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 1929

Registered Victory oats, first generation, also certified seed potato field on the Illustration Station, Riordon, N.B. This oat crop yielded 55 bushels per acre at a cost of 40 cents per bushel.

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OTTAWA
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PRINTER TO THE KING'S MOST EXCELLENT MAJESTY
1930

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# ILLUSTRATION STATIONS

IN

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

The past year has been marked by considerable expansion both with respect to the number of Illustration Stations and the program of demonstration work carried out in the different provinces. The number of new districts reached by such stations, increased by thirty-three, there being one hundred and ninety-three Illustration Stations on which active work was carried out. Twelve of these stations are located in Prince Edward Island, sixteen in Nova Scotia, nineteen in New Brunswick, sixty-one in Quebec, fifteen in Ontario, thirteen in Manitoba, twenty-seven in Saskatchewan, sixteen in Alberta and fourteen in British Columbia. In addition twelve new sites have been selected and work will be started on them in the spring of 1930. 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. | W. L. Chauvin, Ottawa, Ont. |
| J. A. Ste. Marie, Ste. Anne de la Pocatière, P.Q. | P. A. Dorion, Ottawa, Ont. |
| C. F. Bailey, Fredericton, N.B. | J. R. Proulx, Ste. Anne de la Pocatière, Que. |
| W. S. Blair, Kentville, N.S. | T. G. Hetherington, Fredericton, N.B. |
| J. A. Clark, Charlottetown, P.E.I. | F. B. Kinsman, Kentville, N. S. |
| | R. C. Parent, Charlottetown, P.E.I. |

## CROP YIELDS AND THEIR COST OF PRODUCTION

The work summarized in this report represents conditions on one hundred and twenty-three farms centralized under seven districts of supervision. These extend from the Manitoulin Islands to Mattice in Northern Ontatrio and eastward throughout Quebec, New Brunswick and Nova Scotia to Prince Edward Island. Within the districts served by these Illustration Stations, dairying and the economical production of suitable crops as feed are the primary objectives of those engaged in agricultural pursuits. This type of agriculture calls for liberal supplies of succulent feeds, legume hays and concentrates. Generally speaking these stations are located in communities confronted with common farming problems; naturally, such local conditions as type of soil, fertility, supply and type of machinery available, directly affect yields and production costs. However, the average yields and cost of growing the crops suitable for the different areas will convey a statement of existing conditions as well as possible opportunities for advancement.

In the area served, twenty-five districts have proven suitable for corn growing and this year produced on an average 14·3 tons per acre at a cost of $2.98 per ton. When corn does not thrive because of climatic or soil conditions, turnips, mangels, oats, peas or vetch are given prominence in the general scheme of development. This season the average turnip yield was 18·2 tons and the cost $3.52 per ton; oats yielded 40·3 bushels, costing 64 cents per bushel to grow; clover hay yielded 1·9 tons at a production cost of $7.57 per ton. The ultimate profit to the grower would depend on the class of stock kept and their ability to convert such into marketable dairy products. While seasonal conditions such as lack of moisture, winter-killing of clovers, bears an important relation to crop yields, it is likewise true that a fertile, well cultivated field is the best possible insurance for a profitable crop. A study of yields and production costs as herein recorded will indicate a wide variation not only with respect to the individual station but within districts of supervision. In many cases, the lack of plant food has been a limiting factor in crop growth, nevertheless a combination of factors such as lack of drainage delayed seeding of cereals and root crops to the point where they did not make normal growth. This fact was clearly demonstrated on the New Brunswick stations. Where turnip planting was early, namely, from May 21 to May 24, the yield was 24·6 tons per acre and the cost of production $2.58 per ton, whereas on the other stations where seeding ranged from June 6 to 24, the yield was reduced to 15·7 tons and the production cost increased to $3.69 per ton. On these same stations fertilizer demonstrations were carried out comparing the response in crop growth from areas which had been treated with manure as compared with those where manure and chemical fertilizers had been used. Where 450 pounds of 5-10-5 fertilizer was used in addition to manure, the yield was increased by 3·1 tons per acre. On an average of sixteen stations in Eastern Quebec, an application of 534 pounds of 5-10-5 mixture increased the yield by 4·7 tons. The above results would indicate that while crop yields can be increased up to a certain limit by added fertility it is likewise true that certain essential cultural operations such as early planting in the case of roots and cereals has an important relation to the resulting yield. From a complete study of the individual stations and the results obtained therefrom, it is evident that neglect of any one of the essential operations of production, retards growth.

### DEMONSTRATION WORK WITH CHEMICAL FERTILIZERS

The effect of chemical fertilizers in practical agriculture is now being demonstrated and studied on the Illustration Stations in each of the nine provinces. In the three prairie provinces, Saskatchewan, Alberta and Manitoba, special attention has been directed, during the past year, to a study of the value of phosphatic fertilizer in grain farming practices. In addition quite a comprehensive series of experiments were undertaken on the "burn-out" soils at Radville. In the eastern provinces and British Columbia the fertility problem affects permanent pasture lands as well as all classes of cultivated crops. The problems considered and fertilizer projects under way this year, were as follows:—

The effect of ground lime on potatoes.
The influence of lime on crop growth.
Comparative demonstration with manure when used alone and when supplemented by chemical fertilizer.
The value of nitrogenous fertilizers for hay lands.
Ammo-phos in comparison with a complete standard potato mixture.
Nitrophoska compared with a fertilizer made up with standard ingredients.
The effect of superphosphate on turnips.
The effect of potash on the yield of potatoes.

Some very interesting and practical information has been obtained with respect to the use of chemical fertilizers. The results of these demonstrations are outlined under the report for the district of supervision in which they were carried out. Reference might be made to the trials conducted on Prince Edward Island where the effect of increasing the concentration of potash in the fertilizer mixture for the potato crop was under study. It will be noted that the potato yield increased, with the amount of potash applied up to a rate of 200 pounds per acre in the mixture, and that the yield remained practically stationary even though a higher concentration appeared in the mixture. The results from the use of nitrogenous fertilizers on old meadows again demonstrates the practicability of their use under conditions such as at present exist on the average farm where meadows have been left in hay for more than two years without additional fertilization. The results from twenty-six Illustration Stations in Nova Scotia and Prince Edward Island show an increased yield of 1,350 pounds of hay from an application of sulphate of ammonia, nitrate of soda or nitro-chalk.

### THE SUPERIORITY OF VARIETIES, THEIR MULTIPLICATION AND DISTRIBUTION

Varieties of grain such as wheat differ with respect to maturity, yield and milling qualities; clovers and alfalfa differ in hardiness; grasses differ in their ability to produce and reproduce; all differ in their adaptability to natural conditions. Experimental evidence shows that some varieties are more suitable for a given locality than others. To determine, multiply and distribute such amongst neighbouring farmers is one of the important services which the illustration Stations are rendering within their respective communities. Although Marquis continues to be the standard and most generally grown wheat variety in Alberta and Saskatchewan, Garnet and Reward are filling a distinct need for an earlier variety in northerly districts. On the average of the stations in Northern Saskatchewan and Northern Alberta, Marquis ripened in 115 days this season, in comparison with 101 days for Garnet and Reward. Increased appreciation has been evidenced as to the value of hardy clover and alfalfa seed and demands from merchants and agricultural societies have been received by the operators from outside provinces for homegrown red clover seed. Throughout Northern Ontario and Northern Quebec, the demand for Alaska oats, an early variety recently introduced into the district, was far in excess of the supply, with the result that all operators disposed of their surplus stock. Many farmers availed themselves of the opportunity of procuring disease-free seed potatoes at prices below normal, thus improving the quality of seed in general use on many farms. The sale of surplus seed by the operators shows an increase over former years, amounting to 42,387 bushels of seed grain, 10,739 bushels of seed potatoes and 18,790 pounds of grass and clover seed.

### MILK RECORDS, IMPROVEMENT AND SALE OF LIVESTOCK AND POULTRY FOR BREEDING PURPOSES

The keeping of individual milk records is now an accomplished fact on over ninety per cent of the Illustration Stations where dairy farming is being practised. Such work not only indicates the comparative producing powers of the different individuals but often demonstrates the need of giving greater attention to the growing of suitable crops as feed as well as the necessity for improved feeding practices. In 1927, an Illustration Station was started on which twenty milch cows were kept. That same year, the keeping of milk records was started and the average annual production was found to be 2,611 pounds of milk, with the highest individual giving 3,276. The first year's results indicated the need for the elimination of some of low producers; with some of these disposed of and more attention given to feeding, the annual average production the next year was

increased to 3,251 pounds of milk, with the highest producer giving 5,642. These results have been sufficient in the operators' mind to warrant a vigorous policy of improvement as is, or has been, undertaken on the other stations. While on a number of the more recently established stations, preliminary improvement work is in progress, it is likewise true that a high percentage of the stations maintain high producing, accredited, pure-bred herds and are now in a position to supply useful breeding stock to their neighbours. The sale of such stock by the operators during the past year included 282 head of cattle, 274 hogs and 165 sheep. Attention has also been directed to the feeding, housing and general quality of poultry kept at each station. Satisfactory foundation stock having been established, each fall well bred cockerels from dams producing over 200 eggs, are procured in order to maintain a high standard of quality and production within these flocks and thus be in a position to meet the demand within the district for hatching eggs and breeding stock. This year 1,526 settings of eggs, 673 cockerels and 818 pullets were sold by the different Illustration Station operators.

### FIELD DAYS AND AGRICULTURAL MEETINGS

During the year an effort has been made to increase the usefulness of the Illustration Stations as institutions for the encouragement and promotion of the various aspects of practical agriculture in the communities served. Field days were held on the Illustration Station fields, to which those in the surrounding community were invited. Those in attendance were taken over the fields, the different crops discussed and the results of the different projects over a period of years given. The attendance at such meetings averaged about forty with one hundred and fifty present at some points. Dry weather and rather unsatisfactory crop conditions necessitated the withdrawal of a number of meetings which had been planned particularly in the western provinces. The supervisors organized and held one hundred and fifteen field and public meetings; in addition acted as judge at twenty-seven exhibitions and assisted with the program at ten short courses.

### 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 OF THE ILLUSTRATION STATIONS IN NORTHERN ONTARIO AND NORTHERN QUEBEC

During the past year eighteen Illustration Stations were in operation in the district of supervision regarded as Northern Quebec and Northern Ontario. The supervisor for this district makes his headquarters at the Experimental Station, Kapuskasing, Ont. The area referred to embraces that spoken of as Northern Ontario, the Manitoulin Island, the Abitibi and Lake St. John districts. A great deal of preparatory work has been necessary in the way of establishing the proper crop sequence and rotation work, as a number of these stations were but recently started. In addition to the field work, considerable progress has been made on these stations with respect to poultry and livestock improvement. During the year eight operators undertook the keeping of individual milk records for the first time. Four also purchased their first purebred herd sires. Seeding of cereals in general was later than usual, varying somewhat with the particular section from May 22 to June 7. The factor of late seeding in many cases reflected unfavourably on oat and hoed crop yields.

### BARRAUTE, ABITIBI DISTRICT, P.Q.

OPERATOR, HERVIE MARCOTTE

Crop yields at this station, particularly, Alaska oats and turnips were low due to late seeding. The prevailing wet, spring condition delayed oat seeding until May 27 and the planting of turnips until June 12.

The following are the yields and cost of production for this season as well as the two year averages:—

OPERATIONS AT BARRAUTE—FIVE-YEAR ROTATION

| Field | Crop | Number years grown | Yield per acre | | Cost per unit | |
|---|---|---|---|---|---|---|
| | | | 1929 | Average | 1929 | Average |
| | | | | | $ | $ |
| A | Clover hay.....tons | 1 | 1·5 | 1·50 | 7 48 | 7 48 |
| B | Oats, Alaska.....bush. | 2 | 15·0 | 17 25 | 0 86 | 1 00 |
| C | Oats, Alaska.....bush. | 2 | 15·0 | 17·25 | 0 86 | 1 00 |
| D | Oats, Alaska.....bush. | 2 | 15·0 | 17·25 | 0 86 | 1 00 |
| E | Oats, peas and vetch hay.....tons | 2 | 2·0 | 1·37 | 11 20 | 16 75 |
| E | Turnips, Hall's Westbury..... tons | 1 | 6·0 | 6·00 | 7 47 | 7 47 |

When seeding Field "B," "C" and "D," two and a half bushels of Alaska were used per acre along with twenty pounds of grass and clover seed. For comparative study purposes two grass and clover seed mixtures were used; one was made up of 5 pounds alfalfa, 5 pounds red clover, 2 pounds alsike and 8 pounds timothy. The other consisted of 6 pounds red clover, 4 pounds alsike and 8 pounds timothy. By including a certain percentage of alfalfa seed in the mixture, we will be able to determine the suitability of this soil for alfalfa growing.

## BELCOURT, ABITIBI DISTRICT, P.Q.

OPERATOR, EUGENE ROBITAILLE

This is the first year that crop yields were obtained and production costs undertaken at this point in view of last year's operations being of a preparatory nature directed to the establishment of a systematic method of cropping. Seeding was late; in the case of oats this operation was not completed until June 7. The turnips were planted on June 14.

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

OPERATIONS AT BELCOURT—FIVE-YEAR ROTATION

| Field | Crop | Number years grown | Yield per acre | Cost per unit |
|---|---|---|---|---|
| | | | 1929 | 1929 |
| | | | | $ |
| A | Oats, Alaska..... bush. | 1 | 24·0 | 0 76 |
| B | Turnips, Hall's Westbury..... tons | 1 | 0·5 | |
| B | Oats, peas and vetch hay..... tons | 1 | 1·5 | 17 85 |
| C | Clover hay..... tons | 1 | 1·5 | 6 51 |
| D | Clover hay..... tons | 1 | 1·5 | 6 51 |
| E | Clover hay..... tons | 1 | 1·5 | 6 51 |

## COCHRANE, COCHRANE DISTRICT, ONT.

OPERATOR, E. D. CARRERE

Crops in general at this station suffered from excessive moisture. The seeding of oats on field "D" was not possible until June 1 and the planting of turnips was not completed until June 4.

The following table indicates the yields and cost of growing the different crops as well as the average over a period of years:—

OPERATIONS AT COCHRANE—FOUR-YEAR ROTATION

| Field | Crop | Number years grown | Yield per acre | | Cost per unit | |
|---|---|---|---|---|---|---|
| | | | 1929 | Average | 1929 | Average |
| | | | | | $ | $ |
| A | Oats, peas and vetch hay..... tons | 4 | 3·0 | 2·3 | 10 54 | 18 42 |
| B | Timothy hay..... tons | 4 | 1·25 | 1·5 | 10 26 | 12 58 |
| C | Clover seed..... lb. | 1 | ..... | ..... | ..... | ..... |
| D | Oats, Alaska..... bush. | 4 | 17·0 | 29·2 | 1 32 | 0 94 |

After the removal of the timothy hay on Field "B" the land was ploughed shallow and kept frequently cultivated until fall in order to destroy weed growth. Prior to freezing up, it was again ploughed to a depth of from five to six inches and left rough during the winter. The growing season is somewhat short in this section, hence every effort should be made to create favourable conditions with respect to drainage, seed bed preparation and use of early varieties of crops. A fertile, well-drained and thoroughly decomposed sod is essential to successful turnip growing, a very useful crop for this section.

## GENIER, COCHRANE DISTRICT, ONT.

OPERATOR, OLIVIER GENIER

For the past four years Banner oats have been grown on this station. However, a change was made to Alaska this season in view of the apparent need for an earlier variety. Oats were seeded on May 29 and it was not until June 12 that turnip planting was completed due to wet weather.

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

OPERATIONS AT GENIER—FOUR-YEAR ROTATION

| Field | Crop | Number years grown | Yield per acre | | Cost per unit | |
|---|---|---|---|---|---|---|
| | | | 1929 | Average | 1929 | Average |
| | | | | | $ | $ |
| A | Oats, Alaska..... bush. | 1 | 20·0 | ..... | 1 10 | ..... |
| B | Clover hay..... to s | 5 | 2·25 | 1·75 | 6 07 | 10 45 |
| C | Timothy hay..... tons | 4 | 2·00 | 1·41 | 5 73 | 11 23 |
| D | Oats, peas and vetch hay..... tons | 2 | 2·50 | 3·25 | 9 43 | 11 25 |
| D | Turnips, Hall's Westbury..... tons | 2 | 7·50 | 8·25 | 12 40 | 11 17 |

Both clover and timothy hay yields were higher than the average since work was established. For a district where hay prices are usually high these crops were produced at a cost which will net the grower a satisfactory profit.

## GORE BAY, MANITOULIN ISLAND, ONT.

OPERATOR, ED. STRAIN

The six-year rotation in the process of establishment on this station is so arranged as to supply a practical balance of useful crops for dairy feeding, namely, clover hay, grain and turnips on corn. The latter crop was practically a failure this year because of the cold, wet weather. Due to the light crop it was cut as early fall feed and a record of yields was thus not obtained.

The results of the season's operations were as follows:—

OPERATIONS AT GORE BAY—SIX-YEAR ROTATION

| Field | Crop | Number years grown | Yield per acre | | Cost per unit | |
|---|---|---|---|---|---|---|
| | | | 1929 | Average | 1929 | Average |
| | | | | | $ | $ |
| A | Clover hay..... tons | 2 | 2·5 | 1·83 | 5 58 | 7 67 |
| B | Oats, Banner..... bush. | 3 | 65·0 | 36·2 | 0 32 | 0 63 |
| C | Turnips, Hall's Westbury..... tons | 3 | 5·0 | 13·7 | 6 57 | 4 17 |
| D | Clover hay..... tons | 2 | 2·0 | 1·83 | 6 85 | 7 67 |
| E | Oats, Banner..... bush. | 3 | 40·0 | 36·2 | 0 45 | 0 63 |
| F | Timothy hay..... tons | 1 | 1·5 | 1·5 | 8 22 | 8 22 |

Seeding of Banner oats on Fields "B" and "E" was carried out on May 16 and 18 respectively. The variation in the oat yield between the two fields will be noted. This may be accounted for from the fact that Field "B" was in corn and turnips last year whereas Field "E" was ploughed out of clover sod. With the exception of corn and turnips, yields this season were well up to the average of the past three years.

## HEBERTVILLE, LAKE ST. JOHN COUNTY, P.Q.

OPERATOR, JOSEPH GERVAIS

This is the second year that illustration work has been under way at this point and operations preparatory to the establishment of a systematic crop sequence has been undertaken. Seeding of oats on Field " B " was completed on May 23.

The yields and cost of growing crops for the season were as follows:—

OPERATIONS AT HEBERTVILLE—FOUR-YEAR ROTATION

| Field | Crop | Number years grown | Yield per acre | | Cost per unit | |
|---|---|---|---|---|---|---|
| | | | 1929 | Average | 1929 | Average |
| | | | | | $ | $ |
| A | Potatoes, Cobblers..... bush. | 1 | 202·5 | ..... | 0 25 | ..... |
| A | Oats, peas and vetch hay..... tons | 2 | 3·0 | 2·5 | 12 25 | 12 94 |
| B | Oats, Banner..... bush. | 2 | 40·0 | 32·5 | 0 66 | 0 76 |
| C | Clover hay..... tons | 1 | 1·5 | ..... | 12 33 | ..... |
| D | Clover hay..... tons | 1 | 1·5 | ..... | 12 33 | ..... |

To control perennial weeds prevalent on this station and in the district, the practice of after-harvest cultivation is being followed when getting the land in shape for planting to hoed crops. The soil being a heavy clay requires to be ploughed and cultivated when the moisture conditions are best in order to retain its proper physical condition.

## JONQUIERE, CHICOUTIMI COUNTY, QUE.

OPERATOR, EMILE BRASSARD

The heavy clay soils of this district are particularly well adapted to hay growing. This fact is reflected in the yields obtained this season. The grass and clover mixture used when seeding down consisted of 8 pounds of red clover, 2 pounds of alsike, and 10 pounds of timothy per acre.

The yield and cost of production were as follows:—

OPERATIONS AT JONQUIERE—FOUR-YEAR ROTATION

| Field | Crop | Number years grown | Yield per acre | | Cost per unit | |
|---|---|---|---|---|---|---|
| | | | 1929 | Average | 1929 | Average |
| | | | | | $ | $ |
| A | Oats, Banner..... ..... bush. | 2 | 57·0 | 41·0 | 0 45 | 0 66 |
| B | Turnips, Hall's Westbury..... tons | 1 | 8·0 | ..... | 5 56 | ..... |
| B | Oats, peas and vetch hay..... tons | 2 | 2·0 | 2·0 | 17 44 | 15 54 |
| C | Timothy hay..... tons | 1 | 3·0 | ..... | 5 35 | ..... |
| D | Clover hay..... tons | 1 | 2·5 | ..... | 6 13 | ..... |

Field " A " was seeded to Banner oats at the rate of 2½ bushels per acre on May 22. It was not until June 10 that the turnip planting was completed. Many successful turnip growers believe that for the best results root crops should be planted as early as the cereals, in view of their making their best growth during the cool moist weather. The time of seeding was a contributory cause for the light turnip yield at this station.

## LA REINE, ABITIBI DISTRICT, QUE.

OPERATOR, JOS. DESROCHERS

The seeding of fields "C" and "E" was completed at this station on June 4 and 5 respectively. For the second year's operation clover hay yields and production cost were quite encouraging.

The following table indicates the yields obtained:—

OPERATIONS AT LA REINE—FIVE-YEAR ROTATION

| Field | Crop | Number years grown | Yield per acre | Cost per unit |
|---|---|---|---|---|
| | | | 1929 | 1929 |
| | | | | $ |
| A | Clover hay..... tons | 1 | 2·75 | 4 83 |
| B | Clover hay..... tons | 1 | 2·75 | 4 83 |
| C | Oats, Alaska..... bush. | 1 | 24·0 | 0 93 |
| D | Oats, Alaska..... bush. | 1 | 24·0 | 0 93 |
| E | Turnips, Hall's Westbury..... tons | 1 | 3·25 | 14 60 |
| E | Oats, peas and vetch hay..... tons | 1 | 3·0 | 12 09 |

Since starting illustration work this operator has made definite advances along live stock improvement lines, having purchased a pure-bred Ayrshire herd sire and undertaken the keeping of individual milk records.

## MATTICE, COCHRANE DISTRICT, ONT.

OPERATOR, ARTHUR BROUARD

This is the first year that systematic cropping work has been under way at this point. Last year's operations were confined largely to putting in necessary ditches, ploughing and clearing this new land of stumps.

The yields and cost of growing the different crops this year were as follows:—

OPERATIONS AT MATTICE—FIVE-YEAR ROTATION

| Field | Crop | Number years grown | Yield per acre | Cost per unit |
|---|---|---|---|---|
| | | | 1929 | 1929 |
| | | | | $ |
| A | Oats, peas and vetch hay..... tons | 1 | 1·5 | 15 92 |
| B | Turnips, Hall's Westbury..... tons | 1 | 12·5 | 2 50 |
| B | Oats, peas and vetch hay..... tons | 1 | 2·0 | 13 19 |
| C | Clover hay..... tons | 1 | 1·5 | 6 50 |
| D | Barley, O.A.C. No. 21..... bush. | 1 | 28·0 | 0 54 |
| E | Barley, O.A.C. No. 21..... bush. | 1 | 28·0 | 0 54 |

Seeding of both turnips and Alaska oats was completed on May 28. It will be noted that the turnip yield, while relatively low for some districts, was quite economically produced, the land being new and comparatively free from weeds The amount of hand labour required to keep the crop clean was very low.

## MINDEMOYA, MANITOULIN ISLAND, ONT.

OPERATOR, W. A. HARE

After three seasons' operation the four-year rotation which was established at this point is now well established and giving satisfactory response in the way of crop yields.

The yields and cost of production this season were as follows:—

OPERATIONS AT MINDEMOYA—FOUR-YEAR ROTATION

| Field | Crop | Number years grown | Yield per acre | | Cost per unit | |
|---|---|---|---|---|---|---|
| | | | 1929 | Average | 1929 | Average |
| | | | | | $ | $ |
| A | Turnips, Hall's Westbury..... tons | 3 | 11·20 | 16·28 | 3 15 | 2 68 |
| A | Corn, Longfellow..... tons | 3 | 9·05 | 9·18 | 3 90 | 4 09 |
| A | Sunflowers, Giant Russian.... tons | 2 | 10·0 | 11·0 | 3 29 | 3 58 |
| B | Timothy hay..... tons | 1 | 1·83 | ..... | 6 35 | ..... |
| C | Clover hay..... tons | 2 | 2·0 | 1·66 | 8 08 | 9 76 |
| D | Oats, Banner..... bush. | 3 | 55·0 | 46·7 | 0 42 | 0 52 |

The Hall's Westbury swede turnip was used at this station. This variety has proven a very desirable general purpose turnip, being a smooth, good-keeping and satisfactory yielding variety under general farm conditions. For turnip production the land was manured at the rate of from fifteen tons per acre the manure was disked in and a finely pulverized seed bed prepared. Medium sized drills were made on which the seed is planted at the rate of four pounds per acre. The drills are made thirty inches apart and the seedlings thinned when in the second leaf from ten to twelve inches between plants.

## MOONBEAM, COCHRANE DISTRICT, ONT.

OPERATOR, BASILE GAUDREAULT

This represents the second season's cropping results since taking preparatory steps towards the establishment of a five-year rotation on this station. The season was wet early in the spring, delaying seeding and unfavourably affecting yield. This was particularly true with oats and hoed crops.

The yields and costs of growing the different crops were as follows:—

OPERATIONS AT MOONBEAM—FIVE-YEAR ROTATION

| Field | Crop | Number years grown | Yield per acre | | Cost per unit | |
|---|---|---|---|---|---|---|
| | | | 1929 | Average | 1929 | Average |
| | | | | | $ | $ |
| A | Oats, peas and vetch hay..... tons | 2 | 2·6 | 2·55 | 13 70 | 12 51 |
| A | Turnips, Hall's Westbury..... tons | 1 | 4·5 | 4·5 | 14 02 | 14 02 |
| B | Timothy hay..... tons | 1 | 1·0 | 1·0 | 10 83 | 10 83 |
| C | Timothy hay..... tons | 1 | 1·0 | 1·0 | 10 83 | 10 83 |
| D | Clover hay..... tons | 2 | 1·5 | 1·25 | 7 22 | 11 49 |
| E | Oats, Alaska..... bush. | 2 | 28·0 | 32·5 | 0 72 | 0 65 |

In a district such as this where corn or sunflowers have not proven successful, oats, peas and vetch are grown as a substitute in the hoed crop section of the rotation. When such a practice is adopted the land is disked or cultivated immediately on the removal of the crop as hay and kept cultivated until fall as is done in the case of land being after harvest cultivated. It is then fall ploughed to the depth of from five to six inches, depending on the nature of the soil.

## MURRAY BAY, CHARLEVOIX COUNTY, QUE.

OPERATOR, ELIE VILLENEUVE

The Banner oats on field "D" was seeded on May 27 at the rate of 2½ bushels per acre. In the fall of 1928 a line of tile was run across all of these fields, draining out a low area which always delayed seeding.

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

OPERATIONS AT MURRAY BAY—FOUR-YEAR ROTATION

| Field | Crop | Number years grown | Yield per acre | | Cost per unit | |
|---|---|---|---|---|---|---|
| | | | 1929 | Average | 1929 | Average |
| | | | | | $ | $ |
| A | Oats, peas and vetch hay..... tons | 1 | 3·0 | ..... | 10 99 | ..... |
| A | Potatoes..... bush. | 2 | 168·70 | 150·7 | 0 31 | 0 49 |
| B | Clover hay..... tons | 1 | 1·87 | ..... | 9 25 | ..... |
| C | Clover hay..... tons | 1 | 1·87 | ..... | 9 25 | ..... |
| D | Oats, Banner..... bush. | 2 | 37·50 | 34·0 | 0 71 | 0 82 |

In addition to dairying this operator devotes a great deal of attention to the raising of black foxes, a type of farming that recently has become of considerable importance in this county.

## SPRING BAY, MANITOULIN ISLAND, ONT.

OPERATOR, WM. MCCOLEMAN

A slight difference between the oat yields on Fields "A" and "F" will be noted. The former field was in oats, peas and vetch the previous year, whereas "F" was in turnips.

The yields and cost of growing the different crops this year were as follows:—

OPERATIONS AT SPRING BAY—SIX-YEAR ROTATION

| Field | Crop | Number years grown | Yield per acre | | Cost per unit | |
|---|---|---|---|---|---|---|
| | | | 1929 | Average | 1929 | Average |
| | | | | | $ | $ |
| A | Oats, Alaska..... bush. | 3 | 23·0 | 21·0 | 0 96 | 1 10 |
| B | Oats, Alaska..... bush. | 3 | 25·0 | 21·6 | 0 90 | 1 08 |
| C | Turnips..... tons | 2 | 7·20 | 15·07 | 7 50 | 5 19 |
| C | Corn..... tons | 1 | 10·0 | ..... | 3 84 | ..... |
| D | Red clover seed..... lb. | 1 | 135·0 | ..... | 0 15 | ..... |
| E | Red clover seed..... lb. | 1 | 135·0 | ..... | 0 15 | ..... |
| F | Oats, Alaska..... bush. | 3 | 29·0 | 23·0 | 0 81 | 1 05 |

The red clover crop on Fields "D" and "E" were allowed to mature as seed. After taking into consideration rent of land, labour, cost of machinery and all items which enter into the cost of growing the crop, a satisfactory profit was netted the grower, even though the market price for red clover seed was considerably lower than that prevailing for the past few years.

## ST. HILARION, CHARLEVOIX COUNTY, QUE.

OPERATOR, ADJUTOR GILBERT

The oat yield obtained this season as well as the average for the past two years may be considered low. However, when one realizes the difficulty of maturing oats in this section, it will be realized that the Alaska is a decidedly useful variety for such areas with a relatively short growing season. Seeding was not possible on Field "B" until June 10.

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

OPERATIONS AT ST. HILARION—FOUR-YEAR ROTATION

| Field | Crop | Number years grown | Yield per acre | | Cost per unit | |
|---|---|---|---|---|---|---|
| | | | 1929 | Average | 1929 | Average |
| | | | | | $ | $ |
| A | Oats, peas and vetch hay..... tons | 2 | 4·5 | 4·0 | 6 79 | 7 33 |
| B | Oats, Alaska..... bush. | 2 | 22·5 | 17·5 | 0 89 | 1 23 |
| C | Clover hay..... tons | 1 | 2·0 | – | 6 26 | – |
| D | Clover hay..... tons | 1 | 2·0 | ..... | 6 26 | |

Illustration work started at this point last season when Fields "C" and "D" were seeded to grass and clover; a mixture containing 8 pounds of red clover, 2 pounds of Alsike and 10 pounds of timothy were sown. The rate of seeding was twenty pounds per acre with 2½ bushels of Alaska oats per acre as a nurse crop.

## STE. ROSE DE POULARIES, ABITIBI DISTRICT, QUE.

OPERATOR, JOS. LEMOINE

Although the early spring season was wet, an abundance of surface drainage allows the land to dry out earlier than at some points and the seeding of oats and barley was completed on May 30. The operations carried out at this station were essentially preparatory to the establishment of the regular crop sequence as is necessary in a six-year rotation.

The yields and cost of growing the different crops this season were as follows:—

OPERATIONS AT STE. ROSE DE POULARIES—SIX-YEAR ROTATION

| Field | Crop | Number years grown | Yield per acre | Cost per unit |
|---|---|---|---|---|
| | | | 1929 | 1929 |
| | | | | $ |
| A | Barley, O.A.C. No. 21..... bush. | 1 | 30·0 | 0 58 |
| B | Barley, O.A.C. No. 21..... bush. | 1 | 30·0 | 0 58 |
| C | Oats, peas and vetch hay..... tons | 1 | 6·70 | 5 27 |
| C | Turnips, Hall's Westbury..... tons | 1 | 10·40 | 5 54 |
| D | Oats, Aaska..... bush. | 1 | 45·0 | 0 47 |
| E | Clover hay..... tons | 1 | 2·25 | 5 80 |
| F | Timothy hay..... tons | 1 | 2·0 | 5 88 |

In this district turnips are possibly the most useful succulent crop, the average season not being favourable for corn. Oats, peas and vetch proved very useful as a crop substitute for the intertilled crop section of the rotation. As this crop is cut early as hay, it is possible to after-harvest cultivate the land to control weeds prior to fall ploughing. The mixture used when seeding Field "C" consisted of 2 bushels of Banner oats, ¾ bushel Arthur peas and ¼ bushel vetches.

## VAL GAGNE, COCHRANE DISTRICT, ONT.

OPERATOR, H. LABRECHE

This is one of the oldest established stations in Northern Ontario, operations having started six years ago. The yields of turnips, potatoes, clover hay and oats indicate somewhat the crop possibilities of the district when careful and timely cultural operations are adopted. The results of the season's work were as follows:—

OPERATIONS AT VAL GAGNE—FOUR-YEAR ROTATION

| Field | Crop | Number years grown | Yield per acre | | Cost per unit | |
|---|---|---|---|---|---|---|
| | | | 1929 | Average | 1929 | Average |
| | | | | | $ | $ |
| A | Oats, Alaska..... bush. | 6 | 38·0 | 41·0 | 0 62 | 0 64 |
| B | Clover hay..... tons | 5 | 2·0 | 1·9 | 8 14 | 9 37 |
| C | Timothy hay..... tons | 4 | 1·50 | 1·7 | 9 33 | 8 73 |
| D | Potatoes, Irish Cobblers..... bush. | 5 | 168·0 | 180·5 | 0 34 | 0 51 |
| D | Turnips, Hall's Westbury..... tons | 5 | 22·80 | 12·8 | 1 59 | 3 68 |
| D | Mangels, Yellow Intermediate..... tons | 1 | 6·80 | ..... | 3 74 | |
| E | Oats, peas and vetch hay..... tons | 1 | 2·25 | ..... | 13 01 | |
| F | Oats, peas and vetch hay..... tons | 1 | 2·25 | ..... | 13 01 | |

The Alaska oats on Field "A" were seeded on May 27. The resulting yield was somewhat lower than the average. When seeding down this field, five pounds of Ontario Variegated alfalfa were included in the grass and clover mixture in order to gain information as to adaptation of the soil at this station for that crop. The percentage of alfalfa in the hay crop will be recorded in succeeding years.

## VERNER, NIPISSING DISTRICT, ONT.

OPERATOR, ANDRE BEAUDRY

This station has now been in operation four years hence the different crops have made one complete cycle in the rotation and next year, Field "D" will be in hoed crop as was the case the year illustration work started.

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

OPERATIONS AT VERNER—FOUR-YEAR ROTATION

| Field | Crop | Number years grown | Yield per acre | | Cost per unit | |
|---|---|---|---|---|---|---|
| | | | 1929 | Average | 1929 | Average |
| | | | | | $ | $ |
| A | Clover hay, 2 cuts..... tons | 1 | 3·70 | ..... | 4 23 | |
| B | Oats, Alaska..... bush. | 3 | 37·0 | 40·5 | 0 54 | 0 55 |
| C | Turnips, Hall's Westbury..... tons | 3 | 25·70 | 19·9 | 1 77 | 2 93 |
| D | Timothy hay..... tons | 1 | 2·10 | ..... | 5 21 | |

Steady progress is being made on this station as well as on the whole farm. The yields obtained this year reflect creditably on the methods employed when one considers the difficulties encountered because of wet weather. Oat seeding was completed on May 25 as compared with May 23 the year previous. This field presented an attractive appearance throughout the season and netted the grower a satisfactory profit for rent of land, labour and cost of material expended.

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

*Supervisor, W. L. Chauvin*

During the past year illustration work has been carried out at nineteen points in that part of the province termed as Western Quebec and five in Eastern Ontario.

Early spring conditions were not favourable for crop growth. The season was backward in this area to the extent that seeding was delayed and the acreage in grain below the average. During May there were fifteen days on which rain fell and fourteen in June. In spite of the late seeding and slow growth made early in the spring, crops came along satisfactorily with the very favourable growing conditions which existed during midsummer. The majority of crops were harvested under satisfactory weather conditions resulting in an excellent quality of hay being stored.

The following table indicates the average yield obtained on the Illustration Stations in the districts referred to, for the most important crops as well as the average yield for the past ten years:—

AVERAGE YIELDS OBTAINED

| Crop | Average yield per acre 1929 | Yield per acre 10 year average |
|---|---|---|
| Corn | 12·6 tons | 12·3 tons |
| Swede turnips | 19·8 tons | 19·4 tons |
| Potatoes | 269 bush. | 192 bush. |
| Oats | 33·7 bush. | 40·4 bush. |
| Clover seed | 126 pounds | 100 pounds |
| Clover hay | 1·7 tons | 1·6 tons |
| Timothy seed | 284 pounds | 246 pounds |
| Timothy hay | 1·7 tons | 1·6 tons |

### LIVE STOCK IMPROVEMENT

The operators of these Illustration Stations keep pure-bred sires. With two exceptions all are keeping individual milk records and carrying out systematic selection and elimination of the undesirable low-producing animals. It is impossible to tabulate for publication at this time the production of the different herds as a number of individuals have not completed their lactation period.

During the past season a rotation for hogs was started on a number of stations. In this work an acre field was divided into three equal parts and served as a unit for pasturing fifteen hogs. The crop sequence being established consists of 1st year rape; 2nd year oats, peas and vetch seeded to clover; 3rd year clover pasture. The oats, peas and vetch were cut green and fed daily to the hogs. The rape was also cut once and fed as required. After the first cutting was completed the second growth was pastured off.

### LIME AND ITS EFFECT ON THE YIELD OF CLOVER HAY

When seeding down the grain fields on a number of the Illustration Stations in the spring of 1928, a section received an application of hydrated lime at the rate of two tons per acre. An adjoining area was left unlimed in order to determine the comparative yield and its practical value in promoting crop growth. The grass and clover seed mixture used was made up of 5 pounds of

alfalfa, 5 pounds of red clover, 2 pounds of alsike and 8 pounds of timothy. This season a crop of clover hay was produced with the results as tabulated below:—

YIELDS ON LIMED AND UNLIMED PLOTS

| Location | Limed plot yield per acre | Unlimed plot, yield per acre | Increased yield |
|---|---|---|---|
| | lb. | lb. | lb. |
| Aubrey | 2,225 | 1,562 | 663 |
| Bourget | 3,875 | 3,312 | 563 |
| Casselman | 1,742 | 1,092 | 650 |
| Curran | 3,062 | 2,375 | 687 |
| Daveluyville | 3,437 | 2,625 | 812 |
| Lachute | 4,250 | 3,562 | 688 |
| Papineauville | 3,500 | 2,700 | 800 |
| Ste. Brigide | 2,750 | 2,250 | 500 |
| St. Casimir | 5,830 | 4,950 | 880 |
| St. Constant | 2,625 | 2,312 | 313 |
| St. Jerome | 3,250 | 3,125 | 125 |
| St. Leonard | 2,937 | 2,625 | 312 |
| St. Paul de Joliette | 5,125 | 4,062 | 1,063 |
| St. Simon | 1,625 | 1,375 | 250 |

On a number of the stations the percentage of alfalfa in the hay mixture was increased where lime was applied.

### FERTILIZER ILLUSTRATIONS ON CORN AND TURNIPS

During the past spring a series of fertilizer demonstrations were started on a number of Illustration Stations to determine the effect of nitrophoska on corn and turnips. Nitrophoska is a concentrated fertilizer with a 15-30-15 chemical formula. The land was manured at the rate of 10 tons per acre; in addition two hundred pounds of nitrophoska were applied broadcast to the turnip and corn land at the time of planting. A check plot was left untreated to determine the increased growth resulting from its application. On an average of thirteen stations, the manured land produced 12·7 tons corn per acre; manure and nitrophoska 15·2 tons. Thus the corn yield was increased by 2·5 tons from an application of 200 pounds of nitrophoska. In the case of turnips the average yield of fourteen trials where manure was used alone was 17·3 tons as compared with 21·1 tons per acre where nitrophoska was added or an increase of 3·7 tons.

## AUBREY, CHATEAUGUAY COUNTY, QUEBEC

### OPERATOR, SAMUEL REDDICK

In those districts where dairying is the main source of revenue it is highly important that economical and convenient crops be produced in order to realize a profit in selling milk. For that reason a four-year rotation is being carried on to demonstrate the most economical means of obtaining satisfactory yields of corn for ensilage, oats and clover hay. In a well-balanced cropping system it is important also to grow a cash crop. Clover seed growing is the most profitable cash crop for this locality. The following table gives the results of the season's work:—

Leaming corn on the Illustration Station at Ste. Brigide. The crop received an application of 10 tons of manure and 200 pounds of nitrophoska per acre, the latter a concentrated fertilizer with a 15-30-15 formula.

Leaming corn on the Illustration Station at Ste. Brigide, showing the check plot which received 10 tons of manure but no commercial fertilizer.

OPERATIONS AT AUBREY—FOUR-YEAR ROTATION

| Field | Crop | Number years grown | Yield per acre | | Cost per unit | |
|---|---|---|---|---|---|---|
| | | | 1929 | Average | 1929 | Average |
| | | | | | $ | $ |
| A | Corn, ensilage..... tons | 10 | 19·0 | 15·91 | 1 84 | 2 40 |
| B | Oats, Banner..... bush. | 10 | 34·11 | 50·0 | 0 54 | 0 42 |
| C | Timothy hay..... tons | 10 | 1·75 | 1·74 | 7 52 | 8 26 |
| C | Timothy seed..... lb. | 5 | 118·0 | 189·0 | 0 09¼ | 0·09¼ |
| D | Clover hay (one cut)..... tons | 3 | 1·50 | 1·39 | 9 02 | 9 37 |
| D | Clover hay 1st cut..... tons | 6 | 0·96 | 1·81 | 8 66 | 5 56 |
| D | Clover seed 2nd cut..... lb. | 6 | 81·0 | 101·0 | 0 11 | 0·09¾ |

Crop yields were quite satisfactory at this station in spite of the cold, showery spring and consequently late seeding. It will be noted in the above table that the cost price for most crops, namely, corn for ensilage, Banner oats, timothy hay and clover hay, is less than the average of previous years, however, the cost of growing the clover hay first cut is higher than the average of the past six years, a low yield was the contributing cause. The greater part of the clover was killed during the preceding winter.

## BOURGET, RUSSELL COUNTY, ONTARIO

OPERATOR, JULES POTVIN

In this section of Eastern Ontario the home canning industry constitutes an important branch of farming and serves as a cash crop on the farms where dairying is the main source of revenue. The purpose of this special home-canning station is to demonstrate the most suitable varieties, cultural methods and successful practice to follow when preparing such vegetable crops for market.

OPERATIONS AT BOURGET—THREE-YEAR ROTATION

| Field | Crop | Number years grown | Yield per acre | | Cost per unit | |
|---|---|---|---|---|---|---|
| | | | 1929 | Average | 1929 | Average |
| | | | | | $ | $ |
| A | Corn, Golden Bantam..... cans | 2 | 3,200 | 4,133 | 0 05½ | 0 05⅞ |
| A | Tomatoes..... cans | 2 | 3,138 | 2,835 | 0 06½ | 0 07⅛ |
| A | Beans..... cans | 2 | 5,600 | 6,400 | 0 06⅜ | 0 06½ |
| A | Carrots..... tons | 2 | 10·32 | 8·26 | 5 99 | 8 56 |
| B | Clover hay..... tons | 1 | 1·05 | ..... | 12 55 | |
| C | Oats, Banner..... bush. | 2 | 24·0 | 19·0 | 0 68 | 0 68 |

An important point to note in this table is the low cost price of each canned product, allowing the producer to realize a fair profit. The cost of production was lower than it was the previous year. This improvement has been obtained by more experience on the part of the operator in growing the crop and in the utilization of labour. This year boys and girls were employed to a large extent in the harvesting of the crops, all of which tended to reduce production costs.

## BOURGET, RUSSELL COUNTY, ONTARIO

OPERATOR, NAPOLEON MARTEL

Crops suffered considerably from drought in this district, in fact on the Illustration Station it will be noted that most crops yielded less than on the average of the past six years, corn in particular proved less than half the usual. The yields obtained and cost of production summarized over a period of years is as follows:—

OPERATIONS AT BOURGET—FOUR-YEAR ROTATION

| Field | Crop | Number years grown | Yield per acre | | Cost per unit | |
|---|---|---|---|---|---|---|
| | | | 1929 | Average | 1929 | Average |
| | | | | | $ | $ |
| A | Timothy hay..... tons | 6 | 1·50 | 2·26 | 8 68 | 7 00 |
| B | Corn, ensilage..... tons | 6 | 11·70 | 12·75 | 2 59 | 2 90 |
| B | Turnips (Hall's Westbury)..... tons | 6 | 17·18 | 16·77 | 2 68 | 3 46 |
| C | Oats (Banner)..... bush. | 6 | 45·0 | 52·0 | 0 38 | 0 43 |
| D | Clover hay 1st cut..... tons | 5 | 1·75 | 1·55 | 5 00 | 6 43 |
| D | Clover seed 2nd cut..... lb. | 5 | 128·0 | 107·0 | 0 07½ | 0 08¾ |

The soil on this station is quite a heavy clay, also one on which clovers thrive. In the spring of 1928 two tons of hydrated lime were applied to part of Field " D " which at that time was being seeded down to grasses and clovers. A portion was given an application of superphosphate at the rate of six hundred pounds and a portion was left untreated to mark the relative effect of the different treatments. The limed plot yielded 3,875 pounds of clover hay, where superphoshate was applied 4,062 pounds and the check plot 3,312 pounds.

## CAMPBELL'S BAY, PONTIAC COUNTY, QUEBEC

OPERATOR, W. J. HAYES & SON

This is the ninth year that this station has been in operation. Each year a greater number of farmers in the vicinity adopt the methods illustrated by the station work. The results of the season's work are as follows:—

OPERATIONS AT CAMPBELL'S BAY—FOUR-YEAR ROTATION

| Field | Crop | Number years grown | Yield per acre | | Cost per unit | |
|---|---|---|---|---|---|---|
| | | | 1929 | Average | 1929 | Average |
| | | | | | $ | $ |
| A | Corn, ensilage..... tons | 9 | 15·0 | 11·54 | 3 21 | 3 72 |
| B | Oats, Banner..... bush. | 9 | 25·0 | 44·0 | 0 79 | 0 49 |
| C | Clover hay 1st cut..... tons | 4 | 1·50 | 1·35 | 6 55 | 7 93 |
| C | Clover seed 2nd cut..... lb. | 4 | 122·0 | 113·0 | 0 05 | 0 07 |
| D | Timothy hay..... tons | 7 | 2·0 | 1·94 | 6 66 | 7 45 |

The production of a larger percentage of succulent and nitrogenous feed, in addition to the use of a well-bred herd sire and the keeping of milk records are responsible for the continuous improvement in the dairy herd. The possibility of growing clover seed advantageously has been proven on this station; this cash crop is a good compliment to the revenue of livestock farming.

## CASSELMAN, RUSSELL COUNTY, ONTARIO

OPERATOR, HECTOR LAFLECHE

This station has now been in operation for the fifth year and is making constant progress. Considering the rainy, cold season, crops gave very satisfactory yields. The oats on Field "D" were seeded on May 23 and all seeding including turnips and corn was completed by the end of that month.

OPERATIONS AT CASSELMAN—FOUR-YEAR ROTATION

| Field | Crop | | Number of years grown | Yield per acre | | Cost per unit | |
|---|---|---|---|---|---|---|---|
| | | | | 1929 | Average | 1929 | Average |
| | | | | | | $ | $ |
| A | Corn, fodder | tons | 5 | 15·13 | 13·83 | 2 26 | 2 62 |
| A | Turnip, (Hall's Westbury) | tons | 5 | 32·42 | 24·19 | 2 15 | 2 87 |
| B | Timothy hay | tons | 3 | 0·95 | 1·42 | 16 69 | 11 74 |
| C | Clover hay, 1st cut | tons | 3 | 0·72 | 0·98 | 13 46 | 12 85 |
| C | Clover seed 2nd cut | lb. | 2 | 94·0 | 125·0 | 0 20 | 0 16 |
| D | Oats (Banner) | bush. | 2 | 39·0 | 43·0 | 0 60 | 0 54 |

An interesting demonstration was carried out this season on this station to determine the value of lime. This material was applied last season to the grain and seeded field at the rate of 2 tons per acre. The part that received the lime gave an increased yield of 650 pounds of mixed clover hay on the first year meadow and 938 on the second year meadow.

## CURRAN, PRESCOTT COUNTY, ONTARIO

OPERATOR, A. DUPONT

The nature of the soil of this station does not allow early seeding. It was not possible to carry out this operation until May 21 for oats; June 6, for turnips; and June 10, for corn. The turnip yield is lower than the previous years on account of cold, wet weather and damage caused by wire worm.

OPERATIONS AT CURRAN—FOUR-YEAR ROTATION

| Field | Crop | | Number of years grown | Yield per acre | | Cost per unit | |
|---|---|---|---|---|---|---|---|
| | | | | 1929 | Average | 1929 | Average |
| | | | | | | $ | $ |
| A | Oats (Banner) | bush. | 6 | 30·0 | 36·0 | 0 58 | 0 65 |
| B | Clover hay 1st cut | tons | 6 | 1·37 | 1·27 | 6 22 | 7 49 |
| B | Clover seed 2nd cut | lb. | 6 | 143·0 | 82·0 | 0 07 | 0 12 |
| B | Clover hay, one cut | tons | 2 | 1·25 | 1·31 | 5 97 | 8 77 |
| C | Timothy hay | tons | 5 | 2·08 | 2·06 | 6 49 | 6 99 |
| D | Corn, ensilage | tons | 6 | 13·0 | 11·50 | 2 72 | 3 02 |
| D | Turnips, Hall's Westbury | tons | 5 | 14·25 | 22·45 | 2 60 | 1 93 |

This operator has made considerable progress in the improvement of his Ayrshire herd since the establishment of the station in 1924; this year a pure-bred Leicester ram was purchased and systematic work in building up the flock of sheep is being definitely undertaken. Over a period of six years, clover hay, turnips and corn ensilage have given profitable returns, both from a production standpoint, also in supplying suitable feeds for the dairy herd. The main source of revenue on this farm is derived from the sale of livestock and dairy products, as well as red clover seed as a cash crop.

## DAVELUYVILLE, ARTHABASKA COUNTY, QUEBEC

OPERATOR, ALPHONSE POISSON

Snow disappeared at this station early in April and conditions were favourable for an early seeding, however, wet weather came on, as was the case the previous year, delaying the seeding of oats on Field " D " until June 4 and turnips on Field " B " until June 16. The factor of late seeding always tends to reduce yields and increase production cost in such crops.

OPERATIONS AT DAVELUYVILLE—FOUR-YEAR ROTATION

| Field | Crop | Number of years grown | Yield per acre | | Cost per unit | |
|---|---|---|---|---|---|---|
| | | | 1929 | Average | 1929 | Average |
| | | | | | $ | $ |
| A | Timothy hay..... tons | 2 | 1·43 | 1·46 | 7 43 | 7 88 |
| B | Turnips (Hall's Westbury)..... tons | 4 | 13·38 | 12·96 | 2 63 | 3 57 |
| B | Sunflowers, fodder..... tons | 3 | 5 ·0 | 7·17 | 5 19 | 5 74 |
| C | Oats, Alaska..... bush. | 1 | 23·25 | ..... | 0 80 | |
| D | Clover hay 2 cuts..... tons | 1 | 1·65 | ..... | 7 80 | |
| D | Clover hay, 1 cut..... tons | 3 | 1·06 | 1·59 | 11 22 | 9 83 |

When preparing Field " B " for turnips and sunflowers the land was ploughed shallow and the furrow turned flat on the removal of the hay crop. It was then rolled to hasten decomposition of the sod, kept cultivated at frequent intervals to keep weed growth in check. In the fall it was again ploughed and to a depth in keeping with the nature of the soil.

## KAZUBAZUA, WRIGHT COUNTY, QUEBEC

OPERATOR, EPH. ANDERSON

The results on this station demonstrate the possibilities of building up a light sandy soil by means of legume crops, farmyard manure and chemical fertilizers. The greatest effect coming from the use of chemical fertilizers as the supply of manure is very limited.

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 per unit | |
|---|---|---|---|---|---|---|
| | | | 1929 | Average | 1929 | Average |
| | | | | | $ | $ |
| A | Corn..... tons | 5 | 7·0 | 6·80 | 3 03 | 6 71 |
| A | Potatoes..... bush. | 5 | 180·0 | 136·0 | 0 26 | 0 44 |
| B | Timothy hay..... tons | 2 | 1·50 | 2·0 | 4 11 | 5 54 |
| C & D | Clover hay..... tons | 3 | 1·75 | 2·0 | 4 55 | 7 28 |
| E | Oats (Banner)..... bush. | 1 | 31·70 | 31·70 | 0 51 | 0 51 |

When fertilizing the potato crop a combination of manure and chemicals is used. On this soil there is a marked deficiency in nitrogen and frequently light applications of nitrogenous fertilizers such as nitrate of soda or sulphate of ammonia are profitable. In the use of such ingredients it is important that they be applied early, and in the case of meadow lands, best results have been obtained when they are applied just as growth starts.

## L'ANNONCIATION, LABELLE COUNTY, QUEBEC

OPERATOR, DIDYME COTE

The adopting of farm practices which create conditions favourable to early seeding and early maturing varieties are essential at this station because of the comparatively short growing season. This year a heavy frost came on August 22 damaging corn and all garden crops very badly. The Alaska oats, an early maturing variety, was seeded on May 7 and harvested on August 6.

OPERATIONS AT L'ANNONCIATION—FOUR-YEAR ROTATION

| Field | Crop | Number of years grown | Yield per acre | | Cost per unit | |
|---|---|---|---|---|---|---|
| | | | 1929 | Average | 1929 | Average |
| | | | | | $ | $ |
| A | Clover hay..... tons | 3 | 1·47 | 1·13 | 9 65 | 12 33 |
| B | Potatoes, Irish Cobbler..... bush. | 3 | 276·0 | 222·0 | 0 31 | 0 34 |
| B | Corn, fodder..... tons | 4 | 13·21 | 11·28 | 2 75 | 3 62 |
| B | Sunflowers, fodder..... tons | 3 | 19·66 | 18·50 | 1 71 | 2 33 |
| B | Turnips, Hall's Westbury..... tons | 4 | 13·22 | 13·53 | 2 60 | 4 27 |
| C | Timothy hay..... tons | 1 | 0·78 | ..... | 14 10 | ..... |
| D | Oats, Alaska..... bush. | 3 | 12·50 | 18·0 | 1 47 | 1 35 |

As may be noted in the preceding table, the yields and cost are generally better this year than the average of previous years. This improvement clearly demonstrates the value of systematic cropping, timely and thorough cultivation as well as the necessity of conserving the fertility by the use of farmyard manure.

## LACHUTE, ARGENTEUIL COUNTY, QUEBEC

OPERATOR, S. R. SMITH

Seeding was completed relatively early on this station. Oats being sown on May 1 and corn on May 22. Except for the oats, the yields obtained this year were higher than the average of the previous ten years. Dry weather during July and August is responsible for the lower yield of oats.

OPERATIONS AT LACHUTE—FOUR-YEAR ROTATION

| Field | Crop | Number of years grown | Yield per acre | | Cost per unit | |
|---|---|---|---|---|---|---|
| | | | 1929 | Average | 1929 | Average |
| | | | | | $ | $ |
| A | Corn, ensilage..... tons | 10 | 18·40 | 15·33 | 1 99 | 2 31 |
| B | Timothy hay..... tons | 4 | 1·90 | 1·54 | 7 94 | 7 92 |
| C | Clover hay..... tons | 4 | 2·93 | 1·92 | 5 84 | 8 90 |
| D | Oats, Banner..... bush. | 10 | 28·50 | 35·0 | 0 69 | 0 61 |

Constant attention has been given to livestock improvement on this farm. Ten years ago when the illustration work started the dairy herd was principally grades, and consequently of medium quality. Now the operator carries a herd of thirty milch cows, pure and grade Ayrshire of good quality. Higher individual milk production, the use of a bull from a high producing dam, better and more economical feeding obtained by a more suitable cropping system are the main factors contributing to the increased revenue from this farm.

## PAPINEAUVILLE, LABELLE COUNTY, QUEBEC

OPERATOR, JOS. E. BONHOMME

The soil at this station, being a light loam, responds favourably to early seeding. This season the Banner oats on Field "C" was seeded on April 27 at two and one-half bushels per acre along with eight pounds of red clover, two pounds of alsike and ten pounds of timothy.

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 per unit | |
|---|---|---|---|---|---|---|
| | | | 1929 | Average | 1929 | Average |
| | | | | | $ | $ |
| A | Potatoes, Irish Cobbler..... bush. | 6 | 156·0 | 196·0 | 0 59 | 0 46 |
| A | Turnips, Hall's Westbury..... tons | 8 | 16·86 | 26·11 | 4 57 | 3 43 |
| A | Corn, ensilage..... tons | 5 | 16·0 | 13·90 | 2 77 | 3 39 |
| B | Timothy hay..... tons | 7 | 3·75 | 2·44 | 4 39 | 6 10 |
| C | Oats, Banner..... bush. | 9 | 41·66 | 40·53 | 0 49 | 0 56 |
| D | Clover hay, 1st cut..... tons | 4 | 1·55 | 1·86 | 5 69 | 6 37 |
| D | Clover seed, 2nd cut..... lb. | 4 | 72·0 | 111·0 | 0 08¼ | 0 09½ |

When considered over a period of years the production costs obtained at this station are quite encouraging from a dairy farming standpoint. Chemical fertilizers were used to good advantage on both the corn and turnip crops. The application of two tons of ground limestone also increased the clover hay yield by eight hundred pounds per acre. The soil at this station requires considerable cultivation to control couch grass. Light summer ploughing is proving the most practical method of control.

## RUSSELL, RUSSELL COUNTY, ONTARIO

OPERATOR, KENNETH BOYD

Late seeding which has been the rule at this station for the past few years, because of unfavourable spring conditions, has adversely affected yields, particularly, the cereals. The seeding of fields "A" and "C" was not possible until May 25. The following table gives the yields and cost of growing the different crops this year, as well as their average for three seasons.

OPERATIONS AT RUSSELL—SIX-YEAR ROTATION

| Field | Crop | Number of years grown | Yield per acre | | Cost per unit | |
|---|---|---|---|---|---|---|
| | | | 1929 | Average | 1929 | Average |
| | | | | | $ | $ |
| A | Oats, Banner..... bush. | 4 | 30·0 | 39·0 | 0 65 | 0 88 |
| B | Clover hay, one cut..... tons | 1 | 1·0 | ..... | 17 63 | ..... |
| C | Oats, Banner..... bush. | 4 | 38·0 | 39·0 | 0 50 | 0 88 |
| D | Clover hay, one cut..... tons | 1 | 1·25 | ..... | 13 36 | ..... |
| E | Corn, fodder..... tons | 4 | 12·0 | 10·0 | 2 66 | 4 03 |
| F | Mixed clover and alfalfa hay..... tons | 2 | 1·33 | 1·25 | 14 06 | 14 06 |

Spring freezing and thawing caused a great deal of damage to the new meadows. The clover was so badly killed out that it was not possible to harvest seed on either fields "B" or "F" as is the original procedure in this six-year rotation. Two varieties of corn were grown namely, Bailey and Longfellow, the Bailey outyielded the latter by six tons per acre producing fifteen tons per acre.

## STE. BRIGIDE, IBERVILLE COUNTY, QUEBEC

OPERATOR, ALPHONSE GOINEAU

The late date of seeding, namely May 27, had an adverse effect on oat yields, although the general quality of seed produced was well up to standard. The production and sale of registered seed oats have for a number of years been regarded as profitable cash crops on this specialized dairy farm.

OPERATIONS AT STE. BRIGIDE—FOUR-YEAR ROTATION

| Field | Crop | Number of years grown | Yield per acre | | Cost per unit | |
|---|---|---|---|---|---|---|
| | | | 1929 | Average | 1929 | Average |
| | | | | | $ | $ |
| A | Oats, Reg. Banner..... bush. | 9 | 48·0 | 54·0 | 0 41 | 0 40 |
| B | Timothy hay..... tons | 8 | 1·26 | 2·10 | 9 97 | 7 17 |
| C | Corn, ensilage..... tons | 9 | 15·11 | 14·83 | 1 86 | 2 07 |
| C | Turnips, Hall's Westbury..... tons | 9 | 22·25 | 25·0 | 1 61 | 1 78 |
| D | Clover hay, 1st cut..... tons | 6 | 1·29 | 1·35 | 6 28 | 6 35 |
| D | Clover seed, 2nd cut..... lb. | 6 | 86·0 | 91·50 | 0 07½ | 0 09 |

The rotation of crops adopted on this farm, the up-to-date well kept buildings and attractively arranged flower beds and lawns present a condition worthy of imitation by farmers in general. The heavy clay soil on this station is well adapted to the production of clover hay; alfalfa has been tried out for the past three years but does not thrive unless the land is given an application of lime prior to seeding. The most satisfactory rate of seeding consists of a mixture made up of eight pounds red clover, two pounds alsike and ten pounds timothy, per acre.

## ST. CASIMIR, PORTNEUF COUNTY, QUEBEC

OPERATOR, ELOI ST. GERMAIN

This year the crop yields were higher than the average of previous years, with the exception of turnips, which also gave a good yield although lower than the average.

The five-year rotation conducted on this station is well adapted to the district. The Alaska oats, an early ripening variety is well suited to local conditions and as will be noted in a ten-year average has given forty-eight bushels per acre.

OPERATIONS AT ST. CASIMIR—FOUR-YEAR ROTATION

| Field | Crop | Number of years grown | Yield per acre | | Cost per unit | |
|---|---|---|---|---|---|---|
| | | | 1929 | Average | 1929 | Average |
| | | | | | $ | $ |
| A | Clover hay, 1st cut..... tons | 4 | 2·69 | 1·90 | 3 81 | 6 80 |
| A | Clover ensilage, 2nd cut..... tons | 1 | 7·50 | ..... | 2 23 | ..... |
| B | Oats, Alaska..... bush. | 10 | 51·0 | 48·0 | 0 45 | 0 48 |
| C | O.P.V. ensilage..... tons | 1 | 10·50 | ..... | 3 90 | ..... |
| C | Turnips..... tons | 6 | 18·50 | 19·66 | 3 76 | 3 49 |
| D | Timothy hay..... tons | 8 | 2·30 | 1·92 | 6 30 | 7 09 |

In the ordinary course of events corn is grown on the hoed crop section of this rotation, however, because of the cold, wet spring the seed rotted in the ground and it will be noted that field "C" was re-seeded to oats, peas and vetch. Although seeded somewhat late the oats, peas and vetch produced a very fine crop of excellent quality of ensilage, a high percentage of the mixture being peas and vetch. The rate of seeding was oats, two bushels, peas three-quarters of a bushel and vetch one-quarter of a bushel per acre.

## ST. CONSTANT, LAPRAIRIE COUNTY, QUEBEC

OPERATOR, ROCH BOULE

Interesting development continues to be made at this station with respect to both crop production and livestock improvement. Two years ago the operator erected his first silo, in fact the first in the district, and is very favourably impressed with its value.

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

OPERATIONS AT ST. CONSTANT—FOUR-YEAR ROTATION

| Field | Cost | Number of years grown | Yield per acre | | Cost per unit | |
|---|---|---|---|---|---|---|
| | | | 1929 | Average | 1929 | Average |
| | | | | | $ | $ |
| A | Oats, Banner..... bush. | 9 | 41·0 | 38·0 | 0 49 | 0 61 |
| B | Timothy hay, new meadow..... tons | 4 | 1·23 | 0·96 | 13 09 | 16 15 |
| C | Corn, ensilage..... tons | 2 | 16·33 | 13·12 | 2 32 | 3 04 |
| E | Timothy hay..... tons | 7 | 1·18 | 1·43 | 11 68 | 11 53 |

In addition to the regular rotation work a trial was undertaken on field "B" to determine the effect of ground lime when applied at the rate of two tons per acre. The clover in this new meadow was badly winter-killed with the result that the crop was principally timothy. The limed plot yielded 2,625 pounds in comparison with 2,312 on the check plot.

## ST. CLET, SOULANGE COUNTY, QUEBEC

OPERATOR, LOUIS BESNER

This station has now been established for a ten year period during which time considerable has been accomplished in general farm and livestock improvement. Unfavourable weather and illness in the family seriously affected crop yields as well as production cost, particularly corn and turnips. The following table indicates the yields and cost of production obtained:—

OPERATIONS AT ST. CLET—FOUR-YEAR ROTATION

| Field | Crop | Number of years grown. | Yield per acre | | Cost per unit | |
|---|---|---|---|---|---|---|
| | | | 1929 | Average | 1929 | Average |
| | | | | | $ | $ |
| A | Timothy seed..... lb. | 7 | 200·0 | 184·0 | 0 06½ | 0 08 |
| B | Mixed hay..... tons | 1 | 1·60 | ..... | 9 90 | ..... |
| C | Oats, Banner..... bush. | 9 | 19·0 | 40·0 | 1 12 | 0 55 |
| D | Corn, ensilage..... tons | 10 | 4·50 | 10·82 | 6 77 | 3 67 |
| D | Turnips..... tons | 5 | 7·50 | 17·0 | 5 84 | 4 47 |

Unlike in most seasons the red clover was winter-killed. Usually red clover seed growing is a remunerative cash crop at this station as well as in the district. Alfalfa has been tried on the station fields by including five pounds of such seed in the regular mixture. To date, it has not become satisfactory, possibly due to lack of drainage. On higher, more gravelly soil adjoining the illustration fields very promising alfalfa crops have been obtained.

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

OPERATOR, ORIGENE BOURNIVAL

Ideal spring weather, coupled with the light, sandy nature of the soil brought about conditions favourable for early seeding. In fact all crops were seeded by May 30.

The following table gives the yields and cost of growing the different crops for the past year as well as their average, since the work was established:—

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

| Field | Crop | Number of years grown | Yield per acre | | Cost per unit | |
|---|---|---|---|---|---|---|
| | | | 1929 | Average | 1929 | Average |
| | | | | | $ | $ |
| A | Oats, Banner..... bush. | 9 | 30·0 | 26·0 | 0 48 | 0 67 |
| B | Timothy hay..... tons | 8 | 1·38 | 1·05 | 6 86 | 9 64 |
| C | Clover hay..... tons | 7 | 1·02 | 0·97 | 11 01 | 12 57 |
| D | Potatoes, Green Mountain..... bush. | 10 | 314·0 | 214·0 | 0 18 | 0 26 |
| D | Turnips, Hall's Westbury..... tons | 9 | 15·85 | 11·50 | 3 68 | 3 50 |
| D | Corn, Longfellow fodder..... tons | 9 | 17·06 | 9·55 | 1 40 | 3 08 |
| D | Corn, Canadian..... tons | 6 | 12·50 | 8·0 | 2 17 | 3 48 |
| D | Corn, Golden Bantam..... tons | 1 | 11·50 | ..... | 3 17 | ..... |

In addition to the rotation work a series of fertilizer demonstrations were undertaken in 1928. The following applications of fertilizers were applied to the new meadow with the results as previously reported. This year a timothy hay crop was harvested with the yields from the different treatments being as follows:—

| | Yield per acre 3 years average |
|---|---|
| Plot 1—100 pounds nitrate of soda..... | 2,750 pounds |
| Plot 2—100 pounds nitrate of soda, 300 pounds acid phosphate..... | 2,729 pounds |
| Plot 3—Check..... | 1,970 pounds |
| Plot 4—100 pounds nitrate of soda, 150 pounds muriate of potash..... | 2,635 pounds |
| Plot 5—100 pounds nitrate of soda, 300 pounds acid phosphate, 150 pounds muriate of potash..... | 3,031 pounds |

## ST. EUGENE, PRESCOTT COUNTY, ONTARIO

OPERATOR, ALBERT SEGUIN

Seeding on this station started on May 23. This is the latest season experienced since the work was established. In spite of this condition crops gave a fair return. The results of the season's work are as follows:—

OPERATIONS AT ST. EUGENE—FOUR-YEAR ROTATION

| Field | Crop | Number of years grown | Yield per acre | | Cost per unit | |
|---|---|---|---|---|---|---|
| | | | 1929 | Average | 1929 | Average |
| | | | | | $ | $ |
| A | Corn, ensilage..... tons | 4 | 15·95 | 11·81 | 2 56 | 3 99 |
| A | Turnips, Hall's Westbury..... tons | 3 | 24·50 | 18·90 | 3 00 | 4 13 |
| B | Oats, Banner..... bush. | 3 | 43·0 | 44·0 | 0 49 | 0 49 |
| C | Timothy hay, 1st year meadow..... tons | 1 | 1·44 | ..... | 11 84 | ..... |
| C | Clover hay, 1st cut..... tons | 2 | 1·31 | 1·46 | 7 30 | 6 73 |
| C | Clover seed, 2nd cut..... lb. | 2 | 80·0 | 120·0 | 0 17 | 0 14½ |
| D | Timothy hay..... tons | 2 | 1·56 | 1·64 | 10 33 | 8 82 |

In order to determine and demonstrate the economical value of raising hogs on pasture a special project has been started this year with this purpose in view. In the spring an acre of land adjoining the hog house was fenced and divided

into three fields of one-third of an acre each. A three-year rotation with the following crop sequence has been established.

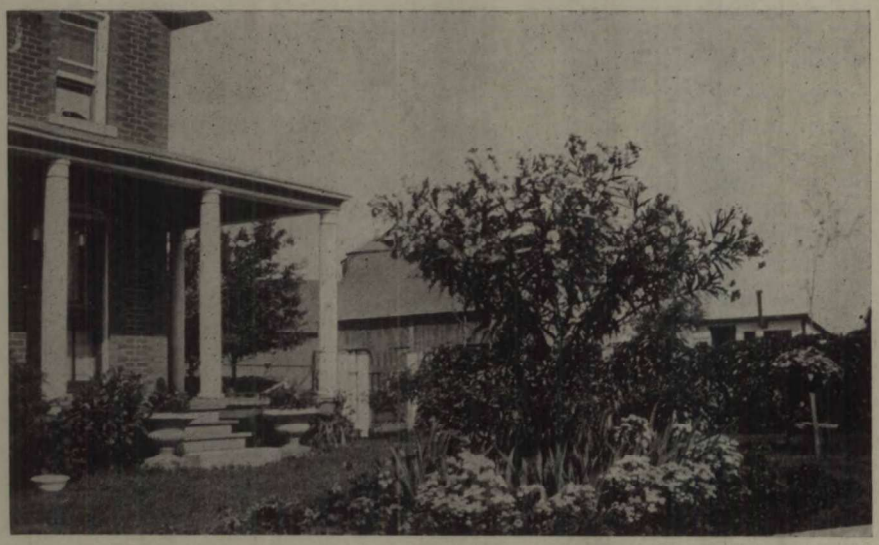
1st year—Rape
2nd year—Oats, peas and vetch seeded with clover
3rd year—Pasture

This year the operator raised twenty-two hogs on these fields with a very satisfactory result. The cost of producing pork was reduced by over one-third compared with previous methods.

## ST. EUSTACHE, TWO MOUNTAINS COUNTY, QUEBEC

OPERATOR, ARTHUR BELANGER

This is the first year that Illustration Station work has been under way in this district. Preparatory work was undertaken, the fields have all been



Pleasant, home-like surroundings on the Illustration Station at St. Eustache.

definitely measured out, and the regular crop sequence in the process of establishment. The following table indicates the yields obtained and cost of production:—

OPERATIONS AT ST. EUSTACHE—FOUR-YEAR ROTATION

| Field | Crop | Number of years grown | Yield per acre | Cost per unit |
|---|---|---|---|---|
| | | | 1929 | 1929 |
| | | | | $ |
| A | Oats, Banner..... bush. | 1 | 33·50 | 0 57 |
| B | Oats, Reg. Banner..... bush. | 1 | 34·25 | 0 57 |
| C | Oats, Reg. Banner..... bush. | 1 | 33·50 | 0 50 |
| D | Corn, ensilage..... tons | 1 | 13·25 | 2 72 |

## ST. JEROME, TERREBONNE COUNTY, QUEBEC

OPERATOR, WILFRID GUAY

The low land on which this station is located is very unfavourable to the seed-bed preparation and early seeding in the spring. First seeding was carried out this year on June 4 with oats. This is the same date as that on which it was performed last year. In spite of this condition, steady progress is being made by this operator in the station work as well as in general farm management. A five-year rotation is now in the process of establishment on the whole of this farm.

The following table indicates the yields obtained, also the cost of production:—

OPERATIONS AT ST. JEROME—FOUR-YEAR ROTATION

| Field | Crop | Number of years grown | Yield per acre | | Cost per unit | |
|---|---|---|---|---|---|---|
| | | | 1929 | Average | 1929 | Average |
| | | | | | $ | $ |
| A | Timothy hay..... tons | 7 | 2·0 | 2·07 | 8 40 | 7 68 |
| A | Timothy seed..... lb. | 2 | 574·0 | 487·0 | 0 03½ | 0 04 |
| B | Potatoes..... bush. | 6 | 320·0 | 211·0 | 0 20 | 0 42 |
| B | Turnips..... tons | 9 | 18·28 | 19·21 | 2 59 | 2 93 |
| B | Corn, fodder..... tons | 9 | 13·50 | 13·0 | 2 74 | 3 40 |
| C | Clover hay, 2 cuts..... tons | 4 | 1·46 | 2·34 | 12 74 | 9 18 |
| C | Clover hay, 1st cut..... tons | 4 | 1·62 | 1·27 | 9 21 | 8 69 |
| C | Clover seed, 2nd cut..... lb. | 4 | ..... | ..... | ..... | ..... |
| D | Oats, Banner..... bush. | 9 | 35·0 | 33·0 | 0 67 | 0 72 |

## STE. JULIE, VERCHERES COUNTY, QUEBEC

OPERATOR, HENRI DELORME

Late seeding followed by wet weather during the growing season brought about very unfavourable crops for this clay soil, consequently yields are lower than the average for most crops. The following table gives the results of the season's work:—

OPERATIONS AT STE. JULIE—FOUR-YEAR ROTATION

| Field | Crop | Number of years grown | Yield per acre | | Cost per unit | |
|---|---|---|---|---|---|---|
| | | | 1929 | Average | 1929 | Average |
| | | | | | $ | $ |
| A | Timothy hay..... tons | 9 | 1·0 | 1·64 | 12 83 | 8 90 |
| B | Oats, Banner..... bush. | 10 | 32·0 | 48·0 | 0 64 | 0 44 |
| C | Corn, ensilage..... tons | 10 | 8·25 | 12·74 | 4 01 | 3 02 |
| D | Mixed hay, new meadow..... tons | 7 | 1·50 | 1·40 | 9 60 | 7 97 |
| D | Timothy seed, new meadow..... lb. | 3 | 150·0 | 249· | 0 08 | 0 07 |
| D | Clover seed..... lb. | 7 | 120·0 | 89·0 | 0 11 | 0 15 |

This land is very suitable for growing common red clover seed. The yield of seed obtained this year was one hundred and twenty pounds per acre, in spite of rather unfavourable weather conditions. The grass and clover seed mixture used when seeding down was made up of red clover, eight pounds, alsike clover two pounds, timothy ten pounds. On the first year meadow an early crop of clover hay was taken, also a seed crop. On the second year meadow a crop of timothy for seed was harvested, the yield this season being considerably below the average.

## ST. PAUL DE JOLIETTE, JOLIETTE COUNTY, QUEBEC

OPERATOR, GEORGE E. BAZINET

It will be noted that there were four crops, namely, corn, turnips, peas and oats, peas and vetch for hay grown on field "C", the hoed crop section of the rotation. The moist, cool season and fertile clay soil on this station was particularly favourable for turnips as indicated by the yield and production cost. The following table gives the season's work:—

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

| Yield | Crop | Number of years grown | Yield per acre | | Cost per unit | |
|---|---|---|---|---|---|---|
| | | | 1929 | Average | 1929 | Average |
| | | | | | $ | $ |
| A | Oats, Banner..... bush. | 6 | 28·0 | 38·0 | 0 70 | 0 71 |
| B | Clover hay, 2 cuts..... tons | 1 | 3·67 | ..... | 6 92 | ..... |
| B | Clover hay, first cut..... tons | 5 | 2·27 | 1·34 | 3 93 | 10 41 |
| B | Clover seed, second cut..... lb. | 3 | ..... | ..... | ..... | ..... |
| C | Corn, fodder..... tons | 6 | 11·87 | 11·34 | 2 07 | 4 12 |
| C | Turnips..... tons | 4 | 42·75 | 29·42 | 1 39 | 2 90 |
| C | Peas..... bush. | 1 | 6·20 | ..... | 5 07 | ..... |
| C | Oats and pea hay..... tons | 6 | 1·90 | 2·97 | 13 84 | 12 88 |
| D | Timothy hay..... tons | 5 | 1·42 | 1·52 | 10 61 | 10 88 |

In comparative trials, ground limestone has given profitable returns on this station. In a trial on field "A" the application of two tons of ground limestone increased the clover hay yield by 1,063 pounds, whereas on the portion of the field receiving 400 pounds of superphosphate the increase in yield was 376 pounds per acre. When the land is limed at the above rate alfalfa does very well when seeded with the regular mixture made up of five pounds alfalfa, five pounds red clover, two pounds of alsike, and eight pounds of timothy per acre.

## ST. SIMON, BAGOT COUNTY, QUEBEC

OPERATOR, DONAT RIVARD

Seeding was not possible at this station until May 27, sixteen days later than in 1928. Weather conditions were very unfavourable for farm work, this condition adversely affecting the yields of turnips and corn, the average being lower than that obtained in previous years.

OPERATIONS AT ST. SIMON—FOUR-YEAR ROTATION

| Field | Crop | Number of years grown | Yield per acre | | Cost | |
|---|---|---|---|---|---|---|
| | | | 1929 | Average | 1929 | Average |
| | | | | | $ | $ |
| A | Corn, on cob, Canadian..... bush. | 1 | 52·0 | ..... | 0 96 | |
| A | Turnips, Hall's Westbury..... tons | 9 | 18·75 | 22·80 | 3 90 | 2 65 |
| A | Corn, ensilage..... tons | 9 | 9·68 | 11·69 | 3 61 | 3 54 |
| B | Clover hay, first cut..... tons | 7 | 0·75 | 1·02 | 13 01 | 9 52 |
| B | Clover seed, second cut..... lb. | 7 | 189·0 | 127·0 | 0 04 | 0 11 |
| C | Barley..... bush. | 1 | 26·75 | ..... | 0 89 | |
| D | Timothy hay..... tons | 7 | 1·68 | 1·62 | 9 53 | 9 70 |

The work at this station, as in the improvement and management of the farm as a whole, shows most interesting and continuous progress. A systematic rotation is established embracing the whole farm, a well-bred and productive herd of Ayrshire cattle is maintained, and a new and modern barn has just been completed, all of which makes for efficiency and profit. In the general scheme of development the beautification of the home and its surroundings is very pleasing. An excellent garden, including strawberries and bush fruits, supply an abundance of fresh fruit and vegetables for home use.

# REPORT OF THE ILLUSTRATION STATIONS IN CENTRAL QUEBEC

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

Thirteen stations were in operation in central Quebec in 1929. On six of these stations special fertilizer illustration work has been carried on, and the results obtained on these special fertilizer Illustration Stations constitutes a special part of this report.

## SEASONAL NOTES

Weather conditions were for the most part favourable to the growing of crops. The snow was not very deep during the winter of 1928-29, but the spring was late and wet. The month of May was very rainy and seeding could not be done until the beginning of June on most of the stations. Later on, the weather was dry to the extent that hoed crops and cereals suffered from the lack of moisture during the growing season, but haying was completed under very satisfactory conditions.

## DAIRY HERD IMPROVEMENT

Live stock has shown steady improvement this year. Most of the work on the Illustration Stations in Central Quebec 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 winter feeding. Central Quebec is an extensive dairying district where particular attention is given this phase of agriculture.

Most of the station operators own a pure-bred bull. On five stations individual milk and butter-fat records have been kept; the milk from each cow is weighed and composite milk samples are tested every month at the local cheese or butter factory. It is planned to extend the keeping of these records to every station of this district.

The following table shows the average milk and butterfat production of the herds kept on the Illustration Stations, also the production of the highest and lowest cows.

Milk and Butterfat Production on Central Quebec Illustration Stations, 1929

| Stations | 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. |
| Black Lake | Grade | 25 | 251 | 4,889 | 184·1 | 3,972 | 142·7 | 5,677 | 186·4 |
| N.D. de Ham | Ayrshire | 16 | 278 | 5,712 | 250·9 | 4,452 | 178·6 | 10,050 | 390·8 |
| Plessisville | Grade | 14 | 253 | 7,610 | 262·2 | 4,531 | 147·6 | 10,221 | 319·1 |
| South Roxton | Ayrshire | 16 | 290 | 7,703 | 283·6 | 5,729 | 261·3 | 10,556 | 446·90 |
| Weedon | Grade | 10 | 275 | 5,714 | 228·0 | 4,909 | 231·2 | 7,044 | 338·4 |

From the above table it will be seen that although some of these stations have creditable herd averages, in many cases they are too low to be profitable. A severe elimination of the lowest producing individuals must be carried out, and improvement can be made by extending the lactation period, as a result of better feeding practices.

## FERTILIZER TESTS

An interesting test has been undertaken on the regular Illustration Stations aiming to demonstrate the comparative effect of a new concentrated synthetic chemical fertilizer named Nitrophoska No. 1, having a 15-30-15 formula.

Nitrophoska, containing the three elements (nitrogen-phosphorous-potassium) was applied at the rate of 200 pounds per acre with ten tons of manure, another plot receiving manure only, and the third received an application of 10 tons of manure and 534 pounds per acre of a 5-10-5 home-mixed fertilizer.

The results and cost per unit of production for swede turnips are summarized in the following table:—

COMPARISON OF NITROPHOSKA AND HOME MIXED FERTILIZER ON TURNIPS

| Station | Manure+Nitrophoska | | Manure alone | | Manure+Fertilizer | |
|---|---|---|---|---|---|---|
| | Yield per acre | Cost per unit | Yield per acre | Cost per unit | Yield per acre | Cost per unit |
| | tons | $ | tons | $ | tons | $ |
| Black Lake | 38·00 | 2 10 | 22·80 | 3 11 | ..... | |
| Bromptonville | 41·25 | 1 63 | 15·00 | 4 15 | 33·75 | 2 00 |
| Plessisville | 20·94 | 2 44 | 16·02 | 2 60 | 20·77 | 2 29 |
| South Roxton | 25·64 | 1 89 | 15·00 | 2 85 | 24·38 | 2 00 |
| Weedon | 26·40 | 1 73 | 16·50 | 2 42 | 36·30 | 1 36 |
| Average | 30·45 | 1 96 | 17·06 | 3 03 | 28·80 | 1 92 |

From the results indicated in the above table one can observe that the turnip yield was increased by $13\frac{1}{3}$ tons per acre when 200 pounds of nitrophoska was used in addition to manure, and by $11\frac{3}{4}$ tons where a home-mixed fertilizer was used compounded with standard ingredients. Chemical fertilizer gave the crop a quick start which was maintained throughout the season. This substantial increase in yield also reduced the production cost per unit below that obtained where manure was applied alone.

### AVERAGE YIELD AND COST OF PRODUCTION

The following table was computed from the data obtained as to yields and cost of production on the stations in Eastern Quebec during the past cropping season, but does not include those where special work was being carried out with chemical fertilizers.

AVERAGE YIELDS AND COST OF PRODUCTION IN CENTRAL QUEBEC

| Crops | | Number of stations | Average yield 1929 | Average cost per unit 1929 |
|---|---|---|---|---|
| | | | | $ |
| Swede turnips (manured only) | tons | 6 | 15·89 | 2 88 |
| O.P.V. hay | tons | 3 | 2·99 | 8 89 |
| Timothy hay, first year | tons | 6 | 2·48 | 5 58 |
| Timothy hay, second year | tons | 2 | 2·25 | 5 79 |
| Clover hay | tons | 6 | 2·41 | 7 66 |
| Banner oats | bush. | 6 | 50·73 | 0 58 |
| Corn, Longfellow | tons | 4 | 17·04 | 2 35 |
| Potatoes | bush. | 3 | 174·5 | 0 31 |
| Corn and sunflowers | tons | 1 | 8·50 | 3 70 |

## BLACK LAKE, MEGANTIC COUNTY

### OPERATOR, ARCH. DALLAIRE

This station has now been in operation for three years and has made steady progress. The four-year rotation is now well established and fields which formerly produced very light crops are now noticeably better.

As this is a dairy district with a good all year round market for milk, the work has been planned with the view of demonstrating a system of farming which would supply the most desirable crops for the winter feeding of dairy cattle, namely, red clover, alfalfa, O.P.V. hay and swede turnips.

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 BLACK LAKE—FOUR-YEAR ROTATION

| Field | Crop | | Number of years grown | Yield per acre | | Cost per unit | |
|---|---|---|---|---|---|---|---|
| | | | | 1929 | Average | 1929 | Average |
| | | | | | | $ | $ |
| A | Swede turnips (manured) | tons | 3 | 22·80 | 24·90 | 3 11 | 2 98 |
| A | [1]Swede turnips | tons | 1 | 38·00 | 38·00 | 2 10 | 2 10 |
| A | O.P.V. hay | tons | 2 | 3·73 | 3·69 | ..... | |
| B | Timothy hay | tons | 1 | 2·25 | 2·25 | 7 13 | 7 13 |
| C | Clover and alfalfa hay | tons | 2 | 3·12 | 3·06 | 5 24 | 5 39 |
| D | Banner oats | bush. | 3 | 37·50 | 39·90 | 0 83 | 0 68 |

[1]Fertilized with 10 tons manure and 200 pounds of nitrophoska per acre.

The application of nitrophoska at the rate of 200 pounds per acre increased the turnip yield by eighty per cent and reduced the cost of production per unit from $3.11 to $2.10.

A young Ayrshire bull was bought by the operator of this station and constant progress has been made in the improvement of the dairy herd.

## BROMPTONVILLE, RICHMOND COUNTY

OPERATOR, VIRTUME MESSIER

In addition to the various cultural operations receiving careful and timely attention, progress has been made in building up a purebred Ayrshire herd as well as a flock of Barred Plymouth Rock poultry. The five-year rotation is now well established at this station and seems well suited to the district, because of the proportion of succulent feed, clover hay and cereals produced.

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 BROMPTONVILLE—FIVE-YEAR ROTATION

| Field | Crop and Treatment | | Number of years grown | Yield per acre | | Cost per unit | |
|---|---|---|---|---|---|---|---|
| | | | | 1929 | Average | 1929 | Average |
| | | | | | | $ | $ |
| A | Corn, Longfellow | tons | 7 | 18·33 | 17·90 | 2 25 | 2 65 |
| A | Swede turnips—10 tons manure | tons | 7 | 15·00 | 29·70 | 4 15 | 2 18 |
| A | [1]Manure and nitrophoska | tons | 1 | 41·25 | 41·25 | 1 63 | 1 63 |
| | [2]Manure and fertilizer | tons | 1 | 33·75 | 33·75 | 2 00 | 2 00 |
| B | Timothy, second year | tons | 2 | 2·50 | 2·45 | 5 54 | 5 60 |
| C | Timothy, first year | tons | 5 | 2·70 | 2·42 | 5 02 | 6 22 |
| D | Clover hay | tons | 7 | 2·25 | 1·73 | 8 34 | 9 21 |
| E | Banner oats | bush. | 5 | 50·00 | 55·20 | 0 60 | 0 73 |

[1]10 tons manure and 200 pounds of nitrophoska per acre.
[2]10 tons of manure and 534 poupds of a 5–10–5 fertilizer per acre.

The effects of chemical fertilizer were very striking in the case of turnips as indicated in the above table of yields being increased at a reduced cost of production. Clover hay gave a very satisfactory yield and was cured in good condition.

## LAC MEGANTIC, FRONTENAC COUNTY

OPERATOR, ALCIDE TRUDEL

Seeding did not get under way on this station until June 15 by reason of the wet spring. A part of field "C" was first seeded with turnips but presumably due to very wet weather they failed to germinate; the field was then harrowed up and seeded to oats, peas and vetch, the latter crop being utilized as fall feed when the pastures started to fail.

Satisfactory yields were obtained at this station as may be seen in the following table:—

OPERATIONS AT LAC MEGANTIC—FOUR-YEAR ROTATION

| Field | Crop | Number of years grown | Yield per acre | | Cost per unit | |
|---|---|---|---|---|---|---|
| | | | 1929 | Average | 1929 | Average |
| | | | | | $ | $ |
| A | Clover hay..... tons | 2 | 3·0 | 2·85 | 6 14 | 6 87 |
| B | Timothy hay..... tons | 1 | 3·33 | 3·33 | 4 57 | 4 57 |
| C | Potatoes, Irish Cobbler..... bush. | 2 | 190·0 | 210·35 | 0 27 | 0 23 |
| D | Oats and pea hay..... tons | 4 | 2·60 | 2·78 | 9 56 | 11 20 |

Clover and timothy hay gave quite profitable yields. The mixture used when seeding down was made up of red clover 8 pounds, alsike clover 2 pounds timothy 10 pounds. Irish cobbler potatoes did not give as high yield as last year although quite a suitable variety for the area.

Noteworthy progress has been made at this station in building up a purebred Ayrshire herd, and a good flock of Barred Plymouth Rock hens.

## NOTRE DAME DE HAM, WOLFE COUNTY

OPERATOR, PIERRE TOUPIN

The rotation on this station was extended to that of a five-year duration in 1928. According to the cycle of the rotation, field "A" was supposed to be in hoed crops in 1929, but due to the lack of drainage and the wet condition of the soil in the spring, a demonstration test field with swede turnips, corn and sunflowers was undertaken on a field outside the station area. The various seeding operations were carried out at this station between May 27 and June 3 and were made under very satisfactory conditions.

The season's yields and cost of growing the different crops as well as their average since starting operations, appear in the following table:—

OPERATIONS AT NOTRE DAME DE HAM—FIVE-YEAR ROTATION

| Field | Crop | Number of years grown | Yield per acre | | Cost per unit | |
|---|---|---|---|---|---|---|
| | | | 1929 | Average | 1929 | Average |
| | | | | | $ | $ |
| A | O.P.V. hay..... tons | 3 | 2·77 | 3·59 | 9 71 | 8 37 |
| B | Timothy hay, second year..... tons | 1 | 2·00 | 2·00 | 6 04 | 6 04 |
| C | Timothy hay, first year..... tons | 3 | 2·66 | 2·05 | 4 74 | 6 76 |
| D | Clover hay..... tons | 4 | 3·00 | 2·48 | 4 88 | 6 17 |
| E | Banner oats..... bush. | 4 | 38·60 | 38·80 | 0 61 | 0 68 |
| | *Demonstration Test Field* | | | | | |
| F | Swede turnips..... tons | 3 | 20·00 | 14·40 | 2 12 | 4 46 |
| F | Corn, Longfellow..... tons | 3 | 16·00 | 16·40 | 1 78 | 2 87 |
| F | Corn and sunflowers..... tons | 5 | 8·50 | 10·10 | 3 70 | 3 38 |

Commercial fertilizer was used on part of field "F", 200 pounds of nitrophoska being applied to that area and resulting in an approximate increased yield of twenty-five per cent.

The above table indicates that this season's yield of corn and sunflowers was below the average; this was due to the "Peacock" fly, which did a great deal of damage to the sunflowers.

With the exception of oats, peas and vetch hay, also corn and sunflowers it will be observed that crops produced fair returns and at a cost generally lower than the average.

## PLESSISVILLE, MEGANTIC COUNTY

OPERATOR, EUDORE JUTRAS

This station, which is now in operation for the tenth year, again gave creditable crop results, considering the unfavourable weather conditions. Seeding took place from May 22 to June 6, as compared with June 11 to June 14 last year. The fields on this station were neatly kept throughout the growing season.

The following is a summary of this season's yields and the cost of production per unit which are comparable with those of previous years:—

OPERATIONS AT PLESSISVILLE—FOUR-YEAR ROTATION

| Fields | Crops | | Number of years grown | Yield per acre | | Cost per unit | |
|---|---|---|---|---|---|---|---|
| | | | | 1929 | Average | 1929 | Average |
| | | | | | | $ | $ |
| A | Clover and alfalfa hay | tons | 10 | 1·10 | 1·66 | 14 32 | 9 33 |
| B | Banner oats | bush. | 1 | 61·00 | 61·00 | 0 43 | 0 43 |
| C | Corn, Longfellow | tons | 10 | 17·50 | 16·58 | 2 43 | 2 26 |
| C | Swede turnip, 10 tons manure | tons | 10 | 16·02 | 25·67 | 2 60 | 2 28 |
| | [1]Manure and nitrophoska | tons | 1 | 20·94 | 20·94 | 2 44 | 2 44 |
| | [2]Manure and fertilizer | tons | 1 | 20·77 | 20·77 | 2 29 | 2 29 |
| D | Timothy hay | tons | 10 | 2·00 | 1·78 | 6 17 | 6 99 |

[1]10 tons manure and 200 pounds of nitrophoska.
[2]10 tons manure and 534 pounds of a 5–10–5 chemical fertilizer.

Clover was a failure at this station due to winter-killing. Banner oats gave a very good yield, namely, 61 bushels per acre. The comparative fertilizer demonstrations, as recorded above are very interesting and of practical value to the turnip grower. The application of 10 tons of manure and 333 pounds of a 3-6-3 chemical fertilizer gave a yield of 20·77 tons per acre at a cost of $2.29 per unit. The same application of manure and 200 pounds of nitrophoska yielded practically the same at a cost of $2.44 per ton in comparison with $2.60 where manure was applied alone. Progress has been made in the improvement of the farm buildings; a manure shed has been constructed and will prove very useful in preventing the loss of fertilizing elements through leaching.

## SOUTH ROXTON, SHEFFORD COUNTY

OPERATOR, A. F. SANBORN & SON

This station has made creditable progress for the two years it has been established. Couch grass is a troublesome weed, making production costs higher than they otherwise would be because of labour required to keep it under control. Shallow ploughing soon after the removal of the hay crop, rolling and frequent cultivation are being followed as control measures. In this dairy dis-

trict the rotation and demonstrational work is being developed so as to provide suitable winter feeds for the stock. Seeding took place at this station at the same time as last year, namely, between May 30 and June 12.

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

OPERATIONS AT SOUTH ROXTON—FOUR-YEAR ROTATION

| Field | Crop | Number of years grown | Yield per acre | | Cost per unit | |
|---|---|---|---|---|---|---|
| | | | 1929 | Average | 1929 | Average |
| | | | | | $ | $ |
| A | Banner oats..... bush. | 2 | 34·0 | 34·50 | 0 69 | 0 58 |
| C | Swede turnips—10 tons manure..... tons | 1 | 15·0 | 15·0 | 2 85 | 2 85 |
| | [1]Manure and fertilizer..... tons | 1 | 24·38 | 24·38 | 2 00 | 2 00 |
| | [2]Manure and nitrophoska..... tons | 1 | 25·64 | 25·64 | 1 89 | 1 89 |
| | Potatoes, Green Mountain..... bush. | 1 | 134·0 | 134·0 | 0 34 | 0 34 |
| D | O.P.V. hay..... tons | 1 | 3·60 | 3·60 | 7 41 | 7 41 |

[1]10 tons manure and 534 pounds of a 5–10–5 chemical fertilizer.
[2]10 tons manure and 200 pounds of notrophoska.

Turnips were produced more economicaly with nitrophoska and manure than with manure and the home mixed chemical fertilizers or manure alone; nitrophoska increased the yield by 10 tons per acre and reduced the cost of production from $2.85 to $1.89 over the plot which received manure alone. Field "B" has been kept cultivated during the summer time in preparation for next year's hoed crop.

This operator has an Ayrshire herd under official test in the Record of Performance; he is one of the leading breeders in that district.

## WEEDON, WOLFE COUNTY

OPERATOR, E. JOS. ALLARD

The results obtained this year at this station are quite comparable to the average of previous years. The cost of growing the different crops however, was generally lower than the average. During the ten years that illustration work has been under way, a four-year rotation has been in operation; this is being changed to one of a five-year duration, next spring, with the following crop sequence; hoed crops, cereals, clover hay, timothy hay and pasture.

Seeding took place at this station from May 27 to June 7 and was carried out under favourable conditions. The season as a whole was favourable to the growth of crops.

The results of the season's work and the average for previous years, appear in the following table:—

OPERATIONS AT WEEDON, FOUR-YEAR ROTATION

| Field | Crop and treatment | Number of years grown | Yield per acre | | Cost per unit | |
|---|---|---|---|---|---|---|
| | | | 1929 | Average | 1929 | Average |
| A | Banner oats..... bush. | 1 | 83·30 | 83·30 | 0 36 | 0 36 |
| B | Potatoes—10 tons manure..... bush. | 7 | 199·60 | 194·50 | 0 31 | 0 39 |
| B | (1) Manure and fertilizer..... bush. | 1 | 300·40 | 300·40 | 0 23 | 0 23 |
| B | Swede turnips—10 tons manure..... tons | 8 | 16·50 | 16·30 | 2 42 | 3 80 |
| B | (2) Manure and nitrophoska..... tons | 1 | 26·40 | 26·40 | 1 73 | 1 73 |
| B | (3) Manure and fertilizer..... tons | 1 | 36·30 | 36·30 | 1 36 | 1 36 |
| B | Corn, 10 tons manure..... tons | 7 | 16·32 | 18·93 | 2 92 | 2 97 |
| B | (1) Manure and fertilizer..... tons | 1 | 20·62 | 20·62 | 2 58 | 2 58 |
| C | Timothy hay..... tons | 8 | 2·00 | 1·41 | 5 87 | 9 78 |
| D | Clover hay..... tons | 8 | 2·00 | 1·68 | 7 08 | 10 51 |

(1) 10 tons manure and 550 pounds of a 4-8-6 chemical fertilizer.
(2) 10 tons manure and 200 pounds of nitrophoska.
(3) 10 tons manure and 534 pounds of a 5-10-5 chemical fertilizer.

The application of chemical fertilizer to the turnip crop was found very effective and produced a profitable increase. The application of 550 pounds of a 4-8-6 chemical fertilizer to potatoes increased the yield by 105.90 bushels per acre and reduced the cost of production from 31 cents to 23 cents per bushel.

### FERTILIZER ILLUSTRATION STATIONS

During the past year, six fertilizer Illustration Stations were in operation in Central Quebec. Three of these stations were in operation in 1928 and work started on three others this spring.

#### *Plan of Procedure*

A four-year rotation serves as the foundation for the soil improvement work on the fertilizer Illustration Stations. In adopting such a rotation and by growing a diversity of crops, more economical use is made of the available plant food in the soil. 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 hoed crops the timothy sod is ploughed shallow as soon as the hay is removed, rolled immediately and worked sufficiently to keep down all growth of grass or weeds; in late fall it is ploughed again. To test the comparative effect of manure and fertilizer singly and when used together, the hoed crop field is divided into four equal areas, running crosswise of the field.

A grain crop, follows the hoed crop and this field is divided in three plots, one receiving an application of 3,000 or 4,000 pounds of limestone, the second one is a check, and a third one receives 400 pounds of superphosphate per acre.

To illustrate the effect of nitrogenous fertilizer on old meadows, 150 pounds of nitrate of soda or 115 pounds of sulphate of ammonia is applied to the second year meadow; a check plot is left between the two in order to check up the comparative effect of each treatment.

## ST. CAMILLE, BELLECHASSE COUNTY

### OPERATOR, POLYDORE LABBE

The soil on this station, as on other farms in the surrounding district may be classed as a light sandy soil of only medium fertility. Prior to last spring, when illustration work started, this land had been in sod for a number of years and had not received an application of manure for many years. The work carried out this year may be considered as preparatory. Frequent rains delayed seeding until June 20.

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

OPERATIONS AT ST. CAMILLE—FOUR-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 | Old meadow.. | Not fertilized | ..... | ..... | ..... | 1·10 tons |
| B | Old meadow. | 150 pounds nitrate of soda | ..... | ..... | ..... | 1·84 tons |
| B | Old meadow. | Check not fertilized | ..... | ..... | ..... | 1·10 tons |
| B | Old meadow. | 115 pounds sulphate of ammonia | ..... | ..... | ..... | 1·48 tons |
| C | Hoed..... | 20 tons manure | 6·82 | 145·0 | 3·16 | |
| C | Hoed..... | 10 tons manure, 500 pounds of a 3-9-6 fertilizer | 8·21 | 160·0 | 3·39 | |
| C | Hoed..... | 1,000 pounds of a 3-9-6 fertilizer | 8·80 | 180·0 | 2·03 | |
| C | Hoed..... | Check not fertilized | 2·02 | 65·0 | 0·79 | |
| D | Oats..... | 4,000 pounds limestone | ..... | ..... | ..... | 29·4 bush. |
| D | Oats..... | Check not fertilized | ..... | ..... | ..... | 18·2 bush. |
| D | Oats..... | 400 pounds superphosphate | ..... | ..... | ..... | 26·0 bush. |

Hay produced quite a satisfactory crop following an application of 150 pounds of nitrate of soda. The results of this year's activities may be considered as satisfactory if one keeps in mind the original unfertile nature of this soil.

## ST. CYR, RICHMOND COUNTY

OPERATOR, STEPHEN SMITH

This Illustration Station was first selected in the fall 1928, and illustration work with fertilizers was first undertaken this spring. A similar plan of procedure to that undertaken on the other stations was adopted including a four-year cropping system. By reason of the wet spring, seeding was not possible on this sandy loam soil until the beginning of June.

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

OPERATIONS AT ST. CYR—FOUR-YEAR ROTATION

| Field | Crop | Fertilizer treatment and rate of application per acre | Yield per acre | | |
|---|---|---|---|---|---|
| | | | Corn | Turnips | — |
| | | | tons | tons | |
| A | Hoed..... | 20 tons manure | 12·70 | 16·28 | |
| A | Hoed..... | 10 tons manure, 500 pounds of 3-9-6 fertilizer | 15·12 | 15·84 | |
| A | Hoed..... | 1,000 pounds of a 3-9-6 fertilizer | 15·40 | 14·52 | |
| A | Hoed..... | Check, not fertilized | 3·93 | ..... | |
| B | Banner oats... | 4,000 pounds limestone | ..... | ..... | 24·2 bush. |
| B | Banner oats... | Check, not fertilized | ..... | ..... | 20·7 bush. |
| B | Banner oats... | 400 pounds superphosphate | ..... | ..... | 30·9 bush. |
| C | Timothy hay. | 150 pounds nitrate of soda | ..... | ..... | 1·54 tons |
| C | Timothy hay. | Check, not fertilized | ..... | ..... | 1·11 tons |
| C | Timothy hay. | 115 pounds sulphate of ammonia | ..... | ..... | 1·98 tons |
| D | Old meadow.. | Not fertilized | ..... | ..... | 1·15 tons |

A study of the above table indicates that there was no increase in the yield of turnips resulting from the application of chemical fertilizer in addition to farmyard manure. In the case of corn the largest yield was obtained from the land given an application of 1,000 pounds of a 3-9-6 fertilizer. On farms when the supply of farmyard manure is small the rational use of chemical fertilizer combined with such manure as is available offers a practical solution as may be observed from the above results.

## ST. EVARISTE, FRONTENAC COUNTY

OPERATOR, CHARLES VEILLEUX

Although this station has only been in operation two years it has made satisfactory progress. The four-year rotation is now well established and the fields which formerly produced very poor crops are noticeably improved. The spring season was rainy and wet, delaying seeding until June 5 on this station where the soil is of a sandy loam nature.

The following table indicates the method of fertilizing the different fields, the rate of application and the resulting yields per acre, also the average results for 2 years for crops receiving similar treatment in 1928:—

OPERATIONS AT ST. EVARISTE—FOUR-YEAR ROTATION

| Field | Crop | Fertilizer treatment and rate of application per acre | Yield per acre | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | O.P.V. hay | | Turnips | | 1929 | Average 2 years |
| | | | 1929 | Average | 1929 | Average | | |
| | | | tons | tons | tons | tons | bush. | tons |
| A | Banner oats | 20 tons manure (1928) | ..... | ..... | ..... | ..... | 46·0 | |
| A | Banner oats | 10 tons manure, 500 pounds of a 3-9-6 fertilizer (1928) | ..... | ..... | ..... | ..... | 38·5 | |
| A | Banner oats | 1,000 pounds of a 3-9-6 fertilizer (1928) | ..... | ..... | ..... | ..... | 37·2 | |
| A | Banner oats | Check, not fertilized (1928) | ..... | ..... | ..... | ..... | 28·2 | |
| B | Clover hay | 3,000 pounds limestone (1928) | ..... | ..... | ..... | ..... | tons 1·23 | |
| B | Clover hay | Check, not fertilized (1928) | ..... | ..... | ..... | ..... | 0·83 | |
| B | Clover hay | 400 pounds superphosphate (1928) | ..... | ..... | ..... | ..... | 2·27 | |
| C | Timothy hay | 150 pounds nitrate of soda | ..... | ..... | ..... | ..... | 1·53 | 1·84 |
| C | Timothy hay | Check, not fertilized | ..... | ..... | ..... | ..... | 1·02 | 1·02 |
| C | Timothy hay | 115 pounds sulphate of ammonia | ..... | ..... | ..... | ..... | 2·12 | 2·00 |
| D | Hoed | 20 tons manure | 3·51 | 3·64 | 18·32 | 16·27 | | |
| D | Hoed | 10 tons manure, 500 pounds of a 3-9-6 fertilizer | 3·51 | 3·74 | 23·50 | 21·18 | | |
| D | Hoed | 1,000 pounds of a 3-9-6 fertilizer | 3·90 | 4·40 | 15·40 | 15·95 | | |
| D | Hoed | Check, not fertilized | 1·42 | 1·52 | 12·20 | 8·74 | | |

A study of the above table indicates the beneficial effect to crops of applying manure and chemical fertilizers on hoed crop land. It may be observed from the above table that profitable results were obtained by applying nitrate of soda and sulphate of ammonia to meadow lands. An application of 400 pounds of superphosphate to the Banner oat field in 1928 considerably increased the yield of clover hay this season. In a district crop competition Mr. Veilleux obtained first prize on this oats, peas and vetch crop as well as on the turnip field.

## STE. JULIE, MEGANTIC COUNTY

OPERATOR, ACHILLE VACHON

This station, which is in operation for the second year, was neatly kept throughout the growing season. Seeding took place between June 1 and 15 because of the unfavourable seasonal conditions.

The following table indicates the fertilizers and manure applied to each plot, the rates 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 | Potatoes | O.P.V. hay | — |
| | | | tons | bush. | tons | |
| A | Hoed | 20 tons manure | 10·89 | 297·2 | 1·90 | |
| A | Hoed | 10 tons manure, 500 pounds of a 3-9-6 fertilizer | 11·85 | 307·4 | 2·01 | |
| A | Hoed | 1,000 pounds of a 3-9-6 fertilizer | 9·63 | 345·0 | 2·16 | |
| A | Hoed | Check, not fertilized | 2·90 | 161·8 | 0·59 | |
| B | O.P.V. hay | 150 pounds nitrate of soda | | | | 2·40 tons |
| B | O.P.V. hay | Check, not fertilized | | | | 1·62 tons |
| B | O.P.V. hay | 115 pounds sulphate of ammonia | | | | 2·83 tons |
| C | Clover hay | 400 pounds superphosphate (1928) | | | | 1·26 tons |
| C | Clover hay | Check, not fertilized (1928) | | | | 0·86 tons |
| C | Clover hay | 3,000 pounds limestone (1928) | | | | 1·04 tons |
| D | Banner oats | 20 tons manure (1928) | | | | 46·5 bush. |
| D | Banner oats | 10 tons manure, 500 pounds of a 3-9-6 fertilizer (1928) | | | | 53·3 bush. |
| D | Banner oats | 1,000 pounds of a 3-9-6 fertilizer (1928) | | | | 43·5 bush. |
| D | Banner oats | Check, not fertilized (1928) | | | | 19·0 bush. |

From the above table it will be seen that this very sandy soil responded best to the application of 1,000 pounds of a 3-9-6 chemical fertilizer in the case of potatoes and O.P.V. hay, while corn gave the highest yield on manure and fertilized land. The application of 400 pounds of superphosphate in 1928 increased the clover hay yields by 0·40 tons per acre; lime also had a beneficial effect on the yield.

The following table indicates the average yield of the hoed crops for the past two years, also the manure and fertilizer treatment made.

YIELD OF HOED CROPS FROM DIFFERENT FERTILIZER APPLICATIONS

| Fertilizer treatment and rate of application per acre | Yield per acre | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | Corn | | | Potatoes | | | O.P.V. hay | | |
| | 1928 | 1929 | Average | 1928 | 1929 | Average | 1928 | 1929 | Average |
| | tons | tons | tons | bush. | bush. | bush. | tons | tons | tons |
| 20 tons manure | 13·81 | 10·89 | 12·35 | 191·0 | 297·2 | 244·1 | 2·50 | 1·90 | 2·20 |
| 10 tons manure, 500 pounds of a 3-9-6 fertilizer | 18·72 | 11·85 | 15·28 | 229·0 | 307·4 | 268·2 | 2·72 | 2·01 | 2·36 |
| 1,000 pounds of a 3-9-6 fertilizer | 11·14 | 9·63 | 10·38 | 179·0 | 345·0 | 262·0 | 1·56 | 2·16 | 1·86 |
| Check, not fertilized | 4·02 | 2·90 | 3·46 | 36·4 | 161·8 | 99·1 | 0·72 | 0·59 | 0·65 |

It may be observed from the above table that the greatest increase in yield, although varying for each year, resulted from the application of 10 tons of manure and 500 pounds of a 3-9-6 chemical fertilizer.

## ST. VICTOR, BEAUCE COUNTY

OPERATOR, JOSEPH BERNARD

Considering the rainy and wet spring season, also the low land on which the station is located, crops gave very satisfactory yields. The heavy rains during the spring delayed seeding, also the application of different fertilizers

until the beginning of June. Good work has been performed by the operator in ridging up the lands and providing for necessary surface drainage.

The following summary indicates the method of fertilizing the different fields, the rate of application and the resulting yields per acre, as well as the average yields for the past two years.

OPERATIONS AT ST. VICTOR—FOUR-YEAR ROTATION

| Field | Crop | Fertilizer treatment and rate of application per acre | Yield per acre | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | O.P.V. | | Turnips | | | |
| | | | 1929 | Average 2 years | 1929 | Average 2 years | 1929 | Average 2 years |
| | | | tons | tons | tons | tons | bush. | |
| A | Banner oats | 20 tons manure, 1929 | | | | | 49·3 | |
| A | Banner oats | 10 tons manure, 500 pounds of a 3-9-6 fertilizer (1928) | | | | | 60·0 | |
| A | Banner oats | 1,000 pounds of a 3-9-6 fertilizer (1928) | | | | | 46·6 | |
| A | Banner oats | Check, not fertilized | | | | | 32·0 | |
| B | Hoed | 20 tons manure | 3·05 | 3·94 | 22·11 | 23·70 | | |
| B | Hoed | 10 tons manure, 500 pounds of a 3-9-6 fertilizer | 3·12 | 4·25 | 28·38 | 28·19 | | |
| B | Hoed | 1,000 pounds of a 3-9-6 fertilizer | 3·25 | 4·22 | 26·34 | 26·57 | | |
| B | Hoed | Check, not fertilized | 1·70 | 3·19 | 11·22 | 19·36 | | |
| C | Clover hay | 3,000 pounds limestone (1928) | | | | | tons 1·72 | |
| C | Clover hay | Check, not fertilized (1928) | | | | | 1·09 | |
| C | Clover hay | 400 pounds superphosphate (1928) | | | | | 2·11 | tons |
| D | Timothy hay | 150 pounds nitrate of soda | | | | | 2·02 | 1·61 |
| D | Timothy hay | Check, not fertilized | | | | | 1·42 | 1·05 |
| D | Timothy hay | 115 pounds sulphate of ammonia | | | | | 1·83 | 1·58 |

It will be noted from the above that the application of manure and chemical fertilizers proved profitable for hoed crops. Especially good results were obtained from an application of 400 pounds of superphosphate per acre to the Banner oat field last year, the yield of clover hay having been increased by 1·02 tons an acre.

## WOTTONVILLE, WOLFE COUNTY

OPERATOR, JOSEPH GENDRON

The work performed at this station may be considered as preparatory, as operations only started in the spring. The station is well located with regard to view from the highway. The soil is a light loam and crops flourish best in seasons of light rainfall. Initial operations have been very satisfactorily conducted. Seeding started on June 10 and was completed by the end of June. This operation was delayed on account of the heavy rain during spring.

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

OPERATIONS AT WOTTONVILLE—FOUR-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 | 15·44 | 280·2 | 2·45 | |
| A | Hoed | 10 tons manure, 500 pounds of a 3-9-6 fertilizer | 13·65 | 208·0 | 2·88 | |
| A | Hoed | 1,000 pounds of a 3-9-6 fertilizer | 10·12 | 176·4 | 3·37 | |
| A | Hoed | Check, not fertilized | 1·50 | 110·5 | 1·05 | |
| B | Banner oats | 4,000 pounds limestone | | | | 22·0 bush. |
| B | Banner oats | Check, not fertilized | | | | 14·5 bush. |
| B | Banner oats | 400 pounds superphosphate | | | | 24·0 bush. |
| C | Old meadow | 150 pounds nitrate of soda | | | | 1·42 tons |
| C | Old meadow | Check, not fertilized | | | | 1·00 tons |
| C | Old meadow | 115 pounds sulphate of ammonia | | | | 1·51 tons |
| D | Old meadow | Not fertilized | | | | 1·00 tons |

It can be noted from the above table that the greatest increase in yield from turnips and potatoes resulted from the application of 20 tons of manure per acre; the wet condition of the land when the 3-9-6 chemical fertilizer was applied is considered largely responsible for low yields obtained in that part of the field. A severe hail during the month of July destroyed the oats badly and considerably reduced the resulting yield.

## THE EFFECT OF GROUND LIMESTONE AND SUPERPHOSPHATE ON THE GROWTH OF CLOVER HAY 1928

Demonstrations aiming to show the comparative value of lime and superphosphate when applied to grain and seeded field were conducted on the fertilizer Illustration Stations. Limestone was applied at the rate of 2 tons and superphosphate at the rate of 400 pounds an acre; a check plot was left between the two so as to determine the benefit derived through an increase in yield.

The following table indicates the average yield of hay obtained from the above mentioned treatment:—

RESULTS OF GROUND LIMESTONE AND SUPERPHOSPHATE TEST

| Station | 2 tons limestone | Check, not fertilized | 400 pounds superphosphate |
|---|---|---|---|
| | tons | tons | tons |
| St. Evariste | 1·23 | 0·83 | 2·27 |
| Ste. Julie | 1·04 | 0·86 | 1·26 |
| St. Victor | 1·72 | 1·09 | 2·11 |
| Average yield | 1·33 | 0·93 | 1·88 |

It will be noticed from the above table that an application of 400 pounds of superphosphate when seeding down gave an increased yield of 1,900 pounds of hay over the unfertilized check.

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

In this demonstration the hoed crop field is divided into four equal areas, each one receiving different treatment; an unfertilized check plot is left in order to check up the comparative effect of each treatment. These fertilizer plots were 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 different treatments of manure and chemical fertilizers on each of the different hoed crops. The soils varied considerably at the different stations with respect to fertility and type. They range from a heavy clay to a light sandy loam, hence, the results are representative of a wide variety of farming conditions.

The following table gives the yield of potatoes, turnips, corn and oat, peas and vetch hay on plots receiving manure and fertilizer treatment as stated:—

RESULTS FROM DIFFERENT FERTILIZER APPLICATIONS ON HOED CROPS

| Station | Manure, 20 tons | | | | Manure, 10 tons, 500 pounds of a 3-9-6 fertilizer | | | | 1,000 pounds of a 3-9-6 fertilizer | | | | Check not fertilized | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Corn | Potatoes | Turnips | O.P.V. hay | Corn | Potatoes | Turnips | O.P.V. hay | Corn | Potatoes | Turnips | O.P.V. hay | Corn | Potatoes | Turnips | O.P.V. hay |
| | tons | bush. | tons | tons | tons | bush. | tons | tons | tons | bush. | tons | tons | tons | bush. | tons | tons |
| St. Camille | ..... | 145·0 | 6·82 | 3·16 | ..... | 160·0 | 8·21 | 3·39 | ..... | 180·0 | 8·80 | 2·03 | ..... | 65·0 | 2·02 | 0·79 |
| St. Cyr | 12·70 | ..... | 16·28 | ..... | 15·12 | ..... | 15·84 | ..... | 15·40 | ..... | 14·52 | ..... | 3·93 | ..... | 1·00 | ..... |
| St. Evariste | ..... | ..... | 18·32 | 3·51 | ..... | ..... | 23·50 | 3·51 | ..... | ..... | 15·40 | 3·90 | ..... | ..... | 12·20 | 1·42 |
| Ste. Julie | 10·89 | 297·2 | ..... | 1·90 | 11·85 | 307·4 | ..... | 2·01 | 9·63 | 345·0 | ..... | 2·16 | 2·90 | 161·8 | ..... | 0·59 |
| St. Victor | ..... | ..... | 22·11 | 3·05 | ..... | ..... | 28·38 | 3·12 | ..... | ..... | 26·34 | 3·25 | ..... | ..... | 11·22 | 1·70 |
| Wottonville | ..... | 280·2 | 15·44 | 2·45 | ..... | 208·0 | 13·65 | 2·88 | ..... | 176·4 | 10·12 | 3·37 | ..... | 110·5 | 1·50 | 1·05 |
| Average | 11·79 | 240·8 | 15·79 | 2·81 | 13·48 | 225·1 | 17·91 | 2·98 | 12·51 | 233·8 | 15·03 | 2·94 | 3·41 | 112·4 | 5·59 | 1·11 |

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

The meadows on a number of the stations where fertilizer work is being carried on have been down in hay for a number of years. To demonstrate the effect of nitrogenous fertilizer on these meadows, 150 pounds of nitrate of soda and 115 pounds of sulphate of ammonia were applied to separate acre plots with an unfertilized area between, from which to calculate the benefit obtained by way of increased yields. These fertilizers were applied broadcast early in the spring just as growth started.

The following table indicates the treatment given and yields obtained from the fertilizer Illustration Stations, also the average yield:—

RESULTS FROM NITRATE OF SODA AND SULPHATE OF AMMONIA

| Station | 150 pounds Nitrate of Soda | | Check not fertilized | | 115 pounds Sulphate of Ammonia | |
|---|---|---|---|---|---|---|
| | 1929 | Average 2 year | 1929 | Average 2 year | 1929 | Average 2 year |
| | tons | tons | tons | tons | tons | tons |
| St. Camille | 1·84 | ..... | 1·10 | ..... | 1·48 | ..... |
| St. Cyr | 1·54 | ..... | 1·11 | ..... | 1·98 | ..... |
| St. Evariste | 1·53 | 1·84 | 1·02 | 1·03 | 2·12 | 2·0 |
| Ste. Julie | ..... | 0·79 | ..... | 0·53 | ..... | 1·05 |
| St. Victor | 2·02 | 1·61 | 1·42 | 1·05 | 1·83 | 1·58 |
| Wottonville | 1·42 | ..... | 1·0 | ..... | 1·51 | ..... |
| Average yield | 1·67 | 1·41 | 1·13 | 0·87 | 1·78 | 1·54 |

It may be observed from the above table that both plots receiving nitrogenous fertilizer gave a higher yield than the check. On the average the increase was practically the same from each of these two forms of nitrogenous fertilizers.

The above table indicates very clearly that the rational use of chemical fertilizers combined with such farmyard manure as may be available offers a practical solution for the solving of the depleted soil problem, that is restoring to the soil the different elements of plant food consumed by the growth.

It will be observed that generally the largest yields were produced on the plots receiving the application of 10 tons of manure and 1,000 pounds of a 3-9-6 chemical fertilizer. In some cases fertilizer alone showed the greatest profit, particularly in the case of potatoes.

The effect of the different treatment on succeeding crops is being studied. This year oats was seeded on the same plots as those on which hoed crops were grown last season with no additional manure or fertilizer applied.

The following table indicates the oat yields obtained on these plots which received the different fertilizer treatment in 1928:—

RESULTS ON OATS FROM DIFFERENT FERTILIZER APPLICATIONS

| Station | 20 tons manure 1928 | 10 tons manure 500 pounds of a 3-9-6 fertilizer 1928 | 1,000 pounds of a 3-9-6 fertilizer 1928 | Check not fertilized 1928 |
|---|---|---|---|---|
| | bush. | bush. | bush. | bush. |
| St. Evariste | 46·0 | 38·5 | 37·2 | 28·8 |
| Ste. Julie | 46·5 | 53·3 | 43·5 | 19·0 |
| St. Victor | 49·3 | 60·0 | 46·6 | 32·0 |
| Average yield | 47·2 | 50·6 | 42·4 | 26·6 |

The above results again indicate that the highest yields were obtained on plots where 10 tons of manure were applied with 500 pounds of a 3-9-6 chemical fertilizer.

After deducting the cost of fertilizer and valuing hay at $10 per ton, nitrate of soda shows a profit of 90 cents net per acre and sulphate of ammonia a profit of $3.05 net 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.

## REPORT OF THE ILLUSTRATION STATIONS FOR EASTERN QUEBEC

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

### SEASONAL CONDITIONS

The spring of 1929 opened up cold and wet. The rainfall, however, was more evenly distributed than last year during the same period. Grain seeding was general during the last days of May, while other crops were sown in the first part of June, which was about fifteen days earlier than last year. Summer weather conditions were generally favourable to the growing of crops and haymaking. These favourable weather conditions were partly responsible for an increase in crop yields as compared with the average of previous years.

The late fall was somewhat rainy, making the harvesting of grain crop difficult for farmers who had delayed their seedings or who are still growing late varieties.

All ploughing operations could be completed at the stations and larger areas than usual have been broken up in the surrounding districts.

### LIVE STOCK

Dairy sires used or purchased last year were retained on most of the stations, except at St. Valier and Rivière Bleue, where advanced registry bulls were introduced. The attention of the operators was directed towards the need for better feeding in order to develop growthy young stock. The use of poor dairy sires and the improper management of the young stock has, in the past, been a most evident handicap in obtaining profitable milk yields. In most cases the individual lactation period is too short for profitable returns.

The keeping of milk and butter-fat records was undertaken again this year in order to secure information as to the production of each individual cow. The data obtained indicate that the individuals in a given herd could be divided into three groups. In the first case those producing over 5,000 pounds of milk and which return a profit to the operator; in the second group those producing 4,000 pounds of milk which give no profit whatever but furnish employment to farm operators during winter time, and thirdly those that produce from 2,500 to 3,500 pounds and absorb the profit made by the highest producers.

Some of the operators secured Yorkshire sows and Leicester ewes from the Experimental Station. Such developments will undoubtedly result in improvement along these lines in the future.

The milk production of each Illustration Station herd is summarized below. It will be noted that the average production for most of the herds is lower than desirable. A number of these operators only recently undertook definite improvement work, hence this work is still in its initial stages on the majority of these stations. Nevertheless, these records show the need for improvement, and the educational work possible, as these conditions are quite representative of others in the surrounding district.

MILK AND BUTTERFAT PRODUCTION ON EASTERN QUEBEC ILLUSTRATIONS STATIONS

| Stations | Number of cows | Breed | 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. |
| Causapscal | 11 | Ayr. | 228 | 5,146 | 203 | 4,326 | 169·5 | 6,325 | 259·0 |
| St. Alexandre | 12 | Gr. | 233 | 5,545 | 223 | 3,823 | 172·0 | 6,141 | 289·1 |
| Nouvelle | 5 | Gr. | 248 | 3,427 | 126 | 2,670 | 92·5 | 4,495 | 182·2 |
| St. Apollinaire | 6 | Ayr. | 247 | 4,365 | 162 | 3,765 | 145·6 | 5,241 | 184·3 |
| St. Fabien | 15 | Gr. | 230 | 3,112 | 119·3 | 2,875 | 107·3 | 4,256 | 168·8 |
| St. Pierre I.O | 16 | Gr. | 210 | 3,291 | 128·8 | 2,287 | 72·3 | 4,044 | 186·4 |
| St. Alphonse | 7 | Gr. | 208 | 4,590 | 191·0 | 3,276 | 154·7 | 5,517 | 223·0 |
| St. Arsène | 7 | Gr. | 274 | 4,596 | 176·0 | 3,975 | 141·9 | 5,304 | 172·5 |
| Rivière Bleue | 11 | Ayr. | 240 | 3,777 | ..... | 2,290 | ..... | 6,455 | ..... |
| New Richmond | 8 | Gr. | 175 | 3,583 | ..... | 3,300 | ..... | 4,500 | ..... |
| Valley Jct | 19 | Gr. | 276 | 6,620 | ..... | 3,795 | ..... | 8,795 | ..... |
| St. Eleuthère | 16 | Gr. | 263 | 4,094 | ..... | 3,076 | ..... | 4,754 | ..... |
| Matane | 9 | Gr. | 269 | 5,856 | ..... | 2,847 | ..... | 7,900 | ..... |
| St. Vallier | 11 | Gr. | ..... | 4,562 | ..... | 2,147 | ..... | 6,987 | ..... |

NOTE.—Gr. is used for Grade and Ayr. for Ayrshire.

## AVERAGE YIELDS AND COST OF PRODUCING CROPS

Illustration Station work would not be completed if consideration was not given to the cost of growing the different crops which enter into successful agriculture. A high yield does not necessarily mean a profitable one, as the expenses incurred in growing it may be in excess of its commercial value. The expenses entering in the cost of production as published in this report are based on prevailing prices in the districts where the stations are situated, except in the case of manure, which is given a standard value of $1.50 per ton; the charge for use of machinery has also been placed at $2.85 per acre. This figure has been obtained from information gathered as a result of a survey carried out on a large number of farms in Eastern Canada. The labour spent on each crop as well as other particulars has been recorded by the operators and forwarded to the supervisor in weekly reports.

The following table indicates the average yield and cost of growing farm crops on Illustration Stations in 1929:—

AVERAGE YIELDS AND COST OF PRODUCTION

| Crops | Number of stations | Yield per acre | Cost per ton or bushel |
|---|---|---|---|
| | | | $ |
| Swede Turnips | 16 | 20·6 tons | 3 06 |
| Potatoes | 11 | 259·4 bush. | 0 24 |
| O.P.V. Hay | 13 | 2·9 tons | 9 49 |
| Oats | 17 | 41·6 bush. | 0 58 |
| Clover hay | 14 | 2·1 tons | 7 90 |
| Timothy hay | 8 | 1·9 ton | 6 79 |

The above tabulated yields and costs may be considered as generally satisfactory if one remembers that most of the stations have been recently established. Higher yields and lower costs can be expected as the fertility and physical condition of the soil on these become improved by systematic cultivation.

COST OF PRODUCING SWEDE TURNIPS

Turnips were grown on sixteen of the Illustration Stations this season. The following table indicates the yields and cost of growing turnips this year on each station in comparison to that obtained in previous years.

YIELDS AND COST OF GROWING TURNIPS

| Stations | Number of years grown | Yield per acre | | Cost per ton | |
|---|---|---|---|---|---|
| | | 1929 | Average | 1929 | Average |
| | | tons | tons | $ | $ |
| Scott Jct. | 6 | 28·0 | 23·2 | 2 00 | 3 07 |
| St. Pierre I.O. | 2 | 27·0 | 21·0 | 2 28 | 2 78 |
| St. Vallier | 1 | 24·5 | 24·5 | 3 20 | 3 20 |
| Nouvelle | 3 | 24·4 | 18·6 | 2 70 | 4 24 |
| St. Alexandre | 3 | 23·3 | 17·0 | 3 12 | 4 79 |
| Montmagny | 8 | 23·0 | 26·5 | 2 10 | 2 17 |
| New Richmond | 8 | 22·5 | 25·3 | 2 77 | 2 43 |
| Matane | 8 | 22·3 | 16·4 | 2 71 | 3 71 |
| St. Fabien | 8 | 22·2 | 17·3 | 2 22 | 4 12 |
| Valley Jct. | 2 | 19·6 | 16·5 | 2 53 | 4 38 |
| St. Arsène | 1 | 18·0 | 18·0 | 3 15 | 3 15 |
| Rivière Bleue | 2 | 17·8 | 16·4 | 4 51 | 4 72 |
| St. Alphonse | 2 | 15·6 | 14·1 | 3 27 | 3 97 |
| Grande Riviere | 2 | 14·4 | 13·9 | 3 55 | 3 51 |
| Causapscal | 2 | 13·1 | 16·4 | 4 30 | 3 67 |
| St. Apollinaire | 5 | 12·0 | 14·5 | 4 61 | 4 61 |
| Average | 4 | 20·5 | 19·7 | 3 06 | 3 50 |

From a review of the above table it will be observed that the yields of turnips on the respective stations varied from 12 to 28 tons per acre and their cost of production from $2 to $4.60 per ton. Natural soil variations such as lack of drainage, fertility have entered in and influenced the individual yields. At St. Apollinaire and St. Alphonse the lack of drainage contributed largely to the low yield obtained. The date of seeding, date of singling and cultural methods employed have effected favourably or otherwise the individual yield. A high yield should be the aim of a grower as this factor influences the cost of production to quite a marked degree as the majority of the overhead charges such as cost of seed, rent of land, cost of manure or fertilizer, labour will vary little between an average or a high yield.

Generally speaking, the supply of farmyard manure is limited on these stations and crops as a whole are reduced accordingly. To restore them to a satisfactory state of tilth and production, the use of chemical fertilizers has been tried out as a supplement to the farmyard manure. Accordingly, a demonstration was undertaken on the turnip crop at some thirteen stations to show the effect of using chemical fertilizers in combination with manure. The turnip fields were divided into three areas, one section received manure alone, the other manure and 178 pounds of nitrophoska No. 1 (a new concentrated fertilizer with a 15-30-15 chemical formula and the third manure and 534 pounds, of a 5-10-5 home mixed fertilizer. The following table indicates the comparative yield obtained from the different fertilizer treatments:—

COMPARATIVE YIELD OF TURNIPS FROM DIFFERENT FERTILIZER TREATMENTS

| Stations | Nitrophoska No. 1 and manure | Manure alone | Home mixed fertilizers and manure |
|---|---|---|---|
| | tons | tons | tons |
| Scott Jct. | 28·0 | 15·0 | 26·0 |
| Matane | 27·2 | 19·3 | 20·0 |
| St. Alexandre | ..... | 17·0 | 22·0 |
| New Richmond | 24·0 | 18·0 | 22·3 |
| St. Alphonse | 21·0 | 10·5 | 15·7 |
| St. Vallier | 20·5 | 16·0 | 28·1 |
| Valley Jct. | 21·7 | 13·7 | 16·3 |
| Montmagny | 25·0 | 23·2 | 24·2 |
| Rivière Bleue | 16·7 | 15·5 | 20·4 |
| St. Fabien | 25·4 | 16·3 | 19·0 |
| Causapscal | 14·4 | 11·1 | 13·3 |
| St. Pierre, I.O. | 30·3 | 22·7 | 26·4 |
| Nouvelle | 26·7 | 20·3 | 24·8 |
| Average for 13-stations | 23·4 | 16·8 | 21·5 |

The proportionate share of the cost of the fertilizers charged to the turnip crop was $4.46 per acre in the case of home-mixed fertilizer and $4.89 for nitrophoska, the increase in yield being 4·7 tons and 6·6 tons per acre respectively. The use of chemical fertilizers for turnips as a supplement to a limited quantity of manure was therefore profitable and is recommended as a sound agricultural practice. Such a practice would make it possible to fertilize a greater area of the farm each year thus improving its production and increasing the number of cattle which it would sustain.

### POTATOES AS A CASH CROP

Potatoes were grown this year on eleven of the Illustration Stations in Eastern Quebec. Of this number, six are producing certified seed potatoes. Two stations are making a specialty of growing certified potatoes as a cash crop on a three-year rotation, namely, at St. Arsene and St. Alexandre. At these two points it will be noted that the highest yields are recorded. The average yield per acre for all stations was 259·4 bushels and may be considered as satisfactory in comparison with the average yield reported for the province, namely, 166 bushels per acre.

The following table summarizes the yield and cost of growing potatoes on the eleven stations indicated below:—

YIELDS AND COST OF GROWING POTATOES

| Stations | Number of years grown | Yield per acre | | Cost per bushel | |
|---|---|---|---|---|---|
| | | 1929 | Average | 1929 | Average |
| | | bush. | bush. | cts. | cts. |
| St. Arsène | 3 | 368·6 | 320·8 | 14 | 20 |
| St. Alexandre | 3 | 347·0 | 293·2 | 18 | 25 |
| Scott Junction | 1 | 345·0 | 345·0 | 21 | 21 |
| New Richmond | 5 | 300·0 | 264·3 | 17 | 25 |
| Causapscal | 2 | 264·7 | 263·8 | 17 | 21 |
| St. Pierre, I.O. | 2 | 250·0 | 187·5 | 35 | 45 |
| Valley Junction | 2 | 250·0 | 207·0 | 30 | 42 |
| Rivière Bleue | 1 | 248·0 | 248·0 | 23 | 23 |
| Matane | 5 | 203·5 | 192·8 | 30 | 31 |
| St. Fabien | 6 | 172·4 | 197·0 | 24 | 31 |
| Grande Rivière | 2 | 105·0 | 159·5 | 42 | 39 |
| Average for 11 stations | 2·9 | 259·4 | 230·7 | 24·5 | 24 |

The potato may be considered as an intensive crop in the sense that it requires more labour, more fertilizer and usually has a higher value per acre than other crops generally grown on the Illustration Stations.

On a number of the stations special demonstrations were undertaken to determine the effect of different manurial and fertilizer treatments to potato land. At St. Arsene the fertilizer treatment and resulting yield of marketable and unmarketable potatoes was as follows:—

RESULTS FROM DIFFERENT MANURIAL AND FERTILIZER TREATMENTS

| Plots No. | Plot treatment | Yield per acre | | Total |
|---|---|---|---|---|
| | | Marketable | Unmarketable | |
| | | bush. | bush. | bush. |
| 1 | Manure, 10 tons and 400 pounds of a 4-8-6 | 319·2 | 79·8 | 389·0 |
| 2 | Manure, 10 tons and 200 pounds of nitrophoska No. 1 | 266·0 | 106·3 | 372·3 |
| 3 | Manure, 20 tons | 239·4 | 133·0 | 372·4 |
| 4 | Manure, 10 tons | 159·6 | 133·0 | 292·6 |
| 5 | No manure or fertilizers | 54·5 | 50·9 | 105·9 |

When chemical fertilizers were used in conjunction with the manure it will be noted that the total yield also the yield of marketable potatoes was substantially increased. At Causapscal 550 pounds of a 4-8-8 mixture increased the yield by 83½ bushels. The plot that received an application of manure alone yielded 195·6 bushels. Where manure and 550 pounds of chemical fertilizer was applied the yield was 288·2 bushels per acre. At Scott Junction where 12 tons of manure was applied alone the yield was 179 bushels. Where a similar amount of manure and 400 pounds of a 4-8-7 fertilizer was used the yield was increased to 345 bushels per acre. In dealing with the potato work reference has been made to certain fertilizer mixtures such as a 4-8-6. In that connection it may be interesting to mention that a ton of such a mixture contains 520 pounds of nitrate of soda, 1,000 pounds of superphosphate and 240 pounds of muriate of potash.

## OATS AND PEA HAY

On the Illustration Stations in Eastern Quebec oats and peas are grown in a mixture and seeded on the cultivated section of the rotation as a substitute for hoed crops such as corn or sunflowers which generally do not thrive under the local soil and climatic conditions. The crop is cut green and cured as hay or made into silage. The yield and cost of growing oats and peas on the thirteen stations mentioned below was as follows:—

YIELD AND COST OF GROWING OATS AND PEAS

| Stations | Number of years grown | Yield per acre | | Cost per ton | |
|---|---|---|---|---|---|
| | | 1929 | Average | 1929 | Average |
| | | tons | tons | $ | $ |
| St. Pierre, I.O. | 2 | 4·5 | 3·7 | 7 10 | 7 12 |
| St. Apollinaire | 4 | 4·0 | 2·8 | 5 28 | 8 87 |
| St. Arsène | 1 | 3·5 | 3·5 | 6 98 | 6 98 |
| Causapscal | 2 | 3·2 | 2·3 | 8 19 | 12 57 |
| St. Fabien | 3 | 3·2 | 2·9 | 8 60 | 8 42 |
| Montmagny | 1 | 3·1 | 3·1 | 8 25 | 8 25 |
| Nouvelle | 3 | 3·0 | 2·8 | 10 40 | 8 97 |
| St. Alexandre | 3 | 3·0 | 2·9 | 10 51 | 9 55 |
| Rivière Bleue | 3 | 2·7 | 2·2 | 10 00 | 11 16 |
| Valley Junction | 2 | 2·4 | 2·4 | 11 64 | 11 64 |
| St. Eleuthère | 3 | 1·9 | 1·6 | 12 10 | 14 38 |
| St. Vallier | 1 | 1·8 | 1·8 | 11 91 | 11 91 |
| St. Alphonse | 2 | 1·5 | 1·7 | 12 44 | 11 55 |
| Average | 2·3 | 2·9 | 2·6 | 91 99 | 10 19 |

The above yields were unfavourably influenced because of the lack of manure on some of the stations. At St. Vallier, St. Alphonse, St. Apollinaire and St. Arsène no manure was available for this crop. Despite this lack of barnyard manure, the stations of St. Apollinaire and St. Arsène produced very fair yields, the former being situated on a black muck soil especially suitable for such a crop, while at the latter station, oats, peas and vetch hay were grown as an emergency crop to replace clover. The low charge for manure at these two stations explains the relatively low cost of production.

YIELD AND COST OF GROWING OATS

In the four-year rotation commonly adopted on the Illustration Stations in Eastern Quebec oats is grown on land which the previous year produced a hoed crop. When seeding this crop the usual rate is 2½ bushels per acre along with 8 pounds of red clover, 2 pounds of alsike and 10 pounds of timothy per acre. The manure and fertilizer treatment given the hoed crop is sufficient to support the cereal crop, hence, no additional manure is applied.

The yields and cost of growing oats on the Eastern Quebec station as well as the average for a period of years was as follows:—

YIELDS AND COST OF GROWING OATS

| Station | Variety | Number of years grown | Yield per acre | | Cost per bushel | |
|---|---|---|---|---|---|---|
| | | | 1929 | Average | 1929 | Average |
| | | | bush. | bush. | cts. | cts. |
| New Richmond | B | 8 | 68·7 | 68·5 | 35 | 34 |
| Valley Junction | B | 2 | 54·5 | 39·8 | 43·5 | 54 |
| Matane | B | 8 | 53·4 | 54·3 | 47 | 45·5 |
| St. Alexandre | A | 3 | 50·7 | 43·1 | 43·5 | 47 |
| Montmagny | B | 7 | 49·5 | 68·0 | 53 | 36 |
| Nouvelle | A | 3 | 46·6 | 51·6 | 41 | 35 |
| St. Arsène | B | 3 | 45·0 | 40·1 | 49 | 46 |
| Causapscal | A | 3 | 42·1 | 39·5 | 43 | 44 |
| Grande Rivière | A | 2 | 41·2 | 34·1 | 72 | 78 |
| Scott Junction | B | 6 | 41·0 | 35·8 | 67 | 67 |
| Riviere Bleue | A | 3 | 40·0 | 40·6 | 56 | 57 |
| St. Eleuthère | A | 3 | 37·7 | 27·6 | 64 | 76 |
| St. Vallier | B | 1 | 35·8 | 35·8 | 62 | 62 |
| St. Pierre, I.O | B | 2 | 30·0 | 24·1 | 62 | 66·5 |
| St. Gabien | B | 8 | 25·0 | 49·3 | 80 | 48 |
| St. Alphonse | A | 2 | 25·0 | 25·0 | 73 | 87 |
| St. Apollinaire | A | 4 | 21·0 | 36·0 | 91 | 67 |
| Average | | 4 | 41·6 | 47·2 | 57·7 | 51·7 |

NOTE:—B. stands for Banner and A. for Alaska.

Alaska oats were introduced in the northern parts of this district as Banner had been found too late in maturity. The short growing period required for Alaska has created considerable interest on the part of the neighbouring farmers, especially on the Illustration Stations along the Gaspe coast where green oats can be seen on the fields as late as the end of October. The results obtained at Riviere Bleue and St. Eleuthere indicate also that an early variety is needed for the upper part of Temiscouata and Kamouraska counties. Alaska yielded 37·7 bushels per acre at St. Eleuthere while Banner, which had previously been grown seldom yielded more than 23 bushels per acre.

YIELDS AND COST OF PRODUCING CLOVER HAY

The production of clover hay in quantity is of primary importance on the Illustration Stations in this district as all are actively engaged in dairying and require feeds high in protein for their feeding rations.

The yields of clover hay obtained on the Illustration Stations since their establishment are embodied in the following table:—

YIELDS AND COST OF GROWING CLOVER HAY

| Station | Number of years grown | Yield per acre | | Cost per ton | |
|---|---|---|---|---|---|
| | | 1929 | Average | 1929 | Average |
| | | tons | tons | $ | $ |
| St. Alexandre (1) | 2 | 3·7 | 2·9 | 5 18 | 5 34 |
| St. Alexandre (2) | 2 | 3·0 | 2·7 | 6 25 | 7 59 |
| Rivière Bleue | 1 | 2·8 | 2·8 | 5 58 | 5 58 |
| Montmagny | 7 | 2·5 | 2·5 | 6 29 | 7 66 |
| New Richmond | 9 | 2·2 | 1·8 | 8 10 | 9 07 |
| Causapscal | 2 | 2·0 | 1·9 | 7 31 | 6 02 |
| St. Eleuthère | 2 | 2·0 | 1·8 | 7 82 | 8 25 |
| St. Fabien | 8 | 1·9 | 1·6 | 7 81 | 10 61 |
| St. Apollinaire | 4 | 1·6 | 1·7 | 8 61 | 8 99 |
| St. Pierre, I.O | 1 | 1·5 | 1·5 | 7 15 | 7 15 |
| Matane | 7 | 1·5 | 1·5 | 13 61 | 12 65 |
| Scott Junction | 5 | 1·4 | 1·3 | 10 68 | 13 74 |
| Grande Rivière | 1 | 1·3 | 1·3 | 7 00 | 7 00 |
| St. Alphonse | 1 | 1·1 | 1·1 | 9 20 | 9 20 |
| Average for 14 stations | 3·7 | 2·1 | 1·8 | 7 90 | 9 59 |

(1) Clay loam. (2) Sandy soil.

In the growing of clover hay on the stations no manure or fertilizer is applied directly to the crop. Applications made two years previous when in hoed crops are expected to carry the hay crop through because of the residue retained in the soil, and which is gradually made available to plants. Because of this residual effect ten per cent of cost of the manure and fertilizer applied to the hoed crops is charged to the clover hay. In this connection a demonstration undertaken at Causapscal in 1927 indicated the carry-over effect of manure and fertilizer. At that time the hoed crop received manurial treatment as outlined in the table below. This year clover hay was produced on these plots. It will be noted that the resulting yield was proportionate to the plant food applied.

YIELDS OF CLOVER HAY FROM DIFFERENT MANURIAL AND FERTILIZER TREATMENTS MADE TWO YEARS PREVIOUS

| Plot No. | Plot treatment | Yield per acre |
|---|---|---|
| 1 | 15 tons manure and 310 pounds of a 5-8-9 fertilizer | 1·8 tons |
| 2 | 15 tons manure and 620 pounds of a 5-8-9 fertilizer | 2·1 tons |
| 3 | 15 tons manure and 1,240 pounds of a 5-8-9 fertilizer | 2·5 tons |
| 4 | 15 tons manure alone | 1·6 tons |

Phosphate and lime demonstrations were undertaken on some of the grain and seeded fields on the stations in 1928 and contributed to increase the clover hay yields this year. At St. Eleuthère an application of 300 pounds of basic slag increased the hay yield by 1½ tons per acre over the untreated plot. Ground limestone at the rate of two tons per acre increased the yield by half a ton. The yields obtained were as follows: lime 1·8 tons per acre, basic slag 2·7 tons, the untreated plot 1·3 tons. At St. Alexandre the limed plot produced 4·1 tons per acre while the untreated plot yielded at the rate of 3·3 tons.

Applications of marl have given beneficial results at New Richmond, naturally its application has increased the cost as compared with stations where

the soil is not lacking in this essential element. However, at this station, without this application, the yield would have been below the point of economical production. The untreated plot yielded 1½ tons per acre as compared with 2½ tons on the limed portion of the field.

### YIELDS AND COST OF PRODUCING TIMOTHY HAY

Timothy hay was grown on only eight stations in the Eastern Quebec district in 1929, due to the fact that a number of the stations have not been in operation for a sufficient period to have reached that crop in the rotation. The yields and cost of producing timothy hay this year as well as the average of previous years will be found in the following table.

YIELDS AND COST OF PRODUCING TIMOTHY HAY

| Station | Number of years grown | Yield per acre | | Cost per ton | |
|---|---|---|---|---|---|
| | | 1929 | Average | 1929 | Average |
| | | tons | tons | $ | $ |
| St. Alexandre | 1 | 2·5 | 2·5 | 5 93 | 5 93 |
| New Richmond | 9 | 2·3 | 1·8 | 6 22 | 8 91 |
| St. Fabien | 7 | 2·0 | 1·5 | 5 35 | 8 74 |
| Causapscal | 1 | 2·0 | 2·0 | 7 31 | 7 31 |
| Matane | 7 | 1·8 | 1·5 | 8 83 | 10 61 |
| St. Eleuthère | 1 | 1·7 | 1·7 | 5 12 | 5 12 |
| St. Apollinaire | 4 | 1·7 | 1·6 | 6 40 | 7 99 |
| Scott Junction | 2 | 1·3 | 1·8 | 9 18 | 8 14 |
| Average | 4 | 1·9 | 1·7 | 6 79 | 9 10 |

The cost of production recorded in the above table might seem somewhat low in some instances such as at St. Fabien. The reader's attention is called to the fact that the cost of seed and manure at St. Fabien is distributed over a longer period, due to the adoption of a six-year rotation. At Matane the cost has been increased by high labour charges at time of haying. It will be noted also that timothy has generally been an expensive crop at this station and that this high cost for a period of seven years has greatly increased the average for all the stations.

### FETILIZER ILLUSTRATION STATIONS

Two of the stations in Eastern Quebec are devoted primarily to demonstration work aimed to study and assist in solving the depleted soil problem. Naturally, the supply of farmyard manure is small, due to the limited amount of stock which they can sustain. To restore them to profitable production better cultivation, the growing of leguminous crops and the rational use of chemical fertilizers combined with such manure as is available offers the most practical solution. In the plan of work the systematic rotation of crops serves as the foundation for these soil improvement demonstrations.

## ST. JEAN PORT JOLI, L'ISLET COUNTY

### OPERATOR, FRANCOIS T. CARON

This is the second year that this station has been in operation. In the spring of 1928 field "A" was fertilized as indicated in the table below and planted to hoed crops. No further fertilizer treatment was given this land but separate wheat yields were obtained from each treatment, so as to check their effect on succeeding crops. It is interesting to note that the land receiving an

application of fertilizer alone yielded the same as that receiving manure and fertilizer. The following table indicates the method of fertilizing the different fields, the rate of application and resulting yields:—

YIELDS FROM DIFFERENT FERTILIZER TREATMENTS

| Field | Crop | Fertilizer treatment and rate of application per acre | Yield per acre | | | |
|---|---|---|---|---|---|---|
| | | | Turnips | | O.P.V. | 1929 |
| | | | 1929 | Average | 1929 | |
| | | | tons | tons | tons | bush. |
| | | *Applied in 1928* | | | | |
| A | Wheat | 20 tons of manure | | | | 29·5 |
| A | Wheat | 10 tons of manure and 500 pounds of a 3-9-6 fertilizer | | | | 34·0 |
| A | Wheat | 1,000 pounds of a 3-9-6 fertilizer | | | | 34·0 |
| A | Wheat | Check, no manure of fertilizer | | | | 21·7 |
| | | *Applied in 1929* | | | | |
| B | Hoed | 20 tons of manure | 13·1 | 12·1 | 2·35 | |
| B | Hoed | 10 tons manure and 500 pounds of a 3-9-6 Fertilizer | 15·8 | 14·1 | 2·86 | |
| B | Hoed | 1,000 pounds of a 3-9-6 fertilizer | 15·0 | 14·4 | 2·62 | |
| B | Hoed | Check, no manure or fertilizer | 8·3 | 8·3 | 1·36 | tons |
| C | Clover hay | 3,000 pounds carbonate of lime | | | | 1·50 |
| C | Clover hay | 400 pounds superphosphate | | | | 2·15 |
| C | Clover hay | Check, no lime or fertilizer | | | | 1·00 |

A study of the results in the above table will indicate that chemical fertilizers have been effective in promoting growth with all classes of farm crops under tests. Frequently a soil is deficient in one element only but generally an application of a complete fertilizer is most effective. In the case of clover hay the yield was increased by 1·15 tons from the application of 400 pounds of superphosphate.

## STE. HELENE, KAMOURASKA COUNTY

OPERATOR, XAVIER PICARD

This is the second year that this station has been in operation, directing special attention to soil improvement problems, and the economical production of crops by the combined use of farmyard manure and chemical fertilizer. At this station a three-year rotation serves as the basis of the work.

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 | | | | | | 1929 |
|---|---|---|---|---|---|---|---|---|---|
| | | | Turnip | | O.P.V. hay | | Potatoes | | |
| | | | 1929 | Two year average | 1929 | Two year average | 1929 | Two year average | |
| | | | tons | tons | tons | tons | bush. | bush. | tons |
| B | Hoed | 20 tons manure | 25·9 | 19·9 | 2·45 | 2·56 | 326·4 | 264·0 | |
| B | Hoed | 10 tons manure and 500 pounds 3-9-6 | 27·3 | 21·2 | 2·56 | 2·28 | 268·8 | 236·1 | |
| B | Hoed | 1,000 pounds 3-9-6 | 28·0 | 23·8 | 2·26 | 1·92 | 288·0 | 264·0 | |
| B | Hoed | Check, no fertilizer | 19·4 | 13·0 | 1·60 | 1·38 | 172·8 | 151·9 | |
| C | Clover hay | 3,000 pounds carbonate | | | | | | | 2·10 |
| C | Clover hay | 400 pounds superphosphate | | | | | | | 2·32 |
| C | Clover hay | Check, no fertilizer | | | | | | | 1·36 |

From the results obtained and as outlined in the above table it will be noted that on the check or unfertilized plot all yields were relatively low and that the combined use of 10 tons of manure and 500 pounds of a 3-9-6 fertilizer, increased the turnip yield by 8·6 tons per acre. In 1928 lime and superphosphate were applied to field "C" prior to being seeded to oats. The application of 400 pounds of superphosphate increased the yield of Banner oats by 11·6 bushels and the second season from when applied, improved the clover hay yield to the extent of 1,920 pounds per acre.

## REPORT OF THE ILLUSTRATION STATIONS FOR NEW BRUNSWICK

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

### SEASONAL CONDITIONS

The winter of 1928-29 was a mild one and although the ground was bare of snow quite frequently during the winter months, clover stands did not suffer generally. Spring weather conditions were not favourable for early planting and as a result land was often worked when it was too wet. During June the rainfall was ample to promote good growing conditions. From midsummer until October the rainfall was generally very light although in a few sections such as the territory surrounding the Riordon and Siegas stations the rainfall was about normal. The different localities reacted to the light rainfall according to the type of soil. In the loam and clay loam areas hay and grain crops were much better than for some years but on light soils such as are characteristic of the St. Charles and Buctouche areas crops were very light. It is questionable if the turnip crop on the average was as good as usual. There were, however, notable exceptions such as at Siegas where a maximum yield was obtained. Mangels stood the drought much better than turnips. Potatoes gave good yields except at St. Charles and Buctouche.

Ideal weather was experienced over the greater part of the province for haying and harvesting of crops and consequently the quality was better than usual.

Seasonal conditions were such that all operations could be accomplished with a minimum amount of extra labour and hence the labour charges in most instances are appreciably lower than in other years.

### ECONOMIC CONDITIONS

The slump in potato prices in the fall of 1928 had a depressing effect on the farming population of the province throughout the greater part of 1929. However, with good harvest weather in the fall of 1929, good prices and in the main, good yields a more optimistic feeling prevails generally. Although finances would not permit of any expansion on the part of the great majority of farmers during the summer of 1929, nevertheless, it has been a season of accomplishment and preparation for expansion.

Fine weather during the haying, harvesting and digging season enabled farmers to do their work more efficiently. Thus, labour charges are lower than usual, similarly the quality of farm products, such as hay, grain and potatoes are much better than usual. Pastures were good in the early summer but poor in midsummer and early fall. Winter stocks of feed, such as hay, straw, grain and roots are equal to or greater than those of last year. The early fall was dry and it was difficult to plough heavy land. However, with frequent rains in the late fall farmers succeeded in getting a much greater acreage prepared for cropping next year than is customary.

There is a gradual tendency on the part of a great many farmers toward an increased acreage in crops. Methods are likewise improving. There is also a tendency toward the production of a greater variety of feeds for animal consumption. In this respect might be mentioned oats, peas and vetches for summer feed to supplement pastures in light soil districts. The acreage in mangels is steadily increasing, similarly turnips are being more generally grown.

PUBLICITY

During the month of July field meetings were held at Baker Brook, Siegas, Harvey, Tracey, Whitneyville, Beresford, St. Isidore, St. Charles and Buctouche. The public interest as manifested by the attendance was more than maintained, the average adult attendance being fifty-seven. As usual the meetings were supported by the local clergy, the provincial extension service and agricultural society officers. Topics of discussion varied according to local conditions and interests.

The sign boards and legends supply general information to the casual visitor. The operators are, however, glad to give detailed information whenever the necessity arises. In this connection it is quite a common occurrence for farmers to telephone operators requesting information on varieties, spraying, chemical fertilizers, etc.

The turnip clubs and other extension activities serve as a connecting link between the farmer and the illustration station. A well-kept station with a good variety of crops where yields are increasing and improvements may be noted in all departments, is the most impressive publicity obtainable. Given a station such as this and operated by a farmer interested in the welfare of his community, then the stations must exercise a beneficial influence and it is for these reasons that a number of our stations have become institutions in their respective localities.

The various stations in greater or lesser degree are aiding in promoting better practice. Object lessons in the use of lime, chemicals, after harvest cultivation, varieties, etc., are in evidence each year; it must be remembered also that the stations have done as much as any other agency to advertise the merits of northern grown clover seed, certified seed potatoes and various varieties of seed grain. The operators each year are taking a larger part in provincial competitions, seed fairs, county fairs, field crop competitions and other activities.

EXTENSION OF ROOT CROP GROWING

In preparing the cropping plans for the Iuustration Stations, turnips have had first consideration. The importance of this crop in the winter feeding program warrants an aggressive policy as regards increased acreage, increased yields and a more general planting. A high standard in regard to the care of this crop on the stations has been demanded and consequently, yields have been good. Labour saving methods have been introduced and with much of the drudgery formerly associated with the growing of this crop, removed, the growing of turnips is becoming more popular. Turnip growing competitions have also played a part in introducing this crop into districts where it was not previously grown.

This year on Illustration Stations and in club competitions, about 100 acres of turnips were grown. This work was carefully supervised and each grower was given instruction on the general requirements of this crop in regard to soil, method of preparation, early planting, fertilization, varieties, etc. Each grower was visited at singling time, failing this, a club meeting was held at singling time when instruction was given in singling and summer cultivation.

In addition to encouraging turnip growing, some attention has been given to the growing of mangels. This year twelve operators grew from one-half to one acre each. Yields were comparatively good considering the season and the inexperience of the operators. The crop is to be utilized for poultry and swine feed.

EARLY VERSUS LATE PLANTED TURNIPS

| Station | Date planted | Yield per acre | Cost per ton |
|---|---|---|---|
| | | tons | $ |
| Baker Brook | May 21 | 26·4 | 2 55 |
| Grand Falls | May 21 | 23·4 | 2·07 |
| Lower Derby | May 23 | 22·1 | 3 25 |
| Siegas | May 24 | 30·1 | 2 68 |
| Tracey | May 24 | 21·3 | 2 36 |
| Average five earliest seeded | ..... | 24·6 | 2 58 |
| Buctouche | June 6 | 18·0 | 3 55 |
| St. Isidore | June 10 | 15·7 | 3 54 |
| Pomeroy Ridge | June 15 | 19·0 | 3 28 |
| Salisbury | June 22 | 15·0 | 3 49 |
| Riordon | June 24 | 11·0 | 4 62 |
| Average five latest seeded | ..... | 15·7 | 3 69 |

The above table indicates that early planted turnips yield best and further indicates that with increased yields costs of production are lowered.

SEED WORK ON ILLUSTRATIONS STATIONS

Interest in the use of better seed has been well maintained during the year. At the Provincial Seed Fair held at Fredericton in January, four operators exhibited oats and wheat and were successful in winning two first, two second, one third, one fifth and one sixth prizes.

This year two operators were supplied with superior foundation seed oats. These were grown under good conditions and as a result over 500 bushels of this seed will be available this year for distribution. Many of the operators are distributing seed locally, others have a provincial trade, thus, the Riordon station shipped seed oats to seven counties. Agricultural Societies are now grouping the seed orders of their membership and in many cases purchasing from Illustration Station operators. The operators that exhibited seed grain enjoyed a good demand for seed and found no difficulty in disposing of all their seed at satisfactory prices. In county field crop competitions several operators this year, as in previous years, scored high.

Operators and farmers are realizing more and more the part that good seed plays in securing good yields. In the following table it is noteworthy that there is very little variation in total cost of production per acre whether yields were large or small, but cost per bushel is naturally dependent on yield and unless yields of forty bushels or more are obtained per acre the cost is too high.

OAT YIELDS AND COSTS AT REPRESENTATIVE STATIONS

| Station | Yield per acre | Cost per bushel | Total cost per acre |
|---|---|---|---|
| | bush. | $ | $ |
| Grand Falls | 88·0 | 0 35 | 30 80 |
| Whitneyville | 66 6 | 0 38 | 25 30 |
| Riordon | 55 0 | 0 40 | 22 00 |
| Sussex | 43·0 | 0 58 | 24 94 |
| Beresford | 33·6 | 0 67 | 22 51 |
| Salisbury | 24·0 | 1 02 | 24 48 |
| Jacquet River | 20·8 | 1 12 | 23 29 |
| Average cost per acre | | | $24 76 |

## CHEMICAL FERTILIZER DEMONSTRATIONS

The important place chemical fertilizers occupy in New Brunswick agriculture is sufficient justification for the extensive demonstrations conducted on the Illustration Stations of the province. Hitherto chemical fertilizers have been more or less associated with the potato crop but in recent years chemicals have been used to profitable advantage on hay, grain and root crops, and to some limited extent on pastures. Chemicals promise to play a still more important role in the province in building up soil fertility, and also in increasing crop yields as the building up process proceeds. It is not too much to say that the use of chemicals has heartened many farmers who were beginning to realize that with the limited amount of barnyard manure at their command, they could not maintain soil fertility and were faced with the problem of diminishing crop yields. The fact that chemicals have come into general use, and further, that new brands are constantly appearing on the market makes it important that the farmer should understand these and know their place and respective values in the production of the several crops they are used on.

Outstanding results were secured through the use of chemicals in oat production on poor land this year. At Petersville, a yield of 35 bushels of oats and a good straw crop per acre were secured on land that yielded 6 bushels of buckwheat per acre the previous year. The cost of chemicals applied amounted to $5.66 per acre. At Salisbury an application of 300 pounds superphosphate and 100 pounds of nitrate of soda resulted in oats maturing seven days earlier and in a greatly increased yield of both grain and straw. The land is heavy in both of the districts mentioned and does not lend itself to hoe crop production to the same extent as many other districts, and hence, the use of chemicals has a special significance in both of the districts.

In hoed crop work with turnips, mangels and potatoes, chemicals have been used for a number of years on the Illustration Stations both in combination with manure and alone. Potato growers on an extensive scale are inclined to fertilize with chemicals alone, ploughing under a clover sod to provide humus. Farmers growing only a few acres and practising a five or six year rotation in many cases use both manure and chemicals but the tendency toward the use of chemicals alone is increasing, farmers using more and more of their supply of barnyard manure for top dressing new seeded land. In root crops, such as turnips or mangels, while it is possible to grow good crops on chemicals alone it is doubtful if chemicals will entirely supplant barnyard manure. These crops have a longer growing season and the use of manure has a special application in their cases, providing a reserve of plant food for the latter part of the growing season. The chemicals provide readily available plant food in the starting and early growing period. In this connection it is worthy of note that since chemicals have been used on turnips on the Illustration Stations, not a single case of second seeding has been recorded.

FERTILIZER WORK WITH TURNIPS AND MANGELS

| Station | Crop | Manure | Nitrophoska | Nitrate of soda | Sulphate of ammonia | Superphosphate | Muriate of potash | Yield per acre |
|---|---|---|---|---|---|---|---|---|
| | | tons | lb. | lb. | lb. | lb. | lb. | tons |
| Siegas | Turnips | | 666 | | | | | 32·7 |
| " | " | | | 260 | 288 | 1,250 | 200 | 27·4 |
| Derby | " | 15 | | | | | | 19·8 |
| " | " | 15 | 180 | | | | | 26·2 |
| " | " | 15 | | 70 | | 337 | 50 | 24·3 |
| " | " | 15 | | | | 337 | | 21·3 |
| " | " | 15 | | 70 | | 337 | | 22·5 |
| Whitney | " | 20 | | | | | | 15·0 |
| " | " | 20 | 200 | | | | | 17·7 |
| Tracey | " | 20 | | | | | | 16·8 |
| " | " | 20 | 180 | | | | | 24·3 |
| " | " | 20 | | 70 | | 337 | 50 | 23·6 |
| " | " | 20 | | | | 337 | | 19·8 |
| " | " | 20 | | 70 | | 337 | | 21·7 |
| Harvey | " | 25 | | | | | | 28·8 |
| " | " | 25 | 180 | | | | | 36·7 |
| " | " | 25 | | 70 | | 337 | 50 | 29·2 |
| " | " | 25 | | | | 337 | | 27·0 |
| " | " | 25 | | 70 | | 337 | | 31·8 |
| Riordon | " | 20 | | | | | | 8·1 |
| " | " | 20 | 180 | | | | | 12·5 |
| " | " | 20 | | 70 | | 337 | 50 | 12·5 |
| " | " | 20 | | | | 337 | | 10·6 |
| " | " | 20 | | 70 | | 337 | | 11·2 |
| Siegas | Mangels | | 664 | | | | | 11·5 |
| " | " | | | 260 | 288 | 1,250 | 200 | 18·5 |
| Derby | " | 20 | | | | | | 12·0 |
| " | " | 20 | | 300 | | | | 20·0 |
| " | " | 20 | | 300 | | | 300 | 24·1 |

*Note.*—One hundred and eighty pounds of nitrophoska contains the same amount of plant food as is contained in 70 pounds nitrate of soda, 337 pounds of superphosphate and 50 pounds of muriate of potash.

HIGH ANALYSIS FERTILIZER VERSUS LOW ANALYSIS FERTILIZER ON POTATOES

Chemical fertilizer work with potatoes consisted of a comparison of Nitrophoska No. 1 (15-30-15) with its equivalent in the commonly used chemicals on the market and with barnyard manure. Nitrophoska is a very concentrated form of fertilizer and results from its use varied largely due to the different methods used in applying it. Where applied with the ordinary potato planter there was a fairly large number of misses presumably due to burning, but where broadcasted no ill effects were observed. The following table indicates the treatment and average yield in bushels per acre:—

DIFFERENT FERTILIZERS ON POTATOES

| Material applied | Quantity per acre | Average yield per acre | Remarks |
|---|---|---|---|
| | lb. | bush. | |
| Nitrophoska No. 1, 15-30-15 | 666 | 262·7 | Fewer potatoes per hill but larger in size. Tops richer looking colour throughout season. |
| Chemicals 5-10-5 | 1,998 | 249·2 | Many potatoes per hill but lacked uniformity. |
| Barnyard manure | 20 tons | 195 | All sound. |

NOTE.—The plant food content of 666 pounds of nitrophoska No. 1 is exactly equivalent to that contained in the 1,998 pounds of chemicals.

## BAKER BROOK, MADAWASKA COUNTY

OPERATOR, FELIX DAIGLE

Average yields were obtained in all sections of the six-year rotation conducted at this station. Fertilizer demonstrations were very carefully conducted on turnips and potatoes and as a result this phase of the work was of considerable interest to all who came in contact with it.

Mangels were grown for the first time this year and while a maximum yield was not obtained due to an insufficient supply of plant food, nevertheless, the crop was sufficiently good to encourage the operator to try this crop again.

Protracted rains during the early spring forced farmers to hold off seeding until they felt that maturity would be endangered and many then seeded regardless of the condition of the soil and as a result such weeds, as smart weed, were very prevalent this year. Those farmers that waited until soil conditions were right for seeding had as a rule better yields and cleaner fields. Thus, in a few instances, we had the apparently contradictory evidence of late seeded grains yielding better than early seeded.

The station work was managed very satisfactorily. There is, however, room for improvement in general workmanship and neatness.

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

OPERATIONS AT BAKER BROOK—SIX-YEAR ROTATION

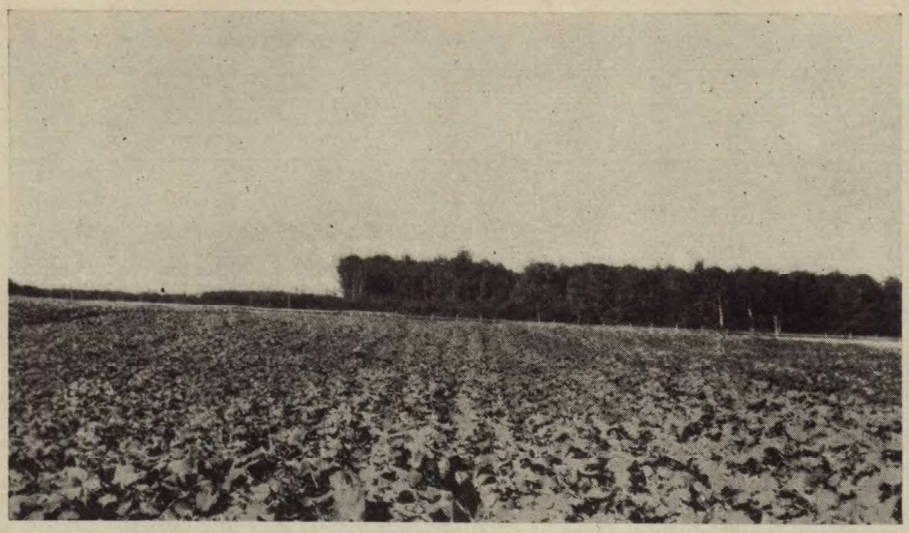
| Field | Crop | Number years grown | Yield per acre | | Cost | |
|---|---|---|---|---|---|---|
| | | | 1929 | Average | 1929 | Average |
| | | | | | $ | $ |
| A | Clover | 4 | 2·28 tons | 2·04 tons | 7 49 per ton | 8 12 per ton |
| B | Potatoes (Green Mountain) | 5 | 327 bush. | 277 bush. | 0 27 per bush. | 0 23 per bush. |
| B | Turnips | 5 | 26·4 tons | 23·2 tons | 2 55 per ton | 3 03 per ton |
| C | Mixed hay | 1 | 2·28 tons | 2·28 tons | 6 39 per ton | 6 39 per ton |
| D | Timothy | 4 | 1·7 tons | 1·52 tons | 8 46 per ton | 9 69 per ton |
| E | Oats | 6 | 40·6 bush. | 40·1 bush. | 0 69 per bush. | 0 536 per bush. |
| F | Clover | 4 | 2·0 tons | 1·972 tons | 7 77 per ton | 8 19 per ton |

## BERESFORD, GLOUCESTER COUNTY

OPERATOR, W. D. G. DOUCET

The establishment of a rotation at this station is proceeding slowly. It was necessary to do considerable preparatory work on each field, such as, levelling, improving the tilth and increasing soil fertility. The fields are responding satisfactorily. Field "A" was seeded down this year with oats as a nurse crop and for this district the oat yield was satisfactory and the clover stand exceptionally good, indicating that preliminary work was necessary. Field "B" was in hoe crop, turnips and potatoes and considering fertility the crops yielded good returns. This field will be seeded in 1930 and field "C" will be in hoe crop.

Fortunately the station fields are representative of the land in that district and the reaction of the soil to various treatments is being closely observed by the surrounding farmers. Extension work was commenced this year in the district, a turnip growing competition having been organized. This brought quite a number in contact with the station work. The operator is progressive and is deeply interested in improving conditions in the locality. Greater attention to such primary principles as thorough cultivation, early seeding, the use of chemical fertilizers are required before the district will progress as it should.



Swede turnip crop on the Illustration Station at Beresford. This crop yielded 22.6 tons per acre at a cost of $2.16 per ton.

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 | |
|---|---|---|---|---|---|---|
| | | | 1929 | Average | 1929 | Average |
| | | | | | $ | $ |
| A | Oats (Victory) | 2 | 33·6 bush. | 28 bush. | 0 67 per bush. | 0 63 per bush. |
| B | Potatoes (Green Mountains) | 2 | 264 bush. | 262 bush. | 0 203 per bush. | 0 211 per bush. |
| B | Turnips (Hall's Westbury) | 2 | 22·6 tons | 17·1 tons | 2 16 per ton | 5 10 per ton |
| C | Hay (mixed) | 2 | 1·0 tons | 1·03 tons | 10 41 per ton | 8 31 per ton |
| D | Oats, peas and vetches | Cut for green feed | | | | |

## BUCTOUCHE, KENT COUNTY

OPERATOR, HENRY BERTHE

Good progress was made in getting the rotation established at this station Workmanship was again of a high order and station management including fertilizer demonstrations were capably and carefully attended to.

Dry weather was a serious handicap in the Buctouche area this year. All crops suffered severely from mid June until late fall. Grain was almost a total failure, a field of wheat grown on the station was cut for fodder; turnips, mangels and potatoes gave barely a fifty per cent yield. The root crops at the station were cultivated very often to conserve moisture but notwithstanding this fact, growth was at a standstill during August and September and yields were correspondingly low. There was a very large percentage of small unmarketable potatoes in this section, due to growth stopping early.

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 | |
|---|---|---|---|---|---|---|
| | | | 1929 | Average | 1929 | Average |
| | | | | | $ | $ |
| A | Potatoes (Green Mountain) | 2 | 211·5 bush. | 221·2 bush. | 0 26 per bush. | 0 27 per bush. |
| B | Turnips (Hall's Westbury) | 2 | 18·0 tons | 21·0 tons | 3 55 per ton | 3 17 per ton |
| B | Mangels | 1 | 10·0 tons | 10·0 tons | 6 01 per ton | 6 01 per ton |
| C | Oats (Victory) | 2 | 28·5 bush. | 36·2 bush. | 0 65 per bush. | 0 50 per bush. |
| D | Wheat (White Russian) | 1 | Crop failure | | | |

## GRAND FALLS, VICTORIA COUNTY

OPERATOR, GABE MORN

Field crops continue to be the leading feature of this station's program. The station stands in first rank as regards high yields and low cost of production, particularly as concerns grain and potatoes. The oat yield this year was 88 bushels per acre and the average yield over a seven year period is over 60 bushels per acre produced at an average cost of less than 40 cents per bushel. Similarly the average potato yield for the seven year period is over 275 bushels and these were produced at less than 18 cents per bushel.

Hand labour is reduced to a minimum and horse labour and heavy machinery is used wherever possible. This undoubtedly is responsible in part for the low cost of production. Chemical fertilizer is used almost exclusively and this further reduces hand labour as compared to fertilizing with barnyard manure.

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 | |
|---|---|---|---|---|---|---|
| | | | 1929 | Average | 1929 | Average |
| | | | | | $ | $ |
| A | Timothy hay | 5 | 1·8 tons | 1·69 tons | 7 30 per ton | 8 71 per ton |
| B | Oats (Banner) | 7 | 88 bush. | 62·6 bush. | 0 35 per bush. | 0 39 per bush. |
| C | Potatoes (Green Mountain) | 7 | 366 bush. | 290 bush. | 0 17 per bush. | 0 18 per bush. |
| C | Turnips (Hall's Westbury) | 6 | 23·4 tons | 21·0 tons | 2 07 per ton | 2 32 per ton |
| D | Clover hay | 4 | 1·16 tons | 2 tons | 12 00 per ton | 7 69 per ton |

## HARVEY STATION, YORK COUNTY

OPERATOR, C. MELVIN GRIEVES

Steady progress is being made at this station. The four-year rotation is now fully established although hoe crops have not been grown on all of the fields. The soil is responding fairly well to more thorough cultivation and an effort will be made to raise the standard still higher. Cropping progress in the locality has not kept pace with live stock development and as a result very large quantities of concentrates have to be purchased. The problem in the

district is therefore to increase the quantity of home-grown grains and improve the quality of the roughage. Station work and cropping plans will therefore be directed with the above objects in view.

The soil is a heavy gravelly clay loam apparently underlaid with hard pan and is also quite wet. Ground limestone has proven very effective in the two years that it has been used. In 1928 equal areas were limed at one ton and three tons per acre on this year's clover crop, the one ton rate was about as good as the three-ton application. From our experience so far at this station, it would seem to be good policy to recommend from one to one and a half tons of ground limestone per acre and supplement this with a light dressing of chemical fertilizer. The chemicals to insure a grain crop and the ground limestone to benefit the clover.

The fact that meadows are left in hay quite a number of years is responsible for a low average quality. In this district as in many others, the natural sequence of improved methods would be improved yields and quality.

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 | |
|---|---|---|---|---|---|---|
| | | | 1929 | Average | 1929 | Average |
| | | | | | $ | $ |
| A | Oats (Victory) | 3 | 38·25 bush. | 39·4 bush. | 0 53 per bush. | 0 59 per bush. |
| B | Clover hay | 3 | 2·17 tons | 1·99 tons | 7 54 per ton | 7 02 per ton |
| C | Timothy hay | 1 | 1·66 tons | 1·66 tons | 6 60 per ton | 6 60 per ton |
| D | Potatoes (Green Mountain) | 3 | 192·5 bush. | 185 bush. | 0 34 per bush. | 0 34 per bush. |

## JACQUET RIVER, RESTIGOUCHE COUNTY

OPERATOR, ALEXANDER TURVEY

The four-year rotation is now fully established at this station. Couch grass control has been the most important advance made here. This has necessitated the expenditure of considerably more horse and hand labour than would be justified under ordinary conditions, however, the end justifies the means in this case as couch grass was completely controlled.

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 | |
|---|---|---|---|---|---|---|
| | | | 1929 | Average | 1929 | Average |
| | | | | | $ | $ |
| A | Oats (Victory) | 4 | 20·8 bush. | 25·4 bush. | 1 12 per bush. | 1 05 per bush. |
| B | Clover | 3 | 3·18 tons | 2·81 tons | 9 21 per ton | 7 71 per ton |
| C | Timothy | 1 | 1·0 ton | 1·0 ton | 13 08 per ton | 13 08 per ton |
| D | Potatoes (Green Mountain) | 3 | 214 bush. | 235 bush. | 0 27 per bush. | 0 27 per bush. |
| D | Turnips (Hall's Westbury) | 4 | 20·7 tons | 18·4 tons | 4 22 per ton | 4 47 per ton |

## LOWER DERBY, NORTHUMBERLAND COUNTY

OPERATOR, W. R. TAYLOR

This is the ninth year that illustration station work has been conducted on this farm and the usual high standard of excellence has again been well maintained. The almost flawless hoed crop section of the rotation is an object lesson to all in clean cultivation and the summer care of such crops as corn, sunflowers, mangels and turnips.

The short rotation conducted has resulted in a steadily increasing reserve of plant food being stored in the soil notwithstanding the fact that maximum yields are taken off each year. Just as the rotation has resulted in increased fertility bringing with it increased yields, so has the difficulty increased in regard to demonstrating the value of various chemical fertilizers and combinations. In this respect the station has not been as valuable as some others.

During the last two years the cropping plan at this station has included one field seeded to alfalfa using wheat as a nurse crop. Fair success has been met with in this project. Fields "B" and "C" are now in alfalfa. The area sown to mangels was doubled this year making an acre in this crop and the operator is planning to again increase his area next year. The turnip crop promised a very heavy yield but drought conditions setting in, only an average crop was harvested.

Progress in live stock has been steady. The sheep flock is one of the best in the county and good rams are sold annually. Lack of suitable stabling and storage accommodation is the biggest handicap at this station. The farm improvement policy instituted some years ago is steadily going ahead. The entire farm is now on a rotation basis and is one of the few farms in the county that is practising a systematic crop rotation.


The mangel crop grown on the Illustration Station at Lower Derby, N.B., was produced at a cost of $3.99 per ton.

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

OPERATIONS AT DERBY—FOUR-YEAR ROTATION

| Field | Crop | Number years grown | Yield per acre | | Cost | |
|---|---|---|---|---|---|---|
| | | | 1929 | Average | 1929 | Average |
| | | | | | $ | $ |
| A | Mangels (Mammoth Long Red) | 4 | 18·7 tons | 21·22 tons | 3 99 per ton | 6 12 per ton |
| A | Turnips (Hall's Westbury) | 9 | 22·1 tons | 20·9 tons | 3 25 per ton | 4 15 per ton |
| A | Corn (Longfellow) | 7 | 12·4 tons | 14·4 tons | 3 79 per ton | 4 77 per ton |
| B | Wheat (White Russian) | 3 | 25 bush. | 23 bush. | 1 17 per bush. | 1 29 per bush. |
| C | Clover hay | 9 | 2 tons | 2·08 tons | 9 82 per ton | 8 83 per ton |
| D | Timothy hay | 9 | 2·5 tons | 2·15 tons | 5 70 per ton | 6 74 per ton |
| E | Potatoes | 9 | 228 bush. | 270 bush. | 0 29 per bush. | 0 34 per bush. |

## PERTH, VICTORIA COUNTY

OPERATOR, R. J. MCCREA

This is the ninth year that station work has been conducted on this farm. Seasonal conditions were favourable and hay and grain crops were good. Turnips were grown on barnyard manure and were a good stand. Singling was somewhat late and summer cultivation was neglected to a certain extent. The potato yield was not as good as usual due mainly to a scarcity of chemicals. Couch grass was quite prevalent.

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 | |
|---|---|---|---|---|---|---|
| | | | 1929 | Average | 1929 | Average |
| | | | | | $ | $ |
| A | Potatoes (Green Mountain) | 9 | 210 bush. | 230 bush. | 0 23 per bush. | 0 24 per bush. |
| A | Turnips (Hall's Westbury) | 7 | 30·1 tons | 18·9 tons | 2 05 per ton | 3 72 per ton |
| B | Clover | 7 | 2·3 tons | 1·95 tons | 8 27 per ton | 8 69 per ton |
| C | Wheat | 6 | 24 bush. | 19·4 bush. | 1 18 per bush. | 1 21 per bush. |
| C | Oats (Victory) | 5 | 40·5 bush. | 40·1 bush. | 0 64 per bush. | 0 50 per bush. |
| D | Timothy | 7 | 2·67 tons | 1·73 tons | 5 63 per ton | 7 96 per ton |

## PETERSVILLE, QUEENS COUNTY

OPERATOR, JAMES BUTLER

Seasonal conditions were very satisfactory in this district and as a result better crops were secured than hitherto has been the case. Station work continues to improve and under improved methods of culture and fertilization yields are steadily improving. A good proportion of the farms in the district show evidence of progress and expansion and while there has been progress and expansion there still remains a vast opportunity for improvement in farming methods. The principle of crop rotations has not been adopted generally and until it has, cultural and cropping progress must of necessity proceed slowly. Another obstacle to progress is the habit of growing hoed crops on the same land for several years in succession.

Various competitions and organizations are co-operating to improve conditions here. The swine club, organized last year, sold over $1,000 worth of breeding stock during the year. A turnip growing competition distributed over $100 in prize money to successful contestants. Other competitions assisted in creating an interest in other crops and a calf club organized last spring will have a healthy influence in regard to better live stock. An increased acreage under cultivation and an increased area in hoe crop which will necessitate the purchase of more chemical fertilizers are policies that must be adopted in this district before permanent improvement in soil fertility will be attained.

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 | |
|---|---|---|---|---|---|---|
| | | | 1929 | Average | 1929 | Average |
| | | | | | $ | $ |
| A | Oats, peas, vetches | 3 | 2·5 tons | 2·66 tons | 7 27 per ton | 9 56 per ton |
| B & C | Clover hay | 2 | 1·5 tons | 1·55 tons | 12 12 per ton | 9 87 per ton |
| D | Oats (Banner) | 3 | 35 bush. | 25·6 bush. | 0 67 per bush. | 1 04 per bush. |
| E & F | Oats (Victory) | 1 | 35 bush. | 35 bush. | 0 50 per bush. | 0 50 per bush. |
| G | Wheat | 1 | 14 bush. | 14 bush. | 1 62 per bush. | 1 62 per bush. |
| H | Potatoes | 3 | 220 bush. | 199 bush. | 0 27 per bush. | 0 40 per bush. |
| I | Turnips | 3 | 18·7 tons | 10·98 tons | 2 08 per ton | 5 89 per ton |

## POMEROY RIDGE, CHARLOTTE COUNTY

OPERATOR, BURTON LINTON

Initial operations were instituted at this station this year. To date little except preparatory work has been accomplished. It was originally planned to conduct a six-year rotation at this station but a closer study of the district led to a decision in favour of the four-year rotation. The land has been left in sod too long and as the soil is naturally inclined to be hard and tight and not easy to work, hence, for a time at least, it was felt that a short rotation would be the best demonstration for the locality.

Farms in the locality are small and their future is certainly linked up with small herds of select dairy cattle, swine, poultry and possibly garden cash crops. Cropping plans in the future will be based on this analysis of the situation. While maximum yields were not obtained this year, nevertheless, yields were comparable with the best in the district and indicate that the soil will respond to good treatment.

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

OPERATIONS AT POMEROY RIDGE—FOUR-YEAR ROTATION

| Field | Crop | Number years grown | Yield per acre | | Cost | |
|---|---|---|---|---|---|---|
| | | | 1929 | Average | 1929 | Average |
| | | | | | $ | $ |
| A | Potatoes (Green Mountain) | 1 | 220 bush. | 220 bush. | 0 29 per bush. | 0 29 per bush. |
| B | Turnips (Hall's Westbury) | 1 | 19 tons | 19 tons | 3 28 per ton | 3 28 per ton |
| C | Oats (Victory) | 1 | 45 bush. | 45 bush. | 0 52 per bush. | 0 52 per bush. |

## RIORDON, GLOUCESTER COUNTY

OPERATOR, THOS. W. RIORDON

This station continues to render excellent demonstrational service to the public. A genuine willingness on the part of the operator to explain his work to all seeking information has been a factor that has helped to popularize the work at this station.

The lowest hay yield yet recorded was harvested this year due largely to winter killing. Turnips are never a heavy crop here due to late planting. Potatoes, oats and green feed produced excellent yields.

Crop of oats, peas and vetch on the Illustration Station at Riordon.

The potato acreage on field "D" was limited this year because this field had been limed some years ago. The crop yielded at the rate of 500 bushels per acre but on account of scab they were unfit for market.

This station is a heavy producer and distributor of seed grain and to still further encourage this policy, the operator was this year supplied with a quantity of first generation registered Victory oats. This was an excellent sample and it produced a good crop which will be distributed for seed purposes.

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

OPERATIONS AT RIORDON—FOUR-YEAR ROTATION

| Field | Crop | Number years grown | Yield per acre | | Cost | |
|---|---|---|---|---|---|---|
| | | | 1929 | Average | 1929 | Average |
| | | | | | $ | $ |
| A | Timothy hay | 4 | 1·16 tons | 2·01 tons | 11 18 per ton | 8 50 per ton |
| B | Clover hay | 5 | 1·33 tons | 2·13 tons | 10 88 per ton | 8 77 per ton |
| C | Oats (Victory) | 6 | 55 bush. | 50 bush. | 0 40 per bush. | 0 52 per bush. |
| D | Oats, peas, vetches | 3 | 3·55 tons | 3·98 tons | 9 66 per ton | 8 90 per ton |
| D | Potatoes | 6 | 500 bush. | 306 bush. | 0 16 per bush. | 0 23 per bush. |
| D | Turnips | 6 | 11 tons | 13·6 tons | 4 62 per ton | 5 72 per ton |

## SALISBURY, WESTMORLAND COUNTY

OPERATOR, COREY LEWIS

This station has been in operation three years. Favourable weather conditions enabled the station to make greater progress this year than has yet been the case. Three crops were demonstrated this year, viz., clover hay, Alaska oats and turnips on fields "A", "B" and "C" respectively. The limed area on field "A" was an effective demonstration particularly after haying when the second crop began to show up. This was the only field of clover that came to our notice in this locality. Extreme dry weather immediately after the Alaska

oats were sown resulted in an uneven germination, and hence, in uneven maturity. In connection with turnips, seeding was accomplished two weeks earlier than usual and in consequence yields were better than have yet been secured at this station. Field "D" was prepared for hoe crop in 1930. During the growing season the station attracted favourable comment and is already a demonstration in the locality of what regular cultivation can accomplish on the heavy type of soil that is characteristic of this locality.

In addition to the work conducted on the station, a half acre of mangels were grown for swine feed and a very good fertilizer demonstration in connection with oats on poor land was conducted. It was found that an application of 300 pounds of superphosphate and 100 pounds of nitrate of soda per acre resulted in a good thick stand of grain about four inches taller than the check plot and ripening seven days ahead of the plot that received no fertilizer. This demonstration was of importance in this locality because much of the grain land needs fertilizer, and furthermore, farmers when confronted with wet weather often have difficulty in harvesting and hence, any practice that will hasten ripening is welcome in this district.

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 | |
|---|---|---|---|---|---|---|
| | | | 1929 | Average | 1929 | Average |
| | | | | | $ | $ |
| A | Clover hay | 1 | 1·82 tons | 1·82 tons | 7 00 per ton | 7 00 per ton |
| B | Alaska oats | 2 | 24 bush. | 23 bush. | 1 02 per bush. | 0 98 per bush. |
| C | Turnips (Hall's Westbury) | 2 | 15 tons | 13·5 tons | 3 49 per ton | 3 94 per ton |

## SIEGAS, MADAWASKA COUNTY

OPERATOR, PHILEAS RUEST

Moisture conditions were perfect at this station for fields "A", "B" and "C" which are heavy clay soils and in consequence, the best yields yet obtained were recorded this year. Turnips yielded 30 tons or 400 barrels per acre, easily the record for the district and the best obtained on any New Brunswick station

Field meeting on the Illustration Station at Siegas.

this year. Timothy hay, clover hay and oats, peas and vetches were distinctly better than any in the district. On field "D" the soil is light and sandy and the oat and wheat yields were somewhat low.

This station is demonstrating to the district what may be accomplished in the way of crop yields provided the soil receives thorough preparation, adequate cultivation during the growing season and intelligent fertilization.

The station has received much favourable comment during the season which was well merited. Variety of crops, first class workmanship, early seeding and general good farm management prevails here and is rapidly placing this station in a leading position as compared with some of the other stations that have been operated for a considerably longer period.

Northern grown clover seed is advertising its merits at this station and the yearly demand for such seed is increasing in the district.

The mangel crop gave a slightly better yield this year. This is the second successful crop of mangels grown at the station. It was pointed out in last year's report that the first field of mangels grown in the county was grown here last year.

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 | |
|---|---|---|---|---|---|---|
| | | | 1929 | Average | 1929 | Average |
| | | | | | $ | $ |
| A | Turnips (Hall's Westbury) | 3 | 30·1 tons | 25·9 tons | 2 68 per ton | 2 46 per ton |
| A | Mangels | 2 | 15 tons | 14·6 tons | 4 46 per ton | 4 15 per ton |
| B | Timothy hay | 2 | 2·5 tons | 2·15 tons | 5 51 per ton | 6 82 per ton |
| C | Clover hay | 3 | 1·74 tons | 1·79 tons | 8 55 per ton | 8 75 per ton |
| D | Wheat (White Russian) | 1 | 12 bush. | 12 bush. | 2 04 per bush. | 2 04 per bush. |
| D | Oats (Alaska) | 2 | 35 bush. | 39·8 bush. | 0 65 per bush. | 0 56 per bush. |

While a high yield of turnips was obtained, cost of production was considerably higher than the average due in large measure to harder soil which led to an increase in horse and man labour. Fertilizer charges were also higher. In general, however, an increase in yield is usually followed by a decrease in cost of production per unit.

## ST. ISIDORE, GLOUCESTER COUNTY

OPERATOR, PETER ROBICHAUD

This district enjoyed a very favourable season and as a result crops at the station and in the surrounding district were, with the exception of hay, better than usual. Hay was somewhat lighter than last year due to a scant snowfall and winter-killing which was particularly hard on clover fields. The station is exercising a beneficial influence in the district. Almost every farmer in this section practised after harvest cultivation to a greater or lesser extent. During the month of August there was more ploughed and cultivated land in evidence in this locality than in any other section in the province. The turnip growing competition conducted in the district was productive of good results in that this crop is now fully established and the farmers know how to grow them. The forty-six members of this turnip club were an enthusiastic lot of competitors.

During the season three public meetings were held in St. Isidore; two in connection with the turnip club in which instruction was given in singling,

cultivation and efficient workmanship and a field meeting on the Illustration Station where general farming matters were discussed. Attendance was extremely good at each meeting.

Illustration Station and extension work carried on in this section was appreciated to the fullest extent. The individual farmer is making steady progress and while increased revenue may be comparatively small, taken collectively it amounts to a considerable total. A concrete example of expansion could be cited in the case of turnips. The Provincial Department is also carrying on extension work in St. Isidore. A campaign to grow oats, peas and vetches for summer feed in the dry pasture season was a forward step. The live stock branches of both Provincial and Federal Departments are also carrying on a vigorous campaign to improve live stock conditions.

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 | |
|---|---|---|---|---|---|---|
| | | | 1929 | Average | 1929 | Average |
| | | | | | $ | $ |
| A | Potatoes (Green Mountain) | 2 | 274 bush. | 245·5 bush. | 0 24 per bush. | 0 30 per bush. |
| A | Turnips (Hall's Westbury) | 2 | 15·7 tons | 14·3 tons | 3 54 per ton | 5 65 per ton |
| B | Clover | 1 | 0·72 tons | 0·72 tons | 17 80 per ton | 17 80 per ton |
| C | Oats (Victory) | 2 | 31 bush. | 27·5 bush. | 0 57 per bush. | 0 66 per bush. |
| D | Clover | 1 | 0·72 tons | 0·72 tons | 18 15 per ton | 18 15 per ton |

## SUSSEX, KING'S COUNTY

OPERATOR, MATTHEW ROBINSON

This station, although lacking variety in the hoed crop section, presented an attractive appearance throughout the growing season. Yields of hay, grain, oats, peas and vetches were equal to or better than in former years. This station being located in a strictly dairy district with at least eighty per cent of the farm revenue derived from dairy products and hogs, it is therefore necessary to specialize to a considerable extent on crops that will interest dairymen. With this in view, a six-year rotation is being demonstrated. The sequence of crops is as follows: grain, hoed crop, grain, clover, timothy, mixed hay.

Due to club root infestation it is impossible to grow turnips on the station and hence mangels were tried this year. The soil was not compacted enough after planting to get good germination and this followed by very dry weather resulted in failure, the land was subsequently sown to oats, peas and vetches. Thus, an early and a late sown field of oats, peas and vetches was available and this proved a distinct asset this year with pastures as dry as they were.

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 | |
|---|---|---|---|---|---|---|
| | | | 1929 | Average | 1929 | Average |
| | | | | | $ | $ |
| A | Mixed hay | 2 | 1·27 tons | 1·83 tons | 9 44 per ton | 7 91 per ton |
| B | Oats (Victory) | 4 | 43 bush. | 40·7 bush. | 0 58 per bush. | 0 53 per bush. |
| C | Clover hay | 2 | 1·3 tons | 1·77 tons | 11 50 per ton | 9 22 per ton |
| D | Timothy hay | 3 | 2·09 tons | 2·46 tons | 7 69 per ton | 6 56 per ton |
| E | Potatoes | 4 | 202 bush. | 256 bush. | 0 305 per bush. | 0 324 per bush. |
| F | Clover hay | 2 | 1·74 tons | 1·99 tons | 8 33 per ton | 7 64 per ton |

## TRACEY, SUNBURY COUNTY

OPERATOR, JOHN PHILLIPS

This station continues to maintain a high standard as regards workmanship, early seeding, clean cultivation and general attractiveness. Yields were not as good as promised early in the season due to light rainfall. The hoed crop section was particularly attractive this year, a good variety of useful crops were grown and some good fertilizer demonstrations were conducted.

The soil in the locality and on the station is a sandy loam. Pastures dry up early in August and must be supplemented with some soiling crop. The plan followed at this station was as follows: sunflowers for early feeding, oats, peas and vetches for midseason use and fodder corn for late season feeding. This system worked out very well as the nature of the soil permits very early seeding, thus, by the time feed was required the sunflowers were seven to eight feet high and were not too coarse. The stock seemd to relish them and the milk flow was increased.

Mangels were grown for the first time this year and quite successfully. They will fill a long felt want as the operator is steadily increasing his hog business.

The front part of field "A" was seeded to alfalfa with White Russian wheat for poultry feed as the nurse crop. Alfalfa should do well in this locality as the soil is deep and open with good natural drainage. The greatest obstacle to its success would appear to be lack of fertility.

The live stock situation at this station is improving. The operator is caretaker for the pure-bred bull owned by the Agricultural Society and was successful in winning numerous prizes at the county fair both with live stock and farm produce. In common with progress in station and live stock work there has been a pronounced improvement in general farm management.

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 | |
|---|---|---|---|---|---|---|
| | | | 1929 | Average | 1929 | Average |
| | | | | | $ | $ |
| A | Wheat (White Russian) | 1 | 22 bush. | 22 bush. | 1 53 per bush. | 1 53 per bush. |
| A | Oats (Banner) | 6 | 56 bush. | 50·5 bush. | 0 36 per bush. | 0 45 per bush. |
| B | Timothy | 5 | 2·8 tons | 2·6 tons | 5 38 per ton | 5 81 per ton |
| C | Mangels | 1 | 13·8 tons | 13·8 tons | 4 52 per ton | 4 52 per ton |
| C | Turnips | 6 | 21·3 tons | 17·19 tons | 2 36 per ton | 4 88 per ton |
| D | Clover | 6 | 3·3 tons | 2·98 tons | 5 42 per ton | 5 68 per ton |

## WHITNEYVILLE, NORTHUMBERLAND COUNTY

OPERATOR, MELVIN STEWART

This station has been in operation for two seasons and already rapid strides have been made. Crops were uniformly good notwithstanding the fact that the soil is light and the rainfall was deficient. Cultivation during the summer and general workmanship was well up to the standard. The fertilizer demonstrations were clear cut and useful. A good variety of crops assisted in drawing attention to the station. The stands of red clover on fields "C" and "D" will help to establish confidence in northern grown clover seed. An acre of mangels grown on a field adjoining the station was well up in the county mangel-growing contest. Advances have been made on the farm proper, particularly in cultural

and cropping operations. The great weakness at this station is the small number of live stock. Some advance in this respect was made this year and more is anticipated during the winter. Under present conditions the farm revenue must be derived from cash crops such as hay, grain, straw and potatoes and this does not insure a regular or adequate financial return.

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 | |
|---|---|---|---|---|---|---|
| | | | 1929 | Average | 1929 | Average |
| | | | | | $ | $ |
| A | Oats (Victory) | 2 | 66·6 bush. | 57·4 bush. | 0 38 per bush. | 0 37 per bush. |
| B | Potatoes (Green Mountain) | 1 | 253 bush. | 253 bush. | 0 24 per bush. | 0 24 per bush. |
| B | Turnips (Hall's Westbury) | 2 | 16 tons | 16·7 tons | 4 28 per ton | 3 35 per ton |
| C | Clover | 1 | 1·66 tons | 1·66 tons | 9 74 per ton | 9 74 per ton |
| D | Clover | 1 | 1·66 tons | 1·66 tons | 9 74 per ton | 9 74 per ton |

## ST. CHARLES, KENT COUNTY

OPERATOR, JOS. L. DAIGLE

Operations of a preparatory nature were conducted at this station during the year. The soil at the station and in the entire district is exceedingly low in fertility and likewise low in humus. This, coupled with its light sandy nature, will make the restoration of fertility a slow process.

Stimulation of the soil by sea shell and mud by a past generation is undoubtedly responsible for the present condition. This material was looked upon as a fertilizer and while its use for a time resulted in increased yields due to the fact that plant food was released, continued applications of shell without other assistance in the way of manure or fertilizer has resulted in an impoverished soil.

In the cropping plans for next year provision will have to be made to build up the humus content of the soil. A humus-producing crop, such as buckwheat, will have to be ploughed under and chemicals will have to be applied even before buckwheat can be grown. This with a definite area in hoe crop each year in which both barnyard manure and chemical fertilizer shall be used should in time make conditions more favourable at the station and in the district.

# REPORT OF THE ILLUSTRATION STATIONS FOR NOVA SCOTIA

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

THE SEASON

It was thought, from the light snowfall during the winter months of 1928-29 and the frequent thaws, that considerable damage would be done to newly seeded land. The clover on newly seeded meadows, however, came through much better than was expected. Very little damage was done by the heaving action of the frost.

Seeding operations began about the same time as in 1928, on the earlier soils. The heavier soils, however, were just getting fit for harrowing when heavy rains occurred and delayed farming operations for nine days.

Lack of rains caused all crops to make slow growth through the growing season. During the month of July only 1·6 inches of rain fell. The hours of sunshine were considerably above the average. Frequent cultivations had to be given all hoed crops in order to conserve what little moisture was left.

Splendid weather prevailed for haymaking. The hay crop was below the usual yield but was housed in the best condition for years, with consequently less expense than usual. No lodging of grain was experienced, which is unusual. Although the straw was short the yields of grain were fair, and the quality was splendid.

The potato crop suffered greatly from the unfavourable season. Especially was this the case with the late plantings. The crop, however, was free from rot, and affected by little or no blight. The prices were higher than last year's so that, although the yield was far less, the price received counterbalanced last year's large crop.

Pastures suffered greatly from the continued dry weather. After the middle of June cattle were unable to get sufficient feed to keep up the milk supply. Considerable oats, peas and vetch, also green oats, had to be cut to supplement the grass feed. In some cases it was not possible, even on pastures treated with limestone, superphosphate or slags, to make cuttings in order to get green weights, except on damp soils. These plots gave formerly as high as seven times the green weight obtained from the pasture areas not treated.

In some seasons like the past it becomes more and more evident that an increase in mixed farming, cattle, horses, sheep, dairy and poultry products would be a great advantage to the farmer, by giving him more diversified sources of income.

### NEW STATIONS

Two new stations were established this season, making a total of fifteen in the province. Both of these are in Pictou county, one at Salt Springs, on the farm of Fred Setchell, and the other at Knoydart, on the farm of Dan M. McDonald. These stations are already giving valuable service.

### LIVE STOCK

The operators have made steady progress with their live stock. Three pure-bred bulls were obtained this past season. Milk has been tested for butter-fat content, and the poorer producers have been gradually weeded out. It seems apparent that the most important need of the operators is to increase the efficiency of their cows. The high-producing cows are more economical in the use of feed.

Not all operators are so situated as to be able to keep many sheep, but all have a few, and from these flocks breeders have been supplied. The prices realized this season have not been so high as last season's, but gave good profits.

### FRUIT TREES

Commercial varieties of plum, pear, apple and cherry trees have been planted at nearly all the stations. These trees have to date grown exceptionally well. An average growth of eleven inches was made this season on all the trees. Very few have died. No injury from winter-killing has been noticed. These trees receive a light application of nitrate of soda early in the spring, and are kept hoed around until the latter part of June. Just how far one can go with growing apples successfully at the various stations remains to be seen, but from present appearances the prospects, provided a careful selection of the soil is made before planting, look very favourable.

## SMALL FRUITS

Strawberries and raspberries have been grown at all the stations very satisfactorily. The demand for these fruits has grown rapidly, and the price received has averaged twenty-five cents per quart. Most operators are enlarging their plots considerably.

## ALFALFA GROWING

At all the stations a small area was sown with alfalfa on the grain and seeded areas, following a hoed crop. Part of this area was sown with a nurse crop and part with alfalfa alone. It was found that the heavier types of soil with poor drainage did not give a good stand of alfalfa. The area sown to alfalfa alone give the better results.

Larger areas at Middle Musquodoboit, Upper Stewiacke, Mabou and N.E. Margaree were sown outside the regular rotation, and the results have been quite encouraging. Well drained soils were selected and the seed was sown on land in a good state of fertility following a hoed crop. These areas were sown at the rate of 20 pounds per acre, and received Belgian slag at the rate of 1,000 pounds per acre.

The first season the alfalfa was sown a few weeds came up. These were cut before the plants seeded. The best stand was at Middle Musquodoboit. The soil at this station where the alfalfa was seeded is a light loam. The seed had been innoculated. The yield this season was, from two cuttings, 3·4 tons per acre. It was observed on this alfalfa area that, where a small section had received a light application of hardwood ashes, the yield was over one-half ton heavier.

The area at Stewiacke did not yield so well. The plants in 1928 were apparently in a very healthy condition, and the prospects looked favourable. This season the plants suffered from the unusually dry weather. The yield from two cuttings was 2·1 tons per acre. The foilage near the bottom of the plants started dropping before blossoming.

At Mabou and Margaree considerable mixed grasses came up this spring, as well as other clovers. The yield, however, was increased by 700 pounds over the areas newly seeded in 1928 with clovers and timothy.

New plots were put down at these stations this season as well as at Salt Springs, and the prospects look more promising than they did last year. Although the dry season checked the growth considerably, the alfalfa grew rapidly when rain eventually came.

## FERTILIZER WORK ON PASTURE LAND

Considerable work has been conducted at the various stations on the improvement of pastures. The results from these tests have been very encouraging and profitable, not only to the operators but to many farmers in the various districts who have tried out similar tests.

The first work on pasture improvement was started in 1924, surface applications of limestone, superphosphate and slags being made. Since then other new areas have been put down. The results of these tests have been very

pronounced. During the past season exceptionally dry weather prevailed throughout the province, which made pastures practically valueless after the middle of June. Complete records from weighings were impossible, except at stations where the soil moisture held out longer or where applications were made on damper soils.

In conducting these tests one-twentieth acre plots were staked off on uniform pasture areas, and various fertilizers applied. Cattle were allowed to graze over these areas the first season, but in the spring of the second season the areas were fenced. In July the grasses from the various plots were mowed and weighed. The annual report for 1926, page 51, gives a more detailed account of the yields.

In the work carried on up to the present time the application of phosphorus has made a decided improvement in the growth of pasture grasses. The results also show that it is possible to get as much as seven times more green weight from areas treated with phosphorus in some form than from unfertilized areas. The fertilized areas continue, as soon as the grass is removed, to supply splendid pasture of a more valuable grass higher in nitrogen content.

The following table gives the results of this test in 1929.

FERTILIZER WORK ON PASTURE LAND, 1929

| Station | Plot 1 | Plot 2 | Plot 3 | Plot 4 | Plot 5 |
|---|---|---|---|---|---|
| | Lime | Lime and slag | Lime and superphosphate | Slag | No fertilizer |
| | lb. | lb. | lb. | lb. | lb. |
| *Yield per acre when cut—* | | | | | |
| Heatherton | 580 | 880 | 960 | 880 | 340 |
| Upper Stewiacke | 540 | 1,860 | 1,160 | 1,120 | 220 |
| Kennetcook | 2,400 | 4,200 | 4,800 | 4,000 | 1,400 |
| Tatamagouche | 900 | 930 | 910 | 600 | 550 |
| *Clover and grass growth—* | | | | | |
| N.E. Margaree | Weak | Fair | Strong | Fair | Very weak |
| Middle River | Weak | Fair | Strong | Fair | Very weak |
| Newport | Weak | Strong | Strong | Fair | Very weak |
| Springfield | Fair | Strong | Strong | Fair | Weak |
| Mabou | Fair | Fair | Strong | Fair | Very weak |
| Christmas Island | Fair | Strong | Strong | Fair | Very weak |
| Barra Glen | Fair | Strong | Strong | Fair | Very weak |
| Middle Musquodoboit | Weak | Strong | Strong | Strong | Very weak |
| Sydney | Very weak | Fair | Strong | Fair | Very weak |

EFFECT ON SUCCEEDING CROPS OF MANURE AND COMMERCIAL FERTILIZERS APPLIED TO POTATOES (BEGUN 1926)

The object of this test was to show that by using less manure than is generally used per acre, and supplementing it with a commercial fertilizer, as profitable crops would be possible and more land would be brought under crops than is generally cultivated. With the limited amount of manure available on most farms the practice of using twenty tons per acre means smaller areas in hoed crops than there should be. The first test was started in 1924. A new test was started in 1925, and another in 1926.

At many stations planting has not been possible until the latter part of June. Where manure alone was used the plants evidently could not get sufficient food to mature a crop of salable potatoes, there being a great many small ones.

These tests were conducted on one-eighth acre plots on soil typical of the district. Irish Cobbler potatoes were planted in plots treated as follows:

*Plot 1.*—Manure, 20 tons per acre.

*Plot 2.*—Manure, 10 tons, and 4-8-4 fertilizer, 750 pounds per acre.

*Plot 3.*—4-8-4 fertilizer, 1,500 pounds per acre.

*Plot 4.*—Unfertilized.

The soil was ploughed in the fall in all tests. The fertilizers and manure were applied broadcast and harrowed in. These plots received the same attention as to cultivation, etc., as was given other farm fields. The following spring these areas were sown to oats and seeded with ten pounds of timothy and five pounds each of alsike and red clover per acre. No other application of fertilizer was made during the four years.

A survey of the table shows that the largest and most economical yield was obtained from Plot 2. Plot 3 gave the next largest yield, while Plot 1 was the lowest yielding fertilized plot. All fertilized plots showed substantial gains over the unfertilized areas. The yields of marketable potatoes on these plots followed the same order as the total yields.

From these tests it has been demonstrated fairly conclusively that by applying a smaller amount of manure and substituting some commercial fertilizer it is quite possible to maintain the fertility of the soil and bring larger areas under crop.

EFFECT OF MANURE AND COMMERCIAL FERTILIZERS ON SUCCEEDING CROPS—FERTILIZERS APPLIED TO POTATO CROP IN 1926

(Yields per acre)

| tation | Plot 1 | | | | Plot 2 | | | | Plot 3 | | | | Plot 4 | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Manure, 20 tons | | | | Manure, 10 tons; 4-8-4 fertilizer, 750 pounds | | | | 4-8-4 fertilizer, 1,500 pounds | | | | No fertilizer | | | |
| | Potatoes, 1926 | Oats, 1927 | Clover hay, 1928 | Timothy hay, 1929 | Potatoes, 1926 | Oats, 1927 | Clover hay, 1928 | Timothy hay, 1929 | Potatoes, 1926 | Oats, 1927 | Clover hay, 1928 | Timothy hay, 1929 | Potatoes, 1926 | Oats, 1927 | Clover hay, 1928 | Timothy hay, 1929 |
| | bush. | bush. | tons | tons | bush. | bush. | tons | tons | bush. | bush. | tons | tons | bush. | bush. | tons | 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 | 1·44 | 263·0 | 45·6 | 2·30 | 1·66 | 246·0 | 42·0 | 2·10 | 1·48 | 80·0 | 23·6 | 1·10 | 0·90 |
| Middle River | 210·0 | 23·4 | 3·05 | 1·30 | 230·0 | 27·0 | 3·00 | 1·94 | 205·0 | 25·2 | 2·90 | 1·82 | 60·0 | 14·8 | 1·00 | 1·30 |
| Kennetcook | 100·0 | 15·2 | 2·33 | 1·76 | 128·0 | 19·5 | 2·38 | 1·66 | 125·5 | 18·0 | 2·29 | 1·44 | 55·0 | 11·0 | 1·92 | 1·01 |
| Newport | 176·8 | 25·0 | 1·93 | 1·70 | 215·2 | 29·3 | 2·10 | 1·79 | 232·0 | 23·4 | 1·95 | 1·40 | 62·0 | 19·6 | 1·16 | 0·91 |
| Christmas Island | 96·0 | 17·4 | 1·01 | 0·75 | 124·0 | 23·0 | 1·70 | 1·50 | 84·0 | 20·2 | 1·62 | 1·37 | 64·0 | 0·9 | 0·80 | 0·71 |
| Tatamagouche | 154·0 | 16·1 | 1·11 | 1·00 | 220·0 | 19·0 | 1·21 | 1·15 | 198·0 | 19·0 | 1·15 | 1·02 | 110·0 | 11·1 | 0·83 | 0·70 |
| Middle Musquodoboit | 140·0 | ..... | 2·00 | 1·79 | 152·5 | ..... | 2·12 | 2·00 | 168·0 | ..... | 2·03 | 1·91 | 104·0 | ..... | 1·60 | 1·10 |
| Sydney | 185·0 | 14·0 | 2·46 | 1·59 | 225·3 | 19·2 | 2·13 | 1·73 | 241·0 | 18·8 | 1·80 | 1·40 | 104·2 | 12·0 | 1·20 | 0·90 |
| Mabou | 552·6 | 19·9 | 1·70 | 1·50 | 783·8 | 24·6 | 1·85 | 1·63 | 769·0 | 28·5 | 1·76 | 1·60 | 333·8 | 13·4 | 1·10 | 0·75 |
| Heatherton | 86·6 | 18·4 | 1·80 | 1·42 | 45·3 | 23·0 | 1·27 | 1·26 | 48·0 | 21·6 | 0·90 | 1·00 | 43·4 | 12·2 | 0·34 | 0·40 |
| Average | 192·4 | 22·4 | 2·00 | 1·42 | 238·6 | 26·5 | 2·03 | 1·63 | 232·4 | 25·4 | 1·86 | 1·44 | 99·6 | 13·6 | 1·19 | 0·87 |
| Average from test begun in 1924 (eleven stations) | 186·7 | 38·8 | 1·10 | 1·49 | 223·0 | 43·6 | 1·47 | 1·64 | 208·1 | 42·1 | 1·36 | 1·52 | 114·5 | 26·5 | 0·83 | 0·99 |
| Average from test begun 1925 (ten stations) | 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 of three tests, begun 1924, 1925, and 1926 | 197·3 | 32·4 | 1·49 | 1·46 | 237·0 | 36·1 | 1·71 | 1·61 | 227·6 | 35·3 | 1·60 | 1·47 | 100·0 | 21·9 | 0·98 | 0·94 |

*Station discontinued in 1929.

COMPARISON OF COMMERCIAL FERTILIZERS AND MANURE FOR POTATOES, 1929

A demonstration was conducted at eleven of the Stations, using manure and commercial fertilizers, separately and combined, in order to determine which would give the most economical yields. This, the obtaining of the maximum yield at the minimum cost, appears to be a very important factor in successful crop production.

By substituting some commercial fertilizer the manure now available may be applied to a larger acreage.

A uniform area was chosen for this work, and measured. The manure and fertilizer applied per acre were as follows:—

*Plot 1.*—Manure, 10 tons; nitrophoska, 250 pounds (a 15-30-15 fertilizer).
*Plot 2.*—Manure, 10 tons; 4-8-4 fertilizer, 750 pounds.
*Plot 3.*—4-8-4 fertilizer, 1,500 pounds.
*Plot 4.*—Manure, 20 tons.
*Plot 5.*—Manure, 20 tons; superphosphate, 400 pounds.
*Plot 6.*—Manure, 20 tons; superphosphate, 400 pounds; nitrate of soda, 150 pounds.
*Plot 7.*—Manure, 20 tons; superphosphate, 400 pounds; sulphate of ammonia, 115 pounds.

The manure was applied broadcast and harrowed, after which the commercial fertilizer was applied broadcast and also harrowed in. The nitrogenous fertilizers in Plots 6 and 7 were applied broadcast after the plants were up and when the foliage was perfectly dry.

It is not possible, because of the backward spring, to plant potatoes at the average station in Nova Scotia until the middle of June.

A survey of the results shows that Plot 1 gave the greatest average yield, Plot 2 the next largest, and Plot 3 the next. The results from Plots 6 and 7 were a little disappointing. The surface application of nitrogenous fertilizer on these plots was made during the early part of July, but the dry weather had evidently affected the plants, so that they did not obtain the nitrogen when it was most needed. These areas will be sown to oats and seeded with the regular grass mixture in 1930, and records will be kept of the oats and hay yields.

COMPARISON OF COMMERCIAL FERTILIZERS AND MANURE FOR POTATOES, 1929: YIELDS PER ACRE

| Station | Manure, 10 tons; nitrophoska, 250 pounds | Manure, 10 tons; 4-8-4 fertilizer, 750 pounds | 4-8-4 fertilizer, 1,500 pounds | Manure, 20 tons | Manure, 20 tons; superphosphate, 400 pounds | Manure, 20 tons; superphosphate, 400 pounds; nitrate of soda, 150 pounds | Manure, 20 tons; superphosphate, 400 pounds; sulphate of ammonia, 115 pounds |
|---|---|---|---|---|---|---|---|
| | bush. | bush. | bush. | bush. | bush. | bush. | bush. |
| Springfield | 301 | 290 | 392 | 300 | 294 | 297 | 291 |
| Kennetcook | 210 | 201 | 226 | 210 | 217 | 211 | 207 |
| Christmas Island | 205 | 241 | 181 | 169 | 188 | 192 | 197 |
| Barra Glen | 326 | 352 | 308 | 288 | 303 | ..... | ..... |
| Middle River | 275 | 270 | 269 | 275 | 277 | 274 | 279 |
| N.E. Margaree | 442 | 470 | 376 | 442 | 498 | ..... | ..... |
| Mabou | 389 | 376 | 340 | 300 | 321 | 325 | 321 |
| Sydney River | 393 | 410 | 396 | 335 | 293 | 305 | 300 |
| Knoydart | 235 | 135 | 191 | 180 | 113 | 143 | 131 |
| Salt Springs | 335 | 350 | 363 | 350 | 335 | 340 | 338 |
| Tatamagouche | 252 | 170 | 170 | 151 | 170 | 175 | 171 |
| Average | 305·7 | 296·8 | 292·0 | 272·7 | 273·5 | 251·3 | 248·3 |

NOTE.—Plots 1 and 2 are not fairly comparable, as the nitrophoska application contains the greater amount of plant food, approximating 750 pounds of a 5-10-5 fertilizer.

## COMPARISON OF COMMERCIAL FERTILIZERS AND MANURE FOR TURNIPS, 1929

A test was conducted this year to compare the value of manure and commercial fertilizers, used separately and together, for turnips. The area was fertilized per acre as follows:—

*Plot 1.*—Manure, 10 tons; nitrophoska, 250 pounds.
*Plot 2.*—Manure, 10 tons; 4-8-4 fertilizer, 750 pounds.
*Plot 3.*—4-8-4 fertlizer, 1,500 pounds.
*Plot 4.*—Manure, 20 tons.
*Plot 5.*—Manure, 20 tons; superphosphate, 400 pounds.
*Plot 6.*—Manure, 20 tons; superphosphate, 400 pounds; nitrate of soda, 150 pounds.
*Plot 7.*—Manure, 20 tons; superphosphate, 400 pounds; sulphate of ammonia, 115 pounds.

The manure was applied broadcast and harrowed in, after which the different fertilizers were sown broadcast and harrowed. The nitrate of soda and sulphate of ammonia were not applied until the turnips were thinned, which was done when the third leaf had appeared.

The season was not favourable for a large yield of turnips. The continued dry weather did not allow a steady early growth. It was observed, however, throughout the season that the foliage and the roots were growing more satisfactorily on the plots that had received some commercial fertilizer than on the plot that had received manure alone. It may be observed from the table that no large yields were obtained. Plot 1, receiving manure and nitrophoska gave the largest yield, and plot 6 gave the next largest. It might have been supposed that the dry season would not allow all the plant food in the commercial fertilizer to be utilized, yet all plots outyielded plot 4, which received manure alone.

The yields would show that commercial fertilizers may be applied profitably to the turnip crop.

COMPARISON OF COMMERCIAL FERTILIZERS AND MANURE FOR TURNIPS, 1929: YIELDS PER ACRE

| Station | Manure, 10 tons; nitrophoska, 250 pounds | Manure, 10 tons; 4-8-4 fertilizer, 750 pounds | 4-8-4 fertilizer, 1,500 pounds | Manure, 20 tons | Manure, 20 tons; superphosphate, 400 pounds | Manure, 20 tons; superphosphate, 400 pounds; nitrate of soda, 150 pounds | Manure, 20 tons; superphosphate, 400 pounds; sulphate of ammonia, 115 pounds |
|---|---|---|---|---|---|---|---|
| | bush. | bush. | bush. | bush. | bush. | bush. | bush. |
| Heatherton | 827 | 877 | 840 | 563 | 880 | 885 | 888 |
| Middle River | 470 | 477 | 437 | 395 | 410 | 430 | 426 |
| Newport | 820 | 841 | 840 | 647 | 775 | 794 | 783 |
| Springfield | 1,115 | 1,024 | 860 | 725 | 890 | 1,219 | 1,030 |
| Kennetcook | 1,089 | 1,103 | 1,120 | 1,088 | 965 | 1,003 | 985 |
| Mabou | 783 | 740 | 711 | 630 | 700 | 730 | 722 |
| Christmas Island | 458 | 330 | 256 | 223 | 433 | 455 | 440 |
| Tatamagouche | 959 | 900 | 878 | 596 | 853 | 871 | 882 |
| Knoydart | 1,060 | 892 | 948 | 669 | 970 | 1,060 | 948 |
| Salt Springs | 871 | 798 | 551 | 473 | 551 | 560 | 558 |
| Averages | 845·2 | 798·2 | 744·1 | 600·9 | 742·7 | 800·7 | 766·2 |

NOTE.—Plots 1 and 2 are not fairly comparable, as the nitrophoska application contains the greater amount of plant food, approximating 750 pounds of a 5-10-5 fertilizer.

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

Tests to show the comparative value of these materials were started in 1923 at Northeast Margaree and Heatherton. The results were so outstanding that it was decided to carry on this work at all the stations. In 1926 soil was carefully selected for this demonstration. In most cases the land was very low in fertility, as may be seen from the yields from the non-fertilized areas. The soil varying throughout the province, as it does, from sandy loam to clay, the fertilizer applications had a good chance to prove their values over a wide range of soils. In 1927 another series of plots was started at all the stations, and it is this test that is reported on here.

These areas consisted of one and one-half acres, and were divided into six one-quarter-acre plots, which were 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.

One-half of each of the above plots received sulphate of ammonia at the rate of 115 pounds per acre. The different materials were well harrowed into a carefully prepared seed bed. Oats were sown, and seeded with eight pounds of timothy and five pounds each of common red and alsike clovers per acre. It will be noticed in the unfertilized plots that the half receiving sulphate of ammonia gave on the average a slight increase in yield over the untreated area. It may further be noted in plot 1 that the half treated with sulphate of ammonia shows a slight gain over the half receiving limestone alone. The best plot appears to be No. 2, limestone and superphosphate, which seems to give a splendid grain crop and also makes a good combination for the hay crop.

The season's work shows quite conclusively that on soils of from poor to fair fertility limestone and superphosphate, applied on a sod surface or when seeding down, or for pasture improvement purposes, have given the most economical returns.

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

| Station | Limestone | | | Limestone and superphosphate | | | Superphosphate | | | Not fertilized | | | Sydney slag | | | Belgian slag | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Oats, 1927 | Clover hay, 1928 | Timothy hay, 1929 | Oats, 1927 | Clover hay, 1928 | Timothy hay, 1929 | Oats, 1927 | Clover hay, 1928 | Timothy hay, 1929 | Oats, 1927 | Clover hay, 1928 | Timothy hay, 1929 | Oats, 1927 | Clover hay, 1928 | Timothy hay, 1929 | Oats, 1927 | Clover hay, 1928 | Timothy hay, 1929 |
| | bush. | tons | tons | bush. | tons | tons | bush. | tons | tons | bush. | tons | tons | bush. | tons | tons | bush. | tons | tons |
| *Treated with sulphate of ammonia* | | | | | | | | | | | | | | | | | | |
| Sydney | 18·2 | 2·32 | 1·56 | 27·4 | 2·49 | 1·81 | 23·0 | 2·36 | 1·56 | 17·9 | 1·44 | 1·08 | 21·1 | 2·48 | 1·73 | 20·0 | 2·49 | 1·85 |
| Christmas Island | 24·4 | 1·03 | 2·50 | 28·2 | 1·32 | 2·75 | 30·2 | 1·43 | 2·70 | 23·7 | 1·08 | 2·30 | 34·1 | 1·50 | 2·84 | 35·3 | 1·53 | 3·10 |
| Barra Glen | 26·1 | 1·60 | 1·20 | 28·0 | 2·50 | 1·95 | 26·4 | 2·00 | 1·00 | 21·0 | 0·54 | 0·50 | 20·4 | 1·75 | 1·25 | 19·6 | 2·00 | 1·84 |
| N.E. Margaree | 68·1 | 2·50 | 2·41 | 86·4 | 2·80 | 2·69 | 77·6 | 2·60 | 2·49 | 29·4 | 1·20 | 1·03 | 82·3 | 2·50 | 2·38 | 77·6 | 2·90 | 2·62 |
| Middle River | ..... | 2·25 | 1·05 | ..... | 2·30 | 1·51 | ..... | 2·05 | 1·00 | ..... | 0·90 | 0·85 | ..... | 1·90 | 1·35 | ..... | 2·10 | 1·45 |
| Mabou | 26·0 | 1·92 | 1·43 | 29·3 | 2·25 | 1·91 | 28·4 | 2·00 | 1·33 | 20·0 | 1·22 | 0·88 | 27·9 | 2·10 | 1·43 | 31·0 | 2·40 | 1·78 |
| Heatherton | 15·5 | 1·16 | 1·32 | 18·8 | 2·32 | 0·80 | 19·9 | 2·49 | 0·72 | 11·3 | 0·48 | 0·03 | 12·2 | 1·94 | 0·64 | 15·3 | 2·51 | 0·88 |
| 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 | 1·80 | 29·0 | 1·51 | 1·82 | 23·0 | 0·83 | 1·80 | 17·4 | 0·58 | 1·14 | 24·2 | 1·16 | 1·34 | 31·6 | 1·33 | 1·86 |
| Middle Musquodoboit | ..... | 2·10 | 1·85 | ..... | 2·65 | 2·10 | 50·1 | 2·20 | 1·60 | 32·0 | 1·30 | 1·09 | 44·2 | 2·40 | 1·90 | 46·1 | 2·70 | 2·05 |
| Kennetcook | 29·0 | 3·44 | 2·38 | 38·3 | 3·88 | 2·61 | 39·1 | 3·12 | 2·16 | 26·0 | 2·50 | 2·00 | 38·0 | 3·16 | 2·08 | 35·2 | 3·20 | 2·56 |
| Newport | 28·0 | 1·92 | 1·60 | 38·4 | 2·48 | 2·10 | 38·0 | 2·24 | 1·80 | 23·2 | 1·79 | 1·34 | 32·8 | 2·49 | 1·88 | 40·8 | 2·90 | 2·10 |
| Averages | 28·5 | 1·92 | 1·74 | 35·5 | 2·37 | 2·00 | 35·1 | 2·09 | 1·65 | 22·8 | 1·17 | 1·11 | 33·4 | 2·15 | 1·71 | 34·8 | 2·31 | 2·01 |
| *Not treated with sulphate of ammonia* | | | | | | | | | | | | | | | | | | |
| Sydney | 12·6 | 2·30 | 1·52 | 18·8 | 2·51 | 1·84 | 11·5 | 2·31 | 1·53 | 11·2 | 1·30 | 1·09 | 16·4 | 2·31 | 1·73 | 15·5 | 2·46 | 1·85 |
| Christmas Island | 22·2 | 1·10 | 2·70 | 23·4 | 1·30 | 2·68 | 30·0 | 1·39 | 2·67 | 23·2 | 1·02 | 2·22 | 34·5 | 1·47 | 2·77 | 34·7 | 1·49 | 3·01 |
| Barra Glen | 21·5 | 1·50 | 1·22 | 25·1 | 2·48 | 1·93 | 21·6 | 1·90 | 1·03 | 19·7 | 0·42 | 0·48 | 18·8 | 1·75 | 1·21 | 17·4 | 1·98 | 1·81 |
| N.E. Margaree | 62·8 | 2·40 | 2·40 | 71·3 | 2·77 | 2·71 | 68·1 | 2·50 | 2·47 | 25·3 | 1·18 | 1·00 | 53·0 | 2·44 | 2·30 | 66·0 | 2·85 | 2·60 |
| Middle River | ..... | 2·00 | 1·00 | ..... | 2·30 | 1·50 | ..... | 2·10 | 1·03 | ..... | 0·81 | 0·77 | ..... | 1·70 | 1·30 | ..... | 1·91 | 1·37 |
| Mabou | 21·0 | 1·81 | 1·45 | 25·2 | 2·26 | 1·89 | 24·1 | 1·83 | 1·35 | 16·0 | 1·11 | 0·85 | 23·9 | 2·00 | 1·39 | 25·4 | 2·42 | 1·71 |
| Heatherton | 12·2 | 1·11 | 1·30 | 15·3 | 2·24 | 0·85 | 12·2 | 2·41 | 0·76 | 8·5 | 0·60 | 0·05 | 9·9 | 1·79 | 0·70 | 12·7 | 2·48 | 0·86 |
| New Glasgow | 27·6 | 1·33 | ..... | 30·0 | 1·95 | ..... | 32·2 | 1·71 | ..... | 29·9 | 1·10 | ..... | 28·8 | 2·40 | ..... | 32·4 | 1·55 | ..... |
| Tatamagouche | 15·6 | 1·44 | 1·74 | 23·8 | 1·53 | 1·75 | 18·7 | 0·64 | 1·77 | 11·7 | 0·40 | 1·11 | 19·0 | 1·17 | 1·31 | 26·1 | 1·33 | 1·82 |
| Middle Musquodoboit | ..... | 2·00 | 1·86 | ..... | 2·51 | 2·00 | 40·5 | 2·25 | 1·55 | 25·0 | 1·01 | 1·02 | 37·5 | 2·31 | 1·85 | 38·0 | 2·66 | 2·00 |
| Kennetcook | 26·8 | 3·14 | 2·29 | 34·8 | 3·60 | 2·63 | 34·4 | 3·10 | 2·14 | 35·3 | 2·31 | 1·91 | 36·7 | 3·16 | 2·00 | 29·0 | 3·10 | 2·51 |
| Newport | 26·1 | 1·76 | 1·62 | 36·9 | 2·29 | 2·12 | 35·5 | 2·11 | 1·81 | 17·1 | 1·19 | 1·30 | 28·7 | 1·98 | 1·70 | 30·1 | 2·49 | 2·00 |
| Averages | 24·8 | 1·82 | 1·72 | 30·8 | 2·31 | 1·99 | 29·9 | 2·02 | 1·65 | 20·3 | 1·04 | 1·07 | 27·9 | 2·04 | 1·66 | 29·8 | 2·23 | 1·96 |

## NITROGENOUS FERTILIZERS ON GRASS LAND

The table below gives the average of six years' work on nine of the Illustration Stations with nitrate of soda and sulphate of ammonia as top dressings on grass land. This season a new nitrogenous fertilizer, nitro-chalk, was used for the first time, and shows up very favourably. These nitrogenous fertilizers have been applied on two-year or older sod land. Care is exercised in selecting land for this application to get a uniform soil with the past history known.

The application has been made each year after vegetation has started in May. Each plot received the same amount of nitrogen. The hay is cut on the average on July 15.

It may be seen from the table that over a six-year period the nitrate of soda application has given the greatest average yield, 1,079·3 pounds more than the untreated plot, while the sulphate of ammonia gave 1,020·1 pounds more than the untreated plot.

Nitro-chalk contains lime as well as nitrogen. Plots were left where the operator was not planning on ploughing, in order to obtain information as to the benefit that may be derived from the lime residue in the nitro-chalk.

NITROGENOUS FERTILIZERS ON GRASS LANDS

| Station | Average yield per acre, six years, 1924-1929 | | | Yield per acre, 1929 | | | |
|---|---|---|---|---|---|---|---|
| | Nitrate of soda | Sulphate of ammonia | Unfertilized | Nitrate of soda | Sulphate of ammonia | Nitro-chalk | Unfertilized |
| | lb. | lb. | lb. | lb. | lb. | lb. | lb. |
| Sydney | 4,486·7 | 4,494·0 | 3,639·2 | 4,131 | 4,063 | 4,029 | 3,519 |
| Christmas Island | 4,031·2 | 4,417·0 | 3,435·0 | 4,747 | 5,018 | 4,825 | 3,830 |
| Middle River | 4,301·7 | 4,145·5 | 3,801·0 | 4,100 | 3,905 | 3,790 | 3,700 |
| N.E. Margaree | 7,151·7 | 7,647·7 | 6,458·2 | 7,010 | 7,680 | 8,215 | 7,240 |
| Heatherton | 5,076·7 | 5,146·0 | 3,740·0 | 4,840 | 4,640 | 5,380 | 3,040 |
| Tatamagouche | 4,309·0 | 3,954·0 | 3,061·2 | 4,400 | 3,900 | 4,480 | 3,000 |
| Middle Musquodoboit | 4,165·5 | 4,524·5 | 3,262·2 | 3,100 | 3,600 | 3,000 | 2,505 |
| Kennetcook | 4,705·2 | 4,109·2 | 2,726·0 | 4,138 | 3,049 | 4,356 | 1,742 |
| Newport | 5,516·7 | 4,774·2 | 3,908·0 | 5,171 | 4,160 | 5,600 | 3,520 |
| Averages | 4,860·5 | 4,801·3 | 3,781·2 | 4,626·3 | 4,446·1 | 4,852·8 | 3,566·2 |
| Average increase over unfertilized plot | 1,079·3 | 1,020·1 | ..... | 1,060·1 | 879·9 | 1,286·6 | ..... |

## NITROGENOUS FERTILIZERS APPLIED WHEN OATS WERE THREE INCHES HIGH

At all stations in 1928 a test was conducted with nitrate of soda and sulphate of ammonia applied to oats when the grain was three inches high. The same test was continued this season and in addition two more fertilizers were used, nitro-chalk and nitrophoska.

The fields were staked off after uniform areas had been selected. These areas had always had the same treatment. The fertilizers were sown broadcast on a calm day when the foliage was perfectly dry. Nitrate of soda, nitro-chalk and nitrophoska were used at the rate of 150 pounds, and sulphate of ammonia at the rate of 115 pounds per acre, each plot thus receiving the same amount of nitrogen.

The past season was a good one in which to test out nitrogenous fertilizers. No lodging was noticed in any plots. The plot receiving nitrophoska was generally easily distinguishable by the rank growth of foliage.

It will be noticed that over the two-year period the nitrate of soda plots have outyielded the sulphate of ammonia plots by an average of 0·7 bushels per acre, and have given an average increase of 9·6 more bushels of oats per acre than the unfertilized plot. Nitro-chalk gave an increase of 7·2 bushels over the check plot. The nitrophoska plots gave the highest yields, an average of 50 bushels per acre of grain, which is 14·7 bushels more than the average unfertilized plot.

Not only did the nitrogenous-fertilizer plots give a larger yield of grain than the unfertilized plots, but the stimulating effect of the nitrogenous fertilizer on the young clover plants in hastening their growth has been very marked.

Nitro-chalk contains 15½ per cent of nitrogen, with half its nitrogen in the nitrate form and half as ammonia. It also contains 48 per cent of lime. Nitrophoska contains 15 per cent of nitrogen, 30 per cent of phosphoric acid and 15 per cent of potash, and thus contains three times as much plant food as a 5-10-5 fertilizer. A part of the nitrogen is present as nitrate and part as ammonia. It will be seen that it is a concentrated complete fertilizer, and because it contains phosphoric acid and potash as well as nitrogen the results from this fertilizer are not fairly comparable with those from the three nitrogenous fertilizers.

NITROGENOUS FERTILIZERS APPLIED WHEN OATS WERE THREE INCHES HIGH
(Yields per acre)

| Stations | 1928 Nitrate of soda | 1929 Nitrate of soda | 1928 Sulphate of ammonia | 1929 Sulphate of ammonia | 1928 No nitrogenous fertilizers | 1929 No nitrogenous fertilizers | 1929 Nitro-chalk | 1929 Nitrophoska |
|---|---|---|---|---|---|---|---|---|
| | bush. | bush. | bush. | bush. | bush. | bush. | bush. | bush. |
| Heatherton | 51·5 | 43·1 | 44·1 | 40·0 | 40·6 | 28·3 | 41·0 | 49·3 |
| N.E. Margaree | 60·4 | 32·4 | 61·2 | 32·0 | 55·0 | 20·8 | 31·3 | 32·2 |
| Middle River | 42·1 | 33·8 | 43·0 | 34·3 | 38·4 | 30·0 | 33·5 | 32·7 |
| Newport | 61·4 | 44·0 | 62·0 | 41·8 | 55·0 | 36·1 | 40·2 | 45·0 |
| Springfield | 48·0 | 72·0 | 49·1 | 51·2 | 45·0 | 28·8 | 72·0 | 95·5 |
| Upper Stewiacke | 37·8 | 35·7 | 30·6 | 37·7 | 30·6 | 27·0 | 31·1 | 42·2 |
| Kennetcook | 44·7 | 48·4 | 43·5 | 47·5 | 37·6 | 45·6 | 48·4 | 49·1 |
| Mabou | 47·1 | 44·1 | 45·0 | 45·0 | 40·3 | 34·6 | 46·0 | 48·3 |
| Christmas Island | 32·0 | 51·3 | 44·0 | 63·0 | 35·0 | 40·2 | 50·2 | 65·0 |
| Barra Glen | 37·5 | 31·5 | 35·0 | 29·5 | 26·0 | 25·0 | 34·1 | ..... |
| Middle Musquodoboit | 43·0 | 40·2 | 44·0 | 43·0 | 25·0 | 34·0 | 41·2 | 44·6 |
| Sydney | 49·1 | 42·1 | 42·6 | 40·0 | 39·3 | 30·4 | 41·6 | 43·2 |
| Tatamagouche | 48·6 | 35·0 | 44·7 | 29·8 | 39·6 | 23·0 | 35·3 | 36·4 |
| Knoydart | ..... | 49·5 | ..... | 65·5 | ..... | 37·0 | 51·5 | 67·0 |
| Salt Springs | ..... | 50·3 | ..... | 48·1 | ..... | 39·9 | 40·0 | 50·2 |
| Average, 1928 | 46·4 | ..... | 45·3 | ..... | 39·0 | ..... | ..... | ..... |
| Average, 1929 | ..... | 43·6 | ..... | 43·2 | ..... | 32·0 | 42·5 | 50·0 |
| Average, 1928-1929 | 44·9 | | 44·2 | | 35·3 | | | |

## BARRA GLEN, VICTORIA COUNTY

OPERATOR, S. R. MCNEIL

Due to the fact that the soil at this station lacks proper drainage, seeding is very late. In fact, grasses are usually not fit to cut until two weeks later than at other stations. The operator has been largely devoting his time to work of a preparatory nature. Although only in operation since 1927 there has been a very marked improvement.

It has been well demonstrated that at this station, where seeding is usually late, it is imperative to use a limited amount of commercial fertilizer with the growing crop.

The operator has, under adverse conditions, made a splendid showing in conducting the work on the Illustration Station. He has already obtained one of the best-bred Guernsey bulls in the province for his herd. The public in this district are very anxious to see the outcome of the different demonstrations. Those already started have given the farmers a great deal of information on how to handle their soils and treat their crops in order to obtain the most economical returns.

OPERATIONS AT BARRA GLEN—FOUR-YEAR ROTATION

| Field | Crop | Number of years grown | Yield per acre | | Cost per unit | |
|---|---|---|---|---|---|---|
| | | | 1929 | Average | 1929 | Average |
| | | | | | $ | $ |
| A | Clover hay..... tons | 1 | 1·4 | ..... | 9 42 | |
| B | (Under preparation). | | | | | |
| C | Turnips..... bush. | 2 | 789·0 | 1,419·5 | 0 09 | 0 07 |
| D | Oats..... bush. | 1 | 30·0 | ..... | 0 68 | |

## CHRISTMAS ISLAND, CAPE BRETON COUNTY

OPERATOR, JOHN A. MCNEIL

Seeding operations at this station began at the usual time. The season was quite favourable for the early growth of crops, but later they suffered from the prolonged dry weather. Frequent cultivations were made to conserve moisture. Hay yields were far above the average in this district, being 1·3 tons on field "A" and 2·1 tons of clover hay on field "B". The straw was short on all areas. The quality of grain was good, and it was housed in a dry condition. The potato and the turnip crops suffered for want of moisture. No rot occurred in the potatoes as there was no blight. The operator is obtaining good prices for this crop. Turnips were of medium size when harvested. The crop the first part of the season looked very promising. The fall rains came too late, however, to bring about a large yield.

OPERATIONS AT CHRISTMAS ISLAND—FOUR-YEAR ROTATION

| Field | Crop | Number of years grown | Yield per acre | | Cost per unit | |
|---|---|---|---|---|---|---|
| | | | 1929 | Average | 1929 | Average |
| | | | | | $ | $ |
| A | Timothy hay..... tons | 6 | 1·3 | 1·30 | 9 32 | 10 99 |
| B | Clover hay..... tons | 7 | 2·1 | 2·04 | 8 16 | 8·50 |
| C | Oats..... bush. | 8 | 38·0 | 36·0 | 0 64 | 0 82 |
| D | Potatoes..... bush. | 8 | 177·0 | 133·0 | 0 71 | 0 70 |
| D | Turnips..... bush. | 8 | 400·0 | 402·3 | 0 11 | 0 21 |

## HEATHERTON, ANTIGONISH COUNTY

OPERATOR, D. W. GRANT

Seeding was not possible at this station until June 5. The prolonged dry weather prevented all crops from giving big yields. All the crops germinated rapidly and grew well until the first part of July. The oats crop was the most outstanding, giving a yield of 50 bushels per acre.

The low yields on fields " C " and " B " made the cost of the hay very high. The operator has extended the practices followed on these areas to other fields of the farm with good results. Phosphoric acid in the form of superphosphate or slag apparently is very valuable on this type of soil.

The operator and his family were very successful in obtaining many first prizes at the County Exhibitions with livestock, vegetables, grain, etc.

OPERATIONS AT HEATHERTON—FOUR-YEAR ROTATION

| Field | Crop | Number of years grown | Yield per acre | | Cost per unit | |
|---|---|---|---|---|---|---|
| | | | 1929 | Average | 1929 | Average |
| | | | | | $ | $ |
| A | Oats..... bush. | 8 | 50·0 | 50·1 | 0 60 | 0 50 |
| B | Clover hay..... tons | 7 | 1·52 | 2·3 | 10 68 | 8 43 |
| C | Timothy hay..... tons | 7 | 1·52 | 1·87 | 9 00 | 8 21 |
| D | Turnips..... bush. | 8 | 582·0 | 579·6 | 0 10 | 0 12 |

## KENNETCOOK, HANTS COUNTY

OPERATOR, WILLARD ETTINGER

Due to soil conditions at this station seeding is usually late. This season all crops did well. The soil apparently has sufficient moisture even in a dry season. The soil in this district is very deficient in phosphorus and the operator has benefited by applying a light application of fertilizer when seeding or planting. This causes the crops to forge ahead, and increases the yields. The benefit from this course has been sufficient to enable the operator to keep more livestock and to have a better quality of feed for them. The fertility of the soil has rapidly improved.

OPERATIONS AT KENNETCOOK—FOUR-YEAR ROTATION

| Field | Crop | Number of years grown | Yield per acre | | Cost per unit | |
|---|---|---|---|---|---|---|
| | | | 1929 | Average | 1929 | Average |
| | | | | | $ | $ |
| A | Turnips..... bush. | 3 | 847·0 | 9·14 | 0 07 | 0 06 |
| A | Potatoes..... tons | 2 | 165·0 | 1·63 | 0 75 | 0 55 |
| B | Timothy hay..... tons | 6 | 2·1 | 2·11 | 6 84 | 7 16 |
| C | Oats..... bush. | 8 | 45·0 | 40·9 | 0 59 | 69 5 |
| D | Clover hay..... tons | 6 | 2·0 | 1·68 | 7 15 | 8 27 |

## KNOYDART, PICTOU COUNTY

OPERATOR, D. M. MCDONALD

This station started operations this season. The work spent on the rotation areas has been for the purpose of getting them in shape for cropping next season.

Considerable work was started with fertilizers outside the rotation area: nitrogenous fertilizers used as surface applications on grass lands, and as top-dressings when the plants were up.

The operator is a very capable farmer and is already gaining a great deal of information as to the requirements of the soil in this large district.

## MABOU, INVERNESS COUNTY

OPERATOR, EDMUND HAWLEY

Seeding operations at this station were not possible until June 10, this date being nearly a month later than last year. Considering the season all crops made fair growth, although no large yields were obtained. The hay crop was housed in good order and the yield was nearly as good as in 1928. The grain crop was also fair, though the straw did not have its usual length. The yield of oats was good and of fine quality. The turnip crop looked very promising until the dry weather set in, when the foliage wilted badly. The fall rains seem to have increased the yield much more than was expected.

The operator, since taking over this work, has brought several acres of pasture into a good state of production.

OPERATIONS AT MABOU—FOUR-YEAR ROTATION

| Field | Crop | Number of years grown | Yield per acre | | Cost per unit | |
|---|---|---|---|---|---|---|
| | | | 1929 | Average | 1929 | Average |
| | | | | | $ | $ |
| A | Timothy hay..... tons | 2 | 1·55 | 1·98 | 7 84 | 7 14 |
| B | Clover hay..... tons | 3 | 2·18 | 2·21 | 6 72 | 6 54 |
| C | Oats..... bush. | 4 | 45·0 | 39·5 | 0 59 | 0 74 |
| D | Turnips..... bush. | 4 | 738·0 | 757·0 | 0 09 | 0 08 |

## MIDDLE MOSQUODOBOIT, HALIFAX COUNTY

OPERATOR, R. B. MCCURDY

The seeding operations at this station were possible June 4. The season did not prevent the growth of crops to the same extent as at most stations, the soil being naturally wet with poor drainage. The timothy hay crop suffered most, yielding only 1·4 tons per acre. The clover yield on this same area in 1928 was 2·25 tons per acre. This year's clover cut was good, giving a yield of 2·30 tons. The weather conditions were ideal for hay-making. The grain crop was exceptionally good, in fact, the best raised at this station. Potato growing is impossible on the rotation area, but the operator has meadow land where this operation is carried on. His success in growing alfalfa on the lighter, well-drained soils has been encouraging.

OPERATIONS AT MIDDLE MUSQUODOBOIT—FOUR-YEAR ROTATION

| Field | Crop | Number of years grown | Yield per acre | | Cost per unit | |
|---|---|---|---|---|---|---|
| | | | 1929 | Average | 1929 | Average |
| | | | | | $ | $ |
| A | Timothy hay..... tons | 2 | 1·4 | 1·90 | 8 95 | 7 56 |
| B | Clover hay..... tons | 3 | 2·3 | 2·3 | 6 67 | 6 52 |
| C | Oats..... bush. | 4 | 56·0 | 42·2 | 0 52 | 0 72 |
| D | Oats..... bush. | 4 | 54·0 | 41·8 | 0 54 | 0 73 |

## MIDDLE RIVER, VICTORIA COUNTY

OPERATOR, FORBES MCDONALD

On this gravelly loam soil a dry season is detrimental to large yields. The continued dry weather prevented satisfactory growth of all crops. The cost of production on both fields "A" and "B" is very high but the crops apparently stood still because of the drought.

The operator is working up a good market for strawberries and other small fruit. This brings in some early money, which is greatly appreciated where the markets are limited. The operator plans on extending his strawberry acreage.

OPERATIONS AT MIDDLE RIVER—FOUR-YEAR ROTATION

| Field | Crop | Number of years grown | Yield per acre | | Cost per unit | |
|---|---|---|---|---|---|---|
| | | | 1929 | Average | 1929 | Average |
| | | | | | $ | $ |
| A | Oats (cured for hay)..... tons | 2 | 2·08 | 2·44 | 13 04 | 12 35 |
| B | Clover hay..... tons | 7 | 1·30 | 2·31 | 10 09 | 7 86 |
| C | Oats..... bush. | 6 | 32·0 | 40·5 | 0 72 | 0 67 |
| D | Timothy hay..... tons | 7 | 2·04 | 2·14 | 6 50 | 7 11 |

## NEWPORT, HANTS COUNTY

OPERATOR, CHAS. ZWICKER

The dry weather interfered considerably with cropping at this station. The crops most affected were hay and grain. The weather for cutting hay and harvesting was ideal, and this lessened the cost of operations. The clover on field "D" was exceptionally good and would have given another ton per acre if conditions had been favourable. The oat yield was low for this station, being only 40 bushels per acre. The turnip crop had to be re-sown in certain areas of the field. Notwithstanding the adverse conditions the crop grew rapidly, particularly in October and gave a yield of 793 bushels per acre.

The operator erected a new, up-to-date henhouse at the beginning of the season, and has stocked it with seventy-five pure-bred White Wyandotte pullets.

OPERATIONS AT NEWPORT—FOUR-YEAR ROTATION

| Field | Crop | Number of years grown | Yield per acre | | Cost per unit | |
|---|---|---|---|---|---|---|
| | | | 1929 | Average | 1929 | Average |
| | | | | | $ | $ |
| A | Timothy hay..... tons | 7 | 1·76 | 2·04 | 7 51 | 6 39 |
| B | Turnips..... bush. | 7 | 793 | 841·0 | 0 07 | 0 08 |
| C | Oats..... bush. | 6 | 40 | 50·5 | 0 69 | 0 54 |
| D | Clover hay..... tons | 6 | 2·90 | 2·64 | 6 54 | 6 55 |

## NORTH EAST MARGAREE, INVERNESS COUNTY

OPERATOR, TOM E. ROSS

Seeding at this station was possible in early May. The unusually dry season prevented the usual good yields, particularly of grain and hay. The potato and turnip crops, due to later cultivation than usual, benefited by rains

which came late in the season. Because of the earliness of sowing of the oats crop the clovers and other grass seeds got a good early start, and when sufficient moisture came later growth was rapid. The clovers on the newly seeded meadows look very promising. The oats, although not a large yield, were of splendid quality. Earlier in the season it looked as if the operator might obtain another record hay crop, but this was prevented by the weather conditions.

This operator has practically his whole farm operating under a systematic rotation. On some parts of the farm where it is not possible to operate a four-year rotation he conducts a three-year cropping system, growing more grain and clovers.

OPERATIONS AT NORTH EAST MARGAREE—FOUR-YEAR ROTATION

| Field | Crop | Number of years grown | Yield per acre | | Cost per unit | |
|---|---|---|---|---|---|---|
| | | | 1929 | Average | 1929 | Average |
| | | | | | $ | $ |
| A | Potatoes..... bush. | 8 | 385·0 | 404·1 | 0 32 | 0 28 |
| A | Turnips..... bush. | 8 | 835·0 | 954·0 | 0 07 | 0 08 |
| B | Clover hay..... tons | 8 | 2·2 | 3·08 | 5 37 | 3 76 |
| C | Oats..... bush. | 8 | 40·0 | 52·1 | 0 68 | 0 56 |
| D | Timothy hay..... tons | 7 | 2·06 | 3·01 | 6 46 | 5 80 |

FERTILIZER APPLICATIONS TO BRING PASTURE AREAS INTO GRAIN AND HAY PRODUCTION

The problem of farmers in all parts of the province is a shortage of grain and clover hay. This test was started in 1923 to find out, if possible, whether pasture lands low in fertility could be used to advantage to produce more grains and clovers, as there are large tracts of such land near this and other stations. The first test was completed in 1925 and another was started on the same area in 1926, with equally good results.

From the table below it will be seen that Plot 1 b gave the greatest net profit over both the three- and four-year periods. Plot 2 a, receiving slag, gave the next highest profit. It is being demonstrated very clearly that soils like this, in a low, rundown condition, respond remarkably to such an application as that given Plot 1 b.

It was not the intention to conduct this test for four years, but it was impossible this spring to get the land prepared in suitable time for further cropping.

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

| Plot | How treated 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 | Timothy hay, 1929 | | | |
| | | bush. | tons | tons | tons | $ | $ | $ |
| 1a | Ground limestone, 2 tons.... | 41·0 | 1·25 | 1·27 | 0·80 | 63 60 | 8 00 | 55 60 |
| 1b | Ground limestone, 2 tons; superphosphate, 800 pounds | 61·3 | 2·01 | 2·00 | 1·30 | 98 97 | 18 00 | 80 97 |
| 2a | Sydney slag, 1,000 pounds... | 52·1 | 1·40 | 1·75 | 1·00 | 79 56 | 10 00 | 69 56 |
| 2b | Superphosphate, 1,000 pounds | 53·2 | 1·02 | 1·50 | 0·85 | 71 34 | 10 00 | 61 34 |
| 3a | Manure, 16 tons..... | 48·0 | 0·94 | 1·10 | 0·75 | 61 92 | 32 00 | 29 92 |
| 3b | Manure, 16 tons; ground limestone, 2 tons..... | 48·0 | 1·05 | 1·50 | 0·80 | 67 85 | 40 00 | 27 85 |
| 4a | Not fertilized..... | 40·0 | 0·62 | 0·65 | 0·30 | 43 56 | | |

## SALT SPRINGS, PICTOU COUNTY

OPERATOR, FRED SETCHELL

This is a new station, operations having been started in the spring. Work of a preparatory nature has been carried on, aiming to establish a four-year rotation. Work was also started outside the regular rotation areas, with nitrogeneous fertilizers and manure for pasture improvement studies. The results of the fertilizer demonstrations are given in the tables of fertilizer tests in this report.

Next season this operator will be in a position to start operations aiming at the establishment of the regular four-year rotation.

## SPRINGFIELD, ANNAPOLIS COUNTY

OPERATOR, MAYNARD GRIMM

Seeding at this station was possible May 28. All crops gave large yields. A small application of commercial fertilizer in conjunction with manure played a big part in producing the yields. It is not possible to get the maximum growth and yields from crops on late soil with manure alone. The commercial fertilizer hastens the growth.

Fields "C" and "D" were newly seeded meadows two years ago when the station was established. Since that time the operator has made great changes on his farm. A large, up-to-date barn was erected in 1928, which adds to the convenience and general appearance of the property.

OPERATIONS AT SPRINGFIELD—FOUR-YEAR ROTATION

| Field | Crop | Number of years grown | Yield per acre 1929 | Cost per unit 1929 |
|---|---|---|---|---|
| | | | | $ |
| A | Potatoes..... bush. | 1 | 312 | 0 38 |
| A | Turnips..... bush. | 1 | 792 | 0 08 |
| B | Oats..... bush. | 1 | 57·6 | 0 75 |
| C and D | Timothy hay..... tons | 1 | 2·17 | 6 50 |

## SYDNEY RIVER, CAPE BRETON COUNTY

OPERATOR, MELVIN P. MORESHEAD

Seeding operations began early at this station. The operator was fortunate in getting all crops sown or planted early. All crops got a good start before the really dry weather commenced. The hay crop gave an exceptionally good yield and was cut and housed without any rain, thus lessening the cost of handling.

In addition to the crops grown on the station this operator grows twelve to sixteen acres of potatoes, twenty acres of grain, and several acres of cabbages and other vegetables.

The operator was again successful in obtaining many first prizes with cattle, roots, fruit, etc., at the county exhibition.

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

OPERATIONS AT SYDNEY RIVER—FOUR-YEAR ROTATION

| Field | Crop | Number of years gorwn | Yield per acre | | Cost per unit | |
|---|---|---|---|---|---|---|
| | | | 1929 | Average | 1929 | Average |
| | | | | | $ | $ |
| A | Potatoes..... bush. | 5 | 220·0 | 238·0 | 0 44 | 0 34 |
| B | Clover hay..... tons | 8 | 3·7 | 2·86 | 5 67 | 6 50 |
| C | Timothy hay..... tons | 8 | 2·3 | 2·82 | 5 56 | 6 49 |
| D | Oats..... bush. | 8 | 53·0 | 42·0 | 0 53 | 0 62 |

## TATAMAGOUCHE, COLCHESTER COUNTY

OPERATOR, G. B. CLARK

Seeding operations were not possible at this station until June 10. Late seeding of crops, even under most suitable weather conditions, does not usually give large yields. This late seeding, with continued dry weather, produced only an average crop. Field "A" produced a fine quality of clover and a good yield, while field "D" was only fair, the yield being 1·5 tons per acre. The dry weather carried through until late in the autumn, and the turnips, although they grew rapidly during the latter part of the season, gave a low yield.

The following table indicates the yields and their average cost of production:—

OPERATIONS AT TATAMAGOUCHE—FOUR-YEAR ROTATION

| Field | Crop | Number of years grown | Yield per acre | | Cost per unit | |
|---|---|---|---|---|---|---|
| | | | 1929 | Average | 1929 | Average |
| | | | | | $ | $ |
| A | Clover hay..... tons | 7 | 2·0 | 2·49 | 9 69 | 7 82 |
| B | Turnips..... bush. | 7 | 600·0 | 739·5 | 0 11 | 0 09 |
| C | Oats..... bush. | 7 | 39·5 | 43·0 | 0 64 | 0 54 |
| D | Timothy hay..... tons | 8 | 1·5 | 2·17 | 10 51 | 6 93 |
| E | Clover hay..... tons | 7 | 2·0 | 2·49 | 6 32 | 7 34 |
| F | Timothy hay..... tons | 8 | 1·4 | 2·04 | 7 50 | 6 86 |
| F | Oats..... bush. | 7 | 35·0 | 40·0 | 0 67 | 0 56 |

## UPPER STEWIACKE, COLCHESTER COUNTY

OPERATOR, H. P. COX

This station has been in operation two years, and progress has been marked. Most of the work on the rotation area has been of a preparatory nature. Considerable fertilizer work was started in 1928, the results from which have been of value. This season the roots and grain were so badly damaged by the freshet which occurred September 18 that it was impossible to get measured yields. The turnip crop was badly infested with clubroot, and the potatoes rotted badly after the freshet. The grain was cut and in stook when rain came, overflowing the land for three days. The grain was carried away by the freshet.

Considerable work has been commenced at this station with fertilizers on pasture lands. On old, rundown highland soils a treatment of limestone, superphosphate and slags has given interesting results.

A small area of alfalfa was sown in 1928, and an acre in 1929. The yield from the area sown in 1928 was 2·5 tons per acre; dry weather prevented normal growth. The area sown in 1929 has a very healthy appearance and a uniform, thick stand of alfalfa.

The results of the lime and phosphoric acid demonstrations undertaken on a soil low in fertility, and applied in the spring of 1928 when sown to oats and seeded with the regular grass mixture, are as follows:—

RESULTS FROM LIME AND FERTILIZER TEST

| Plot | How treated per acre | Yield per acre | |
|---|---|---|---|
| | | Oats, 1928 | Clover, hay 1929 |
| | | bush. | lb. |
| 1 | Limestone, 2 tons..... | 35·5 | 2,265 |
| 2 | Limestone, 2 tons; superphosphate, 800 pounds..... | 33·1 | 3,926 |
| 3 | Superphosphate, 800 pounds..... | 37·0 | 3,624 |
| 4 | Belgian slag, 800 pounds..... | 30·0 | 2,869 |
| 5 | Not fertilized..... | 28·0 | 3,020 |

# REPORT OF THE ILLUSTRATION STATIONS FOR PRINCE EDWARD ISLAND

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

## THE STATIONS

Prince Edward Island has at present twelve Illustration Stations 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. Four of these are in Prince county, five in Queens and three in Kings. All are well situated and are becoming better known each year.

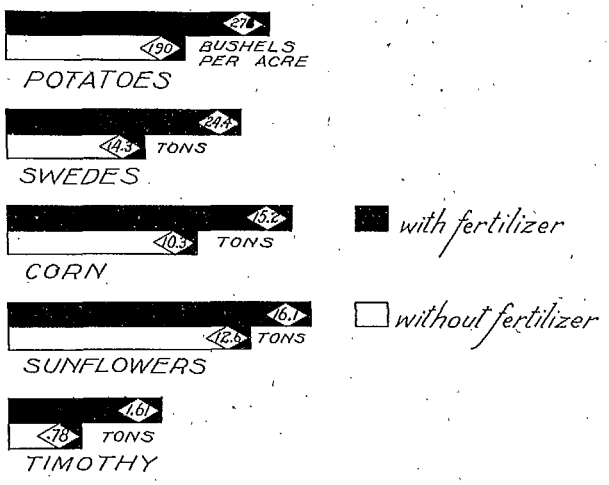
## SEASONABLE NOTES

The winter of 1928-29 was mild with little snow. The spring was cold and somewhat backward owing to continual showers during the month of May. Seeding dates were therefore retarded and on the average were as follows: Wheat and oats May 27, potatoes and corn June 12 and Swedes June 19. A dry spell occurred during the latter part of June and retarded the growth of clover and hay considerably. Again from the 5th to the 20th of August, no rain fell. During this period the lowest temperature was 52° F while the lowest maximum was 70° F. This dry period affected the growth of potatoes very markedly, caused premature ripening and reduced the yield. The summer was an ideal one for the control of weeds and less work was required in this respect. The weather was also ideal for haymaking and for the harvesting of grain and potatoes. Fall ploughing was begun early and was satisfactorily completed before frost intervened about the middle of November.

## CROP YIELDS

ON THE

P.E.I. ILLUSTRATION STATIONS FOR 1929
with and without commercial fertilizer.




POUNDS FERTILIZER PER ACRE (AVE. 11 STATIONS.)

| CROP | N. of Soda | S. Amm. | Superphosphate | M. of Potash |
|---|---|---|---|---|
| POTATOES | 142 | 131 | 596 | 200 |
| SWEDES | 285 | — | 550 | 100 |
| CORN | 120 | 80 | 454 | 144 |
| SUNFLOWERS | 122 | 78 | 452 | 143 |
| TIMOTHY | 125 | — | — | — |

### CROP ROTATION FOLLOWED AND METHODS OF FERTILIZING

On all stations, with one exception, the four-year crop rotation is used. The tendency, however, is towards a slightly longer rotation. The four-year rotation is as follows: First year, hoed crop; 2nd year, grain seeded down with clover and grass seed; 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, topworked throughout the season and reploughed in late autumn. This early ploughing gives a good opportunity to have the sod well rotted and freed from troublesome weeds. The hoed crop receives about 10 tons of barnyard manure per acre, supplemented with commercial fertilizer, which in 1929 was as follows: For potatoes, 156 pounds nitrate of soda, 120 pounds sulphate of ammonia, 600 pounds of superphosphate and 200 pounds muriate of potash; for turnips, 285 pounds of nitrate of soda, 550 pounds of superphosphate, and 100 pounds of muriate of potash; for corn and sunflowers, 100 pounds nitrate of soda, 100 pounds sulphate of ammonia, 450 pounds superphosphate and 140 pounds of muriate of potash. 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. Results of 1928 and 1929 indicate that the above amounts of fertilizers are well suited for the average soil; however, on some of the lighter soils, such as are found in the Iona district, more fertilizer might profitably be used. Experiments indicate that superphosphate is the one chemical which might most profitably be increased.

A check plot, which receives no commercial fertilizer, is left on all fields where fertilizer is used. This plot is a permanent strip running crosswise of the field. At harvest time the crops from the check plot and from the regular field are weighed and compared. From these results the effect of the commercial fertilizer is determined.

### OBTAINING YIELDS

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

### LIVE STOCK

Steady improvement is being made in the live stock on the different stations. All herds are headed by pure-bred sires and all operators are breeders of pure-bred Yorkshire swine. Eight operators weigh milk from their herds regularly, and three tests for butter-fat were made of each cow in the herds at Palmer Road, Glenwood, West Devon, Richmond, Rose Valley, Red Point and Wood Islands. The operator at Rustico this year entered his herd of pure-bred Holstein cows in the Record of Performance and good records are being made. In the hope of making some improvements in the feeding of live stock on the stations, the supervisor prepared a special summary of common feeds and feeding methods for each operator.

### POULTRY

All poultry on the stations is pure bred, and improving both in numbers and in quality. Mr. Alfred Gorrill had a pen in the Prince Edward Island Egg Laying Contest and was able to get four birds from the pen registered. More eggs for hatching were sold in 1929 than in any previous year.

GARDENS AND THE BEAUTIFICATION OF THE HOME SURROUNDINGS

The operators and their wives are finding their gardens more useful each year. A collection made up of the most suitable varieties of garden crops was grown by each operator in 1929, and each garden was a credit to the grower. More attention is also being given to flowers and the general layout of the home surroundings. Good improvements were made in this connection in 1929.

SALE OF SEED AND OF LIVE STOCK FOR BREEDING PURPOSES

The Illustration Station operators continue to supply good seed and breeding stock to their neighbours and to outside buyers. Some, however, are unable to meet all demands made upon them for supplies.

In 1929 the following quantities of seed and stock for breeding purposes were sold by the operators, in addition to their ordinary sales for the general market:—

| | |
|---|---|
| Oats for seed | 1,020 bushels |
| Wheat for seed | 38 " |
| Barley for seed | 24 " |
| Timothy for seed | 175 pounds |
| Potatoes for seed | 5,406 bushels |
| Cattle for breeding purposes | 7 |
| Eggs for hatching | 237 dozen |

Mr. Fred McIntyre and Mr. James E. Daly sell the largest amount of seed potatoes, while Mr. William Johnstone, New London, is the largest seller of grain. Several operators, namely: Mr. James E. Daly, Mr. Malcolm McKenzie, Mr. Thomas Noonan and Mr. Alfred Gorrill, sell quantities of eggs for hatching.

## PALMER ROAD, NORTH PRINCE COUNTY

OPERATOR, SYLVEN PETERS

The station at Palmer Road is rapidly filling a need for the careful demonstration work in the judicious use of commercial fertilizer and in introducing new varieties of crops. Alaska oats in this latter respect is becoming the recognized variety for the district and the operator has for the past two years readily sold all his surplus supply.

Oats were seeded May 22, the same date as last year, and corn and potatoes June 14, three days later than the previous year.

OPERATIONS AT PALMER ROAD—FOUR-YEAR ROTATION

| Field | Crop | | Number of years grown | Yield per acre | | Cost per unit | |
|---|---|---|---|---|---|---|---|
| | | | | 1929 | Average | 1929 | Average |
| | | | | | | $ | $ |
| A | Clover | tons | 2 | 1·02 | 1·31 | 10 92 | 8 75 |
| B | Alaska oats | bush. | 3 | 39·0 | 33·8 | 0 56 | 0 68 |
| C | Swedes | tons | 3 | 29·94 | 28·02 | 1 41 | 1 59 |
| C | Mangels | tons | 1 | 19·38 | 19·38 | 2 27 | 2 27 |
| C | Corn | tons | 3 | 13·73 | 17·25 | 2 52 | 2 03 |
| C | Sunflowers | tons | 3 | 13·99 | 22·88 | 2 42 | 1 62 |
| C | Potatoes | bush. | 2 | 244·8 | 318·4 | 0 16 | 0 15 |
| D | Timothy | tons | 2 | 1·6 | 1·18 | 6 38 | 12 21 |

Potatoes, turnips, corn, sunflowers and timothy grown by the use of commercial fertilizer gave sufficient extra yields over the check plots to more than pay for the fertilizer used and the cost of applying the same. Interesting experiments with commercial fertilizer were also carried on outside the station and were examined by a goodly number on Field Day. The operator at this station had an excellent garden this year. The herd at this station is headed by the Ayrshire bull Charlottetown Supreme 7th.

## GLENWOOD, WEST PRINCE COUNTY

OPERATOR, ALFRED GORRILL

This station, located in the northwest portion of the Island, has attracted a great deal of favourable comment during the past year. Excellent crops were grown on every field and the operator was at all times particular to keep the fields free of unsightly weeds. The good crops of swedes, corn and barley can be attributed largely to the thoroughness of cultivation.

OPERATIONS AT GLENWOOD—FOUR-YEAR ROTATION

| Field | Crop | Number of years grown | Yield per acre | | Cost per unit | |
|---|---|---|---|---|---|---|
| | | | 1929 | Average | 1929 | Average |
| | | | | | $ | $ |
| A | Barley..... bush. | 2 | 28·8 | 30·2 | 0 84 | 0 71 |
| B | Corn..... tons | 2 | 16·08 | 15·15 | 2 28 | 2 91 |
| B | Sunflowers..... tons | 2 | 12·35 | 15·21 | 2 91 | 2 84 |
| B | Swedes..... tons | 2 | 22·02 | 22·84 | 1 90 | 2 14 |
| B | Potatoes..... bush. | 2 | 279·70 | 279·3 | 0 19 | 0 21 |
| C | Timothy..... tons | 2 | 1·17 | 1·43 | 8 65 | 7 79 |
| D | Clover..... tons | 2 | 1·19 | 1·31 | 7 12 | 6 76 |

The application of 125 pounds of nitrate of soda on the timothy gave an increased yield of one-half ton per acre. The field day held in connection with a picnic was largely attended. In the 1928-29 Prince Edward Island Egg Laying Contest four birds in one pen from the Glenwood flock laid over 200 eggs each, and qualified for registration.

## WEST DEVON, WEST PRINCE COUNTY

OPERATOR, CEPHAS GRIGG

An examination of the table giving yields obtained at West Devon during the past season will clearly show that the year has been a successful one. Seeding was comparatively early, but thorough cultivation is responsible, to a considerable extent, for the yields obtained. The land for the root crop was summer-fallowed and well worked the previous autumn. In addition to the commercial fertilizer used, this field received an application of barnyard manure at the rate of ten tons per acre. On all root crops and on timothy commercial fertilizer was used with profit.

OPERATIONS AT WEST DEVON—FOUR-YEAR ROTATION

| Field | Crop | | Number of years grown | Yield per acre | | Cost per unit | |
|---|---|---|---|---|---|---|---|
| | | | | 1929 | Average | 1929 | Average |
| | | | | | | $ | $ |
| A | Clover | tons | 6 | 1·58 | 1·78 | 10 15 | 12 07 |
| B | Alaska oats | bush. | 3 | 36·0 | 33·8 | 0 70 | 0 76 |
| C | Swedes | tons | 7 | 21·38 | 20·19 | 2 37 | 2 76 |
| C | Corn | tons | 6 | 16·80 | 13·87 | 2 44 | 3 44 |
| C | Sunflowers | tons | 6 | 23·04 | 20·28 | 1 74 | 2 45 |
| C | Potatoes | bush. | 7 | 304·3 | 320·5 | 0 16 | 0 24 |
| D | Timothy | tons | 5 | 2·17 | 2·13 | 6 38 | 7 96 |

As in previous years, the station in 1929 was kept free of weeds at all times and the garden-like effect of the fields in the station could not but attract the attention of anyone passing along the road. The field day held during the growing season was much more largely attended than last year, and attracted visitors from a considerable distance.

## RICHMOND, CENTRAL PRINCE COUNTY

OPERATOR, THOMAS NOONAN

The outstanding features of the Richmond Station during 1929 were the excellent crop of timothy hay and the remarkable difference in yield of potatoes between the plot which received a dressing of commercial fertilizer and the plot which received none. The acre of timothy which received a dressing of 125 pounds of nitrate of soda per acre gave a yield of $2\frac{1}{2}$ tons, while the acre which received none gave only $1\frac{1}{4}$ tons.

OPERATIONS AT RICHMOND—FOUR-YEAR ROTATION

| Field | Crop | | Number of years grown | Yield per acre | | Cost per unit | |
|---|---|---|---|---|---|---|---|
| | | | | 1929 | Average | 1929 | Average |
| | | | | | | $ | $ |
| A | Wheat | bush. | 5 | 10·2 | 18·2 | 3 37 | 2 11 |
| B | Corn | tons | 6 | 14·40 | 16·66 | 3 54 | 3 66 |
| B | Swedes | tons | 6 | 17·16 | 20·03 | 3 63 | 3 95 |
| B | Potatoes | bush. | 6 | 234·3 | 289·7 | 0 21 | 0 33 |
| C | Timothy | tons | 3 | 2·55 | 2·10 | 5 85 | 9 80 |
| D | Clover | tons | 5 | 1·60 | 1·83 | 9 87 | 10·99 |

On the potato crop, the yield with the use of 1,075 pounds of mixed chemicals gave 234 bushels of potatoes, while the check plot gave only 47 bushels. No barnyard manure was used on the potato crop.

Seeding was late and the yields of potatoes, turnips and corn were somewhat below last year. More people attended the field day than the previous year.

## NEW LONDON, NORTHWEST QUEENS COUNTY

OPERATOR, WILLIAM E. JOHNSTONE

The operations at New London were more satisfactory for the year 1929 than for the past year. Seeding was considerably earlier and all crops made good growth. Field "D" was, however, badly infested with ball mustard, and a portion of the field was mowed. Pulling was resorted to in the other parts of the field. This removed the trouble for the remainder of the season. Spraying with sulphate of ammonia was tried in an oat field, with fair success.

OPERATIONS AT NEW LONDON—FIVE-YEAR ROTATION

| Field | Crop | Number of years grown | Yield per acre | | Cost per unit | |
|---|---|---|---|---|---|---|
| | | | 1929 | Average | 1929 | Average |
| | | | | | $ | $ |
| A | Timothy..... tons | 2 | 1·41 | 1·31 | 9 59 | 10 59 |
| B | Banner oats..... bush. | 2 | 28·0 | 29·7 | 0 58 | 0 61 |
| C | Corn..... tons | 2 | 15·9 | 16·90 | 2 77 | 3 08 |
| C | Swedes..... tons | 2 | 23·10 | 21·61 | 2 24 | 2 33 |
| C | Potatoes..... bush. | 2 | 216·0 | 278·5 | 0 26 | 0 23 |
| D | Barley..... bush. | 2 | 28·7 | 24·3 | 0 85 | 0 92 |
| E | Clover..... tons | 2 | 0·88 | 1·05 | 13 51 | 12 56 |

In an endeavour to clean up some of the couch grass on this station, fields "A," "B" and "C" were treated as follows: On August 5, shortly after the hay was cut, field "A" was ploughed shallow and topworked during the remainder of the season. Field "B" was ploughed on October 4, after the oats were harvested. This was also harrowed; and again on November 12, fields A, B and C were cross ploughed and given one cut with the spring harrow. This left considerable of the couch roots exposed to the action of the frost.

An interesting experiment was carried on with turnips, comparing the concentrated fertilizer nitrophoska with the regular chemicals. No appreciable difference was noted in the results from the two mixtures.

In 1928 one half of Field "A" was seeded with clover seed procured from St. Chrysostome, Prince Edward Island. The stand on this portion was considerably better than the remainder of the field, on which Quebec seed had been used.

Over 700 bushels of seed oats were sold by the operator at New London during 1929.

## ROSE VALLEY, WEST QUEENS COUNTY

OPERATOR, MALCOLM MCKENZIE

While the yields of potatoes, turnips and clover were not up to the average, the yields of Banner oats and timothy hay were outstanding and were special attractions throughout the growing season of 1929. On the station commercial fertilizer was used with profit on timothy, potatoes and corn. The yield of timothy on one acre which had received an application of 125 pounds nitrate of soda in the early spring was $2\frac{1}{4}$ tons, while the yield on an acre which had received none was slightly over $\frac{3}{4}$ of a ton, making a difference of more than $1\frac{1}{4}$ tons of hay.

OPERATIONS AT ROSE VALLEY—FOUR-YEAR ROTATION

| Field | Crop | Number of years grown | Yield per acre | | Cost per unit | |
|---|---|---|---|---|---|---|
| | | | 1929 | Average | 1929 | Average |
| | | | | | $ | $ |
| A | Clover..... tons | 6 | 0·77 | 1·84 | 21 81 | 12 74 |
| B | Banner oats..... bush. | 3 | 60·5 | 45·3 | 0 43 | 0 53 |
| C | Potatoes..... bush. | 7 | 270·2 | 322·3 | 0 20 | 0 22 |
| C | Swedes..... tons | 7 | 16·43 | 18·37 | 3 40 | 2 97 |
| C | Corn..... tons | 7 | 17·60 | 18·35 | 2 76 | 2 75 |
| C | Sunflowers..... tons | 6 | 19·30 | 20·63 | 2 48 | 2 44 |
| D | Timothy..... tons | 5 | 2·17 | 1·77 | 7 14 | 9 37 |

Outside the station interesting fertilizer experiments were carried on with potatoes. Manure and fertilizer were compared, and it was found that a combination of the two did by far the best. The concentrated fertilizer, nitrophoska, also was compared with a mixture made up of the regular chemicals. The yield with nitrophoska was slightly more than that with the regular chemicals. Plots where nitrate fertilizers alone were used gave no marketable potatoes, but a plot with superphosphate gave a creditable yield of marketable potatoes, showing that perhaps this poor land is chiefly lacking in phosphorus. A more complete experiment will be tried next year to determine which of the three elements is most lacking.

## RUSTICO, NORTH QUEENS COUNTY

OPERATOR, JOHN L. CLARK

The Field Day held on August 5 was the outstanding feature at the Rustico Station during the past year. All crops looked exceptionally well, and showed that thorough work had been done. The turnips and corn which are ordinarily grown on the station were grown on an adjoining field which will be included in the station in 1930. This will make a five-year rotation and give an opportunity for growing more grain. Two hundred and fifty people attended the Field Day, including the operators from the other stations. Special features of the day were a live stock judging contest and a poultry culling demonstration. These were put on by Messrs. Shaw and Nash.

OPERATIONS AT RUSTICO—FOUR-YEAR ROTATION

| Field | Crop | Number of years grown | Yield per acre | | Cost per unit | |
|---|---|---|---|---|---|---|
| | | | 1929 | Average | 1929 | Average |
| | | | | | $ | $ |
| A | Barley..... bush. | 1 | 30·0 | 30·0 | 0 77 | 0 77 |
| B | Potatoes..... bush. | 4 | 256·0 | 360·5 | 0 20 | 0 20 |
| C | Timothy..... tons | 4 | 1·51 | 1·93 | 9 44 | 8 49 |
| D | Clover..... tons | 5 | 1·44 | 2·04 | 10 98 | 8 52 |

In the manure vs. fertilizer experiment, the plot which received a combination of both manure and fertilizer did better than the plots which received either singly. The exact yields obtained are given in another part of the report.

The pure-bred herd of Holstein cattle owned by the operator at this station are entered in the Record of Performance and have been milking exceptionally well.

## ST. PETERS, NORTH KINGS COUNTY

OPERATOR, CLIFFORD MCEWEN

Seeding was late at St. Peters, barley being sown on May 25 and potatoes, turnips, corn and sunflowers planted June 19. Notwithstanding this fact, the yields of all crops, with the exception of clover, were greater than the average for the past number of years.

OPERATIONS AT ST. PETERS—FOUR-YEAR ROTATION

| Field | Crop | Number of years grown | Yield per acre | | Cost per unit | |
|---|---|---|---|---|---|---|
| | | | 1929 | Average | 1929 | Average |
| | | | | | $ | $ |
| A | Clover..... tons | 6 | 0·96 | 1·90 | 16 36 | 12 48 |
| B | Barley..... bush. | 1 | 32·4 | 32·4 | 0 76 | 0 76 |
| C | Potatoes..... bush. | 7 | 368·0 | 346·7 | 0 16 | 0 22 |
| C | Swedes..... tons | 6 | 25·80 | 24·47 | 1 89 | 2 42 |
| C | Corn..... tons | 7 | 20·20 | 15·04 | 1 93 | 3 59 |
| C | Sunflowers..... tons | 6 | 25·90 | 25·12 | 1 47 | 2 28 |
| D | Timothy..... tons | 5 | 1·91 | 1·91 | 7 29 | 8 96 |

The acre of timothy which received a dressing of nitrate of soda gave a yield of 1·92 tons of first quality hay per acre, while the acre which received none gave only ¾ of a ton. Here is a difference of over one ton per acre for 125 pounds of nitrate of soda applied early in the spring.

As in 1928 the potash experiment was carried on at St. Peters with practically the same results, as is shown in another part of this report.

Both the field day and the winter meeting were well attended this year.

## RED POINT, EAST KINGS COUNTY

OPERATOR, NELSON R. STEWART

To the operator of the Illustration Station at Red Point goes the credit of growing both the heaviest crop of potatoes and of swedes on any of the Illustration Stations of Prince Edward Island for 1929. These crops were grown on

Effect of one ton of ground limestone on clover at the Red Point Illustration Station. The yield with limestone was 1.9 tons per acre, and where no lime was applied 0.92 of a ton.

a field of the station which is in good heart, but the wheat and clover on two other fields are an entirely different proposition. Here the soil is very poor and lacking in lime. To find out the need of these fields in this respect, a portion of each field was given an application of ground limestone in the spring of 1928. The portion of the wheat field which had received lime gave a yield easily double that from the portion which had received none. On the clover in 1929 the yield from the limed area was 1·9 tons clover, and from the unlimed area 0·92 tons hay. This was a very marked experiment, and brought forth much favourable comment by visitors.

OPERATIONS AT RED POINT—FOUR-YEAR ROTATION

| Field | Crop | | Number of years grown | Yield per acre | | Cost per unit | |
|---|---|---|---|---|---|---|---|
| | | | | 1929 | Average | 1929 | Average |
| | | | | | | $ | $ |
| A | Clover | tons | 1 | 0·92 | 0·92 | 17 99 | 17 99 |
| B | Wheat | bush. | 2 | 8·0 | 9·8 | 3 46 | 3 22 |
| C | Potatoes | bush. | 3 | 393·3 | 385·3 | 0 12 | 0 17 |
| C | Swedes | tons | 3 | 30·48 | 21·92 | 1 43 | 2 45 |
| C | Corn | tons | 3 | 14·30 | 11·58 | 2 63 | 3 97 |
| C | Sunflowers | tons | 3 | 9·20 | 17·51 | 4 00 | 2 77 |
| D | Clover | tons | 1 | 0·87 | 0·87 | 7 87 | 7 87 |

One hundred and twenty-five people attended the field day, and a very profitable afternoon was spent. The field of corn attracted considerable attention and many stated that they would grow a small field next year. The potash plots also proved interesting. Besides the above items of interest, a live stock judging contest was put on, which was followed by supper and a tug of war.

## MONTAGUE, WEST KINGS COUNTY

OPERATOR, FRED MACINTYRE

The Illustration Station at Montague was, as usual, a model of efficiency, and, while yields were not so heavy as they were last year, the majority of crops were very good. Huron wheat was sown May 26, potatoes and corn planted June 8, while the swedes were not sown until June 26. Turnip seed which had been put in the ground earlier in June did not germinate, and many complained of very poor stands. This was not true at Montague. The turnips were sown June 26, immediately after a shower and a perfect stand obtained.

OPERATIONS AT MONTAGUE—FOUR-YEAR ROTATION

| Field | Crop | | Number of years grown | Yield per acre | | Cost per unit | |
|---|---|---|---|---|---|---|---|
| | | | | 1929 | Average | 1929 | Average |
| | | | | | | $ | $ |
| A | Clover | tons | 5 | 1·82 | 1·70 | 8 55 | 13 26 |
| B | Huron wheat | bush. | 1 | 17·0 | 17·0 | 1 62 | 1 62 |
| C | Potatoes | bush. | 7 | 248·7 | 355·0 | 0 23 | 0 21 |
| C | Swedes | tons | 7 | 26·14 | 29·13 | 2 05 | 1 95 |
| C | Corn | tons | 7 | 16·80 | 18·21 | 2 81 | 2 90 |
| C | Sunflowers | tons | 7 | 17 30 | 20·16 | 2 69 | 2 56 |
| D | Timothy | tons | 4 | 1·28 | 2·01 | 11 17 | 8 13 |

The Field Day at Montague attracted 125 people, and after a general view of the various crops on the station, a very interesting and instructive spray-mixing demonstration was put on. The following main features were demonstrated:—

1. The 4-4-40 mixture is the best for all occasions.

2. Mix as follows: Water, 32 gallons, first; stock solution of bluestone, 4 gallons, second; stock solution of lime, 4 gallons, last.

3. Two ounces of sugar per cask will make the solution stick better.

4. Too much lime weakens solution and causes it to lose its sticking qualities.

5. Test for free copper with a few drops of potassium ferro-cyanide.

## WOOD ISLANDS, SOUTH QUEENS COUNTY

OPERATOR, ALEXANDER MATHESON

Oats were seeded May 24, and potatoes and turnips planted June 6. Considerable dry weather followed these dates, which retarded germination; but despite this fact very creditable yields were obtained It must also be remembered that the portion of this farm selected for the station is one of the poorest pieces of land in the southern section of the Island.

OPERATIONS AT WOOD ISLAND—FOUR-YEAR ROTATION

| Field | Crop | Number of years grown | Yield per acre | | Cost per unit | |
|---|---|---|---|---|---|---|
| | | | 1929 | Average | 1929 | Average |
| | | | | | $ | $ |
| A | Clover..... tons | 1 | 0·70 | 0·70 | 24 93 | 24 93 |
| B | Banner oats..... bush. | 3 | 18·5 | 24·6 | 1 56 | 0 97 |
| C | Potatoes..... bush. | 3 | 264·0 | 274·7 | 0 22 | 0 29 |
| C | Swedes..... tons | 3 | 23·51 | 17·86 | 1 86 | 3 38 |
| C | Corn..... tons | 3 | 11·6 | 9·92 | 3 45 | 4 69 |
| C | Sunflowers..... tons | 3 | 10·6 | 14·35 | 3 70 | 3 28 |
| D | Timothy..... tons | 2 | 0·65 | 0·58 | 15 49 | 19 75 |

The stand of swedes was not uniform, but a good crop was harvested and the operator found many individual specimens which weighed from 10 to 14 pounds each. The growth of clover on the lime plot was distinctly better than on the remainder of the field, and the different fields will therefore be given a small application as they are seeded down. Other fertilizer experiments carried on here include a comparison of manure and fertilizer for the potato crop and also a comparison of nitrophoska and the regular chemicals. These experiments are tabulated in another section of this report.

The vegetable garden at this station was a distinct credit to the operator and his family, as was also the showing made in flowers. The pure-bred Ayrshire bull Charlottetown Supreme 14th has grown into a very typy senior yearling.

The field day at this station was the most satisfactory held to date. Fifty people were present, and were shown flowers, garden, live stock, fertilizer experiments, lime plots, tuber unit potatoes the result of two years' selection, and the various crops and tests on the Illustration Stations.

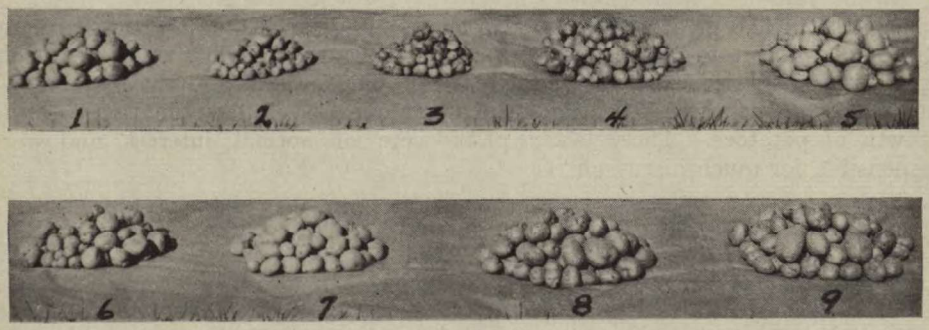
## IONA, SOUTH QUEENS COUNTY

OPERATOR, JAMES E. DALY

Seeding was comparatively late at Iona in 1929. Wheat was sown May 29, potatoes planted June 6, and turnips and corn sown June 13. The season was very dry for such sandy soil, but satisfactory crops of turnips, potatoes, corn, sunflowers and timothy were produced. The effect of nitrate of soda on timothy was very marked, as usual, and was responsible for a three-quarter-ton increase in yield. For a late and dry season the yield of swedes was very gratifying.

OPERATIONS AT IONA—FOUR-YEAR ROTATION

| Field | Crop | | Number of years grown | Yield per acre | | Cost per unit | |
|---|---|---|---|---|---|---|---|
| | | | | 1929 | Average | 1929 | Average |
| | | | | | | $ | $ |
| A | Clover | tons | 5 | 0·5 | 0·58 | 26 36 | 27 92 |
| B | Wheat | bush. | 4 | 8·0 | 9·6 | 3 32 | 2 82 |
| C | Swedes | tons | 7 | 30·23 | 22·32 | 1 21 | 2 08 |
| C | Potatoes | bush. | 7 | 208·9 | 276·1 | 0·25 | 0 25 |
| C | Corn | tons | 7 | 11·10 | 11·22 | 3 35 | 4 78 |
| C | Sunflowers | tons | 7 | 13·20 | 12·33 | 2 76 | 3 67 |
| D | Timothy | tons | 4 | 1·25 | 0·92 | 9 18 | 14 78 |




Fertilizer experiment at Iona: (1) check plot, no treatment; (2) muriate of potash alone; (3) nitrate of soda alone; (4) sulphate of ammonia alone; (5) superphosphate alone; (6) sulphate of ammonia and potash; (7) superphosphate and potash; (8) sulphate of ammonia and superphosphate; (9) sulphate of ammonia, superphosphate and potash.

On the clover field, the portion which had received an application of ground limestone was very noticeably superior to the remainder of the field. Outside the station 19 plots were devoted to fertilizer tests with potatoes. Manure and fertilizer were compared, ammo-phos and the regular chemicals, also potash in varying amounts. The results from these tests are tabulated in other sections of this report. The most enlightening experiment, however, was one comparing nitrogen, potash and superphosphate singly and in various combinations.

NITROGEN, POTASH AND PHOSPHORUS FOR POTATOES AT IONA—1929

| Plot | Treatment per acre | Yield per acre | |
|---|---|---|---|
| | | Marketable | Unmarketable |
| | | bush. | bush. |
| 1 | Check plot—no treatment | 36·7 | 51·3 |
| 2 | Muriate of potash alone 400 pounds | ..... | 58·6 |
| 3 | Nitrate of soda alone 400 pounds | ..... | 58·6 |
| 4 | Sulphate of ammonia alone 300 pounds | 29·3 | 102·6 |
| 5 | Superphosphate alone 750 pounds | 88·0 | 58·6 |
| 6 | Sulphate of ammonia 300 pounds and Muriate of potash 240 " | 36·7 | 66·0 |
| 7 | Superphospahte, 750 pounds and Muriate of potash 240 " | 58·6 | 58·6 |
| 8 | Sulphate of ammonia, 300 pounds and Superphosphate, 750 " | 117·3 | 80·6 |
| 9 | Sulphate of ammonia, 300 pounds Superphosphate, 750 " and Muriate of potash, 240 " | 139·4 | 36·7 |

A glance at the above table will clearly show the folly of using the three essential chemicals separately on poor soils. The results of this experiment, which could only be appreciated by seeing the potatoes in the growing stage and again at harvest time, would, however, indicate that superphosphate was perhaps the main fertilizing element. Even alone, the yield was creditable and the quality of the potatoes excellent.

The operator at Iona has had a busy season remodelling his dairy barn and fitting his stables with concrete floors and steel stanchions.

The field Day held at Iona was an outstanding success, as there were many things of interest to be shown, such as check and lime plots on the station, manure vs. fertilizer experiment, rates of applying potash, and the plots showing effect of the three essential elements, alone and in combination, on the growth of potatoes. These latter plots were of special interest, and were responsible for much discussion.

## NITRATE OF SODA FOR TIMOTHY

The demonstration showing the effect of an application of nitrate of soda on timothy sod was perhaps the most clear cut, and the one attracting the greatest amount of attention on the Prince Edward Island Illustration Stations during the past year. As early in the spring as was possible, 125 pounds of nitrate of soda were sown on one acre of timothy sod at each station. A check plot with no nitrate of soda, was left.

Within a week the difference in the growth of grass on the two areas was fairly distinct, and at hay-making the following average yields were obtained from the ten stations: With soda, 1·61 tons and without soda 0·78 tons. In 1928 a similar test with nitrate of soda on the stations gave an increased yield of 0·76 tons per acre, and in 1927 the increase was 0·84 tons. The cost of the fertilizer together with the cost of application in 1929 was $2.94, in 1928 was $2.70 and in 1927 $3.23. This is, however, charging only 80 per cent of the total cost to the timothy; 20 per cent is charged to the following crop. Below is given the table of yields for 1929:—

RESULTS OF APPLYING NITRATE OF SODA ON TIMOTHY—1929

| Station | Pounds used per acre | Yield per acre | | Increase per acre due to fertilizer |
|---|---|---|---|---|
| | | With fertilizer | Without fertilizer | |
| | lb. | tons | tons | tons |
| Palmer Road | 125 | 1·60 | 0·78 | 0·82 |
| Glenwood | 125 | 1·17 | 0·69 | 0·48 |
| West Devon | 125 | 2·17 | 0·92 | 1·25 |
| Richmond | 125 | 2·55 | 1·31 | 1·24 |
| New London | 125 | 1·41 | 0·64 | 0·77 |
| Rose Valley | 125 | 2·17 | 0·82 | 1·35 |
| Rustico | 125 | 1·51 | 1·01 | 0·50 |
| St. Peters | 125 | 1·92 | 0·69 | 1·23 |
| Montague | 125 | 1·28 | 0·85 | 0 43 |
| Iona | 125 | 1·25 | 0·48 | 0·77 |
| Wood Islands | 125 | 0·65 | 0·40 | 0·25 |
| Total | 1,375 | 17·68 | 8·59 | 9·09 |
| Average | 125 | 1·61 | 0·78 | 0·83 |

NITROCHALK FOR TIMOTHY

In 1929 a new fertilizer by the name of nitrochalk was first tested in Prince Edward Island. This fertilizer contains 15 per cent nitrogen and approximately 85 per cent of limestone, and is supposed to be of special benefit to hay crops such as timothy. Nitrochalk at the rate of 125 pounds per acre was compared with 125 pounds of nitrate of soda and with 100 pounds of sulphate of ammonia on three stations with the following results:—

EFFECT OF NITROCHALK ON THE GROWTH OF TIMOTHY HAY

| Station | Yield per acre | | |
|---|---|---|---|
| | With 125 pounds nitrate of soda | With 100 pounds sulphate of ammonia | With 100 pounds nitro-chalk |
| | tons | tons | tons |
| Montague | 1·44 | 1·41 | 1·56 |
| Rose Valley | 2·00 | 1·76 | 1·92 |
| West Devon | 1·65 | 1·75 | 1·55 |
| Total | 5·09 | 4·92 | 5·03 |
| Average | 1·70 | 1·64 | 1·68 |

CORN GROWING ON THE ILLUSTRATION STATIONS

Ever since the Illustration Stations were started in Prince Edward Island, corn has been given a fairly prominent place as one of the hoed crops. The operators speak well of this crop because they have learned how much their cattle, horses and hogs relish it. The value of corn as a supplement to dry pastures was clearly demonstrated in 1929, and it was well that many had learned of its value and had had an area planted. At the various field days farmers spoke highly of corn as a fodder crop, and many who had never grown it decided to try a field in 1930.

Yields on the Illustration Stations for the past three years have clearly shown that this crop can be grown at a profit. The average yield for 1929 was 15·32 tons per acre, and the cost per ton $2.71. For the production of this crop

the land is treated as for turnips or potatoes. The rows are marked with a marker, and the seed usually dropped by hand. Covering may be done either with a garden hoe or a horse hoe. Seeding may also be done with a grain seeder by first stopping a number of the drills. This method, however, is not so convenient as having the corn in hills. If a spike harrow is used just as the corn is coming up, much hard hoeing is eliminated. The horse hoe is also used to advantage to cover many of the small weeds. Cutting is easily done with a sickle, and the corn may either be fed immediately or shocked and fed as stover in the early winter.

In 1929, 120 pounds of nitrate of soda, 80 pounds sulphate of ammonia, 454 pounds of superphosphate and 144 pounds of muriate of potash gave on the average profitable increases in yield. The following table gives the yields obtained with and without the use of commercial fertilizer:—

EFFECT OF COMMERCIAL FERTILIZER ON THE GROWTH OF CORN

| Station | Yield per acre | | |
|---|---|---|---|
| | With fertilizer | Without fertilizer | Increase due to fertilizer |
| | tons | tons | tons |
| Palmer Road | 13·73 | 7·92 | 5·81 |
| West Devon | 16·80 | 11·04 | 5·76 |
| Richmond | 14·40 | 11·80 | 2·60 |
| New London | 15·90 | 11·80 | 4·10 |
| Rose Valley | 17·60 | 12·40 | 5·20 |
| St. Peters | 20·20 | 14·90 | 5·30 |
| Red Point | 14·30 | 11·40 | 2·90 |
| Montague | 16·80 | 8·90 | 7·90 |
| Wood Islands | 11·60 | 7·50 | 4·10 |
| Iona | 11·10 | 5·50 | 5·60 |
| Total | 152·43 | 103·16 | 49·27 |
| Average | 15·24 | 10·32 | 4·92 |

It will be seen from the above that 798 pounds of chemicals gave, on the average, an increase in yield of 4·92 tons of corn per acre. This amount of fertilizer, including sowing, would cost $13.21, or by considering 55 per cent of this cost, which more nearly approximates that used by the corn, the total cost per acre for fertilizer would be $7.27.

### SUNFLOWERS ON THE ILLUSTRATION STATIONS

Of all crops grown on the Illustration Stations, sunflowers appear to be the only one which does not meet with the general favour of the public. The coarseness of the fodder is largely responsible for this disfavour. The sunflower crop has, however, several things in its favour. It is a sure crop, and a heavy yield can be expected. In 1929 the average yield on the stations was 16·10 tons. If cut early and fed before corn, sunflowers will be readily eaten by cattle, hogs or horses. As silage, cattle will eat it almost as readily as corn.

Commercial fertilizer has been found to give increased yields at a profit. This year 795 pounds of chemicals gave an average increase in yield of 3·49 tons.

### SWEDE GROWING ON THE ILLUSTRATION STATIONS

Swedes are the old standby for a succulent winter feed, and for the average farmer in Prince Edward Island must continue to be so. Silos and silo equipment are expensive, but a root pit is easily made. Swedes are also proving a valuable cash crop in late years.

While seeding was very late in 1929, and although the early summer was dry, yields of swedes were creditable. The average yield on the stations was 24·20 tons per acre, with an average cost of $1.99 per ton.

For maximum production the swede crop needs a heavy application of barnyard manure and thorough cultivation. In addition to manure, commercial fertilizer has been found to give excellent returns. In 1929, 285 pounds nitrate of soda, 550 pounds superphosphate, and 100 pounds muriate of potash gave an average increase in yield of 10·10 tons per acre. Below are given the yields obtained with and without commercial fertilizer on the differnt stations:

EFFECT OF COMMERCIAL FERTILIZER ON THE GROWTH OF SWEDES

| Station | Yield per acre | | |
|---|---|---|---|
| | With fertilizer | Without fertilizer | Increase due to commercial fertilizer |
| | tons | tons | tons |
| Palmer Road | 29·94 | 19·17 | 10·77 |
| West Devon | 21·38 | 15·84 | 5·54 |
| Richmond | 17·16 | 12·96 | 4·20 |
| New London | 23·10 | 17·42 | 5·68 |
| Rose Valley | 16·43 | 8·62 | 7·81 |
| St. Peters | 25·80 | 18·00 | 7·80 |
| Red Point | 30·48 | 13·21 | 17·27 |
| Montague | 26·14 | 17·16 | 8·98 |
| Wood Islands | 23·51 | 11·44 | 12·07 |
| Iona | 30·23 | 9·40 | 20·83 |
| Total | 244·17 | 143·22 | 100·95 |
| Average | 24·42 | 14·32 | 10·10 |

POTATO GROWING ON THE ILLUSTRATION STATIONS

The potato crop is by far the most important crop in Prince Edward Island, and the crop on which the most of the commercial fertilizer is used. The 1927 report of this Division gave in detail the methods used in growing the potato crop on the stations, and therefore only tests with commercial fertilizer will be given here. The general mixture used on the rotation fields in 1929 was: One hundred and forty-two pounds nitrate of soda, 131 pounds sulphate of ammonia, 596 pounds superphosphate and 200 pounds muriate of potash per acre. This is equivalent to 1,200 pounds of a 4-8-8 mixture. In the majority of cases a small dressing of barnyard manure was also used. The average yield for 1929 was 273·5 bushels, of which 245·6 were marketable. On the check plot, which received no fertilizer, the yield was 189·8 bushels, of which 152·5 were marketable. This is an average increase of 93 bushels of marketable potatoes due to the use of fertilizer. The total cost of the above fertilizer together with the cost of application equals $17.60. Fifty-five per cent of this, which is considered the amount of fertilizer used by the first crop, is $9.68; in other words an outlay of $9.68 for fertilizer in 1929 gave in return 93 bushels marketable potatoes. The table below gives the yields of potatoes with and without commercial fertilizer on each of the twelve stations:—

EFFECT OF COMMERCIAL FERTILIZER ON THE GROWTH OF POTATOES—1929

| Station | Fertilizer used | | | | Yield per acre | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | With fertilizer | | | Without fertilizer | | |
| | Nitrate of soda | Sulphate of ammonia | Superphosphate | Muriate of potash | Marketable | Unmarketable | Total | Marketable | Unmarketable | Total |
| | lb. | lb. | lb. | lb. | bush. | bush. | bush. | bush. | bush. | bush. |
| Palmer Road | 156 | 120 | 550 | 200 | 217·8 | 27·0 | 244·8 | 177·3 | 30·8 | 208·1 |
| West Devon | 156 | 120 | 600 | 200 | 280·4 | 23·9 | 304·3 | 175·9 | 36·7 | 212·6 |
| Richmond | 156 | 120 | 600 | 200 | 208·1 | 26·2 | 234·3 | 7·8 | 39·3 | 47·1 |
| New London | 156 | 120 | 600 | 200 | 192·4 | 23·6 | 216·0 | 157·0 | 35·3 | 192·3 |
| Rose Valley | 156 | 120 | 600 | 200 | 249·6 | 20·6 | 270·2 | 206·3 | 33·0 | 239·3 |
| Rustico | 156 | 120 | 600 | 200 | 220·0 | 36·0 | 256·0 | 160·0 | 32·0 | 192·0 |
| St. Peters | ..... | 240 | 600 | 200 | 344·0 | 24·0 | 368·0 | 320·0 | 16·0 | 336·0 |
| Red Point | 156 | 120 | 600 | 200 | 348·0 | 45·3 | 393·3 | 224·0 | 32·0 | 256·0 |
| Montague | 156 | 120 | 600 | 200 | 225·4 | 23·3 | 248·7 | 132·1 | 31·1 | 163·2 |
| Wood Islands | 156 | 120 | 600 | 200 | 247·5 | 16·5 | 264·0 | 66·0 | 66·0 | 132·0 |
| Iona | 156 | 120 | 600 | 200 | 168·6 | 40·3 | 208·9 | 51·3 | 58·6 | 109·9 |
| Average | ..... | ..... | ..... | ..... | 245·6 | 27·9 | 273·5 | 152·5 | 37·3 | 189·8 |

MANURE VS. COMMERCIAL FERTILIZER FOR POTATOES

An interesting and a very important experiment was carried on in 1929 on five Prince Edward Island Illustration Stations. Barnyard manure at the rate of 20 tons per acre was compared with commercial fertilizer at the rate of 1,500 pounds of a 4-8-8 mixture, and these two with a mixture of 10 tons manure and 750 pounds fertilizer. There is no appreciable difference between the cost of the three treatments. Below in detail are given the yields obtained from the three treatments:—

MANURE VS. COMMERCIAL FERTILIZER FOR POTATOES, 1929

| Station | 20 tons barnyard manure | | | 10 tons barnyard manure, 750 lb. 4-8-8-fertilizer mixture | | | 1,500 pounds of a 4-8-8 fertilizer mixture | | |
|---|---|---|---|---|---|---|---|---|---|
| | Yield per acre | | | Yield per acre | | | Yield per acre | | |
| | Marketable | Unmarketable | Total | Marketable | Unmarketable | Total | Marketable | Unmarketable | Total |
| | bush. | bush. | bush. | bush. | bush. | bush. | bush. | bush. | bush. |
| Rose Valley | 111·4 | 111·4 | 222·8 | 363·0 | 28·8 | 391·8 | 202·1 | 41·3 | 243·4 |
| Rustico | 272·0 | 20·0 | 292·0 | 288·0 | 28·0 | 316·0 | 236·0 | 4·0 | 240·0 |
| Montague | 190·4 | 81·6 | 272·0 | 194·3 | 27·0 | 221·3 | 143·7 | 85·5 | 229·2 |
| Wood Islands | 169·1 | 37·1 | 206·2 | 255·8 | 16·5 | 272·3 | 214·5 | 49·5 | 264·0 |
| Iona | 47·6 | 73·3 | 120·9 | 194·2 | 40·3 | 234·5 | 249·2 | 33·0 | 282·2 |
| Average | 158·1 | 64·7 | 222·8 | 259·1 | 28·1 | 287·2 | 209·1 | 42·7 | 251·8 |

POTASH REQUIREMENTS FOR THE POTATO CROP

For the production of a profitable crop of potatoes, a supply of available potash, as well as nitrogen and acid phosphate, is absolutely necessary. Potash aids in the improvement of the general vigour of the crop, and is necessary for the production of starches and sugars; this of course in the potato is of prime importance.

For the past three years on the Prince Edward Island Illustration Stations, 200 pounds of potash in a 4-8-8 mixture supplied at the rate of 1,200 pounds per acre gave an average yield of 338 bushels of potatoes per acre. These potatoes were grown on sod land and in the majority of cases the fertilizer was supplemented with a small dressing of barnyard manure. During the past few years it has been brought to the attention of the Experimental Station, Charlottetown, that 400 pounds, and in quite a few cases 500 pounds of muriate of potash were being used per acre. To demonstrate the effect of large quantities of potash on the potato crop, the following experiment was tried on five of the Prince Edward Island Illustration Stations in 1928 and 1929. Fifteen hundred pounds of a fertilizer mixture in which the nitrogen and phosphorus were constant and in which the potash varied from none to 400 pounds, were sown on 5 plots on each of the stations. Below are given in tabular form the results of the above test.

EFFECT OF VARYING AMOUNTS OF POTASH ON THE POTATO CROP, 1928–1929

| Station | No. K. * | | 100 pounds K. | | 200 pounds K. | | 300 pounds K. | | 400 pounds K. | | **200+200 pounds K | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Market-able. | Unmark-etable. | Market-able | Unmark-etable. | Market-able. | Unmark-etable. | Market-able. | Unmark-etable. | Market-able. | Unmark-etable. | Market-able. | Unmark-etable. |
| | bush. | bush. | bush. | bush. | bush. | bush. | bush. | bush. | bush. | bush. | bush. | bush. |
| Glenwood | 58·3 | 66·0 | 217·6 | 46·6 | 303·0 | 31·1 | 318·6 | 19·4 | 310·8 | 23·3 | 233·0 | 31·1 |
| Richmond | 121·7 | 27·5 | 282·6 | 15·7 | 259·1 | 19·6 | 204·1 | 19·6 | 274·8 | 27·5 | 290·5 | 7·9 |
| St. Peters | 328·0 | 48·0 | 360·0 | 24·0 | 352·0 | 20·0 | 392·0 | 24·0 | 424·0 | 24·0 | 392·0 | 20·0 |
| Red Point | 280·0 | 72·0 | 384·0 | 52·0 | 384·0 | 56·0 | 408·0 | 40·0 | 356·0 | 28·0 | 344·0 | 36·0 |
| Iona | 117·3 | 80·6 | 139·3 | 66·0 | 146·6 | 36·7 | 132·0 | 36·7 | 132·0 | 36·7 | 190·6 | 73·3 |
| Average (1929) | 181·1 | 58·8 | 276·7 | 40·9 | 288·9 | 32·7 | 290·9 | 27·9 | 299·5 | 27·9 | 290·0 | 33·7 |
| Average (1928) | 195·5 | 72·7 | 307·7 | 53·0 | 331·5 | 48·7 | 329·7 | 39·5 | 321·5 | 44·4 | | |
| Average 1928 and 1929 | 187·5 | 65·0 | 290·5 | 46·3 | 307·8 | 39·8 | 308·2 | 33·1 | 309·3 | 35·2 | | |

* K—Muriate of potash.
300 pounds sulphate of ammonia and 750 pounds superphosphate constant on all plots.
** 200 pounds applied just previous to planting, and 200 pounds when the tops were about 6 inches in height.

## CONCENTRATED FERTILIZERS FOR THE POTATO CROP

For the past few years concentrated fertilizers have been given considerable advertisement, but in Prince Edward Island they have been tested only to a very limited extent. The two most common of these fertilizers in this province are ammo-phos and nitrophoska, the latter being tested in Prince Eward Island for the first time in 1929. The main virtue claimed for these fertilizers by their manufacturers is the great saving in freight and hauling charges. Below are given results obtained by the use of ammo-phos and nitrophoska. Practically the same quantity of fertilizing elements are supplied in each mixture.

AMMO-PHOS VS. REGULAR FERTILIZER MIXTURE FOR POTATOES

| Station | Ammo-phos | | | Regular fertilizer mixture | | |
|---|---|---|---|---|---|---|
| | 285 pounds 20–20 ammo-phos<br>145 " 13–48 "<br>240 " muriate of potash | | | 300 pounds sulphate of ammonia<br>850 " superphosphate<br>240 " muriate of potash | | |
| | Yield per acre | | | Yield per acre | | |
| | Marketable | Unmarketable | Total | Marketable | Unmarketable | Total |
| | bush. | bush. | bush. | bush. | bush. | bush. |
| Palmer Road | 269·9 | 65·5 | 335·4 | 308·0 | 61·7 | 369·7 |
| West Devon | 152·0 | 16·0 | 168·0 | 216·0 | 20·0 | 236·0 |
| Iona | 110·0 | 80·6 | 190·6 | 146·6 | 36·7 | 183·3 |
| Average | 177·3 | 54·0 | 231·3 | 223·5 | 39·5 | 263·0 |

NITROPHOSKA VS. REGULAR FERTILIZER MIXTURE FOR POTATOES

| Station | Nitrophoska | | | Regular Fertilizer Mixture | | |
|---|---|---|---|---|---|---|
| | 500 pounds 15–30–15 | | | 300 pounds sulphate of ammonia<br>750 " superphosphate<br>240 " muriate of potash | | |
| | Yield per acre | | | Yield per acre | | |
| | Marketable | Unmarketable | Total | Marketable | Unmarketable | Total |
| | bush. | bush. | bush. | bush. | bush. | bush. |
| Palmer Road | 215·9 | 77·1 | 293·0 | 308·0 | 61·7 | 369·7 |
| West Devon | 200·0 | 8·0 | 208·0 | 216·0 | 20·0 | 236·0 |
| Rose Valley | 202·1 | 61·9 | 264·0 | 202·1 | 41·3 | 243·4 |
| Wood Islands | 231·0 | 57·8 | 288·8 | 214·5 | 49·5 | 264·0 |
| Average | 212·3 | 51·2 | 263·5 | 235·2 | 43·1 | 278·3 |

## ILLUSTRATION STATION FIELD DAYS

Eleven Field Days were held at the various stations throughout the province, the average attendance being 80 people. As a means of bringing before the public the findings of the Experimental Farms and various research workers, nothing equals such meetings where those who attend can see for themselves the benefits of superior seed, the effects of various cultural practices, the comparisons of different commercial fertilizers, etc. At certain stations this year live stock and poultry demonstrations were held. These were very interesting and free discussion followed.

The social side of these field days was not ignored, as there was then furnished a splendid opportunity for farmers and their families to meet one another and discuss many matters of mutual interest. In many districts also the local Women's Institutes put on a tea which made the day more satisfying.

### PUBLIC MEETINGS AND PRESS ARTICLES

During the winter and early spring meetings were held at the following places: Iona, Wood Islands, Eldon, Rustico, Baltic, St. Peters, Palmer Road, West Devon and Uigg. The average attendance was 60 people. Lantern slides were used at all meetings and were found very useful. The superintendent and supervisor were present at each meeting. These winter meetings serve as a means to put before the public the latest results from the Illustration Stations and from the Experimental Farms. All meetings were well received.

Several press articles dealing with specific phases of work on the stations were also written by the supervisor during the past year.