DOMINION OF CANADA
DEPARTMENT OF AGRICULTURE
DOMINION EXPERIMENTAL FARMS

REPORT OF THE CHIEF SUPERVISOR

J. C. MOYNAN, B.S.A.

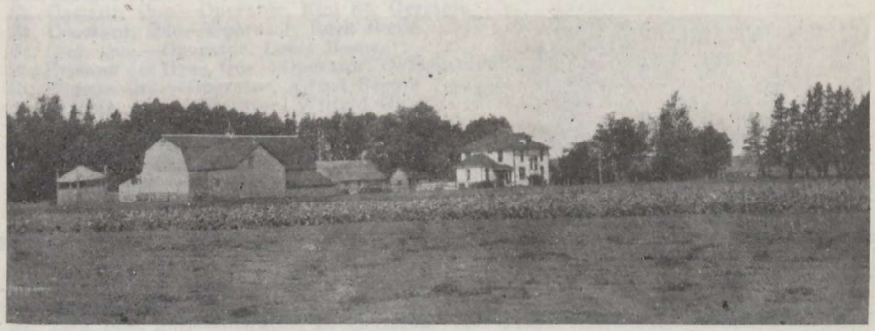
ON

THE ILLUSTRATION STATIONS

IN

ONTARIO, QUEBEC, NEW BRUNSWICK, NOVA SCOTIA and PRINCE EDWARD ISLAND

FOR THE YEAR 1928.



Ideal arrangement of house and barns with ample protection from wind. Rustico, P.E.I., Illustration Station.

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TABLE OF CONTENTS

ILLUSTRATION STATIONS

IN

Ontario, Western Quebec, Eastern Quebec, New Brunswick, Nova Scotia, and Prince Edward Island

During the past year one hundred and eighty-six Illustration Stations have been in operation in the Dominion. Twelve of these are located in Prince Edward Island, sixteen in Nova Scotia, eighteen in New Brunswick, fifty-five in Quebec, fifteen in Ontario, thirteen in Manitoba, twenty-four in Saskatchewan, seventeen in Alberta and sixteen in British Columbia. Over one hundred field days and meetings have been held on these stations to explain the work and to bring the results of the different projects to the attention of the farmers in the surrounding districts.

The yields and cost of growing the different crops on each station, as well as their average over a period of years are summarized for publication and appear in two reports, one dealing with the work in the east, where mixed farming is generally carried on and the other with that in the western provinces.

For the collection of data and the recording of the results enumerated in this report, the superintendents of the Experimental Farms, and the supervisors of the Illustration Stations, as named below, are responsible:

SUPERINTENDENTS	SUPERVISORS
S. Ballantyne, Kapuskasing, Ont.	J. H. Tremblay, Kapuskasing, Ont.
J. A. Ste. Marie, Ste. Anne de la Pocatiere, Que.	W. L. Chauvin, Ottawa, Ont.
C. F. Bailey, Fredericton, N. B.	P. A. Dorion, Ottawa, Ont.
W. S. Blair, Kentville, N. S.	J. R. Proulx, Ste. Anne de la Pocatiere, Que
J. A. Clark, Charlottetown, P.E.I.	T. G. Hetherington, Fredericton, N. B.
	F. B. Kinsman, Kentville, N. S.
	R. C. Parent, Charlottetown, P.E.I.

THE PRODUCTION AND SALE OF SEED GRAIN, GRASSES AND CLOVERS

The use of suitable varieties of grain and hardy strains of clovers are always of prime importance and frequently are determining factors in profitable production. These facts have been demonstrated on several of the Illustration Stations during the past season, particularly in northerly districts, where early varieties are essential. On a number of these stations in Saskatchewan where frost damage was severe, Garnet wheat, because of early maturity was demonstrated to be superior to Marquis in both yield and grade. On the stations where Garnet and Reward were grown in comparison with Marquis, Reward proved equal to Garnet in commercial grade. The success of these early varieties, in at least partly escaping frost damage and producing a good grade of wheat has created a demand from the operators for seed grain. On the Alberta stations, uniform fields of Marquis wheat and Banner oats grown from registered seed attracted considerable notice and favourable comment, because of their purity. In Northern Ontario and Northern Quebec, wheat is not grown to any extent

but an early maturing oat is essential. The introduction of such a variety has made the growing of this crop possible in districts where it was previously considered a speculative venture. A concrete example may be sighted at St. Hilarion, where a station was established in the spring. Alaska oats were sown on the Illustration Station field. When in the district this fall, it was claimed that this was the only ripe oat field in the district; on adjoining farms where later varieties were grown this crop failed to mature and had to be cut and utilized as hay.

During the past year the sales of seed grain from the Illustration Stations increased by thirty-two per cent. Favourable moisture conditions during 1927 and 1928, particularly in the western provinces, resulted in the wheat and oat yields being well above the average. The resulting improved financial position of the farmers has stimulated the demand and made possible the purchase of fresh supplies of pure seed grain. In this respect the Illustration Stations perform a useful service by keeping up the quality and offering their surplus seed of the most suitable varieties to those in the neighbourhood desirous of renewing their seed stocks. A review of the sales made by the operators indicates that Marquis still maintains its position as the leading variety of wheat as over seventy-five per cent of the sales made from the stations in Manitoba, Saskatchewan and Alberta were of that variety. Garnet was most in demand in the northerly districts of these provinces. Of the oat varieties Banner and Victory in all provinces found preference, excepting in Northern Ontario, Northern Quebec and sections of the Maritime Provinces subject to early frost, where Alaska has proven a very desirable variety. Of the barley varieties, O.A.C. No. 21, Trebi and Charlottetown No. 80 have done well on the stations, the choice of which depends largely on the soil and climatic conditions of the district, Trebi doing particularly well on the Manitoba stations.

The seed sold by the operators during the past year amounted to 40,072 bushels of seed grain, 7,999 bushels of seed potatoes and 18,061 pounds of grass and clover seed.

LIVE STOCK IMPROVEMENT

In the eastern provinces, Manitoba, parts of Alberta and British Columbia considerable attention is being directed in a practical and demonstrational way to building up the dairy herds on the Illustration Stations and to the development of typey flocks of sheep and hogs. To effect the desired results it is sometimes necessary to start with the demonstration and production of suitable hay crops high in protein, to increase the supply of succulent feeds and to arouse greater attention in the feeding, housing and systematic grading up of the individual herds. The majority of the operators are now using pure-bred bulls, they are keeping individual milk records and making butter fat determinations in order to determine the production of each animal. A study of the year's production of milk and butter fat on the different stations indicates that the average production of butter fat varies from 408 pounds to 121 pounds; the lowest producing individual on the Eastern Quebec stations giving 74 pounds of butter fat. These results show the need and possibilities of systematic breeding and selection. The improvement of the dairy herds, sheep and hogs on the stations makes available in the districts concerned, a supply of pure-bred males and females for other farmers who may be interested in similar work. During the past year the operators sold 260 head of cattle, 301 hogs and 202 sheep for breeding purposes.

THE SUPPLEMENTARY VALUE OF CHEMICAL FERTILIZERS

Continuous cropping of the land with too little attention being given to restoring to the soil the different elements of plant food utilized has reduced crop yields on the farms in many districts below the point of economical production. On such farms the supply of farmyard manure is small, due to the limited number of cattle which they are capable of sustaining. To restore these soils to profitable production better cultivation, the growing of legumes and the rational use chemical fertilizer combined with such manure as is available offers a practical solution for such soil problems. With this in view special demonstrations are underway on the Illustration Stations operating in such districts aiming to feature these principles.

To demonstrate the effect of commercial fertilizer when used singly and with manure the fields intended for potato growing were divided into four equal areas, one section received 20 tons of manure per acre; the second 10 tons of manure and 750 pounds of a 4-8-4 fertilizer; the third plot received 1,500 pounds of a 4-8-4 chemical fertilizer; the fourth plot was left unfertilized in order to determine the variation in yield resulting from each of the different manure or fertilizer treatments. The three year average obtained from eleven stations in Nova Scotia indicated that the manured plot yielded 201 bushels, manure and fertilizer 236 bushels, fertilizer alone 226 bushels and the unfertilized plot 98 bushels per acre. From these yields it will be noted that the greatest gain was obtained on the plot where a light application of manure, namely, 10 tons per acre was used with 750 pounds of chemical fertilizer. The increase over the unfertilized plot being 138 bushels. Similar results were obtained on the Quebec stations this year, the increase being 117 bushels of potatoes from the portion of the field receiving the combined application of manure and fertilizer. On the eleven Prince Edward Island stations, nine tons of manure and 1,000 pounds of a 4-8-8 fertilizer increased the potato yield by 123 bushels per acre. As 55 per cent of the cost of the fertilizer is charged to the potato crop and 45 per cent to succeeding crops it is found that this increased yield cost $9.73 per acre or on a bushel basis less than eight cents. In 1927 the increase of 135 bushels cost eight and one-quarter cents per bushel. From these results it would appear that under practical farm conditions, soils low in fertility can be restored to profitable production by using limited quantities of chemical fertilizers to supplement the necessary amount of plant food which cannot be supplied through farmyard manure.

POULTRY IMPROVEMENT WORK

Progress continues to be made on the Illustration Stations with regard to the housing, feeding and general quality of poultry kept. This can be seen by comparing conditions three years ago on the Eastern Quebec stations with those existing at the present time. In 1925 there were 374 pure-bred birds kept on twenty Illustration Stations then in operation. At the present time on twenty-two stations there are 1,904 birds kept of which 1,650 are pure-breds, principally, Barred Plymouth Rocks. A number of the operators and adjoining farmers have sought information on poultry-house construction, some have built houses to accommodate up to 250 birds, others have remodelled their old buildings making improvements in the lighting and ventilation. Attention is given each Fall to securing well bred cockerels from stock which has produced 200 eggs or more. Over a period of years, following the practice of mating these cockerels with some of the best producting females, the flocks on some of the stations have improved to the point where they are now able to enter and successfully compete in the Provincial Egg Laying Contests. The benefit of efforts expended in this

direction are far reaching as the operators make an effort to dispose of their surplus breeding stock and hatching eggs to farmers in the surrounding district. This year 516 cockerels, 489 pullets and 1,631 settings of hatching eggs were sold by the different Illustration Station operators.

FACTORS CONSIDERED WHEN MAKING UP PRODUCTION COSTS

Cost of production records are kept for each crop on each Illustration Station. The actual time taken to perform the different field operations as well as the quantity of seed, twine, manure, fertilizer are taken into consideration. These in addition to such items as rent of land, use of machinery are charged against the crop.

All cost of production figures are reduced to the basis of one acre, although in the rotation work the fields vary from two to five acres. In determining these costs the following values have been used:

Rent of land	Based on value of land at prevailing rate of interest and taxes.
Horse and manual labour, spray material cost of fertilizers, seed, twine and threshing	Based on prices in the district.
Use of machinery	$2.85 per acre.
Manure, (spread)	$2.00 per ton.

The cost of manure was distributed over the crops in the four-year rotation in the following proportions: —

40 per cent is charged to the hoed crop.
30 per cent is charged to the grain crop.
20 per cent is charged to the clover crop.
10 per cent is charged to the timothy hay.

The cost of chemical fertilizers was charged to the different crops as follows:

First year	55 per cent.
Second year	30 per cent.
Third year	10 per cent.
Fourth year	5 per cent.

Where nitrate of soda has been used alone 80 per cent of its cost has been charged to the crop to which it was applied and 20 per cent to the succeeding crop.

REPORT ON THE ILLUSTRATION STATIONS IN NORTHERN ONTARIO AND NORTHERN QUEBEC.

J. H. Tremblay, B.S.A., Supervisor.

During the past year eighteen Illustration Stations were in operation in Northern Quebec and Northern Ontario. The supervisor for this district makes his headquarters at the Experimental Station, Kapuskasing. Eleven of these stations were in process of establishment and consequently the operations carried out were preparatory to the establishment of regular rotation work. At present two other stations are authorized, namely, at Normandin, Lake St. John county and St. Tite des Caps, Charlevoix county, Quebec, where the work will begin in the spring of 1929.

SEASONAL CONDITIONS

On the Manitoulin Island and in the districts of Nipissing and Cochrane grain was sown from May 16 to May 24. In the other sections seeding was not completed until the middle of June. This month was quite favourable to a normal growth, but excessive rains during the succeeding months materially reduced the

yields of hoed crops in most cases .A period of good weather occurred during the last days of July and the first two weeks of August, which permitted the curing of the hay crop in very good condition.

The precipitation during the growing season from May to September inclusive at two Illustration Stations, as well as at the Experimental Station at Kapuskasing is shown in the following table:—

MONTHLY PRECIPITATION

Month	Genier 1928	Val Gagne 1928	Kapuskasing 1928	Kapuskasing average 11 years
	in.	in.	in.	in.
May	No record	1.61	2.08	1.65
June	2.69	4.65	2.98	2.10
July	2.75	7.19	3.59	3.20
August	4.43	7.12	6.87	3.09
September	5.78	8.07	3.25	3.38

INTRODUCTORY CROP GROWING COMPETITIONS

In order to encourage the farmers to produce more cash crops, competitions were organized in the area immediately surrounding several of the stations. In this connection alsike clover seed has been supplied to a number of farmers adjacent to the stations at Belcourt and La Reine, Quebec, while red clover seed was distributed around Cochrane and Genier and turnip seed in the Verner section. The clover seed was sown pure with a nurse crop. All the fields will be inspected in 1929 and instructions given to each farmer as to the best method of harvesting and curing the crop for seed.

The turnip competition at Verner was inspected during the fall of 1928, when the crop was fairly well advanced. The yields were not very high, averaging about 12 tons per acre. Considering this is the first year that turnips were grown to any extent in this section, the results are very encouraging and it is hoped that a few years experience in the production of this crop will prove very beneficial and establish it as a standard crop for the district.

POULTRY

Excellent progress in the work with poultry may be reported on most of the stations.

A well established flock of bred-to-lay Barred Plymouth Rocks is present on each of five stations which are centres of distribution for hatching eggs, cockerels and pullets. Most of the other stations recently organized have obtained enough birds from hatching eggs or baby chicks purchased in the spring of 1928 to build up a fair sized flock by another year.

BARRAUTE, ABITIBI DISTRICT, QUEBEC.

OPERATOR, HERVIE MARCOTTE

The work began at this station in the spring of 1928. As nothing had been done the previous fall all crops had to be grown on spring ploughing, which is not a commendable practice in this district. Consequently the yields were low, but the work done will be valuable in preparing the land for the five-year rotation and will help in having it established at the eardlest possible date.

A report of the season's work will be found in the following table:—

OPERATIONS AT BARRAUTE—FIVE-YEAR ROTATION

Field	Crops	Yield per acre	Cost per unit
			$
A and B.	Mixed hay.....	0.75 tons	11 65 per ton
C. and D.	O. P. V. hay.....	0.75 tons	22 31 per ton
E.	Alaska oats.....	19.5 bushels	1 14 per bushel

Field "A" was after-harvest cultivated and will be in hoed crops next season.

BELCOURT, ABITIBI DISTRICT, QUEBEC

OPERATOR, EUGENE ROBITAILLE

This was the first year for this station to be in operation, and most of the fields were ploughed for the first time out of new land. The soil is heavy and low-lying which required a lot of surface drainage, particularly this season on account of the wet weather.

In order to give the soil adequate seed bed preparation it was deemed advisable to harvest the oat and mixed crops at this station before they were really nature, consequently, data as to yields and cost are not available this year.

Mr. Robitaille has purchased a well-bred registered Ayrshire bull, which should prove of great value in building up his dairy herd.

CHICOUTIMI,CHICOUTIMI COUNTY, QUEBEC

OPERATOR, WILLIAM BOILY

This station is located in a good farming section within a few miles of the town of Chicoutimi on the main highway. The area under illustration work is divided into four fields of equal area, on which will be established a straight four-year rotation. This being the first year, the work carried on was preparatory to the regular rotation.

The following table gives the results of the season's work:—

OPERATIONS AT CHICOUTIMI—FOUR-YEAR ROTATION

Field	Crop	Yield per acre	Cost per unit
			$
A	O. P. V. hay.....	4 tons	7 82 per ton
B	O. P. V. hay.....	4 tons	7 82 per ton
C	Oats	Not threshed	
D	Oats	Not threshed	

The yield of oats on fields C. & D. are not given because the crops were not threshed in time to be included in this report. It will be noted, however, that the O. P. V. which was sown on June 19 and 22 produced a very profitable crop.

COCHRANE, COCHRANE DISTRICT, ONTARIO

OPERATOR, E. D. CARRERE

The four-year rotation is well established at this station and the crops are grown accordingly. The hay yield is satisfactory, while the barley and turnip yields have been considerably reduced by the excessive moisture. Had the land been properly drained, the loss would have been much smaller but being relatively

new, there are still a few low spots very difficult to drain. The barley was sown on May 19, and harvested August 30.

The results of the year are shown in the following table:

OPERATIONS AT COCHRANE—FOUR-YEAR ROTATION

Field	Crop	Number of Years	Yield per acre		Cost per unit	
			1928	Average	1928	Average
					$	$
A	Timothy hay.....tons	3	1.75	1.58	11 12	13 37
B	Clover hay.....tons	1	1.25	1.25	17 97	17 97
C	Barley, O.A.C. 21.....bush.	1	18	18	1 91	1 91
D	O. P. V.....tons	3	3	2.16	12 96	21 05
D	Potatoes .....bush.	3	148	148	0 78	0 91
D	Turnips .....tons	1	8.88	8.88	11 69	11 60

Although the costs of production seem extremely high there is still a margin for profits, as the local market is very good. The hay for instance sells around $20. per ton, and a certain amount of turnips were sold at $1. per bushel.

GENIER, COCHRANE DISTRICT, ONTARIO

Operator, Oliver Genier

This station having been organized for several years, the work is well under way and the four-year rotation follows its regular course.

The Banner oats, which has been grown for several years at this station has proven to be somewhat late in maturing for this district. That is, this variety does not seem to mature sufficiently early to have the benefit of favourable weather conditions for harvesting and curing.

The potatoes and turnips have suffered considerably from the excessive rain in July and August, which caused a lot of potatoes to rot in the ground.

The oats were sown on May 18.

The following table gives the results of the season's work:—

OPERATIONS AT GENIER—FOUR-YEAR ROTATION

Field	Crop	Number of Years	Yield per acre		Cost per unit	
			1928	Average	1928	Average
					$	$
A	O. P. V. hay.....tons	2	4.0	3.75	12 07	13 10
A	Potatoes .....bush.	3	120.0	198.0	0 84	0 88
A	Turnips .....tons	1	9.0	9.0	9 94	9 94
B	Banner oats.....bush.	4	43.3	35.8	0 80	0 98
C	Clover hay.....tons	3	1.65	1.59	12 80	13 37
D	Timothy hay.....tons	4	1.5	1.41	11 61	11 34

GORE BAY, MANITOULIN ISLAND, ONTARIO

Operator, Ed. Strain

The soil of this station is a clay loam, somewhat run down in fertility, and is quite apt to pack if it is not worked at the right time. The operator deserves considerable credit for the manner in which he has carried on the work, particularly, in cleaning up the fields.

An increase of 12 bushels of barley per acre was obtained over the 1927 crop, due to a better preparation of the land and an application of manure on the hoed crop which preceded. The turnips yielded 24 tons per acre, compared to 12 tons per acre in 1928. It is also expected that the hay yields will show a considerable increase when it will be grown after a hoed crop. The barley was sown on May 21, and harvested on August 20. The Alaska oats were sown May 22 and harvested August 24.

The results of the season's work are shown in the following table:—

OPERATIONS AT GORE—SIX-YEAR ROTATION

Field	Crop	Number of Years	Yield per acre		Cost per unit	
			1928	Average	1928	Average
					$	$
A	Barley, O.A.C. 21.....bush.	2	42.0	36.0	0 71	0 57
B	Swede turnips.....tons	2	24.0	18.0	2 31	2 96
C	Clover hay.....tons	1	1.0	1.0	10 59	10 59
D	Alaska oats.....bush.	2	20.0	22.5	0 98	0 76
E	Clover hay.....tons	1	0.80	0.80	13 11	13 11
F	Clover hay.....tons	1	0.80	0.80	13 11	13 11

HEBERTVILLE, LAKE ST. JOHN COUNTY, QUEBEC

OPERATOR, JOSEPH GERVAIS

This is a new station adjoining the village of Hebertville and facing the main highway. The soil is a clay loam, and the fields contain a considerable amount of sowthistle which will require a few years to clean up.

This year's work was preparatory to the regular rotation, and the results are shown in the following table:—

OPERATIONS AT HERBERTVILLE—FOUR-YEAR ROTATION

Fields	Crops	Yield per acre	Cost
			$
A	O. P. V. hay.....	2 tons	13 64 per ton
B	O. P. V. hay.....	2 tons	13 64 per ton
C	Banner oats.....	25 bushels	0 87 per bushel
D	Banner oats.....	25 bushels	0 87 per bushel

JONQUIÈRE, CHICOUTIMI COUNTY, QUEBEC

OPERATOR, EMILE BRASSARD

After having been closed up for a couple of years due to an industrial development in the neighbourhood which was supposed to take up the station for building lots, this station was reorganized at the owners request.

Operations were started on the original 12 acres of land facing the main highway. The four-year rotation is well under way and the yields are showing the effects of the work done previously.

The following table gives the results of the season's work:—

OPERATIONS AT JONQUIERE—FOUR-YEAR ROTATION

Fields	Crops	Yield per acre	Cost
			$
A	O. P. V. hay	2.25 tons	19 20 per ton
A	Turnips	19.12 tons	3 88 per ton
B	Timothy hay	3 tons	8 11 per ton
C	Clover hay	3 tons	8 93 per ton
D	Timothy hay	2 tons	10 73 per ton

LA REINE, ABITIBI DISTRICT, QUEBEC

Operator, Jos. Desrochers

This being the first year of operations, the work conducted was preparatory to a five-year rotation.

Ten acres have been measured out in two-acre plots. The land is rather flat and low, and the wet season rendered it very difficult to get it well conditioned for the growing of crops. Consequently, the Alaska oats on field "A", and the barley on field "B" were very poor.

The O.P.V. for hay yielded two tons to the acre and had it not been for the excessive moisture the yield would have been much higher.

Mr. Desrochers purchased a pure-bred Ayrshire bull calf which will undoubtedly have a marked influence in improving his dairy herd.

MATTICE, COCHRANE DISTRICT, ONTARIO

Operator, Arthur Brouard

This is the first year that Illustration Station work has been carried out at this place. Considerable cleaning up and stumping had to be done before starting operations. This is a new settled section where the land is just being cleared, and which is quite promising for agriculture. It is situated along the Canadian National Railway, 40 miles west of Kapuskasing. The soil is mostly clay with parts of black muck.

No costs of production are reported this year, as most of the work done was in preparation for the coming year's crops.

MINDEMOYA, MANITOULIN ISLAND, ONTARIO

Operator, W. A. Hare

With the closing of the second year's work at this station, the four-year rotation is practically established, and the fields are in a much better condition of tilth than they were at the start. The yields show a noticeable increase over last year. The oats were sown May 16, and harvested August 22.

Following are the results of the season's work:—

OPERATIONS AT MINDEMOYA—FOUR-YEAR ROTATION

Field	Crop	Number years grown	Yield per acre		Cost per unit	
			1928	Average	1928	Average
					$	$
A	Clover hay.....tons	1	1.33	1.33	11 44	11 44
B	Clover hay.....tons	1	1.33	1.33	11 44	11 44
C	Banner oats.....bush.	2	56.0	42.5	0 40	0 57
D	Turnips .....tons	2	22.0	18.83	2 38	2 44
D	Corn .....tons	2	10.0	9.25	4 75	4 19
D	Sunflowers .....tons	1	12.0	12.0	3 88	3 88

In addition to the regular rotation, a special test was made to determine the value of after-harvest cultivation versus fall ploughing for the production of oats. A six-acre field divided into two equal plots served the purpose. Three acres were ploughed in 1927 immediately after the hay crop was taken off. They were disked a few times and ploughed again in the late fall. The other three acres were simply fall ploughed in the ordinary way. A record of the time spent in each case was kept and the costs of production calculated accordingly. It will be noticed in the following table that the yield is much higher where the oats were grown on a well-prepared land, and the cost of production is also much lower in spite of the extra time spent.

AFTER HARVEST CULTIVATION VERSUS FALL PLOUGHING

Field	Crop	Yield per acre	Cost
			$
1	Oats grown on after-harvest cultivated land....	53 bushels	0 35 per bush.
2	Oats grown on fall ploughing.....	33 bushels	0 45 per bush.

MOONBEAM, COCHRANE DISTRICT, ONTARIO

OPERATOR, BASILE GAUDREAULT

This station is situated on the main road, half way between Fauquier and Moonbeam in the centre of a good farming section. It includes ten acres of land, and the work is carried out under a five-year rotation. It is the first year work has been conducted at this place, and the farmers of the neighbourhood seem to be quite interested.

The following table gives the results of the season's work:—

OPERATIONS AT MOONBEAM—FIVE-YEAR ROTATION

Field	Crop	Yield per acre	Cost
			$
A	O. P. V. hay.....	2.5 tons	11 33 per ton
B	Alaska oats	35 bushels	0 58 per bushel
C	Clover hay.....	1 ton	15 76 per ton
D	Clover hay.....	1 ton	15 76 per ton
E	Clover hay.....	1 ton	15 76 per ton

MURRAY BAY, CHARLEVOIX COUNTY, QUEBEC

OPERATOR, ELIE VILLENEUVE

The soil of this station is a sandy loam, and being the first year of operations the work conducted was preparatory to a four-year rotation. Eight acres were staked out in two-acre plots to serve the purpose. There is a number of weeds such as sow thistle and wild mustard, which will require careful attention in order to eradicate. The yields were lessened by a low-lying area which ran across all of the fields, but a tile was put in last fall and there is no doubt that it will improve considerably the condition of every field, and better results may be expected in the coming years.

The results of the season's work will be found in the following table:—

OPERATIONS AT MURRAY BAY—FOUR-YEAR ROTATION

Field	Crop	Yield per acre	Cost
			$
A	Potatoes	133 bushels	0 68 per bush.
B	Banner oats	31 bushels	0 92 per bush.
C	Banner oats	31 bushels	0 92 per bush.
D	Mixed hay	2 tons	10 87 per ton.

SPRING BAY, MANITOULIN ISLAND, ONTARIO

OPERATOR, WILLIAM MCCOLEMAN

Some progress has been made at this station in the production of Swede turnips. Although the weeding and thinning was delayed in the first part of the season by excessive moisture, the field was finally cleaned and the crop made a profitable growth. The Alaska oats were sown May 22, and harvested September 3.

The O.P.V. mixture has proved to be a very profitable crop.

The results of the season's work will be found in the following table:—

OPERATIONS AT SPRING BAY—SIX-YEAR ROTATION

Field	Crop	Number of years	Yield per acre		Cost per unit	
			1928	Average	1928	Average
					$	$
A	O. P. V. for hay.....tons	1	2.5	2.5	9 28	9 28
B	O. P. V. for hay.....tons	1	3.0	3.0	8 27	8 27
C	Mixed hay.....tons	2	1.0	1.25	10 74	9 35
D	Alaska oats.....bush.	2	23.0	20.0	1 31	1 17
E	Alaska oats.....bush.	2	23.0	20.0	1 31	1 17
F	Swede turnips.....tons	1	22.95	22.95	2 88	2 88

STE. ROSE DE POULARIES, ABITIBI DISTRICT, QUEBEC

OPERATOR, JOS. LEMOINE

Operations began at this station in the spring of 1928. The soil is loamy and somewhat low, but by working it properly and rounding up the lands it is hoped that satisfactory drainage will be obtained.

During the past season, early ploughing was done on fields B and C, in preparation for the 1929 cropping season.

A six-year rotation will be conducted at this station on twelve acres of land divided into two-acre plots.

Mr. Lemoine purchased a pure-bred Ayrshire bull which should improve the production of his grade herd through better breeding.

ST. HILARION, CHARLEVOIX COUNTY, QUEBEC

OPERATOR, ADJUTOR GILBERT

This also is a new station. The land is very hilly and stoney and the soil is rather light and run down in plant food. A four-year rotation is being established which should certainly improve the condition considerably after it will be going for a few years. Seedings are generally late in this particular section, which will necessitate the use of early varieties of grain. This year the Alaska oats were sown on June 2.

Following are the results of the season's work:—

OPERATIONS AT ST. HILARION—FOUR-YEAR ROTATION

Field	Crop	Yield per acre	Cost
			$
A	Pasture	After-harvest cultivated	
B	O. P. V. hay	3.5 tons	7 90 per ton
C	Alaska oats	12.5 bushels	1 58 per bush.
D	Alaska oats	12.5 bushels	1 58 per bush.

VAL GAGNE, COCHRANE DISTRICT, ONTARIO

OPERATOR, H. LABRECHE

The four-year rotation is well established at this station, as the work has been conducted for several years. The turnips and potatoes suffered considerable damage from the excessive rain in the early part of the season. It will be interesting to note the different yields obtained on field C. One half of this field was seeded in 1927, with 10 pounds timothy, 8 pounds red clover and 2 pounds alsike clover per acre. The other half was seeded with 8 pounds timothy, 5 pounds red clover, 5 pounds alfalfa and 2 pounds alsike per acre, the latter mixture being partly responsible for the heavier yield.

The Alaska oats were sown May 24, and harvested September 11.

The following table gives the results of the season's work:—

OPERATIONS AT VAL GAGNE—FOUR-YEAR ROTATION

Field	Crop	Number of years	Yield per acre		Cost per unit	
			1928	Average	1928	Average
					$	$
A	Potatoes ..... bush.	4	112.0	233.0	0 72	0 55
A	Swede turnips ..... tons	4	9.8	16.5	5 17	4 66
B	Alaska oats ..... bush.	4	37.0	45.0	0 67	0 65
C	Clover hay ..... tons	3	2.0	1.66	9 51	9 86
C	Clover and alfalfa hay ..... tons	1	2.5	2.5	7 85	7 85
D	Timothy hay ..... tons	4	1.75	1.56	8 94	7 46

VERNER, NIPISSING DISTRICT, ONTARIO

OPERATOR, ANDRE BEAUDRY

With the close of the second year of operations, the four-year rotation is pretty well established on twelve acres of land divided into three-acre blocks and facing the main highway.

The outstanding appearance of the crops throughout the season was very pleasing, and the operator deserves a lot of credit for it. The Alaska oats, which were sown May 23, and harvested August 25, produced a most beautiful crop which caught the eye of many passersby.

A turnip growing competition was organized in the neighbourhood of this station, which aroused a great deal of interest among the farmers. Although the weather conditions were very unfavourable, ten contestants out of nineteen produced very satisfactory crops, in view of it being new to many of them.

The results of the season's work will be found in the following table:—

OPERATIONS AT VERNER—FOUR-YEAR ROTATION

Field	Crop	Number of years	Yield per acre		Cost	
			1928	Average	1928	Average
					$	$
A	Alaska oats	2	57 bush.	42 bush.	0 49 per bush.	0 56 per bush.
B	Turnips, Hall's Westbury.	2	16.31 tons	16.1 tons	4 51 per ton	3 51 per ton
B	Potatoes	2	150 bush.	170 bush.	0 65 per bush.	0 50 per bush.
C	Clover hay.....	1	1.83 tons	1.83 tons	10 05 per ton	10 05 per ton
D	Clover and alfalfa hay..	1	1.5 tons	1.5 tons	12 43 per ton	12 43 per ton

REPORT OF THE ILLUSTRATION STATIONS IN WESTERN QUEBEC AND EASTERN ONTARIO.

Supervisor, W. L. Chauvin

During the past season nineteen Illustration Stations have been in operation in the section of the province termed as Western Quebec. In addition the supervisor for that district was responsible for the work on five stations in Eastern Ontario.

The spring season was backward, delaying seeding to the extent that the acreage in cereal crops was below the average. Rainy, cool weather retarded normal growth and was largely responsible for the low yields obtained from such crops as corn, turnips, cereals and clover seed, particularly on the heavy clay soils. On the light sandy soils the yields were somewhat higher than usual. The rainfall during the growing season was much higher than usual. On the Illustration Station at St. Casimir, from May to September inclusive, 13.99 inches of rain fell, at St. Simon the precipitation was 16.45 inches during the same period. the fall months continued rainy and wet delaying fall ploughing to quite an extent.

LIVE STOCK IMPROVEMENT

Farming in the districts where the undermentioned stations are located consists primarily of dairying. This fact can readily be observed from the type of rotations followed and crops grown on the stations where these records are kept. In order to determine the performance of each cow and thus to systematically weed out the low producers, individual milk records have been kept of the different Illustration Station herds in Eastern Ontario and Western Quebec,

during the past year. This practice arouses interest and seemingly creates a desire to reach even a still higher production. Practically all of these operators have pure-bred sires, a number also have accredited herds. At some of these farms systematic selection and breeding has been followed for some time, at others this work has just started. Due to some having only recently started keeping milk records it was not possible to tabulate the yearly production of all cows in the different herds Of the 222 milch cows on these stations 171 or 77 per cent had completed their lactation period at the time these records were compiled.

The following table indicates the production of the highest and the lowest cow, also the average pounds of milk and butterfat produced by each herd:—

RECORDS OF COWS

Station	Breed	Number of cows	Average days of lactation	Highest cow production	Lowest cow production	Average milk production	Average butterfat production
				lb.	lb.	lb.	lb.
Aubrey	Hols. Gr.	16	295	10,491	6,163	7,652	299
Bourget	Ayrs. Gr.	12	286	9,276	5,489	6,814	259
Casselman	Ayrs. Gr.	11	275	8,432	4,749	6,140	221
Curran	Ayrs.	15	344	9,186	5,206	7,007	.....
Daveluyville	Gr.	6	258	7,659	4,230	5,822	.....
L'Annonciation	Gr.	15	284	5,188	4,274	4,762	190
Papineauville	Gr.	6	295	6,088	4,034	4,880	204
Ste. Brigide	Ayrs. & Can.	12	339	7,146	3,970	5,406	216
St. Casimir	Gr.	6	296	10,964	7,189	8,683	304
St. Clet	Gr.	14	268	8,844	2,921	5,282	169
St. Constant	Ayrs. Gr.	7	374	15,397	6,245	10,117	.....
St. Etienne	Gr.	6	279	7,577	5,781	6,679	.....
St. Eugene	Hols. Gr.	9	286	7,648	4,487	5,585	206
St. Jerome	Ayrs. Gr.	6	307	8,245	3,539	6,095	213
Ste. Julie	Ayrs. Gr.	7	307	9,707	4,210	6,473	230
St. Leonard	Ayrs. Gr.	10	300	6,330	4,751	5,472	197
St. Simon	Ayrs.	4	292	9,646	7,572	8,502	408
Stanbridge East	Hols. Gr.	9	294	5,724	2,010	4,596	151

N.B.—Ayrs.—Ayrshire, Can.-Canadian, Gr.-Grades, Hols.—Holstein.

AUBREY, CHATEAUGUAY COUNTY, QUEBEC

OPERATOR, SAMUEL REDDICK

The spring season was cold and wet resulting in seeding operations being delayed until the third week in May. Oats were sown on May 18 and corn on June 13.

The following table gives the results of the season's work in crop production: —

OPERATIONS AT AUBREY—FOUR-YEAR ROTATION

Field	Crop	Number of years grown	Yield per acre		Cost	
			1928	Average	1928	Average
					$	$
A	Timothy hay.....tons	9	1.28	1.60	11 48	9 71
B	Corn, ensilage.....tons	9	15.75	15.62	2 32	2 56
C	Timothy hay (new meadow)..tons	8	1.75	1.54	10 47	7 68
D	Timothy seed.....lb.	4	128.0	207.0	0 12	0 07½
C	Oats, Banner.....bush.	9	50.05	52.3	0 48	0 44

Crop yields were quite satisfactory at this station in spite of the unfavourable weather. Timothy hay and seed were somewhat below the average. Freuent cultivation was necessary to control weeds increasing, somewhat, the cost of production. It was equally difficult because of frequent showers, to store crops in first class condition. Spring killing of the clover on Field "C" reduced the yield considerably. Usually red clover seed is harvested from the new meadow. As the clover killed out, part of the field was cut as hay and part for timothy seed.

Lime demonstrations were conducted on Fields "A" and "C". These fields had been seeded down using a mixture made up of 5 pounds red clover, 5 pounds alfalfa, 2 pounds alsike and 8 pounds timothy. Where lime was applied on Field "A" which was a second year meadow, the yield was increased by 500 pounds per acre. On Field "C", the increase in yield was not so marked being only 175 pounds. This slight increase may be due to the winter killing of the clovers.

BOURGET, RUSSELL COUNTY, ONTARIO

Operator, Napoleon Martel

In the district served by this station, the soil is a heavy clay, well adapted to dairy farming. The farm where this work is being conducted is all tillable, making the four-year rotation very suitable for local conditions, because of the proportion of succulent feed, clover hay and cereal crops produced. Seeding of the illustration fields started on Field "D" on May 16. The results of the season's work are as follows:—

OPERATIONS AT BOURGET—FOUR-YEAR ROTATION

Field	Crop	Number of years grown	Yield per acre		Cost	
			1928	Average	1928	Average
					$	$
A	Clover hay, 1st cut.....tons	4	1.25	1.25	7 95	0 09
A	Clover seed, 2nd cut.....lb.	4	31.0	102.0	0 11⅔	6 79
B	Timothy hay.....tons	5	2.0	2.40	8 56	6 67
C	Corn, ensilage.....tons	5	10.0	13.0	3 39	2 96
C	Turnips (Hall's Westbury)....tons	5	16.88	16.60	3 34	3 62
D	Oats (Banner).....bush.	5	39.0	54.0	0 58	0 44

Considerable difficulty was encountered this season to keep the corn and turnip crops in good tilth and free from weeds, hand labour being necessary, thus increasing the cost of production. Such seasons, however, are rare and as may be noted crops yields have been quite satisfactory over a 5 year period. Progress has been made during the past season in building up the dairy; a well-bred Ayrshire bull now heads the herd.

BOURGET, RUSSELL COUNTY, ONTARIO

Operator, Jules Potvin

This is the first year that this station has been in operation, being established in a district with a light sandy soil to do special work in the growing of crops suitable for canning. A three year rotation forms the basis of this work. In the hoed crop section, carrots, corn, tomatoes, beans and peas are grown for canning purposes.

The yields and cost of growing the different crops in 1928, were as follows:—

OPERATIONS AT BOURGET—THREE-YEAR ROTATION

Field	Crop	Number of years grown	Yield per acre 1928	Cost 1928
				$
A	Oats, Banner.....bush.	1	14	0 68
B	Oats, Banner.....bush.	1	14	0 68
C	Carrots .....tons	1	6.20	11 14
C	Corn, Golden Bantam.....cans	1	5,067	0 06¼
C	Tomatoes .....cans	1	2,533	0 07½
C	Beans .....cans	1	7,200	0 06⅝

In addition to growing the different crops, considerable improvement of a permanent nature has been made such as removing brush, removing and straightening fences so that field operations could be more economically handled. In making up production cost it might be mentioned that all such factors as rent of land, use of machinery, cost of seed, horse and manual labour, cost of manure, cost of fertilizers, price of cans as well as depreciation on buildings and use of canning machinery, have been taken into consideration.

CASSELMAN, RUSSELL COUNTY, ONTARIO

Operator, Hector Lafleche

In addition to the various cultural operations receiving careful and timely attention, progress has been made in building a pure-bred Ayrshire herd as well as a large flock of bred-to-lay white Leghorn poultry. Farm operations were delayed and considerable extra work entailed in connection with the growing and storing of the different crops, because of frequent rains. Oats were sown on May 18, potatoes planted June 3 and corn June 13.

The yields and cost of growing the different crops are as follows:—

OPERATIONS AT CASSELMAN—FOUR-YEAR ROTATION

Field	Crop	Number of years grown	Yield per acre		Cost	
			1928	Average	1928	Average
					$	$
A	Timothy hay.....tons	2	1.69	1.63	9 29	9 27
B	Clover hay, 1st cut.....tons	2	0.43	1.12	19 05	12 30
B	Clover seed, 2nd cut.....lb.	2	.....	.....	.....	.....
D	Potatoes .....bush.	4	172.0	237.0	0 32	0 39
D	Turnips .....tons	4	20.86	21.50	2 95	3 02
D	Corn, fodder.....tons	4	11.40	13.50	3 42	2 71

On this farm as in the district, a great deal of mustard exists presenting a problem in so far as the production of seed grain is concerned. As a means of controlling it, the practice of after harvest cultivation is followed, with light cultivation afterwards so as not to turn up new weed seeds. Instead of growing oats for seed it is cut green for hay prior to the ripening and dropping of the mustard seed.

CAMPBELL'S BAY, PONTIAC COUNTY

OPERATOR, W. J. HAYES & SON

The soil on this station varies considerably ranging from a sandy loam to a heavy clay and was not seriously affected because of the somewhat excessive rains. Banner oats on field "C" were sown on May 15 along with 5 pounds red clover, 5 pounds of alfalfa, 2 pounds alsike and 8 pounds timothy. Lime at the rate of two tons per acre was applied to part of the field to determine its effect in promoting the growth of alfalfa.

The yields and cost of growing the different crops are as follows:—

OPERATIONS AT CAMPBELL'S BAY—FOUR-YEAR ROTATION

Field	Crop	Number of years grown	Yield per acre		Cost	
			1928	Average	1928	Average
					$	$
A	Timothy hay.....tons	6	2	1.94	7 55	7 56
B	Corn, ensilage.....tons	8	9	10.25	3 92	3 84
C	Oats ,Banner.....bush.	8	53	49.3	0 41	0 44
D	Clover hay, 2 cuts.....tons	3	2.60	2.08	7 52	7 26

It will be noted in the above table that all crops are well up to their average for the past eight years. It has been our usual practice at this station to harvest clover seed from the new meadow which this year was Field "D". Winter-killing combined with a rank late growth resulted in the seed setting very poorly hence the second crop was cut for hay. Considerable progress in livestock improvement is resulting at this station, from the use of well-bred sires combined with the keeping of milk records.

CURRAN, PRESCOTT COUNTY, ONTARIO

OPERATOR, ALDEGE DUPONT

The soil on this station varies a great deal ranging from a heavy clay to a sandy loam. The growing of legumes, through cultivation and use of manure on the hoed crop has developed this soil to quite a fair state of fertility, which condition is reflected in the yields obtained.

The yields and cost of growing the different crops are as follows:—

OPERATIONS AT CURRAN—FOUR-YEAR ROTATION

Field	Crop	Number of years grown	Yield per acre		Cost	
			1928	Average	1928	Average
					$	$
A	Corn, ensilage.....tons	5	12.0	11.20	2 79	3 09
A	Turnips, Hall's Westbury.....tons	4	24.0	24.50	1 64	1 77
B	Oats, Banner.....bush.	5	17.0	37.0	1 21	0 66
C	Clover hay, one cut.....tons	1	1.38	.....	12 57	.....
C	Clover hay, 1st cut.....tons	5	1.03	1.20	8 96	7 75
C	Clover seed, 2nd cut.....lb.	5	50.0	70.0	0 16	0 12
D	Timothy hay.....tons	4	2.63	1.26	5 52	7 12

It will be noted that part of Field "C" was cut as hay; the remainder was cut twice, the first as hay and the second for clover seed. In the part cut as hay, the clover was seriously damaged by flooding and ice lying on the field. The oat

crop suffered from cutworm damage and later from rust, resulting in the lowest yield obtained on this station, since illustration work started. Progress has been made in developing the livestock on this farm, including, Ayrshire cattle, sheep and hogs.

DAVELUYVILLE, ARTHABASKA COUNTY, QUEBEC

Operator, Alphonse Poisson

During the three years that illustration work has been under way, a four-year rotation has been in the process of establishment. Excepting for hay crops, the season was extremely unfavourable, seeding being delayed because of wet weather. It was not possible to plant corn, sunflowers or turnips until June 20. Heavy rains and frequent flooding of the corn land resulted in this crop being practically a failure.

The following table gives the results of the season's work:—

OPERATIONS AT DAVELUYVILLE—FOUR-YEAR ROTATION

Field	Crop	Number of years grown	Yield per acre		Cost	
			1928	Average	1928	Average
					$	$
A	Clover hay.....tons	2	2.10	1.75	7 47	9 03
B	Timothy hay.....tons	1	1.50	.....	8 33	.....
C	Turnips, Hall's Westbury.....tons	3	8.63	11.75	4 61	3 89
C	Sunflowers, fodder.....tons	2	4.0	8.25	8 88	6 02
D	Oats, Banner.....bush.	3	21.5	32.8	1 00	0 63

This operator keeps individual milk records of his cows and is systematically grading up his herd of French Canadian cattle. The milk is disposed of in town, to private customers.

KAZUBAZUA, WRIGHT COUNTY, QUEBEC

Operator, Ephriam Anderson

The results on this station demonstrate the possibilities of building up a light unproductive soil by the combined use of manure and chemical fertilizer. Four years ago this soil was so lacking in fertility that the light crop produced could sustain very little livestock, hence little farmyard manure was available, making the use of fertilizers essential.

The results of the season's work are as follows:—

OPERATIONS AT KAZUBAZUA—FOUR-YEAR ROTATION

Field	Crop	Number of years grown	Yield per acre		Cost	
			1928	Average	1928	Average
					$	$
A	Mixed hay.....tons	1	2.50	.....	6 96	.....
B	Clover hay.....tons	2	2.50	2.13	6 30	8 65
C	Oats, Banner.....bush.	2	36.0	48.5	0 56	0 41
D	Oats, Banner.....bush.	1	26.0	.....	0 69	.....
E	Potatoes, Green Mountain.....bush.	4	210.0	1.25	0 33	0 60
E	Corn fodder.....tons	4	0.0	6.75	3 07	7 63
E	Oats, Banner.....bush.	4	26.0	43.0	0 61	0 47

A four-year rotation is being followed. Frequent surface applications of fertilizer are made to the different crops rather than a heavy application on the corn or potato crop. By this method good crops of clover hay have been produced. The effect of the clover sod was noticeable on this year's potato crop, the yield being considerably higher than previous years. Ten tons of manure were applied to the potato crop in addition to 750 pounds of a home-mixed 4-8-4 chemical fertilizer This application is expected to carry the succeeding grain crop as well as the first crop of hay; 125 pounds of nitrate of soda per acre is applied to the timothy hay or second year meadow.

L'ANNONCIATION, LABELLE COUNTY, QUEBEC

Operator, Didyme Cote

Seeding was earlier on this station than on most others. Spring opened up quite early and conditions throughout the growing season were favourable for crop growth. The soil is typical of the surrounding district, being a light sand lacking in organic matter.

The results of the season's work are as follows:—

OPERATIONS AT L'ANNONCIATION—FOUR-YEAR ROTATION

Field	Crop	Number of years grown	Yield per acre		Cost	
			1928	Average	1928	Average
					$	$
A	Oats, Alaska.....bush.	2	20.5	20.8	1 12	0 99
B	Clover hay, one cut.....tons	2	1.09	1.92	12 35	13 67
C	Clover hay, 1st cut.....tons	1	1.09	.....	12 35	.....
C	Clover seed, 2nd cut.....lb.	1	.....	.....	.....	.....
D	Potatoes, Irish Cobbler.....bush.	2	240.0	195.0	0 29	0 36
D	Turnips, Hall's Westbury.....tons	3	14.60	13.63	3 20	4 83
D	Corn, fodder.....tons	3	12.22	10.64	3 13	3 91
D	Sunflowers, fodder.....tons	2	14.60	19.92	2 72	2 64

Some interesting information has been gained at this point in the growing of sunflowers. Present information goes to show that they will give more dependable returns in this district. Like corn they serve as a cleaning crop and require the same seed bed preparation. A field meeting was held on this station on August 14. It was well attended by interested farmers in the district. At that time the hay crop had been stored and a good aftermath of clover covered the field. Field "B" was also ploughed in preparation for hoed crop in 1929 following the practice of after-harvest cultivation. The Alaska oats were also cut and stooked, providing ample scope for discussion. It is proving a very useful variety for this district.

LACHUTE, ARGENTEUIL COUNTY, QUEBEC

Operator, S. R. Smith

Unlike many others, the clover came through the winter at this station without damage. The soil being sandy did not suffer from excessive moisture. Seeding of oats was done May 11 and corn on May 25. Although Field "B" was seeded down with a mixture containing alfalfa, it all disappeared, even on the limed plot. Little headway has resulted although repeated trials have been made to establish this crop on this farm.

The results of the season's work are as follows:—

OPERATIONS AT LACHUTE—FOUR YEAR ROTATION

Field	Crop	Number of years grown	Yield per acre		Cost	
			1928	Average	1928	Average
					$	$
A	Timothy hay.....tons	3	1.50	1.42	10 03	7 91
B	Clover hay.....tons	3	2.0	1.86	8 82	9 93
C	Oats, Banner.....bush.	9	35.0	35.0	0 63	0 60
D	Corn, Ensilage.....tons	9	16.60	15.0	2 45	2 35

The highest yield of corn on the Western Quebec Illustration Stations was obtained at this point, it being 16.60 tons per acre. A very clean crop was also produced by harrowing the field three or four days after planting, then again when it is well up and crosswise when it is about 4 inches high. After harrowing, the field was cultivated three times between June 6 and 28. The cultivator was run shallow so as to prevent cutting and damaging the rapidly extending rootlets.

PAPINEAUVILLE, LABELLE COUNTY, QUEBEC

OPERATOR, JOS. ELZEAR BONHOMME

Early in the season conditions were quite favourable for the normal growth of crops. Field "D" was seeded to Banner oats on May 11 at the rate of 2¼ bushels per acre along with 8 pounds of red clover, 2 pounds of alsike and 10 pounds of timothy, a 46.9 bushel crop being harvested on August 17.

The results of the season's work are as follows:—

OPERATIONS AT PAPINEAUVILLE—FOUR-YEAR ROTATION

Field	Crop	Number of years grown	Yield per acre		Cost	
			1928	Average	1928	Average
					$	$
A	Timothy hay.....tons	6	2.05	2.55	5 85	6 38
A	Timothy seed.....lb.	1	240.0	.....	0 03¾	.....
B	Clover hay, 2 cuts.....tons	4	3.83	2.88	6 00	5 09
C	Potatoes, Irish Cobbler.....bush.	5	132.0	204.0	0 54	0 43
C	Turnips, Hall's Westbury.....tons	7	19.0	27.59	4 32	3 64
C	Corn, ensilage .....tons	4	10.25	13.0	5 18	3 54
D	Oats, Banner.....bush.	8	46.9	40.0	0 52	0 57

Clovers came through the winter at this station in good condition and early prospects looked favourable for a good red clover seed crop. As the seed crop is harvested in the district from the second cut, the first crop was cut on June 23 in order to give the second ample time to mature seed. However, wet weather promoted growth to the extent that the seed did not set properly necessitating its being cut for hay.

RUSSELL, RUSSELL COUNTY, ONTARIO

OPERATOR, J. A. BOYD & SON

As this is an extensive dairying district with a good all year round market for milk, the work on this station has been planned with the view of demonstrating a rotation of crops and system of farming which would supply in a fair

proportion the most desirable crops for the winter feeding of dairy cattle namely, clover and alfalfa hay, concentrates and succulent foods such as are obtained from crops like corn.

The results of the season's work are as follows:—

OPERATIONS AT RUSSELL—SIX-YEAR ROTATION

Field	Crop	Number of years grown	Yield per acre		Cost	
			1928	Average	1928	Average
					$	$
A	Mixed clover and alfalfa hay..tons	1	1.25	.....	14 07	.....
B	Oats, Banner .....bush.	3	37.0	30.0	0 61	0 79
C	Corn, fodder.....tons	3	10.0	9.33	3 60	4 48
C	Potatoes ,Irish Cobbler.....bush.	1	128.0	.....	0 68	.....
D	Clover hay, 2 cuts.....tons	1	2.33	.....	8 45	.....
E	Clover hay, 2 cuts.....tons	1	1.75	.....	13 25	.....
F	Barley, O.A.C. No. 21.....bush.	2	10.0	14.5	2 49	1 90

The fields at this station were badly infested with couch grass. By ploughing the second year meadow shallow and flat on the removal of the hay, rolling, keeping it cultivated throughout the summer and ploughing deeply in the fall, considerable progress has been made towards keeping the couch grass in control and preparing an excellent seed bed for the hoed crops. The past two seasons have been extremely wet in this district and have been particularly unfavourable for grain crops. Nitrate of soda at the rate of 125 pounds per acre has been effective in increasing the yield of hay on the second year meadow. Lime applied this spring at the rate of two tons per acre, materially increased the vigour of the alfalfa in the new seeding.

STE. BRIGIDE, IBERVILLE COUNTY, QUEBEC

OPERATOR, ALPHONSE GOINEAU

The spring was late in opening and seeding was not possible on this station until May 19. Being a heavy clay soil, crops suffered a great deal from excessive moisture, the season being one of the wettest experienced in the district.

The following table gives the yields and cost of growing the different crops this season in addition to their average over a period of years:—

OPERATIONS AT STE. BRIGIDE—FOUR-YEAR ROTATION

Field	Crop	Number of years grown	Yield per acre		Cost	
			1928	Average	1928	Average
					$	$
A	Corn, ensilage .....tons	8	15.37	16.25	2 08	2 10
A	Turnips, Hall's Westbury.....tons	8	17.0	25.25	2 38	1 80
B	Clover hay, 1st cut.....tons	5	1.20	1.35	7 25	6 36
B	Clover seed, 2nd cut.....lb.	5	35.0	94.0	0 12	0 09
C	Timothy hay.....tons	7	1.75	2.22	8 01	6 78
C	Timothy seed.....lb.	4	420.0	281.0	0 03½	0 05½
D	Oats, Reg. Banner.....bush.	8	45.0	54.5	0 51	0 40

A review of the above table indicates that this season's yields were in practically all cases, below the average; the red clover seed crop particularly suffered. Part of Field "C" was cut for hay and part for seed; the latter proved very profitable because of the high yield of good quality seed produced.

An interesting lime demonstration was conducted on Field "B". When the field was seeded down in 1927, hydrated lime at the rate of 2 tons per acre was applied to part of the field. The limed area gave a yield of 2062 pounds mixed clover and alfalfa hay, whereas the unlimed, yielded 1750 pounds per acre. Where lime was applied, there was a higher percentage of alfalfa in the mixture.

ST. CASIMIR, PORTNEUF COUNTY, QUEBEC

OPERATOR, ELOI ST. GERMAIN

Field "A" was seeded to oats on June 5 following which wet weather set in, delaying corn planting until June 13.

The following table gives the yields and cost of growing the different crops this season:—

OPERATIONS AT ST. CASIMIR—FOUR-YEAR ROTATION

Field	Crop	Number of years grown	Yield per acre		Cost	
			1928	Average	1928	Average
					$	$
A	Oats, Alaska.....bush.	9	27.0	48.0	1 02	0 48
B	Corn, Ensilage .....tons	8	3.50	11.75	8 07	3 74
C	Timothy hay.....tons	7	1.50	1.86	11 30	7 21
D	Clover hay.....tons	3	1.75	1.93	10 97	9 19

Over a period of eight years corn has proven a decidedly profitable crop; this year, however, proved an exception. The land in the district is very rolling necessitating careful attention in ploughing narrow, well-formed ridges, and keeping the water furrows open. Under prevailing humid conditions this season, the importance of the above could be seen from the very small growth of corn near the water furrows and good growth on the centre of the ridge. The application of hydrated lime at two tons per acre increased the clover hay yield on Field "D" by 813 pounds.

ST. CONSTANT, LAPRAIRIE COUNTY, QUEBEC

OPERATOR, ROCH BOULE

The spring of 1928 opened late; first seeding on the station was done on May 12. Following this date, wet weather set in delaying the planting of the hoed crops, potatoes being planted on June 4 and corn on the 16th.

The results of the season's work are as follows:—

OPERATIONS AT ST. CONSTANT—FOUR-YEAR ROTATION

Field	Crop	Number of years grown	Yield per acre		Cost	
			1928	Average	1928	Average
					$	$
A	Potatoes, Irish Cobbler.....bush.	6	64.0	134.0	0 90	0 61
A	Turnips, Hall's Westbury.....tons	6	4.60	12.63	3 62	5 45
A	Corn, Ensilage.....tons	1	9.80	.....	3 73	.....
B	Oats, Banner.....bush.	8	31.5	38.0	0 70	0 63
C	Timothy hay.....tons	6	1.10	1.38	13 33	11 56
D	Timothy hay, new meadow.....tons	3	0.63	0.88	22 80	17 17

The hay crop on Fields "C" and "D" was badly damaged by ice which covered them early in spring, killing out the clovers. Corn germinated poorly

because of the cold, wet weather following planting. A thin crop resulted except on the centre of the ridges where drainage was better. The operator built a stave silo this season, one of the first in the district.

ST. CLET, SOULANGES COUNTY, QUEBEC

OPERATOR, LOUIS BESNER

It has been our usual practice to grow oats on this station following the hoed crop. Wet weather delayed seeding to the extent that this season it was replaced by barley. Experiments indicate that barley does not suffer to the same extent as oats from delayed seeding.

The results of the season's work are as follows:—

OPERATIONS AT ST. CLET—FOUR-YEAR ROTATION

Field	Crop	Number of years grown	Yield per acre		Cost	
			1928	Average	1928	Average
					$	$
A	Clover hay, 1st cut.....tons	8	1.0	0.96	9 88	9 71
A	Clover seed, 2nd cut.....lb.	8	40.0	107.0	0 10	0 11
B	Barley, O.A.C. No. 21.....bush.	1	24.0	.....	1 14	.....
C	Turnips, Hall's Westbury.....tons	4	5.0	12.0	9 67	4 13
C	Corn, Ensilage.....tons	9	7.50	11.50	5 37	3 35
D	Timothy hay.....tons	7	1.0	1.05	15 28	12 61

The hoed crops in particular suffered from continuous summer rains, turnips yielding 7 tons lower than the average for this crop, during the four years grown. In the case of corn, the yield is low and the cost of production high because of the large amount of hand work done. It was impossible to go through the crop with the cultivator as the rain kept the heavy clay soil at this station in an unworkable condition.

ST. ETIENNE DES GRES, ST. MAURICE COUNTY, QUEBEC

OPERATOR, ORIGENE BOURNIVAL

Moisture conditions were quite favourable at this staion. The rainy weather was favourable for this soil which is of a very sandy nature. Oats were sown on June 15 and harvested on August 28.

The following table indicates the yields and cost of growing the different crops:—

OPERATIONS AT ST. ETIENNE DES GRES—FOUR-YEAR ROTATION

Field	Crop	Number of years grown	Yield per acre		Cost	
			1928	Average	1928	Average
					$	$
A	Potatoes, Green Mountain.....bush.	9	233.0	202.0	0 24	0 27
A	Corn, Longfellow.....tons	8	10.0	8.0	2 78	3 28
A	Corn, Canadian.....tons	5	6.0	5.80	5 00	3 74
A	Turnips, Hall's Westbury.....tons	8	14.0	12.38	3 00	3 48
B	Clover hay.....tons	6	1.25	.95	10 50	12 83
C	Oats, Banner.....bush.	8	21.0	25.0	0 71	0 68
D	Timothy hay.....tons	7	2.60	1.0	6 99	9 39

It will be noted that the yield of Canadian corn was rather low and the cost per ton high. However, as a large percentage of the ears were sold for table purposes, it gave a very profitable return. Because of the sandy nature of this soil, it responds to frequent light applications of manure or commercial fertilizer. In 1927, Field "C" and in 1928, Field "D" were given the following fertilizer treatment. The response in increased hay yields is as indicated below:

	Yield per acre Average 2 years.
Plot 1.—100 pounds nitrate of soda	2,625 pounds clover hay.
Plot 2.—100 pounds nitrate of soda + 300 pounds acid phosphate	2,687 pounds clover hay.
Plot 3.—Check	1,875 pounds clover hay.
Plot 4.—100 pounds nitrate of soda + 150 pounds muriate of potash	2,500 pounds clover hay.
Plot 5.—100 pounds nitrate of soda + 300 pounds acid phosphate + 150 pounds muriate of potash	3,000 pounds clover hay.

ST. EUGENE, PRESCOTT COUNTY, ONTARIO

Operator, Albert Seguin

The spring was late in this district, no seeding being done on the station until May 12. It was generally regarded as one of the wettest seasons experienced.

The yields and cost of growing the different crops are as follows:—

OPERATIONS AT ST. EUGENE—FOUR-YEAR ROTATION

Field	Crop	Number of years grown	Yield per acre		Cost	
			1928	Average	1928	Average
					$	$
A	Timothy hay.....tons	1	1.73	.....	7 31	.....
B	Corn, Ensilage.....tons	3	13.0	11	3 27	4 46
B	Turnips, Hall's Westbury.....tons	2	17.75	16	4 35	4 70
C	Oats, Banner.....bush.	2	40.0	44	0 57	0 48
D	Clover hay, 2 cuts.....tons	1	1.40	.....	15 14	.....

With the exception of clover hay it will be observed that crops produced fair returns. Corn and turnips were grown on a year old meadow which had been fall-ploughed and manured at 12 tons per acre, hence even in an unfavourable season responded to the seed bed preparation as well as to the fertilizer obtained from the manure and the turning under of the clover sod. Milk records are being kept by the operator of this station and progress is being made towards building up a Holstein herd.

ST. JEROME, TERREBONNE COUNTY, QUEBEC

Operator, Wilfrid Guay

Field "C" was seeded to oats on June 4. The hoed crops were not planted until two weeks later. Banner oats has proven a very satisfactory variety for this district. It has been seeded at the rate of 2¼ bushels per acre along with 8 pounds of red clover, 2 pounds of alsike and 10 pounds of timothy.

The results of the season's work are as follows:—

OPERATIONS AT ST. JEROME—FOUR-YEAR ROTATION

Field	Crop	Number of years grown	Yield per acre		Cost	
			1928	Average	1928	Average
					$	$
A	Clover hay, 2 cuts.....tons	3	3.44	2.80	7 25	8 00
B	Timothy hay.....tons	6	2.0	2.08	8 98	8 06
B	Timothy seed.....lb.	1	600.0	.....	6 04	.....
C	Oats, Banner.....bush.	8	30.0	33.0	1 08	0 73
D	Potatoes .....bush.	5	144.0	130.0	0 43	0 47
D	Turnips .....tons	8	16.40	19.88	2 80	2 98
D	Corn, fodder.....tons	8	13.40	12.75	3 40	3 48

The soil at this station varies considerably, ranging from peat to a sandy loam. A study of the above table indicates that over a period of years it has produced very satisfactory crops of oats, clover hay and succulent crops, and at a cost profitable for livestock feed, where well-bred cattle are kept.

Steady progress is being made towards building up a good Ayrshire herd, by introducing sires from record of performance individuals and by keeping milk records.

STE. JULIE, VERCHERE COUNTY, QUEBEC

OPERATOR, HENRI DELORME

Of the nine years that illustration work has been under way at this station, this season proved the most unsatisfactory from a crop growing standpoint. Corn was the one exception and yielded well up to the average. The season was somewhat late, oat seeding bing delayed until the third week in May.

The results of the season's work are as follows:—

OPERATIONS AT STE. JULIE—FOUR-YEAR ROTATION

Field	Crop	Number of years grown	Yield per acre		Cost	
			1928	Average	1928	Average
					$	$
A	Timothy hay, new meadow.....tons	2	1	1.10	15 46	12 30
B	Corn, Ensilage.....tons	9	13.20	13	2 39	3 27
C	Pasture	.....	.....	.....	.....	.....
D	Oats, Banner.....bush	9	40	60	0 57	0 42

Clover was a failure with regards hay and a seed crop. This resulted from winter killing. The soil here is a heavy clay, necessitating timely cultivation and proper seed-bed preparation if kept in the best physical condition. Under these conditions the practice of after-harvest cultivation is followed when preparing the land for hoed crop. As soon as the hay is removed the land is ploughed shallow, turning a flat furrow. It is immediately rolled and given a light stroke with the disk harrow. Afterwards a stiff tooth cultivator is used with sufficient frequency to keep down all weed growth. Prior to freezing up it is fall ploughed.

ST. LEONARD D'ASTON, NICOLET COUNTY, QUEBEC

OPERATOR, E. CARTER

Frequent heavy rains through the spring and growing season delayed the seeding of oats on Field "A" until June 8. This year's crops were the poorest obtained at this station due to existing seasonal conditions. Considerable time was spent endeavouring to keep the hoed crops in shape without very much avail.

The following table gives the yields and cost of growing the different crops:

OPERATIONS AT ST.LEONARD—FOUR-YEAR ROTATION

Field	Crop	Number of years grown	Yield per acre		Cost	
			1928	Average	1928	Average
					$	$
A	Oats, Banner.....bush.	3	22.5	30.0	0 90	0 70
B	Clover hay, one cut.....tons	1	1.50	.....	10 56	.....
B	Clover hay, 1st cut.....tons	2	1.0	0.75	6 87	11 66
	Clover seed, 2nd cut.....lb.	3	66.0	76.0	0 12	0 17
C	Corn, fodder.....tons	1	1.33	.....	23 23	.....
C	Turnips .....tons	3	9.0	18.0	4 94	3 03
D	Timothy hay.....tons	3	1.50	1.43	8 86	11 42

ST. PAUL DE JOLIETTE, JOLIETTE COUNTY, QUEBEC

OPERATOR, GEORGES E. BAZINET

The soil at this station is a heavy, quite productive clay soil and under normal conditions produces good hay, grain and hoed crops. This year the oats and Field "B" were seeded during the first week in May. A cold, wet period bout June 1 resulted in corn germinating poorly necessitating replanting.

The results of the season's work are as follows:—

OPERATIONS AT ST. PAUL DE JOLIETTE—FOUR-YEAR ROTATION

Field	Crop	Number of years grown	Yield per acre		Cost	
			1928	Average	1928	Average
					$	$
A	Oats and pea hay.....tons	5	1.50	3.20	18 00	12 68
A	Corn, fodder.....tons	5	7.0	11.20	6 01	4 53
A	Turnips, Hall's Westbury.....tons	3	43.45	25.0	1 29	3 40
B	Oats, Banner.....bush.	5	25.0	40.0	0 97	0 72
C	Timothy hay.....tons	4	1.50	1.55	10 53	10 95
D	Clover hay, 1st cut.....tons	4	2.20	1.14	4 77	12 04
D	Clover seed, 2nd cut.....lb.	2	90.0	77.0	0 11½	0 12

Unlike at many other points, the clover came through the winter in quite satisfactory condition. Field "D" produced quite profitable crops of both hay and clover seed. In this district the seed is harvested from the second cut. It is, however, necessary to get the first cut off early in order to give the second, or seed crop, time to mature. In this district, it is necessary to cut the first crop by the end of the third week in June.

ST. SIMON, BAGOT COUNTY, QUEBEC

OPERATOR, DONAT RIVARD

Most interesting developments continue to be made at this station. The operator this season, erected a large modern feed and dairy barn. He is also an owner of a well-bred and productive Ayrshire herd and a grower of registered seed. A well-keep garden and lawn tastefully arranged with flowers and shrubbery gives a real homelike setting to the surroundings and serves as an excellent demonstration as to what is possibe in this line under general farm conditions.

The results of the season's work are as follows:—

OPERATIONS AT ST. SIMON—FOUR-YEAR ROTATION

Field	Crop	Number of years grown	Yield per acre		Cost	
			1928	Average	1928	Average
					$	$
A	Timothy seed.....lb.	3	250.0	342.0	0 04	0 04
A	Timothy hay.....tons	6	1.50	1.02	9 30	9 73
B	Oats, Reg. Banner.....bush.	8	30.0	46.3	0 83	0 50
C	Corn, Ensilage.....tons	8	11.0	12.0	3 60	3 53
C	Turnips, Hall's Westbury.....tons	8	23.0	23.25	2 49	2 49
D	Clover hay, one cut.....tons	2	0.95	0.80	18 00	17 30
D	Clover hay, 1st cut.....tons	6	0.80	1.07	12 88	9 02
	Clover seed mixture 2nd cut....lb.	6	30.0	116.0	0 34	9 12

The spring season opened up about the average date, resulting in Field "B" being seeded to oats on May 11. Later rains promoted a rank growth, causing the oat crop to lodge badly, resulting in a yield of 16 bushels lower than the average for the past eight years.

STANBRIDGE EAST, MISSISQUOI COUNTY, QUEBEC

OPERATOR, B. MOORE

It will be noted that two four-year rotations have been established at this station, to demonstrate the effect of under-drainage. One rotation is under-drained with tile, the other is surface-drained by water-furrows, as would be done under good farm practice. The comparative yields and cost of production are as follows:—

OPERATIONS AT STANBRIDGE EAST—FOUR-YEAR ROTATION

Field	Crop	Number of years grown	Yield per acre		Cost	
			1928	Average	1928	Average
	Tile-drained land				$	$
A	Clover hay.....tons	9	2.35	2.38	6 83	7 04
B	Oats, Banner.....bush.	9	20.0	41.0	1 01	0 54
C	Corn, fodder.....tons	8	11.0	13.08	2 16	2 68
D	Turnips.....tons	9	18.40	18.0	1 76	3 18
D	Timothy hay.....tons	9	2.20	1.91	6 43	7 26
	Surface-drained land.....		.....	.....	.....	.....
E	Timothy hay.....tons	9	2.25	1.71	6 47	8 67
F	Corn, fodder.....tons	8	9.90	0.38	2 50	2 50
F	Turnips.....tons	2	12.0	14.75	3 27	4 05
G	Oats, Banner.....bush.	9	25.0	34.5	0 99	0 66
H	Clover hay.....tons	9	1.75	1.99	9 71	7 72

Hay produced quite a satisfactory crop on each rotation. Corn did not do well being planted too late, and did not reach full growth before frost came. Oats were sown on the tile-drained land on June 13 and on surface-drained, on June 16. They made rapid growth but being late, rusted badly.

REPORT ON THE FERTILIZER ILLUSTRATION STATIONS IN QUEBEC.

Pierre A. Dorion, B.S.A., Supervisor.

The continuous cropping of land with little or no attempt being made to restore to the soil the different elements of plant food consumed has in many districts reduced crop yields below the point of economical production. Naturally, the supply of farmyard manure on such farms is small, due to the limited amount of stock which they can sustain. To bring them back to profitable production, better cultivation, the growing of leguminous crops and the rational use of chemical fertilizer combined with such manure as is available offers a practical solution for the solving of this depleted soil problem. With this in view special illustrations, featuring these principles have been undertaken on Illustration Stations located in such districts.

These fertilizer Illustration Stations are under the direction of a Supervisor with headquarters at the Central Experimental Farm, Ottawa.

SEASONAL CONDITIONS

A rainy, cold spring was responsible for the late seeding in Central Quebec. It was not possible to work the land on these stations until the first days of June. However, during the summer months weather conditions were quite favourable for the growth of most crops. However, heavy rains towards the end of the season, particularly, in Beauce county, rendered the harvesting and curing of crops very difficult.

The precipitation during what may be termed the growing season, namely, from May to October inclusive, taken at three closely adjoining points, will serve as a guide to that obtained in the intervening districts where Illustration Stations are located.

MONTHLY PRECIPITATION

Month	Ste. Anne de la Pocatière	Lennoxville	Cap Rouge	Average
	in.	in.	in.	in.
May (2 last weeks)	5.52	2.93	2.20	3.55
June	4.43	4.45	3.92	4.26
July	2.09	3.93	3.28	3.10
August	2.55	4.49	2.56	3.20
September	1.94	5.02	2.60	3.18
October	2.68	6.03	2.72	3.81

PLAN OF PROCEDURE

A four-year rotation of crops serves as the foundation for the soil improvement work on the Fertilizer Illustration Stations, except at Ste. Helene, where a three-year rotation has been established. By adopting a rotation and growing a diversity of crops more economical use is made of the available plant food in the soil. This results from some plants drawing their food from greater depths than others, also from the fact that they differ in the proportion to which they draw on the essential elements, namely, nitrogen, phosphorus and potash. The crop sequence adopted in the four-year rotation is as follows:—

First year—Hoed crops.
Second year—Grain seeded to grasses and clovers.
Third year—Clover hay.
Fourth year—Timothy.

For the hoed crops the timothy sod is ploughed shallow as soon after the hay is removed as possible. It is rolled immediately to hasten decomposition of the sod and worked sufficiently to keep down all growth of grass or weeds. In the late fall it is again ploughed to a depth in keeping with the nature of the soil. The following spring the land is disked and cultivated sufficiently to prepare a well pulverized seed bed in preparation for turnips, potatoes, oats, peas and vetch hay or corn, in districts where it can be successfully grown. The hoed crop field is divided into four equal areas. To test the comparative effect of manure and fertilizer singly and when used together, each plot receives the following treatment per acre: —

Plot 1.—20 tons manure.
Plot 2.—10 tons manure, also 500 pounds of a 3-9-6 chemical fertilizer.
Plot 3.—1,000 pounds of a 3-9-6 chemical fertilizer.
Plot 4.—Check, unfertilized.

These fertilier plots run crosswise of the fields and the hoed crops are planted in the opposite direction. By so doing it is possible to determine the comparative effect of the above treatment on each of the different hoed crops.

A grain crop, usually oats or barley, follows the hoed crop; oats being seeded at the rate of two and one-half bushels per acre, with a grass and clover mixture made up of 8 pounds timothy, 5 pounds red clover, 5 pounds alfalfa and 2 pounds alsike. The grain field is divided into three plots, one receiving an application of 3,000 pounds of limestone, the second or midde plot is a check and the third receives an application of acid phosphate at the rate of 400 pounds per acre.

The meadows on a number of the stations, where the fertilizer work is being carried on, have been down in hay for a number of years, hence, low yields are obtained. To illustrate the effect of nitrogenous fertilizer on old meadows, a demonstration is undertaken comparing nitrate of soda, when applied at the rate of 150 pounds, and sulphate of ammonia at 115 pounds per acre. An unfertilized check plot is left in order to check up the comparative effect of each.

METHOD OF OBTAINING YIELDS

In view of the fact that it is not possible to weigh all the turnips, corn, potatoes and oats, peas and vetches produced on each plot, due to the lack of suitable equipment, representative areas are measured and weighed on each plot

that received this fertilizer treatment. From the average of the weights obtained, yields are calculated on an acre basis. Hay weights are taken green and reduced to a dry basis. Grain yields are taken from plots cut in a similar manner. The threshing is done, however, at the Central Experimental Farm, in a mill especially constructed for the threshing of small plots.

ST. EVARISTE DE FORSYTH, FRONTENAC COUNTY

OPERATOR, CHARLES VEILLEUX

The soil on this station, as on other farms in the surrounding district may be classed as a sandy loam of only medium fertility. Prior to this spring, when illustration work started, this land had been in sod for a number of years and had not received an application of manure or fertilizer for a few years. Two fields were spring ploughed out of sod, one for turnips, oats, peas and vetches, the other for oats. Frequent rains delayed seeding until June 15.

The following table indicates the fertilizer treatment, rate of application and yields resulting therefrom:—

OPERATIONS AT ST. EVARISTE DE FORSYTH—FOUR-YEAR ROTATION

Field	Crop	Fertilizer treatment and rate of application per acre	Yield per acre		
			Turnips	O. P. V. hay	
			tons	tons	
A	Hoed	20 tons manure	14.03	3.78	
A	Hoed	10 tons manure, 500 pounds of a 3-9-6 fertilizer	18.86	3.97	
A	Hoed	1,000 pounds of a 3-9-6 fertilizer	16.50	4.91	
A	Hoed	Check, not fertilized	5.28	1.62	
B	Oats	300 pounds lime			54.4 bush.
B	Oats	Check, not fertilized			48.3 bush.
B	Oats	400 pounds superphosphate			78.6 bush.
C	Hay	150 pounds nitrate of soda			2.16 tons
C	Hay	Check, not fertilized			1.03 tons
C	Hay	115 pounds sulphate of ammonia			1.89 tons

From the above table it may be seen that the application of 10 tons of manure and 500 pounds of 3-9-6 chemical fertilizer gave the highest turnip yields, namely, 18.86 tons or 13.58 tons more than the unfertilized check plot. Manure and chemical fertilizer, when used alone also showed quite a substantial increase in the case of both turnips and oats, peas and vetches. The latter was cut green and ensiled for winter feeding. In the district crop competition, Mr. Veilleux obtained first prize on this oats, peas and vetch crop.

STE. HELENE, KAMOURASKA COUNTY

OPERATOR, XAVIER PICARD

A three-year crop rotation comparing the effect of manure and fertilizer is being demonstrated at this station, the crop sequence being as follows in 1928:—

Field A — Hoed crop.
Field B — Oats.
Field C — Hay.

Heavy rains delayed seeding to the extent that the various crops were not seeded until between June 15 and June 20; the applications of manure, lime and fertilizers were made at the same period.

The following table indicates the method of fertilizing the different fields, the rate of application and the resulting yields:—

OPERATIONS AT STE. HELENE—THREE-YEAR ROTATION

Field	Crop	Fertilizer treatment and rate of application per acre	Yield per acre			
			Turnips	Potatoes	O.P.V. hay	
			tons	bush.	tons	
A	Hoed	20 tons manure	13.86	201.6	2.68	
A	Hoed	10 tons manure, 500 pounds of a 3-9-6 fertilizer	14.96	203.5	2.00	
A	Hoed	1,000 pounds of a 3-9-6 fertilizer	19.58	240.1	1.56	
A	Hoed	Check, not fertilized	6.60	131.0	1.16	
B	Alaska oats	3,000 pounds lime	.....	.....	.....	44.8 bush.
B	Alaska oats	Check, not fertilized	.....	.....	.....	38.4 bush.
B	Banner oats	Check, not fertilized	.....	.....	.....	42.8 bush.
B	Banner oats	400 pounds superphosphate	.....	.....	.....	54.4 bush.
C	Clover hay	150 pounds nitrate of soda	.....	.....	.....	3.47 tons
C	Clover hay	Check, not fertilized	.....	.....	.....	2.07 tons
C	Clover hay	115 pounds sulphate of ammonia	.....	.....	.....	3.37 tons

From the above table it will be seen that this soil which is a sandy loam responded best to the application of 1,000 pounds of a 3-9-6 chemical fertilizer in the case of turnips and potatoes, while oats, peas and vetches gave the highest yield on the manured land. In addition to the fertilizer work on field "B" two varieties of oats, namely, Banner and Alaska were compared on land receiving similar treatment. It will be noted that the Banner out-yielded the Alaska by 6.4 bushels. Very interesting results were obtained from the applications of sulphate of ammonia and nitrate of soda on field "C". Substantial increases in yield of 1.27 and 1.40 tons per acre, resulting from their application.

ST. JEAN PORT JOLI, L'ISLET COUNTY

OPERATOR, FRANCOIS T. CARON

This is the first year that Illustration Station work has been carried on in this district. The land was selected in the spring and immediate preparations were made for the establishment of a four-year rotation.

The soil on this station is a heavy clay thus requiring care as to its condition when worked.

Seeding was late and on the illustration fields this operation was not possible until June 25, due to heavy rains. However, the summer season was favourable to the growth of crops.

The following table indicates the fertilizers and manure applied to each plot, the rate of application and resulting yields:—

OPERATIONS AT ST. JEAN PORT JOLI—FOUR-YEAR ROTATION

Field	Crop	Fertilizer treatment and rate of application per acre	Yield per acre		
			Turnips	Potatoes	
			tons	bush.	
A	Hoed	20 tons manure	11.25	286 5	
A	Hoed	10 tons manure, 500 pounds of a 3-9-6 fertilizer	12.37	316.7	
A	Hoed	1,000 pounds of a 3-9-6 fertilizer	13.78	332.3	
A	Hoed	Check, not fertilized	8.37	232.7	
B	Barley	3,000 pounds lime			44.4 bush.
B	Barley	Check, not fertilized			30.5 bush.
B	Barley	400 pounds superphosphate			48.6 bush.
C	Clover hay	150 pounds nitrate of soda			3.50 tons
C	Clover hay	Check, not fertilized			2.93 tons
C	Clover hay	115 pounds sulphate of ammonia			3.43 tons

It will be noted from the above table that the application of 1,000 pounds of a 3-9-6 fertilizer on the hoed crop field, gave an increase of 99.6 bushels for potatoes and 5.41 tons for turnips over the check plot.

ST. JOSEPH, BEAUCE COUNTY

Operator, Fortunat Jacques

Illustration work with fertilizers was first undertaken on this station this spring. A similar plan of procedure to that undertaken on the other stations was adopted, including a four-year rotation of crops. By reason of the wet spring, seeding was not possible on this clay soil until June 8. The whole area under illustration work had been ploughed the previous fall, hence, it was not possible to carry out the demonstration with nitrogenous fertilizers on meadow land as on the other stations. However, 150 pounds of nitrate of soda per acre and 115 pounds of sulphate of ammonia were applied on field "D" with an unfertilized check plot left between to check up the increased yield, resulting therefrom.

The following table indicates the fertilizers and manure applied to each plot, the rates of application and the resulting yields:—

OPERATIONS AT ST. JOSEPH—FOUR-YEAR ROTATION

Field	Crop	Fertilizer treatment and rate of application per acre	Yield per acre			
			Turnips	Potatoes	O.P.V. hay	Oats
			tons	bush.	tons	bush.
A	O.P.V. hay	Not fertilized	15.40	144.0	2.42	
B	Hoed	20 tons manure	18.80	216.2	2.93	
B	Hoed	10 tons manure, 500 pounds of a 3-9-6 fertilizer	20.46	192.0	2.56	
B	Hoed	1000 pounds of a 3-9-6 fertilizer	14.08	96.8	2.50	
B	Hoed	Check, not fertilized			2.33	
C	Banner oats	3000 pounds lime				70
C	Banner oats	Check, not fertilized				64
C	Banner oats	400 pounds superphosphate				70
D	Banner oats	Check, not fertilized				74
D	Banner oats	150 pounds nitrate of soda				80
D	Banner oats	115 pounds sulphate of ammonia				82

It can be noted that the best turnip yield was obtained from the plot receiving an application of 1,000 pounds of a 3-9-6 fertilizer per acre; potatoes gave the greatest increase over the check plot from an application of 10 tons of manure and 500 pounds of a 3-9-6 fertilizer. The slight increases in yields resulting from the application of sulphate of ammonia and nitrate of soda were not sufficient to make its use profitable. From a check up on the previous treatment given field "D" it was found that the year previous it had received an application of farmyard manure, hence, the yields would indicate that there was no marked efficiency of nitrogen in this soil. The same was true with regard to the fertilizer treatment of field "C." However, where lime was applied it was found a decided benefit to the grasses and clovers in the new seeding.

STE. JULIE, MEGANTIC COUNTY

Operator, Achille Vachon

Operations began on this station in the spring of 1928, under very unfavourable conditions. The heavy rains during the spring delayed seeding, also the application of fertilizers until June 12. The soil is a sandy loam, somewhat lacking in plant food; this can be judged from the difference in yield between the fertilized and unfertilized plots.

The following table indicates the manure or fertilizer treatment given each field, the rate of application and the resulting yields:—

OPERATIONS AT STE. JULIE—FOUR-YEAR ROTATION

Field	Crop	Fertilizer treatment and rate of application per acre	Yield per acre			
			Corn	O.P.V. hay	Potatoes	
			tons	tons	bush.	
A	Hoed	20 tons manure	13.81	2.50	191.0	
A	Hoed	10 tons manure, 500 pounds of a 3-9-6 fertilizer	18.72	2.72	229.0	
A	Hoed	2000 pounds of a 3-9-6 fertilizer	11.14	1.56	179.0	
A	Hoed	Check, not fertilized	4.02	0.72	36.4	
B	Banner oats	3000 pounds lime	.....	.....	.....	17.6 bush.
B	Banner oats	Check, not fertilized	.....	.....	.....	21.6 bush.
B	Banner oats	400 pounds superphosphate	.....	.....	.....	25.6 bush.
C	Timothy hay	150 pounds nitrate of soda	.....	.....	.....	0.79 tons
C	Timothy hay	Check, not fertilized	.....	.....	.....	0.53 tons
C	Timothy hay	115 pounds sulphate of ammonia	.....	.....	.....	1.05 tons

It may be observed from the above table that the greatest increase in yield from corn, turnips and oats, peas and vetches resulted from the application of 10 tons of manure and 500 pounds of a 3-9-6 chemical fertilizer. The prevalence of couch grass in the limed plot on field "B" may be largely responsible for the resulting low yield. As lime is a soil amendment, its effects are indirect and will likely be apparent in succeeding crops, particularly, clover and alfalfa hay.

ST. VICTOR, BEAUCE COUNTY

Operator, Joseph Bernard

To date operations at this station have been largely of a preparatory nature. The land was ploughed in the spring and immediate preparations were made for the establishment of a rotation of crops, embodying fertilizer and cultural demonstrations. The spring season was rainy delaying seeding until June 10.

The following table indicates the manure or fertilizer treatment given each field, the rate of application and resulting yields:—

OPERATIONS AT ST. VICTOR—FOUR-YEAR ROTATION

Field	Crop	Fertilizer treatment and rate of application per acre	Yield per acre		
			Turnips	O.P.V. hay	
			tons	tons	
A	Hoed	20 tons manure	25.3	4.84	
A	Hoed	10 tons manure, 500 pounds of a 3-9-6 fertilizer	28.0	5.38	
A	Hoed	1000 pounds of a 3-9-6 fertilizer	26.8	5.20	
A	Hoed	Check, not fertilized	27.5	4.68	
B	Banner oats	3000 pounds lime			68.1 bush.
B	Banner oats	Check, not fertilized			52.1 bush.
B	Banner oats	400 pounds superphosphate			77.0 bush.
C	Mixed hay	150 pounds nitrate of soda			1.20 tons
C	Mixed hay	Check, not fertilized			0.69 tons
C	Mixed hay	115 pounds sulphate of ammonia			1.34 tons

A study of the above table indicates that there was no increase in yield resulting from the application of manure or fertilizer. On trying to determine the cause, it was found that field "A" had been in oats in 1927 and had been given what was termed a light application of manure and some acid phosphate. The rate of application was, undoubtedly, heavier than anticipated, as there was sufficient residue to fully supply the needs of this year's hoed crop. Superphosphate on field "B" increased the Banner oat yields by 24.9 bushels per acre. Lime also had a beneficial effect on the yield but its influence was mainly noted by its effect on stimulating the growth of clover and alfalfa.

THE RESULT OF APPLYING NITRATE OF SODA AND SULPHATE OF AMMONIA TO MEADOW LANDS.

Lands which have been in meadow for a number of years are frequently unproductive, the lack of nitrogen being one of the limiting factors. To demonstrate the effect of nitrogenous fertilizer on soils of this kind an application of 150 pounds, nitrate of soda and 115 pounds, sulphate of ammonia was applied to separate acre plots with an unfertilized area between from which to calculate the benefit derived be way of increased yields. These fertilizers were applied broadcast early in the spring just as the meadows were showing indications of growth.

The following table indicates the treatment and yields obtained from five stations, where the soils varied in tilth and composition:—

Station	150 pounds nitrate of soda	Check not fertilized	115 pounds of sulphate of ammonia
	tons	tons	tons
St. Evariste	2.16	1.03	1.89
Ste. Helene	3.47	2.07	3.37
St. Jean Port Joli	3.50	2.93	3.43
Ste. Julie	0.79	0.53	1.05
St. Victor	1.20	0.69	1.34
Average yield	2.22	1.45	2.21

It will be noted in each case that the plots receiving nitrate of soda or sulphate of ammonia gave a higher yield than the check plot. On an average the increase was practically the same from each of these two forms of nitrogenous fertilizers, namely, 1,540 pounds of timothy hay per acre. After deducting the cost of fertilizer and valuing hay at $10.00 per ton, nitrate of soda shows a profit of $2.45 and sulphate of ammonia $4.15 per acre. When meadows are giving comparatively low yields the use of either of these two forms of nitrogenous fertilizer seems a sound and practical means of obtaining hay.

THE COMPARATIVE EFFECT OF MANURE AND COMMERCIAL FERTILIZER ON THE YIELD OF POTATOES, TURNIPS AND OAT, PEAS AND VETCH HAY.

In this demonstration the manure was applied broadcast and harrowed in. These tests were conducted on one-quarter acre plots, which were spring ploughed out of sod land. The soil varied considerably in fertility and type ranging from a heavy clay to a light sandy loam, hence, the results are representative of a wide variety of conditionss.

The following table gives the yield of potatoes, turnips, and oat, peas and vetch hay on plots receiving manure, manure and fertilizer and fertilizer alone, as well as on the unfertilized check plot:—

RESULTS FROM DIFFERENT FERTILIZER APPLICATIONS

Station	Manure, 20 tons			Manure, 10 tons, 500 pounds of a 3-9-6 fertilizer			1000 pounds of a 3-9-6 fertilizer			Not fertilized		
	Potatoes	Turnips	O.P.V. hay	Potatoes	Turnips	O.P.V. hay	Potatoes	Turnips	O.P.V. hay	Potatoes	Turnips	O.P.V. hay
	bush.	tons	tons	bush.	tons	tons	bush.	tons	tons	bush.	tons	tons
St. Evariste	.....	14.03	3.78	.....	18.86	3.97	.....	16.50	4.91	.....	5.28	1.62
Ste. Helene	201.6	13.86	2.68	203.5	14.96	2.00	240.1	19.58	1.56	131.0	6.60	1.16
St. Jean Port Joli	286.5	11.25	.....	316.7	12.37	.....	332.3	13.78	.....	232.7	8.37	.....
St. Joseph	144.0	15.40	2.93	216.2	18.80	2.56	192.0	20.46	2.50	96.8	14.08	2.33
Ste. Julie	191.0	.....	2.50	229.0	.....	2.72	179.0	.....	1.56	36.4	.....	0.72
St. Victor	.....	25.30	4.84	.....	28.0	5.38	.....	26.80	5.20	.....	27.50	4.68
Average	205.8	15.97	3.35	241.3	18.6	3.33	235.8	19.42	3.14	124.3	12.36	2.10

An examination of the above table indicates that the largest yield of potatoes was produced on the plot receiving 10 tons of manure and 1000 pounds of a 3-9-6 commercial fertilizer, the increased yield over the fertilizer plot being 117 bushels. After deducting the cost of manure and fertilizer it is found that the increase in yield gave a profit over the cost of the fertilizer amounting to $57.34 per acre. In these calculations manure was given a value of $2.00 per ton and potatoes a sale value of 60 cents per bushel. As the plant food in manures or commercial fertilizers is not all utilized, the first year, 40 per cent of the cost of manure and 55 per cent of the cost of the commercial fertilizer is charged to the first crop or in this case to the crops shown in the above table. The revenue from the oat, peas and vetch plot receiving the same treatment shows a profit from its use of 44 cents per acre. As the yield was increased 1.23 tons per acre, it would appear a sound practice to follow this method of fertilizing, where a farmer has a shortage of hay. In some cases fertilizer alone showed the greatest profit over its cost, particularly, in the case of turnips. However, as farmyard manure has an indirect effect on the physical condition of the soil, its effect on succeeding crops should be watched to determine its true value and due consideration given to this fact when considering the results in the above table.

REPORT OF THE ILLUSTRATION STATIONS IN EASTERN QUEBEC

J. R. Proulx, B.A., B.S.A., Supervisor.

Twenty-two stations were in operation in eastern Quebec in 1928. Two new stations were established in the fall to start operations in 1929.

Weather conditions were for the most part unfavourable to the growing of crops. The depth of snow recorded during the winter resulted in a late spring. In the Ste. Anne district fields were still covered with snow on April 25. The latter part of May was so rainy that seeding could not be done until June. Contrary to usual conditions, the spring opened earlier along the Gaspe coast than in Eastern Townships. The seasonal conditions in the former district were also more favourable for the growing of farm crops throughout the summer.

Crops generally suffered from the excess of rain during the growing season and farmers had much difficulty in storing hay crops in a satisfactory condition. Repeated rainfalls necessitated frequent cultivation of turnips, corn and potatoes, which contributed to increase their cost of production. Due to seasonal conditions all crop yields, with the exception of hay, were lower than last year.

DAIRY HERD IMPROVEMENT

The objective in herd improvement is aimed at by growing crops for winter feeding, by introducing sires from high-producing dams and by keeping individual milk and butterfat records. The following table contains a list of the Ayrshire bulls purchased by the Illustration Station operators, as herd sires, also the milk and butterfat production of their dams, all of which it will be noted, have qualified in the Canadian Record of Performance.

RECORDS OF HERD BULLS PURCHASED BY ILLUSTRATION STATION OPERATORS

Station	Name of animal	Registration No.	Milk production of dam.	Fat production of dam.	Class	Lactation period
			lb.	lb.	years	days
Plessisville	Ste. Anne Lord Kyle 4..	88235	16,051	702	4	305
Black Lake	Star de Leeds	113512	8,275	374	2	365
Valley Jnct.	Supreme des Mines	119456	10,589	441	2	305
Scott Jnct.	Ste. Anne Supreme 10...	113473	6,393	248	2	286
St. Arsene	Ste. Anne Lord Kyle 30..	119712	8,182	342	2	293
St. Fabien	Alcide	122873	8,364	374	2	365
Riviere Bleue	Gaillard d'Oka	105438	7,745	273	2	305
Bromptonville	Des Bacages Brillant	106428	9,106	385	mature	291

All but a few of the recently established stations own or are using purebred bulls. As in previous years, milk records were kept of each individual cow's production. This year, monthly tests for butterfat content were added to the procedure, with the object of giving to the operator more specific information concerning the production of each cow of the herd. Weighing the milk and testing for butterfat leads to the elimination of the cows which are not profitable, and to retain in the herd only the calves from the best cows.

The following table shows the average milk and butterfat production of the various herds kept on Illustration Stations, together with the highest and lowest cow's production:—

MILK AND BUTTERFAT PRODUCTION ON EASTERN QUEBEC ILLUSTRATION STATIONS

Station	Breed	Number of cows	Average days in milk	Average production		Lowest cow's production		Highest cow's production	
				Milk	Fat	Milk	Fat	Milk	Fat
			days	lb.	lb.	lb.	lb.	lb.	lb.
Plessisville	Grade	10	279	9,049	317.6	5,920	208	10,221	309
Valley Jnct.	Grade	12	290	7,296	286.2	5,075	214	8,715	359
South Roxton	Ayrshire	16	302	7,088	295.7	5,784	265	10,516	444
Notre D. de Ham.	Ayrshire	13	262	6,186	242	4,516	189	10,218	414
Megantic	Grade	8	221	6,188	238.5	4,942	167	8,944	315
Montmagny	Ayrshire	10	256	5,978	235.8	4,632	211	8,928	338
Weedon	Grade	10	281	5,900	216.3	4,464	165	7,541	305
St. Alexandre	Grade	12	244	5,820	222.6	5,127	196	6,995	278
Bromptonville	Ayrshire	17	265	5,175	197.6	2,851	99	7,268	294
Black Lake	Grade	25	247	4,764	195.5	4,002	133	5,573	229
Rivière Bleue	Ayrshire	9	248	4,620	172.7	3,197	121	6,232	208
St. Alphonse	Grade	7	211	4,555	200.0	3,256	149	6,881	258
St. Fabien	Grade	15	230	4,349	167.0	2,581	95	4,909	190
New Richmond	Grade	10	212	4,137	164.0	3,196	140	5,017	174
Scott Jnct.	Grade	11	246	3,943	160.0	2,762	116	4,977	229
St. Apollinaire	Ayrshire	8	240	3,905	136.0	2,297	93	5,109	198
St. Arsene	Grade	7	276	3,687	141.2	2,390	100	4,439	174
St. Eleuthere	Grade	21	232	3,251	111.3	2,261	86	5,642	181
Nouvelle	Grade	3	214	3,030	121.2	1,915	74	3,840	155
Matane	Grade	9	311	8,100	.....	4,810	.....	9,949	.....

The most striking feature brought out from a review of this table is the great variability in the average milk and butterfat production of the herds, also the marked variability in the production of different cows in the same herd. The average production per cow for all the herds reported above, is 5,356 pounds of 3.6 per cent milk or 201.0 pounds of butterfat. The average lactation period was 255 days.

Although a number of these stations have creditable herd averages, in many cases it is too low to be profitable. This average could be raised to quite an extent by further elimination of the lowest producing individuals and by extending the lactation period by better winter feeding.

IMPROVING POULTRY FLOCKS

The total number of poultry kept this year on the Illustration Stations in Eastern Quebec, amounted to 1,904, of which 1,650 were pure breds. This may be considered as noteworthy progress, in view of the fact that only 344 pure-bred birds were kept on the same stations three years ago.

The improvement of the poultry flocks on the Illustration Stations has a beneficial effect upon the farms of the neighbourhood, as the surplus breeding stock and hatching eggs are offered for sale to adjoining farmers at moderate prices. In the Eastern Quebec district, the operators disposed of 354 dozen hatching eggs, 137 cockerels and 182 pullets.

INCREASING CROP YIELD BY THE USE OF CHEMICAL FERTILIZERS

Fertilizer tests have been conducted on several Illustration Stations. These demonstrations have proven interesting and effective, as farmers are becoming more and more interested in plant nutrition and the quantity of fertilizer being purchased in the surrounding districts, is increasing each year. An average increase of 6.8 tons of turnips per acre and 68 bushels of potatoes were obtained last year by the use of suitable home mixed fertilizers. The increasing of the yield in this way resulted in a lower production cost. Fertilizers, however, are not recommended to replace other efficient cultural operations, such as rotation of crops, drainage, addition of organic matter, proper cultivation, which are always essential in order to secure higher returns from farm land.

FERTILIZERS FOR SWEDE TURNIPS

A demonstration was undertaken on several of the Illustration Stations aim-

Where no fertilizer was applied the turnips on the Illustration Station at Scott Junction yielded 3.5 tons per acre, while on the part of the field receiving 412 pounds of a complete fertilizer, in addition to 12 tons of manure, the yield was increased by 10 tons per acre.

ing to determine the supplementary value of chemical fertilizers on turnips. Part of the field was manured at twelve tons per acre and in addition, received an application of 100 pounds nitrate of soda, 280 pounds of superphosphate and 32 pounds of potash per acre. A central portion of the field received the same application of stable manure but no chemical fertilizers. In this way any increase in yield resulting form the use of the chemical fertilizers, could be determined.

The following table indicates the resulting yield and cost of production at each station:—

RESULTS FROM MANURE AND FERTILIZER VS. MANURE ALONE FOR SWEDE TURNIPS

Station	Manure and fertilizer		Manure alone	
	Yield per acre	Cost per ton	Yield per acre	Cost per ton
	tons	$	tons	$
Black Lake	24.8	3 10	15.6	4 27
Notre Dame de Ham	20.5	2 57	15.5	2 90
Scott Junction	13.5	3 96	3.5	14 61
Weedon	18.8	2 94	8.8	4 67
Valley Junction	14.0	6 10	11.7	6 59
St. Apollinaire	12.3	4 70	8.6	6 02
St. Alexandre	14.3	6 15	12.0	6 91
St. Eleuthere	14.5	3 93	4.3	10 90
St. Fabien	16.5	4 00	8.0	7 07
Nouvelle	18.3	4 52	13.3	5 55
St. Alphonse	15.7	3 90	6.5	7 63
Average	16.6	4 17	9.8	7 01

A review of this table shows that the supplementing of stable manure with chemical fertilizers is advantageous in growing turnips, especially when the quantity of manure available on the farm is not sufficient to meet the plant food requirements of this crop. Under local conditions, the turnips require a liberal quantity of available phosphoric acid, necessitating quite heavy applications of manure to meet the requirements of the plant, unless supplied in a concentrated form through superphosphate or a chemical fertilizer carrying a high percentage of this ingredient.

FERTILIZERS FOR POTATOES

Fertilizer demonstrations with potatoes were conducted at six stations. In carrying out this demonstration, part of the field received an application of 15 tons of manure per acre. The remaining portion of the field in addition to a similar application of manure, received 135 pounds of nitrate of soda, 250 pounds of superphosphate and 85 pounds of muriate of potash.

The yields and cost of production at the different stations were as follows:—

RESULTS FROM MANURE AND FERTILIZER VS. MANURE ALONE FOR POTATOES

Station	Manure and fertilizer		Manure alone	
	Yield per acre	Cost per bushel	Yield per acre	Cost per bushel
	bush.	cts.	bush.	cts.
St. Pierre, I.O.	140	50	110.0	57
New Richmond	250	23	165.0	30
Grande Riviere	178	39	55.5	96
St. Alexandre	300	32	247.0	36
Nouvelle	264		216.0	
Average	226.7	36	158.7	55

As may be noted in the preceding table, the addition of a limited quantity of fertilizers, increased the potato yield by 68 bushels and reduced the cost of production by 19 cents per bushel. It should be noted, however, that the figures mentioned, for the station of Grande Rivière, apply to the production of potatoes without manure, the quantity of this material being limited at this particular station. Only a small portion of the field received manure and chemical fertilizers. This crop yielded 250 bushels per acre at a cost of 32 cents per bushel.

A somewhat different procedure was followed in a fertilizer test conducted at the St. Arsene station, with potatoes.

The plan of the demonstration and the results obtained are summarized in the following table:—

Plot No.	Treatment	Yield per acre	Cost per bushel
		bush.	cts.
1	15 tons manure, 500 pounds 5-8-9	271.8	25
2	15 tons manure, 500 pounds 5-8-6	239.6	28
3	15 tons manure	161.4	36

This table indicates that in both cases the addition of chemical fertilizers was profitable. The comparative results obtained with the two fertilizer mixtures should not, however, be taken as too conclusive, as the quality of stable manure used on this three acre field, was not uniform.

BLACK LAKE, MEGANTIC COUNTY

Operator, Archilas Dallaire

This station, which is in operation for the second year, was neatly kept throughout the growing season. The yield of swede turnips was slightly lower than of last year. The crop was also more expensive to grow, due to the frequent rains which necessitated more frequent cultivations. Oats were sown June 8 and harvested September 22. The yield was low being about half of that obtained last year, this being the general condition in this district. Clover hay gave a very satisfactory yield at a reasonable cost.

The yields and cost of growing the different crops are as follows:—

OPERATIONS AT BLACK LAKE—FOUR-YEAR ROTATION

Fields	Crop	Number years grown	Yield per acre		Cost per unit	
			1928	Average	1928	Average
					$	$
D	Swede turnips ..... tons	2	23.3	26	3 26	2 91
C	Oats, Banner ..... bush.	2	24.5	41	0 87	0 60
A and B	Clover hay ..... tons	1	3.0	.....	5 55	.....

Chemical fertilizers were found profitable for growing turnips and produced an increase of nine tons per acre.

BROMPTONVILLE, RICHMOND COUNTY

Operator, Vertume Messier

This station which is now in operation for the sixth year again gave creditable results this year, considering the unfavourable weather conditions. Oats were seeded June 4 and the crop harvested September 3. Turnips and corn were sown in the latter part of June.

The following is a summary of this season's yields which are comparable with those of previous years, except for the oats being 20 bushels lower than last year.

OPERATIONS AT BROMPTONVILLE—FIVE-YEAR ROTATION

Fields	Crop	Number years grown	Yield per acre		Cost per unit	
			1928	Average	1928	Average
					$	$
E	Swede turnips ..... tons	6	30.0	32.2	1 93	1 85
E	Corn, Longfellow ..... tons	6	20.0	17.8	2 40	2 72
D	Oats, Banner ..... bush.	4	40.0	56.5	0 62	0 51½
C	Clover hay ..... tons	6	1.87	1.64	10 45	10 96
B	Timothy hay, 1st year ..... tons	4	2.12	2.36	7 06	6 52
A	Timothy hay, 2nd year ..... tons	1	2.4	2.4	5 66	5 66
A	Timothy seed ..... lb.	1	300.0	.....	05	.....

Field "E" was added to the four-year rotation making it a five-year, which seems more practical for the needs of the farmers of this district.

Over a hundred bushels of Banner seed oats were sold from this station to farmers of the neighbourhood who are anxious to take advantage of the productive strain grown.

GRANDE RIVIERE, GASPE COUNTY

Operator, Jacques Cauvier

The work done this year at this station may be considered as preparatory, as work only started here in the spring. The nature of the soil varies from a sandy to a clay loam which has not been fertilized for a period of eight years. Although

the area under illustration work is not large, the quantity of manure was far from being sufficient to fertilize the first year sod. This explains the low yields obtained.

The following table summarizes the first year's work:—

OPERATIONS AT GRANDE RIVIERE—FOUR-YEAR ROTATION

Field	Crop	Yield per acre	Cost per unit
			$
A	Swede turnips.....tons	13.5	3 48
A	Potatoes .....bush.	250.0	0 32
B	Oats and pea hay.....tons	1.6	12 75
C	Oats, Alaska.....bush.	27.0	0 84

Swede turnips were grown with superphosphate only. A yield of 13½ tons per acre was secured in a ½ acre field, which had received an application of 500 pounds of superphosphate. The check plot did not produce any crop. Growth ceased shortly after the plants came up, presumably due to the lack of plant food. The effects of chemical fertilizers were also very striking on the potato field, the check plot yielding only 55 bushels, while 178 bushels per acre were obtained on the plot that received an application and 250 bushels on the plot where farmyard manure was supplemented with chemical fertilizers.

LAC MEGANTIC, FRONTENAC COUNTY

Operator, Alcide Trudel

The nature of the soil at this station does not allow early seeding. It was not possible to carry out this operation until June 20. Crop yields are somewhat lower than the average of previous years, as will be seen in the following table:—

OPERATIONS AT LAC MEGANTIC—FOUR-YEAR ROTATION

Field	Crop	Number years grown	Yield per acre		Cost per unit	
			1928	Average	1928	Average
					$	$
D	Swede turnips.....tons	2	23.0	28.5	1 93	1 78
D	Potatoes, Irish Cobblers.....bush.	1	230.7	.....	0 18	.....
A	Oats and pea hay.....tons	3	2.0	2.9	14 30	11 77
B & C	Clover hay, ...tons	1	2.7	.....	7 59	.....

Irish Cobbler potatoes were found a very profitable crop and were in good demand locally. Part of the turnip crop was also sold for table use. During the year the herd at this station was tuberculin tested with the view of accreditation. The building of a new and modern poultry house is also an improvement worthy of note.

NEW RICHMOND, BONAVENTURE COUNTY

Operator, John B. Cyr

Cultural operations have been carried on with constant attention at this station, which has now been in operation for eight years. The crops were neatly

kept throughout the growing season and the yields obtained were very satisfactory as may be seen in the following summary of yields and costs:—

OPERATIONS AT NEW RICHMOND—FOUR-YEAR ROTATION

Field	Crop	Number years grown	Yield per acre		Cost per unit	
			1928	Average	1928	Average
					$	$
A	Swede turnips.....tons	7	21.0	25.7	2 08	2 38
A	Potatoes, Green Mountain.....bush.	4	221.5	255.0	0 25	0 26
D	Oats, Banner.....bush.	7	68.7	68.5	0 37	0 34
C	Clover hay.....tons	8	2.5	1.8	6 53	9 19
B	Timothy hay.....tons	8	2.25	1.74	6 83	9 24

The oat crop on this station gave the highest yield obtained on any of the Illustration Stations in Eastern Quebec, being 68.7 bushels per acre or 25 bushels more than last year. The yield of timothy and clover hay is over three-quarters of a ton higher than the average for the past eight years.

MATANE, MATANE COUNTY

OPERATOR, MICHEL PHILIBERT

The district in which this station is situated did not suffer from the rainfall as was the case in other districts. Seeding started on May 30 and was completed by June 9. The yield of crops and their cost of production is much similar to the average of previous years. The hay crop, however, was thirty per cent superior to that of last year. Potatoes also yielded better than in other years due mainly to the use of better seed.

The following statement shows the comparative yields and cost of growing crops at this station:—

OPERATIONS AT MATANE—FOUR-YEAR ROTATION

Field	Crop	Number years grown	Yield per acre		Cost per unit	
			1928	Average	1928	Average
					$	$
C	Swede turnips.....tons	7	12.7	15.6	4 92	3 85
C	Potatoes, Green Mountain.....bush.	4	228.7	190.0	0 22	0 31
B	Oats, Banner.....bush.	7	48.2	54.4	0 50	0 45
A	Clover hay.....tons	6	1.55	1.46	12 18	12 50
D	Timothy hay.....tons	6	1.5	1.49	10 35	10 91

The application of fertilizers on the turnip culture did not result in any increase in the yield. A great part of that crop, or 15,550 pounds, was sold for table use at 0.02 per pound. Although the yield was comparatively low, a profit of $248.40 was realized from the acre field in addition to 5,000 pounds which were kept for cattle feed.

It should be noted, however, that this district has a special market for this product, which is in great demand for the lumbering industry.

MONTMAGNY, MONTMAGNY COUNTY

OPERATOR, G. FORTUNAT FOURNIER

Seeding was delayed because of seasonal conditions and ranged from May 31 to June 15. Similar to many other stations, the hay crop was the most satisfactory and was produced at a reasonable cost, as may be noted from the following table: —

OPERATIONS AT MONTMAGNY—FOUR-YEAR ROTATION

Field	Crop	Number years grown	Yield per acre		Cost per unit	
			1928	Average	1928	Average
					$	$
A	Swede turnips.....tons	7	18.0	27.0	2 67	2 18
A	Oats and pea hay.....,tons	1	3.4	.....	10 42	.....
D	Barley .....bush.	3	25.0	29.8	0 94	0 81
C	Clover hay.....tons	6	1.87	2.53	8 64	7 89
B	Timothy hay.....tons	7	2.43	1.9	6 04	6 96

Continuous rainy weather delayed turnip seeding until July 3. The yield was considerably reduced on that account. In spite of this condition, the operator was allotted first prize in the local turnip contest.

With a view to increasing the value of surplus stock which this operator may have for sale, four cows were officially entered in the Record of Performance test. Three of them have already given the quantity of milk required for qualification in the Roll of Honour, and it is expected that the fourth will qualify in the 365 day test.

NOTRE DAME DE HAM, WOLFE COUNTY

OPERATOR, PIERRE TOUPIN

The rotation on this station has been extended from a four-year to that of a five-year duration. The new field that was taken this year for the hoed crop was rather unproductive and had to be cleared of stones. Considerable work was accomplished in this connection and the yield of corn, turnips and sunflowers obtained was very satisfactory as may be seen in the summary. Oats were sown before the rainy weather but were flooded in the latter part of May. This encouraged the production of a thick growth of grass and weeds, necessitating cutting it green for hay.

The following table summarizes the results obtained since starting operations: —

OPERATIONS AT NOTRE DAME DE HAM—FIVE-YEAR ROTATION

Field	Crop	Number years grown	Yield per acre		Cost per unit	
			1928	Average	1928	Average
					$	$
E	Swede turnips.....tons	2	18.0	14.2	2 60	4 48
E	Corn, Longfellow.....tons	3	20.0	14.4	1 96	4 08
E	Corn and Sunflowers.....tons	3	10.0	14.0	3 55	3 72
D	Oats hay.....tons	3	3.75	3.91	6 52	7 31
C	Timothy .....tons	3	1.5	2.24	9 05	7 28
B	Clover hay .....tons	2	1.6	1.8	7 00	6 75
A	Pasture					

Considerable information relative to the cultural methods, was given by the operator of this station, who made individual visits to the members of the swede turnip contest organized in the parish.

Progress has been made in the improvement of the dairy herd at this station. A few cows were entered in the Record of Performance test. These have already given the quantity required for qualification. A manure shed was built during the summer, which will be very useful in preventing the loss of the fertilizing elements through leaching.

PLESSISVILLE, MEGANTIC COUNTY

Operator, Eudore Jutras

Seeding took place at this station from June 11 to June 14, as compared with May 30 to June 3 last year. All the crops, except hay, produced lower yields than the average of previous years, this being partly due to weather conditions and to the fact that cultural operations could not be performed as promptly and carefully as usual, due to building operations.

The following table shows this year's results compared to those of previous years: —

OPERATIONS AT PLESSISVILLE—FOUR-YEAR ROTATION

Field	Crop	Number years grown	Yield per acre		Cost per unit	
			1928	Average	1928	Average
					$	$
B	Swede turnips.....tons	8	16.5	24.5	2 31	2 20
B	Corn, Longfellow.....tons	8	11.0	16.2	3 00	2 49
A	Barley .....bush.	4	35.0	45.0	0 68	0 57
D	Clover and alfalfa hay.....tons	8	2.25	1.84	7 14	9 02
C	Timothy and alfalfa hay.....tons	8	2.75	1.87	5 00	6 94

Quite a high percentage of alfalfa was noticed in the hay crop on Fields "D" and "C", thus the yield was increased and the cost of growing hay reduced.

An aged Ayrshire bull was bought by the operator of this station. This animal is entered in the Advanced Registry. His dam, Beaver Meadow Beauty 6th, stands Champion in the 305 day official test, with 16,041 pounds of milk and 702 pounds of butterfat to her credit as a four-year old.

RIVIERE BLEUE, TEMISCOUATA COUNTY

Operator, Joseph Boulanger

The district where this station is situated, is infested with numerous weeds. Extra work is therefore required in the various cultural operations, to keep them under control, and contributes to making the crops more expensive to grow. Swede turnips were grown this year for the first time and will, no doubt, help to solve the problem of weed control, because of the frequent cultivation given the crop.

The season's yields and cost of growing the different crops as well as the average for two years, appear in the following table: —

OPERATIONS AT RIVIERE BLEUE—FOUR-YEAR ROTATION

Field	Crop	Number years grown	Yield per acre		Cost per unit	
			1928	Average	1928	Average
					$	$
A	Swede turnips.....tons	1	15.0	.....	4 93	.....
B	Oats, Alaska .....bush.	2	42.3	41.1	0 55	0 58
C & D	Oats and pea hay.....tons	2	1.93	1.96	14 49	11 75

Considerable progress has been made in poultry keeping, in the course of the past season. The number of pure-bred pullets raised this year amounted to 110. The flock was carefully culled last fall and the undesirable birds sold for meat. This branch of the farm has been found profitable and it is expected that still better results will be obtained as further selection and attention to breeding is made.

ST. ALEXANDRE, KAMOURASKA COUNTY

Operator, Alphonse Ouellet

This station which has been in operation for the third year, is making constant progress. Considering the season, crops gave very satisfactory yields. As was intimated in last year's report, two rotations are being tested out, one of three and one of four years' duration.

A summary of the yields and costs in the four-year rotation is given in the following table: —

OPERATIONS AT ST. ALEXANDRE—FOUR-YEAR ROTATION

Field	Crop	Number years grown	Yield per acre		Cost per unit	
			1928	Average	1928	Average
					$	$
D	Swede turnips.....tons	2	13.7	13.8	6 33	5 63
D	Oats and pea hay.....tons	2	3.0	2.87	9 63	9 07
C	Oats, Alaska.....bush.	2	43.7	40.1	0 54	0 48
A & B	Clover hay.....tons	1	2.12	.....	5 51	.....

The high yields obtained this year with oats, clovers, and oats and pea hay, can be attributed to the good work done by the operator in rounding up the lands and providing for the necessary surface drainage. It is worthy of note that a yield of over 43 bushels of Alaska oats was obtained on a soil which the farmers of this locality considered unsuitable to ripen oats. This variety is now in demand and the operator of the Illustration Station has disposed of his surplus stock of approximately 2,800 pounds to 15 farmers in the district.

The yield of turnips on this rotation is comparable to that of last year. The soil does not seem well adapted to this crop. It is expected, however, that more profitable yields will be obtained in the second cycle of rotation.

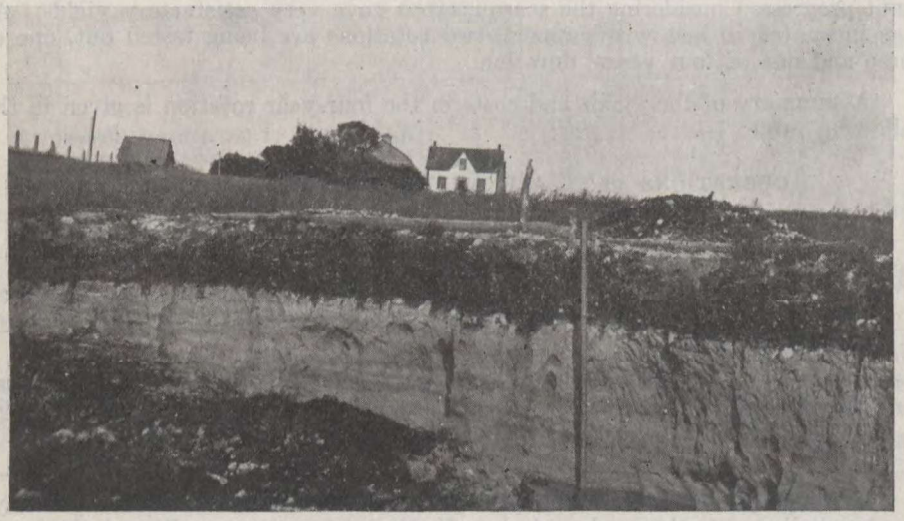
The three-year rotation is situated on the sandy part of the farm. All crops, except wheat, have given profitable yields as indicated in the following summary:—

OPERATIONS AT ST. ALEXANDRE—THREE-YEAR ROTATION

Field	Crop	Number years grown	Yield per acre		Cost per unit	
			1928	Average	1928	Average
					$	$
H	Potatoes, Green Mountain.....bush.	2	286.7	266.3	0 33	0 28
H	Swede turnips.....tons	1	23.5	.....	2 74	.....
G	Wheat, Huron.....bush.	1	18.4	.....	1 66	.....
F	Clover hay.....tons	1	2.43	.....	8 94	.....

A fertilizer demonstration as previously mentioned was conducted on land planted to potatoes. The application of 470 pounds of chemical fertilizer to the manure, resulted in an increase of 53 bushels per acre over the check plot. Spraying with the Bordeaux mixture continued until the end of August. Unfortunately a late blight infection occurred in the beginning of September, thus reducing the yield somewhat.

The frequent rains favoured the turnip crop on that sandy land, producing a 23½ ton yield in comparison with 13.7 tons on the heavier soil.



A marl deposit in Bonaventure County, used for correcting soil acidity, and found effective in promoting clover growth.

ST. ALPHONSE DE CAPLAN, BONAVENTURE COUNTY

OPERATOR, ISIDORE ST. ONGE

The results of this year's activities on this recently established station may be considered as satisfactory if one keeps in mind the unfertile nature of the soil in this district.

The following summary indicates the yield and cost of growing the different crops at this station: —

Field	Crop	Yield per acre 1928	Cost per unit
			$
D	Swede turnips.....tons	12.6	4 67
C	Oats and pea hay.....tons	2.0	10 67
A & B	Oats, Alaska.....bush.	15.0	1 02

Chemical fertilizers have given good results in the production of turnips, showing an increased yield of 9 tons to the acre. The difference might have been still greater had not this crop been reduced by a certain dry rot. The yield of oats was very poor, as could be expected, from the fact that this portion of the field was not manured.

A fertilizer demonstration, started last year on the oat field, gave the following yield of clover hay :—

RESULTS FROM DIFFERENT FERTILIZER APPLICATIONS

Plot No.	Treatment of plot	Yield per acre
1	Nitrate of soda, 200 pounds.....	1.02 tons
2	Manure, 8 tons, marl 5 tons.....	2.43 tons
3	(Superphosphate, 250 pounds, (Nitrate of soda, 100 pounds.....	1.02 tons
4	(Superphosphate, 250 pounds (Muriate of potash, 150 pounds.....	0.88 tons
5	Check	0.59 tons

The results obtained from this demonstration would indicate that this soil is particularly lacking in lime and general fertility in view of the highest yields being obtained from the plot given a light application of manure and marl. Air dried samples of a marl deposit situated on this farm were analyzed by the Division of Chemistry, and were found to contain 93.5 per cent carbonate of lime. This substance can be obtained for the cost of hauling in several sections of Bonaventure and Gaspe counties. It would seem advisable to use it, in preference to ground lime, which is much more expensive on account of transportation costs.

ST. APOLLINAIRE, LOTBINIERE COUNTY

Operator, Joseph Cote

The low land on which this station is located created rather unfavourable conditions, for the most effective carrying out of routine duties. Barley was sown June 20. Cultivation of the turnip crop frequently had to be delayed on account of the wetness of the land. The clover and timothy hay on fields "C" and "D" gave yields superior to the average of previous years.

A summary of the comparative yields and costs of growing the different crops, is given below: —

OPERATIONS AT ST. APOLLINAIRE—FOUR-YEAR ROTATION

Field	Crop	Number years grown	Yield per acre		Cost per unit	
			1928	Average	1928	Average
					$	$
B	Swede turnips.....tons	4	12.3	15.2	4 70	3 86
B	Oats and pea hay.....tons	3	2.0	2.4	8 67	10 06
A	Barley, O.A.C. 21.....bush.	1	20.2	.....	1 04	.....
D	Clover hay.....tons	3	2.44	1.77	6 50	9 12
C	Timothy .....tons	3	2.4	1.57	5 48	8 52

ST. ARSENE, TEMISCOUATA COUNTY

Operator, Antonio Cayouette

A three-year rotation is being established at this station, giving special attention therein to the potato growing. The yields from the different crops grown were excellent, considering the season. Potatoes, however, were slightly affected by late blight.

A summary of yields and costs is given in the following table: —

OPERATIONS AT ST. ARSENE—THREE-YEAR ROTATION

Field	Crop	Number years grown	Yield per acre		Cost per unit	
			1928	Average	1928	Average
					$	$
C	Potatoes, Green Mountain.....bush.	2	240.0	297.0	0 27	0 22
B	Oats, Banner.....bush.	2	41.2	37.6	0 55	0 45
A	Clover hay.....tons	1	2.3	.....	5 78	.....

Fertilizer demonstrations comparing manure and chemical fertilizers at different rates, were undertaken on the potato crop. The results of this test have already been mentioned in a summary dealing with this work, in the introduction of the report. An attempt is being made to increase the productiveness of the Green Mountain variety of potatoes, through tuber unit selection. This work is conducted in co-operation with the district inspector for the certification of potatoes.

Two pure-bred Ayrshires, a male and a female, were introduced into the herd at this station during the past season. Both are from Record of Performance dams, the bull being eligible for the A.A. class of Advanced Registry. Both are being well developed and their quality is a guarantee of success, which may be expected in the first attempt to build up a pure-bred herd.

ST. ELEUTHERE, KAMOURASKA COUNTY

Operator, Germain Morin

As a result of the work done at this station, to improve the drainage and disposal of surface water, seeding was completed earlier than last year. This soil

is naturally lacking in fertility, making it difficult at the present time to produce crops economically. Progress, however, can be noted and undoubtedly yields will be more satisfactory after the first cycle of rotation has been completed.

Crop yields and the cost of production since the beginning of operations are tabulated hereunder:—

OPERATIONS AT ST. ELEUTHERE—FOUR-YEAR ROTATION

Field	Crop	Number years grown	Yield per acre		Cost per unit	
			1928	Average	1928	Average
					$	$
A	Swede turnips.....tons	2	12.0	9.6	4 54	8 93
A	Oats and pea hay.....tons	2	1.25	1.42	19 99	16 52
D	Oats, Banner.....bush.	2	22.0	22.5	1 00	0 83
B & C	Clover hay.....tons	1	1.75	.....	8 68	.....

In order to determine and demonstrate the supplementary value of fertilizer on turnips, part of the turnip field received a 12 ton application of farmyard manure; the remainder of the field in addition to manure, received 412 pounds of chemical fertilizer per acre. The fertilizer increased the yield by 10.2 tons per acre.

The Banner oats yield was low, producing only 22 bushels per acre. It is intended to try Alaska oats next year. This could not be done last spring because of the scarcity of seed of that variety.

ST. FABIEN, RIMOUSKI COUNTY

Operator, Joseph Albert

The results obtained this year at this station are somewhat comparable to the average of previous years, except for oats, which like in many other districts, produced only a medium crop. The cost of growing the different crops, however, was generally lower than the average. This can be explained by the fact that the soil is steadily improving and that the fixed charges, such as rent and cost of fertilizers, are distributed over a period of six years, due to the extension of this rotation to that of a six-year duration.

The following table outlines this season's results and also the average yields and costs since the station started operations:—

OPERATIONS AT ST. FABIEN—SIX-YEAR ROTATION

Field	Crop	Number years grown	Yield per acre		Cost per unit	
			1928	Average	1928	Average
					$	$
B	Swede turnips.....tons	7	14.5	16.6	4 48	4 54
B	Potatoes, Green Mountain.....bush.	5	195.0	201.8	0 25	0 32
B	Oats and pea hay.....tons	2	3.0	2.4	7 09	9 41
A	Oats, Banner.....bush.	7	30.0	52.8	0 66	0 43
F	Clover hay.....tons	7	1.8	1.54	9 64	11 01
E	Timothy hay.....tons	6	1.3	1.44	8 42	9 86
D	Pasture	.....	.....	.....	.....	.....
C	Oats and pea hay.....tons	2	3.0	2.8	6 83	7 25

A pure-bred Ayrshire bull and a heifer calf were purchased by the operator of this station, as a means of building up the herd. These animals are from Record of Performance dams and should be effective in bringing about the desired improvement.

ST. JEAN L'EVANGELISTE, BONAVENTURE COUNTY

OPERATOR, LEON LAVOIE

This station has given creditable results for the second year's operation. The cost of crops is gradually decreasing in proportion to the improvement of the soil. As the land at this station is infested with couch grass, considerable extra labour is entailed preparing the seed bed, in thinning the turnip crop and keeping it under control during the growing season, particularly in years of abundant rainfall such as that experienced this year.

The following table embodies the results obtained since the beginning of operations: —

OPERATIONS AT ST. JEAN L'EVANGELISTE—FOUR-YEAR ROTATION

Field	Crop	Number years grown	Yield per acre		Cost per unit	
			1928	Average	1928	Average
					$	$
D	Swede turnips.....tons	2	17.1	15.7	4 77	5 01
D	Oats and pea hay.....tons	2	3.0	2.7	6 63	8 25
D	Peas, Chancellor.....bush.	1	12.0	.....	2 63	.....
C	Oats, Banner.....bush.	2	48.3	54.1	0 34	0 33
A & B	Clover hay.....tons	1	1.6	.....	8 12	.....

Turnips were produced more economically with chemical fertilizers and manure than with manure alone, as reported in a previous section of this report. A fertilizer demonstration on potatoes was undertaken on an acre field of sandy land outside the Illustration area; 264 bushels of certified potatoes were obtained where manure and chemical fertilizers were used, and 216 bushels where manure was applied alone. No increase in yield was obtained from the clover hay, where ground lime was applied last year.

ST. MAXIME DE SCOTT, DORCHESTER COUNTY

OPERATOR, ELZEAR LACROIX

As could be anticipated from prevalent weather conditions, a substantial increase in the yield of hay was obtained this year on this rather light, sandy soil. Other crops, however, suffered from the heavy rainfall. The yield of oats was much below the average. The turnip crop did not come up very uniform, thus the yield was reduced because of the numerous misses. Chemical fertilizers were found very efficient in supplementing farmyard manure, and increased the yield by 10 tons per acre.

The following table indicates the yield and cost of growing the different crops in the rotation, also their averages over a period of years:—

OPERATIONS AT ST. MAXIME DE SCOTT—FOUR-YEAR ROTATION

Field	Crop	Number years grown	Yield per acre		Cost per unit	
			1928	Average	1928	Average
					$	$
B	Swede turnips.....tons	5	13.5	22.2	3 96	3 29
A	Oats, Banner.....bush.	5	24.0	34.7	1 12	0 75
D	Clover hay.....tons	4	2.25	1.31	7 40	14 50
C	Timothy hay.....tons	2	2.25	1.36	7 11	16 85

ST. PIERRE, ISLE OF ORLEANS, MONTMORENCY COUNTY

OPERATOR, ADELARD ROUSSEAU

This newly established station is situated on sandy soil naturally low in fertility. Fields "A" and "B" were fertilized last spring, but the quantity of manure available was not sufficient to meet the plant food requirement of the crop.

The following table indicates the results obtained in the first year's operations:—

OPERATIONS AT ST. PIERRE—FOUR-YEAR ROTATION

Field	Crop	Yield per acre	Cost per unit
			$
A	Swede turnips.....tons	15.0	3 29
A	Potatoes.....bush.	125.0	0 55
B	Oats and pea hay.....tons	3.0	7 15
C	Oats, Banner.....bush.	18.3	0 71

The four acres of oats and pea hay created considerable interest on the part of passers-by. The introduction of this crop into this district would, no doubt, assist in solving the cattle feed problems. The yield of turnips and potatoes was somewhat lowered due to too great a distance being left between the rows.

SOUTH ROXTON, SHEFFORD COUNTY

OPERATORS, A. F. SANBORN & SON

Owing to the fact that this station was established in late fall 1927, fall ploughing was not possible. Half of the area, which amounts to 8 acres, was spring-ploughed and sown to corn and oats. Both crops were sown in the first days of June.

Oats yielded 35 bushels per acre at a cost of 0.47 per bushel. Fifteen tons of corn silage were obtained from a one acre plot, which had received 15 tons of manure in addition to 400 pounds of home mixed fertilizers, corresponding to a 3-8-5 mixture. The remainder of the corn field received the same quantity of manure but no chemical fertilizer produced an eleven ton crop. The balance of the area, an old meadow, has been after-harvest cultivated, in preparation for next year's hoed crop.

This operator has an Ayrshire herd, under official test in the Canadian Record of Performance, which contains a number of individuals that have already qualified. The herd sire is a son of "Penhurst Mischief Star" and from an Honour Roll cow which has given 11,584 pounds of 4.8 per cent milk as a three-year old.

VALLEY JUNCTION, BEAUCE COUNTY

OPERATOR, ERNEST JACOB

This is the first year that Illustration Station work has been under way at this station. Operations have been mainly of a preparatory nature, directed with a view of establishing a four-year rotation.

OPERATIONS AT VALLEY JUNCTION—FOUR-YEAR ROTATION

Field	Crop	Yield per acre	Cost per unit
			$
A	Swede turnips.....tons	13.4	6 23
A	Potatoes, Green Mountain.....bush.	164.0	0 55
B	Oats and pea hay.....tons	2.4	11 25
C & D	Oats, Banner.....bush.	25.2	0 64

The foregoing table shows that all the crops were rather expensive to grow, this being due to the preliminary work necessary to control the weeds and to improve the physical condition of the soil, which was low in fertility. A great deal of attention has been given to the different cultural operations and will undoubtedly have a beneficial effect in improving the productivity of this soil in future years.

The feeding of the herd is the object of special attention at this station. Aiming to improve its quality, an Ayrshire bull calf was secured from a reputable herd last summer. The animal is from an Honour Roll cow, which has given 10,589 pounds of milk and 441 pounds of butterfat, as a two-year old.

WEEDON, WOLFE COUNTY

OPERATOR, E. JOSEPH ALLARD

This season's operations at this station were an improvement over past years. All the crops, except turnips gave a higher yield than the average of previous years. Clover has made a good growth and yielded two tons of hay per acre.

The following table gives the year's yields and cost of production, also their average for previous years:—

OPERATIONS AT WEEDON—FOUR-YEAR ROTATION

Field	Crop	Number years grown	Yield per acre		Cost per unit	
			1928	Average	1928	Average
					$	$
A	Swede turnips.....tons	8	16.0	20.0	3 23	3 69
A	Potatoes, Green Mountain.....bush.	2	148.0	134.0	0 45	0 62
A	Corn, Longfellow.....tons	7	20.0	14.2	2 57	4 73
D	Barley.....bush.	3	40.0	37.6	0 77	0 85
C	Clover hay.....tons	8	2.0	1.43	7 60	11 03
B	Timothy hay.....tons	8	1.75	1.77	6 96	7 77

Chemical fertilizers applied on the swede turnip crop, were found very effective and produced an increase of ten tons per acre.

AVERAGE YIELD AND COST OF CROPS

The accompanying table was computed from the present report for the purpose of showing average yield and cost of the crops grown on the Illustration Stations of eastern Quebec in 1928. All the stations, with the exception of those only in operation for the first year, are included in this summary:—

AVERAGE YIELDS AND COST OF CROPS IN EASTERN QUEBEC IN 1928

Crops	Number of Stations	Average yield	Average cost
			$
Swede turnips.....tons	18	18.7	3 63
Corn.....tons	5	18.2	2 52
Sunflowers.....tons	1	10.0	3 55
Potatoes.....bush.	7	221.5	0 28
Oats and pea hay.....tons	9	2.79	9 03
Oats.....bush.	11	39.3	0 64
Barley.....bush.	4	30.0	0 85
Clover hay.....tons	16	2.07	7 85
Timothy hay.....tons	11	2.07	6 90

The above tabulated yields and costs have been obtained under practical farm conditions. Attention, however, should be directed to the fact that some of these stations have not yet completed the first cycle of rotation.

REPORT OF THE ILLUSTRATION STATIONS FOR NEW BRUNSWICK

Thos. G. Hetherington, B.S.A., Supervisor.

SEASONABLE CONDITIONS

A light snowfall during the winter of 1927-28 with frequent thaws caused serious damage to new seeded land. Very few stands of clover survived the winter.

Summer weather conditions in the Eastern, Central and Southern parts of the province were similar to those of the two preceding seasons in that the rainfall was excessive and the number of hours of sunshine was below the average. The haying season was prolonged in many cases into September. Grain lodged to a considerable extent and was difficult to harvest. Late blight in potatoes was very prevalent due to the dark weather and spraying or dusting charges were unusually high with the treatment not as effective as normally.

Growing conditions were unusually good except on low-lying land. Hay, grain and potatoes made good growth. Turnips, due to the fact that they are usually planted on the heavier types of soil, suffered more from the heavy rainfall than did any other crop and while the Illustration Station fields yielded almost a normal crop, the general average in the country was much lower than usual.

The rainfall was also responsible for a greatly increased cost of production for almost all crops. Loss of time due to rain together with a great deal of extra handwork in drying grain and in harvesting all other crops as well, made the season a very unsatisfactory one.

The northern counties, especially Restigouche and Gloucester, had a very favourable season particularly during grain and potato harvesting. A very good late fall season enabled farmers to clean up their fall work and a normal acreage of land was prepared for next years cropping.

PUBLICITY

The Illustration Stations have their greatest influence in the local districts surrounding them; however, a tidy well managed station is attractive and inspiring even to the casual traveller. The sphere of a station's influence is wide or narrow depending on the operator of the station and the kind of work he is doing.

This year, summer field meetings were held at Derby, Rexton, Baker Brook, Siegas, Grand Falls and Petersville. The Rexton meeting was not well attended but at the other stations the attendance ranged from 50 to 225 people. The local clergy were present at the respective meetings besides representatives of the press, and the meetings received favorable comment in the farm and local papers.

The meetings were conducted on the rotation fields and such practical subjects as soil preparation and cultivation, varieties, rates of seeding, the use of lime and chemical fertilizers, spraying and dusting to control blight, the value of good seed, and many other kindred topics were discussed. Usually a concrete example in the form of a demonstration was at hand to illustrate the feature being discussed.

Many of the station operators through various methods attract attention to the work being conducted. The local clergy in many cases have interested themselves in the stations and have been very active in promoting an interest in station work. This has been particularly true at Petersville, St. Isidore, Siegas, Riordon, and to a lesser extent at a few of the other stations.

The agricultural representatives of the Provincial Department of Agriculture have likewise co-operated with this Division and supported the station work, assisting in advertising meetings and in making the field days a success.

The operators particularly at Riordon, Lower Derby, Siegas, Grand Falls, and Sussex, have been active in promoting the use of better seed and have made many sales of potatoes and seed grain. Some operators have interested local farmers in northern grown clover seed and have ordered it direct from a reputable grower for the use of the farmers in the locality. This was first attempted by the progressive operator at Siegas, other operators following this example last year. Unfortunately a few of the operators have not been active in disposing of seed, hatching eggs, etc. A vigorous effort will be made to stimulate the less active operators. The Illustration Stations are conducted for the public and the duty of the operator is to make his station useful to the public.

ECONOMIC CONDITIONS

This year the general farmer with dairy cattle, sheep, hogs, poultry, and one or two cash crops, again occupies an enviable position as compared with the one-crop farmer or specialist. Seasonal conditions were very much in his favour with excellent pasturage and a long pasture season. Price for dairy products have been well maintained; beef, pork, lamb, mutton and wool prices were somewhat better than last year.

Potato growers on the other hand, have had a decidedly unfavourable year. Seed prices were high at the time of planting, ranging from two to three dollars a barrel. Spraying and dusting charges, too, were greater than usual due to favourable weather for blight; harvesting charges were also above the average due to broken weather and finally the product, due to general overproduction in North America, was practically unsaleable. At the prices ruling this year, i.e., from 75 cents to 40 cents a barrel, the product will not return nearly enough revenue to cover production costs. Fortunately, very few of the station operators are dependent on potatoes alone. It is a fact, however, that many of the stations are low in revenue producing products and progress and expansion will be held in check until the revenue is built up. Over a period of years, however, many improvements may be noted on the farms of the more progressive operators. These range from new buildings, painting and renovation of buildings, to new machinery and improvements in the method of farming, such as liming, rotations and advances in live stock.

SEED WORK ON ILLUSTRATION STATIONS

The province of New Brunswick is a heavy importer of seed grain and a ready market awaits the local grown product provided it is up to quality. The operators of Illustration Stations have in this feature an excellent opportunity to render a useful service to the province and as well an opportunity to swell the farm revenue. Little effort is required to dispose of seed grain. In fact, on those stations where an attempt is made to cater to this trade, the seed is often bargained for by farmers before the grain has been harvested.

Some of the stations can produce seed of good quality on an extensive scale. This is particularly true at Riordon where from 2000 to 3000 bushels of grain are annually harvested. Other stations have an opportunity to produce on a moderate scale and practically all stations are situated in heavy seed grain purchasing districts. A few of the stations are prevented from functioning as distributors of seed grain due to the prevalence of wild mustard.

DEMONSTRATIONS WITH ALASKA OATS

Alaska oats were sown at the stations enumerated in the table following and compared with Banner and Victory oats as to yield and date of maturity. The results were as follows:—

YIELDS OF OATS

Station	Yield of Alaska oats per acre	Yield of other variety per acre
	bushels	bushels
Baker Brook	35.0	35.5 (Banner)
Grand Falls	44.0	45.0 (Banner)
Perth	40.0	43.0 (Victory)
Riordon	44.0	46.0 (Banner)
Siegas	44.7	45.8 (Victory)
Salisbury	22.0	25.3 (Victory)
Average	38.2	40.1

The above yields indicate some advantage in favour of Banner and Victory but the fact that Alaska oats mature from ten to twelve days earlier justifies its

use in districts with short seasons or in districts where the soil is heavy and spring planting may be delayed or where it would be desirable to take off the harvest early.

TUBER UNIT SEED PLOTS

In a province such as New Brunswick where potatoes are grown on an extensive scale both for seed and table use, it is desirable to demonstrate the best methods in seed production as well as to make available a high grade of seed. With these objects in mind, each operator of an Illustration Station was supplied with from two to five barrels of certified seed potatoes. These were planted in an isolated field using the tuber unit method of planting. In this method the tubers are cut as planted, each tuber unit is cut into four sets or seed pieces, and these are dropped one after the other. A space from eighteen inches to twenty-four inches separates each group of four sets.

Digging potatoes in the tuber unit seed plot, Buctouche, N. B.

Thus if a single potato is diseased it will show in all four sets and all four plants will be rogued out. In this way disease free seed is secured.

The operators were all keenly interested in this method and each plot was well looked after during the season. At harvest time the best units were selected to carry on a seed plot next year, the remainder of the crop will provide seed for their field planting and this in turn will be available for distribution to the general public the next year.

ADAMSVILLE, KENT COUNTY

OPERATOR, JOSEPH CORMIER

Good progress in cropping work was made at this station. The hay yields on Fields "C" and "D" were light due to winter killing. Potatoes and turnips gave a good yield for this locality. Crops in this section readily respond to an application of chemical fertilizer. It is worthy of note that the potatoes on field "A" yielded at the rate of 315 bushels per acre and were fertilized at the rate of 1000 pounds of a 4-8-6 mixture per acre.

Due to the death of the operator early in August and the purchase of the standing field crops by another farmer, complete and accurate data on costs of production could not be secured.

The results of the season's work are as follows:—

OPERATIONS AT ADAMSVILLE—FOUR-YEAR ROTATION

Field	Crop	Number years grown	Yield per acre		Cost	
			1928	Average	1928	Average
					$	$
A	Turnips (Halls Westbury)	1	19.4 tons	19.4 tons	.....	.....
A	Potatoes (Green Mountains)	2	315 bush.	212.5 bush.	.....	.....
B	Oats (Victory)	2	36 bush.	34.2 bush.	.....	.....
C	Clover hay	1	0.68 tons	0.68 tons	13 00 per ton	13 00 per ton
D	Clover hay	1	0.59 tons	0.59 tons	14 98 per ton	14 98 per ton

BAKER BROOK, MADAWASKA COUNTY

OPERATOR, FELIX DAIGLE

Cropping work was well conducted at this station and with seasonal conditions favourable, very good crops were secured on all fields. This year two additional fields were added and the former four-year rotation has been extended to a six-year rotation. Crop costs in some cases are high; bad weather in harvest necessitated a lot of hand labour in order to get the crops cured. A low oat yield also tended to make production costs high.

Seasonal conditions were very favorable for both timothy and clover hay and good yields were secured. The clover on field "D" was exceptionally good and although the first crop was harvested on July 24, an extra good second crop developed, part of which was harvested for winter feed for sheep, hogs and poultry. On field "B" an excellent stand of oats, peas and vetches developed. The outstanding feature was the high proportion of peas and vetches in the mixture. This field yielded a good tonnage of first class fodder. The turnip crop was planted somewhat later than last year and the yield was slightly lower. Field "F" was seeded down with oats as a nurse crop. Lime was applied at the rates of one ton and three tons per acre respectively and basic slag was applied at the rate of 1000 pounds per acre. Any results of these applications will be apparent next year in the clover stands.

The results of the season's work are as follows:—

OPERATIONS AT BAKER BROOK—SIX-YEAR ROTATION

Field	Crop	Number years grown	Yield per acre		Cost	
			1928	Average	1928	Average
					$	$
A	Oats (Banner).....	5	30.3 bush.	40.0 bush.	0 73 per bush.	0 506 per bush.
B	Oats, peas, vetches...	2	3.25 tons	3.22 tons	8 12 per ton	8 06 per ton
C	Timothy	3	2.0 tons	1.46 tons	6 36 per ton	10 08 per ton
D	Clover	3	2.3 tons	1.96 tons	8 22 per ton	8 34 per ton
E	Potatoes (Green Mountains)	4	255 bush.	265 bush.	0 264 per bush.	0 222 per bush.
E	Turnips (Hall's Westbury)	4	21.8 tons	22.4 tons	3 29 per ton	3 15 per ton
F	Oats (Banner).....	5	30 bush.	40.0 bush.	0 46 per bush.	0 45 per bush.

BERESFORD, GLOUCESTER COUNTY

OPERATOR, W. D. G. DOUCET

Operations of a preparatory nature were begun at this station in 1927. The land when taken over was very rough and it will take several years to establish a rotation. It will be necessary to grow on each field a preparatory crop such as oats, peas and vetches, previous to the hoed crop. This procedure was followed on field "A" in 1927 and left the soil in good condition for potatoes and turnips this year and these crops in turn will leave the land in satisfactory condition for seeding down in 1929. It was thought that thoroughness in preparation in the initial stages was of more importance than speed.

The operator is disposed to do his work carefully and the hoed crop consisting of potatoes and turnips on field "A" was a credit to him and a good example to the district. Barnyard manure and chemical fertilizers were used in combination on both crops and an excellent yield of potatoes was secured. The turnip crop was rather light but this was largely due to inexperience in handling this crop. The other crops grown on fields "C" and "D" were quite light due to lack of fertility.

Farming in this district is decidedly backward and the station will gradually tend to improve conditions. Here, as in many other districts, the greatest weakness is in careless and hap-hazard methods of cultivation.

The results of the season's work are as follows:—

OPERATIONS AT BERESFORD—FOUR-YEAR ROTATION

Field	Crop	Number years grown	Yield per acre		Cost	
			1928	Average	1928	Average
					$	$
A	Potatoes (Green Mountains)	1	260 bush.	260 bush.	0 22 per bush.	0 22 per bush.
A	Turnips (Hall's Westbury)	1	11.6 tons	11.6 tons	8 04 per ton	8 04 per ton
B	Oats, peas, vetches....	1	1.75 tons	1.75 tons	11 31 per ton	11 31 per ton
C	Oats (Banner).....	1	22.5 bush.	22.5 bush.	0 59 per bush.	0 59 per bush.
D	Mixed hay.....	1	1.06 tons	1.06 tons	6 22 per ton	6 22 per ton

BUCTOUCHE, KENT COUNTY

OPERATOR, HENRY BERTHE

Work of a preparatory nature was begun at this station in the spring of this year. The station is well located as regards locality and view from the highway. The soil in this section is a light, sandy loam and crops flourish best in seasons of heavy rainfall. Initial operations have been very satisfactorily conducted. A tuber unit plot of certified Green Mountain potatoes was grown at the station for seed purposes next year.

The results of the season's work are as follows:—

OPERATIONS AT BUCTOUCHE—FOUR-YEAR ROTATION

Field	Crop	Number years grown	Yield per acre		Cost	
			1928	Average	1928	Average
					$	$
A	Oats (Banner).....	1	44 bush.	44 bush.	0 36 per bush.	0 36 per bush.
B	Oats (Banner).....	1	44 bush.	44 bush.	0 36 per bush.	0 36 per bush.
C	Potatoes (Green Mountain)	1	231 bush.	231 bush.	0 29 per bush.	0 29 per bush.
D	Turnips (Hall's Westbury)	1	24 tons	24 tons	2 80 per ton	2 80 per ton
D	Oats, peas, vetches....	1	3 tons	3 tons	6 12 per ton	6 12 per ton

GROUND LIMESTONE AND BASIC SLAG FOR HAY LAND

Tests with ground limestone have been conducted at many of the New Brunswick stations. In the majority of cases its application has proved to be distinctly profitable. In some instances the increase in yield from the first crop of clover hay has paid for the entire outlay and as it is known to be effective over a long period of years, it has proven a good investment on many farms. At Riordon, Lower Derby, Tracey. Perth and Grand Falls, ground limestone has been of pronounced value and it is a noteworthy fact that at these stations hay yields are invariably good. At a few stations ground limestone has not proved its worth. This has been noticeably true at Sussex, Welsford, Baker Brook and Rexton where yields of clover and timothy have not been influenced by its use. It has been customary to apply 3 tons of ground limestone per acre, and as noted above, this has been profitable in the majority of cases. It is also true that its use at this rate has been disastrous in its effect on succeeding potato crops. Therefore, caution must be exercised in its use. On many farms it is becoming a fixed policy to lime the heavy land reserving the lighter soil for potato growing.

At a number of stations lime is being compared with basic slag. The following table illustrates the results obtained from the use of lime and basic slag and also the results where the two were being compared.

RESULTS OF TESTS OF GROUND LIMESTONE AND BASIC SLAG FOR HAY LAND

Station	Year	Treatment per acre	Crop	Yield	Increase or (—) Decrease per acre
				tons	tons
Grand Falls.	1926	3 tons ground limestone.....	Clover	2.8	1.4
Grand Falls.	1926	Check plot.....	Clover	1.4	
Harvey	1928	3 tons ground limestone.....	Clover	2.8	1.6
Harvey	1928	Check plot.....	Clover	1.2	
Perth	1926	3 tons ground limestone.....	Clover	3.7	2.3
Perth	1926	Check plot.....	Clover	1.4	
Perth	1926	3 tons ground limestone.....	Clover	2.7	1.4
Perth	1926	Check plot.....	Clover	1.3	
Riordon	1925	4 tons West Lime Sludge.....	Clover	2.17	1.42
Riordon	1925	Check plot.....	Clover	0.75	
Riordon	1926	3 tons ground limestone.....	Clover	2.5	1.75
Riordon	1926	Check plot.....	Clover	0.75	
Siegas	1928	3 tons ground limestone.....	Clover	1.82	—0.11
Siegas	1928	Check plot.....	Clover	1.93	
Grand Falls.	1928	3 tons ground limestone.....	Clover	2.8	1.62
Grand Falls.	1928	600 pounds Basic Slag.....	Clover	2.7	1.52
Grand Falls.	1928	Check plot.....	Clover	1.18	
Siegas	1927	500 pounds Basic Slag.....	Clover	1.7	0.94
Siegas	1927	Check plot.....	Clover	0.76	
Siegas	1928	500 pounds Basic Slag.....	Timothy	1.96	0.75
Siegas	1928	Check plot.....	Timothy	1.21	

More data will be available next year as lime and basic slag are being compared at other stations including Baker Brook, St. Isidore and Petersville.

In regard to the comparative costs of the two materials, an application of 3 tons of ground limestone costs $12. per acre and an application of 500 pounds of basic slag costs $6. per acre.

Basic slag is beneficial to the grain crop as well as to the succeeding hay crops but it is doubtful if its influence will be felt to any extent after the first four years. In the case of ground limestone its value has been known to extend over a long period of years.

GRAND FALLS, VICTORIA COUNTY

OPERATOR. GABE MORIN

Seasonal conditions were very favorable at this station and as a result crop stands and yields were good. The station presented an exceptionally good appearance throughout the growing season. The fertilizer demonstrations were again well defined and clear cut. On field "A" lime was compared with basic slag. The following table illustrates the experiment and the results obtained:—

Crop	Treatment per acre	Year applied	Yield per acre
Clover	3 tons ground limestone	1927	2.8 tons
Clover	600 pounds basic slag.....	1927	2.7 tons
Clover	Check plot.....	1927	1.18 tons

On field "C" sulphate of ammonia was compared with nitrate of soda on timothy hay. The following table illustrates the result:—

Crop	Treatment per acre	Year applied	Yield per acre
Timothy	115 pounds sulphate of ammonia.....	1928	2.4 tons
Timothy	150 pounds nitrate of soda.....	1928	1.8 tons
Timothy ...	Check plot.....	1928	0.6 tons

The above demonstration and test shows the great response that this soil makes to an application of nitrogenous fertilizer and corresponds closely to former tests conducted with nitrate of soda on this station.

On field "D" Banner and Alaska oats were compared for yield and earliness of maturity. The difference in yield was almost negligible and with Alaska oats maturing 13 days ahead of Banner.

The results of the season's work are as follows:—

OPERATIONS AT GRAND FALLS—FOUR-YEAR ROTATION

Field	Crop	Number years grown	Yield per acre		Cost	
			1928	Average	1928	Average
					$	$
A	Clover	3	2.25 tons	2.28 tons	7 09 per ton	6 25 per ton
B	Potatoes (Bliss Triumph)	6	234 bush.	278 bush.	0 21 per bush.	0 18 per bush.
B	Turnips (Hall's Westbury)	5	27.2 tons	20.6 tons	2 26 per ton	2 37 per ton
C	Timothy	4	1.6 tons	1.67 tons	9 86 per ton	9 06 per ton
D	Oats (Banner).....	6	41.6 bush.	58.4 bush.	0 46 per bush.	0 40 per bush.

Cropping work at the Grand Falls Station has attained a high state of perfection. Crop costs are very low due to good yields, easily worked soil, and high, dry, level land. Labour saving and efficient machinery as well as good judgment play a part in keeping cost of production low.

HARVEY STATION, YORK COUNTY

OPERATOR, C. MELVIN GRIEVES

This is the second year that this station has been in operation and favourable progress is being made. The operator is gradually removing the unsightly brush and rock fence in front of the field and by the time the rotation is fully established the fields will be worked to the roadside.

Crop yields on fields "A" and "B" were fairly good. Fields "C" and "D" have not yet been hoe cropped and therefore hay yields are comparatively low. An application of 3 tons of ground limestone on an acre in field "C" more than doubled the yield of hay and similarly a nitrated area on field "D" gave a yield almost double that obtained on a check plot.

Cropping operations and workmanship at this station are very satisfactory. The operator has a very clear conception of his duty to the community and be-

sides disposing of seed grain and potatoes at reasonable prices, he has encouraged farmers to group orders for lime, fertilizer and seeds.

The results of the season's work are as follows:—

OPERATIONS AT HARVEY—FOUR-YEAR ROTATION

Field	Crop	Number years grown	Yield per acre		Cost	
			1928	Average	1928	Average
					$	$
A	Turnips (Hall's Westbury)	2	22.5 tons	23.2 tons	2 74 per ton	2 73 per ton
A	Potatoes (Green Mountain)	2	184 bush.	181 bush.	0 30 per bush.	0 34 per bush.
B	Oats (Victory)	2	48 bush.	40 bush.	0 60 per bush.	0 63 per bush.
C	Clover hay	2	1.8 tons	1.9 tons	8 16 per ton	6 76 per ton
D	Mixed hay	1	1.95 tons	1.95 tons	5 07 per ton	5 07 per ton

JACQUET RIVER, RESTIGOUCHE COUNTY

OPERATOR, ALEXANDER TURVEY

This is the third year that Illustration Station work has been conducted on this farm. The four-year rotation will be fully demonstrated next year. Grain crop yields have steadily increased, this is due to the fact that there was a considerable residue of manure and chemicals left in the soil from the previous year's hoe crop grown on field "B". Fields "C" and "D" yielded a good tonnage of clover hay, two crops were taken from each field. The yield on field "C" was somewhat larger than on field "D" due to the fact that field "C" was in hoe crop in 1926, whereas field "D" has never been hoe-cropped. Intensive cultivation is another factor that is and will continue to influence yields.

While cropping work and cultural operations are being very satisfactorily conducted here, as yet no definite live stock improvement policy has been settled upon, and until such is the case, the station cannot function to its fullest extent as an object lesson to the community.

The results of the season's work are as follows:—

OPERATIONS AT JACQUET RIVER—FOUR-YEAR ROTATION

Field	Crop	Number years grown	Yield per acre		Cost	
			1928	Average	1928	Average
					$	$
A	Potatoes (Green Mountain)	2	218 bush.	246 bush.	0 31 per bush.	0 27 per bush.
A	Turnips (Hall's Westbury)	3	15 tons	17.6 tons	5 72 per ton	4 55 per ton
B	Oats (Victory)	3	50 bush.	27 bush.	0 55 per bush.	1 03 per bush.
C	Clover (two cut)	1	3.0 tons	3.0 tons	6 35 per ton	6 35 per ton
D	Clover (two cut)	1	2.25 tons	2.25 tons	7 57 per ton	7 57 per ton

NITRATE OF SODA AND SULPHATE OF AMMONIA ON HAY LAND

The following table is the result of one year's experience in comparing the yield of hay secured from an application of 150 pounds of nitrate of soda with the yield from an application of 115 pounds of sulphate of ammonia.

HAY—RESULTS FROM DIFFERENT APPLICATIONS OF FERTILIZER

Station	Yield from Check plot (no fertilizer)	Yield from nitrate of soda (150 pounds per acre)	Yield from sulphate of ammonia (115 pounds per acre)
	tons	tons	tons
Siegas	1.21	2.0	2.10
Grand Falls	0.6	1.8	2.4
St. Isidore	1.4	1.9	2.04
Harvey	1.37	2.5	1.98
Perth	1.85	2.37	2.12
Adamsville	0.54	0.71	0.80
Average Yield	1.16	1.88	1.90
Average Increase	.....	0.72	0.74

It will be noted that sulphate of ammonia gave a greater increase than nitrate of soda at Siegas, Grand Falls, St. Isidore and Adamsville, while nitrate of soda gave a greater increase than sulphate of ammonia at Harvey and Perth.

The average yield and consequently the average increase in yield from the use of both chemicals is practically the same and would seem to indicate that the two chemicals have about the same value when used as a top dressing for hay land.

LOWER DERBY, NORTHUMBERLAND COUNTY

Operator, W. R. Taylor

A four-year rotation has been conducted at this station for eight years. From 200 to 300 people visit this station annually. Local farmers for a radius of twenty miles or more, have watched and been impressed with the annual improvement in crop yields and quality, which has been brought about by following a definite rotation.

The increased productivity of the soil at this station is the result of a combination of factors including intelligent cultivation, crop rotations, and the regular application of a well balanced fertilizer. Barnyard manure at the rate of 15 tons per acre and a varying quantity of chemical fertilizer ranging from 300 to 800 pounds per acre is applied every four years. Thus the manure and a heavy sod ploughed under every four years provides an abundance of humus and likewise contributes fertilizing elements that taken with the elements supplied by the artificial fertilizer more than compensate for the annual drain on the soil by the crops.

The station has been of great value to the community as it has demonstrated among other things that the soil in this section responds to good farming practice. A considerable number of farmers have profited by following the operator's methods in soil preparation and intensive cultivation.

Several new departures in the station's cropping plan are under way. In 1927 and 1928 seed wheat has been grown as the grain crop. This was necessary because the oat crop was growing too rank and lodging. Mangels were again introduced into the hoe crop this year and gave a greater yield than the swede turnips at a lower cost per ton. Field "C" was sown to wheat in 1928 and seeded out with 15 pounds of alfalfa and 5 pounds of alsike per acre. A fine stand developed and if winter conditions are favorable this crop will be an added attraction for the station next year.

The results of the season's work are as follows:—

OPERATIONS AT LOWER DERBY—FOUR-YEAR ROTATION

Field	Crop	Number years grown	Yield per acre		Cost	
			1928	Average	1928	Average
					$	$
A	Timothy	8	2.5 tons	2.11 tons	7 13 per ton	6 87 per ton
B	Potatoes (Green Mountain)	8	335.5 bush.	275.5 bush.	0 24 per bush.	0 35 per bush.
B	Turnips (Hall's Westbury)	8	23.1 tons	20.8 tons	3 28 per ton	4 26 per ton
B	Corn, (Longfellow)	6	21.1 tons	14.8 tons	3 07 per ton	4 93 per ton
B	Mangels	3	27 tons	22.00 tons	2 80 per ton	6 83 per ton
C	Wheat (White Russian)	2	22 bush.	22 bush.	1 34 per bush.	1 36 per bush.
D	Clover	8	2.5 tons	2.09 tons	7 91 per ton	8 71 per ton

PERTH, VICTORIA COUNTY

OPERATOR, R. J. McCREA

Good yields were secured on all crops grown at this station. One acre of oats, peas and vetches grown on field "C" was fed to dairy cattle during July and August and is not reported below. Some useful fertilizer and variety demonstrations were conducted during the season. Alaska oats matured ten days earlier than Victory. Certified potatoes gave a large increase in yield over uncertified. The turnip yield was lower than last year due to later planting and the use of barnyard manure alone. Last year barnyard manure was supplemented with chemical fertilizer. The application of 200 pounds of nitrate of soda and 600 pounds of acid phosphate is considered a good dressing for turnips. The nitrate of soda is very readily available as plant food and stimulates growth in the early stages, acid phosphate and manure being available for later growth.

This year the operator constructed a large grain barn, a much needed improvement both for feed storage and stabling accommodation.

The results of the season's work are as follows:—

OPERATIONS AT PERTH—FOUR-YEAR ROTATION

Field	Crop	Number years grown	Yield per acre		Cost	
			1928	Average	1928	Average
					$	$
A	Timothy hay	6	2.0 tons	1.58 tons	8 76 per ton	8 35 per ton
B	Oats (Alaska)	1	40 bush.	40 bush.	0 49 per bush.	0 49 per bush.
B	Oats (Victory)	4	43 bush.	40.0 bush.	0 46 per bush.	0 47 per bush.
B	Wheat (White Russian)	5	20.6 bush.	18.5 bush.	1 11 per bush.	1 22 per bush.
C	Potatoes (Green Mountain)	8	220 bush.	233 bush.	0 24 per bush.	0 24 per bush.
C	Turnips (Hall's Westbury)	6	19.8 tons	17.0 tons	2 72 per ton	4 00 per ton
D	Clover	6	2.35 tons	1.89 tons	7 73 per ton	8 77 per ton

PETERSVILLE, QUEENS COUNTY

OPERATOR, JAMES BUTLER

This station has been in operation two years and progress is being made towards the establishment of a four-year rotation. The land is heavy and very wet and therefore cannot be cropped as efficiently or as successfully as some of the other stations. Lack of drainage is one of the greatest drawbacks in the entire community and it is planned to give some attention to this feature next year.

During the two years that the station has been in operation many progressive movements have been undertaken in the district and a splendid community spirit is being developed under the leadership of the Reverend Father Allan, Parish Priest of the district. The following are some of the outstanding activities;

(1) The organization of a turnip growing competition with a membership of thirty-three farmers.

(2) The shipment of turnips in car lots.

(3) The organization of a boy's and girl's swine club.

(4) The purchase of thirteen pure-bred Yorkshire brood sows and a pure-bred boar; organization of a Yorkshire Swine Breeder's Club.

(5) The purchase of two power dusters co-operatively and twelve hand dusters to control late blight in potatoes.

(6) The purchase of several pure-bred bulls.

(7) The purchase of chemical fertilizers and concentrates in car lots.

(8) The purchase of certified potatoes and other classes of good seed.

(9) Demonstrating the value of chemical fertilizers on thirty individual farms.

Many other indications of progress are evident, such as, earlier seeding, better cultural methods and earlier hay making. Along with these concrete evidences of progress the farmers are gradually acquiring a knowledge and understanding of modern methods, soil fertility problems, etc., which will enable them to farm more intelligently than they have in the past.

The results of the season's work are as follows:—

OPERATIONS AT PETERSVILLE—FOUR-YEAR ROTATION

Field	Crop	Number years grown	Yield per acre		Cost	
			1928	Average	1928	Average
					$	$
A	Clover	1	1.6 tons	1.6 tons	7 63 per ton	7 63 per ton
B	Oats (Victory)	2	17 bush.	21 bush.	1 46 per bush.	1 23 per bush.
C	Oats, peas and vetches.	2	3 tons	2.75 tons	9 50 per ton	10 71 per ton
D	Turnips (Hall's Westbury)	2	6.75 tons	7.12 tons	6 97 per ton	7 80 per ton
E & F	Buckwheat	2	6 bush.	5 bush.	1 84 per bush.	2 95 per bush.
G	Potatoes	2	275 bush.	189 bush.	0 20 per bush.	0 47 per bush.

REXTON, KENT COUNTY

OPERATOR, J. G. DICKINSON

A rotation has been conducted on this farm for a number of years but maximum yields have never been obtained due to several factors, one of the most harmful of which has beeen an excess of surface water. The top soil is underlaid with a hardpan fairly close to the surface and hence water does not penetrate it very rapidly. This year, due to the above reason, considerable damage was done in all fields and therefore only average yields were secured.

The results of the season's work are as follows:—

OPERATIONS AT REXTON—FOUR-YEAR ROTATION

Field	Crop	Number years grown	Yield per acre		Cost	
			1928	Average	1928	Average
					$	$
A	Potatoes (Green Mountain)	9	261 bush.	216 bush.	0 30 per bush.	0 38 per bush.
A	Turnips (Hall's Westbury)	8	18.7 tons	14.5 tons	3 64 per ton	5 80 per ton
B	Timothy	7	1.5 tons	1.6 tons	7 54 per ton	7 68 per ton
C	Clover	7	2.0 tons	1.7 tons	6 75 per ton	7 24 per ton
D	Wheat (Huron)	8	12.5 bush.	16.96 bush.	1 61 per bush.	1 18 per bush.

TURNIPS AND MANGELS ON THE ILLUSTRATION STATIONS

Operators of Illustration Stations have always been encouraged to grow as large an acreage of turnips as possible in order to provide winter feed. The stations have done considerable to popularize this crop in many sections. The fact that during the last few years early planting has been insisted on is largely responsible for the good stands and good average yields obtained. Formerly, many of the operators delayed planting until the middle or last of June. These men,

except in wet seasons, invariably had poor stands and often had to plant the second time. It is generally assumed that late planted turnips are superior in quality to early planted. However, in New Brunswick with only an average length of season the operators are advised to plant early so that a larger yield will be obtained. Our experience with late planted turnips is that early cultural work and singling or thinning operations conflict with hay making and often the turnips are neglected rarely making a good crop. The following table fairly forcibly illustrates the advantages of early planting:—

RESULTS FROM DIFFERENT DATES OF PLANTING TURNIPS

Station	Dated Planted	Date Singled	Yield per acre
			tons
Siegas	May 22	June 24 to 28	22.3
Lower Derby	May 26	June 24 to 26	23.1
Baker Brook	June 9	July 14 to 16	21.8
Rexton	June 16	July 12 and 13	18.7
Beresford	June 20	July 18	11.6
Salisbury	July 9	July 26 to 30	12.0

In turnip production as in other crops, too much emphasis cannot be placed on securing a good yield. Seed bed preparation, fertilization and cultivation are the chief factors that influence yield. Cost of production depends on yield, labour expended, and cost of fertilizer. The following table illustrates the variation in labour, yield and cost of production at some of the New Brunswick Stations:—

Station	Hours man labour	Hours horse labour	Acre yield	Cost per ton
			tons	$
1	158	46	27.2	2 26
2	169	58	22.3	2 45
3	145	59	22.5	2 74
4	127	56	19.8	2 72
5	181	87	24.0	2 80
6	214	99	23.1	3 28
7	232	91	21.8	3 29
8	154	130	17.6	3 35
9	181	102	18.7	3 64
10	147	85	12.0	4 39
11	226	128	15.0	5 72
12	312	87	6.4	7 76

Thorough seed bed preparation and timely attention to singling and cultivation are sure ways to reduce hand labour, just as careless seed bed preparation, neglect of cultivation and late singling increase hand labour. Station No. 12 illustrates an extreme case with an excess of man labour, low yield and high cost of production per ton. Station No. 1 is an example of reasonable labour costs, good yield and low cost of production.

Improved methods of fertilizing play a part in decreasing costs by increasing yields. In general 20 tons of barnyard manure per acre supplemented with 200 pounds of nitrate of soda and 600 pounds of acid phosphate is a good application

for turnips. The following table illustrates the yields obtained by three methods of fertilizing:—

TURNIPS—RESULTS FROM DIFFERENT APPLICATIONS OF FERTILIZER

Treatment per acre	Number of Stations	Yield per acre	Increase
		tons	tons
20 tons manure, 600 pounds acid phosphate	7	17.7	.....
20 tons manure	7	19.5	1.8
20 tons manure, 600 pounds acid phosphate, 200 pounds nitrate of soda	7	24.6	5.1

Operators that are interesting themselves in poultry and swine are giving some attention to mangels and this movement will be encouraged on all stations where land is suitable and where swine are raised because of the value of this crop in feeding swine during the fall and winter months. At one or two stations turnip production is out of the question due to the prevalence of club root and mangels must be grown to supply succulent winter feed.

In the three years that mangels have been grown at the Derby station an average yield of 22.06 tons has been obtained. The soil at this station is in a high state of fertility which is a very desirable condition for this crop.

Mangels were grow at Siegas this year for the first time and gave a yield of 14.2 tons per acre and cost $3.85 per ton to produce.

In mangel growing early seeding is even more essential than is the case with turnips as this crop is slower growing and requires a longer growing season and does not make its big growth in the cool fall as is the case with turnips. It is essential in mangel growing that the soil be considerably richer than is required for turnips. Both operators report very favorably on mangels as a palatable supplement for hogs and poultry and express a determination to grow more in the future.

Operator's garden on the Illustration Station at Baker Brook, N. B.

RIORDON, GLOUCESTER COUNTY

OPERATOR, THOMAS W. RIORDON

Illustration work was started at this staion in the fall of 1922. The first crop was harvested in 1923. The grain crop that year was so poor that it was cut for green feed. Crop yields have steadily increased year by year, particularly is this true of clover, timothy and oats. The soil in this district packs very hard and unless a deep well worked seed bed has been prepared, crops suffer hence, with the advent of after harvest cultivation with a shallow ploughing in July or August and a deep ploughing in the late fall, crops immediately respond. This method was a distinct advance compared with the old method of one shallow ploughing in the late fall or more often in the spring. This station is situated along the coast line and the surface soil suffers from drying winds through a great part of the season. The former method of broadcast seeding of grain resulted in poor stands because the kernels were too close to the surface. The operator at this station is now using a disk drill seeder and fine stands of grain develop because the kernels are placed deep in the soil in contact with moisture and not affected by drying winds. Improvement in cultural methods has undoubtedly been a major factor in increasing grain and root crop yields. The clover and timothy hay increases can be attributed to three major factors, i.e., seed bed preparation, the use of hardy seed, and a generous use of ground limestone. A limed area at this station in 1926 yielded 2.5 tons of clover hay per acre as compared with 0.75 tons an acre from an unlimed but otherwise similar area.

The results of the season's work are as follows:—

OPERATIONS AT RIORDAN—FOUR-YEAR ROTATION

Field	Crop	Number years grown	Yield per acre		Cost	
			1928	Average	1928	Average
					$	$
A	Clover hay	4	2.16 tons	2.34 tons	8 89 per ton	8 25 per ton
B	Oats	5	45 bush.	49 bush.	0 51 per bush.	0 55 per bush.
C	Potatoes (Green Mountain)	5	253 bush.	267 bush.	0 26 per bush.	0 25 per bush.
C	Turnips (Hall's Westbury)	5	9 tons	14.1 tons	8 63 per ton	5 94 per ton
C	Oats, peas, vetches	2	4.0 tons	4.2 tons	8 51 per ton	8 53 per ton
D	Timothy	3	2.5 tons	2.3 tons	6 99 per ton	7 61 per ton

SALISBURY, WESTMORLAND COUNTY

OPERATOR, COREY LEWIS

Heavy soil and an excessive rainfall combined to delay seeding and all succeeding operations at this station. Oats were sown on June 16, oats, peas and vetches on June 22 and turnips on July 9. These are exceedingly late seeding dates and are not favorable to large yields.

Field "A" was sown to Alaska and Victory oats and seeded down. Early maturity is a prime requisite on this farm and on all farms in the district, hence, the Alaska oats grown on field "A" due to their early ripening was a great source of interest to the community.

The turnips on field "B" yielded at the rate of 480 bushels or 12 tons per acre which was very creditable considering the late planting date.

As noted above, the soil in this district is heavy and wet and therefore is not adapted to potato growing and hence this crop is not available as a source of revenue. Similarly in this district not as large an area is devoted to hoe crops neither is the barnyard manure supplemented with chemical fertilizer to the same extent as is the case in other districts where potatoes are grown and consequently many fields are noted that are in a low state of fertility. An application of acid phosphate or basic slag to the grain crop would be distinctly beneficial to the grain crop and to succeeeding hay crops.

The results of the season's work are as follows:—

OPERATIONS AT SALISBURY—FOUR-YEAR ROTATION

Field	Crop	Number years grown	Yield per acre		Cost	
			1928	Average	1928	Average
					$	$
A	Oats (Alaska).....	1	22 bush.	22 bush.	0 94 per bush.	0 94 per bush.
A	Oats (Victory).....	1	25.3 bush.	25.3 bush.	0 81 per bush.	0 81 per bush.
B	Turnips (Hall's Westbury)	1	12.0 tons	12.0 tons	4 39 per ton	4 39 per ton
C	Oats, peas, vetches....	1	2.0 tons	2.0 tons	11 29 per ton	11 29 per ton

SIEGAS, MADAWASKA COUNTY

OPERATOR, PHILEAS RUEST

Field crops at this station were distinctly in advance of any in the district. Good cultivation, early seeding and the use of suitable varieties were the responsible factors. Several good fertilizer demonstrations and variety tests added to the usefulness of the station. A test of Victory oats and Alaska oats comparing dates of maturity and yields was of economic value to this part of the province. The Alaska matured 14 days ahead of the Victory and yielded 38 pounds less grain per acre than was the case with Victory. Root crops were an outstanding demonstration. In this district turnips are seldom planted until the last of June and as a result singling comes on in the height of the haying season and hence the turnips are neglected. At this station turnips were sown on May 22 and singling and all hand work completed on June 28. Thus the crop had a full months longer growing period than is usual in this district. A quarter acre of mangels was grown this year for poultry and for wintering brood sows. The yield secured was 14.2 tons per acre as compared with 22.3 tons of turnips. The added palatability of the mangels, especially for hogs, makes it a very desirable crop and one that should be more commonly grown on New Brunswick farms.

Basic slag was applied to field "A" in 1926 at the rate of 500 pounds per acre and seeded down with a standard grass seed mixture. The table compares the yields on ground treated with slag and on check area receiving no slag.

RESULTS FROM BASIC SLAG

Year	Crop	Treatment per acre	Yield	Increase
			tons	tons
1927	Clover	500 pounds slag in 1926.....	1.7	0.94
1927	Clover	Nil	0.76	.....
1928	Timothy	500 pounds slag in 1926.....	1.96	0.75
1928	Timothy ...	Nil	1.21	.....
		Total increase.....	.....	1.69

It will be noted that crop yields in the following table are low, but notwithacre gave an increased yield totalling 1.69 tons at a total cost of $4.75, in other words, the increase in yield cost $2.80 per ton.

The results of the season's work are as follows:—

OPERATIONS AT SIEGAS—FOUR-YEAR ROTATION

Field	Crop	Number years grown	Yield per acre		Cost	
			1928	Average	1928	Average
					$	$
A	Timothy	1	1.81 tons	1.81 tons	8 13 per ton	8 13 per ton
B	Clover	2	1.95 tons	1.82 tons	10 54 per ton	8 85 per ton
C	Oats (Victory)	3	45.8 bush.	43.9 bush.	0 46 per bush.	0 48 per bush.
	Oats (Alaska).....	1	44.7 bush.	44.7 bush.	0 47 per bush.	0 47 per bush.
D	Turnips (Hall's Westbury)	2	22.3 tons	23.8 tons	2 45 per ton	2 35 per ton
	Mangels	1	14.2 tons	14.2 tons	3 85 per ton	3 85 per ton
	Potatoes	3	203 bush.	193 bush.	0 27 per bush.	0 31 per bush.

ST. ISIDORE, GLOUCESTER COUNTY

OPERATOR, PETER ROBICHAUD

Preparatory work was begun on this station in 1927. This year good progress has been made toward establishing a rotation and the station is already attracting the attention of the local farmers. The district surrounding the station has been poorly farmed for many years and soil fertility was practically depleted. During the last two or three years a keener interest in better methods has been evident and material progress has been made toward the restoration of soil fertility. The ground limestone demonstrations at the Riordon station, which is situated twenty miles from St. Isidore, were largely responsible for the awakened interest. Farmers are now adopting better cultural methods, this with the use if lime and commercial fertilizer is helping to make the soil more productive.

This year a number of fertilizer and lime demonstrations were conducted at the station, the most important being a comparison of lime and basic slag. The results of this test will not be evident until next year when the clover crop develops. A test of nitrate of soda and sulphate of ammonia was conducted on field "A" which was in timothy hay. Turnips are not grown in this district except those required for table use; this year a half acre was grown on the station.

It will be noted that crop yields in the following table are low, but notwithstanding this fact, the yields are much greater than the average obtained in this district.

The results of the season's work are as follows:—

OPERATIONS AT ST. ISIDORE—FOUR-YEAR ROTATION

Field	Crop	Number years grown	Yield per acre		Cost	
			1928	Average	1928	Average
					$	$
A	Timothy	1	1.78 tons	1.78 tons	7 21 per ton	7 21 per ton
B	Oats (Banner)	1	20 bush.	20 bush.	0 98 per bush.	0 98 per bush.
C	Potatoes (Green Mountain)	1	217 bush.	217 bush.	0 36 per bush.	0 36 per bush.
C	Turnips (Hall's Westbury)	1	12.9 tons	12.9 tons	7 76 per ton	7 76 per ton
C	Oats, peas, vetches	1	1.5 tons	1.5 tons	14 00 per ton	14 00 per ton
D	Oats (Banner)	1	29 bush.	29 bush.	0 52 per bush.	0 52 per bush.

SUSSEX, KINGS COUNTY

OPERATOR, MATTHEW ROBINSON

The four-year rotation formerly conducted at this station was changed this year to a six-year rotation. Two new fields were added making a total of eighteen acres in the station.

The turnip crop of two acres on field "B" was a total failure due to the soil being infected with club root. A strain of turnip seed reputed to be club root resistant was planted but with no success. In future this operator will have to depend on mangels for winter feeding of dairy cows, and with this in mind, at least two acres will be devoted to this crop next year.

Good stands of clover are secured at this station during the summer but to date they have not survived the winters. This year field "D" was in first year hay and this was pure timothy; one acre of the field was limed in 1927 at the rate of 3 tons per acre and without any beneficial effect, hence, it is safe to assume that winter killing is responsible rather than an acid condition of the soil.

Potatoes were an excellent crop both in the main field and in the tuber unit plot. Potatoes are, however, not a major crop in the district and the facilities for spraying are very crude. No attempt is made to control late blight and as a result in bad blight years the tops are dead before the tubers have fully developed. In such districts where the acreage is small and perhaps does not warrant the purchase of spraying or dusting equipment except co-operatively, it would possibly be a better policy to plant an earlier variety, such as the Irish Cobbler thus securing a greater degree of maturity before the blight develops.

The results of the season's work are as follows:—

OPERATIONS AT SUSSEX—SIX-YEAR ROTATION

Field	Crop	Number years grown	Yield per acre		Cost	
			1928	Average	1928	Average
					$	$
A	Tomothy	2	2.9 tons	2.65 tons	5 62 per ton	6 00 per ton
B	Potatoes (Green Mountain)	3	357 bush.	274 bush.	0 30 per bush.	0 33 per bush.
C	Oats (Victory)	3	36.6 bush.	41 bush.	0 64 per bush.	0 49 per bush.
D	Clover and timothy	1	2.25 tons	2.25 tons	6 95 per ton	6 95 per ton
E	Oats, peas, vetches	1	3.0 tons	3.0 tons	8 36 per ton	8 36 per ton
F	Oats (Victory)	3	30 bush.	38.8 bush.	0 83 per bush.	0 55 per bush.

TRACEY STATION, SUNBURY COUNTY

OPERATOR, JOHN PHILLIPS

Steady progress is being made by this operator both in station work and general farm management. This operator is developing tidy habits as regards workmanship and is progressive in adopting modern methods. This year late blight was controlled by spraying and the potato field on this farm remained green until killed by frost. All other fields in the district were dead three weeks before. In potato work the operator is somewhat handicapped due to the fact that the former owner had applied ground limestone at a heavy rate over the greater part of the farm and thus it is impossible to grow potatoes free from scab; hence, he has been forced to bring new fields under cultivation in order to grow marketable potatoes.

Interest in live stock is developing and thus far poultry and hogs have received attention and as circumstances permit progress in dairy cattle can be expected. This farm is well located to demonstrate fertilizer experiments and methods of cultivation and it has functioned in this respect very satisfactorily. As a source of seed grain and potatoes for farmers in the district it has not been particularly useful and this phase of the work will be emphasized in the future.

The results of the season's work are as follows:—

OPERATIONS AT TRACEY—FOUR-YEAR ROTATION

Field	Crop	Number years grown	Yield per acre		Cost	
			1928	Average	1928	Average
					$	$
A	Turnips (Hall's Westbury)	5	17.6 tons	16.37 tons	3 35 per ton	5 39 per ton
A	Buckwheat	1	16.5 bush.	16.5 bush.	2 17 per bush.	2 17 per bush.
B	Clover	5	3.0 tons	2.92 tons	5 65 per ton	5 73 per ton
C	Timothy	4	2.8 tons	2.56 tons	6 21 per ton	5 92 per ton
D	Oats (Banner)	5	47 bush.	49.4 bush.	0 47 per bush.	0 47 per bush.

WHITNEYVILLE, NORTHUMBERLAND COUNTY

OPERATOR, MELVIN STEWART

Initial operations were instituted at this farm this year. Fairly good progress has been made in getting the rotation underway. The station is situated in a large district some distance from market and until recently lumbering operations engaged the attention of the majority of the people. At the present time an interest in better farming is evident in the community. Concrete evidence of this interest is manifest by the enquiries in regard to the nature of chemical fertilizers. It is estimated that more fertilizer went into this district this year than during all previous years together. Interest in cultivation and good seed is likewise receiving attention. On many farms the sale of hay and grain to the lumbermen was the chief source of revenue.

Normally land in this section is left in hay quite a number of years, often five or six, this land is then ploughed and one or two crops of grain taken and again seeded down. A very small proportion of the land is in hoe crop and no definite rotation is practised. The weakness in the present system of farming is

the small area devoted to hoe crop and the policy of selling roughage such as hay and straw off the farms.

The results of the season's work are as follows:—

OPERATIONS AT WHITNEYVILLE—FOUR-YEAR ROTATION

Field	Crop	Number years grown	Yield per acre		Cost	
			1928	Average	1928	Average
					$	$
A	Turnips (Hall's Westbury)	1	17.4 tons	17.4 tons	2 43 per ton	2 43 per ton
B	Oats, peas, vetches	1	4 tons	4 tons	5 91 per ton	5 91 per ton
C	Oats (Victory)	1	48.3 bush.	48.3 bush.	0 37 per bush.	0 37 per bush.
D	Oats (Victory)	1	48.3 bush.	48.3 bush.	0 37 per bush.	0 37 per bush.

LIVE STOCK ON THE ILLUSTRATION STATIONS

Progress in live stock improvement work has been steady but not outstanding. Eight of the stations have a definite grading up policy in regard to dairy cattle. Five stations possess sheep and are following a progressive plan in sheep management. Nine stations are making creditable progress in swine breeding and feeding. Seven stations have substantial flocks of poultry and two of these are "approved flocks."

The Baker Brook station still maintains its leadership as regards all round interest in live stock. At this station grade Holstein cows are headed by a pure-bred Holstein bull; grade Shropshire sheep are headed by pure-bred Shropshire rams; pure-bred Yorkshire sows are headed by a pure-bred Yorkshire boar; and Barred Plymouth Rock hens are headed by bred-to-lay male birds. The fact that each class of stock is kept in sufficient numbers to make it an important feature in the operations is a very desirable condition.

Sheep are kept at Derby, Riordon, Rexton, Baker Brook, and Siegas and all are headed by first class pure-bred rams. The Derby flock is composed of pure-bred Shropshires and individuals from it were successfully exhibited at Fredericton and Chatham Exhibitions. Four pure-bred ram lambs were sold from this flock at $25 each and the flock won $75 in prize money. This is the first effort on the part of any operator to show sheep at the larger fairs. Sheep management of the station flocks is good with the exception that not sufficient attention is paid to change of pasture.

Swine are receiving more attention than formerly and good progress is being made at a number of stations. Baker Brook, Siegas, Riordon, Rexton and Petersville, maintain pure-bred Yorkshire boars for community use and keep pure-bred Yorkshire sows. Other stations such as Tracey, Salisbury, Buctouche, Derby, Perth and Sussex, have pure-bred sows and also have access to pure-bred boars owned locally. Operators are being encouraged to winter at least two brood sows. Several of the new operators are interested in swine and will be encouraged to develop along this line. In the production of home grown feeds, the operators will be encouraged to grow mangels and to make use of forage crops such as oats, peas and vetches for summer pasture.

Dairy cattle are leading producers of revenue at Salisbury, Sussex, Baker Brook, Derby, Harvey, Perth and Siegas, and to a lesser extent at Rexton, Buc-

touche, Beresford, Jacquet River, Tracey, Petersville and Riordon. Milk records are being kept at Baker Brook, Siegas, Sussex, Beresford, Harvey and Lower Derby. The Tracey and Beresford stations are planning to increase and improve their strain of cattle this year. The field management of the stations and farms is so planned that there will be an abundance of succulent feeds such as turnips, mangels, and oats, peas and vetches for winter feeding.

Poultry is receiving more attention each year on the stations. The operators at Baker Brook, Siegas, Grand Falls, Perth, Harvey, Rexton, Sussex and Riordon, have flocks ranging from 50 to 125 birds. The flocks at Beresford, Tracey,

Field day on the Siegas, N. B., Illustration Station.

Salisbury and Buctouche, are being increased. During the last few years eight new poultry houses have been constructed and several have been renovated. Bred-to-lay male birds head all the flocks. When new birds are required they are exchanged with other operators or purchased form the Experimental Station.

Egg production records are kept at several stations, some for the entire year and others for the fall and winter period.

The following is the monthly production record at the Siegas station: —

MONTHLY PRODUCTION RECORD—SIEGAS STATION

Year	Number of pullets	Number of hens	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1926	35	29	.....	.....	.....	1,112	1,045	930	664	562	394	212	181	270
1927	36	36	374	563	1,089	1 191	1,031	868	755	703	514	647	642	752
1928	36	36	666	749	1.210	1.246	1,181	1,016	872	797	534	343	.....	.....

The tendency toward small scale operations in all classes of livestock is a drawback at a great many stations. A litter feeding policy in the case of swine work will be encouraged this year and in the case of poultry an effort will be made to increase the size of flocks and to improve the system of management.

NEW STATIONS

A new station has been located on the farm of Joseph D'Aigle at St. Charles in Kent county. This is a large district and thickly populated. The soil varies from a light loam to sand and is only moderately productive. Operations will commence here in the spring of 1929.

A new station has been located on the farm of Burton Linton at Pomeroy Ridge in Charlotte county. The soil here is heavy and of a gravelly clay loam nature. Operations will begin here in the spring.

REPORT OF THE ILLUSTRATION STATIONS FOR NOVA SCOTIA

F. B. Kinsman, B.S.A., Supervisor

The time of seeding at the different stations did not vary from that of 1927. The snowfall in general throughout the province was light. There was some doubt as to the wintering of the clover plants on account of the thawing and freezing, but the outcome, however, was on the whole satisfactory, and good yields were obtained at the various stations.

The seeding or planting of crops was not delayed materially on account of rains. The early growth of grains, grasses and hoed crops was rapid, due to there being sufficient moisture up to the end of June and to the unusual amount of sunshine throughout the season. Grain, however, received a set-back at most stations. Just before heading out, the latter part of July, the weather was warm and the lack of moisture, did not permit of as large an average yield has has been obtained. The weather during July was favourable for haymaking. This crop was cut and housed in splendid condition, having made most of its growth before the effects of the dry weather were felt. The turnip crop perhaps suffered most; growth was greatly delayed during this long dry period. When the rains did come in the latter part of September, growth was rapid. One outstanding feature of this crop was that where nitrogenous fertilizers were applied immediately after thinning, the growth was much more uniform and the quality superior to the untreated areas. Turnips not receiving this application were found to have a streaky, brown discoloration, evidently due to the breaking down of the cell structure of the root. The potato yield on the whole was good, and of uniform, clean stock, without rot.

Because of the very open fall, all ploughing operations have been completed. Larger areas than usual have been ploughed at the stations, as well as in surroundings districts.

A record of the summer rainfall at Heatherton for the years 1927 and 1928 is given, and also, for the purpose of comparison, that at the Experimental Station, Kentville, for 1928, and the average for the previous fourteen years.

RAINFALL DURING THE GROWING SEASON

Month	Heatherton		Keatville	
	1927	1928	1928	Average, previous fourteen years, 1914-1927, inclusive
	in.	in.	in.	in.
May	2.68	4.38	3.16	2.16
June	3.21	1.69	1.88	3.06
July	3.38	4.10	3.32	3.04
August	6.30	0.85	1.02	3.03
September	2.74	2.01	2.76	2.84
October	4.62	6.27	3.12	4.32
Totals	22.93	20.20	15.26	18.95
Averages	3.82	3.37	2.54	3.16

LIVE STOCK IMPROVEMENT

The operators on the Illustration Stations have made steady progress this last season in live stock improvement. All the stations with the exception of Mabou and Kennetcook, have pure-bred sires heading their herds. These sires have been selected by the operators from the standpoint of milk production. The operators are beginning to take a keen interest in keeping milk records, in order to determine the exact amount of milk obtained from each cow. They realize that through the demonstration work, larger yields may and are being obtained, but that they are nearly as far away from the desired goal if they have not suitable stock to consume these better grades of feeds, thus the production of suitable dairy feeds and livestock improvement must go hand in hand to be most effective.

On some of the stations sheep are getting to be in demand. Unfortunately not all the stations are situated to handle sheep, owing to pasture shortage. Careful weeding out has been carried on, turning off a few of the old ewes each fall and keeping some of the choicest ewe lambs for breeders. Mr. Ross at Margaree and Mr. Grant at Heatherton have been obtaining many prizes at the exhibitions, due to their care in breeding and selection.

POULTRY

This phase of the work on the Ilustration Stations has been receiving a great deal of attention. The women have taken a very keen interest in poultry. The influence of pure-bred flocks at all the stations has been a great help to the districts through supplying eggs for hatching and cockerels in the fall for breeders. Mr. Zwicker at Newport erected a new hen-house this season, and at the Heatherton station, one will be erected in the spring.

FRUIT TREES

In the spring of 1926 at each station were planted apple trees of commercial varieties also plum pear and cherry trees. The apple trees were planted on well selected land at each station and spaced 30 feet apart each way. These trees have come along exceptionally well and have made from twelve to sixteen inches in

twig growth per year, very few having died out. They are kept hoed around during the summer, up to the last of June. The fertilizer used is a small quantity of nitrate of soda early in the spring. No winter injury has as yet been noticed at any of the stations. Unless something unforseen takes place, these young orchards started at the various stations, will give a great deal of information as to fruit possibilities outside the regular fruit-growing belt, the Annapolis Valley.

RASPBERRY PLANTATIONS

In the spring of 1925 each operator planted out one hundred raspberry canes in order to find out the possibilities of growing this fruit. On the whole these have been very successful. These plots have produced good crops of splendid fruit. Annual pruning is being carried on to assure that the plantation is well supplied with year-old canes.

STRAWBERRIES

Strawberry plants were also set out at the various stations. When one realizes that small fruits have rarely been grown in these districts, the success obtained may be considered remarkable. The Senator Dunlap is the variety being grown, and appears to lend itself to a wide range of soil and climatic conditions. At these stations, particularly Middle River and Christmas Island, the areas have been increased and very satisfactory yields have been obtained. By starting these plots on the Illustration Stations and demonstrating that fruits can be produced at these various points, many others in the districts have undertaken to grow for home use a supply of these small fruits.

CEREAL TRIAL PLOTS

Five varieties each of oats, wheat and barley containing five rod-rows of each variety, were tested at the Illustration Stations during the season. The seed was furnished by the Cereal Division, Experimental Farm, Ottawa.

The plots were sown in the regular grain-and-seeded areas at the stations, leaving room to cultivate around the edges to prevent their getting mixed. The seed was sown by hand after a well worked seed bed had been established. The rows were seven inches apart, and all seed was sown at a uniform depth, and coved with a rake.

The growth of grain on these plots was interesting. Observations were made on the manner of growth, freedom from rust, stiffness of straw, date of ripening, and height of the grain.

The harvesting operation was done by cutting off the heads of the three centre rows of each plot and placing them in a bag. After this the two guard or outside rows were cut and placed in another bag. All were carefully labelled. The grain was shipped to the Experimental Station, Kentville, and threshed. There were some variations in the yields of the same variety at different stations, also in the ripening periods .The weight per bushel of the same varieties differed also.

Considerable interest was taken by the public in the manner of growing these rod-rows. Over a period of years, no doubt a great deal of information may be gathered from the growing of these varieties of grain at the different stations, under such varying soil and weather conditions.

ALFALFA GROWING

At all the stations, a small area was sown with alfalfa on the grain-and-seeded areas, with the exception of New Glasgow, Middle Musquodoboit and N. E. Margaree, where one or two acres were sown. At the New Glasgow station, alfalfa has been growing very successfully for three years. The second-year crop yielded 7¼ tons of alfalfa hay from two cuttings on 1¼ acres.

One could not expect a hundred per cent stand at all the stations because some of the soil appears to be too wet for the successful growing of alfalfa. The most suitable condition for growing alfalfa is a well-drained soil in a good state of fertility following a hoed crop. These areas were seeded at the rate of 20 pounds per acre and received Belgian slag at the rate of 1000 pounds per acre. One-half of the area was seeded with a nurse crop and the other seeded alone. In most cases, it was observed that where alfalfa was sown without a nurse crop the plants were much stronger, although no great difference was noticed at Tatamagouche, where wheat was sown as a nurse crop.

Perhaps the best stand of any was at Middle Musquodoboit. This crop was seeded June 1 on a light loam soil, the seed having been inoculated. In September, the crop was very uniform throughout the whole area, and measured 24 inches high.

At some of the stations weed growth appeared. This necessitated a mower being run over the areas with the tilting bar well back, leaving five or six inches of the alfalfa growth. The last visit to the stations in the fall showed a very healthy stand of alfalfa in nearly every case.

EFFECT ON SUCCEEDING CROPS OF MANURE AND COMMERCIAL FERTILIZER APPLIED TO POTATOES

The first demonstration on the Nova Scotia Illustration Stations with potatoes, was started in the spring of 1924, the data to be gathered through a four-year rotation. The primary object of this demonstration was, if possible, to determine the practicability of substituting commercial fertilizer for part of the manure usually applied, also to see if it were possible to hasten the growth of potatoes at the different stations, where, in some seasons, planting is very backward.

These tests were conducted on four one-eighth acre plots on soil typical of that found in the various districts. Irish Cobbler potatoes were planted. Manure and fertilizer applied at the rates given in the following table were applied broadcast in the spring and harrowed in. The plots were ploughed late in the fall of 1924, and sown to oats the following spring along with a standard grass and clover mixture. The plots were left in hay two years. The yields for these four years are given in detail on page 57 of the 1927 report.

A similar demonstration was begun on other areas in 1925, and the yields for the four years of the rotation are given in the table below, together with the average yields of the previous test, which was completed in 1927. The average of the two tests is also given. It will be seen from the results that it is quite possible to substitute some commercial fertilizer for manure and obtain good crops. In fact, plot No. 2, receiving 10 tons of manure and 750 pounds of 4-8-4 fertilizer per acre, gave the largest yields.

It is reasonable to suppose from the above results that the fertility of the soil may be maintained and satisfactory crops produced by supplying the necessary amount of plant food through commercial fertilizers, when sufficient farm-yard manure is not available.

EFFECT ON SUCCEEDING CROPS OF MANURE AND COMMERCIAL FERTILIZER APPLIED TO POTATOES (BEGUN 1925)

YIELDS PER ACRE

Station	Manure, 20 tons				Manure, 10 tons; 4-8-4 fertilizer, 750 pounds				4-8-4 fertilizer, 1500 pounds				No fertilizer			
	Potatoes, 1925	Oats, 1926	Clover hay, 1927	Timothy hay, 1928	Potatoes, 1925	Oats, 1926	Clover hay, 1927	Timothy hay, 1928	Potatoes, 1925	Oats, 1926	Clover hay, 1927	Timothy hay, 1928	Potatoes, 1925	Oats, 1926	Clover hay, 1927	Timothy hay, 1928
	bush.	bush.	tons	tons	bush.	bush.	tons	tons	bush	bush.	tons	tons	bush.	bush.	tons	tons
Sydney	207.0	38.4	1.81	2.72	235.5	39.0	1.85	2.48	276.0	37.0	1.63	2.16	62.0	62.0	1.01	1.70
Christmas Island	80.0	27.0	1.00	1.15	96.0	29.2	1.32	1.60	100.0	31.0	1.05	1.12	53.0	16.0	0.57	0.81
Middle River	270.0	*	1.34	1.75	290.0	.....	1.52	1.72	282.0	.....	1.48	1.65	53.0	.....	0.84	0.75
N. E. Margaree	385.0	41.0	2.10	1.70	412.5	47.4	2.26	1.68	375.0	45.0	2.34	1.59	118.2	23.0	1.11	1.00
Heatherton	138.6	32.0	0.98	1.05	221.3	39.6	1.47	1.15	195.8	42.0	1.90	1.25	134.2	19.0	0.79	0.84
New Glasgow	259.9	37.0	1.13	1.00	356.4	34.3	1.89	1.40	372.0	38.2	1.62	1.30	140.8	21.0	0.92	0.90
M. Musquodoboit	168.7	*	1.58	1.17	132.4	.....	1.99	1.30	140.0	.....	1.81	1.25	63.0	.....	1.12	1.02
Kennetcook	203.5	32.0	1.21	1.85	305.7	36.0	1.46	1.91	236.5	39.1	1.29	1.77	99.0	18.0	0.93	0.70
Newport	232.0	46.0	1.31	1.42	247.0	44.0	1.27	1.30	288.0	41.0	1.30	1.34	32.5	25.0	1.04	1.10
Tatamagouche	198.0	29.0	1.17	1.00	209.0	31.0	1.23	1.11	171.5	28.6	1.29	1.15	88.0	18.0	0.97	0.88
Averages	214.2	35.3	1.36	1.48	250.6	37.6	1.63	1.56	243.7	37.7	1.57	1.46	84.4	25.2	0.93	0.97
Average crops from test begun 1924 (eleven stations)	1924	1925	1926	1927	1924	1925	1926	1927	1924	1925	1926	1927	1924	1925	1926	1927
	186.7	38.8	1.10	1.49	233.0	43.6	1.47	1.64	208.1	42.1	1.36	1.52	114.5	26.5	0.83	0.99
Average of both tests.	199.8	37.3	1.22	1.49	241.4	41.1	1.55	1.60	225.0	40.2	1.46	1.49	100.2	26.0	0.88	0.98

* Grain frosted.

COMPARISON OF COMMERCIAL FERTILIZER AND FARMYARD MANURE FOR POTATOES, 1926

A demonstration similar to that carried on previously was undertaken in 1926 to show the comparative values of a complete commercial fertilizer, used alone and in combination with farmyard manure. Four one-eighth acre plots were treated as shown in the table. The yield of potatoes in 1926, oats in 1927, and clover hay in 1928 is given. Another hay crop will be removed from these plots in 1929 before the test is completed. The increased potato crop in 1926 was more than sufficient to pay for the fertilizers used on the first three plots.

COMPARISON OF COMMERCIAL FERTILIZER AND FARM YARD MANURE FOR POTATOES, 1926—YIELDS PER ACRE

Station	Manure, 20 tons			Manure, 10 tons; 4-8-4 fertilizer, 750 pounds			4-8-4 fertilizer, 1500 pounds			No fertilizer		
	Potatoes, 1926	Oats, 1927	Clover hay, 1928	Potatoes, 1926	Oats, 1927	Clover hay, 1928	Potatoes, 1926	Oats, 1927	Clover hay, 1928	Potatoes, 1926	Oats, 1927	Clover hay, 1928
	bush.	bush.	tons	bush.	bush.	tons	bush.	bush.	tons	bush.	bush.	tons
New Glasgow	162.0	34.1	2.46	238.0	35.0	2.29	240.0	37.8	1.99	79.0	17.0	1.99
N. E. Margaree	253.0	41.0	2.12	263.0	45.6	2.30	246.0	42.0	2.10	80.0	23.6	1.10
Middle River	210.0	23.4	3.05	230.0	27.0	3.00	205.0	25.2	2.90	60.0	14.8	1.00
Kennetcook	100.0	15.2	2.33	128.0	19.5	2.38	125.5	18.0	2.29	55.0	11.0	1.92
Newport	176.8	25.0	1.93	215.2	29.3	2.10	232.0	23.4	1.95	62.0	19.6	1.16
Christmas Island	96.0	17.4	1.01	124.0	23.0	1.70	84.0	20.2	1.62	64.0	0.9	0.80
Tatamagouche	154.0	16.1	1.11	220.0	19.0	1.21	198.0	19.0	1.15	110.0	11.1	0.83
M. Musquodoboit	140.0	.....	2.00	152.5	.....	2.12	168.0	.....	2.03	104.0	.....	1.60
Sydney	185.0	14.0	2.46	225.3	19.2	2.13	241.0	18.8	1.80	104.2	12.0	1.20
Mabou	552.6	19.9	1.70	783.8	24.6	1.85	769.0	28.5	1.76	333.8	13.4	1.10
Heatherton	86.6	18.4	1.80	45.3	23.0	1.27	48.0	21.6	0.90	43.4	12.2	0.34
Averages	192.4	22.4	2.00	238.6	26.5	2.03	232.4	25.4	1.86	99.6	13.6	1.19

NITROGENOUS FERTILIZERS APPLIED WHEN OATS WERE THREE INCHES HIGH

At all the stations a test was conducted with nitrate of soda and sulphate of ammonia applied to oats when the grain had reached a height of three inches. The land was staked off carefully and only uniform areas used. The fertilizers were sown broadcast when the foliage was perfectly dry. Nitrate of soda was used at the rate of 150 pounds and sulphate of ammonia at the rate of 115 pounds per acre, these rates giving the same amount of nitrogen to each plot. The yield of grain on the areas so treated became much higher than on the areas not treated. Some slight lodging was noted, but the yield was not affected, the season being dry. The difference in yields on the two fertilizer plots was very slight in most cases. The nitrate of soda plot averaged 7.2 bushels, the sulphate of ammonia 5.9 bushels more than the non-fertilized areas. In 1928, the cost of nitrate of soda and sulphate of ammonia was the same, and ranged around $58. per ton. The average cost of nitrate of soda was $4.35, and of sulphate of ammonia, $3.33 per acre. Assuming oats to be worth 70 cents per bushel, the average gain per acre, after paying for these fertilizers, was 69 cents where nitrate of soda was used, and 80 cents where sulphate of ammonia was used. The soil in most cases was in a fair state of fertility.

NITROGENOUS FERTILIZERS APPLIED WHEN OATS WERE THREE INCHES HIGH
YIELDS PER ACRE

Station	Nitrate of soda	Sulphate of ammonia	No nitrogenous fertilizers
	bush.	bush.	bush.
Heatherton	51.5	44.1	40.6
N. E. Margaree	60.4	61.2	55.0
Middle River	42.1	43.0	38.4
Newport	61.4	62.0	55.0
Springfield	48.0	49.1	45.0
Upper Stewiacke	37.8	30.6	30.6
Kennetcook	44.7	43.5	37.6
Mabou	47.1	45.0	40.3
New Glasgow	44.0	40.0	38.0
Christmas Island	32.0	44.0	35.0
Barra Glen	37.5	35.0	26.0
Middle Musquodoboit	43.0	44.0	25.0
Sydney	49.1	42.6	39.3
Tatamagouche	48.6	44.7	39.6
Totals	647.2	628.8	546.3
Averages	46.2	44.9	39.0

NITROGENOUS FERTILIZERS APPLIED AFTER TURNIPS WERE THINNED

A test was conducted this year to determine the value of nitrogenous fertilizers applied to turnips after they were thinned. The various fields on which this test was made were manured and prepared without regard to the fact that a surface application of nitrogenous fertilizers would later be made. Nitrate of soda was applied to one plot at the rate of 150 pounds, and sulphate of ammonia to another plot at the rate of 115 pounds per acre, these rates giving the same amount of nitrogen to each plot. A third plot was left without any nitrogenous fertilizer, as a check plot. The fertilizers were applied as soon as the turnips were thinned. The thnning was done when the third leaf had appeared. It was

observed that the turnips that had received the fertilizer kept growing steadily throughout the season. It will be seen from the table that the nitrate of soda plots gave the largest yields, averaging 160.3 bushels more than the unfertilized plots. The sulphate of ammonia plots gave an average of 92.9 bushels more than the unfertilized plots. This season's work shows that nitrogenous fertilizers may be applied profitably to the turnip crop. The sulphate of ammonia cost $3.33, and the nitrate of soda $4.35 per acre. Assuming the turnips to be worth 10 cents per bushel, the average gain after paying for these fertilizers was $11.68 on the nitrate of soda plot, and $5.96 on the sulphate of ammonia plot.

NITROGENOUS FERTILIZERS APPLIED AFTER TURNIPS WERE THINNED—YIELDS PER ACRE

Station	Nitrate of soda	Sulphate of ammonia	No nitrogenous fertilizers
	bush.	bush.	bush.
Heatherton	724	673	396
N. E. Margaree	985	940	886
Middle River	600	590	460
Newport	970	940	929
Springfield	1,060	880	629
Upper Stewiacke	1,253	928	1,009
Kennetcook	927	901	874
Mabou	786	772	731
New Glasgow	735	710	447
Christmas Island	696	661	568
Barra Glen	1,120	1,075	1,050
Tatamagouche	545	522	504
Totals	10,401	9,592	8,477
Averages	866.7	799.3	706.4

NITROGENOUS FERTILIZERS APPLIED TO POTATOES WHEN PLANTS WERE UP

At all the stations a test was conducted to determine the value of nitrogenous fertilizers applied to potatoes when the plants were up. Three one-quarter acre areas were used for this test, nitrate of soda being applied to one at the rate of 150 pounds, sulphate of ammonia to the second at the rate of 115 pounds per acre, and the third left without nitrogenous fertilizers. The areas chosen were uniform, and were treated alike.

As most of the stations used only barnyard manure as a fertilizer, the test may also be considered to furnish a comparison of manure with manure and nitrogenous fertilizers. The applications were made July 1, on the average. Two weeks after the application the foliage began to get larger and become very dark green in colour. The nitrate of soda plot gave the best yields, averaging 41.5 bushels over the area receiving no nitrogenous fertilizer, as compared with an average increased yield of 25.9 bushels for the sulphate of ammonia plot. Figuring potatoes at 50 cents per bushel, and nitrate of soda and sulphate of ammonia at 3 cents per pound, there was an average profit over the cost of the fertilizer of $16.25 per acre on the nitrate of soda plots, and $9.50 per acre on the sulphate of ammonia plots.

NITROGENOUS FERTILIZERS APPLIED TO POTATOES WHEN PLANTS WERE UP—YIELDS PER ACRE

Station	Nitrate of soda	Sulphate of ammonia	No nitrogenous fertilizers
	bush.	bush.	bush.
Heatherton	203	195	180
N. E. Margaree	450	445	421
Middle River	265	262	250
Newport	290	282	260
Springfield	398	340	326
Upper Stewiacke	.....	.....	.....
Kennetcook	319	310	292
Mabou	228	221	190
New Glasgow	177	164	113
Christmas Island	77	73	61
Barra Glen	480	450	387
Sydney	256	240	188
Tatamagouche	183	157	160
Totals	3,326	3,139	2,828
Averages	277.2	261.6	235.7

NITROGENOUS FERTILIZERS ON GRASS LAND

The following table gives the average of five years' work on ten of the Illustration Stations with nitrate of soda and sulphate of ammonia as top-dressings on grass land. These applications were made on timothy sod when vegetation started in May. The land selected for this work was an uniform as it was possible to obtain, and in each case is typical of the district. Nitrate of soda was applied at the rate of 150 pounds, and sulphate of ammonia at the rate of 115 pounds per acre, thus giving each plot the same amount of nitrogen.

It will be seen from the table that over this five-year period the sulphate of ammonia applications have given the highest average yield, and that a yearly average of 1137.6 pounds per acre more hay was obtained on these plots than from the unfertilized area, while the nitrate of soda plots over the five years gave an average of 1062.7 pounds per acre more hay than the unfertilized plots. The value of these fertilizers varies from year to year, but on the whole ranges about $60. per ton. It is evident that at this price and with hay at $10. per ton the average gain above the cost of sulphate of ammonia was $2.24, and above the cost of nitrate of soda, 81 cents per acre.

Station	Average yield per acre, five years, 1924-1928			Yield per acre, 1928		
	Nitrate of soda	Sulphate of ammonia	Unfertilized	Nitrate of soda	Sulphate of ammonia	Unfertilized
	lb.	lb.	lb.	lb.	lb.	lb.
Sydney	4,842.5	4,925.0	3,759.5	4,400	4,643	3,441
Christmas Island	3,315.5	3,816.0	3,040.0	3,240	3,410	2,635
Middle River	4,513.5	4,386.0	3,902.0	3,815	3,910	3,425
N. E. Margaree	7,293.5	7,615.5	5,676.5	7,409	7,812	6,803
Heatherton	5,313.5	5,652.0	4,440.0	6,280	6,320	5,920
New Glasgow	5,963.0	6,114.5	5,221.2	6,776	6,485	6,243
Tatamagouche	4,218.0	4,008.0	3,132.5	4,207	3,924	3,200
Middle Musquodoboit	5,231.0	5,499.0	4,020.5	4,900	5,006	4,004
Kennetcook	5,272.5	5,169.5	3,710.1	7,520	7,280	5,000
Newport	5,862.5	5,388.5	4,296.0	6,175	6,200	5,380
Averages	5,182.5	5,257.4	4,119.8	5,472.2	5,499.0	4,605.1

LIMESTONE, SUPERPHOSPHATE AND SLAGS USED WITH AND WITHOUT SULPHATE OF AMMONIA WHEN SEEDING DOWN (BEGUN 1926)

Tests to show the comparative values of the above materials were conducted at Northeast Margaree, and Heatherton in 1923, with such apparently definite results that the work was extended to all the stations in 1926. An area of one and one-half acres was used at each station. In many cases the test was conducted on land where there had not been a field crop for twenty years. These areas were divided into six one-quarter acre plots, and treated per acre as follows:—

Plot 1—Limestone, 2 tons.

Plot 2—Limestone, 2 tons; superphosphate, 800 pounds.

Plot 3—Superphosphate, 800 pounds.

Plot 4—Sydney slag, 800 pounds.

Plot 5—Belgian slag, 800 pounds.

Plot 6—Not fertilized.

In addition, one-half of each plot received 115 pounds of sulphate of ammonia per acre. The different materials were applied and harrowed into a well prepared seed bed. Oats were sown, together with 8 pounds of timothy and 5 pounds each of common red and alsike clovers. It will be noticed from the table below that in the grain crop, 1926, there was an average of 7.9 more bushels of oats harvested on plot 6 where sulphate of ammonia was used than where it was not used. The plot giving the greatest yield of oats in 1926 was the sulphate of ammonia section of plot 2, 48.2 bushels on the average. This was an average of 9.4 bushels more oats than the section of plot 2 that did not receive sulphate of ammonia. The fertilized plot giving the lowest yield was Plot 1, 34.6 bushels. The straw was of a much heavier growth on the half of each plot where the sulphate of ammonia was applied. This made a very interesting demonstration and was

carefully noted by the farmers in each district. It was very evident in the clover crop of 1927 that where limestone, limestone and superphosphate, or slag was used there was an abundance of clover. The plot giving the heaviest yield of clover in 1927 was plot 2, the average being 2.42 tons; with the Belgian slag plot next with an average of 2.07 tons. Plot 1 gave an average of 1.70 tons, this being less than the superphosphate plot, No. 3, which gave an average of 1.99 tons. The quality of the hay, however, was not so good on plot 3 as on plot 1. Clover was lacking in most cases to a much greater extent than on plot 1. This year's hay crop also was greatest on Plot 2, giving 1.76 tons, while Plot 5 gave 1.71 tons. Plot 3, superphosphate, gave the next highest yield.

This test, being conducted on so many different types of soil through the province, shows fairly conclusively that the best all-round results come from the application of 2 tons of limestone per acre together with superphosphate.

LIMESTONE, SUPERPHOSPHATE AND SLAGS USED WITH AND WITHOUT SULPHATE OF AMMONIA WHEN SEEDING DOWN—YIELDS PER ACRE

Station	Limestone			Limestone and superphosphate			Superphosphate			Sydney slag			Belgian slag			Not fertilized		
	Grain, 1926	Hay, 1927	Hay, 1928	Grain, 1926	Hay, 1927	Hay, 1928	Grain, 1926	Hay, 1927	Hay, 1928	Grain, 1926	Hay, 1927	Hay, 1928	Grain, 1926	Hay, 1927	Hay, 1928	Grain, 1926	Hay, 1927	Hay, 1928
Treated with sulphate of ammonia	bush.	tons	tons	bush.	tons	tons	bush.	tons	tons	bush.	tons	tons	bush.	tons	tons	bush.	tons	tons
Sydney	30.0	1.34	1.51	43.6	1.68	1.80	41.0	1.52	1.60	36.0	1.51	1.61	39.0	2.07	1.70	24.8	0.68	1.20
Christmas Island	26.1	1.60	1.10	52.5	2.05	1.30	48.3	2.35	1.39	20.4	1.96	1.47	27.0	2.32	1.49	12.5	1.50	1.02
Middle River	37.0	1.05	1.25	63.3	2.50	2.01	53.3	2.15	1.68	46.5	2.00	1.45	52.7	2.25	1.80	23.4	0.60	1.11
N. E. Margaree	48.0	2.37	1.86	66.0	2.59	2.08	60.0	2.31	2.00	61.0	2.75	1.99	45.2	2.75	2.15	16.4	1.47	1.30
Mabou	25.0	2.05	1.30	20.1	3.18	1.65	18.5	2.40	1.93	28.1	1.76	1.52	36.4	2.30	1.96	16.4	1.21	1.13
Heatherton	34.1	1.22	0.64	59.6	2.83	1.28	59.4	1.44	0.76	37.8	1.28	0.72	46.0	1.72	1.16	22.0	0.40	0.56
New Glasgow	60.8	1.48	1.05	60.7	1.51	1.45	60.5	1.81	1.11	60.9	1.26	1.23	55.2	1.43	1.30	50.1	1.26	0.80
Tatamagouche	27.1	2.60	1.20	45.0	2.64	2.00	43.6	1.51	1.31	32.0	1.51	1.49	40.6	1.75	1.65	22.0	1.00	0.90
Middle Musquodoboit	24.0	1.90	1.91	40.6	3.42	2.20	41.0	2.25	2.00	28.6	1.80	2.10	34.4	2.11	2.43	19.6	0.87	1.75
Kennetcook	44.1	1.80	1.23	54.1	2.88	1.89	50.8	2.84	1.69	47.1	2.28	1.64	48.5	2.72	1.78	32.0	1.55	1.45
Newport	24.0	1.32	1.20	24.6	1.31	1.75	24.8	1.30	1.15	28.5	1.04	1.10	28.5	1.38	1.40	28.7	0.75	0.90
Averages	34.6	1.70	1.29	48.2	2.42	1.76	45.6	1.19	1.51	38.8	1.74	1.48	41.2	2.07	1.71	24.4	1.03	1.10
Not treated with sulphate of ammonia																		
Sydney	23.4	1.30	1.54	38.0	1.64	1.70	36.2	1.52	1.54	26.1	1.36	1.45	29.8	2.00	1.72	14.0	0.49	0.99
Christmas Island	20.1	1.72	1.13	47.0	1.83	1.29	44.1	2.32	1.32	19.3	1.97	1.40	23.0	2.72	1.41	9.2	1.48	1.12
Middle River	23.4	1.00	1.20	50.0	2.39	2.07	45.4	2.09	1.72	36.6	1.99	1.41	40.0	2.25	1.75	16.9	0.34	1.00
N. E. Margaree	44.0	2.34	1.81	62.1	2.60	2.00	57.6	2.28	1.70	50.2	2.72	1.99	47.6	2.74	2.00	15.5	1.40	1.23
Mabou	20.1	2.00	1.20	29.4	3.00	2.08	28.3	2.24	1.91	22.0	1.80	1.50	26.4	2.24	1.98	13.2	1.16	1.14
Heatherton	18.2	1.23	0.64	32.3	2.80	1.30	29.8	1.40	0.75	21.4	1.24	0.72	27.0	1.74	1.10	14.0	0.32	0.48
New Glasgow	40.0	1.46	1.12	48.1	1.50	1.40	45.1	1.81	1.08	42.3	1.25	1.13	44.4	1.38	1.30	28.1	1.24	0.81
Tatamagouche	22.5	2.56	1.23	37.0	2.63	1.81	34.2	1.52	1.30	27.0	1.50	1.10	29.4	1.77	1.69	17.0	0.99	0.94
Middle Musquodoboit	20.0	1.80	1.84	26.1	3.40	2.22	25.0	2.19	1.89	22.4	1.74	2.00	24.0	2.65	2.10	15.9	0.72	1.48
Kennetcook	29.1	1.68	1.20	39.9	2.76	1.87	38.4	2.68	1.69	35.4	2.16	1.54	38.1	2.68	1.80	24.0	1.48	1.46
Newport	15.5	1.32	1.20	17.0	1.30	1.68	17.3	1.27	1.00	17.7	1.04	1.02	17.7	1.41	1.30	13.4	0.67	0.95
Averages	25.1	1.67	1.28	38.8	2.35	1.77	36.5	1.94	1.45	29.1	1.71	1.39	31.6	2.14	1.65	16.5	0.93	1.05

LIMESTONE, SUPERPHOSPHATE, AND SLAGS USED WITH AND WITHOUT SULPHATE OF AMMONIA WHEN SEEDING DOWN (BEGUN 1927)

In order to gather more information as to the value of this treatment a test was commenced in 1927 exactly similar to the preceding test begun in 1926. The yields for the two years 1927 and 1928 are given in the following table.

It will be noticed that sulphate of ammonia used alone (plot 4) showed an average gain of 2.5 bushels over the unfertilized area. All plots gave larger yields of both oats and straw where sulphate of ammonia was used. It will be seen that plot 2, limestone and superphosphate, gave the largest yield of clover hay; Plot 6, Belgian slag, the second largest; Plot 5, Sydney slag, the next; superphosphate, the next, and limestone the next. There was not any large amount of clover on Plot 3 (superphosphate). The plots treated with lime or lime and phosphorus in some form in nearly every case ran well to common red clover with a sprinkling of alsike.

This test will be conducted for another year in order to get the timothy hay yields.

LIMESTONE, SUPERPHOSPHATE, AND SLAGS USED WITH AND WITHOUT SULPHATE OF AMMONIA WHEN SEEDING DOWN—YIELDS PER ACRE

Station	Limestone		Limestone and superphosphate		Superphosphate		Not fertilized		Sydney slag		Belgian slag	
	Oats, 1927	Hay, 1928	Oats, 1927	Hay, 1928	Oats, 1927	Hay, 1928	Oats, 1927	Hay, 1928	Oats, 1927	Hay, 1928	Oats, 1927	Hay, 1928
Treated with sulphate of ammonia	bush.	tons	bush.	tons	bush.	tons	bush.	tons	bush.	tons	bush.	tons
Sydney	18.2	2.32	27.4	2.49	23.0	2.36	17.9	1.44	21.1	2.48	20.0	2.49
Christmas Island	24.4	1.03	28.2	1.32	30.2	1.43	23.7	1.08	34.1	1.50	35.3	1.53
Barra Glen	26.1	1.60	28.0	2.50	26.4	2.0	21.0	0.54	20.4	1.75	19.6	2.00
N. E. Margaree	68.1	2.50	86.4	2.80	77.6	2.60	29.4	1.20	82.3	2.50	77.6	2.90
Middle River	.....	2.25	.....	2.30	.....	2.05	.....	0.90	.....	1.90	.....	2.10
Mabou	26.0	1.92	29.3	2.25	28.4	2.00	20.0	1.22	27.9	2.10	31.0	2.40
Heatherton	15.5	1.16	18.8	2.32	19.9	2.49	11.3	0.48	12.2	1.94	15.3	2.51
New Glasgow	28.8	1.35	31.3	1.93	30.9	1.74	28.8	1.01	30.0	2.47	30.4	1.61
Tatamagouche	21.3	1.45	29.0	1.51	23.0	0.83	17.4	0.58	24.2	1.16	31.6	1.33
Middle Musquodoboit	.....	2.10	.....	2.65	50.1	2.20	32.0	1.30	44.2	2.40	46.1	2.70
Kennetcook	29.0	3.44	38.3	3.88	39.1	3.12	26.0	2.50	38.0	3.16	35.2	3.20
Newport	28.0	1.92	38.4	2.48	38.0	2.24	23.2	1.79	32.8	2.49	40.8	2.90
Average	28.5	1.92	35.5	2.37	35.1	2.09	22.8	1.17	33.4	2.15	34.8	2.31
Not treated with sulphate of ammonia												
Sydney	12.6	2.30	18.8	2.51	11.5	2.31	11.2	1.30	16.4	2.31	15.5	2.46
Christmas Island	22.2	1.10	26.4	1.30	30.0	1.39	23.2	1.02	34.5	1.47	34.7	1.49
Barra Glen	21.5	1.50	25.1	2.48	21.6	1.90	19.7	0.42	18.8	1.75	17.4	1.98
N. E. Margaree	62.8	2.40	71.3	2.77	68.1	2.50	25.3	1.18	53.0	2.44	66.0	2.85
Middle River	.....	2.00	.....	2.30	.....	2.10	.....	0.81	.....	1.70	.....	1.91
Mabou	21.0	1.81	25.2	2.26	24.1	1.83	16.0	1.11	23.9	2.00	25.4	2.42
Heatherton	12.2	1.11	15.3	2.24	12.2	2.41	8.5	0.60	9.9	1.79	12.7	2.48
New Glasgow	27.6	1.33	30.0	1.95	32.4	1.71	29.9	1.10	28.8	2.40	32.4	1.55
Tatamagouche	15.6	1.44	23.8	1.53	18.7	0.64	11.7	0.40	19.0	1.17	26.1	1.33
Middle Musquodoboit	.....	2.00	.....	2.51	40.5	2.25	25.0	1.01	37.5	2.31	38.0	2.66
Kennetcook	26.8	3.14	34.8	3.60	34.4	3.10	35.3	2.31	36.7	3.16	29.0	3.10
Newport	26.1	1.76	36.9	2.29	35.5	2.11	17.1	1.19	28.7	1.98	30.1	2.49
Averages	24.8	1.82	30.8	2.31	29.9	2.02	20.3	1.04	27.9	2.04	29.8	2.23

BARRA GLEN, VICTORIA COUNTY

OPERATOR, S. R. MCNEIL

This station was started in 1927, and to date field operations have consisted largely of getting the fields into suitable shape for growing crops. The soil is a heavy clay loam, lacking in drainage, but representative of a large section of the country. This season, which was favourable, due to the dry weather, the turnip crop gave the excellent yield of 1050 bushels per acre. Tests were started outside of the rotation areas in 1927, and also in the spring of 1928. Records of these tests are not shown in the tables giving the average yields of these tests at the different stations, due to the short period in which they have been conducted.

OPERATIONS AT BARRA GLEN—FOUR-YEAR ROTATION

Field	Crop	Yield per acre	Cost per unit
		bush.	$
A	Turnips	1,050	0.06
B, C, D.	Under preparation		

A test was started this season with potatoes, using plot 1, 20 tons of manure; plot 2, 10 tons of manure and 750 pounds of 4-8-4 fertilizer; plot 3, 1500 pounds of 4-8-4 fertilizer; and plot 4, not fertilized. The soil was prepared in the same manner as at the other stations. The yield was: Plot 1, 111 bushels, plot 2, 130 bushels; plot 3, 156 bushels, and plot 4, 64 bushels. The largest yield, it will be noted, was obtained from commercial fertilizer alone, and the manured plot gave the lowest yield of the fertilized plots. This test, like former tests at other stations, will be conducted for three more years, to ascertain the effect of these fertilizers on the succeeding crops.

Other tests were started in the spring of 1928, using nitrogenous fertilizers on oats when they were up, on potatoes at the time of the first hoeing, on turnips after they were thinned, and as surface applications on grass land. The yields were as follows:—

RESULTS FROM DIFFERENT APPLICATIONS OF FERTILIZER

Crop	Nitrate of soda, 150 pounds per acre	Sulphate of ammonia, 115 pounds per acre	Untreated
Potatoes	384 bush.	360 bush.	309 bush.
Turnips	668 bush.	829 bush.	397 bush
Oats	30 bush.	28.1 bush.	20 bush.
Hay	1.75 tons	1.50 tons	1.25 tons

FERTILIZERS ON LAND SEEDED IN 1927

An area seeded to oats with timothy and clover, in 1927, was treated when seeded as given in the table below. This area had not been ploughed for several years and was low in fertility, as indicated by the yield from the area not treated. Records of the oat yield in 1927 were not obtained, but a great difference

was noted in the fertilized plots as compared with the untreated area. The yield of hay on these areas in 1928 was as stated in the table below:—

CLOVER HAY—RESULTS FROM DIFFERENT APPLICATIONS OF FERTILIZER

Plot	Fertilizers applied per acre	Yield of clover hay 1928	Remarks
		tons	
1	Marl, 2 tons	1.60	A low, thick stand of clover.
2	Marl, 2 tons; superphosphate, 800 pounds	2.60	A strong, thick growth of clover and timothy.
3	Superphosphate, 800 pounds	2.00	Strong, but not so thick as on plot 2
4	Unfertilized	0.61	Light, with no clover and with considerable brown top.
5	Sydney slag, 800 pounds	1.75	Good mixed hay.
6	Belgian slag, 800 pounds	2.00	Mostly clover.

FERTILIZERS ON LAND SEEDED TO OATS IN 1928

The object of this test is to determine how areas largely devoted to pasture can be made to yield profitable grain and hay crops. The seeding was done late, as the field area on this farm is a heavy loam with an excess of moisture. The season came in dry after seeding and the crop suffered from drought. It will be noted from the table below that nitrogenous fertilizers do not increase yields materially if used alone, but do so when used in conbination with superphosphate or slag. It would appear that satisfactory crops at this station are not possible until phosphoric acid in some form has been supplied. During the next two years a record will be kept of the hay yields from these areas.

FERTILIZERS ON LAND SEEDED TO OATS IN 1928

Plot	Fertilizers applied per acre	Yield per acre
		bush.
1	Marl, 2 tons	6.6
2	Marl, 2 tons; nitrate of soda, 150 pounds	15.7
3	Marl, 2 tons; superphosphate, 800 pounds	17.1
4	Marl, 2 tons; superphosphate, 800 pounds; nitrate of soda, 150 pounds	20.0
5	Superphosphate, 800 pounds	13.0
6	Superphosphate, 800 pounds; nitrate of soda, 150 pounds	25.0
7	Belgian slag, 800 pounds	16.2
8	Belgian slag, 800 pounds; nitrate of soda, 150 pounds	25.7
9	Not fertilized	4.8
10	Nitrate of soda, 150 pounds	6.5

CHRISTMAS ISLAND, CAPE BRETON COUNTY

OPERATOR, JOHN A. MCNEIL

Seeding at this station began about the usual time, June 6. The season was favourable for this type of heavy soil. There was no excessive amount of rain at any particular time during the growing season. The clover hay crop was the best in the history of the station. In fact, all the crops were very satisfactory. The clover hay yield was 3.17 tons, this being 1.82 tons more per acre than was grown in 1921 when the station was started.

The grain and seeded area was very uniform and gave a good yield for this section, 35 bushels. The soil is not suited to the growing of potatoes at any time, but this year's crop was 150 bushels of sound marketable potatoes.

The improvement at this station has been equal to that of any other in the province. It is now possible to feel reasonbly sure of a good hay crop each year. This is due to the testing out of different fertilizers. Of these limestone and superphosphate or slag, give the best results. The operator states that the six acres under the regular rotation gave a greater production this year than did his whole farm previous to starting this work.

The operator was successful in taking several prizes at the local exhibition, with livestock, poultry and vegetables. He is making a good market for cultivated raspberries and strawberries.

OPERATIONS AT CHRISTMAS ISLAND—FOUR-YEAR ROTATION

Field	Crop	Number years grown	Yield per acre		Cost per unit	
			1928	Average	1928	Average
					$	$
A	Clover hay.....tons	6	3.17	2.03	6 12	8 56
B	Oats and seeded.....bush.	7	35	36.0	0 61	0 85
C	Potatoes .....bush.	7	150	126.7	0 64	0 70
C	Turnips .....bush.	7	550	402.6	0 14	0 22
D	Timothy hay.....tons	5	1.70	1.30	8 10	11 33

HEATHERTON, ANTIGONISH COUNTY

OPERATOR, D. W. GRANT

The season on the whole was good at this station. The soil, being heavy, does not permit of early seeding. There was sufficient moisture to produce good crops; in fact, as good as the operator has every produced.

On Field "A" in July the turnips were at a standstill and looked anything but promising, but after opportune showers, they came along well and produced a good crop of 800 bushels per acre. The oats probably suffered most, due to lack of rain before they headed out. The hay crop was exceptionally good, clover giving a yield of 3.20 tons, and timothy 2.40 tons per acre. The operator was again successful in taking many prizes with cattle, sheep, poultry and grains at the fall fairs.

OPERATIONS AT HEATHERTON—FOUR-YEAR ROTATION

Field	Crop	Number years grown	Yield per acre		Cost per unit	
			1928	Average	1928	Average
					$	$
A	Turnips .....bush.	7	800	591.7	0 07	0 12
B	Oats and seeded .....bush.	7	40.5	50.1	0 62	0 49
C	Clover hay.....tons	6	3.20	2.43	5 54	8 06
D	Timothy hay.....tons	6	2.40	1.927	5 25	8 08

FERTILIZERS ON UNPRODUCTIVE LAND

A tract of land at the Heatherton station was considered by the operator as of little value, and would not form a good sod for pasture. In 1922 three acres of this area were ploughed and seeded to oats, which turned out a failure. The area was again ploughed and fertilized in different ways, two of the sections receiving phosphorous in some form. It could be plainly seen from the growing crop of that year, as well as of following years, that phosphorus was the limiting factor in crop production on this area.

In the fall of 1925, the land was again ploughed. Just before seeding, 10 tons of barnyard manure per acre were applied crosswise on one-half of each area. The various sections were then fertilized as shown in the table following. A good seed bed was established, and seeded to oats, with timothy, 8 pounds; common red clover, 5 pounds; and alsike clover, 5 pounds per acre. These plots again responded to applications of phosphorus to the extent of an increase of 32 bushels per acre over the unfertilized section. All plots carrying phosphoric acid in some form responded to this treatment. Manure alone, 20 tons (plot 11) produced only 22.5 bushels This yield can only be accounted for as being due to the lack of sufficient mineral elements in the manure. In 1927 all plots gave a profit above the cost of fertilizer, except plot 11, receiving 20 tons of manure.

The completion of the test in 1928 gave further interesting data on the handling of such soils. A survey of the table shows that 20 tons of manure per acre produced crops at a loss over a period of three years, while plot 10, with half the amount of manure and 1000 pounds of superphosphate, gave a gain of $73.65 after paying for the fertilizers. Plot 9, receiving manure, superphosphate and marl gave the largest profit in the test. Superphosphate alone gave a profit of $39.13 per acre.

FERTILIZERS ON UNPRODUCTIVE LAND

Plot	How fertilized per acre	Yield of oats, 1926	Yield of clover hay, 1927	Yield of timothy hay, 1928	Total value of product	Cost of fertilizer	Profit or loss (-) above cost of fertilizer
		bush.	tons	tons	$	$	$
1	Marl, 3 tons	22.6	1.04	0.64	34 61	6 00	28 61
2	Marl, 3 tons; Sydney slag, 1000 pounds	25.4	1.34	0.92	43 13	16 00	27 13
3	Marl, 3 tons; superphosphate, 1000 pounds	36.9	2.58	1.83	75 82	16 00	59 82
4	Superphosphate, 1000 pounds	39.0	1.06	1.00	49 13	10 00	39 13
5	Not fertilized	7.0	0.16	0.30	9 63	20 00	.....
6	Manure, 10 tons	17.7	0.78	1.22	33 84	.....	13 84
7	Marl, 3 tons; manure, 10 tons	32.9	1.98	1.52	62 32	26 00	36 32
8	Marl, 3 tons; Sydney slag 1000 pounds; manure, 10 tons	24.4	1.34	1.20	45 28	36 00	9 28
9	Marl, 3 tons: superphosphate, 1000 pounds; manure, 10 tons	57.4	4.32	3.64	129 87	36 00	93 87
10	Superphosphate, 1000 pounds; manure, 10 tons	41.1	3.58	3.03	103 55	30 00	73 65
11	Manure, 20 tons	22.5	0.88	1.16	37 65	40 00	— 2 35

KENNETCOOK, HANTS COUNTY

OPERATOR, WILLARD ETTINGER

The spring planting at this station is backward, due to the nature of the soil. This retards seeding operations greatly. This season all crops except oats gave a good yield. This crop suffered from the dry weather just before heading out.

The operator has made changes in farm practices in this district by showing the value of the fertilizer or combination of fertilizers best suited to this and the surrounding districts. For instance, by the addition of 300 pounds of superphosphate on a hoed crop that had been manured, the yield of turnips was increased by 180 bushels over that from the area receiving manure alone. It has also been demonstrated at this, as well as at the other stations, that lime and phosphoric acid greatly increase the yields of grain and hay crops.

OPERATIONS AT KENNETCOOK—FOUR-YEAR ROTATION

Field	Crop	Number years grown	Yield per acre		Cost per unit	
			1928	Average	1928	Average
					$	$
A	Turnips ..... bush.	2	874.0	947.0	0 08	0 06
B	Clover hay..... tons	5	2.5	1.60	7 10	8 49
C	Timothy hay..... tons	5	2.5	2.12	6 80	7 22
D	Oats and seeded..... bush.	7	37.6	40.3	0 67	0 71

MABOU, INVERNESS COUNTY

OPERATOR, EDWARD HAWLEY

Seeding operations were earlier than usual at this station, commencing May 9. All crops did fairly well and gave good yields. The operator has made marked improvements in this station since its inception in 1926. He was again successful in taking several prizes at the local exhibition this year.

OPERATIONS AT MABOU—FOUR-YEAR ROTATION

Field	Crop	Number years grown	Yield per acre		Cost per unit	
			1928	Average	1928	Average
					$	$
A	Clover hay..... tons	2	2.7	2.4	6 74	6 45
B	Oats and seeded..... bush.	3	40.3	37.7	0 63	0 79
C	Potatoes ..... bush.	1	190.0	.....	0 61	.....
C	Turnips ..... bush.	3	731.0	763.0	0 09	0 08
D	Timothy hay..... tons	1	2.41	.....	6 18	.....

MIDDLE MUSQUODOBOIT, HALIFAX COUNTY

OPERATOR, R. B. MCCURDY

Seeding was possible at this station June 3, this being earlier than usual on this type of soil. Very few heavy rains came during the growing season, although there was sufficient moisture. Field "B" suffered considerably from heavy rainfalls. The seed bed was well prepared, but when the oats were sown, heavy rains came and packed the soil. Field "C" was intended for a hoed crop, but the operator had the misfortune to lose his dairy herd, hence had no use this year for seed crops and sowed the field to oats. This field was sown ten days after field "B" and escaped the adverse conditions which affected field "B". The yield on this field was more than double that of field "B", namely, 52 bushels per acre.

This station, from present observations, shows splendid prospects for alfalfa growing on the interval land. There are large tracts of this interval land in this district. The soil is a light loam and has good drainage, differing greatly from the heavy upland areas which have rather poor drainage, the hard-pan being too near the surface. This and the surrounding districts are wholly devoted to dairying. Large quantities of mill feeds are bought in to feed the dairy herds. If alfalfa continues to do as well on other farms as at this station, progress will have been made towards solving their feed problems.

OPERATIONS AT MIDDLE MUSQUODOBOIT—FOUR-YEAR ROTATION

Field	Crop	Number years grown	Yield per acre		Cost per unit	
			1928	Average	1928	Average
					$	$
A	Clover hay.....tons	5	2.25	2.01	8 24	7 18
B	Oats and seeded.....bush.	5	25.0	32.6	0 88	0 80
C	Oats .....bush.	5	52.0	38.0	0 50	0 72
D	Timothy hay.....tons	6	2.0	2.11	7 46	6 88

MIDDLE RIVER, VICTORIA COUNTY

OPERATOR, FORBES MCDONALD

Seeding at this station was late, the first being done June 2. In spite of the very dry season, all crops did well. The grass land had plenty of moisture to carry it through and produce a good crop. Oats suffered most, so much so that the grain did not fill properly, consequently it was green and cured as hay.

The soil at this station responds readily to applications of limestone. The operator applied this material at the rate of 2 tons per acre in 1921. The section of the field on which it was applied has gone through two four-year rotation periods since then without a further application. The whole field otherwise has been treated in the same manner. The comparison this season between the limed and unlimed areas was so striking in the hay crop that the operator made duplicate weighings of the crops from the two areas. The limestone area gave 4200 pounds of cured hay, while the untreated area gave 3425 pounds.

OPERATIONS AT MIDDLE RIVER—FOUR-YEAR ROTATION

Field	Crop	Number years grown	Yield per acre		Cost per unit	
			1928	Average	1928	Average
					$	$
A	Timothy hay.....tons	6	1.52	2.16	8 53	7 21
B	Clover hay.....tons	6	2.90	2.48	6 00	7 48
C	Potatoes .....bush.	7	250	239.3	0 39	0 40
C	Turnips .....bush.	5	690	577	0 10	0 11
D	Oats (cured for hay).....tons	1	280	.....	11 67	.....

NEW GLASGOW, PICTOU COUNTY

Operator, George P. Fraser

Seeding was backward at this station, the soil not being fit to work until June 6. Growth was rapid until the dry weather came. The hoed crops were sown or planted with manure alone as a fertilizer. Neither the potato nor the turnip corp produced an average yield. If some commercial fertilizer had been used in conjunction with the manure, it is likely the operator would have obtained a much larger yield. The commercial fertilizers would have hastened the growth. The hay crop was good, the yields being 2.10 tons of clover and 1.90 tons of timothy hay per acre. The grain crop was light, due to dry weather. The second growth on all the clover fields was heavy. The newly seeded areas are good, with prospects for a good crop next year.

The alfalfa field sown in 1926 is in splendid shape except for a small area which was damaged by water seeping out of an old well. The operator harvested in two cuttings this season 5¾ tons of cured hay from 1¼ acres.

The operator was successful in taking many prizes at the county exhibition this season with horses, cattle and roots.

OPERATIONS AT NEW GLASGOW—FOUR-YEAR ROTATION

Field	Crop	Number years grown	Yield per acre		Cost per unit	
			1928	Average	1928	Average
					$	$
A	Potatoes .....bush	6	151.0	212.0	0 45	0 38
A	Turnips .....bush.	7	447.5	583.1	0 11	0 10
B	Clover hay.....tons	6	2.10	1.82	7 58	8 67
C	Timothy hay.....tons	6	1.90	1.60	8 25	7 85
D	Oats and seeded.....bush.	7	31.1	40.2	0 67	0 64

NEWPORT, HANTS COUNTY

Operator, Chas. Zwicker

Seeding at this station is usually late, due to the type of soil. The operator usually has time to do most of his work on interval lands before the regular rotation area is ready. All crops were good, as is always the case at this station. The operator is always well advanced with his work and never allows it to get ahead of him.

Field "D" gave a yield of 47 bushels per acre of oats. No doubt the yield would have been larger if the soil could have been prepared earlier.

OPERATIONS AT NEWPORT—FOUR-YEAR ROTATION

Field	Crop	Number years grown	Yield per acre		Cost per unit	
			1928	Average	1928	Average
					$	$
A	Clover hay.....tons	5	2.10	2.59	7 05	6 55
B	Timothy hay.....tons	6	2.0	2.09	6 40	6 21
C	Turnips .....bush.	6	884.0	849.0	0 12	0 09
D	Oats and seeded.....bush.	5	47.0	52.6	0 59	0 51

NORTH EAST MARGAREE, INVERNESS COUNTY

OPERATOR, TOM ROSS

The development at this station has been very marked and the crops show a record of exceptionally high yields. Seeding began on May 17, the land being naturally well drained. The yields of clover hay and timothy hay, it will be noticed, were very heavy, being 3.29 and 3.09 tons of cured hay per acre, respectively. The yield of oats was heavy, although the season was not very favourable. The potato crop consisted of certified Irish Cobblers, and yielded 434 bushels per acre.

The operator was again successful in taking a number of prizes at local shows with livestock, vegetables and grain.

OPERATIONS AT NORTH EAST MARGAREE—FOUR-YEAR ROTATION

Field	Crop	Number years grown	Yield per acre		Cost per unit	
			1928	Average	1928	Average
					$	$
A	Timothy hay.....tons	6	3.09	3.17	6 95	5 69
B	Oats and seeded.....bush.	7	54.5	53.8	0 61	0 54
C	Potatoes .....bush.	7	434.0	406.8	0 36	0 27
C	Turnips .....bush.	7	932.0	971.0	0 08	0 08
D	Clover hay.....tons	7	3.29	3.20	7 10	5 82

FERTILIZER APPLICATIONS TO BRING PASTURE AREAS INTO GRAIN AND HAY PRODUCTION

This test was started in 1923 at the Northeast Margaree station to find out the best means of bringing pasture lands under cultivation. There are large areas of such land, gravelly loam, in this and surrounding districts. One test was finished in 1925, and is reported on page 58 of the report for that year.

The land was ploughed late in the fall of 1925, and in spring the four original plots were fertilized as shown in the table below. It will be noticed that plot (1-b) receiving ground limestone and superphosphate, has given the greatest net return over the three-year period, plot (2-a) receiving slag, the next greatest profit and plot (2-b) receiving superphosphate, the next greatest. This seems to show fairly conclusively that lime and superphosphate are very important on soils of the type on which this test was conducted.

FERTILIZER APPLICATIONS AT NORTH EAST MARGAREE TO BRING PASTURE AREAS INTO GRAIN AND HAY PRODUCTION

Plot	How fertilized per acre, 1926	Yield per acre			Total value of product	Cost of fertilizer	Profit over cost of fertilizer
		Oats 1926	Clover hay, 1927	Timothy hay, 1928			
		bush.	tons	tons	$	$	$
1a	Ground limestone, 2 tons.	41.0	1.25	1.27	55 60	8 00	47 60
1b	Ground limestone, 2 tons, superphosphate, 1000 pounds	61.3	2.01	2.00	85 97	18 00	67 97
2a	Sydney slag, 1000 pounds.	52.1	1.40	1.75	69 56	10 00	59 56
2b	Superphosphate, 1000 pounds	53.2	1.02	1.50	62 84	10 00	52 84
3a	Manure, 16 tons	48.0	0.94	1.10	54 42	32 00	22 42
3b	Manure, 16 tons; ground limestone, 2 tons	48.0	1.05	1.50	59 85	40 00	19.85
4a	Not fertilized	40.0	0.62	0.65	40 56	.....	.....

SPRINGFIELD, ANNAPOLIS COUNTY

OPERATOR, MAYNARD GRIMM

This is a new station having started operations in the spring. Work of a preparatory nature has been carried on, aiming to establish a four-year rotation. Some work was started, however, outside of the rotation areas, with nitrogenous fertilizers on turnips after thinning, on potatoes after the plants were up, and on old meadows just after vegetation had started. The yields for these were as follows:

RESULTS FROM DIFFERENT APPLICATIONS OF FERTILIZER

Crop	Nitrate of soda 150 pounds per acre	Sulphate of ammonia 115 pounds per acre	No fertilizer
Turnips	1,064 bush.	880 bush.	629 bush.
Potatoes	398 bush.	340 bush.	326 bush.
Hay	2.90 tons	2.94 tons	2.63 tons

In this test the nitrogenous fertilizers gave an increased yield in all cases over the areas where no nitrogenous fertilizer was used. The plots not treated with such fertilizers received the usual application of manure and also some superphosphate, and, as may be seen from the yields, were well fertilized.

A test of commercial fertilizer and manure applied to potatoes was also conducted at this station on one-quarter acre areas. The yields obtained were as follows: —

POTATOES—RESULTS FROM DIFFERENT APPLICATIONS OF FERTILIZER

Plot	How fertilized per acre	Yield per acre
		bush.
1	Manure, 20 tons per acre	246
2	Manure, 10 tons; 4-8-4 fertilizer, 750 pounds	326
3	4-8-4 fertilizer, 1500 pounds	335
4	Not fertilized	152

Another test was started, using limestone, superphosphate and slag on a three-year rotation. The area chosen for this work was in a fair state of fertility. The area was sown with oats and seeded with grass seed. The growth was very heavy, but it was impossible to obtain accurate yields on account of a rainstorm the latter part of September. The catch of grass was good. The yields of clover hay and timothy hay will be recorded in 1929 and 1930.

SYDNEY RIVER, CAPE BRETON COUNTY

OPERATOR, MELVIN P. MORESHEAD

Seeding operations started at this station on May 16. The oats and seeded area promised a satisfactory yield, but the dry weather at the time of heading, reduced the yield to 40.5 bushels per acre. The clover hay crop, being eighty per cent common red clover, gave a yield of 3.5 tons of cured hay per acre. Field "D" was too wet to sow or plant to a hoed crop, due to a small brook running through the corner of the field. The seepage makes this field slow in drying. The operator was successful in taking many prizes at the fall fairs with fruit, vegetables and cattle.

The results from the rotation areas were as given below:—

OPERATIONS AT SYDNEY RIVER—FOUR-YEAR ROTATION

Field	Crop	Number years grown	Yield per acre		Cost per unit	
			1928	Average	1928	Average
					$	$
A	Timothy hay....tons	7	1.70	2.89	9 85	6 62
B	Oats and seeded....bush.	7	40.5	40.4	0 55	0 63
C	Clover hay....tons	7	3.5	2.74	6 12	6 62
D	Oat hay....tons	1	2.8	.....	10 13	.....

TATAMAGOUCHE, COLCHESTER COUNTY

OPERATOR, G. B. CLARK

Seeding was started at this station May 20, and growth was fairly continuous throughout the season. The oats and seeded areas were fairly good on field "A", giving a yield of 42.5 bushels per acre. The hay crops were extra good, clover hay giving a yield of 3 tons, and timothy 2.5 tons per acre. The turnip crop was the lightest the operator has had for years; the crop was very uniform in size but did not develop sufficiently to give the usual yield. Fields "E" and "F" are two fields where a three-year rotation is being conducted. These two

fields are flat and lacking in drainage, and were in a very low state of cultivation. A short rotation including clovers combined with light applications of commercial fertilizer has had a marked improvement on crop yields.

OPERATIONS AT TATAMAGOUCHE—FOUR-YEAR ROTATION

Field	Crop	Number years grown	Yield per acre		Cost per unit	
			1928	Average	1928	Average
					$	$
A	Oats and seeded.....bush.	6	42.5	43.6	0 66	0 52
B	Timothy hay.....tons	7	2.5	2.26	6 10	6 42
C	Potatoes .....bush.	5	160.0	203.2	0 58	0 52
C	Turnips .....bush.	6	650.0	762.7	0 10	0 08
D	Clover hay.....tons	6	3.0	2.57	6 54	7 51
E	Oats and seeded.....bush	6	26.0	40.8	0 79	0 54
F	Timothy hay.....tons	7	1.60	2.13	8 56	6 77

UPPER STEWIACKE, COLCHESTER COUNTY

OPERATOR, H. P. COX

This is the first year that work has been under way at this station. It is located on a well travelled road from Upper Stewiacke to Stewarts. It was impossible to fully establish the regular four-year rotation this season, however the necessary preparatory work has been accompished so that the regular rotation will be started next season. Some work was commenced, however, outside of the regular rotation areas, with nitrogenous fertilizers, also with limestone, superphosphate and slags. The nitrogenous fertilizers were applied broadcast to oats, turnips and potatoes after they were up. The yields from this test were as follows: —

RESULTS FROM DIFFERENT APPLICATIONS OF FERTILIZER

Crop	Nitrate of soda, 150 pounds per acre	Sulphate of ammonia, 115 pounds per acre	Not fertilized
Turnips	1,253 bush.	928 bush.	1,009 bush.
Oats	37.8 bush.	30.6 bush.	30.6 bush.
Hay	5,544 pounds	5,544 pounds	3,542 pounds

It will be seen from the above results that nitrate of soda has given as good and in some cases better results than sulphate of ammonia. The hay yields were the same on these two plots.

A demonstration was also started comparing manure, manure and fertilizers, and fertilizers alone, when applied to the potato crop. The yields from this test were as follows: —

POTATOES—RESULTS FROM DIFFERENT APPLICATIONS OF FERTILIZER

Plot	How fertilized per acre	Yield per acre
		bush.
1	Manure, 20 tons	280
2	Manure, 10 tons; 4-8-4 fertilizer, 750 pounds	348
3	4-8-4 fertilizer, 1500 pounds	386
4	Not fertilized	183

It will be noted that plot 3, when fertilizer was used alone, gave the best yields. The potatoes were also more uniform.

Another test was commenced on a three-year rotation, using limestone, superphosphate, and slag. The soil was well prepared, and the fertilizers applied broadcast and harrowed in. The oats were then sown, together with the grass seed mixture, when a light levelling harrow was used. The rate of applying the fertilizers and the yields obtained were as follows: —

OATS—RESULTS FROM DIFFERENT APPLICATIONS OF FERTILIZER

Plot	How fertilized per acre	Yield per acre
		bush.
1	Limestone, 2 tons	35.5
2	Limestone, 2 tons; superphosphate, 800 pounds	33.1
3	Superphosphate, 800 pounds	37.0
4	Belgian slag, 800 pounds	30.0
5	Not fertilized	28.0

The grain on plot 2 lodged quite badly, lessening the yield. Plot 3, superphosphate, gave the largest yield. Plot 4, slag, gave a smaller yield than limestone alone. In plot 1, the whole area shows a very uniform stand of clover. From this area two crops of hay will be taken before the test is completed.

REPORT OF THE ILLUSTRATION STATIONS FOR PRINCE EDWARD ISLAND.

R. C. Parent, M.S.A., Supervisor.

THE STATIONS

Twelve stations are now in operation in Prince Edward Island, and are located at the following places: Palmer Road, Glenwood, West Devon, Richmond, New London, Rose Valley, Rustico, St. Peters, Red Point, Montague, Wood Islands, and Iona.

THE OPERATORS

The twelve operators of Illustration Stations for Prince Edward Island must be given credit for their assistance in the preparation of this report. The work on the stations was carefully recorded, instructions followed to the letter, and willing assistance given in obtaining yields. All operators are leaders in their respective neighbourhoods and are always ready to lend a helping hand where needed.

SUMMARY OF SEASON'S WORK

1. Twelve stations, including 120 acres of land, are now under Illustration Station work in Prince Edward Island. Besides the above areas in the stations proper, 120 plots of varying sizes were devoted to fertilizer tests during the past season.

2. Three of the operators purchased pure-bred bulls during 1928.

3. Poultry on the stations is gradually improving. Two operators have pens in the local egg laying contest.

4. Clover was winter-killed badly, and was therefore scarce; however timothy made very excellent growth, and was harvested in first class shape.

5. Average yields and costs for 1928 are as follows: —

	Yield per acre	Cost per unit housed.
Potatoes	351.8 bushels	$ 0 20 per bushel
Turnips	25.27 tons	2 33 per ton
Corn	14.92 tons	3 19 per ton
Sunflowers	21.06 tons	2 35 per ton
Oats	42.6 bushels	0 64 per bushel
Timothy	1.55 tons	11 74 per ton
Clover	1.40 tons	14 61 per ton

6. Our experiments during the past years have shown that commercial fertilizer can be profitably applied to potatoes, corn, turnips and timothy.

7. Ten field days were held during the growing season, with a total attendance of approximately 800.

8. Twelve winter meetings were held in the Illustration Station districts, with an average attendance of 60 people.

SEASONAL NOTES

Fall ploughing in 1927 continued up until the first of December, and was well completed. Considerable snow fell during the winter, especially during the months of January and February, but occasional rains left the land bare several times during the winter and early spring. Clover winter-killed badly excepting around the fences where the snow lay continuously during the winter and early spring. Rainfall was below the average during the months of May and June, and thus seeding was earlier than last year. General seeding dates were as follows: Wheat, May 16; oats, May 18; potatoes, June 1; turnips, corn and sunflowers, June 8. Haymaking started early and was completed before the adverse weather conditions set in which so retarded progress in the other Maritime Provinces. Timothy was an average crop, but clover was scarce. Oats gave a yield of nearly 10 bushels more per acre than last year, and there was no serious lodging to hamper harvesting operations. Yields of corn and potatoes were smaller than in 1927, while turnip yields were considerably greater. All crops were harvested under favourable weather conditions. Fall ploughing was well completed when snow and frost came during the last week of November. The ground during December was bare.

PRECIPITATION AT THE ILLUSTRATION STATIONS IN P.E. ISLAND, 1928.

Month.	Palmer Road.	West Devon.	Richmond	Rose Valley.	Saint Peters.	Red Point.	Wood Islands.	Iona.	Ch'town 1928.	Ch'town 28-yr. Average.
	in.	in.	in.	in.	in.	in.	in.	in.	in.	in.
Jan....	2.25	4.33	3.80	3.08	6.10	2.15	2.87	3.93	5.76	3.72
Feb.....	0.29	1.19	1.35	1.87	2.70	1.73	2.37	2.09	3.79	3.06
Mch....	1.95	1.29	1.86	2.35	1.94	1.45	2.23	2.17	3.80	3.53
Apr....	2.68	1.36	1.99	1.94	1.98	2.32	2.29	3.17	2.48	3.01
May....	3.91	3.49	3.08	3.12	2.16	3.04	2.93	2.62	2.40	2.61
June...	3.82	3.53	3.25	3.35	1.89	2.26	3.07	2.49	2.82	2.80
July....	2.73	3.78	3.36	3.22	2.25	3.19	3.94	4.29	3.48	2.85
Aug....	1.61	2.33	3.33	4.12	2.51	3.90	2.72	2.94	3.88	3.26
Sept....	2.82	3.44	3.87	3.85	3.02	3.33	3.84	4.38	4.39	3.68
Oct.....	3.22	2.21	2.47	3.87	3.35	4.41	3.58	3.34	2.49	4.04
Nov....	2.31	2.30	2.70	2.69	1.95	2.13	2.57	1.70	3.89	3.90
Dec....	2.60	4.09	1.78	4.47	2.94	4.15	4.52	5.36	5.17	4.83
Total...	30.19	33.34	32.84	37.93	32.79	34.06	36.93	38.58	44.35	41.29

Oat fileds on the Illustration Station at Rustico, P.E.I., and neighbouring farms.

GENERAL CONDITIONS THROUGHOUT THE PROVINCE FOR 1928

The year 1928 cannot be considered quite as prosperous for the farmer and for the general public as was 1927. The low price of potatoes in the fall of 1928 is largely responsible for this condition. Farmers were not able to meet their obligations with ease and this naturally depressed business somewhat. In many other respects the year 1928 was above average; the spring opened early, there were no damaging frosts, rains or windstorms, roads were better than previously and there was a splendid tourist trade. Yields of grain, turnips, corn and timothy were considerably above average, while clover was scarce due to much winter-killing. The yield per acre of potatoes was less than last year, but this was offset by the extra acreage.

Live stock producers had a particularly satisfactory year in 1928. According to the Dairy Superintendent the output of butter and cheese was greater in 1928

than in any previous year, and the quality was better. Beef brought the highest price since 1918, and lambs reached a higher price than has been recorded for Prince Edward Island. Many quality dairy cattle have been shipped out of the province, so many in fact that dairymen are being cautioned to keep up their production and not sell all their best. Twenty-five per cent more wool was graded and sold co-operatively than in 1927; likewise the shipping clubs, the Co-operative Egg and Poultry Association and the Potato Growers' Association all report increases in business transacted.

The outlook for 1929 is promising, and a spirit of optimism is everywhere apparent.

CROP ROTATION FOLLOWED AND METHODS OF FERTILIZING

On all stations with one exception the four-year crop rotation is used as follows: First year, hoed crop, potatoes, turnips and corn; 2nd year, grain seeded down with clover; 3rd year, clover; 4th year, timothy. For the hoed crop the timothy sod is ploughed shallow as soon as possible after the hay is cut, top-worked throughout the season and reploughed in late autumn. The hoed crop receives about 12 tons of barnyard manure per acre, supplemented with commercial fertilizer, which in 1928 was as follows: For potatoes, 1200 pounds of a 4-8-8 chemical mixture, for turnips, 1100 pounds of a 4-8-4 chemical mixture, and for corn and sunflowers 900 pounds of a 3-8-8 chemical mixture. Timothy also receives 125 pounds of nitrate of soda in early spring. The use of the above amounts of manure and fertilizer, together with high quality seed and good cultural practices, has enabled the operators to obtain the excellent yields noted in the summary and in the detailed accounts of each station.

All operators have been careful to treat their seed grain and potatoes, and to spray according to the most approved methods. Attention to these matters has invariably been profitable. Nor has commercial fertilizer been used without thought to its profitability. Across all fields where commercial fertilizer is applied a check plot is left, which receives none. Yields are taken from this area and compared with those from the regular field, and the value of fertilizer ascertained. The use of ground limestone is also being tested in a similar manner.

OBTAINING YIELDS

The yields of all crops, with the exception of grain, are obtained by measuring and weighing the crop from small representative areas of a definite size at various places throughout the fields. Samples for dry matter determinations were taken from the hay fields and yields calculated on an 88 per cent dry matter basis. Samples for dry matter determination were also taken from corn, turnips and sumflowers. In all, 86 samples were obtained. Potatoes were graded into marketable and unmarketable. To insure uniformity and greater accuracy, practically all samples and weights were taken by the Supervisor.

LIVE STOCK

Live stock has shown steady improvement this year. The operators weighed the milk from their cows at least three days per month; three operators daily. One hundred milk samples were tested by the Supervisor and considerable difference found in the per cent butter fat. Emphasis is also given to feeding. It is planned to continue the keeping of these records for a period of years, and thus effect some needed weeding out in the herds. Sylven Peters, Palmer Road, pur-

chased the Ayrshire bull Charlottetown Supreme 7th, 111430, and Alexander Matheson, Wood Islands, the Ayrshire bull Charlottetown Supreme 14th, 122567. Both bulls are from good dams, and go into herds and districts where live stock improvement is sorely needed.

GARDENS AND THE BEAUTIFICATION OF THE HOME SURROUNDINGS

Every operator of an Illustration Station in Prince Edward Island had, in 1928, a garden fully 50 per cent better than last year. This improvement was partly due to the excellent collection of seeds sent by the Illustration Station Division, Ottawa, and partly to a little thought in the arrangement and care of the gardens. At most of the stations a perennial border was started on a small scale. It is planned to extend and improve these borders until they contain a collection of the best perennials suited to this province.

SALES OF SEED AND LIVE STOCK FOR BREEDING PURPOSES

During the past season the operators of the Illustration Stations have again supplied seed and breeding stock of superior quality to those who wished them. In addition to the ordinary sales the following quantities were sold by them:—

Oats for seed	608	bushels
Wheat for seed	25	"
Barley for seed	31	"
Timothy for seed	488	pounds
Potatoes for seed	3,436	bushels
Heifers and bulls for breeding purposes	9	
Eggs for hatching	130	dozen
Cockerels	31	
Pullets	14	

PALMER ROAD, NORTH PRINCE COUNTY

OPERATOR, SYLVEN PETERS

This is the second year that this station has been in operation, and, as in 1927, excellent crops were grown. Alaska oats were seeded May 22, and potatoes planted June 11.

OPERATIONS AT PALMER ROAD—FOUR-YEAR ROTATION

Field	Crop	No. of years grown	Yield per acre		Cost per unit	
			1928	Average	1928	Average
					$	$
A	Alaska oats....bush.	2	30.9	31.1	0 76	0 74
B	Turnips....tons	2	28.38	27.06	1 61	1 68
B	Potatoes....bush.	1	392.0	392.0	0 13	0 13
B	Corn....tons	2	19.01	19.0	1 78	1 78
B	Sunflowers....tons	2	27.46	27.33	1 22	1 22
C	Timothy....tons	1	0.75	0.75	17 04	17 04
D	Clover....tons	1	1.59	1.59	6 57	6 57

The Field Day held August 18 was well attended by the neighbouring farmers who showed appreciation of the work being carried on. Mr. McKenzie, operator of the Illustration Station at Rose Valley, assisted in the program for the day. The operator at Palmer Road has also shown his progressiveness by purchasing the Ayrshire bull Charlottetown Supreme 7th, and we are expecting that much improvement will be made within the next few years, in the live stock industry of this neighbourhood.

GLENWOOD, WEST PRINCE COUNTY

OPERATOR, ALFRED GORRILL

The new station at Glenwood is ideally situated, as it occupies a corner formed by two main public highways. The check plot, showing differences in yields with and without commercial fertilizer, can readily be seen while driving along the road leading to West Cape. The field is low-lying and spring seeding was somewhat backward in 1928; nevertheless creditable yields were obtained from all crops. The effect of the nitrate of soda on the timothy perhaps attracted the greatest amount of attention.

OPERATIONS AT GLENWOOD—FOUR-YEAR ROTATION

Field	Crop.	Yield per acre 1928	Cost per unit 1928
			$
A	Potatoes ..... bush.	278.90	0 23
A	Turnips ..... tons	23.65	2 37
A	Corn ..... tons	14.21	3 53
A	Sunflowers ..... tons	18.06	2 77
B	Timothy ..... tons	1.69	6 92
C	Clover ..... tons	1.42	6 39
D	Barley ..... bush.	31.50	0 57

Like others in the vicinity of Glenwood, the operator takes pride in raising a large flock of turkeys each year. No Field Day was held during the summer at this station, but the winter meeting, held in March, was one of the best attended in the province.

WEST DEVON, WEST PRINCE COUNTY

OPERATOR, CEPHAS GRIGG

Yields of grain and root crops at West Devon were greater than in previous years, but, owing to the clover being so badly winter-killed, this crop was very much below the average. Seeding of grain was possible May 21 and potatoes and corn were planted June 4 and 22 respectively.

OPERATIONS AT WEST DEVON—FOUR-YEAR ROTATION

Field	Crop	No. of years grown	Yield per acre		Cost per unit	
			1928	Average	1928	Average
					$	$
A	Alaska oats ..... bush.	2	31.1	28.9	0 98	0 98
B	Potatoes ..... bush.	6	370.6	323.2	0 20	0 25
B	Turnips ..... tons	6	22.95	19.82	2 25	2 83
B	Corn ..... tons	5	17.20	13.28	2 95	3 63
B	Sunflowers ..... tons	5	21.85	19.72	2 31	2 59
C	Timothy ..... tons	4	1.68	2.12	10 23	8 36
D	Clover ..... tons	5	0.81	1.82	20 29	12 45

The winter meeting at West Devon was well attended, but at the field day only a few were present, besides the six western operators. One outstanding feature of this station during the past year was its freedom from weeds, it was perhaps the cleanest of all Prince Edward Island stations. This is a worthy feature, as Mr. Grigg is our oldest operator.

RICHMOND-CENTRAL, PRINCE COUNTY

OPERATOR, THOMAS NOONAN

Work on the land was first begun at Richmond on May 8. More attention was given to the preparation of the seed bed and to the general care of the growing crop than in previous years. The result was increased yields in all root crops. Wheat was sown May 18, and potatoes planted June 8.

OPERATIONS AT RICHMOND—FOUR-YEAR ROTATION

Field	Crop	No. of years grown	Yield per acre		Cost per unit	
			1928	Average	1928	Average
					$	$
A	Potatoes, I. Cobblers.....bush.	5	345.6	260.8	0 20	0 35
A	Turnips .....tons	5	28.30	20.60	2 74	4 05
A	Corn .....tons	5	17.13	17.11	3 18	3 68
A	Sunflowers .....tons	4	32.85	22.64	1 66	2 71
B	Timothy .....tons	2	1.94	1.87	10 98	11 77
C	Clover .....tons	4	1.73	1.88	14 65	11 27
D	Wheat .....bush.	4	18.3	20.2	1 75	1 80

Both the winter meeting and the field day were well attended. Improvements have been made on the house during the past year, and the hen house was remodelled.

NEW LONDON, NORTHWEST QUEENS COUNTY

OPERATOR, WILLIAM E. JOHNSTONE

The Illustration Station at New London was started in the spring of 1928, and like the new station at Glenwood, is situated in a corner made by two highways. This enables passers-by to obtain a better view of the crops, and to study the check plots. No ploughing was done in the fall of 1927, and thus the land for the root and grain crops had to be fully prepared in the spring. The fields were also infested with couch grass, which further retarded preparation and made it more difficult. Oats and barley were not sown until June 4. Notwithstanding these difficulties, creditable yields from all crops were obtained.

OPERATIONS AT NEW LONDON—FIVE-YEAR ROTATION.

Field	Crop.	Yield per acre 1928	Cost per unit 1928
			$
A	Clover .....tons	1.21	11 60
B	Timothy .....tons	1.21	11 60
C	Barley Ch'town No. 80 .....bush.	19.9	0 99
D	Potatoes .....bush.	341.0	0 20
D	Turnips .....tons	20.11	2 42
D	Corn .....tons	17.90	3 38
E	Banner oats .....bush.	31.4	0 63

The winter meeting at New London was well attended. No field day was held during the growing season; however, the operator was given an opportunity to be present at a number of field days held on the western stations.

ROSE VALLEY — WEST QUEENS COUNTY

OPERATOR, MALCOLM MCKENZIE

The yields of all crops at Rose Valley with the exception of sunflowers were greater in 1928 than the average of previous years. Clover was especially good in a year when practically every field in Prince Edward Island was winter killed. The yield of potatoes was unnsually high for 1928, and the tubers were of a high quality. Four hundred and thirty-two bushels per acre were marketable, while only 27 bushels were unmarketable. The effect of the nitrate of soda on timothy was perhaps the most clear cut demonstration on the station.

OPERATIONS AT ROSE VALLEY—FOUR-YEAR ROTATION.

Field	Crop	No. of years grown	Yield per acre		Cost per unit	
			1928	Average	1928	Average
					$	$
A	Oats ..... bush.	2	46.3	37.6	0 71	0 58
B	Potatoes ..... bush.	6	459.8	331.0	0 14	0 23
B	Turnips ..... tons	6	23.63	18.69	2 39	2 92
B	Corn ..... tons	6	18.56	18.44	3 07	2 74
B	Sunflowers ..... tons	5	19.80	20.90	2 90	2 43
C	Timothy ..... tons	4	1.99	1.67	9 74	10 93
D	Clover ..... tons	5	2.08	2.06	10 57	9 93

The winter meeting and the field day at Rose Valley were both satisfactory.

An experiment comparing manure and commercial fertilizer for potatoes was started at this station, and the results are given in the following table:—

MANURE VS. COMMERCIAL FERTILIZER FOR POTATOES.

Plot No.	Treatment.	Bushels per acre	
		Marketable	Unmarketable
1	20 tons barnyard manure	29.0	70.1
2	10 tons barnyard manure and 750 pounds 4-8-8 commercial fertilizer	123.7	107.2
3	1500 pounds 4-8-8 commercial fertilizer	264.0	59.8
4	Check—No manure and no fertilizer.....	8.2	33.0

The low yields obtained from the plots receiving barnyard manure can be explained as follows: The manure was not applied until a few days before the potatoes were planted, and contained considerable undecayed straw. Records of crops on these same fields will be kept in succeeding years, and the experiment again tried in 1929 with the manure applied in the fall.

Fourteen tons of ground limestone were used by the operator on his farm during the year.

RUSTICO — NORTH QUEENS COUNTY

OPERATOR, JOHN L. CLARK

Work on the land at Rustico was possible May 7, and the operator was able to seed oats May 16, and plant potatoes June 1. The yields of all crops, with the exception of clover, were considerably higher than the average of preceding years. One acre of timothy was saved for seed. Both the winter meeting and the field day were largely attented and proved very successful.

OPERATIONS AT RUSTICO—FOUR-YEAR ROTATION.

Field	Crop	No. of years grown	Yield per acre		Cost per unit	
			1928	Average	1928	Average
					$	$
A	Potatoes .....bush.	3	408.0	395.3	0 18	0 19
A	Turnips .....tons	5	30.60	22.62	1 50	2 36
B	Timothy .....tons	3	2.27	2.07	7 50	8 17
C	Clover .....tons	4	2.14	2.18	7 86	7 90
D	Banner oats.....bush.	2	59.0	54.8	0 52	0 43

The pure-bred herd of Holstein at this station continues to produce well but has never been pushed for production.

The following is the production of the five pure-breds during their last lactation period:—

No. 1—11,788 pounds milk and 402.02 pounds butter fat.
No. 3—11,752 pounds milk and 383.6 pounds butter fat.
No. 4— 8,132 pounds milk and 288.4 pounds butter fat.
No. 5—10,812 pounds milk and 367.7 pounds butter fat.
No. 6—10,090 pounds milk and 334.3 pounds butter fat.

ST. PETERS—EAST KINGS COUNTY

OPERATOR, CLIFFORD MCEWEN

Work on the land started May 7. Oats were sown May 17, and potatoes planted June 9. Very good growth was made by all crops throughout the season. and harvest found the yields of oats, turnips, potatoes and timothy well above the average. Timothy which received an application of nitrate of soda was much cleaner than that which received no application, and gave an extra yield of one-half ton per acre. This field was also much better for seed production.

OPERATIONS AT ST. PETERS—FOUR-YEAR ROTATION.

Field	Crop	No. of years grown	Yield per acre		Cost per unit	
			1928	Average	1928	Average
					$	$
A	Banner oats.....bush.	4	60.0	56.1	0 55	0 51
B	Potatoes .....bush.	6	351.5	343.2	0 19	0 22
B	Turnips .....tons	5	33.84	22.21	1 68	2 52
B	Corn .....tons	6	16.80	14.18	2 29	3 86
B	Sunflowers .....tons	5	18.24	24.97	2 10	2 44
C	Timothy .....tons	4	2.24	1.91	9 95	9.38
D	Clover .....tons	5	1.46	2.09	13 28	11 70

Both the winter meeting and the field day were well attended. The field day was held between 4 and 6 p.m., which proved a very satisfactory hour.

RED POINT — EAST KINGS COUNTY

OPERATOR, NELSON R. STEWART

Two years of satisfactory work have been completed at Red Point. Grain was sown May 16, and potatoes planted June 8. Banner and Alaska oats were compared, and while Banner gave a larger yield by six bushels, there was no difference in pounds of meal as Banner contains 30 per cent hull and Alaska only 23 per cent. Across fields "A" and "B" a strip of lime was sown in the spring of 1928 at the rate of one ton per acre. Here the increased yield in the wheat and the extra growth of clover was outstanding. On the potato crop the yield was 60 bushels more on the area which had received lime.

OPERATIONS AT RED POINT—FOUR-YEAR ROTATION.

Field	Crop	No. of years grown	Yield per acre		Cost per unit	
			1928	Average	1928	Average
					$	
A	Huron wheat.....bush.	1	11.5	11.5	2 98	2 98
B	Potatoes .....bush.	2	381.7	381.3	0 16	0 19
B	Turnips .....tons	2	21.28	17.64	2 26	2 05
B	Corn .....tons	2	10.89	10.19	3 38	4 01
B	Sunflowers .....tons	2	22.02	21.66	1 91	2 15
C	Banner oats.....bush.	1	46.0	46.0	0 37	0 37
D	Alaska oats.....bush.	2	40.0	34.7	0 43	0 56

Both the field day and the winter meeting at Red Point were well attended. Improvement in the general work of the farm during the past year has been considerable. Ten tons of ground limestone were bought and sown on fields which needed it. In the neighbourhood 200 tons of ground limestone were used during the past season. The operator has also made improvements in the home and home surroundings.

MONTAGUE — WEST KINGS COUNTY

OPERATOR, FRED MCINTYRE

Work on the land started early at Montague; Banner oats were sown May 22 and potatoes planted May 24. All crops made good growth throughout the season with the exception of clover, which had been badly winter-killed. An experiment comparing manure and fertilizer for the potato crop was also tried at Montague with the following results: An application of 20 tons manure gave a yield of 233 bushels of potatoes; 1500 pounds of a 4-8-8 commercial fertilizer gave a yield of 277 bushels, and an application of 10 tons manure and 750 pounds of a 4-8-8 mixture resulted in a yield of 210 bushels, while the check plot produced 39 bushels.

OPERATIONS AT MONTAGUE—FOUR-YEAR ROTATION.

Field	Crop	No. of years grown	Yield per acre		Cost per unit	
			1928	Average	1928	Average
					$	$
A	Banner oats.....bush.	6	58.0	45.2	0 51	0 55
B	Potatoes .....bush.	6	377.9	372.7	0 21	0 21
B	Turnips .....tons	6	28.78	29.60	2 16	1 93
B	Corn .....tons	6	20.86	18.44	2 21	2 91
B	Sunflowers .....tons	6	24.00	20.63	1 92	2 54
C	Timothy .....tons	3	1.85	2.21	6 66	7 12
D	Clover .....tons	4	1.10	1.68	19 15	14 44

This experiment will be treated similarly to the same experiment at Rose Valley and repeated in 1929.

Owing to the very bad condition of the roads at the time when the winter meeting was held, the attendance was small, but the field day surpassed all previous gatherings of this nature. Between 400 and 500 were present.

WOOD ISLANDS — SOUTH QUEENS COUNTY

Operator, Alexander Matheson

The year 1928 was not quite so satisfactory as was 1927 for crops on the station at Wood Islands. Yields, however, were gratifying for such a light, sandy field, and the increased yield due to the use of commercial fertilizer on the hoed crops was great. An application of 1200 pounds of a 4-8-8 mixture gave a yield of 165 bushels of marketable potatoes per acre over that of the check, while 1100 pounds of 4-8-4 mixture increased the turnip yield by 9.73 tons per acre.

OPERATIONS AT WOOD ISLANDS—FOUR-YEAR ROTATION.

Field	Crop	No. of years grown	Yield per acre		Cost per unit	
			1928	Average	1928	Average
					$	$
A	Barley .....bush.	1	Failure	.....	.....	.....
B	Potatoes .....bush.	2	238.2	280.1	0 36	0 33
B	Turnips .....tons	2	15.78	15.04	4 86	4 14
B	Corn .....tons	2	8.17	9.09	5 61	5 31
B	Sunflowers .....tons	2	12.56	16.23	3 64	3.06
C	Banner oats.....bush.	2	24.0	27.6	0 65	0 67
D	Timothy .....tons	1	0.50	0.50	24.00	24 00

In the spring of 1928 the operator built a lime kiln for the purpose of burning seven tons of stone lime. Eight cords of fine hard wood were used in the building of this kiln and a great deal of hard labour expended. When a record was kept of the materials used and the labour employed, it was found that the burning of the stone lime by the use of wood had little to recommend it, and unless plenty of surplus wood was on hand, it was a wasteful proposition.

A field day as well as a winter meeting was held at Wood Islands during the past year. Both were well attended. In November, 1928, Mr. Matheson purchased the Ayrshire bull calf Charlottetown Supreme 14.

IONA — SOUTHERN QUEENS COUNTY

OPERATOR, JAMES E. DALY

Work on the land started early at Iona. Wheat was sown May 16 and potatoes planted May 22. While the yield of potatoes was not quite so high as the average for previous years, the yields of turnips, corn and sunflowers were considerably above the average. On the Early Red Fife, 100 pounds of sulphate of ammonia were applied to one acre, and 125 pounds nitrate of soda to another acre. The following yields were obtained; with ammonia, 13 bushels, and with soda 17 bushels. The check plot gave only 9 bushels.

OPERATIONS AT IONA—FOUR-YEAR ROTATION.

Field	Crop	No. of years grown	Yield per acre		Cost per unit	
			1928	Average	1928	Average
					$	$
A	Wheat ..... bush	3	15.0	10.2	2 09	2 65
B	Potatoes, Gr. Mts. ..... bush.	6	276.1	287.3	0 21	0 25
B	Turnips ..... tons	6	25.98	21.0	1 69	2 23
B	Corn ..... tons	6	13.36	11.24	3 16	5 02
B	Sunflowers ..... tons	6	13.73	12.19	3 07	3 83
C	Timothy ..... tons	3	0.93	0.80	14 55	16 62
D	Clover ..... tons	4	0.42	0.60	35 78	28 31

The grade Guernsey herd at this station is making steady improvement, and this year's heifer calves are an especially fine lot.

For a number of years the division has been striving to get alfalfa established on the station, and some fair stands have been obtained. In the spring of 1928 eight farmers in the neighbourhood received seven pounds of alfalfa seed each to add to their regular grass mixture for one acre. Some good stands were obtained, but the spring of 1929 will show how well it can be expected to stand the winter.

During the past year the operator has made improvements on his house and has built a new brooder house.

FIELD DAYS ON THE ILLUSTRATION STATIONS

By a Field Day is meant a general gathering of the neighbours in the vicinity of the Illustration Station on an appointed day during the growing season. So popular have they become that the gatherings consist of women and children as well as men; and besides farmers include business men from the nearest towns and villages. Field Days serve a number of purposes:

In the first place they bring the neighbours together, and in the second place they provide an opportunity for showing to those present the benefits of improved cultural practices and the use of good seed, and also the various results obtained with the different treatments of barnyard manure and the different commercial fertilizers.

Ten field days were held during the past summer, with a total attendance of approximately 800. The various crops and treatments were shown and explained to all. At the majority of places the gardens and the flowers attracted considerable attention, and many questions were asked regarding these phases of farm life. At West Devon and Richmond six of the operators were present. This enabled them to discuss problems of station work among themselves and to see what the others were doing. At Rustico a judging competition caused considerable excitement, and the local Women's Institute prepared an afternoon tea which was much enjoyed by all. On September 1, a field day was held at Iona,

and after the regular topics were handled the meeting was addressed by members of the Government and Canadian National Railway, as well as farmers in the district, and some of the transportation problems discussed. The field day held at Montague was the largest ever held in Prince Edward Island. Besides the general items of interest, four different potato diggers were demonstrated by their salesmen, and attracted a great deal of interest. At all field days valuable assistance was given by members of the Plant Pathology Department.

NITRATE OF SODA ON TIMOTHY HAY

The practice of sowing nitrate of soda in early spring on the timothy sod was again carried out this year. One hundred and twenty-five pounds per acre were sown. In 1927 an average of 119 pounds of soda costing $3.23 gave an increase in yield of eight-tenths of a ton per acre. The following table gives the yields obtained from the use of 125 pounds of nitrate of soda per acre, costing $2.70, compared with a check plot which received no fertilizer.

RESULTS OF APPLYING NITRATE OF SODA TO OLD MEADOWS

Station	Pounds applied	Yield of hay in tons per acre		
		With fertilizer	Without fertilizer	Increase due to use of fertilizer
		tons	tons	tons
Palmer Road	125	0.75	0.50	0.25
Glenwood	125	1.47	0.64	0.83
West Devon	125	1.68	1.02	0.66
Richmond	125	1.94	1.15	0.79
New London	125	2.33	1.44	0.89
Rose Valley	125	2.07	0.78	1.29
Rustico	125	2.27	1.47	0.80
St. Peters	125	2.24	1.70	0.54
Montague	125	1.76	0.90	0.86
Iona	125	0.93	0.24	0.69
Total	12.50	17.44	9.84	7.60
Average	125	1.74	0.98	0.76

On six of the Illusrtation Stations 125 pounds of nitrate of soda carrying 20 pounds of nitrogen were compared with 100 pounds of sulphate of ammonia carrying the same amount of the fertilizing element. The soda cost $2.70 per acre, and the ammonia $2.12. The following table gives the results obtained: —

COMPARISON OF NITRATE OF SODA AND SULPHATE OF AMMONIA ON TIMOTHY.

Station.	Yields in tons per acre	
	With 125 pounds soda	With 100 pounds ammonia
	tons	tons
Palmer Road	0.75	0.75
Glenwood	1.25	1.50
New London	2.33	2.04
Rose Valley	2.07	1.91
Rustico	1.25	1.12
Montague	1.76	1.95
Total	9.41	9.27
Average	1.57	1.55

From the above table it would appear that there is no appreciable difference between these two fertilizers for timothy sod.

TIMOTHY SEED

The saving of a portion of the best field of timothy for seed is a practice which has much to commend it. Island grown seed seems to do considerably better than imported seed. Five operators, namely: Alfred Gorrill, Thomas Noonan, Malcolm McKenzie, John L. Clark and Clifford McEwen each saved approximately one acre for seed. The average yield of cleaned seed per acre for the past year was approximately 300 pounds, and the only extra expense in its production was that of threshing and cleaning, which was about $4.50 per acre.

POTATO GROWING ON THE PRINCE EDWARD ISLAND ILLUSTRATION STATIONS

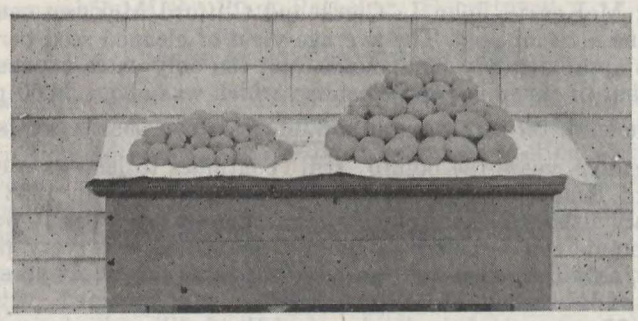
As in previous years the potato still continues to lead as a cash crop for Prince Edward Island. The Illustration Station operators in 1928 had a very successful year, although the production was not so heavy as it was last year. The use of commercial fertilizer in limited quantities gave very profitable increased yields, as will be seen by examining the table below. At all stations, with the exception of Richmond, the chemicals were supplemented with barnyard manure. Only 55 per cent of the total cost of the fertilizer is charged against the immediate crop, the other 45 per cent being charged against the crops which follow. The cost of sowing is also added to the cost of the fertilizer. All plots were dug by the Supervisor, graded and weighed by him. Representative areas throughout the field were taken.

THE EFFECT OF COMMERCIAL FERTILIZER ON THE GROWTH OF POTATOES.

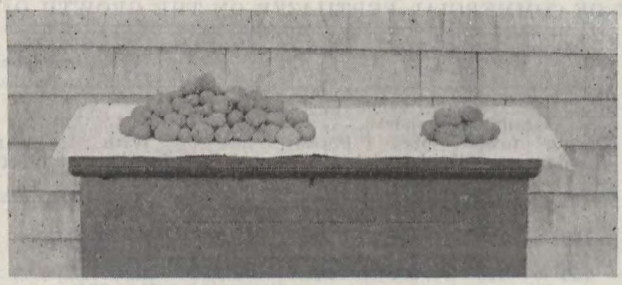
Station	Pounds of fertilizer sown per acre				55% of cost of fertilizer	Yield in bushels per acre		
	Nitrate of soda	Sulphate of ammonia	Superphosphate	Potash		With fertilizer	Without fertilizer	Increase marketable due to fertilizer
Glenwood	160	132	600	200	9.97	*M. 205.3 U. 73.6	158.9 54.2	46.4
West Devon...	156	120	600	200	9.66	M. 337.9 U. 32.7	290.7 50.9	47.2
Richmond	190	150	600	240	10.80	M. 271.8 U. 73.8	62.1 178.6	209.7
New London...	160	132	600	200	9.58	M. 306.1 U. 34.9	197.6 31.0	108.5
Rose Valley ...	156	120	600	200	9.51	M. 432.6 U. 27.2	353.9 24.0	78.7
Rustico	156	120	600	200	9.49	M. 376.0 U. 32.0	320.0 32.0	56.0
St. Peters.....		240	600	200	8.94	M. 305.2 U. 46.3	176.2 58.1	129.0
Red Point.....	156	120	600	200	9.80	M. 234.8 U. 176.9	80.0 112.3	154.8
Montague	156	120	600	200	9.34	M. 337.9 U. 40.0	167.1 36.3	170.8
Iona	156	120	600	200	9.55	M. 250.7 U. 25.4	58.1 54.5	192.6
Wood Islands	156	136	570	230	10.44	M. 206.2 U. 132.0	41.2 86.6	165.0
Total	1,602.	1,510	6,570	2,270	107.08	M. 3264.5 U. 694.8	1,905.8 718.5	1,358.7
Average	145.6	137.3	597.3	206	9.73	M. 296.8 U. 63.2	173.2 65.3	123.6

* M.—Marketable. U.—Unmarketable.

It will be seen by an examination of the above data that the use of 1086 pounds of chemicals, costing on the average $9.73 can be expected to give an increase in the yield of marketable potatoes of 123.5 bushels. On a bushel basis this increase cost less than 8 cents. In 1927 the increase of 135 bushels cost 8¼ cents per bushel.



Potatoes grown with 9 tons manure and 1000 pounds of a 4-8-4 fertilizer per acre. Yield, 222 bushels marketable and 110 bushels unmarketable.



Potatoes grown on the check plot with 9 tons of manure per acre and no commercial fertilizer. Yield, 13 bushels marketable and 125 bushels unmarketable.

THE USE OF VARYING AMOUNTS OF POTASH ON THE POTATO CROP

Ever since the potato has been grown on a commercial basis, the use of chemical potash has been stressed as being the most essential, and one which must be used in large quantities if a crop of any consequence is to be grown. During the past two years it has been brought to the attention of the Experimental Farm that as much as 400, and in quite a few cases 500 pounds of muriate of potash were sown per acre, this of course in addition to the other chemicals. To demonstrate the effect of using large amounts of potash for the potato crop, the following experiment was tried on four of the Prince Edward Island stations: Fifteen hundred pounds of a fertilizer mixture in which the nitrogen and acid phosphate were constant, and in which the potash varied from none to 420 pounds, were sown on five plots on each of the stations. The table gives the yields obtained: —

EFFECT OF VARYING AMOUNTS OF POTASH ON THE POTATO CROP. *

Station.	1500 pounds of a 4-8-0 mixture. No potash.		1500 pounds of a 4-8-4 mixture, 100 pounds potash.		1500 pounds of a 4-8-6 mixture, 210 pounds potash.		1500 pounds of a 4-8-10 mixture, 300 pounds potash.		1500 pounds of a 4-8-12 mixture, 420 pounds potash.	
	Yield per acre.		Yield per acre.		Yield per acre.		Yield per acre.		Yield per acre.	
	Marketable	Unmarketable	Marketable	Unmarketable	Marketable	Unmarketable	Marketable	Unmarketable	Marketable	Unmarketable
	bush.	bush.	bush.	bush.	bush.	bush.	bush.	bush.	bush.	bush.
Glenwood	156.3	92.2	343.4	48.7	358.7	33.3	369.0	35.9	356.2	51.2
St. Peters	170.7	83.5	261.5	65.4	348.7	36.3	341.4	29.1	330.1	43.6
Red Point	302.5	60.5	320.6	72.6	320.6	99.8	299.5	78.6	305.5	75.6
Iona	152.6	54.5	305.2	25.4	297.9	25.4	308.8	14.5	294.3	7.3
Total	782.1	290.7	1,230.7	212.1	1,325.9	194.8	1,318.7	158.1	1,286.1	177.7
Average	195.5	72.7	307.7	53.0	331.5	48.7	329.7	39.5	321.5	44.4

* This experiment was also tried at Richmond, but the fertilizer was not applied until some time after the potatoes were planted, and results were not considered to give a fair test.

From the above table, which gives the records for only one year's crop, it can readily be seen that there is nothing to be gained by sowing large quantities of potash for the potato crop. This experiment will be continued for a number of years.

AMMO-PHOS FOR THE POTATO CROP

For the past few years considerable attention has been given to the use of *Concentrated Fertilizers,* and in order to meet the demand for reliable information regarding these, the Experimental Farm and Illustration Stations have, for the past few years, compared these with the regular mixtures.

The following mixtures were compared on three Prince Edward Island stations: *No. 1,* Ammo-Phos composed of the following chemicals: —

285 pounds Ammo-Phos 20 — 20*
145 pounds Ammo-Phos 13 — 48
240 pounds muriate of potash

Total 670

*(20% ammonia, 20% acid phosphate).

This mixture is equivalent to 1500 pounds of a 4-8-8 mixture.

No. 2. *Regular Mixture* composed of the following chemicals: —

195 pounds nitrate of soda
150 pounds sulphate of ammonia
750 pounds superphosphate
240 pounds muriate of potash

Total 1335

This mixture is also equivalent to 1500 pounds of a 4-8-8 fertilizer mixture. The following table gives the yields obtained from the two mixtures:—

COMPARISON OF AMMO-PHOS AND THE REGULAR CHEMICALS FOR POTATOES.

Station	Ammo-Phos Yield per acre		Regular chemicals, Yield per acre	
	Marketable	Unmarketable	Marketable	Unmarketable
	bush.	bush.	bush.	bush.
West Devon	285.2	80.2	254.8	77.3
Iona	145.5	111.5	322.5	32.7
Wood Islands	66.0	144.5	160.9	165.0
Total	496.7	336.2	738.2	275.0
Average	165.6	112.1	246.1	91.7

Difference in favour of regular mixture, 80.5 bushels of marketable potatoes.

At Palmer Road the Ammo-Phos gave a yield of 224 bushels marketable, while a check with no fertilizer gave a yield of 116 bushels marketable potatoes per acre. The soil at West Devon and Palmer Road is much heavier than at Iona and Wood Islands, and this may have had a decided effect on results.

COMMERCIAL FERTILIZERS FOR POTATOES — SUMMARY

1. Nitrogenous fertilizers are necessary for the growth of foliage; therefore your foliage is your best guide for its use. If it is too heavy, use less, and if scant, use larger amounts of fertilizer than previously.

2. Superphosphate is necessary for root development; it is cheap and does not easily leach from the soil, therefore less care can be used in its application.

3. Potash is necessary for vigour and for the production of starch. Our results show that 300 pounds per acre is the limit, and in the majority of cases 200 pounds will be found to give as good results.

CORN, SUNFLOWERS AND TURNIPS COMPARED

Since the organization of the Illustration Stations in Prince Edward Island, corn, sunflowers and turnips have been grown with varying degrees of success. When green weights only are considered the sunflowers appear to be the best fodder, but on a dry matter basis this is not the case. A record of the dry matter yields for 1927 and 1928 is given in the table below:—

COMPARISON OF CORN, SUNFLOWERS AND TURNIPS ON A DRY MATTER BASIS, (1927 FIGURES).

Station	Corn				Sunflowers				Tunips (Swedes)			
	Green weight per acre	% Dry matter	Yield dry matter per acre	Cost to grow per acre	Green weight per acre	% Dry matter	Yield dry matter per acre	Cost to grow per acre	Green weight per acre	% Dry matter	Yield dry matter per acre	Cost to grow per acre
	tons	%	tons	$	tons	%	tons	$	tons	%	tons	$
Palmer Road	19.0	17.19	3.27	34 10	27.20	9.77	2.66	33 55	.....	.....	.....	.....
West Devon	.....	.....	.....	.....	21.20	5.31	1.13	44 29	17.60	12.30	2.16	63 59
Richmond	15.5	15.82	2.45	53 06	17.60	5.20	0.92	52 51	10.90	12.50	1.36	80 35
Rose Valley	12.5	10.90	1.36	43 62	24.20	5.66	1.37	43 07	17.30	12.70	2.20	51 90
Rustico	.....	.....	.....	.....	.....	.....	.....	.....	17.40	15.04	2.62	47 47
St. Peters	19.20	11.70	2.25	42 66	33.50	8.52	2.86	42 03	.....	.....	.....	.....
Red Point	9.50	11.43	1.09	51 36	21.30	7.46	1.59	50 81	14.00	12.40	1.74	51 30
Montague	16.40	10.25	1.68	47 81	23.20	8.40	1.95	47 26	31.20	12.40	3.87	54 75
Wood Islands	10.0	17.09	1.71	50 12	19.	10.90	2.17	49 57	14.30	14.36	2.05	48 92
Iona	18.0	11.91	2.14	46 10	.....	.....	.....	.....	19.80	14.16	2.80	44 32
Average	15.1	13.29	1.99	46 10	23.51	7.65	1.83	45 39	17.81	13.23	2.35	55 32
Cost per ton of dry matter		$23.17				$24.80				$23.54		

CORN, SUNFLOWERS AND TURNIPS COMPARED—AVERAGE FOR 1928.

	Corn	Sunflowers	Turnips
Green weight per acre .....tons	16.32	21.06	25.27
Per cent dry matter .....%	11.83	15.13	11.21
Yield dry matter per acre.....tons	2.09	3.18	2.83
Cost per acre .....$	47 97	46 03	55 84
Cost per ton green weight .....$	2 93	2 18	2 21
Cost per ton dry matter .....$	22 95	14 47	19 71

Two years' results with these three fodder crops would tend to show that there is perhaps not a great deal of difference between the yields and the cost of production, and in order to arrive at their true value certain facts other than yields must be considered:

1. Sunflowers mature early and supply an abundance of green fodder at a time when pastures are short, and if fed before becoming woody will be readily eaten by cows, horses and hogs.

2. Corn is much relished by all live stock, and is a valuable green feed after the sunflowers have gone. It is also particularly suitable for silage.

3. Turnips are the old standby for winter feeding and for the average farmer in Prince Edward Island must continue to be so. Silos and silo equipment are very expensive, but a root pit is easily made and there is usually room for the storage of a limited amount of roots under the dwelling house. Of late years turnips are proving a valuable cash crop.

PUBLIC MEETINGS AND PRESS ARTICLES

Public meetings were held at the following places during March and April, 1928: Glenwood, Palmer Road, West Devon, Richmond, New London, Rose Valley, Rustico, St. Peters, Baltic, Montague, Wood Islands and Iona. All meetings were well attended. These meetings, like the field days, serve to bring the farmers of the neighbourhood together; the season's work carried on over all of the stations is presented at this time, as well as any outstanding features or finds of the Experimental Farm System. At these meetings there is usually considerable discussion, and in this way some particular problem is threshed out. The Superintendent of the Experimental Station as well as the Supervisor of the Illustration Stations attended the various meetings mentioned. Lantern slides were used at all meetings, and aided greatly in making the meetings more interesting, especially for the younger folk.

In order to further present certain phases of the work to the public, a number of press articles were written by the Supervisor. The Editor of the Maritime Farmer, during a visit to Prince Edward Island collected data for an article outlining the work of the operators at Iona and Montague.

EXHIBITIONS AND FAIRS

Illustration Station work is further presented to the public at exhibitions and fairs in Prince Edward Island. At the Charlottetown Exhibition a section of the Experimental Farm booth was devoted to work conducted by this Division, and at Georgetown an exhibit of the division showed work with potash on the stations

at St. Peters, Iona and Red Point. Perhaps 20,000 people saw the first exhibit and 2000 the second. The Supervisor also judged calves, grain, fruit and vegetables and delivered addresses at the following school fairs: Red Point, St. Peters, Souris, Hope River and Mayfield, and assisted in judging at Georgetown and Egmont Bay exhibitions.

The program of work on the Illustration Stations for 1929 will include the continuation of the work now under way and the extension of a number of fertilizer demonstrations with lime and potash. More emphasis will be given to the improvement of live stock and to the beautification of the home surroundings. It is also planned to have the operators visit the other Illustration Stations and the Experimental Farm at Charlottetown.