat culture.

The amount charged for manure represents the second year share of a quantity of 16 tons of manure applied to a four-year rotation.

The average for the last season as well as for the last four years are shown in the following table:—

COST OF PRODUCTION OF AN ACRE OF BARLEY

Item		1929	Four-year average
Rent and taxes	$	4 50	4 50
Manure	$	7 20	9 00
Seed	$	4 35	4 71
Use of machinery	$	2 85	2 85
Twine	$	0 22	0 30
Manual labour	$	5 02	4 99
Horse labour	$	3 27	3 25
Threshing	$	1 09	1 30
Total cost per acre	$	28 50	30 90
Yield per acre (grain)	bush.	10·9	13·0
Yield per acre (straw)	tons	0·33	0·71
Value per acre (grain)	$	10 90	13 60
Value per acre (straw)	$	1 98	4 29
Total value	$	12 88	17 89
Loss per acre	$	−15 72	−13 01
Cost per bushel, value of straw deducted from the total cost	$	2 43	2 05

COST OF PRODUCTION OF OATS

The oats crop appears to be the most reliable of all cereals and that which has the best chance of success in this district in the worst years. However, although the yield was twice as large as the yield of barley, it was still too low to show a profit.

The amount charged for manure represents the second year share of 16 tons of manure applied to a four-year rotation. The details for the year as well as the four-year average are shown in the following table:—

COST OF PRODUCTION OF ONE ACRE OF OATS

Item		1929	Four-year average
Rent and taxes	$	4 50	4 50
Manure	$	7 20	9 00
Seed	$	4 80	4 20
Use of machinery	$	2 85	2 85
Twine	$	0 27	0 33
Manual labour	$	5 01	4 02
Horse labour	$	3 16	3 64
Threshing	$	1 69	1 84
Total cost per acre	$	29 48	29 69
Yield per acre (grain)	bush.	21·1	24·5
Yield per acre (straw)	tons	0·43	0·77
Value per acre (grain)	$	18 99	18 23
Value per acre (straw)	$	2 88	4 68
Total value	$	21 87	22 91
Loss per acre	$	−7 61	−6 78
Cost per bushel, value of straw deducted from the total cost	$	1 26	1 02

COST OF PRODUCTION OF POTATOES

The potato crop is one of the most profitable in this district; however, few farmers grow potatoes. A large quantity is imported for local requirements. In December, 1929, potatoes sold in this district as high as $2.50 for 80-pound bags. As to the chances of success, they are much better than it is generally thought; this crop is very seldom affected by frost in this district when the planting is done early.

The amount of $12.15 for manure includes the share of two applications of manure, the first year share of an application of 16 tons and the fourth year share of an application of 8 tons in a six-year rotation. It includes also the share of an application of 2 tons of limestone per acre, the cost of which is equally divided between the six years of the rotation.

COST OF PRODUCTION OF ONE ACRE OF POTATOES

Item		1929	Four-year average
Rent and taxes	$	4 50	4 50
Manure and limestone	$	12 15	17 43
Seed	$	14 40	27 10
Use of machinery	$	2 85	2 85
Manual labour	$	38 01	37 79
Horse labour	$	5 90	5 21
Total cost per acre	$	77 81	94 88
Yield per acre	bush.	127·9	107·80
Total value of crop per acre	$	204 64	141 19
Profit or loss per acre	$	+126 83	+46 31
Cost of production per bushel	$	0 60	0 80

SILAGE PLANTS *VS* ROOTS

The object of these experiments is to ascertain the best succulent feeds for cattle. A four-year rotation was established for this purpose, as follows: first year, hoed crop; second year, oats; third year, clover hay; fourth year, timothy hay.

The comparison is made during the first year of the rotation. The land is ploughed in the fall and manured at the rate of 16 tons per acre. In the spring, it is divided and seeded at the most suitable time for each crop.

The crops under test were the following: beets, swedes, sunflowers, corn and O.P.V. mixture made up of 2 bushels of oats, ¾ bushel of peas and ¼ bushel of vetches.

A quantity of 16 tons of farm manure is applied to the first year of the rotation. The seeding of the various crops is done when the temperature and the condition of the soil appear to be the most suitable.

The results obtained are shown in the following table:—

SILAGE PLANTS VS. ROOTS

Item		O.P.V. mixture	Sun-flowers	Corn	Swedes
Yield of green weight per acre	tons	6·97	4·30	0·22	2·88
Yield of dry matter per acre	lb.	3,520	1,170	48	708
Total cost per acre	$	34 36	36 73	36 48	39 08
Total value per acre	$	34 85	17 20	0 88	6 71
Profit or loss per acre	$	+0 49	−19 56	−36 00	−32 37
Cost of 100 pounds of dry matter	$	0 97	3 14	75 82	5 52
Two-year average	$	1 51	5 41	46 92	25 87

As shown by the results obtained, the hoed crops gave very low yields compared with the O.P.V. mixture, which appears to be preferable in very wet years on soil rich in humus and with an impervious sub-soil.

SURFACE DRAINAGE EXPERIMENT

The object of this experiment is to ascertain the influence of the width of lands on the yield of crops. This experiment is conducted on a clay soil

containing a fair percentage of humus, underlaid by a heavy clay sub-soil. A four-year rotation is followed in this experiment as follows:—

First year—Oats.
Second year—Barley.
Third year—Clover hay.
Fourth year—Timothy hay.

A quantity of 16 tons of manure per acre is applied to the first year of the rotation. Each field is divided into two parts; one part includes three narrow lands of 16·5 feet and the other one wide land of 49·5 feet. The results obtained in this experiment are shown in the following table:—

Year of the rotation	Crop	Yield per acre			
		1929		3-year average	
		Narrow lands	Wide lands	Narrow lands	Wide lands
1	Oats..... bush.	22·8	27·4	25·8	29·6
2	Barley..... "	3·9	5·6	9·1	10·7
3	Clover hay..... tons	2·14	2·00	2·01	1·82
4	Timothy hay..... "	2·50	2·50	1·97	2·03

ROTATIONS

The work on rotations started in 1923 was continued. It includes five rotations which appear to be fairly suitable for the farms of the district where dairying has a great future.

Such experiments will surely show which is the best sequence of crops for this district, what crops give the best yield and are the most suitable for dairying, while, at the same time, maintaining and improving the fertility of the soil.

After the land is cleared and drained, there is nothing more important for the farmer than to adopt a good rotation for the maintenance of soil fertility and the production of heavy yields. The rotations under test in 1923 were as follows:

ROTATION "A"—THREE YEARS

First year—Sunflowers.
Second year—Oats.
Third year—Clover hay.

This rotation may not be suitable for all farmers. It might be the best for those who have a small acreage of cleared land and a great deal of pasture, or for dairy farmers living in the proximity of a city and who must carry on an intensive system of farming. In some cases, a crop of O.P.V. or a crop of vegetables or potatoes might be substituted for the sunflower crop.

The manure includes 12 tons of farm manure applied to the first year of the rotation. In 1929, two tons of ground limestone were applied to the second year of the rotation as soil amendment. In this rotation, one-third of the land remains in sunflowers, one-third in oats and one-third in hay. The mixture of grasses used for the establishment of meadows generally includes 10 pounds of timothy, 8 pounds of red clover and 4 pounds of Alsike clover.

The results obtained with this rotation are shown in the following table:—

ROTATION "A"—THREE YEARS

Rotation year	Crop	Yield per acre		Value of crop	Cost of production, 1929	Profit or loss per acre	
		1929	Seven-year average			1929	Seven-year average
				$	$	$	$
1	Sunflowers..... tons	2·39	2·52	9 56	37 52	−27 96	−28 77
2	Oats..... bush.	20·1	21·6	19 95	29 48	−9 53	−9 45
			(4 years)				
3	Clover hay..... tons	2·40	1·16	33 60	22 54	+11 06	− 1 61
	Total.....	.....	.....	63 11	89 54	−26 43	−40 00
	Average per acre.....	.....	.....	21 03	29 85	− 8 81	− 13 33

ROTATION " B "—FOUR YEARS

First year—Oats, peas and vetches.
Second year—Oats.
Third year—Clover.
Fourth year—Timothy hay.

This rotation is fairly well adapted to the general conditions of the farms of the district where there is a fair amount of cleared land. In this rotation, a part of the O.P.V. crop could be replaced by a crop of vegetables or potatoes.

At present, half the land is sown to hay, one quarter to oats and one quarter to O.P.V. The latter was substituted for sunflowers this year only, because the yield of sunflowers was not profitable.

Sixteen tons of manure are applied to the first year of the rotation. Two tons of limestone are applied also as amendment to the oats crop. The mixture of grasses used for the establishment of the meadow is the same as described for the three-year rotation.

The results obtained with this rotation are shown in the following table:—

ROTATION "B"—FOUR YEARS

Year of the rotation	Crop	Yield per acre		Value of crop	Cost of production, 1929	Profit or loss per acre	
		1929	Seven-year average			1929	Seven-year average
				$	$	$	$
	Sunflowers (6 years)..... tons	.....	2·43	.....	.....	.....	−26 81
1	O.P.V. (1 year).....	2·40	.....	12 00	35 79	−23 79	−23 79
2	Oats..... bush.	19·1	23·9	18 99	31 34	−12 35	− 9 27
3	Clover hay..... tons	2·52	1·41	35 28	20 72	+14 56	+ 2 29
4	Timothy hay..... tons	1·36	1·00	19 04	17 95	+ 1 09	− 0 25
	Total.....	.....	.....	85 31	105 80	−20 49	−33 24
	Average per acre.....	.....	.....	21 32	26 45	−5 12	− 8 31

ROTATION " C "—FIVE YEARS

First year—O.P.V.
Second year—Barley.
Third year—Clover hay.
Fourth year—Timothy hay.
Fifth year—Oats.

This five-year rotation allows for the production of a larger quantity of cereals. It is especially suitable where cereals grow well and on farms where dairying is practised along with swine breeding for the production of bacon. It is well to have also a good quantity of barley.

In this rotation, one-fifth of the acreage is in O.P.V. Prior to 1929, this land was sown to sunflowers, but O.P.V. was substituted this season because it gives a better yield.

During the five years of the rotation, the total quantity of manure applied is 20 tons, as follows: 12 tons to the O.P.V. crop of the first year and 8 tons to the timothy crop of the fourth year. In 1929, an application of 2 tons of limestone was made to the barley crop of the second year. The mixture of grasses seeded with barley for the establishment of the meadow is the same as described for the preceding rotations.

The results obtained are shown in the following table:—

ROTATION "C"—FIVE YEARS

Year of the rotation	Crop	Yield per acre		Value of crop, 1929	Cost of production, 1929	Profit or loss per acre	
		1929	Seven-year average			1929	Seven-year average
				$	$	$	$
	Sunflowers (6 years)..... tons	.....	2·20	8 80	37 26	−29 65	−29 65
1	O.P.V. (1 year)..... tons	3·28	.....	16 40	32 99	−16 59	−16 59
2	Barley..... bush.	9·0	12·1 (5 years)	10 20	26 44	−16 24	−15 43
3	Clover hay..... tons	2·70	1·34	37 80	22 38	+15 42	+ 2 84
4	Timothy hay..... tons	1·62	1·45	22 68	19 25	+ 3 43	+ 4 82
5	Oats..... bush.	19·1	28·5 (4 years)	18 99	33 21	−14 22	− 8 07
	Total.....	.....	.....	106 07	134 27	−28 20	−43 62
	Average per acre.....	.....	.....	21 21	26 85	− 5 65	− 8 72

ROTATION "D"—SIX YEARS

First year—Potatoes.
Second year—Wheat.
Third year—Barley.
Fourth year—Clover hay.
Fifth year—Timothy hay.
Sixth year—Timothy hay.

This rotation is the most profitable of all, mainly on account of the potato crop which sells for a high price in this district and also on account of the large crop of hay, which gives a fairly high yield every year at a low cost of production.

Twenty-four tons of manure are applied to this rotation as follows: 16 tons to the potato crop of the first year and 8 tons to the clover crop of the fourth year. Furthermore, it was deemed advisable in the spring of 1929 to apply 2 tons of ground limestone to the barley crop.

The mixture of grasses seeded with barley for the establishment of the meadow is the same as described for the five-year rotation.

The results given by this rotation are shown in the following table:—

ROTATION "D"—SIX YEARS

Year of the rotation	Crop	Yield per acre		Value of crop	Cost of production, 1929	Profit or loss per acre	
		1929	Seven-year average			1929	Seven-year average
				$	$	$	$
1	Potatoes..... bush.	127·9	88·5	204 64	77 81	+126 83	+18 13
2	Wheat..... bush.	9·32	13·4 (4 years)	14 76	28 53	− 13 77	−18 96
3	Barley..... bush.	11·1	10·3 (5 years)	12 00	27 27	− 15 27	−16 55
4	Clover hay..... tons	2·38	1·51	33 32	22·16	+ 11 16	− 0 19
5	Timothy hay..... tons	1·48	1·44	20 72	18 10	+ 2 62	+ 6 17
6	Timothy hay..... tons	1·46	1·24	20 44	16 74	+ 3 70	+ 4 63
	Total.....	.....	.....	305 88	190 61	+115 27	− 1 81
	Average per acre.....	.....	.....	50 98	31 77	+ 19 21	− 0 30

ROTATION "E"—FIVE YEARS

First year—Summer-fallow followed by wheat and fall rye.
Second year—Half of the land is sown to fall wheat and the other half to fall rye.
Third year—Clover hay.
Fourth year—Timothy hay.
Fifth year—Oats.

This rotation includes crops of wheat and fall rye, but the season is so short that it is necessary to sow early, which does not permit a crop being obtained before the cereals are sown. However, eight pounds of red clover are sown with the oats in the fifth year, and the following year; when this clover has made a sufficient growth, it is ploughed under and the land is kept under a short rotation until the time of seeding wheat and fall rye.

It will be interesting to see if the increased yield of the other crops will compensate for the cost of summer-fallow and the loss of the second-year crop.

Sixteen tons of manure are applied to this rotation as follows: 8 tons to the summer-fallow in the first year and 8 tons to the timothy crop of the fourth year. Two tons of ground limestone are also applied to the fall cereals since last spring.

The mixture of grasses seeded for the establishment of the meadow is the same as described for the above-mentioned rotations. The rye crop was a failure in 1929; this is attributed to the poor quality of the seed used.

The results given by this rotation to date are shown in the following tables:—

ROTATION "E"—FIVE YEARS. FALL WHEAT

Year of the rotation	Crop	Yield per acre		Value of crop	Cost of production 1929	Profit or loss per acre	
		1929	Five-year average			1929	Five-year average
				$	$	$	$
1	Fallow.....	.....	.....	.....	20 45	−20 45	−16 42
2	Fall wheat..... bush.	5·5	5·1	10 40	27 16	−16 76	− 7 55
3	Clover hay..... tons	1·22	1·41	17 08	18 34	− 1 26	− 0 54
4	Timothy hay..... tons	1·31	1·55	18 34	21 30	− 2 96	+ 1 23
5	Oats..... bush.	19·5	18·8 (4 years)	20 01	28 26	− 8 25	−15 99
	Total.....	.....	.....	65 83	115 51	−49 68	−37 87
	Average per acre.....	.....	.....	13 17	23 10	− 9 93	− 7 57

ROTATION "E"—FIVE YEARS. FALL RYE

Year of the rotation	Crop	Yield per acre		Value of crop	Cost of production, 1929	Profit or loss per acre	
		1929	Five year average			1929	Five-year average
				$	$	$	$
1	Fallow				20 45	−20 45	−16 43
2	Fall rye bush.	No crops	7·1 (3 years)		23 98	−23 98	−13 65
3	Clover hay tons	1·22	1·41	17 08	18 34	− 1 26	− 0 54
4	Timothy hay tons	1·31	1·55	18 34	21 30	− 2 96	+ 1 22
5	Oats bush.	19·5	18·8 (4 years)	20 01	28 26	− 8 25	−13 39
	Total			55 43	112 33	−56 90	−42 79
	Average per acre			11 08	22 46	−11 38	− 8 56

EXPERIMENTS ON FERTILIZATION AND SOIL AMENDMENTS

Experiments are carried on a field scale on the fertilization and amendment of the soil through the use of green manure, farm manure alone, farm manure and ground limestone, and chemical fertilizers. All these experiments are compared with a check plot where no fertilizer is applied. These experiments are carried on on a fairly uniform soil.

EXPERIMENTS WITH GREEN MANURE AND SUMMER-FALLOW

Clover ploughed under followed by a summer-fallow.

The object of this experiment is to ascertain the value of green manure and summer fallow. A five-year rotation is followed in this experiment:—

First year—Oats.
Second year—Fallow.
Third year—Barley.
Fourth year—Clover.
Fifth year—Timothy.

Each field includes two acres. Eight pounds of red clover and six pounds of alsike clover are sown with the oats the first year; the second year, the young growth of clover from this seeding is ploughed under when it is in flower. The field is then divided into two parts of one acre each. Acre No. 1, after the clover is ploughed under, is fallowed; acre No. 2 is again seeded to a mixture of one bushel of peas and two bushels of oats. When this crop has reached its full growth, it is ploughed under in the fall.

This rotation is compared with another one not receiving any fertilizer. The results obtained with green manure are shown in the following tables:—

EXPERIMENT WITH GREEN MANURE FOLLOWED BY SUMMER FALLOW

Year of the rotation	Crop	Yield of hay and straw		Yield of grain		Cost of summer fallow		Value of crop, cost of summer fallow and green manure deducted	
		1929	Seven-year average	1929	Seven-year average	1929	Seven-year average	1929	Seven-year average
		tons	tons	bush.	bush.	$	$	$	$
1	Oats	0·38	0·99	23·5	22·4	3 38	3 69	20 05	21 33
2	Clover ploughed under followed by summer-fallow								
3	Barley	0·10	0·47	6·1	9·0	3 38	5 02	3 93	5 33
4	Clover hay	1·75	1·79			3 38	7 42	21 12	14 98
5	Timothy hay	1·37	1·46			3 38	7 17	15 80	18 21
	Total					13 52	23 30	60 90	59 81
	Average per acre					2 70	4 66	12 18	11 96

EXPERIMENT WITH GREEN MANURE PLOUGHED UNDER FOLLOWED BY A CROP OF PEAS AND OATS PLOUGHED UNDER IN THE FALL

Year of the rotation	Crop	Yield of hay and straw		Yield of grain		Cost of green manure		Value of crop, cost of green manure deducted	
		1929	Seven-year average	1929	Seven-year average	1929	Seven-year average	1929	Seven-year average
		tons	tons	bush.	bush.	$	$	$	$
1	Oats	0·33	0·92	17·7	19·2	5 97	5 90	11 94	16 24
2	Clover ploughed under, followed by a crop of peas and oats ploughed under in the fall								5 48
3	Barley	0·12	0·50	7·5	9·2	5 97	11 13	3 00	14 77
4	Clover hay	1·45	1·65			5 97	7 30	14 33	20 61
5	Timothy hay	1·70	1·69			5 97	5 90	17 83	
	Total					23 88	30 23	47 10	57 10
	Average per acre					4 77	6 04	9 42	11 42

EXPERIMENT WITHOUT FERTILIZERS

This experiment is used as a check for the previous ones. A four-year rotation is followed:—

First year—Oats.
Second year—Barley.
Third year—Clover.
Fourth year—Timothy.

The area of each plot is one acre. The results obtained are as follows:—

EXPERIMENT WITHOUT FERTILIZERS

Year of the rotation	Crop	Yield of hay and straw		Yield of grain		Value of crop	
		1929	Seven-year average	1929	Seven-year average	1929	Seven-year average
		tons	tons	bush.	bush.	$	$
1	Oats	0·35	0·72	24·1	22·9	23 79	17 80
2	Barley	0·06	0·39	4·4	6·6	5 20	7 60
3	Clover hay	2·07	1·48			28 98	23 41
4	Timothy hay	1·87	1·50			26 18	23 13
	Total					84 15	71 94
	Average per acre					21 04	17 98

EXPERIMENT WITH FARM MANURE

The rotation used is the same as the one used for the experiment without fertilizers, except that 16 tons of manure are applied to the oats crop of the first year of the rotation. The results obtained are as follows:—

EXPERIMENT WITH FARM MANURE

Year of the rotation	Crop	Yield of hay and straw		Yield of grain		Cost of farm manure		Value of crop, cost of farm manure deducted	
		1929	Seven-year average	1929	Seven-year average	1929	Seven-year average	1929	Seven-year average
		tons	tons	bush.	bush.	$	$	$	$
1	Oats	0·42	0·94	26·6	28·4	9·60	8 59	16 86	14 62
2	Barley	0·10	0·72	6·3	11·0	7 20	8 57	0 33	6 73
3	Clover hay	2·27	1·70			4 80	5 71	26 98	19 61
4	Timothy hay	2·50	1·61			2·40	2 85	32 60	20 93
	Total					24 00	25 72	76 77	58 01
	Average per acre					6 00	6 43	19 19	14 50

EXPERIMENT WITH FARM MANURE AND LIMESTONE

The rotation followed is similar to the previous one; 16 tons of farm manure are applied to the oats crop and furthermore 2 tons of ground limestone are applied to the barley crop. The results obtained are as follows:—

EXPERIMENT WITH FARM MANURE AND LIMESTONE

Year of the rotation	Crop	Yield of hay and straw		Yield of grain		Cost of farm manure and limestone		Value of crop, cost of farm manure and limestone deducted	
		1929	7-year average	1929	7-year average	1929	7-year average	1929	7-year average
		tons	tons	bush.	bush.	$	$	$	$
1	Oats	0·38	0·81	26·1	27·0	11 63	13 64	14 14	11 40
2	Barley	0·37	0·74	13·8	11·1	9 23	10 79	8 17	8 35
3	Clover hay	1·83	1·89	.....	.....	6 82	7 92	19 50	21 73
4	Timothy hay	2·25	1·45	.....	.....	4 42	10 60	27 08	18 68
	Total	.....	.....	.....	.....	32 10	42 95	68 89	60 16
	Average per acre	.....	.....	.....	.....	8 02	10 72	17 22	15 04

EXPERIMENT WITH CHEMICAL FERTILIZERS ONLY

An experiment with the object of ascertaining the value of nitrate of soda and superphosphate is conducted on a rotation similar to the previous one. The method of applying the fertilizers is as follows: 100 pounds of nitrate of soda are applied to the crop of the second year of the rotation, soon after emergence; in addition, 100 pounds of nitrate of soda and 300 pounds of superphosphate are applied to the timothy crop of the fourth year of the rotation. The results obtained are shown in the following table:—

EXPERIMENT WITH CHEMICAL FERTILIZERS ONLY

Year of the rotation	Crop	Yield of hay and straw		Yield of grain		Cost of chemical fertilizers		Value of crop, cost of chemical fertilizers deducted	
		1929	7-year average	1929	7-year average	1929	7-year average	1929	7-year average
		tons	tons	bush.	bush.	$	$	$	$
1	Oats	0·55	0·94	29·6	26·7	1 68	2 88	28 26	17 86
2	Barley	0·52	0·71	11·7	10·8	3 00	4 56	12 99	7 83
3	Clover hay	2·25	1·77	.....	.....	0 89	1 01	30 61	25 76
4	Timothy hay	.....	2·49	.....	.....	3 08	5 60	31 78	21 37
	Total	.....	.....	.....	.....	8 65	13 51	103 64	72 82
	Average per acre	.....	.....	.....	.....	2 16	3 51	25 81	18 20

NOTE.—All the above experiments may be compared with one another, as they are conducted under similar conditions. Each experiment may be compared to the experiment without fertilizers. The influence of fertilizers is already noticeable.

HORTICULTURE

PEAS—VARIETY TEST

The seed was sown on May 29 in 30-foot rows, 30 inches apart, with the plants one inch apart in the rows. Fifteen varieties were under test. The results obtained are as follows:—

PEAS—RESULTS OF VARIETY TEST

Variety	Source	Days from seeding until ready for use	Yield per 30-foot row	Yield per acre	Three-year average
			lb.	lb.	lb.
Laxtonian	Graham	58	12·3	7,134	9·9
Thos. Laxton	Mc. D.	58	11·3	6,554	9·9
Director	Invermere	65	17·3	10,034	19·9
Am. Wonder	Mc. D.	58	15·0	8,700	
Gradus or Prosperity	Rennie	61	13·3	7,714	10·7
Six Weeks	Child	57	13·5	7,830	
Stratagem	Mc. D.	77	18·0	10,440	
Lincoln	Invermere	71	22·0	12,760	17·9
Kootenay	"	71	23·8	13,804	
Bruce	"	77	16·5	9,570	14·2
No. 6	"	70	17·3	10,034	18·8
No. 42	"	76	16·5	9,570	
Eng. Wonder and Gradus	C.E.F.	77	15·3	8,874	
Greg. Supp. and Eng. Wonder	"	76	16·8	9,744	17·6
Eng. Wonder	"	77	18·5	10,730	

PEAS—DIFFERENT DATES OF PLANTING

The first sowing was done as soon as the ground was ready, and the three others at one week intervals. The variety used was Thomas Laxton. The results obtained are as follows:—

PEAS—RESULTS FROM PLANTING AT DIFFERENT DATES

Sowing	Date	Date ready for use	Yield per 30-foot row
			lb.
1st sowing	May 29	July 27	11·8
2nd sowing	June 6	July 31	12·8
3rd sowing	June 13	Aug. 7	15·5
4th sowing	June 20	Aug. 21	11·0

PEAS—PLANTING AT DIFFERENT DISTANCES

Three varieties—Thomas Laxton, English Wonder, and Stratagem—were sown on May 29, in rows 30 inches apart. The results obtained are as follows:—

PEAS—RESULTS FROM PLANTING AT DIFFERENT DISTANCES

Variety	Date of sowing	Date ready for use	Yield per 30-foot row		
			1 inch	2 inches	3 inches
			lb.	lb.	lb.
Thomas Laxton	May 29	July 26	12·8	11·5	11·5
Eng. Wonder	" 29	" 29	17·8	15·5	12·0
Stratagem	" 29	" 26	13·3	13·8	8·5

BEANS—VARIETY TEST

Fourteen varieties were sown on June 10, in 30-foot rows, 30 inches apart, and the plants 2 inches apart in the rows. The results obtained are shown in the following table:—

BEANS—RESULTS OF VARIETY TEST

Variety	Source	Days from sowing until date ready for use	Yield per 30-foot row	2-year average	Remarks
		days	lb.	lb.	
Rd. Pd. Kidney Wax	C.E.F.	74	5·0	.....	Rusty
Int. Challenge Blk. Wax	"	67	9·3	7·9	
Pencil Blk. Wax	"	79	8·0	5·1	Rusty
Stringless Green Pod	"	69	7·8	5·5	
Masterpiece	Harrow.....	71	6·0	4·6	Poor germination
Princess of Artois	C.E.F.....	71	7·5	5·7	
Wardwell Kidney Wax	Graham....	69	2·5	2·4	Rusty.
Yellow Pod Bountiful	Schell.....	71	9·3	6·3	
Davis White Wax	Mc. D.....	71	6·8	3·4	
Giant Stringless Green Pod	Burpee.....	69	5·0	3·6	
Dwarf Green Pod Bountiful	Schell.....	70	3·3	3·3	Antrachoose
Bountiful	Will.....	71	5·8	5·4	
Plentiful French	Sutton.....	71	9·0	7·1	
Lg. Port Wonder	Kelway & Son.....	83	2·5	.....	Too late

BROAD BEANS—VARIETY TEST

Seven varieties were sown on May 29, in 30-foot rows, 30 inches apart, with the plants 2 inches apart in the rows. The results obtained are as follows:—

BROAD BEANS—RESULTS OF VARIETY TEST.

Varieties	Source	Days from sowing until date ready for use	Yield per 30-foot row	Yield per acre	4-year average
		days	lb.	lb.	lb.
Lg. Pod. Seville	Sharpe.....	83	17·3	10,005	10·5
Lg. Pod. Green	"	85	8·0	4,640	8·5
Mazagan	Sutton.....	81	2·0	1,160	6·7
Lg. Pod Conqueror	Sharpe.....	78	3·8	2,204	10·0
Broad Windsor	S.B.....	78	8·8	5,104	13·4
Lg. Pod. Aquadulce	Sharpe.....	86	19·0	11,020	12·2
Lg. Pod. Hangdown	"	87	19·0	11,020	14·6

BEANS—SOWING AT DIFFERENT DATES

The first sowing was done on June 10; the three others at one week intervals. The Round Pod Kidney Wax was the variety used for this experiment. The results obtained are as follows:—

BEANS—RESULTS FROM SOWING AT DIFFERENT DATES

Sowing	Date	Date ready for use	Yield per 30-foot tow
			lb.
1st sowing	June 10	Aug. 21	6·8
2nd sowing	" 17	" 26	5·5
3rd sowing	" 24	Sept. 11	1·3
4th sowing	" 30		

BEANS—HILL VS. ROW CULTIVATION

Two varieties were sown on June 10 as follows: two 30-foot rows, 30 inches apart, and the plants 6 inches apart in the rows, and two 30-foot rows with the plants 24 inches by 24 inches apart. The results obtained are as follows:—

BEANS—RESULTS FROM HILL VS. ROW CULTIVATION

Varieties	Number of days in season		Yield per 30-foot row	
	Rows	Hills	Rows	Hills
			lb.	lb.
Rd. Pod Kidney Wax	71	71	10·5	3·5
Stringless Green Pod	68	69	11·5	7·5

BEETS—VARIETY TEST

Six varieties were sown on May 31 in 30-foot rows, 30 inches apart, with the plants 3 inches apart in the rows. The results of this test are as follows:—

BEETS—RESULTS OF VARIETY TEST

Varieties	Source	Days from sowing until ready for use	Yield per 30-foot row	Yield per acre	Five-year average
			lb.	lb.	lb.
Detroit Dark Red	Mc. D	96	12·0	6,960	14·2
Eclipse	Vaughan	129	8·0	4,640	15·1
Blk. Red Ball	Burpee	96	11·0	6,380	9·5
Sunnybrook	"	80	21·3	12,325	13·3
Improved Dark Red	Webb	132	5·8	3,364	.....
Half Long	Kelway & Son	83	26·0	15,080	.....

BEETS—SOWING AT DIFFERENT DATES

The first sowing was done as soon as the ground was in good condition, and the three others at one-week intervals. The Detroit Dark Red (McDonald) was the variety used for this experiment. The results obtained are shown in the following table:—

BEETS—RESULTS FROM SOWING ON DIFFERENT DATES

Sowing	Date	Date ready for use	Yield per 30-foot row	Three-year average
			lb.	lb.
1st sowing	May 31	Aug. 17	23·8	22·2
2nd sowing	June 7	" 9	29·3	17·8
3rd sowing	" 14	" 18	23·3	14·2
4th sowing	" 21	" 22	11·0	6·4

BEETS—THINNING EXPERIMENT

Three 30-foot rows, 30 inches apart, were sown on May 31. The Detroit Dark Red was the variety used. In the first row the beets were thinned to 2

inches, in the second row to 3 inches, and in the third row to 4 inches. The average yield per acre for seven years was as follows: thinned to 2 inches, 10,788 pounds; thinned to 3 inches, 8,642 pounds; and thinned to 4 inches, 8,468 pounds.

CABBAGE—VARIETY TEST

Ten varieties were sown in hot beds on May 6 and transplanted in the open on June 14, in 30-foot rows, 30 inches apart, with the plants 18 inches apart in the rows. The results obtained are shown in the following table:—

CABBAGE—RESULTS OF VARIETY TEST

Varieties	Source	Days from sowing until date ready for use	Yield of a 60-foot row	Yield per acre	Four-year average
			lb.	lb.	lb.
Ey. Jersey Wakefield	Mc. D.	110	92·6	26,825	56·8
Copenhagen Mkt.	Graham	105	92·6	26,825	94·6
Ex. Am. Dan. Ballhead	Harris	130	68·0	19,720	37·7
Danish S.S.	"	130	82·0	23,780	51·1
Golden Acre	"	109	77·0	22,330	46·1
Flat Swedish	D. & F.	126	88·0	25,520	51·9
Baby Head	"	107	83·6	24,244	44·2
All Head Ey.	S.B.	124	55·6	16,124	49·4
Dan. Ballhead	"	128	72·0	20,880	36·0
Dan. Ballhead M.S.	Burpee	129	60·0	17,400	.....

CABBAGE—SOWN IN HOT BEDS AND IN THE OPEN

Two varieties Early Jersey Wakefield and Copenhagen Market were used for this experiment. The results obtained are shown in the following table:—

RESULTS WITH CABBAGE SOWN IN HOT BEDS AND IN THE OPEN

Varieties	Method of sowing	Date of sowing	Date ready for use	Yield of a 60-foot row
				lb.
Ey. Jersey Wakefield	Hotbed	May 7	Aug. 28	106·0
	Open	June 2	.....	.....
Copenhagen Mkt.	Hotbed	May 7	Aug. 19	158·6
	Open	June 2	.....	.....

CABBAGE—PROTECTION AGAINST ROOT MAGGOTS

Two varieties were used in this experiment, i.e., Extra Am. Danish Ballhead and Copenhagen Market. The results obtained are as follows:—

PROTECTION OF CABBAGE AGAINST ROOT MAGGOTS

Variety	1/1500 solution of bichloride of mercury		Tar-paper disks		Check unprotected	
	Per cent destroyed	Yield per 30-foot row	Per cent destroyed	Yield per 30-foot row	Per cent destroyed	Yield per 30-foot row
		lb.		lb.		lb.
Ex. Am. Dan. Ballhead	1	28·5	0	39·5	10	8·1
Copenhagen Mkt.	0	43·0	0	46·9	10	8·1
Average of 8 years	2·3	21·7	15·6	25·0	26·8	15·1

CAULIFLOWER—VARIETY TEST

Eight varieties were sown in hot-beds on May 7 and set out in the open on June 14 in 30-foot rows, 30 inches apart, with the plants 18 inches apart in the rows. The results obtained are as follows:—

CAULIFLOWER—RESULTS OF VARIETY TEST

Varieties	Source	Days from sowing until ready for use	Yield of a 30-foot row	Two-year average
			lb.	lb.
Veitch Autumn Giant	Mc. D.	133	12·0	.....
Veitch Autumn Giant	Sutton	133	8·8	.....
Large Late Algiers	D. & F.	124	23·0	.....
Dan. Perfection	Madsen	99	19·3	.....
Ey. Dwarf Erfurt	Strandholm	98	48·0	.....
Snowball	Madsen	100	35·3	21·7
Six Weeks	Mc. D.	106	38·3	24·9
Snowball	Strandholm	103	43·3	

CAULIFLOWER—PROTECTION AGAINST ROOT MAGGOTS

Two varieties were used in this experiment, i.e., Early Snowball and Early Dwarf Erfurt. The results obtained are as follows:—

CAULIFLOWER—RESULTS FROM PROTECTION AGAINST ROOT MAGGOTS

Variety	1/1500 solution of bichloride of mercury		Tar-paper disks		Check unprotected	
	Per cent destroyed	Yield per 30-foot row	Per cent destroyed	Yield per 30-foot row	Per cent destroyed	Yield per 30-foot row
				lb.	lb.	lb.
Ey. Snowball	2	42·0	4	44·0	5	6·3
Ey. Dwarf Erfurt	2	41·3	1	60·5	3	6·0

PARSNIPS—VARIETY TEST

Five varieties were sown on May 31 in 30-foot rows, 30 inches apart, with the plants 2 inches apart in the rows. The results obtained are shown in the following table:—

PARSNIPS—RESULTS OF VARIETY TEST

Varieties	Source	Days from sowing until ready for use	Yield of a 30-foot row	Yield per acre	Three-year average
			lb.	lb.	lb.
Hollow Crown	O-2196	91	23·5	13,630	10·0
Elcombe Imp. Hollow-crown	Graham	87	26·0	15,080	9·9
Dobbie Select	Ewing	91	20·0	11,600	.....
XXX Guernsey	Rennie	87	25·8	14,964	11·3
Hollow Crown	Mc. K.	89	21·5	12,470	9·6

PARSNIPS—SOWING AT DIFFERENT DATES

The first sowing was done as soon as the ground was ready and the three others at one-week intervals. The variety used was Hollow Crown, Graham. The results obtained are as follows:—

PARSNIPS—RESULTS FROM SOWING AT DIFFERENT DATES

Sowing	Date	Date ready for use	Yield per 30-foot row	Four-year average
			lb.	lb.
1st	May 31	Aug. 24	26·3	14·4
2nd	June 7	" 30	25·0	14·0
3rd	" 14	Sept. 10	18·0	10·6
4th	" 21	Oct. 8	5·8	1·9

PARSNIPS—THINNING EXPERIMENT

Three 30-foot rows, 30 inches apart, of the Hollow Crown variety, were sown on May 31. In one row the plants were thinned to 2 inches, in the second row to 3 inches, and in the third row to 4 inches. The average yield per acre of four years was 8,178 pounds for parsnips thinned to 2 inches, 6,728 pounds for those thinned to 3 inches, and 7,096 pounds for those thinned to 4 inches.

CARROTS—VARIETY TEST

On May 31, seven varieties were sown in 30-foot rows, 30 inches apart, with the plants 1½ inches apart in the rows. The results obtained are shown in the following table:—

CARROTS—RESULTS VARIETY TEST

Varieties	Source	Days from sowing until ready for use	Yield per 30-foot row	Yield per acre	Three-year average
			lb.	lb.	lb.
Chantenay	0-285A	109	27·8	16,124	25·6
Ry. Scarlet Horn	D. & F.	74	51·0	29,580	30·0
Danvers Half Lg	Rennie	74	39·5	22,910	21·2
St. Valery	D. & F.	80	36·8	21,364	20·3
Chantenay	Mc. D.	76	47·3	27,434	31·6
Intermediate	Rennie	74	70·0	40,600	34·7
Nantes	Mc. D.	79	53·8	31,204	32·6

CARROTS—DIFFERENT DATES OF SOWING

The first sowing was done as soon as the land was ready and the three others at one week intervals. Chantenay, McDonald, was the variety used in this experiment. The results obtained are as follows:—

CARROTS—RESULTS FROM SOWING AT DIFFERENT DATES

Order of sowing	Date	Date ready for use	Yield per 30-foot row	Yield per acre	Four-year average
			lb.	lb.	lb.
1st	May 31	Aug. 13	46·0	26,680	24·9
2nd	June 7	" 19	36·3	21,054	21·7
3rd	" 14	" 23	42·8	24,824	20·8
4th	" 21	Sept. 18	20·8	12,064	11·8

CARROTS—THINNING EXPERIMENT

Three 30-foot rows, 30 inches apart, of the Chantenay variety, were sown on May 31. In one row the plants were thinned to 1½ inches, in the second row to 2 inches, and in the third row to 3 inches. The average yield per acre during four years was as follows: thinned to 1½ inches, 14,732 pounds; thinned to 2 inches, 15,312 pounds; thinned to 3 inches, 10,962 pounds.

POTATOES—VARIETY TEST

Five varieties were sown on June 11 in 30-foot rows, 30 inches apart, with the plants 12 inches apart in the rows. The results obtained are as follows:—

POTATOES—RESULTS OF VARIETY TEST

Variety	Quantity of seed per acre	Yield per acre		
		Date of pulling	Marketable	Unmarketable
			bush.	bush.
Green Mountain	20·8	Sept. 23	79·7	7·5
Irish Cobbler	21·8	" 23	86·0	5·8
Gold Coin	20·5	" 23	48·3	9·7
Gold Nugget	24·5	" 23	71·5	10·6
Early Ohio	22·3	" 23	91·8	7·3

The seed used was very poor, and the sets had a low productivity. The plants were affected with mosaic and leaf roll, and a large proportion had to be rogued at the beginning of growth.

POTATOES—DATES OF PLANTING

The first planting was done on June 11, and the three others at one-week intervals. Green Mountain was the variety used in this experiment. The results obtained are as follows:—

POTATOES—RESULTS FROM DIFFERENT DATES OF PLANTING

Order of planting	Date	Yield per acre	Marketable	Unmarketable	Four-year average of marketable tubers
		bush.	bush.	bush.	bush.
1st	June 11	145·1	135·4	9·7	159·2
2nd	" 18	135·4	125·7	9·7	141·0
3rd	" 25	111·6	100·5	11·6	149·5
4th	July 2	106·4	87·0	19·4	155·2

All the sets were of poor quality and the germination of the third and fourth plantations was weak. The weak plants were readily affected with mosaic and leaf roll, which necessitated the eradication of almost 25 per cent of the plants.

POTATOES—DIFFERENT KINDS OF SETS

The object of this experiment is to determine the relative value of sets containing one, two and three eyes. Planting was done on June 11. The results obtained are as follows:—

POTATOES—RESULTS FROM DIFFERENT KINDS OF SETS

Variety and number of eyes	Quantity of seed per acre	Yield per acre	Marketable	Unmarketable	Four-year average
	bush.	bush.	bush.	bush.	bush.
Green Mountain—					
1 eye	13·4	193·4	178·9	14·5	166·7
2 eyes	17·8	222·3	204·9	17·4	209·6
3 eyes	22·5	264·8	243·6	21·3	232·5
Irish Cobbler—					
1 eye	13·5	174·9	162·4	12·5	153·2
2 eyes	18·2	194·2	180·8	13·5	179·3
3 eyes	21·8	247·3	231·0	18·1	162·1

POTATOES—NITRATE OF SODA USED TO STIMULATE THE GROWTH

Three hundred pounds of nitrate of soda per acre were applied in four applications, at 10-day intervals. The first application was made immediately after germination. Potatoes were planted on June 11. The total yield per acre was 543 bushels, of which 523·9 bushels were marketable and 19·4 bushels unmarketable.

POTATOES—NUMBER OF CULTIVATIONS

The object of this experiment is to ascertain if the number of cultivations has an influence on yield. The Green Mountain and Irish Cobbler varieties were used in this experiment. The results obtained are as follows:—

POTATOES—NUMBER OF CULTIVATIONS, RESULTS IN 1929

Variety and number of cultivations	Yield per acre		Four-year average	
	Marketable	Unmarketable	Marketable	Unmarketable
	bush.	bush.	bush.	bush.
Green Mountain—				
8 cultivations	237·8	17·4	132·9	45·2
4 cultivations	106·4	24·1	111·6	48·6
Irish Cobbler—				
8 cultivations	123·7	11·6	104·1	43·8
4 cultivations	151·8	12·5	128·5	45·8

POTATOES—DISTANCES OF PLANTING

The object of this experiment is to determine how far apart potatoes should be planted to obtain the best yields. The results obtained are shown in the following table:—

POTATOES—RESULTS FROM DIFFERENT DISTANCES OF PLANTING

Variety	Date of planting	Distance between sets	Quantity of seed used per acre	Yield per acre		
				Marketable	Unmarketable	4-year average
		in.	bush.	bush.	bush.	bush.
Irish Cobbler	June 12	12	22·8	246·5	20·3	159·1
	" 12	14	18·5	206·9	16·4	217·7
Green Mountain	" 12	12	22·5	273·5	18·4	204·2
	" 12	14	19·7	247·7	17·4	166·6

CELERY—VARIETY TEST

Nine varieties were sown in hotbeds on May 3 and set out in the open on June 14, in 15-foot rows, 48 inches apart, with the plants 6 inches apart in the rows. The results obtained are as follows:—

CELERY—RESULTS OF VARIETY TEST

Variety	Source	Ready for use	Yield per 15-foot row	Three-year average
			lb.	lb.
Golden Self Blanching	C.E.F.	Sept. 17	29·5	14·8
White Plume	Graham	" 15	37·8	.....
Winter King	"	Oct. 8	29·0	19·1
Golden Plume	Dreer	Sept. 18	38·0	17·4
Golden Self Blanching	Mc. D.	" 30	17·3	.....
Emperor	Schell	" 2	39·5	20·7
Giant Pascal	Mc. D.	" 14	32·8	20·9
London Red	S.B.	" 18	41·5	21·3
Paris Golden	"	Oct. 8	25·8	13·6

RADISH—VARIETY TEST

Nine varieties were sown on May 31 in 30-foot rows, 15 inches apart, and the plants thinned to 1 inch in the rows. The results obtained are as follows:—

RADISH—RESULTS OF VARIETY TEST

Variety	Source	Days from sowing until ready for use	Yield per 30-foot row	Four-year average
			lb.	lb.
Lg. Wht. Icicle	D. & G.	37	9·3	.....
XXX Scarlet Oval	Rennie	36	11·0	7·9
Scarlet Turnip White Tip	Mc. D.	36	8·8	7·3
French Breakfast	Patmore	36	9·3	9·2
Saxa	Mc. K.	35	11·5	8·2
Twenty days	Vaugham	37	4·5	7·3
Ex. Scarlet Globe	Vick	37	2·8	5·6
Ey. Wht. Turnip	Ewing	37	7·8	9·7
Chartier	"	43	9·3	8·9

LETTUCE—VARIETY TEST

Ten varieties were sown on May 31 in 15-foot rows, 15 inches apart, with the plants 6 inches apart in the rows. The results obtained are as follows:—

LETTUCE—RESULTS OF VARIETY TEST

Variety	Source	Days from sowing until ready for use	Yield per 15-foot row	Four-year average
			lb.	lb.
Paris Wht. Cos	Graham	47	30·3	17·4
Salamander	Mc. D.	39	12·8	12·3
Iceberg	Ewing	38	11·3	11·9
All Heart	Dreer	38	16·0	10·9
Crisp as Ice	Will	38	11·5	9·3
Wonderful	Webb	39	12·5	13·7
Big Boston	Graham	38	12·5	13·2
Trianon Cos	Vaugham	47	30·8	25·9
Grand Rapids	Mc. K.	38	12·0	13·3
Blk. Seeded Simpson	Vaugham	39	38·3	24·9

SPINACH—VARIETY TEST

Five varieties were sown on May 31 in 30-foot rows, 30 inches apart. The results obtained are as follows:—

SPINACH—RESULTS OF VARIETY TEST

Variety	Source	Days from sowing until date ready for use	Yield per 30-foot row	Three-year average
			lb.	lb.
King of Denmark	Graham	47	15·8	10·3
New Zealand	"	62	63·8	38·3
Noble Gandry	Stoke	45	14·5	11·9
Princess Juliana	Rice	45	16·0	10·0
Big Crop	Harris	45	15·5	9·5

SALSIFY—VARIETY TEST

Three varieties were sown on May 31, in 30-foot rows, 30 inches apart, with the plants 1½ inches apart in the rows. The results obtained are as follows:—

SALSIFY—RESULTS OF VARIETY TEST

Variety	Source	Days from sowing until date ready for use	Yield per 30-foot row	Three-year average
			lb.	lb.
Mammoth Sandwich Island	Rennie	90	20·3	18·8
Large White	Dreer	85	25·0	15·5
Large Black	D. & F.	88	18·3	.....

SWISS CHARD—VARIETY TEST

Two varieties were sown on May 31 in 30-foot rows, 30 inches apart. The results obtained are as follows:—

SWISS CHARD—RESULTS OF VARIETY TEST

Variety	Source	Days from sowing until date ready for use	Yield per 30-foot row	Three-year average
			lb.	lb.
Lucullus	Ewing	61	60·3	44·7
Spanish Beet	Rennie	63	53·5	46·6

KOHL RABI—VARIETY TEST

Two varieties were sown on May 6 in hotbeds and set out in the open on June 14 in 30-foot rows, 30 inches apart, with the plants 6 inches apart in the rows. The results obtained are shown in the following table:—

KOHL RABI—RESULTS OF VARIETY TEST

Variety	Source	Days from sowing until date ready for use	Yield per 30-foot row
			lb.
White Vienna	McD.	105	30·8
Purple Giant	Graham	97	51·8

BRUSSELS SPROUTS—VARIETY TEST

Five varieties were sown on May 6 in hotbeds and set out in the open on June 14, in 30-foot rows, 30 inches apart, with the plants 18 inches apart in the rows. The results obtained are as follows:—

BRUSSELS SPROUTS—RESULTS OF VARIETY TEST

Variety	Source	Days from sowing until date ready for use	Yield per 30-foot row
			lb.
Dalkeith	McD.	148	2·0
Paris Market	Ewing	150	1·3
Imp. Dwarf	Vaughan	147	2·5
Little Gem	Barr	146	2·3
Dwarf Paris Market	Gregory	146	4·0

PUMPKIN—VARIETY TEST

Five varieties were sown on June 4 in hills 9 feet by 9 feet apart. The results are as follows:—

PUMPKIN—RESULTS OF VARIETY TEST

Variety	Source	Days from sowing until date ready for use	Yield of 3 hills
			lb.
Small Sugar	O-11015	105	13·0
Connecticut Field	McD.	105	15·5
Small Sugar	Graham	105	4·5
Pie	Brand	105	8·5
King of Mammoth	Graham	105	12·0

SQUASH—VARIETY TEST

Six varieties were sown on June 4 in hills 9 by 9 feet apart. The results obtained are as follows:—

SQUASH—RESULTS OF VARIETY TEST

Variety	Source	Days from sowing until date ready for use	Yield of 3 hills	Two-year average
			lb.	lb.
Golden Hubbard	O-11014	105	.....	.....
Eng. Vegetable Marrow	S.B.	104	18·5	13·5
Hubbard Green	Graham	104	10·0	9·9
Golden Hubbard	Harris	102	31·5	17·2
Large White Bush Marrow	Ewing	99	23·5	37·7
Perfect Gem	Morse	.....	.....	2·5

PARSLEY—VARIETY TEST

Two varieties were sown on May 31 in 30-foot rows, 15 inches apart. The results obtained are as follows:—

PARSLEY—RESULTS OF VARIETY TEST

Variety	Source	Days from sowing until date ready for use	Yield per 30-foot row
			lb.
Moss Curled	Ewing	68	3·5
Triple Curled	Ewing	66	19·3

TURNIPS—VARIETY TEST

Three varieties were sown on May 31 in 30-foot rows, 15 inches apart, with the plants 2 inches apart. The results obtained are shown in the following table:—

TURNIPS—RESULTS OF VARIETY TEST

Variety	Source	Days from sowing until date ready for use	Yield per 30-foot row	Four-year average
			lb.	lb.
Red Top Strap Leaf	McD	68	19·3	28·5
Extra Early Purple Top Milan	McD	67	17·5	27·7
Early White Milan	Harris	68	13·0	22·1

TOMATOES—VARIETY TEST

Thirty-one varieties were sown on May 2 in hotbeds and set out in the open on June 17. The results in green weight are shown in the following table:—

TOMATOES—RESULTS OF VARIETY TEST

Variety	Source	Days from sowing until date green tomatoes ready for use	Yield of five plants
			lb.
Alacrity	O–3531–41	137	2·0
Herald	O–11386	136	1·3
Pink No. 1	O–11388	134	4·0
L. G. & B. B	O–11392	136	2·8
Bonny Best	Keith	132	3·5
John Baer	And. Mountain	138	2·5
Marglobe	Stoke	138	0·8
Earliana Gr. 2	Langdon	138	0·8
Burbank	Gregory	132	2·8
First of All	McK	135	3·0
John Baer	S. & B	137	2·8
Greater Baltimore	Ferry	135	4·5
Gulf State Market	"	133	5·5
Bloomsdale	Langdon	125	5·3
Dwarf Stone	Livingston	138	3·8
Coreless	"	137	1·5
Rosy Morn	"	136	1·8
Norton Willis Resistant	"		0·3
Sparks Earliana	Burpee	135	4·0
Matchless	Graham	137	1·8
Self Pruning	Burpee	130	5·0
Earliana	Ferry	126	7·7
Crimson Cushion	Henderson	138	1·3
Marglobe	Harris	132	5·0
Landreth	Landreth	132	3·0
Bloomsdale	"	138	2·0
Fordhook First	Burpee	134	2·8
Sunnybrook Earliana	"	132	10·0
Truckess Favourite	"	138	7·5
Hawkins Australian	Hawkins	132	14·0
Adirondack Earliana Gr. 3	Langdon	130	12·0

EXPERIMENTS WITH OTHER VEGETABLES

The following herbs or vegetables were sown on June 3, in 30-foot rows, 15 inches apart. The results obtained are given in the following table:—

OTHER VEGETABLES—VARIETY TESTS

Kind	Variety	Source	Days from sowing until date ready for use	Yield per 30-foot row
				lb.
Sage	Broad Leaf	S.B	103	1·8
Savory	Summer	S.B	66	6·3
Cress		McD		
Cress	Pepper grass	S.B	42	23·3
Chervil	Double curled	McD	64	12·5
Chervil	Green curled	Willis	61	10·0
Thick Leaved		Sutton	78	4·0

NITRATE OF SODA FOR VEGETABLES

The object of this experiment is to determine the advisability of applying nitrate of soda in addition to the usual application of manure in the fertilizing of vegetables. Nitrate of soda was applied at the rate of 300 pounds per acre,

in two applications, the first immediately after the germination of the plants and the other fifteen days later. The results obtained are as follows:—

RESULTS OF USING NITRATE OF SODA ON VEGETABLES

Vegetable	Yield per acre	
	Manure and nitrate of soda	Manure only
	lb.	lb.
Peas	9,744	9,048
Cabbage	36,424	8,816
Cauliflower	25,636	4,872
Carrots	30,392	22,620
Beans	4,408	2,552
Beets	11,136	5,220
Parsnips	15,428	12,528
Kohl Rabi	31,088	12,876
Beets	48,488	17,574
Potatoes	32,478	22,950

The additional use of nitrate of soda seems to be quite profitable. It hastens the growth at a time when it is imperative to do so, as vegetation is rather slow in this district on account of cold weather. Furthermore, the land seems to contain little nitrogen.

ORNAMENTAL GARDENING

During the last season the lawns were improved, new hedges were planted and those already existing were trimmed and now show up to better advantage.

A large number of varieties and strains of flowers were under test. They produced a magnificent bloom which lasted from early summer until very late in the fall.

EXPERIMENTS WITH PAPER MULCH

BEANS—ROUND POD KIDNEY WAX

Date of sowing	Date of blooming	Date ready for use	Height at the end of 3 weeks	Yield, green beans, date and quantity	Yield of ripe beans, date and quantity	Marketable	Unmarketable
			in.	lb.	lb.	lb.	lb.
With paper mulch— June 11	July 29	Aug. 19	8	4·5 Sept. 4	8·8 Sept. 20	8·3	0·3
Without paper mulch— June 11	July 29	Aug. 21	6	5·3 Sept. 5	5·3 Sept. 20	4·3	1·0

Unmarketable beans were affected with rust and anthracnose.

BEANS—STRINGLESS GREEN POD

Date of sowing	Date of blooming	Date ready for use	Height at the end of 3 weeks	Yield, green beans, date and quantity	Yield, ripe beans, date and quantity	Marketable	Unmarketable
			in.	lb.	lb.	lb.	lb.
With paper mulch— June 11	July 27	Aug. 17	8	15·8 Aug. 28	13·5 Sept. 20	13·3	0·2
Without paper mulch— June 11	July 29	Aug. 19	6	9·5 Aug. 28	12·0 Sept. 20	11·5	1·5

Unmarketable beans were affected with rust and anthracnose.

CAULIFLOWER—SUPER SNOWBALL

Date when six good marketable heads were six inches or more	Number of 6 inch heads on the first date	Number of plants not producing any marketable heads	Yield	Date of first and last harvest
			lb.	
With paper mulch—				
Aug. 11	3 Aug. 9	0	59·5	Aug. 9–Sept. 17
Without paper mulch—				
Aug. 14	4 Aug. 12	2	26·9	Aug. 23–Sept. 11

Two plants did not produce any marketable heads on account of root maggots.

CABBAGE—GOLDEN ACRE

Date of planting	Date when first firm head measured 6 inches	Date when six first firm heads measured 6 inches	Yield
			lb.
With paper mulch—			
June 14	Aug. 7	Aug. 9	163·8
One head weighing 1·8 pounds was unmarketable on account of root maggots.			
Without paper mulch—			
June 14	Aug. 5	Aug. 12	133·8
Three heads weighing 4·8 pounds were unmarketable on account of root maggots.			

CELERY—GOLDEN PLUME

Date of planting	Height at end of 4 weeks	Comparative strength of plants at banking time	Crispiness of plants after banking up	Weight of 12 average plants	Yield and date of harvesting
	in.			lb.	lb.
With paper mulch—					
June 18	3·5	Good	Very good Not woody	18·5	64·5–Oct. 8
Without paper mulch—					
June 18	4·5	Very good	Very good Not woody	21·0	87·0–Oct. 8

The celery was blanched with boards in the two plots. At harvesting the height of the mulched plants was 19 inches and of the unmulched plants 20 inches.

CARROTS—CHANTENAY

Date of sowing	Date when first carrot measured 1 inch diameter	Number of carrots measuring 1 inch on the first date	Date when six first carrots measured one inch	Weight and number of carrots pulled on the first date	Weight and number of carrots pulled in the fall
With paper mulch— June 3	Aug. 9	2	Aug. 14	162 9·8 pounds	109 27 pounds
Without paper mulch— June 3	Aug. 12	2	Aug. 14	175 11·7 pounds	112 32·5 pounds

The carrots in the mulched plot were not uniform, very rooty and misshaped; those on the unmulched plot were well shaped and had a good size.

BEETS—DETROIT DARK RED

Date when first beets measured 1½ inches diameter	Number of beets measuring 1½ inches diameter on the first date	Date when six first beets measured 1½ inches diameter	Weight and number of beets pulled from a 15-foot row and measuring 1½ inches diameter	Weight and number of beets pulled in the fall
With paper mulch— July 31	2	Aug. 3	92 18·8 pounds	81 22·5 pounds
Without paper mulch— Aug. 9	1	Aug. 11	93 14·1 pounds	89 21·3 pounds

The beets on the mulched plot were well shaped, very uniform and of a good size, while those on the unmulched plot were rather small and misshaped.

LETTUCE—ICEBERG

Date of cutting of first head	Date when the first six heads were ready for cutting	Length of season	Weight of 6 average heads
		days	ounces
With paper mulch— July 12	July 15	39	10
Without paper mulch— July 14	July 18	42	8

SPINACH—KING OF DENMARK

Length and width of leaf 4 weeks after planting	Date when the grain stem first appeared	Weight of 15 heads when ready for cutting	Comparative strength
		lb.	
With paper mulch— Length 2 inches, width 1 inch	July 24	3·3	Good
Without paper mulch— Length 1½ inches, width ¾ inch	July 23	2·5	Weak

For certain crops, a paper mulch seems to be beneficial from the standpoint of yield and earliness. Some other crops were mulched also, but as they were sown very late, the yield was negligible; consequently the results are not given.

POTATOES—IRISH COBBLER

Date of plantation	Date when 50 per cent of the plants were pulled	Date of full bloom	Quantity pulled on Aug. 15	Marketable	Unmarketable	Date when 75 per cent of leaves died	Quantity pulled in the fall	Marketable	Unmarketable
			lb.	lb.	lb.		lb.	lb.	lb.
With paper mulch—									
June 11....	July 4	Aug. 7	6·5	5·0	1·5	Sept. 20	41·5	39·3	2·3
Without paper mulch—									
June 11....	July 4	Aug. 7	7·3	5·8	1·5	Sept. 20	42·8	40·0	2·8

The yield per acre on the mulched plot was 401·3 bushels, and that of the unmulched plot, 413·3 bushels. On the mulched plot four plants were infested with mosaic and three with leaf roll. On both plots no insect injury was noticed.

POTATOES—GREEN MOUNTAIN

Date of plantation	Date when 50 per cent of the plants were pulled	Date of full bloom	Quantity pulled on Aug. 15	Marketable	Unmarketable	Date when 75 per cent of leaves died	Quantity pulled in the fall	Marketable	Unmarketable
			lb.	lb.	lb.		lb.	lb.	lb.
With paper mulch—									
July 11....	July 4	Aug. 5	9·0	5·3	3·8	Sept. 20	53·3	51·3	2·0
Without paper mulch—									
June 11....	July 4	Aug. 6	5·0	2·8	2·3	Sept. 20	53·8	51·3	2·5

The yield per acre on the mulched plot was 515·3 bushels, and that of the unmulched plot, 520 bushels. On the mulched plot no plants were diseased, while on the unmulched plot one plant was infested with mosaic. On both plots no insect injury was noticed.

CEREALS

The seeding of cereal plots was somewhat delayed by frequent rains in May and June. However, early varieties ripened before the fall frosts in spite of this delay.

The yields of wheat, oats, and barley obtained in 1929 on 120th-acre plots are much lower than those that may be expected in a normal year in Abitibi, on land in perfect condition as regards tilth and fertility. The principal causes of these low yields are the excessive precipitation during the growing season, the lack of humus in certain parts of the fields, where the soil hardens after each rain and remains impervious, and the lack of plant food.

WORK WITH CEREALS

The work with cereals consists of growing on plots different strains and varieties of cereals, in order to determine the earliest, the most productive and the most resistant to diseases.

There are two kinds of plots: those under the rod-row system, in which five rows 18·5 feet long are sown of each of the varieties under test, and this sowing is replicated on four different plots. The yield per acre is determined from the three centre rows of each plot; the two outside rows of each plot serve as buffer rows for the centre ones, and are not used in computing the total yield. At harvesting time, the length of the plots is cut down to exactly one rod (16½ feet) in length, by removing 1 foot off each end.

The other system consists of plots of 120th of an acre in size. On these plots each variety is replicated five times.

The land where this work is conducted is under a four-year rotation as follows:—

First year.—Sunflowers.
Second year.—Cereals.
Third year.—Clover hay.
Fourth year.—Timothy hay.

Manure is applied to the first year of the rotation at the rate of 16 tons per acre.

TEST OF VARIETIES AND STRAINS ON ROD-ROW PLOTS

The varieties and strains were sown on June 3, on land in fairly good condition. On the whole, the results obtained with these plots were good.

WHEAT.—Five varieties were under test; all ripened and gave a fair yield. The two varieties Garnet Ott. 652 and Reward Ott. 15 have again shown themselves to be relatively suitable for the district. The results obtained are shown in the following table:—

SPRING WHEAT—AVERAGE OF FOUR ROD-ROW PLOTS

Variety	Number of days to ripen	Average length of straw, including head	Strength of straw, on scale of 10 points	Yield of grain per acre	Weight per measured bushel after cleaning	Weight of 1,000 kernels
		in.		bush.	lb.	grams
Garnet, Ott. 652	105	30·5	9·8	18·6	64·00	30·4
Reward, Ott. 328	106	32·7	9·9	18·0	64·12	32·36
Ruby, Ott. 623	107	27·5	9·8	15·9	63·40	29·40
Prelude, Ott. 135	101	25·0	9·8	15·2	66·11	29·08
Marquis, Ott. 15	110	37·0	9·7	11·7	57·90	28·24

SPRING RYE.—Two varieties were under test and both gave fair yields. The results are as follows:—

RYE—AVERAGE OF FOUR ROD-ROW PLOTS

Variety	Number of days to ripen	Average length of straw, including head	Strength of straw, on scale of 10 points	Yield of grain per acre	Weight per measured bushel after cleaning	Weight of 1,000 kernels
		in.		bush.	lb.	grams
O.A.C. 61	115	48·7	9·2	16·9	59·10	26·36
Ott. Select	112	49·5	9·4	16·6	60·70	23·64

OATS.—Four varieties were under test. Alaska again headed the list. This variety has proven to be well adapted to our soil and climatic conditions. Liberty, which is a hulless variety, has given a fairly good yield, as compared with the others. The results obtained are given in the following table:—

OATS—AVERAGE OF FOUR ROD-ROW PLOTS

Variety	Number of days to ripen	Average length of straw, including head	Strength of straw, on scale of 10 points	Yield of grain per acre	Weight per measured bushel after cleaning	Weight of 1,000 kernels
		in.		bush.	lb.	grams.
Alaska	101	27·7	9·8	33·9	43·11	32·84
Gold Rain	119	28·2	9·7	32·7	42·00	29·88
Banner, Ott. 49	121	29·4	9·3	27·1	38·14	32·44
Liberty, Ott. 480	104	33·0	9·6	20·6	52·90	21·52

BARLEY.—Four varieties of barley were under test, and all ripened. The results obtained are shown in the following table:—

BARLEY—AVERAGE OF FOUR ROD-ROW PLOTS

Variety	Number of days to ripen	Average length of straw, including head	Strength of straw, on scale of 10 points	Yield of grain per acre	Weight per measured bushel after cleaning	Weight of 1,000 kernels
		in.		bush.	lb.	grams
O.A.C. 21	97	29·5	9·7	24·8	53·9	33·4
Mensury, Ott. 60	98	29·0	9·9	21·1	51·0	33·4
Velvet	100	28·5	9·8	19·8	51·0	34·2
Albert, Ott. 54	86	23·7	9·8	17·6	49·6	35·92

OATS.—Five varieties of oats were sown on June 10 at the rate of 2·5 bushels per acre. Of these, Alaska, Cartier, and Montcalm ripened completely, while the others suffered from early frosts. The results are as follows:—

OATS—VARIETY TEST

Variety	Type	Number of days from sowing to ripening	Average length of straw, including head	Strength of straw on scale of 10 points	Yield per acre after sifting	
					1929	Three-year average
			in.		bush.	bush.
Alaska	Panicle	105	23	8·7	19·8	23·7
Cartier	"	105	19	9·0	17·1	21·6
Montcalm	"	105	20	9·1	14·5	20·3

The Gold Rain, Banner 44Mc, and Legacy varieties were damaged by frosts before ripening. The earlier varieties obviously are better adapted to the district.

BARLEY.—Ten varieties of barley were sown on June 11 at the rate of 2·5 bushels per acre; all ripened, although the growth was somewhat checked and the yield of grain reduced by the excessive dampness of the soil during the growing season. The results are as follows:—

BARLEY—VARIETY TEST

Variety	Type	Number of days from sowing to ripening	Average length of straw, including head	Strength of straw on scale of 10 points	Yield per acre after sifting	
					1929	Three year average
			in.		bush.	bush.
Star S.V.	6-rowed	102	24·2	9·3	15·4	21·0
O.A.C. No. 21	6- "	105	26·2	9·0	15·1	20·8
Monck M.C.	6- "	107	29·6	9·5	12·4	(2 yrs.) 9·8
Manchurian C.R. 14	6- "	105	27·6	9·2	11·9	17·2
Charlottetown No. 80	2- "	108	27·1	9·6	11·1	21·9
Mensury Ott. 60	6- "	104	26·8	9·0	10·2	18·5
Duckbill 207	2- "	109	29·8	9·8	10·2	18·0
Bearer Ott. 457	6- "	109	25·0	8·9	9·4	17·8
Hannchen	2- "	105	27·0	9·2	8·5	18·9
Pontiac M.C.	6- "	107	24·4	9·3	6·4	(2 yrs.) 6·6

It is worthy of note that the ten varieties of barley under test have all ripened.

FORAGE PLANTS

The 17-acre field used for the variety tests was rearranged during the last season. The 1/80th-acre plots were reduced to 1/100th acre, which will allow for the use of quadruplicate instead of triplicate plots previously used. The shape of the plots has also been changed from square to rectangular.

Ten varieties of carrots, twenty of beets, twenty-two of swedes, twelve of turnips, six of sunflowers, eight of corn, forty various mixtures of grasses, and sixteen mixtures of annual hay crops were tested on the new plots this year. The results obtained were very good, considering the fact that the sowing could not be completed until the end of June.

As usual, the crops of these plots were weighed in a green condition; that is at the time of cutting for hay, corn, sunflowers, and annual hay crops, and at the time of pulling for carrots, beets, swedes and fall turnips. Immediately the green weight had been made, 2- or 5-pound shrinkage samples were taken and placed in drying trays for partial curing. When drying was sufficient to allow for shipment they were forwarded to the Division of Forage Plants for determination of absolute dry matter in order that all comparisons could be made on a dry matter basis. Yields in the case of field roots, corn, and sunflowers are given in absolute dry matter; in the case of grasses and clovers the yields are given in hay containing 15 per cent moisture.

SUNFLOWERS—VARIETY TEST

Six varieties of sunflowers were tested in quadruplicate in $\frac{1}{100}$-acre plots. Seeding was done on June 20 in rows 36 inches apart. When harvested on September 21 the following results were obtained:—

SUNFLOWERS—RESULTS OF VARIETY TEST

Variety	Source	Yield per acre			
		Green weight		Dry matter	
		tons	lb.	tons	lb.
Mammoth Russian	K. McDonald	7	1,700	1	135
" "	Ewing	7	1,000	1	055
Ottawa 76	C.E.F.	6	1,500	0	1,971
Manchurian	McKenzie	6	600	0	1,950
Mennonite	F. Ex. Rosthern	6	600	0	1,915
Mammoth Russian	Disco	6	1,900	0	1,890

CORN—VARIETY TEST

Eight varieties of corn were sown on June 20 in rows 36 inches apart, on 1/100-acre plots in quadruplicate. The crop was harvested on September 4. The results obtained were as follows:—

CORN—RESULTS OF VARIETY TEST

Variety	Source	Yield per acre	
		Green weight	Dry matter
		tons lb.	tons lb.
Twitchells Pride		2 800	398
Bailey	Bondy	1 1,900	343
N.W.D.	C.E.F., Brandon	1 1,200	317
Burr Leaming	Carter	1 1,700	311
Wisconsin No. 7, Twitchells	Summerland	1 1,700	289
Amber Flint	Wimple	1 1,100	260
Minnesota 13	Dakota Imp. Seed Co.	1 1,100	247
Yellow Dent	Wimple	1 700	235

SOYA BEANS—VARIETY TEST

Two varieties of soya beans were sown on June 21, in rows 36 inches apart, on 1/100-acre plots, in quadruplicate. The crop was harvested on September 4. The results obtained were as follows:—

SOYA BEANS—RESULTS OF VARIETY TEST

Variety	Source	Yield per acre	
		Green weight	Dry matter
		lb.	lb.
Early Brown	Salmon Arm, B.C.	1,500	669
St. Anne No. 92.	Macdonald College.	1,300	493

ANNUAL HAY CROPS

The settlers and farmers of this district take a great deal of interest in annual crops for hay, and the growing of these crops has been continued for this reason.

On June 24 sixteen various mixtures were sown on 1/100-acre plots in quadruplicate. The results obtained are as follows:—

ANNUAL HAY CROPS—RESULTS OF VARIETY TEST

Crop	Rate of seeding per acre	Yield per acre			
		Green weight		Hay containing 15% moisture	
	bush.	tons	lb.	tons	lb.
Oats, Liberty	2·0	6	100	2	1,068
Peas, Chancelor	2·5	9	1,200	2	698
Peas, Gold Stem	2·5	11	200	2	645
Oats, Longfellow	2·5	6	1,900	2	633
Oats, Alaska	2·5	4	1,800	2	415
Oats, Banner Ott. 49	2·5	6	0	2	347
Oats, Gold Rain	2·5	5	1,200	2	137
Peas, Arthur	2·5	9	700	2	113
Peas, Mackay	2·5	8	1,400	1	1,526
Oats, Daubeny	2·5	5	800	1	1,417
Vetch, black	1·0	7	800	1	857
Peas, ¾ bush., oats 2 bush., vetch ¼ bush	3·0	5	200	1	448
Peas ½ bush., oats 2 bush., vetch ½ bush	3·0	4	1,700	1	276
Peas 1 bush., oats 1½ bush., vetch ½ bush	3·0	4	600	1	175
Peas 1 bush., oats 2 bush	3·0	3	700	0	1,970
Sweet clover, Hubam	20 lbs.	1	1,300	0	990

MANGEL—VARIETY TEST

Sixteen varieties of mangels, including feeding sugar beets, were sown on June 20 in rows 36 inches apart, in $\frac{1}{100}$-acre plots in quadruplicate. The yields were poor on account of the late sowing and the large amount of plant food required by this crop. The results obtained were as follows:—

MANGELS—RESULTS OF VARIETY TEST

Variety	Source	Yield per acre		
		Green weight		Dry matter
		tons	lb.	lb.
Yellow Inter	C.E.F.	2	700	738
Giant Yellow Inter	J. E. Bruce	2	200	626
Red Globe	D. & F.	1	1,100	477
Danish Sludstrup	Graham	1	1,300	472
Red Globe	J. E. Bruce	1	1,200	493
Eckendorfer Yellow	H. Hartmann	1	1,500	473
Red Tankard	Mc. Donald	1	1,500	469
Wht. Red Top ½ sugar	H. Hartmann	1	1,300	469
Yellow Eckendorfer	Swalof	1	1,400	445
Yellow Globe	D. & F.	1	900	421
Giant Yellow Globe	Ewing	1	1,300	419
Golden Tankard	J. E. Bruce	1	900	394
Eckendorfer Red	H. Hartmann	1	800	386
Long White	D. & F.	1	1,700	629
Long Red Mammoth	Mc. Faden	1	1,600	569
Rubra	Swalof	1	1,800	555
Long Yellow	Ewing	1	700	416

Three lots of sugar beets were sown and harvested at the same time as the mangels and gave the following results:—

SUGAR BEETS—VARIETY TEST

Variety	Yield per acre		
	Green		Dry matter
	tons	lb.	lb.
Fredericksen	2	100	920
Horning	2	...	860
Rabbethge Giesecke	1	300	531

SWEDE TURNIPS—VARIETY TEST

Twenty-one varieties of swede turnips were sown on June 21, in rows 36 inches apart, on $\frac{1}{100}$-acre plots, in quadruplicate. The swede turnips gave larger yields than mangels. The results obtained were as follows:—

SWEDE TURNIPS—RESULTS OF VARIETY TESTS

Variety	Source	Yield per acre			
		Green weight		Dry matter	
		tons	lb.	tons	lb.
Bangholm	Exp. F. Nappan	8	1,400	1	471
F. S. Favorite	D. & F.	9	600	1	344
Good Luck	Steele Briggs	9	700	1	300
Garton's Superlative	Ewing	9	200	1	220
Mammoth Clyde Purple Top	D. & F.	8	500	1	096
Elephant or Monarch	Ewing	9	0	1	096
Jumbo	Steele Briggs	8	400	1	087
Bangholm	Ex. F. Kentville	7	1,600	1	036
Kangaroo	Ewing	7	1,400	0	1,971
Ditmars	Mc. Nutt	7	1,900	0	1,908
Elephant or Monarch	D. & F.	7	1,600	0	1,888
Canadian Gem	J. A. Bruce	7	1,600	0	1,856
Hall's Westbury	Ewing	7	1,600	0	1,841
Ne plus ultra	D. & F.	7	600	0	1,698
Kangaroo	D. & F.	5	1,400	0	1,637
Bangholm	Ewing	6	100	0	1,575
Bangholm Purple Top	D. & F.	5	1,300	0	1,537
Perfect Model	D. & F.	5	300	0	1,360
Laing's Imp. Purple Top	D. & F.	4	1,700	0	1,300
Invicta Brome Top	Ewing	4	1,800	0	1,235
Best of All	Ewing	4	500	0	1,132

FALL TURNIPS—VARIETY TEST

Eleven varieties of fall turnips were sown on June 21, in rows 36 inches apart, on $\frac{1}{100}$-acre plots, in quadruplicate. The results are as follows:—

FALL TURNIPS—RESULTS OF VARIETY TESTS

Variety	Source	Yield per acre		
		Green weight		Dry matter
		tons	lb.	lb.
Early Six Weeks	Sutton	4	1,100	910
Purple Top Mammoth	Steele Briggs	3	1,400	807
Green Top Yellow Aberdeen	Ewing	3	300	806
Mammoth Purple Top	Sutton	3	1,400	710
Pomeranian White Globe	Steele Briggs	3	300	687
White Globe	Ewing	3	800	656
Hardy Green Round	Sutton	2	1,900	655
Aberdeen Purple Top	Steele Briggs	2	1,400	572
Red Paragon	Sutton	2	1,000	565
Aberdeen Purple Top	"	2	800	552
Greystone Devonshire	Steele Briggs	2	200	449

CARROTS—VARIETY TEST

Ten varieties of carrots were sown on June 21, in rows 36 inches apart, on 1/100-acre plots, in quadruplicate. The results obtained are shown in the following table:—

CARROTS—RESULTS OF VARIETY TEST

Variety	Source	Yield per acre	
		Green weight	Dry matter
		tons lb.	lb.
Danish Champion	C.E.F.	3 1,800	874
White Belgian	Ewing	3 1,900	861
Mammoth Wht. Int.	John Bruce	3 1,200	828
Champion	Hartmann	3 1,000	763
New Yellow Intermediate	Ewing	3 700	717
White Belgian	D. & F.	3 1,000	707
Imp. Intermediate White	"	3 100	677
Lg. White Vosges	"	2 1,700	667
Imp. Intermediate White	Ewing	2 1,500	611
White Belgian	Hartmann	2 1,200	593

WHITE CLOVER—VARIETY TEST

Five varieties of white clover were sown on 1/80-acre plots, in triplicate. The yields obtained were as follows:—

WHITE CLOVER—RESULTS OF VARIETY TEST

Variety	Rate of seeding per acre	Yield per acre, 1929	
		Green weight	Hay containing 15 per cent moisture
	lb.	tons lb.	tons lb.
Stryno	4	6 300	1 1,328
Morso	4	6 700	1 1,315
Ladino	4	5 1,600	1 1,261
Wild White	4	5 1,300	1 1,150

SWEET CLOVER—VARIETY TEST

Two varieties only were sown on 1/80-acre plots in triplicate. The yields were as follows:—

SWEET CLOVER—RESULTS OF VARIETY TEST

Variety	Rate of seeding per acre	Yield per acre, 1929	
		Green weight	Hay containing 15 per cent moisture
	lb.	tons lb.	tons lb.
White Blossom	20	6 1,000	2 205
Yellow Blossom	20	4 1,900	1 1,039

ALFALFA—VARIETY TEST

Three varieties were sown on 1/80-acre plots, in triplicate. The results obtained were as follows:—

ALFALFA—RESULTS OF VARIETY TEST

Variety	Rate of seeding per acre	Yield per acre, 1929			
		Green weight		Hay containing 15 per cent moisture	
	lb.	tons	lb.	tons	lb.
Grimm	20	6	1,600	2	559
Variegated	20	7	-	2	332
Medicago Falcata	20	6	1,100	2	220

TIMOTHY—VARIETY TEST

Three varieties were sown on 1/80-acre plots in triplicate. The results obtained were as follows:—

TIMOTHY—RESULTS OF VARIETY TEST

Variety	Rate of seeding per acre	Yield per acre, 1929			
		Green weight		Hay containing 15 per cent moisture	
	lb.	tons	lb.	tons	lb.
Boon	12	7	800	2	1,571
Commercial	12	7	500	2	1,458
Ohio 9227	12	6	1,500	2	1,066

GRASSES—TEST OF VARIOUS STRAINS

Ten strains of various grasses were sown on 1/80-acre plots, in triplicate. The results obtained were as follows:—

GRASSES—RESULTS OF TEST OF VARIOUS STRAINS

Variety	Yield per acre, 1929			
	Green weight		Hay containing 15 per cent moisture	
	tons	lb.	tons	lb.
Alsike clover	7	400	3	64
Western Rye grass	6	400	2	1,864
Kentucky blue grass	6	1,300	2	[illegible]
Red fescue	5	1,600	2	[illegible]
Meadow fescue	6	700	2	[illegible]
Tall oats	5	1,700	1	1,[illegible]
Brome grass	5	300	1	[illegible]
Italian Rye grass	5	1,900	1	[illegible]
Orchard grass	6	900	1	[illegible]
Perennial Rye grass	7	600	1	[illegible]

MIXTURES OF LEGUMES AND GRASSES

Twenty-eight different mixtures of legumes and grasses at different rates were sown on 1/80-acre plots, in triplicate. The results obtained were as follows:—

RESULTS WITH MIXTURES OF GRASSES AND LEGUMES

Mixtures	Rate of seeding per acre	Yield per acre, 1929			
		Green weight		Hay containing 15% moisture	
	lb.	tons	lb.	tons	lb.
Timothy	8				
Alsike	4				
Kentucky blue grass	2	8	100	2	1,861
Red fescue	2				
White clover	1				
Timothy	6				
Orchard grass	2				
Meadow fescue	2	6	1,700	2	1,662
Red clover	10				
Kentucky blue grass	2				
Red fescue	2				
White clover	1				
Timothy	6				
Orchard grass	4				
Red clover	8				
Alsike clover	2	8	1,800	2	1,235
Kentucky blue grass	2				
Red fescue	2				
White clover	1				
Timothy	6				
Meadow fescue	4				
Red clover	8	8	1,200	2	1,220
Alsike	2				
White clover	1				
Timothy	6				
Meadow fescue	2				
Orchard grass	2	7	1,400	2	1,126
White blossom sweet clover	10				
White clover	1				
Timothy	8				
Yellow blossom sweet clover	10	7	200	2	1,091
White clover	1				
Timothy	8				
White blossom sweet clover	10	7	.....	2	1,039
White clover	1				
Timothy	6				
Orchard grass	2				
Meadow fescue	2				
Red clover	8	7	1,800	2	999
Alsike	2				
Kentucky blue grass	2				
Red fescue	2				
White clover	1				
Timothy	6				
Meadow fescue	4				
Red clover	10	7	.....	2	924
White clover	1				
Timothy	8				
Red clover	8				
Alsike	2	6	1,000	2	893
White clover	1				

RESULTS WITH MIXTURES OF GRASSES AND LEGUMES—*Continued*

Mixtures	Rate of seeding per acre	Yield per acre, 1929			
		Green weight		Hay containing 15% moisture	
	lb.	tons	lb.	tons	lb.
Timothy	8				
Alsike	4	7	1,600	1	860
White clover	1				
Timothy	6				
Meadow fescue	4				
White blossom sweet clover	10	7	600	2	809
White clover	1				
Timothy	6				
Meadow fescue	2				
Orchard grass	2	7	800	2	788
Yellow blossom sweet clover	10				
White clover	1				
Alfalfa	3				
Timothy	6				
Red clover	6	6	1,800	2	772
White clover	1				
Timothy	8				
Red clover	10				
Kentucky blue grass	2	6	1,500	2	769
Red fescue	2				
White clover	1				
Timothy	8				
Red clover	10	6	.....	2	729
White clover	1				
Timothy	6				
Orchard grass	4				
Red clover	8	8	1,200	2	713
Alsike	2				
White clover	1				
Timothy	6				
Orchard grass	4				
Red clover	10				
Kentucky blue grass	2	7	1,300	2	697
Red fescue	2				
White clover	1				
Timothy	8				
Red clover	8				
Alsike	2				
Kentucky blue grass	2	7	1,800	2	643
Red fescue	2				
White clover	1				
Timothy	6				
Meadow fescue	4				
Red clover	8				
Alsike	2	8	1,700	2	580
Kentucky blue grass	2				
Red fescue	2				
White clover	1				
Alfalfa	6				
Timothy	6				
Red clover	10	6	1,900	2	578
Alsike	2				
White clover	1				
Timothy	6				
Orchard grass	2				
Meadow fescue	3	7	900	2	404
Red clover	8				
Alsike	2				
White clover	1				

RESULTS WITH MIXTURES OF GRASSES AND LEGUMES—*Concluded*

Mixtures	Rate of seeding per acre	Yield per acre, 1929			
		Green weight		Hay containing 15% moisture	
	lb.	tons	lb.	tons	lb.
Timothy	6				
Orchard grass	4	7	.....	2	381
Red clover	10				
White clover	1				
Timothy	6				
Orchard grass	4				
Yellow blossom sweet clover	10	6	900	2	279
White clover	1				
Timothy	6				
Orchard grass	2				
Meadow fescue	2	5	1,100	2	244
Red clover	10				
White clover	1				
Timothy	6				
Orchard grass	4				
White blossom sweet clover	10	7	100	2	230
White clover	1				
Timothy	6				
Meadow fescue	4				
Red clover	10	7	900	1	1,289
Kentucky blue grass	2				
Red top	2				
White clover	1				
Timothy	6				
Meadow fescue	4				
Yellow blossom sweet clover	10	8	600	1	958
White clover	1				

POULTRY

Barred Plymouth Rock hens and Pekin ducks are kept on this station. On December 31, 1929, our flock included 454 birds as follows: 46 Barred Plymouth Rock cocks and cockerels and 365 hens, and 6 Pekin males and 37 females.

EXTENSION

The demand for hatching eggs, day-old chicks, eight-week-old pullets, fall pullets and breeding stock is continually increasing. Settlers are taking more interest in poultry and visit the station oftener than in the past. An incubator with a 5,000-egg capacity will be started in the spring, with a view to satisfying the demand for day-old chicks and improving the quality of poultry in the district.

INCUBATION

A Jamesway incubator, with a 1,400-egg capacity, was added to the other makes of incubators on hand. The number of eggs set was 9,337. The fertility of these eggs was 91·3 per cent. The per cent of fertile eggs hatched was 67·6 per cent, and 97·1 per cent of the chicks hatched were alive at the age of three weeks.

MATINGS AND PEDIGREE BREEDING

The laying capacity of our stock was materially increased through pedigree breeding during the past years and through the selection for breeding of the birds giving the highest egg production and the elimination of those showing standard defects. Thus, in 1924, the twenty-four best breeding hens gave an average production of 151 eggs, while the twenty-four best hens that will be mated in 1930 had an average production of 258·25 eggs, an increase of 107 eggs per hen. At the time of writing, 135 hens of our flock have laid 200 eggs or more, and the average of the forty-eight best hens is 248 eggs.

REGISTRATION

Last year, twenty-four birds were entered in laying contests: twelve at Ste. Anne and twelve in the Canadian National contest at Ottawa.

In the Ste. Anne contest, our pen came first in the number of birds qualifying for registration, with eight registered birds; five of these were second generation birds.

The total production of the ten regular hens during the fifty-one weeks of the contest was 2,061 eggs and the number of points 2,218·8.

In the Ottawa contest, which included eighty pens and 800 birds, our birds won second and third places for best layers. Our pen was fourth as regards the number of eggs laid with a total of 2,173 eggs for the ten regular birds; five birds qualified for registration.

Twenty-two registered birds will be used for breeding purposes this year, and no bird laying less than 200 eggs will be used for this purpose.

In order to ascertain the cost of artificial incubation, a record was kept of the number of eggs placed in the incubators, the cost of these eggs, the quantity and cost of coal-oil used, the labour and the cost of labour. The eggs were valued at $5 per hundred, coal-oil at 35 cents per gallon, and labour at 30 cents per hour. The results are as follows:—

SUMMARY OF COST OF ARTIFICIAL INCUBATION

Number of eggs set	9,387
Number of chicks hatched	5,792
Value of eggs	$469 35
Quantity of oil used (gallons)	172
Cost of oil	$ 60 20
Labour, 30 cents per hour	99 00
Total cost	628 55
Cost per egg	0·067
Cost per chick	0·108

COST OF FUEL WITH DIFFERENT MAKES OF INCUBATORS

Incubator	Capacity	Total quantity of oil	Quantity per 100 eggs	Total cost	Cost per 100 eggs	Cost per egg
		quarts	quarts	$	cts.	
Buckeye	1,125	70·5	7·45	6 17	65	·0065
Prairie State	210	21·0	10·0	1 84	88	·0088
Jamesway	1,440	115·5	8·0	9 86	70	·007

As regards the Buckeye, three machines of different capacity of this make were used, and the average quality of oil used by the three machines is recorded in the above table.

NATURAL VS. ARTIFICIAL INCUBATION

The purpose of this experiment is to ascertain which method of incubation (natural or artificial) gives the best results. Eggs from selected hens were hatched by hens and by incubators and the results noted as regards cost, per cent of hatching and viability of chicks. The results are given in the following table:—

NATURAL VS. ARTIFICIAL INCUBATION

—	Natural incubation	Artificial incubation
Number of eggs set	60	60
Number of chicks hatched	48	53
Per cent total eggs hatched	80	88
Number of chicks alive at age of 3 weeks	40	50
Per cent of chicks alive at age of 3 weeks	83	94·3

Summary of Cost

—	Natural incubation	Artificial incubation
Cost of eggs at 5 cents each	$3 00	$3 00
Quantity of coal-oil used, quarts	.....	9·5
Cost of coal oil used	.....	$0 83
Cost of labour at 30 cents per hour	$3 20	2 18
Total cost	6 20	6 01
Cost per chick hatched	0·13	0·113
Cost of incubation per chick at age of 3 weeks	0·155	0·12

The above table shows that artificial incubation cost 3·5 cents less than natural incubation. There are also other objections to natural incubation: it requires more labour; good setting hens are scarce, and hens often break the eggs or leave the nest.

COST OF ARTIFICIAL BROODING

The object of this experiment is to determine the cost of brooding chicks from birth until they have no further need of artificial heat, at the age of six weeks. The results are as follows:—

COST OF ARTIFICIAL BROODING

—	—
Number of chicks	200
Quantity of coal used (pounds)	905
Value of coal at $17.35 per ton	$ 7 85
Cost of grain, 135 pounds at $2.75 per 100 pounds	3 71
Cost of mash, 115 pounds at $2.90 per 100 pounds	3 34
Cost of skim-milk, 200 pounds at 50 cents per 100 pounds	1 00
Cost of cod liver oil, 2 quarts at 27½ cents per quart	0 55
Cost of labour, 35 hours at 30 cents	10 50
Total cost	26 95
Cost per 100 chicks	13 48
Cost per chick	0·135

NATURAL VS. ARTIFICIAL BROODING

The purpose of this experiment is to ascertain the comparative advantage of raising chicks until six weeks of age with hens and with artificial brooders. A record was kept of all the expenses in connection with the two systems and the results are given in the following table:—

NATURAL VS. ARTIFICIAL BROODING

—	Natural	Artificial
Number of chicks	50	50
Cost of coal		$1 96
Cost of scratch grain, $2.75 per 100 pounds	$1 38	0 93
Cost of mash at $2.90 per 100 pounds	1 19	0 84
Cost of skim-milk at 50 cents per 100 pounds	0 60	0 60
Cost of cod liver oil	0 08	0 08
Cost of labour	2 25	2 50
Total cost	5 50	6 81
Cost per chick	0 11	0 136

As regards natural brooding, the loss of production resulting from the use of hens for hatching and brooding the chicks was not taken into consideration. The feed cost is higher in natural brooding on account of the feed consumed by the brooding hens.

POTATOES AS SUBSTITUTE FOR CORN MEAL IN THE LAYING MASH

The object of this experiment is to determine the advantage, if any, of adding cull potatoes to the laying mash, in order to lower the cost. Two lots of twenty-five pullets, of similar quality, and under similar housing and feeding conditions, were used for this experiment; the only difference was that one lot received boiled cull potatoes in the wet mash in place of the corn meal of the mash. Potatoes were mixed with an equal weight of the mash. Records were taken of the quantity and cost of feed, the number and value of eggs laid, the feed cost per dozen of eggs, mortality, condition of birds, gain or loss of weight during the experiment and profit over feed cost. The results are as follows:—

POTATOES VS. CORN MEAL

Item	Potatoes	Corn meal
Feed consumed lb.	63·6	51·1
Cost of feed $	1 63	1 38
Number of eggs laid	66	101
Value of eggs laid $	3 47	5 20
Feed cost per dozen eggs $	0 31	0 18
Profit on feed cost $	1 84	3 82
Gain per bird lb.	0·13	0·74
Condition	Good	Good
Mortality	4%	12%

Boiled cull potatoes were not profitable for egg production, but as this is the first year of the experiment no final conclusions can be drawn.

POTATOES AS SUBSTITUTE FOR CORN MEAL FOR FATTENING COCKERELS

The object of this experiment is to determine the advisability of substituting cull potatoes for corn meal in the ration for fattening cockerels. Three lots of twelve cockerels each were crate fed.

Lot 1 received a wet mash consisting of equal parts of corn meal, middlings and rolled oats, with skim-milk added.

Lot 2 received a mash consisting of equal parts of middlings, rolled oats and boiled potatoes, with skim-milk added.

Lot 3 received the same mash as lot 2, minus skim-milk.

Each lot received 2½ per cent of charcoal and occasionally a meal of sprouted oats at noon. The mash was fed morning and night. The fattening period covered twenty-one days. The results obtained in 1928-29 are given in the following table:—

EXPERIMENT ON THE FATTENING OF COCKERELS

Lot and special feed	Initial weight	Weight after fattening	Value at start of experiment	Value after fattening	Increase in value	Value of feed	Profit	Profit per bird	Year
	lb.	lb.	$ cts	$ cts.	$ cts.	$ cts.	$ cts.	cts.	
No. 1 Corn.....	23·25	26·5	6 98	9 28	2 30	1 27	1 03	26	1928
	77·5	89·5	23 25	31 33	8 08	4 88	3 20	27	1929
No. 2 Potatoes and milk.	21·5	24·75	6 45	8 66	2 21	0 97	1 24	31	1928
	72·5	83·5	21 75	29 23	7 48	3 10	4 38	36·5	1929
No. 3 Potatoes without milk.	22·5	24·75	6 75	8 66	1 91	0 92	0 99	25	1928
	76·25	83·5	22 88	29 23	6 35	2 58	3 77	31·4	1929

The lot receiving cooked potatoes mixed with the mash and skim-milk gave the highest profit; the birds of this lot also had the best appearance for the market.

The lot which did not receive any potatoes had the best flavour.

This experiment will be carried on another four years before final conclusions are drawn.

It must be noted that in 1928 the lots included four cockerels each, while in 1929 they included twelve cockerels.

WET MASH VS. DRY MASH

The object of this experiment is to compare wet mash and dry mash for egg production. Two groups of pullets, as similar as possible as regards breeding, age and weight, were selected for this experiment. They were housed, treated and fed in the same manner, with the exception that one group received dry mash in a self-feeder, available at all times, while the other group received in addition wet mash in a trough, at noon. The experiment was conducted for a period of six months, from November 1 to May 1. The results are given in the following table:—

WET MASH VS. DRY MASH

—	Wet mash	Dry mash
Total cost of feed	$1 66	$1 38
Eggs laid	67	72
Value of eggs laid	$3 47	$3 54
Feed cost per dozen eggs	0 32	0 25
Net profit	1 84	2 16

These figures are based on the production of one bird.

These results are in contradiction with those of the past years as the lot receiving dry mash only gave the largest profit this year. The results, as well as the deductions for the five years that this experiment has been conducted, will be given in next year's report.

ROOTS VS. CLOVER VS. SPROUTED OATS VS. EPSOM SALTS

The object of this experiment is to compare the three green feeds mentioned above and to see if Epsom salts may be used as a substitute for green feed.

Four lots of twenty-five pullets each were used in this experiment; they were housed, treated and fed in the same manner, with the exception of the form of green feed given.

The first lot received clover as green feed. The second lot received vegetables and the third sprouted oats. The fourth lot received Epsom salts as substitute for green feed, at the rate of 2 ounces daily for twenty-five pullets. This experiment was conducted during a period of six months, from November 1 to May 1. The results are as follows:—

ROOTS VS. CLOVER VS. SPROUTED OATS VS. EPSOM SALTS

—	Clover	Vegetables	Sprouted oats	Epsom salts
Cost of feed	$ 1 21	$ 1 29	$ 1 43	$ 1 29
Eggs laid	84·51	86·23	95·7	82·6
Value of eggs laid	$ 4 93	$ 4 45	$ 4 98	$ 4 22
Feed cost per dozen eggs	0 17	0 19	0 21	0 22
Net profit	3 71	3 15	3 54	2 93
Mortality	4%	4%	8%	8%

These figures are based on the production of one bird.

The pen receiving clover gave the best results. The experiment will be continued for a few years before final conclusions are drawn.

EFFECT OF VARIOUS GREEN FEEDS ON FERTILITY

The object of this experiment is to determine the effect of various green feeds on fertility of eggs.

Four pens of twenty-five pullets each were used. They were given as green feeds, or as substitutes, clover, vegetables, sprouted oats and Epsom salts. All the birds in these pens were mated at two different periods. In the first period, they were mated in the ordinary way; in the second period, the males were transferred from one pen to another every day. A record of incubation was kept for the two periods. The results are as follows:—

EFFECT OF VARIOUS GREEN FEEDS ON FERTILITY

—	Number of eggs set	Number of infertile eggs	Per cent fertile eggs	Average per cent fertile eggs for season	Average per cent fertile eggs for each period
First period—					
Group No. 1—Clover	60	11	81·6	.....	.....
No. 2—Vegetables	60	20	66·6	.....	.....
No. 3—Sprouted oats	60	5	91·6	.....	76·6
No. 4—Epsom salts	60	20	66·6	.....	
Second period—					
Group No. 1—Clover	60	8	86·6	84·1	.....
No. 2—Vegetables	60	6	90·0	78·3	.....
No. 3—Sprouted oats	60	9	85·0	88·3	82·1
No. 4—Epsom salts	60	20	66·6	66·6	

The per cent of fertile eggs was slightly higher during the second period, when the males were transferred from one pen to another every day. Pen No. 3, receiving sprouted oats, had the highest fertility.

COST OF PRODUCTION OF EGGS

The object of this experiment is to determine the feed cost of eggs per dozen as well as the number of eggs required to pay for the feed cost during the winter months (November, December, January, and February). The results obtained are as follows:—

Cost of feed	$1 44
Number of eggs laid	96
Value of eggs laid	$4 98
Cost of one dozen of eggs	0 21
Number of eggs required to pay for winter feeding	27

These figures are based on the production of one bird.

COST OF PRODUCTION OF EGGS FOR DIFFERENT PERIODS DURING THE WINTER

—	Nov.	Dec.	Jan.	Feb.	March	April
Cost of feed ..... cts.	23·5	24·2	24·1	22·8	24·0	25·2
Number of eggs laid	10	16	11	13	21	24
Value of eggs laid ..... $	0 49	0 95	0·695	0 77	1 07	1 00
Feed cost per dozen ..... cts.	29·4	17·8	26·7	20·6	12·5	12·5

These figures are based on the production of one bird.
The cost of production of eggs was the lowest in April.

PULLETS VS. HENS FOR EGG PRODUCTION

The object of this experiment is to compare pullets with hens for egg production.

A record was kept of the cost of feed, the number of eggs laid, the value of these eggs and the profit for the ten best layers during the first and second years of laying. The results are as follows:—

PULLETS VS. HENS FOR EGG PRODUCTION

—	Pullets	Hens
Number of birds	10	10
Number of eggs laid	2,720	1,933
Value of eggs (average price 50 cents per dozen)	$113 33	$ 80 54
Cost of feed	32 50	25 50
Profit	81 83	53 04
Profit per bird	7 18	5 30

The cost of feed is higher for the pullets, as a record was kept of the feed from birth until the end of the laying year. Pullets gave $1.88 more profit than hens. It is advisable, therefore, to keep only the number of old hens required for breeding purposes.

RELATION OF WINTER PRODUCTION TO FERTILITY, HATCHABILITY AND VIABILITY

The object of this experiment is to determine to what extent fertility, hatchability and viability are influenced by winter production.

Eggs from hens having laid different numbers of eggs during the winter were set and a record of incubation was kept in each case.

The period of winter production includes November, December, January, and February. The results are given in the following table:—

RELATION OF WINTER PRODUCTION TO FERTILITY, HATCHABILITY AND VIABILITY

—	Number of eggs set	Number of infertile eggs	Number of dead germs	Number of eggs hatched	Per cent fertility	Per cent hatched	Per cent chicks alive at 3 weeks
1 to 10 eggs	153	19	39	95	87·6	62·1	94
10 to 20 eggs	154	9	42	103	94·2	66·9	95
20 to 30 eggs	117	7	38	72	94·0	61·5	94
30 to 40 eggs	31	4	11	17	87·3	55·0	93
40 to 50 eggs	69	7	20	42	89·9	60·8	94

Fertility, hatchability and viability seem to be somewhat influenced by a heavy winter production.

INTESTINAL PARASITES

The object of this experiment is to devise and apply control measures for intestinal parasites. While no symptoms of parasitism have been discovered in the flock, preventive measures are being applied against intestinal worms.

With this end in view, chicks are reared without coming in contact with adult birds. They are reared in portable colony-houses, and these houses are transferred every year to a new field which has been ploughed and seeded the previous year. This system necessitates the use of two fields. Each year, one field is disinfected by ploughing and seeding to grasses, while the other, which has been ploughed and seeded the previous year, is used for rearing.

RELATION BETWEEN DATE OF FIRST EGG AND ANNUAL PRODUCTION

The object of this experiment is to ascertain if there is a relation between the date of the first egg and the annual production.

The record of production shows that the pullets hatched between the 1st and 10th of April and that have started laying at the age of six to seven months gave the highest production.

This experiment will be continued for a few years before final conclusions are drawn.

FIBRE PLANTS

One variety of flax, J.W.S., and one variety of hemp, Kentucky, were grown on triplicate plots. Flax did very well, but hemp, though grown under the same conditions, failed to develop. This may be due to the lack of available lime in the soil, as hemp is known to require a great deal of lime.

The flax crop was harvested in a dry state and shipped to the Division of Fibre Plants, Central Experimental Farm, Ottawa, to be graded according to the quality of the fibre. The results will be given in next year's report.

IMPROVEMENTS

CONSTRUCTION.—A two-story building, 28 by 28 feet, was erected. The ground floor is used for the storage of concentrates for cattle, and the top floor for the storage of home-grown cereals and their preparation for seed. This granary is a valuable addition to this Station.

FENCES.—Ten thousand feet of wire fences were erected last season. This completes the fencing of fields to be used as pasture, with a total area of 60 acres.

DRAINAGE.—Twelve thousand feet of ditches were dug with the Martin ditching machine, where possible, and by hand in other cases. A granite barrage at the top of a waterfall on the river which drains the basins of three lakes —i.e., Beauchamp, George, and Gauvin lakes—was removed by blasting, thus greatly improving the drainage on a large area which comprises the best soil on the uncleared part of the farm.

ROADS.—Four hundred loads of gravel were applied on the road leading to the C.N.R. station. This road was also extended to the western limit of the farm. This work was done in co-operation with the provincial Department of Forests. Furthermore, this department has just established on the western limit of the farm a forest reservation and a nursery; the latter is located close to the C.N.R. line. Next spring one million trees are to be planted.

ORNAMENTAL.—A large area was levelled in order to extend the lawns and beautify the farm surroundings. Between two and three hundred loads of earth were hauled and a similar number of stones of various sizes were removed, in order to fill some deep depressions or level parts of the ground that could not be sodded.

EXTENSION AND PUBLICITY

Several articles were prepared during the year by the members of the staff. A large number of inquiries were replied to, verbally or in writing. The members of the staff also acted as judges at a number of fairs and competitions and gave lectures and demonstrations at agricultural meetings. Among the largest parties that visited the farm were the La Sarre Farmers'-Club and the Macamic Women's Club.

ILLUSTRATION STATIONS

Five illustration stations, rather widely separated, and located in the best districts of Abitibi, are under the supervision of this Station. Much is expected from these stations and it is hoped that additional ones may be established in order to complete this organization, which is one of the best means of imparting quickly to farmers a knowledge of the best methods of farming.

OTTAWA: Printed by F. A. ACLAND, Printer to the King's Most Excellent Majesty, 1931.