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Canada

DOMINION OF CANADA
DEPARTMENT OF AGRICULTURE
DOMINION EXPERIMENTAL FARMS

REPORT OF THE CHIEF SUPERVISOR

J. FIXTER

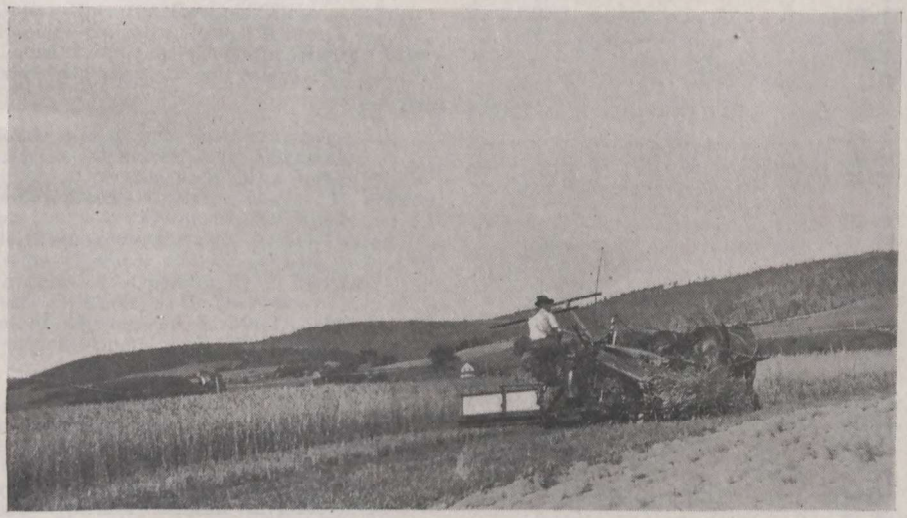
ON

THE ILLUSTRATION STATIONS

IN

QUEBEC, NEW BRUNSWICK, and NOVA SCOTIA

FOR THE YEAR 1922



Cutting Huron Wheat on an Illustration Station, at this date the adjoining field was plowed in preparation for hoed crops.

Printed by Authority of the Hon. W. R. Motherwell, Minister of Agriculture, Ottawa, 1923

OTTAWA
F. A. ACLAND
PRINTER TO THE KING'S MOST EXCELLENT MAJESTY
1923

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DIVISION OF ILLUSTRATION STATIONS

REPORT OF THE CHIEF SUPERVISOR, JOHN FIXTER

INTRODUCTION

The number of Illustration Stations is increasing year by year; as their value becomes more and more apparent, demands for the establishment of Illustration Stations are constantly coming in from fresh sections of the Dominion, and it has been thought advisable to widen somewhat the amount of work heretofore carried on on these Stations. This has rendered it very difficult, if not impossible, for the Chief Supervisor of Illustration Stations, located at Ottawa, to keep in close and constant touch with the larger number of field supervisors now necessary and with the work being conducted on the Illustration Stations themselves. It was felt also that it would be a distinct advantage to link together more closely the work of the Illustration Stations and that of their parent bodies, namely the Experimental Farms or Stations of the various localities or districts into which the system of Illustration Stations may be grouped and upon which Stations are being demonstrated some of the well proven results of work carried on upon the Experimental Farms. Such a system of reorganization would also place the Illustration Station work under the same system of administration as obtains in the other lines of work of the Experimental Farms System.

With the above ends in view, therefore, it was decided to place a certain amount of supervisory responsibility upon the superintendents of some of the Experimental Farms and Stations most conveniently located to look after the work of the Illustration Stations in their districts. The work as now arranged, then, leaves the Chief Supervisor of Illustration Stations in precisely the same position as before, namely in charge of, and responsible for, the Illustration Station work throughout the Dominion of Canada. To collaborate with him, and to assist him in the supervision of details of administration and inspection, come the superintendents of the farms referred to above. The field supervisors, as before, carry on the actual inspection work of the Illustration Stations, accompanied once or twice a year by the superintendents and by the Chief Supervisor of Illustration Stations. These field supervisors now have the status of assistants to the superintendents interested in this work, having as their special duty that of Illustration Station inspection, their scope and method of work being such as are agreed upon and understood by the superintendents and the head of the Illustration Stations system, namely the Chief Supervisor of Ottawa.

It is felt that this new plan will add greatly to the efficiency of the work, will keep the work of the farms and of the Illustration Stations in much closer touch and will benefit the latter a great deal by enlisting the interest, attention, and guidance of the Branch Farm superintendents who are thoroughly familiar with the local conditions obtaining in the districts where these Stations are located, and who, further, are familiar with the lines of work being demonstrated from the time that work was incepted on the Experimental Farms as an experiment until now when it is being demonstrated as a proven fact upon our Illustration Stations.

At present the Illustration Stations in New Brunswick are under the general supervision of the Superintendent, Experimental Station, Fredericton, N.B.,

those for Nova Scotia of the Superintendent, Experimental Station, Kentville, N.S., for Eastern Quebec of the Superintendent, Experimental Station, Ste. Anne de la Pocatiere, Que., for Western Quebec of the Chief Supervisor of Illustration Stations and his supervisor having his headquarters at Ottawa. At present there are eighty-nine Illustration Stations in operation, of this number ten are in New Brunswick, eleven in Nova Scotia and thirty-one in Quebec.

Speaking generally, crops have been much better on the stations this year than last. In the eastern provinces, the clover hay crop was considerably reduced because of the serious drought of 1921. This drought so seriously affected the newly seeded meadows that many fields had to be broken up and reseeded. Grain crops have yielded well over last season's average, and the newly seeded meadows are looking very promising.

As the fields on these Illustration Stations are fronting on the main travelled highway, the method of growing and handling of the crops comes under the public eye. In this way, passersby become informed as to the possibilities of growing these different crops and the proper means of handling them. Not only is the work on the station noticed from the public highway, but practical discussions, in the form of field meetings, are held on these stations during the growing season. At these meetings, all the details relative to the different crops, the varieties of grain, the preparation of the soil, the rate of seeding and the methods of handling the fertilizers are fully discussed. As all this work is done by a practical farmer on his own land, it is possible in this way to demonstrate the results of the work of the Experimental Farm in a practical way to the farmers in these different districts. By demonstrating these sound, safe practices the necessity of experimenting on the part of the individual farmer is greatly reduced.

ILLUSTRATION STATIONS IN QUEBEC

The season was late and backward this year, with the result that seeding was not general until from the 2nd to the 20th of May. The date of seeding depended more on the type of soil and the drainage than on the location of the Station. For instance, in the western part of the province seeding started on May 2 on the Station at Papineauville; here the soil is of a sandy loam nature; at Aubrey the soil is a heavy clay and seeding was delayed until May 16. In the northern part of the province, seeding dates were quite similar, as at New Carlisle and New Richmond, in the Gaspé Peninsula, seeding started on the 9th and 16th of May respectively.

Practically the reverse of 1921 moisture conditions were experienced in many districts of western Quebec, this year, due to repeated heavy rains. The Three Rivers district, especially, suffered. On June 19, a large area of seeded fields was under water with the result that a great deal of reseeding had to be done. Corn, turnips and mangels naturally made slow growth under these climatic conditions. During this time, weeds thrived and the land was so wet that it was impossible to carry on the regular cultural operations. This necessitated additional cultivation later in the season to get weeds under control and increased the cost of production on the stations thus affected.

Crops on the whole have been much better this year than for the season of 1921. In many cases, newly-seeded fields were very patchy because of the drought of 1921, hence the cost of production is high on some of the Stations because of low yields. Many other fields also had to be ploughed up and reseeded to grass and clovers. Grain crops have yielded quite up to the average. In the following report the difference in the cost of producing corn, sunflowers, turnips and mangels, and the suitability of each to the respective districts of the province, should prove interesting.

During the year the division has operated thirty-one stations in the province of Quebec and has investigated new districts, with the result that three new Stations will be in operation in 1923. The work in this province is divided, for convenience in supervision, into eastern and western Quebec. Fourteen of these Stations are in eastern and seventeen in western Quebec. The foundation of the work is a four-year rotation and the demonstrating of new crops and improved methods is introduced by carrying them out in the daily operations. The undermentioned plan explains the four-year rotation as it is established on the Illustration Stations in Quebec.

FOUR-YEAR ROTATION

	Field A	Field B	Field C	Field D
First year	Hoed crops	Grain and seeded. Clover 10 pounds, timothy 10 pounds per acre.	Clover, 1st cut hay, 2nd cut seed.	Hay or pasture.
Second year	Grain and seeded. Clover 10 pounds, timothy 10 pounds per acre.	Clover, 1st cut hay, 2nd cut seed.	Hay or pasture	Hoed crops.
Third year	Clover, 1st cut hay, 2nd cut seed.	Hay or pasture	Hoed crops	Grain and seeded. Clover 10 pounds, timothy 10 pounds per acre.
Fourth year	Hay or pasture	Hoed crops	Grain and seeded. Clover 10 pounds, timothy 10 pounds per acre.	Clover, 1st cut hay 2nd cut seed.

In making up this report, the cost of production is based on the undermentioned prices. The yields of corn, roots and hay are estimated in some reports.

In determining standard cost, all Illustration Stations in the province are figured at the same cost. In this way the cost of production is comparable one station with another. By actual cost, is meant the cost of production based on the prevailing cost of labour, rent of land, etc., at each station.

	Standard cost	Actual cost
Rent of land	$2.00	Based on value of land at 6 p.c. interest.
Use of machinery	0.75	$ 0·75
Manual labour per hour	0 20	Based on prices prevalent in the district.
Horse labour per hour	0 10	
Threshing—		
wheat per bushel	0 07	
oats per bushel	0 04	
Manure per ton	1 00	1 00
Cost of Seed—		
Oats per bushel	1 00	1 25
Wheat per bushel	1 50	2 00
Longfellow corn per bushel	1 50	1 95
Leaming corn per bushel	1 50	1 65
Golden Glow	1 50	1 65
Sunflowers per pound	0 08	0 08
Turnips per pound	0 50	0 50
Mangels per pound	0 40	0 40
Sweet clover per pound	0 10	0 10½
Alsike clover per pound	0 20	0 21
Red clover per pound	0 25	0 28
Timothy per pound	0 11	0 11

The grain crop is credited with straw at $6 per ton.

In computing the cost of manure—

50 per cent is charged to the hoed crop.
32 per cent is charged to the grain and seeded.
12 per cent is charged to the clover hay.
·06 per cent is charged to the timothy hay.

REPORT OF THE ILLUSTRATION STATIONS FOR WESTERN QUEBEC

W. L. CHAUVIN, SUPERVISOR OF ILLUSTRATION STATIONS

AUBREY, CHATEAUGUAY COUNTY—*Operator, Samuel Reddick*

The soil at this Station is a heavy, stiff clay, and seeding was not possible on it until May 16. All crops have been produced quite economically this year, as may be seen in the following table. The systematic rotation of crops, after-harvest cultivation and the heavy seeding of clover have aided materially in the rapid recovery of the soil to normal crop production after the drought of 1921.

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

FOUR-YEAR ROTATION

Field	Yield per acre	Standard cost	Actual cost
		$ cts.	$ cts.
"A"—Oats, Banner	42½ bush.	0 27	0 34
"B"—Clover hay, 1st cut	1¾ tons	3 70	4 50
"B"—Clover seed	171 pounds	0 03	0 04
"C"—Corn fodder	19½ tons	1 39	1 49
"C"—Corn ensilage	19⅔ tons	1 49	1 59
"D"—Timothy hay	1¼ tons	5 04	7 01
"D"—Timothy seed	205 pounds	0 01	0 03

Considerable loss has resulted to grain crop in this district, due to smut: as oats is the main grain crop, the greatest loss was caused by the loose smut of oats. Ten per cent losses were common and fields were observed affected to the extent of twenty per cent. Several methods of control have been recommended. However, for the loose smut of oats the formalin treatment has been found simple, efficient and cheap. The method of treatment followed on this Station and found satisfactory was to sprinkle the oats with a solution made up in the proportion of one pound or pint of formalin in forty gallons of water; this is sufficient to treat forty bushels of oats. As the grain was being sprinkled it was shoveled about until all the kernels were thoroughly moistened. After this it was put into a pile and covered with a canvas for three hours. It was then spread out in a thin layer and allowed to dry. When seeding cannot be done at once, the seed oats should be stirred occasionally to prevent them from sprouting. If seeded before thoroughly dry, the grain drill should be set to sow one-quarter of a bushel heavier, to allow for the swelling of the kernels due to moistening. It is important to treat the sacks and dry them before refilling, and to wash out the seeder box before sowing, in order to destroy any smut spores which may be present.

Since starting the work of the Illustration Stations in the Aubrey district, one hundred and twelve tons of clover seed have been grown within a radius of ten miles of the station, valued at eighty thousand dollars.

Another feature of the work is the heavy vs. light seeding of timothy and clover seed. From reports received, the heavy seeding undoubtedly gives the heavier crops.

BASSIN DU LIEVRE, HULL COUNTY—*Operator, Edward Brady.*

The soil at this Station is a heavy, hard clay. Seeding started on May 4 on field " D ". This field was seeded with Banner oats at the rate of two and a half bushels per acre, along with eight pounds of red clover, two pounds alsike and ten pounds of timothy.

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

FOUR-YEAR ROTATION

Field	Yield per acre	Standard cost	Actual cost
		$ cts.	$ cts.
"A"—Clover hay, 1st cut	½ ton	8 85	12 35
Clover seed	91 pounds	. 06	09
"B"—Corn fodder	12 tons	2 20	2 67
Corn, ensilage	12 tons	3 21	3 65
Turnips	14 tons	4 96	4 70
"C"—Timothy hay	1½ tons	4 61	7 14
"D"—Oats and seeded (Banner)	46½ bush.	26	34

It will be noted that the crop of clover on field " A " was very light; this was caused by the poor stand of clover at the beginning of June, due to the drought of 1921. At this time the field looked more like a timothy than a clover field. However, there was a heavy undergrowth of clover which gave promise for a red clover seed crop if cut early. Accordingly, field " A " was cut for hay on June 19. The second crop was cut on September 15 for clover seed. In order to get a seed crop of red clover, the first crop should be cut in June, or to be exact, when the second growth starts at the base of the plants. Care has to be taken to cut high enough not to destroy these secondary shoots. This will give the second crop of clover the best opportunity to develop sufficiently to mature seed.

CAMPBELLS BAY, PONTIAC COUNTRY—*Operator, W. J. Hayes and Son.*

The regular four-year rotation has not as yet been fully established at this farm as this is only the second year that it has been in operation. Spring opened up quite early and conditions throughout the summer were quite favourable for crop growth.

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

FOUR-YEAR ROTATION

Field	Yield per acre	Standard cost	Actual cost
		$ cts.	$ cts.
"A"—Oats, Banner seed	56 bush.	0 24	0 27
"B"—Clover hay, 1st cut	1,100 pounds	7 71	8 67
Clover seed, 2nd cut	75 pounds	0 06	0 07
"C"—Clover hay	1 ton	7 13	8 18
"D"—Corn, fodder	16½ tons	1 65	1 72
Corn, ensilage	16½ tons	2 01	2 08
Mangels	8 tons	11 27	11 40
Turnips	12 tons	8 70	8 78

The soil at this Station is of a sandy loam nature. Couch grass has been very troublesome to control. To eradicate the couch, considerable cultivation was necessary, which had an influence in increasing the cost of growing the hoed crop on field " D ". Although the cost of growing the crop is high, after-harvest

cultivation has been very effective in destroying this weed and the field is now in fine shape to be seeded to oats, grasses and clovers. This practice has proven popular in this district, and sixty acres have been treated similarly on adjoining farms this fall in preparation for hoed crops in 1923. Clover seed was grown for the first time on this station with fair success.

LAC A LA TORTUE, CHAMPLAIN COUNTY—*Operator, S. T. Lupien.*

The soil at this Station is typical of the surrounding district, being a light sand, almost void of humus. The spring opened up early and seeding commenced on May 4. Field "C" was seeded to Banner oats at the rate of two bushels per acre along with seven pounds of red clover, three pounds of alsike clover and ten pounds of timothy. Growth was very slow throughout May and June, due to wet, cold weather. The hoed crops planted on field "B" consisted of corn, turnips and potatoes. The turnip crop suffered a great deal from cut-worm which greatly reduced the stand and crop yield.

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

FOUR-YEAR ROTATION

Field	Yield per acre	Standard cost	Actual cost
		$ cts.	$ cts.
"A"—Clover hay	2 tons	3 57	4 16
"B"—Corn	8¾ tons	2 16	2 40
Turnips	8¼ tons	3 10	3 30
Potatoes	138 bush.	26	28
"C"—Oats, Banner, seeded	27½ bush.	41	56
"D"—Timothy hay	1,400 pounds	10 90	12 60
EXTRA FIELD			
"E"—Timothy hay	1 ton	$8 15	$9 45
Corn, fodder	6 tons	2 46	2 72
Corn, ensilage	6 tons	2 71	2 98

Extra fields have been added this year, in preparation for a three-year rotation with sweet clover. Sweet clover will be used in this rotation with the view of improving the texture and fertility of the soil which is of sandy loam nature.

LACHUTE, ARGENTEUIL COUNTY—*Operator, S. E. Smith.*

The spring opened up later than usual in this district. The first seeding was done on May 2. At this time, field "A" was seeded with Banner oats at the rate of two and a half bushels per acre, along with eight pounds of red clover, two pounds of alsike and ten pounds of timothy per acre. The oats, as at all the Illustration Stations, were treated with a formalin solution to control smut. The clover seed was also treated with nitro-culture.

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

FOUR-YEAR ROTATION

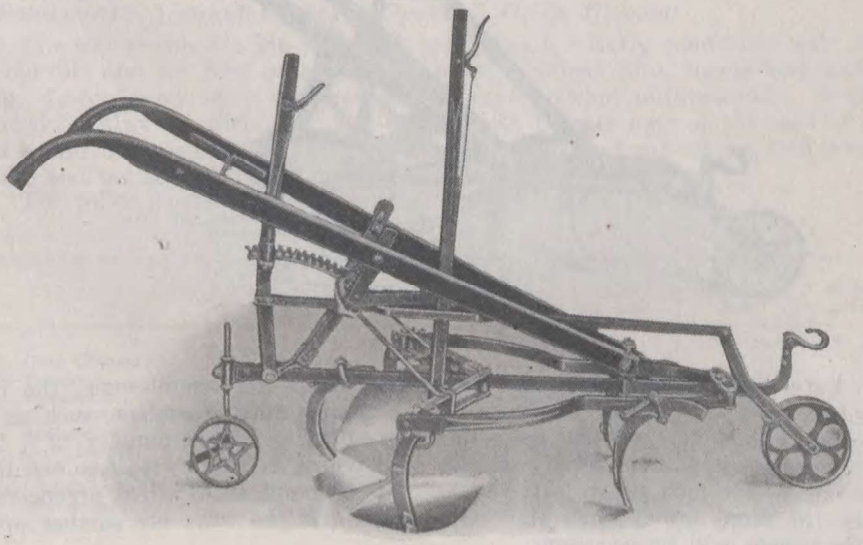
Field	Yield per acre	Standard cost	Actual cost
		$ cts.	$ cts.
"A"—Oats, Banner, and seeded	40½ bush.	0 23	0 41
"B"—Corn, fodder	12¾ tons	2 07	2 64
Corn, ensilage	12¼ tons	2 36	2 93
"C"—Pasture			
"D"—Oats (Banner)	47 bush.	0 19	0 35

It will be noted that both fields "A" and "D" were in oats this year. This was due to the grass and clover in field "D" winter-killing, otherwise the crop would have been clover hay. On May 6 oats were seeded alone, and on August 3, a forty-seven bushel crop was harvested. The land was then ploughed as soon as possible and seeded to fall rye and sweet clover on September 5. This crop will be utilized for hay or pastured in 1923. Both crops looked very promising in the fall.

In the hoed crop section, two varieties of corn were planted; the Leaming slightly outyielded the Bailey. Both varieties produced an excellent quality of silage.

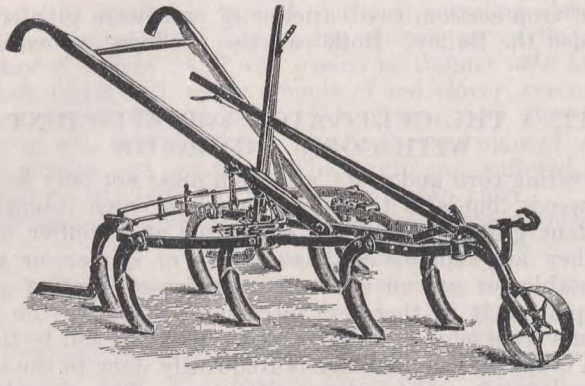
ADJUSTING THE CULTIVATOR FOR EFFICIENT WORK WITH CORN AND ROOTS

When cultivating corn and roots, attention must not only be directed to the destruction of weeds, but also to the promotion of such conditions as will be conducive to plant growth. As the cultivator and scuffler comes from the manufacturer they are supplied with a variety of shovels or points, none of which are adaptable for use on all crops, nor for cultivating at all stages in the life of the plant. It is, therefore, necessary, to adjust the points and the set of these points from time to time, so as to work the soil to the best advantages. With such crops as corn, damage is frequently done to the crop by cutting off many of the lateral rootlets when cultivating. This damage is most general when the plants are quite small, at which time root development is very rapid. In this connection it might be well to consider the corn plant, as the habit of root development is the best guide as to the type of cultivation that should be be carried on. When a kernel of corn is planted, a temporary root first forms, and regardless of whether the kernel is planted two or three inches deep, the secondary or permanent root forms from the temporary one about an inch from the surface of the soil. Thus we find that the roots and rootlets form very close to the surface of the soil. As they extend laterally at first, care has to be taken not to cultivate too deep, close to the plants, or these feeders will be cut off and growth delayed. Hence it is highly important to have the cultivator and the points on the cultivator adjusted in such a way that the danger of damage in this respect will be reduced to a minimum.



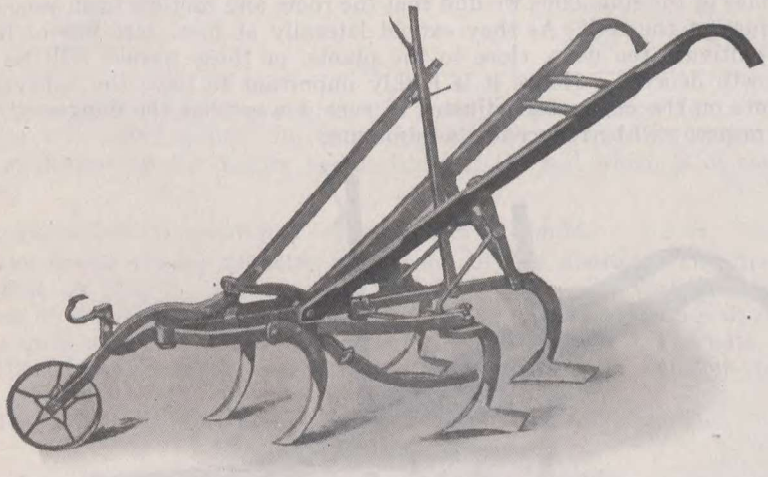
Cut Number "1".

We have found, on the Illustration Stations, that for the first cultivation the short moldboard does excellent work when set with the forward points up, as in the above cut, number "1." When these are set with the forward point of the moldboard up, the ground is partly skimmed close to the plant, and as the distance from the plants increases, the depth of cultivation gradually increases. Thus the young roots are left undisturbed.



Cut Number "2".

With such crops as corn these moldboards are only suitable for the first cultivation and should be replaced by the oval points as in cut number "2," as they are more effective in checking the growth of young weeds and in bringing roots such as couch grass roots to the surface of the soil. These should also be set to work shallow and should be used frequently.



Cut Number "3".

Later cultivation, especially, when the weeds are troublesome, the oval points should be replaced for those with a greater cutting surface, such as the sweeps, or duck feet as they are sometimes called, as in cut number "3." The arrangements it will be noted, are two oval points in front with two ten inch, and one twelve inch sweep in the rear. This is found an excellent arrangement when the crops are in rows thirty-six inches. If the rows are farther apart, wider sweeps will be necessary.

When the area devoted to inter-tilled crops such as corn is large, the two rowed cultivator will, undoubtedly, be used instead of the scuffler. On these also the adjustments are indicated and the points can be arranged as mentioned for the scuffler.

L'ASSOMPTION, L'ASSOMPTION COUNTY—*Operator, Joseph Papin.*

Early spring conditions were very favourable for seeding operations. Oats on field "B" were seeded on May 13. The date of planting the hoed crops ranged from May 17 to the 22nd. The weather was cold and wet up to the last week in June.

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

FOUR-YEAR ROTATION

Field	Yield acre per	Standard cost	Actual cost
		$ cts.	$ cts.
"A"—Clover, 1st cut	1¼ tons	3 53	5 00
Clover seed			
"B"—Oats (Banner)	54 bush.	24	33
"C"—Corn, fodder	14½ tons	1 34	1 62
Corn, ensilage	14½ tons	1 58	1 86
Turnips	11 tons	7 60	7 97
Mangels	8½ tons	9 12	9 60
"D"—Timothy hay	1⅞ tons	4 23	6 53

The corn and roots suffered considerably, due to the cold, wet weather during May and June. The land was so wet that it was impossible to do the cultivating at the proper time. This necessitated considerable extra cultivation and made thinning much more difficult. Thinning is probably the most expensive operation in connection with growing roots and it frequently proves more expensive and laborious than it should. Roots should always be hoed at least once after thinning, whether there are weeds or not, as it pulverizes the soil between the plants and gives the usual benefits of cultivation. Three varieties of corn were grown on this station; namely, Leaming, Golden Glow, and Early Bailey. All three varieties gave very similar yields and produced a good quality of silage.

PAPINEAUVILLE, LABELLE COUNTY—*Operator, Ovilla Clement.*

The soil at this Station is a light, sandy loam. Early conditions were very favourable and the first promise was for an excellent corn, turnip and mangel crop. Later heavy rains rendered conditions somewhat unfavourable. Seeding started on May 2. Field "A" was seeded with Banner oats at the rate of two and a half bushels per acre, along with eight pounds of red clover, two pounds alsike and ten pounds of timothy.

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

FOUR-YEAR ROTATION

Field	Yield per acre	Standard cost	Actual cost
		$ cts.	$ cts.
"A"—Oats (Banner)	44 bush.	0 24	0 32
"B"—Turnips	41 tons	3 92	5 03
Mangels	7 tons	6 95	9 52
Sunflowers, fodder	18 tons	1 94	2 41
Sunflowers, ensilage	18 tons	2 90	3 37
Corn, fodder	10¾ tons	2 81	3 46
Corn, ensilage	10¾ tons	3 52	4 16
"C"—Clover hay, 2 cuts	2¾ tons	5 11	6 56
Clover seed	150 pounds	06	09
"D"—Clover hay, 2 cuts	4 tons	2 81	3 40

Two fields, namely, "C" and "D," were in clover hay this year; each field was cut twice. Field "C" was first cut for hay and the second for seed. Field "D" was cut twice for hay. It will be noted that both corn and sunflowers were ensiled on this station. While the yields of sunflowers were higher than corn, they were more troublesome to harvest. In a district such as this, where corn does so well, there seems no advantage in using sunflowers for silage. The sunflowers were planted in drills thirty-six inches apart, and the plants were thinned to six inches apart in the rows.

ST. CASIMIR, PORTNEUF COUNTY—*Operator, Eloi St. Germain.*

Clovers and grasses came through the winter in very good condition. The first planting done on the Station was an acre of mangels on May 16. It was not possible to seed the oats until May 24. The heavy rains on June 21 and 22 flooded the field and it was feared that the hoed crops would suffer to a greater extent than they did. After these rains considerable tillage was necessary to restore the soil to the usual condition.

It will be noted in the undermentioned table that part of field "B" was cut twice for hay, the other portion was also cut twice. The first cutting was taken as hay and the second for clover seed.

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

FOUR-YEAR ROTATION

Field	Yield per acre	Standard cost	Actual cost
		$ cts.	$ cts.
"A"—Timothy hay	2 tons	3 38	4 80
"B"—Clover hay, 2 cuts	2¼ tons	3 29	4 60
Clover, 1st cut	1,100 pounds	8 60	11 00
Clover, seed	47 bush.	04¼	07¼
"C"—Oats (Banner)	55⅓ bush.	20	26
"D"—Corn	18¾ tons	1 68	1 86
Mangels	20 tons	2 32	2 46
Turnips	18¾ tons	2 65	2 81
Potatoes	147 bush.	39	40

The growing of hoed crops such as corn, turnips and mangels is of the greatest importance, in this district where so much livestock is being kept. The above table shows that all of these crops can be profitably grown here. All of field "D" was after-harvest cultivated and manured in the spring at the rate of eighteen tons per acre. By so doing, the land was freed from weeds and the physical condition of the soil made such that, on the application of the manure, the best possible growing conditions were afforded these crops. In conjunction with this, the growing of clover aids materially in improving the physical conditions of this heavy clay soil. Grasses and clovers are seeded with the oats at the rate of twenty pounds per acre, made up of a mixture of eight pounds red clover, two pounds alsike and ten pounds of timothy.

ST. CLET, SOULANGE COUNTY—*Operator, Louis Besner.*

Excellent success has been obtained in clover and red clover seed growing since the commencement of the work in this district three years ago. The crop came through the winter in good condition and looked promising early in the season. However, on May 12, clover was completely killed out due to a heavy frost. This spring injury left both fields "B" and "C" in timothy hay. Part of field "C" was cut for hay, the remainder of the field was left for timothy seed.

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

FOUR-YEAR ROTATION

Field	Yield per acre	Standard cost	Actual cost
		$ cts.	$ cts.
"A"—Corn, fodder	13¾ tons	1 56	1 97
Corn, ensilage	13¾ tons	1 86	2 28
Potatoes	186⅔ bush.	0 23	0 25
"B"—Timothy hay	⅔ ton	8 07	13 23
"C"—First year hay	1 ton	7 27	11 40
Timothy seed	100 pounds	0 07	0 11
"D"—Oats, Banner and seeded	40 bush.	0 34	0 45

Field "D" was seeded with Banner oats on May 13 at the rate of two and a half bushels per acre, along with eight pounds of red clover, two pounds of alsike and ten pounds of timothy. The oats were treated with a formalin solution which was very effective in controlling smut. The growing of clover seed has been quite successful in this country. Since starting the Illustration Station work the operator has purchased a clover huller.

ST. BRIGIDE, IBERVILLE COUNTY—*Operator, Alphonse Goineau.*

The soil at this station is a heavy clay, typical of a large area in this country. Such soils are liable to bake, thus it is important to cultivate properly and at the right time. The four-year rotation which has been established here is proving very satisfactory from a yield and cost of production standpoint.

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

FOUR-YEAR ROTATION

Field	Yield per acre	Standard cost	Actual cost
		$ cts.	$ cts.
"A"—Clover hay, 1st cut	1 ton	4 50	6 14
Clover, seed	103 pounds	0 04	0 06
"B"—Corn, fodder	13½ tons	1 63	1 89
Corn, ensilage	13½ tons	2 00	2 29
Turnips	22 tons	1 62	1 91
Mangels	15 tons	3 27	3 70
"C"—Oats and seeded, Banner	51 bush.	0 23	0 31
"D"—1st year, hay	1½ tons	5 97	8 74

Seeding commenced on field "C" on May 18. Mangels were planted on May 12, with corn and turnips on the 27th and 29th respectively. Three varieties of corn were planted, namely, Leaming, Golden Glow and Bailey; they yielded in the order given. Sunflowers gave a yield of twenty-three tons per acre. This field was after-harvest cultivated, and manured at the rate of fourteen tons per acre. When thinning turnips and mangels, the ordinary hoe was used, but required certain alterations; first, the neck was straightened so that the handle would be at right angles to the blade. This allows the operator to pull and push out the undesirable plants; secondly, the top and sides of the blade were cut off making the ends about four inches wide, and forming four square corners. Both ends should be sharpened as well as the blade. The square corners are essential to separate the plants when thinning. Thirdly, a longer handle was put

on the hoe so that the operator could walk between the first and second row from the one he was thinning. By so doing he could see under the small leaves and separate the plants better than when working directly over them. Thinning should be done when the plants are one and a half inches high.

ST. CONSTANT, LAPRAIRIE COUNTY—*Operator, Roch Boule.*

This is the second year that this Station has been in operation, hence the regular rotation is only in the course of establishment. The dry season of 1921 quite seriously affected this heavy clay soil and has resulted in a lower yield of clover hay than had been expected.

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

FOUR-YEAR ROTATION

Field	Yield per acre	Standard cost	Actual cost
		$ cts.	$ cts.
"A"—Clover hay	1¼ tons	4 41	7 52
"B"—Clover hay	1¼ tons	4 41	7 52
"C"—Oats (Banner) seeded	39 bush.	0 29	0 41
"D"—Corn	8¾ tons	3 30	3 77
Mangels	12¾ tons	4 71	5 00
Turnips	3½ tons	10 22	11 45

In a district such as this, where the growing of corn and mangels is not general, the above results should be encouraging, in view of the somewhat unfavourable season in this locality. Two varieties of corn were planted; the Leaming outyielded Longfellow by a small margin. Field "C" was seeded on May 15 to Banner oats at the rate of two and a quarter bushels per acre along with eight pounds red clover, two pounds of alsike and ten pounds of timothy per acre. A portion of the field was seeded with clover treated with nitro-culture, the remainder of the field with untreated seed. A decidedly better growth of clover could be noted this fall on the portion seeded with the treated seed.

ST. ETIENNE DES GRES, ST. MAURICE COUNTY—*Operator, T. Bournival.*

The soils of the district and at the Station are of a light sandy nature, almost void of humus. Hence the aim in the rotation work here is shallow working the soil and frequent light top dressings of manure to build up the soil to a higher state of production. In 1921 field "A" was seeded to grasses and clover, but because of the continued drought, a satisfactory yield was not obtained. In view of this, it was ploughed up and seeded to fall rye and cut for hay.

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

FOUR-YEAR ROTATION

Field	Yield per acre	Standard cost	Actual cost
		$ cts.	$ cts.
"A"—Fall rye hay	1½ tons	10 10	10 43
"B"—Potatoes	125 bush.	0 25	0 25
Corn	6¾ tons	2 83	2 88
Turnips	¾ tons	5 71	5 78
"C"—Timothy hay	½ ton	11 12	12 18
"D"—Oats and seeded	22 bush.	0 61	0 64

It will be noted that the cost of production is somewhat high due to low yields. Attacks of cutworms and grasshoppers were in no small measure responsible for such low yields. Cutworms did so much damage that it was necessary to re-seed the corn and turnips. The damage done by grasshoppers proved so serious that it was necessary to put out poisoned bait. The mixture used consisted of: Paris green, 2 pounds; bran, 20 pounds; molasses, ½ gallon; lemons, ½ dozen.

ST. JULIE, VERCHERES COUNTY—*Operator, Leonidas Hebert.*

The soil on this Station is a heavy clay. The spring was backward and no seeding was possible until May 11. It will be noted that the hoed crop did very well. It was produced on a two-year-old sod which had been after-harvest cultivated and manured at the rate of ten tons per acre. By so doing, the hoed crop receives the fertilizing value of the decayed clover roots and the residual free nitrogen which they had added to the soil.

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

FOUR-YEAR ROTATION

Field	Yield per acre	Standard cost	Actual cost
		$ cts.	$ cts.
"A"—Corn	17½ tons	.....	.....
Turnips	16¼ tons	1 52	1 60
Mangels	24 tons	1 55	1 65
"B"—Timothy hay	1⅔ tons	5 30	7 09
"C"—Oats, Banner	55 bush.	0 19	0 27
"D"—Clover hay	1½ tons	7 05	9 14

Three varieties of corn were planted at this Station, namely, Leaming, Wisconsin No. 7 and Golden Glow, and yielded in the order as given.

ST. SIMON, BAGOT COUNTY—*Operator, Donat Rivard.*

This is the second year that this Station has been in operation. During this time a four-year rotation has been fairly well established. Seeding started at this Station on May 13. In seeding field "A" and "C", Banner oats were sown at the rate of two and a half bushels per acre, along with eight pounds red clover, two pounds of alsike and ten pounds of timothy. It will be noted that the yields were very similar on these two fields. Both fields were well prepared. Field "A" was in hoed crop in 1921 and "C" was after-harvest cultivated.

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

FOUR-YEAR ROTATION

Field	Yield per acre	Standard cost	Actual cost
		$ cts.	$ cts.
"A"—Oats, Banner, seeded	45 bush.	0 23	0 33
"B"—Clover hay	1,333 pounds	10 42	16 61
"C"—Oats, Banner, seeded	50 bush.	0 31	0 40
"D"—Mangels	17 tons	3 44	3 68
Turnips	22½ tons	1 64	1 82
Corn, fodder	13 tons	1 99	2 32
Corn, ensilage	13 tons	2 39	2 72

The hoed crops did exceptionally well on this station, the land was after-harvest cultivated, and manured at the rate of thirteen tons per acre. Mangels and turnips were planted on May 16 and corn on May 27. Three varieties of corn were planted, namely, Leaming, Bailey, Longfellow, and yielded in the order given. Sunflowers yielded twelve and a half tons per acre in comparison with thirteen tons of corn.

ST. JEROME, TERREBONNE COUNTY, *Operator, Wilfrid Guay.*

The soil at this Station is very variable, ranging from loam and sandy loam to light sand. This is the second year that this Station has been in operation, hence the regular rotation has not been definitely established. It will be noted

Sunflowers, roots and corn were economically grown on the station at St. Jerome.

that fields "C" and "D" were in clover hay this year. The spring season opened up late in this district. Seeding did not commence until May 23. Field "B" was seeded to Banner oats at the rate of two and a quarter bushels per acre, along with eight pounds of red clover, two pounds of alsike and ten pounds of timothy.

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

Field	Yield per acre	Standard cost	Actual cost
		$ cts.	$ cts.
"A"—Corn	17 tons	1 80	2 04
Mangels	13½ tons	3 34	3 64
Turnips	21 tons	2 29	2 48
"B"—Oats, Banner, seeded	30⅛ bush.	0 42	0 57
"C"—Clover hay	2 tons	3 87	5 93
"D"—Clover hay, 2 cuts	2 tons	4 04	6 10
Clover, 1st cut	1 ton	5 08	7 14
Clover seed	204 pounds	0 03¾	0 04¾

It will be noted that the corn, turnips and mangels were produced quite economically at this Station. This land was prepared by practising after-harvest cultivation; twelve tons barnyard manure was applied per acre. After

thorough spring cultivation, the land was drilled up, making the drills thirty inches apart. The roller was passed over these drills to firm them prior to seeding. Mangels were seeded at the rate of six pounds per acre and turnips at four pounds per acre. Thinning was done with a sharp, four-cornered hoe; this also helped to keep down the cost of production. Mr. Guay took first prize on this turnip field in the standing field crop competition.

STANBRIDGE EAST, MISSISQUOI COUNTY—*Operator, C. S. Moore.*

The work on this Station has now been under way for the past seven years. Two four-year rotations were established at the comencement of the work, one was tile-drained, the other only surface-drained. Two facts have been outstanding from the first, namely, that seeding is always possible much earlier and that yields are always higher on the tile-drained rotation. It is generally accepted that the heavy clay soils suffer from lack of drainage. This case demonstrates that the same may be true with sandy loam soils.

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

FOUR-YEAR ROTATION

ON TILE DRAINED LAND

Field	Yield per acre	Standard cost	Actual cost
		$ cts.	$ cts.
"A"—Potatoes	145 bush.	0 37	0 38
Turnips	21½ tons	2 98	3 16
Mangels	12 tons	3 55	3 63
Corn dry fodder	4¾ tons	5 07	5 32
"B"—Timothy hay	1½ tons	4 05	4 68
"C"—Clover hay, 2 cuts	2¾ tons	3 55	3 97
"D"—Oats, Banner	43½ bush.	0 28	0 32
ON UNDRAINED LAND			
"E"—Oats, Banner	36 bush.	0 41	0 45
"F"—Clover hay, 2 cuts	1¾ tons	5 33	5 95
"G"—Timothy hay	1½ tons	5 21	5 97
"H"—Corn, dry fodder	2½ tons	10 16	10 67

In the above tables it should be noted that the corn yields are recorded as dry fodder. In conjunction with the regular rotation work, fertilizer demonstrations were started this year on the hoed crops. The whole hoed crop field was first manured at the rate of fifteen tons per acre. On a portion of the potato section four hundred pounds of acid phosphate was added, with an increased yield of nineteen bushels per acre. On the mangel section five-hundred pounds of 4-8-4 commercial fertilizer was applied per acre. The fertilized section gave an increased yield of six tons per acre.

ST. TITE, CHAMPLAIN COUNTY—*Operator, N. P. Delisle.*

The spring season opened later than usual in this district on account of the cold weather. Field "A" was seeded to Banner oats at the rate of two and a half bushels per acre, along with eight pounds of red clover, two pounds of alsike clover and ten pounds of timothy.

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

FOUR-YEAR ROTATION

Field	Yield per acre	Standard cost	Actual cost
		$ cts.	$ cts.
"A"—Oats, Banner, seeded	28½ bush.	0 35	0 53
"B"—Clover hay	1½ tons	6 07	8 80
"C"—Mixed grain	16 bush.	0 87	1 20
Buckwheat	10½ bush.	1 33	1 72
Potatoes	220 bush.	0 45	0 46
"D"—Timothy hay	1⅞ tons	5 90	8 75

Crops suffered a great deal in this district because of unfavourable weather and wireworms. Turnips and corn were seeded on a portion of field " C "; this failed to germinate and the land was disced up and re-seeded with buckwheat on June 27. A portion of field " C " was seeded to peas, oats and vetches, as the whole of the field could not be utilized in corn or turnips. This makes a good crop to sow in place of a hoed crop, as it is taken off the land early, allowing it to be cultivated prior to fall ploughing in order to destroy any weeds which may infest the soil.

REPORT OF THE ILLUSTRATION STATIONS FOR EASTERN QUEBEC

J. H. TREMBLAY, SUPERVISOR OF ILLUSTRATION STATIONS

BAIE ST. PAUL, CHARLEVOIX COUNTY—*Operator, Johnny Larouche.*

As this is a new Station, a great deal of the work carried on this year was of a preparatory nature. The land has all been subdivided and a four-year rotation is in the course of preparation. The soil on this Station and in the surrounding district is a heavy clay loam. Mustard and couch grass is very prevalent in this locality. Seeding started on the Station on May 11.

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

FOUR-YEAR ROTATION

Field	Yield per acre	Standard cost	Actual cost
		$ cts.	$ cts.
"A"—Turnips	7¾ tons	9 29	11 13
Mangels	7 tons	9 25	10 96
Corn	9 tons	6 77	8 05
"B"—Oats, Banner, seeded	68 bush.	0 28	0 43
"C"—Wheat, Red Fife, seeded	19 bush.	0 89	1 27
"D"—Mixed grain	47 bush.	0 34	0 50

It should be noted that field " A " was not after-harvest cultivated when preparing this field for turnips, mangels and corn. Considerable hand labour was thus necessary to control weeds and this had a decided influence on increasing the cost of production.

ISLE VERTE, TEMISCOUATA COUNTY—*Operator, Alfred Michaud*

Owing to errors in carrying out certain details in connection with the work, it is impossible to report on the cost of production this year.

JONQUIERE, CHICOUTIMI COUNTY—*Operator, Emile Brassard*

This is the second year that illustration work has been carried on in this district. A four-year rotation was established on this station. Quite large herds of dairy cattle are kept, and it appears that greater attention should be given to the growing of such crops as corn, turnips and mangels in order to provide variety in the ration.

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

FOUR-YEAR ROTATION

Field	Yield per acre	Standard cost	Actual cost
"A"—Clover hay	1¾ tons	$4.10 per ton	$9.74 per ton
"B"—Wheat, Huron, seeded	8½ bush.	1.89 per bush.	3.15 per bush.
"C"—Turnips	29½ tons	2.77 per ton	3.31 per ton
Mangels	9 tons	6.70 per ton	8.28 per ton
Potatoes	102 bush.	0.51 per bush.	0.62 per bush.
"D"—Mixed grain for hay	2¼ tons	7.13 per ton	11.89 per ton

The wheat gave quite a low yield; this is in part due to the damage done to the crop in the early season by cutworms. The cost of production, it will be noted, is quite high. In this connection it should be borne in mind that land values are much higher in this district than in most others, so that allowing six per cent interest on two hundred dollars which is the valuation of land per acre in the district, a charge of twelve dollars per acre for rent of land has to be made against each crop.

Turnip growing has only started in this district, and considering the results on the station, they give promise of being a profitable crop.

MATANE, GASPE COUNTY—*Operator, Michael Philibert*

The soil at this Station is a very light sand, seriously lacking in humus. Hence it will take some time to get the soil worked into a satisfactory state of fertility. By following a systematic rotation, by practising after-harvest cultivation, by growing clover and by making frequent light applications of manure, it is hoped to build up this soil to a higher state of fertility.

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

FOUR-YEAR ROTATION

Field	Yield per acre	Standard cost	Actual cost
"A"—Turnips	19¾ tons	$2.71 per ton	$2.76 per ton
Potatoes	132 bush.	0.33 per bush.	0.34 per bush.
"B"—Peas, oats and vetches	1 ton	16.74 per ton	18.49 per ton
"C"—Oats, Banner, seeded	39½ bush.	0.58 per bush.	0.67 per bush.
"D"—Oats, Banner, seeded	39½ bush.	0.58 per bush.	0.67 per bush.

Field "C" and "D" were seeded on May 29 with Banner oats at the rate of two and a quarter bushels per acre, along with six pounds of red clover, four pounds of alsike and ten pounds of timothy. Ordinarily, field "B" would have been in timothy hay, but as this is a new station, the rotation is not fully established as yet. This field was seeded to peas, oats and vetches and cut for hay. By cutting the crop for hay it was possible to cultivate the land in order to control couch grass and get the land in good shape for the hoed crop in 1923.

MONTMAGNY, MONTMAGNY COUNTY—*Operator, G. F. Fournier*

The work under way at this Station is progressing favourably, and systematic farm practices are proving effective in steadily increasing crop yields. Seeding started on May 5 and harvesting on August 22. Field "B" was seeded with Banner oats at the rate of two and a half bushels per acre, along with eight

Pure seed grain is one of the objects of the Illustration Station work.

pounds of red clover, two pounds of alsike, and ten pounds of timothy. A very nice, uniform field of oats developed and the grass and clover went into the winter in excellent condition.

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

FOUR-YEAR ROTATION

Field	Yield per acre	Standard cost	Actual cost
"A"—Clover hay, 2 cuts	3¾ tons	$2.98 per ton	$3.25 per ton
Clover seed	50 pounds	0.27 per pound	0.29 per pound
"B"—Oats, Banner, seeded	75 bush.	0.21 per bush.	0.24 per bush.
"C"—Corn	17½ tons	2.07 per ton	2.06 per ton
Sunflowers	19 tons	2.01 per ton	1.94 per ton
Turnips	28 tons	1.75 per ton	1.64 per ton
"D"—Timothy hay	2 tons	4.07 per ton	4.72 per ton

For the past three years, corn has been grown on this station and this year with greater success than in the past. Sunflowers also did very well. As a result, Mr. Fournier erected a silo during the summer in which he stored thirty-six tons of silage. This is one of the first silos in the district and will certainly be of interest to the farmers in the neighbourhood.

PASPEBIAC WEST, BONAVENTURE COUNTY—*Operator, E. M. Legallais*

During the growing season the weather conditions were quite favourable. The oats was sown on May 16, and harvested on August 31, yielding sixty-one bushels per acre.

Sunflowers were grown for the first time at this station; the yield obtained was even higher than expected. The preparation of the land for the sunflowers was similar to that for the corn, namely, after-harvest cultivation. They were planted in rows thirty-six inches apart, at the rate of from ten to twelve pounds per acre. To procure a good quality of silage, a distance of six inches between plants in the rows seems satisfactory. While the best time to cut sunflowers has not been definitely decided, tests go to show that they should be cut when in the dough stage.

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

FOUR-YEAR ROTATION

Field	Yield per acre	Standard cost	Actual cost
"A"—Oats, Banner, seeded	61 bush.	$0.19 per bush.	$0.23 per bush.
"B"—Potatoes	320 bush.	0.13 per bush.	0.13 per bush.
Turnips	12½ tons	2.71 per ton	2.54 per ton
Corn	.....	.....	.....
Sunflowers	.....	.....	.....
"C"—Timothy hay	2 tons	4.01 per ton	4.47 per ton
"D"—Clover hay	2½ tons	3.64 per ton	4.01 per ton

There was such a nice stand of clover in field "D" that it was intended to take a hay crop off early and allow the second to go for seed. Unfavourable weather just at the time that the first cut should have been taken off delayed cutting to such an extent that it was impossible to harvest a seed crop.

PETIT CASCAPEDIA, BONAVENTURE COUNTY—*Operator, J. B. Cyr*

The weather conditions were very favourable during the growing season. The clover on field "A" did exceptionally well. The portion of the field on which wheat was used as a nurse crop gave a decidedly stronger growth than the portion where oats were used.

It will be noted that a portion of field "B" was seeded to Banner oats this year and the remainder to Huron wheat. Wheat was seeded on May 9 and oats on the 15th along with the wheat and oats was seeded eight pounds of red clover, two pounds of alsike and ten pounds of timothy.

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

Field	Yield per acre	Standard cost	Actual cost
"A"—Clover hay	1½ tons	$5.49 per ton	$6.33 per ton
Clover seed	81 pounds	0.14 per pound	0.14 per pound
"B"—Oats, Banner, seeded	75 bush.	0.14 per bush.	0.23½ per bush.
Wheat, Huron, seeded	25 bush.	0.58 per bush.	0.86 per bush.
"C"—Potatoes	250 bush.	0.21 per bush.	0.24 per bush.
Turnips	31½ tons	1.65 per ton	1.87 per ton
Corn	22½ tons	2.14 per ton	2.48 per ton
"D"—Timothy hay	2 tons	4.17 per ton	4.94 per ton

When attempting to produce red clover seed in this district, it is highly important to take the hay crop off early in order to give the second crop time to mature seed. As an indication of about the time that it is necessary to cut the first crop in this district, it will be interesting to note that field "A" was cut on June 12 for hay and the seed crop was harvested on September 30. While the red clover seed was produced at quite a moderate cost, it should also be borne in mind that such seed is especially valuable inasmuch as it has proven to be hardy under the climatic conditions common to the district.

PLESSISVILLE, MEGANTIC COUNTY, *Operator, Eudore Jutras.*

Illustration work started in this district in 1920; since that time considerable improvement has been effected on the illustration fields and on other farms in the neighbourhood. Fields "C" and "D" were badly infested with couch grass; these have been thoroughly cleaned. Field "C" was in oats this year; the seeding was done on May 15, at the rate of two and three quarter bushels per acre, along with eight pounds of red clover, two pounds of alsike and ten pounds of timothy. The oats were harvested on August 17, and yielded sixty-seven bushels per acre.

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

FOUR-YEAR ROTATION

Field	Yield per acre	Standard cost	Actual cost
"A"—Timothy hay	1 ton	$7.22 per ton	$7.29 per ton
"B"—Clover hay	1¾ tons	5.55 per ton	6.00 per ton
"C"—Oats, Banner, seeded	67 bush.	0.22½ per bush.	0.35 per bush.
"D"—Corn	19 tons	1.72 per ton	1.54 per ton
Turnips	24 tons	2.67 per ton	2.52 per ton
Mangels	12 tons	2.40 per ton	2.26 per ton

The method of cultivation followed to clear the fields of couch grass was as follows: The portion of the rotation intended for hoed crop was first ploughed shallow as soon as the hay was taken off, early in July. It was harrowed frequently to keep down green growth and to bring the couch grass roots to the surface. The field was raked three times and the couch grass roots were piled up and burned. Prior to freezing up, the land was again ploughed in the same direction as before and as deep as the nature of the soil would allow.

This is an excellent corn growing district, the average yield for the past three years at the Station being eighteen and three-quarter tons per acre. Few silos have been erected to date. Undoubtedly, farmers could benefit by giving greater attention to the growing of these crops.

ST. JEAN CHRYSOSTOME, LEVIS COUNTY—*Operator, Theophile Cantin.*

An Illustration Station was established at this place in 1921, hence fields "A" and "C" have not been worked according to the systems followed on these Stations. A great deal of preparatory work has been done such as removing stone piles and renewing fences. The soil at this Station is of a heavy clay loam nature and responds admirably to thorough cultivation. The cost of production is higher here than at many other Stations due to the high rental charge of ten dollars and eighty cents per acre. This rental fee is derived by charging six per cent interest on land value, which at this place is one-hundred and eighty dollars per acre.

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

FOUR-YEAR ROTATION

Field	Yield per acre	Standard cost	Actaul cost
"A"—Timothy hay	1¼ tons	$6.40 per ton	$13.95 per ton
"B"—Oats, Banner, seeded	36⅔ bush.	0.29 per bush.	0.64 per bush.
Wheat, Huron, seeded	20½ bush.	0.96 per bush.	1.54 per bush.
"C"—Mixed hay	1 ton	7.47 per ton	16.51 per ton
"D"—Corn	12 tons	3.87 per ton	4.80 per ton
Sunflowers	15 tons	3.18 per ton	3.90 per ton
Turnips	31 tons	2.12 per ton	2.53 per ton
Mangels	20 tons	2.01 per ton	2.56 per ton

PIERREVILLE, YAMASKA COUNTY—*Operator, Simon Traversy.*

The four-year rotation was slightly changed at this Station during the season. Originally, field "A" would have been in clover hay, however, because of the presence of couch grass in the spring, the field was ploughed up, half of it was sown with peas, oats and vetches, and the other half with oats for seed. The whole field was seeded with ten pounds timothy, eight pounds of red clover and two pounds of alsike per acre.

In the fall, the clover catch was considerably better on the portion of the field which was in peas, oats and vetches. The reason of this was that the green feed being taken off the field earlier than the oats, gave a better chance to the young clover plants to develop and left a heavier aftermath which was a better protection against the hard winter.

The grain at this Station was sown on May 23 at the rate of two and a half bushels per acre and harvested on August 11.

The period of continuous rain experienced during the three first weeks of June is the cause of the comparatively low yields for corn and sunflowers.

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

FOUR-YEAR ROTATION

Field	Yield per acre	Standard cost	Actual cost
"A"—Peas, oats and vetches	1¾ tons	$11.50 per ton	$14.35 per ton
Oats, Banner, seeded	30¾ bush.	0.46 per bush.	0.62 per bush.
"B"—Timothy hay	1¾ tons	3.95 per ton	6.25 per ton
"C"—Sunflowers	12 tons	2.08 per ton	2.41 per ton
Corn	8 tons	3.21 per ton	3.73 per ton
"D"—Oats, Banner, seeded	30¾ bush.	0.56 per bush.	0.72 per bush.

ST. JULES, BEAUCE COUNTY—*Operator, Georges Cliche.*

Oats on field "D" was sown on May 13, and harvested on August 26. Farmers of this district are very interested in all the operations that are followed on this Illustration Station. As results, a turnip contest was organized at this place during the year, under the supervision of the Division of Illustration Stations, and three-hundred and forty-four tons of turnips were produced as a result.

The following table will illustrate the proportion in which turnip growing has increased since the establishment of a Station at this place:—

Year	Number of farmers growing turnips	Tons produced
1920	2	10
1921	4	31
1922	24	344

Splendid results have also been obtained with after-harvest cultivation. This practice was introduced on the Illustration Station, and it may also be interesting to note the progress that has been made on the introduction of this practice.

Year	Acres Summer-fallowed	Number of farms
1920	2	1
1921	4	2
1922	26	14

It will be noticed that in 1920 just two acres were summer cultivated, this was on the Illustration Station. In 1921 another farmer made his first trial. In 1922 an enquiry was made to find out the number of farmers that were practising after-harvest cultivation and the results are as mentioned above.

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

FOUR-YEAR ROTATION

Field	Yield per acre	Standard cost	Actual cost
"A"—Clover hay	1½ tons	$5.27 per ton	$5.11 per ton
"B"—Timothy hay	1¼ tons	5.12 per ton	5.12 per ton
"C"—Corn	14 tons	4.23 per ton	3.48 per ton
Turnips	15 tons	3.66 per ton	2.95 per ton
Mangels	5 tons	8.18 per ton	6.86 per ton
"D"—Oats, Banner, seeded	25 bush.	0.50 per bush.	0.46 per bush.

One of the fields in the turnip contest at St. Jules, Beauce County

ST. FABIEN, RIMOUSKI COUNTY—*Operator, Joseph Albert.*

Early spring conditions were quite favourable for crop growth. However, dry weather followed which delayed their development. During the summer, considerable ditching was found necessary and, in this connection, the main ditch between field "B" and "C" and between field "C" and "D" were deepened. A great deal of work was done in hauling and removing stone piles from field "A". This not only added to the appearance of the field but also tended to greater efficiency in working the land.

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

FOUR-YEAR ROTATION

Field	Yield per acre	Standard cost	Actual cost
"A"—Pasture			
"B"—Clover hay	1¼ tons	$6.27 per ton	$5.35 per ton
"C"—Oats, Banner, seeded	43 bush.	0.31 per bush.	0.25 per bush.
"D"—Corn	1½ tons	2.57 per ton	1.95 per ton
Potatoes	124 bush.	0.53 per bush.	0.41 per bush.
Turnips	20 tons	2.71 per ton	1.88 per ton

Field "A" was in pasture until July 1. At this time the field was ploughed shallow and kept cultivated frequently until fall. Prior to freezing up it was again ploughed as deep as the nature of the soil would allow. This practice brought so many couch grass roots to the surface that they were raked off and burned. This field is for hoed crops in 1923. The oats on field "C" was seeded on May 20 and harvested on August 23. The grass and clovers came on nicely and went into the winter in excellent condition. Prior to seeding, the clover seed was treated with nitro-culture in order to introduce nitrogen-gathering organisms into the soil.

ST. LEONARD JUNCTION, NICOLET COUNTY—*Operator, Henry Carter*

This is the second year that this Station has been in operation. The yields obtained on the different fields are quite satisfactory, although they certainly would have been higher had it not been for the heavy rainfall in the beginning of June, which covered all the fields with water.

Variety tests were made with two varieties of corn, Golden Glow and Leaming, giving the advantage to the Golden Glow, also for the Perfection and Hall Westbury swedes, giving the advantage to the Perfection variety.

Another interesting point was the illustration on two different rates of seeding grass and clover seeds. One part of the fields was sown in 1921 at the rate of twelve pounds of seed per acre and the other at the rate of twenty pounds per acre made up in the following proportion: eight pounds red clover, two pounds alsike, ten pounds timothy. This year the twenty-pound seeding yielded thirty-three per cent more hay than the twelve-pound seeding, which is even more than the general rate of seeding in this district.

The oats were seeded on May 16 and harvested on August 24.

It was at this station that the mangels gave the highest yield and yet there was quite a difference in the yield of turnips over mangels. Mangels have been grown on almost every Illustration Station in this section and have proved to be rather difficult to grow satisfactorily because the soil generally is not rich enough.

For the present the turnips are more advantageous on account of their higher yields.

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

FOUR-YEAR ROTATION

Field	Yield per acre	Standard cost	Actual cost
"A"—Timothy hay	1¼ tons	$4.28 per ton	$6.36 per ton
"B"—Corn (Leaming)	14 tons	3.53 per ton	3.90 per ton
Corn (Golden Glow)	15 tons	3.29 per ton	3.78 per ton
Swedes (Perfection)	29 tons	1.39 per ton	1.38 per ton
Swedes (Halls' Westbury)	26 tons	1.56 per ton	1.54 per ton
Mangels (Yellow Intermediate)	16 tons	2.05 per ton	2.07 per ton
"C"—Clover hay, 2 cuts	2½ tons	3.88 per ton	5.29 per ton
"D"—Oats, Banner, seeded	40 bush.	0.42 per bush.	0.62 per bush.

WEEDON, WOLFE COUNTY—*Operator, Joseph Allard*

This is the third year that this Station has been in operation. Oats were seeded on field "B" on May 9 at the rate of two bushels per acre, along with eight pounds of red clover, two pounds of alsike and ten pounds of timothy, and harvested on August 28. The oats were treated with a formalin solution to control smut and the clover seed was inoculated with nitro-culture prior to seeding. The clover came on well and went into the winter in excellent condition.

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

FOUR-YEAR ROTATION

Field	Yield per acre	Standard cost	Actual cost
"A"—Clover hay (1st cut)	1¼ tons	$7.00 per ton	$6.05 per ton
Clover seed (2nd cut.)	40 pounds	0.21 per pound	0.20 per pound
"B"—Oats, Banner, seeded	55 bush.	0.30 per bush.	0.31 per bush.
"C"—Corn	12½ tons	4.51 per ton	3.83 per ton
Turnips	36 tons	1.72 per ton	1.42 per ton
"D"—Timothy hay	1¾ tons	4.66 per ton	3.92 per ton

Corn is not generally grown in this district, but from the results obtained on the illustration field for the past three years, it would appear that corn growing could be taken up in this district with profit. The corn crop suffered somewhat this spring from heavy rains, with the result that this year's yield was somewhat lower than that for last season. Clover seed was again harvested this year from the second crop of red clover.

REPORT OF THE ILLUSTRATION STATIONS FOR NEW BRUNSWICK

T. G. HETHERINGTON, SUPERVISOR OF ILLUSTRATION STATIONS

This concludes the third year of Illustration Station work in New Brunswick. Ten Stations were in operation this season, but one of these was abandoned in the fall of 1922. Eight new stations have been authorized, in districts that were not being served by other stations. These, in part, have been surveyed and initial operations either begun in the fall of 1922, or will begin in the spring of 1923. The new stations vary in size from eight to twenty acres.

The need for Illustration Station work is very pronounced. Considering the fact that the attention of the farmer in many districts is divided between agriculture and the lumbering industry, or between agriculture and fishing, it is not surprising that, in some districts, up-to-date methods are not always in evidence. The establishing of crop rotations, the introduction of after-harvest cultivation and better cultural methods generally, the use of lime, a wider range of crops and better seed, all are tending to leave their impress in the districts surrounding the Illustration Stations. The introduction of silage crops, such as corn and sunflowers, although in some cases on a small scale, is tending to awaken an interest in these crops and incidentally in the silo, for which there is a pressing need more particularly in the dairy sections of the province. The comparison between disease free potatoes and native stock planted side by side has been very striking, and is indicative of what can be accomplished along this line with other crops. A combination of good and efficient methods tends to increase crop yields at lowered costs, thus increasing the farmer's net income.

The following plan illustrates the principal rotation that is being established on the Illustration Stations of the province:—

FOUR-YEAR ROTATION

—	Field A	Field B	Field C	Field D
1st year	Hoed crop	Grain and seeded to timothy and clovers.	Clover hay	Timothy hay or pasture.
2nd year	Grain and seeded to timothy clover	Clover hay	Timothy hay or pasture	Hoed crop
3rd year	Clover hay	Timothy hay or pasture	Hoed crop	Grain and seeded to timothy and clovers
4th year	Timothy hay or pasture	Hoed crop	Grain and seeded to timothy and clovers	Clover hay

NOTE 1.—The field devoted to hoed crop may, in some cases, be partially used for a crop such as oats, peas and vetches, providing it is top dressed or fertilized similar to the part that is used for hoed crops such as turnips or corn and also providing the crop is removed early and after-harvest cultivation carried on.

NOTE II.—The standard grass seed mixture used is ten pounds timothy and ten pounds red clover except in low-lying, damp land, when ten pounds of timothy, five pounds of red clover and five pounds of alsike is the mixture used.

NOTE III.—In two instances a three-year rotation has been established. One of these is located in a district where potato growing is carried on very extensively. The other three-year rotation is in a district where wild mustard is very prevalent.

In preparing the report for the province, cost of production is based on the undermentioned prices. The yields of corn, roots and hay are in most cases estimated. In determining standard cost, all Illustration Stations in the province are figured on the same cost basis. In this way, the cost of production is comparable one Station with another. Actual cost is based on the prevailing price of labour, value of land, etc., at each Station.

	Standard cost	Actual cost
Rent of land per acre	$2 00	Based on 6% valuation
Use of machinery per acre	0 75	$0 75
Manual labour per hour	0 20	
Horse labour per hour	0 10	Based on price prevalent in the district
Tractor labour per hour	0 75	
Threshing (wheat)	0 07	
(oats)	0 04	
Manure per ton	1 00	1 00
Fertilizer per ton	40 00	40 00
Cost of Seed—		
Oats per bushel	1 00	1 25
Wheat per bushel	1 50	2 00
Longfellow corn per bushel	1 50	1 95
Leaming corn per bushel	1 50	1 65
Barley and Golden Glow	1 50	1 65
Sunflowers per pound	0 08	0 08
Turnips per pound	0 60	0 50
Mangels per pound	0 40	0 40
Sweet clover per pound	0 10	0 10½
Alsike per pound	0 20	0 21
Red clover per pound	0 25	0 28
Timothy per pound	0 11	0 11

In computing the costs of the crops on the rotation, that of manure and fertilizer were distributed as follows:—

50 per cent of cost to hoed crop.
32 per cent of cost to grain.
12 per cent of cost to clover.
·06 per cent of cost to timothy.

The grain crop is credited with straw at $6 per ton.

ADAMSVILLE, KENT COUNTY, N.B.—*Operator, J. A. Arsenault.*

This Station has been in operation for two seasons and a four-year rotation is nicely established on eight acres. The remaining sixteen acres, which is very representative of the country round about, is land which has been burned over repeatedly and in consequence is almost devoid of humus and is likewise lacking in fertility. Soil of this nature is admirably adapted for fertilizer demonstrations, and a portion not yet included in the rotation will be utilized for this purpose in the programme for the 1923 season. This demonstration will embrace a complete fertilizer, an incomplete fertilizer without potash, a basic slag experiment at two different rates of application, a barnyard manure experiment and a check.

The yields and costs for the season of 1922 follow:—

FOUR-YEAR ROTATION

Field	Yield per acre	Standard cost	Actual cost
Field "A"—Oats and seeded	61½ bush.	$0.24 per bush.	$0.25 per bush.
Field "B"—Potatoes	237½ bush.	0.25½ per bush.	0.25½ per bush.
Field "C"—Clover	1¾ tons	8.00 per ton	7.46 per ton
Field "D"—Clover	1¾ tons	8.00 per ton	7.46 per ton

The crops on the rotation land were exceptionally good as compared with those produced in the vicinity and can be attributed to good cultural methods. This applies more particularly to the potatoes and grain crops and the yield of clover (heavy for that section) to the previous application of lime at the rate of two tons per acre.

The cost of producing potatoes as shown in the above table is significant. The operator had a yield of approximately one hundred barrels per acre at a total cost of $53.43 per acre or 53 cents per barrel. This yield was secured in what was considered only a fair potato season, without the use of any commercial fertilizer and with only twelve tons of barnyard manure per acre. Credit for results such as this may be attributed largely to the thorough preparation of the soil for the crop, which began the year previous, immediately the hay crop had been removed.

APOHAQUI, KINGS COUNTY, N.B.—*Operator, J. H. Manchester.*

This Station is located in a highly specialized dairy section, where every effort is directed toward securing maximum yields of succulent crops such as corn or sunflower silage, clover hay, turnips, mangels and as much grain as possible, to reduce the amount of concentrates purchased. The operator has a silo and in this regard is unique among the New Brunswick Illustration Station operators. He has regularly ensiled corn for a period covering fourteen years. Each year from four to five acres is grown. Such varieties as Longfellow, Golden Glow, White Cap Yellow Dent, Improved Bailey and latterly Twitchell's Pride have been grown. The operator considers, on the average, Longfellow is the best variety to grow although in good corn years the Dent varieties are best as they will cob just as well and yield a greater tonnage. Twitchell's Pride, in average seasons, will mature but does not produce the tonnage. It should be well adapted for the more northern sections of the province. The operator announced success in raising silage. This may be attributed to the following three factors: (*a*) liberal dressings of barnyard manure (*b*) thorough preparation of the soil, (*c*) constant cultivation during the early growing season. He does not possess any location or soil advantage that is not available to any other farmer in the district.

A late freshet submerged the potato field, with the result that the crop was completely rotted. The same freshet washed away a portion of the oat crop, hence reliable data cannot be secured for these two fields.

The following table gives the results of the seasons work:—

FOUR-YEAR ROTATION

Field	Yield per acre	Standard cost	Actual cost
Field "A"—O.P.V.	8 tons	$2.87 per ton	$3.00 per ton
Field "B"—Sunflowers	38·3 tons	1.79 per ton	1.72 per ton
Field "C"—Corn—			
Longfellow yield, 29·9 tons	29·51 tons	1.34 per ton	1.36 per ton
Golden Glow yield, 31·07 tons			
Imp. Bailey yield, 30·9 tons			
Twitchell's Pride, 32·66 tons			

The following items go to make up the cost of producing and ensiling an acre of sunflowers:—

Rent of land (based on a valuation of $50 at 6%)	$ 3 00
Use of machinery	2 75
Seed, 12 pounds at 8c	0 96
Manure, 15 tons, at $1 (½ charged to sunflowers)	7 50
Manual labour, at 15c. per hour	30 75
Horse labour, at 15c. per hour	18 90
Gas and oil silo filling	2 00
Total	$65 86

Maximum yields, such as listed above for corn and sunflowers, cannot be secured by the average farmer and it is doubtful, year in and year out, if more

Corn can be grown in this district if early varieties are planted. This crop of corn and mangles were grown by Mr. Taylor, Lower Derby.

than twelve to fifteen tons can be secured. Other things being equal, farm profits increase with crop increases, and it should be the aim of every farmer to produce annually increasing yields.

BOUNDARY CREEK, WESTMORELAND COUNTY, *N.B.—Operator, Manzer D. Steeves.*

On account of incomplete records no report could be prepared for this Station.

LOWER DERBY, NORTHUMBERLAND COUNTY, N.B.—*Operator, W. R. Taylor.*

This Station is well established along the line of a standard four-year rotation. The crops, including potatoes, Twitchell's Pride corn, mangels, turnips, clover hay and Banner oats, presented an exceptionally creditable display, and the value of the Illustration Station to the community was greatly enhanced due to the uniform neatness and cleanliness prevailing on the Station. The demonstration plots of sunflowers and Twitchell's Pride corn should do a lot toward popularizing these two crops, in a district where neither of them had been previously grown. The operator exhibited potatoes at the Toronto Royal Show in November, 1922, and won first prize on the sample submitted; he also secured first prize in the New Brunswick standing Field Crop Competition for Northumberland county on his field of Banner oats. The various crops produced satisfactory yields although costs were in some cases excessive, and perhaps could have been reduced by more efficient methods.

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

FOUR-YEAR ROTATION

Field	Yield per acre	Standard cost	Actual cost
Field "A"—Oats	60 bush.	$0.31½ per bush.	$0.37½ per bush.
Field "B"—Clover hay	2½ tons	3.30 per ton	3.93 per ton
Field "C"—Timothy hay	2½ tons	2.92 per ton	3.47 per ton
Field "D"—			
(*a*) Potatoes	240 bush.	0.32 per bush.	0.34 per bush.
(*b*) Turnips	1,051 bush.	0.09½ per bush.	0.09⅝ per bush.
(*c*) Twitchell's Pride corn	10½ tons	5.50 per ton	6.05 per ton
(*d*) Mangels	960 bush.	0.09½ per bush.	0.10½ per bush.

SWEET CLOVER

The dry season of 1921, bringing with it scanty pastures in the summer and a feed shortage the succeeding winter, was responsible for a considerable interest in sweet clover. Very little, if any, had been grown in the province up to this time and in the spring of 1922 it was decided to try out sweet clover at several of the Illustration Stations. The 1922 season was moderately damp and all grain crops grew luxuriantly, especially the oats, and in the bulk of cases oats were used as the nurse crop to seed with the sweet clover. At Apohaqui, sweet clover was sown without any nurse crop. The soil was of a gravelly nature and in a low state of fertility. Notwithstanding these conditions, a good stand developed which was pastured in the late summer and was greatly relished by the cattle. At Derby Junction sweet clover was sown with oats as a nurse crop. The field was in moderately good heart and a heavy stand of grain and sweet clover developed. Lime had been applied the previous year and undoubtedly this accounts for the good growth of sweet clover. Late rains and heavy winds lodged the grain and finally it was cut with the mowing machine and very close to the ground, with the result that fall growth was light. This treatment will probably interfere with next season's crop. With the exception of the above two, the other experiments with sweet clover were failures.

Sweet clover apparently requires plenty of air and sunshine. The good yields secured in the Upper Provinces in 1921 and about which so much appeared in the agricultural press, were due, in no small measure, to the fact that the grain crop only partially germinated and the straw was short and scanty. The dry weather did not affect the sweet clover in the same way on account of its deep rooting system.

It is doubtful if sweet clover can be seriously considered as a hay crop. Great difficulty would be experienced in curing it under the damp and cool climatic conditions of New Brunswick. The first crop could be cured for hay if sown with oats. Thus, in the process of curing, the oat straw would absorb part of the moisture. If sweet clover can be grown successfully in the province, it should function as a pasture crop or as a crop to plough under for soil improvement purposes.

In 1923, experiments will be conducted with sweet clover to determine, in so far as possible, the factors that are favourable or unfavourable to its growth. Sweet clover will be sown without a nurse crop, with barley as a nurse crop and with oats as a nurse crop, in the same field, and thus, with similar conditions prevailing throughout, it should be possible to determine the reason for any variation in its behaviour.

LITTLE SHEMOGUE, WESTMORELAND COUNTY—*Operator, Arthur Oulton.*

This Station has been in operation one year and the rotation is well under way. The soil is naturally quite heavy, moderately fertile but fairly late. It is, however, characteristic of the district and while maximum crops are produced in warm, dry seasons, only mediocre crops are produced in wet seasons. It is questionable if a complete system of drainage could be profitably installed, due to the high cost of the work, also to location disadvantages such as long distance from market. It would seem however that soil conditions could be materially improved by (*a*) the incorporation of very coarse strawy manure, which would have a tendency to warm the soil and open it up as well (*b*) by setting the land up well when ploughed in the fall so that frost action would be complete (*c*) by ploughing narrow lands (*d*) by deep, narrow, dead furrows (*e*) by a systematic rotation of crops and (*f*) by opening up all surface water courses with a furrow in the fall of the year.

The soil at this Station is not adapted to potato growing and the experiment comparing certified and home-grown seed did not produce the results that were evident in the comparison at the Perth Station. Next year's hoed crop will be made up with turnips, mangels, corn and sunflowers and some of the O.P.V. mixture.

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

FOUR-YEAR ROTATION

Field	Yield per acre	Standard cost	Actual cost
Field "A"—Oats	53 bush.	$0.32 per bush.	$0.31 per bush.
Field "B"—Oats	53 bush.	0.32 per bush.	0.31 per bush.
Field "C"—Hoed crop—			
Potatoes	200 bush.	0.40 per bush.	0.39½ per bush.
Turnips	500 bush.	0.13½ per bush.	0.13¼ per bush.
Field "D"—Part old meadow and costs not kept until next year.			

Fields "A" and "B" were each seeded to timothy and clover in the spring of 1922 and there is every indication that a good stand of clover will be secured next season.

MILLVILLE, YORK COUNTY, N.B.—*Operator, Patrick Graham.*

The crops grown on this Station, with the exception of the turnips, made a creditable show. The potatoes yielded approximately one hundred barrels per acre, a much higher yield than common for the year and the district. This comparatively good yield was secured by using commercial fertilizer at one

half the rate commonly applied in the district for potatoes. The fertilizer bill was thus materially reduced by the after-harvest cultivation of the preceding year. The potatoes were sufficiently free from disease to be certificated. The operator did considerable work on field "C," removing stone piles and boulders, which will add to the appearance of the station and make for more reliable acreage yields and greatly facilitate the farm operations. Considerable alsike showed on this field in the spring but was heaved out by frost action and to remedy this the land was compacted with a roller, thus re-establishing root connection with the soil, and a nice stand developed for hay. This practice should be adopted in all cases where conditions permit. It is worthy of note that a better crop of clover was secured on that portion of field "D" that was seeded with wheat as a nurse crop than with the part where oats were used.

From general observation it would appear that oats are used as the nurse crop on about ninety per cent of the land seeded. Barley offers possibilities as a good nurse crop and as a useful farm crop, more particularly in combination with other grains for hog feeding. At the Fredericton Station, over a period of years barley has averaged twenty-eight bushels per acre and the Charlottetown No. 80 variety has yielded an average of thirty-eight bushels for the two years it has been grown. In comparing the yield of barley with oats it must be kept in mind that the legal weight of barley is forty-eight pounds per bushel as compared with thirty-four pounds for oats. The scanty foliage of barley allows a maximum of sunshine and air to reach the young clover and timothy plants as compared with a smothering effect in the case of a good crop of oats. Further, barley is one of the first crops sown in the spring. It matures early and is removed in good season, thus enabling the seedlings to develop and be in better condition to withstand the winter.

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

FOUR-YEAR ROTATION

Field	Average yield	Standard cost	Actual cost
Field "A"—Oats	50 bush.	$0.29½ per bush.	$0.38½ per bush.
Field "B"—Potatoes	230 bush.	0.24½ per bush.	0.24½ per bush.
Field "C"—Timothy	1½ tons	4.58 per ton	3.85 per ton
Field "D"—Clover	1⅝ tons	6.40 per ton	5.90 per ton

NOTE.—In the "actual" cost of producing oats in the above table a charge of fifteen cents per bushel is charged for threshing, which accounts for the high figure of thirty-eight and a half cents per bushel for producing oats.

HAYMAKING

Late haymaking, as practised in the eastern provinces, has many serious disadvantages, the most outstanding being (*a*) the palatability is reduced. For instance, timothy and clover, if kept too long, become dry, coarse and colourless and much of the hay is pushed aside by the live stock. An inferior quality of hay may be partially palatable if properly made in good season; (*b*) over-mature hay loses its colour and for selling purposes this is a drawback; (*c*) late haymaking allows weed seeds to ripen and be broad casted; (*d*) the tonnage of the succeeding crop is reduced. This latter feature was well demonstrated at the Woodstock Station last year. One half of the field containing a second crop of clover was cut very late for seed, the balance of the field did not have sufficient clover to warrant cutting and was left. The next year that portion of the field left uncut

produced an extraordinary good crop of clover and timothy hay, whereas the portion that had been cut late yielded but an indifferent crop of timothy alone. The cause of the results noted above is that the uncut clover partly reseeded itself and at the same time a mat of grass covered the roots of the plants, and harboured snow during the winter thus protecting the crop. Directly opposite conditions prevailed on the cut field.

PERTH JUNCTION, VICTORIA COUNTY, N.B.—*Operator R. J. McCrae*

This Station has been in operation two years. The merits of certified seed potatoes as compared with uncertified stock were clearly demonstrated at this Station. Five rows of certified seed were planted in the same field with the local stock. During the summer the certified potatoes developed good, strong tops of a dark, healthy colour, whereas the uncertified potatoes plainly were not as vigourous nor as healthy looking. The difference was so apparent that it attracted more than passing attention from the farmers in the district. At harvest time a further and more important feature was revealed in favour of the certified seed, viz., a yield of thirteen barrels from the five rows of certified seed as compared with a yield of five barrels from five rows of the uncertified or native stock.

On field"A," three varieties of wheat were grown, namely, Marquis, Huron and Red Fife. The Marquis matured about one week ahead of the Huron and the Huron about ten days ahead of the Red Fife. The yields of the three varieties were as follow: Marquis, sixteen bushels per acre; Huron, twelve bushels, and Red Fife, six bushels. The Red Fife germinated very poorly, giving not more than a fifty per cent stand, its yield was resultingly reduced and cannot be compared with the Marquis or Huron, which had a full stand.

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

FOUR-YEAR ROTATION

Field	Average yield	Standard cost	Actual cost
Field "A"—Wheat	12⅔ bush.	$1.34 per bush.	$1.53¼ per bush.
Field "B"—Clover	1¼ tons	5.06 per ton	4.95 per ton
Field "C"—Clover	2¼ tons	3.77 per ton	3.68 per ton
Field "D"—Potatoes	148 bush.	0.39 per bush.	0.39 per bush.

In comparing the cost of producing clover on fields "B" and "C," it is worthy of note that field "C," with an increased yield over field "B," had an appreciably reduced tonnage cost. This emphasizes the relation that exists between high yields and lowered costs.

THE GROWING OF SILAGE CROPS IN NEW BRUNSWICK

The oats, peas and vetch mixture (or as it is sometimes called O.P.V.), clover, corn and sunflowers have all been tried out in the province as silage crops, the success achieved in producing the different crops depending a lot on the knowledge and skill of the farmer. At the present time considerable interest is being taken in both corn and sunflowers. The prevailing opinion seems to be that sunflower silage is not as palatable nor as good a feed as corn silage. However at the Fredericton Experimental Station sunflower silage proved equally as good as corn silage when fed to dairy cattle for milk production.

Taking the province as a whole, possibly sunflowers are the surer crop. Corn, however, furnishes the bulk of the silage crop at the Fredericton Experimental Station and at the Apohaqui Illustration Station, and will continue to be the popular silage crop in the more southern portion of the province. How far north the higher yielding varieties will grow is not known at the present

time. More definite information will be available next year, as different varieties of corn will be tried out at the Illustration Stations in the more northern sections of the province. This year a good sample of Twitchell's Pride corn was produced at the Derby Junction Station near Chatham and a fair sample was grown at the Perth Station.

Corn is a more useful crop than sunflowers as it can be fed in the summer direct from the field, thus keeping up the milk flow through a dry pasture season.

At Perth Jct. four rows of commercial seed produced 5 barrels of potatoes, an equal area grown from certified or (disease free) seed produced 13 barrels.

It is doubtful if sunflowers could be used to the same advantage, although at the Perth Station sunflowers were cut in the field and fed to dairy cattle. This would not hold true if farmers arranged to grow more so that an amount of silage would be available for summer feeding.

The comparatively low yields of both clover and the oats, peas and vetch mixture make it doubtful if they will ever attain any great popularity.

Summing up, one might safely say that the heavier yielding varieties of corn, such as Longfellow, Golden Glow, Bailey and White Cap Yellow Dent, can be and are being grown successfully in the southern parts of the province. Just how far north they can be grown at present is unknown. An early maturing variety such as Twitchell's Pride can be grown in any part of the province and yields of from eight to twelve tons can be relied on. From our present information it would seem that sunflowers can be successfully grown in all parts of the province

Seasonal and soil conditions possibly affect corn to a greater extent than sunflowers. Warm, dry seasons and warm, dry soils are very favourable to corn growth. Cool, damp seasons and cold, late soils are extremely unfavourable.

REXTON, KENT COUNTY, *N.B.—Operator, J. G. Dickinson.*

This Station is situated in a general farming section. There are large areas in the surrounding country that seem to be more or less cropped out. The live stock holdings are small compared with the acreage of cleared land. Mussel mud is available in this section and clover flourishes where it has been applied. It would not be difficult to build up the live stock holdings if mussel mud was used to a greater extent. The operator of this station does not maintain sufficient live stock to provide manure for the entire hoed crop section of the rotation. In 1922 a large part of the hoed crop section was sown with

Banner oats. This is not good practice as succeeding crops do not have the same chance as those grown on the manured land. In 1923 the portion of the hoed crop land not planted to hoed crops will be sown with the O.P.V. mixture and cut early for hay and an effort will be made to secure manure or fertilizer to give it a light dressing. Finally, immediately after the crop is removed, the land will be cultivated as much as possible until late fall, when it will be ploughed.

The following table shows the results of the work at this Station for the year:—

FOUR-YEAR ROTATION

Field	Average yield	Standard cost	Actual cost
Field "A"—Potatoes	200 bush.	$0.49½ per bush.	$0.44½ per bush.
Turnips	375 bush.	0.22½ per bush.	0.18½ per bush.
Oats	37 bush.	0.32½ per bush.	0.34½ per bush.
Field "B"—Clover	1⅝ tons	5.95 per ton	5.80 per ton
Field "C"—Wheat	14 bush. per acre	1.09 per bush.	1.34 per bush.
Field "D"—Clover	1½ tons	6.52 per ton	6.42 per ton

WELSFORD, QUEENS COUNTY, N.B.—*Operator, J. L. MacDonald.*

Operations of a preparatory nature were begun at this Station in the spring of 1922. The Station comprises twenty acres of land and this has been divided into four fields of five acres each. The rotation is established now and crop yields and costs will be reckoned for next year, the same as at other Stations.

WOODSTOCK, CARLETON COUNTY, N.B.—*Operator, E. W. Turner.*

This Station is located in the heart of the potato country. The principal problem in this section is to maintain soil fertility and at the same time try to reduce the amount of commercal fertilizer required. The charges for this at the present time encroach very heavily on the returns from the crop. Very little assistance is received at present from live stock in maintaining soil fertility, but the tendency is toward increased live stock holdings. Ploughing down clover offers a partial solution but under a four-year rotation scheme this is not feasible. Successful clover production in the province depends to a considerable extent on liming the soil and this again is dangerous practice on potato land as it induces scab. It is possible that light applications of lime, applied fairly frequently, would materially assist in clover production and not have any bad effects on the potatoes.

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

FOUR-YEAR ROTATION

Field	Average yield	Standard cost	Actual cost
Field "A"—Oats	40 bush.	$0.38 per bush.	$0.41 per bush.
Field "B"—Timothy hay	1 ton	5.93 per ton	6.03 per ton
Field "C"—Timothy hay	½ ton	6.81 per ton	6.91 per ton
Field "D"—Potatoes	109 bush.	0.40½ per bush.	0.40$\frac{7}{8}$ per bush.
Field "E"—Oats	40 bush.	0.35½ per bush.	0.37 per bush.

NOTE.—Field "E" was seeded with sweet clover at the rate of twenty pounds per acre, but indications are that it will be a failure.

SUMMARY

Nine Illustration Stations were in operation last year in the province. These now have well defined rotations established that serve as concrete examples to the farmers of their district. These rotations, if continued and

carried on properly, should gradually demonstrate, through increased yields, the advantages of a rotation. The cultural methods in practice on the stations are, in some cases, being adopted by the farmers surrounding the Stations. This applies more particularly to after-harvest cultivation of sod land in preparation for next year's hoed crop. The method of ploughing leaves much to be desired. Deep, flat ploughing of sod land in the late fall continues to be practised. Ploughing demonstrations on the Illustration Stations would be very useful in correcting some of the defects along this line. In some cases the implements being used are undesirable, for instance, wide-bottomed ploughs are used for both sod and stubble land. Very few cultivators are in use.

The cropping plan, especially as regards variety of crops, can be improved on in this province. The variety of crops planted is limited and the Illustration Stations are rendering a service in this respect. Next year, reports on the benefit of lime will be available, and with eight new Stations functioning, considerable data *re* varieties of silage corn and barley suitable to different sections of the province will be available.

REPORT OF THE ILLUSTRATION STATIONS IN NOVA SCOTIA

F. B. KINSMAN, SUPERVISOR

Because of the dry season of 1921, clover plants were not sufficiently developed to come through the winter in extra strong condition, and, as a result, the yield of clover hay at all stations was light. The harvesting season was unfavourable because of wet weather. During the late summer and early fall the turnip crop suffered from excessive moisture; thus the yields were very much cut down except on light and naturally drained soil. The turnip crop suffered, on all but such soils, from an excess of moisture during the late summer and early fall, which cut down the yield very much. The season favoured the grain crop at all stations and although a considerable number of fields lodged, the yield was, on the whole, satisfactory, and all the operators have seed of a good quality for sale. In some cases much of it has already been sold to farmers living near the various stations.

Treatment of Grain for Smut.—All grain used at the various Stations have been treated with formalin for smut. This in itself has demonstrated in no uncertain way, the value of treating grain for smut. This disease was bad in most sections during the summer and the comparison between the areas with fifty per cent and more of smut on the farms in the various sections, with the grain at the stations having no smut, speaks in no uncertain way. There will be a heavy call for formalin for treating grain next spring. Owners of threshing mills claim they will not thresh grain next fall that has not been treated before seeding. One operator, wishing to put in an area for greenfeed, did not treat the seed and the heads were over fifty per cent diseased.

Potatoes.—The value of planting seed potatoes free from mosaic and leaf-roll has been well demonstrated at the different stations. In every case the operators have had increased yield over the seed stock they were using. These operators think they will have no difficulty in disposing of all the seed they have. The season was unfortunate in that considerable rot developed, particularly on the areas that were heavily fertilized with stable manure. Had the season not been so wet, this loss would not have happened. At Sydney River there was a gain of 281·6 bushels per acre in favour of the seed supplied from Kentville, and at New Glasgow a gain of two hundred and fifty-three bushels.

Limestone, Slag and Nitrate of Soda Illustration.—At a number of the Stations, areas in the grain field were limed and slagged when working the land for seeding, adjoining areas were slagged and limed, and nitrate of soda at the rate of one hundred pounds per acre was applied on areas so treated. The

results given below are interesting in that they show under what condition such applications are likely to prove most profitable. In general it is shown that land, previously in a hoed crop for which manure was used, does not require nitrate of soda, while areas newly broken up respond readily to an application of from one hundred to two hundred pounds of nitrate of soda per acre and give profitable returns for the expenditure. This is because such lands have not sufficient readily available nitrogen to develop a good plant early, consequently poor yields are a result.

The applications of lime and slag are more beneficial to the clover and timothy seeded along with the oats. It is quite evident in all the trials that the stand of clover is better and the growth stronger where the lime and slag have been applied. This form of illustration work is interesting the farmer greatly, and doubtless will aid very materially in showing that lime or slag is necessary if good yields of clover are to be hoped for.

The result of the trials at the various stations is given in the table below:—

OATS—YIELD PER ACRE

Where conducted	Limestone, 2 tons per acre	Slag, ½ ton per acre	Not treated	Limestone, 2 tons per acre. Nitrate of soda, 100 lbs. per acre	Slag, ½ ton per acre. Nitrate of soda, 100 lbs. per acre
	bush.	bush.	bush.	bush.	bush.
Sydney River	42·0	45·0	40·0	56	55·5
New Glasgow	45·2	49·4	45·5	50	53·8
Big Baddeck	40·0	35·0	25·0	50	48·0
Mabou	60·0	60·0	55·0	60	57·5
Yarmouth	42·0	40·0	42·0	37	42·0
Christmas Island	16·0	17·0	10·0	29	40·0

White Sweet Clover.—The illustration work conducted at the various Stations indicates that there is little hope for a stand of this clover without an application of lime to the soil. It is also evident that it is not a poor soil crop, and unless sufficient available plant food is in the soil to give a strong growth the first season, there is little hope for a stand of this clover without winter loss.

It does not seem to have advantages to recommend its use over the common red clover or alsike, as both these clovers do much better for seeding down, and will stand the shade of the grain, should it make a strong growth, much better than will sweet clover.

Sunflower.—In every section the sunflowers have grown well. The yields have varied from fifteen to twenty and a half tons per acre. Sunflowers doubtless will prove to be one of the principal silage crops in parts of Nova Scotia where corn is not generally profitable because of lack of heat to mature it; under cool conditions their growth is much better than corn. They will grow on any kind of soil, respond to good treatment and their growth will be proportionate to the richness of the land. They may be fed green when cut, stooked and fed when dried out, or put in the silo.

Mangels.—Mangels have been grown at all the Stations. Where they were seeded early on well prepared land the stand was good and good crops resulted. Early seeding is of prime importance in the development of the crop.

Corn.—Samples of corn sent to the various Stations made much better growth in every case than had been expected. The yield per acre is less than the sunflowers grown under similar conditions. The yield averaged from ten to fifteen tons per acre.

COST OF PRODUCTION

In determining standard cost, all Illustration Stations in a province are figured on the same basis, in order that cost of production at the various Stations may be compared. The actual cost is that calculated by using the current rate of wages in the locality where Station is located. The following are the rates used in determining costs:—

	Standard cost	Actual cost
Rent of land per acre	$2 00	Based on value of land at 6% interest
Use of machinery per acre	0 75	$0 75
Manual labour per hour	0 20	Based on price prevalent in the district
Horse labour per hour	0 10	
Threshing—		
Wheat per bushel	0 07	
Oats per bushel	0 04	
Manure per ton	1 00	1 00
Cost of Seed—		
Oats per bushel	1 00	1 25
Wheat per bushel	1 50	2 00
Longfellow corn per bushel	1 50	1 95
Sunflowers per pound	0 08	0 08
Turnips per pound	0 50	0 50
Mangels per pound	0 40	0 40
Alsike per pound	0 20	0 21
Red clover per pound	0 25	0 28
Timothy per pound	0 11	0 11

In computing the costs—
50 per cent of cost of manure is charged to hoed crop.
32 per cent of cost of manure is charged to grain and seeded.
12 per cent of cost of manure is charged to clover hay.
.06 per cent of cost of manure is charged to timothy hay.
The following rotation is being carried on in Nova Scotia:—

FOUR-YEAR ROTATION

—	Field "A"	Field "B"	Field "C"	Field "D"
First year	Hoed crops or part mixed crops	Grain and seeded (Clover, 10 pounds, timothy, 10 pounds per acre)	Clover hay	Timothy hay
Second year	Grain and seeded (Clover, 10 pounds, timothy, 10 pounds per acre)	Clover hay	Timothy hay or pasture	Hoed crops
Third year	Clover hay	Timothy hay or pasture	Hoed crops	Grain and seeded (Clover, 10 pounds, timothy, 10 pounds per acre)
Fourth year	Timothy hay or pasture	Hoed crops	Grain and seeded (Clover, 10 pounds, timothy, 10 pounds per acre)	Clover hay

BELLIVEAU COVE, DIGBY COUNTY—*Operator, Adolph Belliveau.*

The regular rotation at this Station consists of six acres of land, the most of which is in a good state of fertility. The season, in this shore district, was so wet that it was about impossible to keep weeds under control, the land being too wet to cultivate. The crops generally were good.

Considerable fish offal is used for fertilizer on the farms adjoining the Bay of Fundy shore. This material was used on the area seeded to turnips. The ground was not sufficiently compacted when seeded, and a period of dry weather following seeding resulted in a very poor germination, not more than one-third of a normal stand being secured, giving a low yield.

The Green Mountain potatoes furnished by the Department made a very strong growth, and an area dug before they were fully matured yielded six hundred bushels per acre. The most of this field was dusted five times with copper dust, using four hundred pounds per acre altogether. The area dusted retained its foliage late into the fall, but evidently some blight organisms which had developed on some of the leaves were carried into the soil by the heavy and almost continuous fall rains and resulted in a complete loss of the crop from rot. The area not dusted went down with blight early, and were also a total loss from rot.

The newly-seeded area which was in oats made a very strong growth and all lodged badly. The illustration fertilizer and lime areas were apparently all alike and, because of being badly lodged, no records were obtained. The limed area, however, in the fall indicated a great gain in favour of lime in the stand and growth of clover, and doubtless this will show up still more in the clover crop next year.

The yield from the various rotation areas and cost of production was as given in the table following:—

FOUR-YEAR ROTATION

Field	Yield per acre	Standard cost	Actual cost
Field "A"—Oats	60 bush.	$0.30 per bush.	$0.35 per bush.
Field "B"—Potatoes	600 bush.	0.21 per bush.	0.23 per bush.
Field "C"—Turnips	400 bush.	0.16 per bush.	0.18 per bush.
Field "D"—Hay	3½ tons	.....	.....

CHRISTMAS ISLAND, CAPE BRETON—*Operator, John A. McNeil.*

This Station, established in the summer of 1921, comprises six acres in rotation work. The land is in a low state of fertility, consisting of old pasture mainly. The turnip crop was light, due principally to the summer being so wet that proper cultivation was not possible, and the roots as well suffered from being in soil too wet for their best development. The yield was five hundred bushels per acre.

The grain-seeded area made excellent growth. The seeding was done May 30. It will be noticed that there was a great difference in the yield on these newly-broken areas without nitrate of slag, as compared with the plot where these were used, the land apparently having very little readily available food material. The season was favourable for grain on such lands, yet the returns were small, there being but seventeen bushels on the slagged areas as compared with forty on the area slagged with one hundred pounds of nitrate of soda added. The difference was very striking, in fact the most outstanding demonstration of the value of one hundred pounds of nitrate of soda per acre on poor lands that we had ever seen.

The clover areas for next year are coming on nicely and the area where nitrate of soda and lime or slag were used are apparently better than other areas in the field.

The acre of Green Mountain potatoes made fair growth, as good as one could expect considering the fertility of the land and were comparatively free from rot.

The yields from the rotation areas were as given below:

FOUR-YEAR ROTATION

Field	Yield per acre	Standard cost	Actual cost
Field "A"—Potatoes	105 bush.	$0.88 per bush.	$0.97 per bush.
Field "B"—Turnips	500 bush.	0.18 per bush.	0.19 per bush.
Field "B"—Oats	30 bush.	0.54 per bush.	0.66 per bush.
Field "C"—Oats and seeded	29·3 bush.	0.74 per bush.	0.86 per bush.
Field "D"—Oats and seeded	24·6 bush.	0.92 per bush.	1.08 per bush.

BIG BADDECK, VICTORIA COUNTY—*Operator, J. A. Kiley.*

The work of seeding was started at this Station on May 12. The turnip crop was almost a failure because of club-root. The similar field of the rotation last season yielded one thousand bushels and no trace of this disease was noticeable. It is difficult to understand how the disease could have been spread to destroy this area so completely. The yield of potatoes was not large and some rot developed after digging. The stock is of good quality.

The oat yield was good on the field that was in hoed crop in 1921. The contrast between this and the field ploughed out of sod in 1921, which yielded twenty-seven bushels per acre is worth noting. It is interesting to notice the difference in cost per bushel of oats from these two fields.

The area seeded to clover this season is showing a good stand and of particular interest are the tests with lime and slag and nitrate of soda. The apparent difference in the plots was very marked and the yields show considerable advantage from their use. The stand of clover is very much better where slag or lime has been used.

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

FOUR-YEAR ROTATION

Field	Yield per acre	Standard cost	Actual cost
Field "A"—Oats	56 bush.	$0.30 per bush.	$0.46 per bush.
Field "B"—Turnips	150 bush.	0.29 per bush.	0.37 per bush.
Field "B"—Potatoes	123 bush.	0.45 per bush.	0.52 per bush.
Field "C"—Oats	27 bush.	0.80 per bush.	0.87 per bush.
Field "D"—Clover hay	1 ton 620 pounds	4.30 per ton	4.40 per ton

HEATHERTON, ANTIGONISH COUNTY—*Operator, D. W. Grant.*

The season was backward, it being the last of May before seeding was possible. The hoed crops came on well during the early part of the season, but the turnips, particularly suffered because of the excessive summer rains, preventing proper cultivation and hoeing, and later checking development because of the ground being too wet for this crop. The potato crop did remarkably well, but, here again, a great loss resulted from rot, the apparently healthy tubers rotting after being dug.

The grain here lodged badly also and records from the illustration fertilizer areas were not obtainable. Records taken from the areas where nitrate of soda, at the rate of one hundred pounds per acre, was applied, show a height growth of seven inches greater than where none was used. The excessive rains, however, lodged the area not fertilized, so that there was no apparent gain from the nitrate, so far as the oat crop was concerned. It was apparent, however, that there was a good clover stand, particularly where the lime and slag were used.

The hay crop was disappointing. The clover made very inferior growth. This was due to the weak growth of 1921, because of the dry season, followed by a winter of more or less freezing and thawing, particularly in the early spring, resulting in a lifting of the small clover plants, many failing to start and those that did start making a weak growth.

A poor pasture which had not been broken for fifty years was seeded to sweet white clover and was a complete failure. There apparently was not sufficient readily available plant food to give the plants the start they required, and by the end of the season but a few plants remained.

The plot on the left received no nitrate of soda, the one on the right had an application of 100 lbs. per acre.

Doubtless the cool and excessively wet summer also had considerable to do with the failure of this crop. It seems that one cannot hope for very satisfactory results on poor land with white sweet clover, particularly unless it has been previously well limed.

The results from the rotation are as follows:—

FOUR-YEAR ROTATION

Field	Yield per acre	Standard cost	Actual cost
Field "A"—Hay	1 ton	$3.87 per ton	$4.14 per ton
Field "B"—Hay	1½ tons	3.77 per ton	4.93 per ton
Field "C"—Turnips	466 bush.	0.13 per bush.	0.15 per bush.
Field "D"—Oats	52 bush.	0.37 per bush.	0.56 per bush.

MABOU, INVERNESS COUNTY—*Operator, Duncan Boyle.*

The spring weather at this Station was backward, seeding starting on the 2nd of June. The turnip crop was disappointing because of the wet weather during the summer. The roots were uniform and of good quality. Potatoes made a very strong growth, but, unfortunately, were all lost from rot. When dug, the proportion of rot was large and those stored later had to be gone over, and very few sound tubers were obtained. Where large amounts of nitrogenous manures were used, rot invariably followed, the wet late summer and fall favouring the development of rot under such soil conditions.

The grain yields were heavy, although much difficulty was experienced in getting the crop properly cured after cutting. The land being in a good state of fertility, no striking difference in yield was noticeable in the areas treated with nitrate of soda and slag compared with those not treated.

The clover crop was good and the areas seeded this season are a good stand with good prospects for next year.

The results from the rotation area are as follows:—

FOUR-YEAR ROTATION

Field	Yield per acre	Standard cost	Actual cost
Field "A"—Hay	2¼ tons	$4.67 per ton	$5.10 per ton
Field "B"—Turnips	435 bush.	0.16 per bush.	0.18 per bush.
Field "C"—Oats	53 bush.	0.45 per bush.	0.57 per bush.
Field "D"—Hay	2 tons	4.91 per ton	5.44 per ton

MIDDLE RIVER, VICTORIA COUNTY—*Operator, Forbes McDonald.*

The seeding at this Station was late, the first being done on June 3. The turnip crop was light on the rotation area, due largely to the heavy rains. No certified Green Mountain potato seed stock was supplied to this Station.

The yield of oats was good. There was no apparent difference in the stand of clover and timothy where a rate of seeding above twenty pounds per acre was used; that is, ten pounds timothy, five pounds common red clover and five pounds alsike clover seems to be a desirable rate per acre.

One rotation area was summer-fallowed to put it in shape for a hoed crop next season and to permit of underdrainage, which was necessary. The tile drains were put in and the field is in good condition for next year.

One rotation area was seeded to oats for cutting green for hay and ten tons of cured hay was secured.

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

FOUR-YEAR ROTATION

Field	Yield per acre	Standard cost	Actual cost
Field "A"—Oats	44 bush.	$0.48 per bush.	$0.63 per bush.
Field "B"—Turnips	400 bush.	0.10 per bush.	0.12 per bush.
Field "B"—Potatoes	210 bush.	0.38 per bush.	0.48 per bush.
Field "C"—Oat hay	4 tons	5.46 per ton	6.98 per ton

NEW GLASGOW, PICTOU COUNTY—*Operator, Geo. P. Fraser.*

The seeding was backward on this Farm, the soil remaining wet and not fit to work until toward the first of June. Seeding was started on June 3. The growth was rapid. The turnips, although making a good start, failed to yield well, due to the ground being too wet during later summer and fall growth. The potato crop was good on the area seeded with certified Green Mountain seed supplied by the Department, the yield, as shown below, amounting to three hundred and ninety-four bushels per acre, while on adjoining Green Mountain areas of home-grown seed the yield was three hundred and ninety-six bushels from two and three-quarter acres or one hundred and forty-one bushels per acre. The average yield of potatoes from other than certified seed was one hundred and fifty-seven bushels. The certified seed was grown on a field separate from the other fields, but the operator thought no better, if as good, soil treatment was given to this area than to the other field. The potatoes were well sprayed throughout the season.

The grain crops on the whole were good, with some loss from lodging. This was particularly noticeable on areas manured in 1921 which were given an application of one hundred pounds of nitrate of soda, indicating that grain crops on such soils will not benefit greatly in a season such as the past one.

The clover yields were poor and this is accounted for by the poor development of the clover plants in 1921, which were so dried in the summer that many of them made very inferior growth and suffered from winter injury.

The second growth on all the clover fields was heavy. The newly seeded areas are good with prospects for a good crop next year.

The results from the rotation area are given in the table below:—

FOUR-YEAR ROTATION

Field	Yield per acre	Standard cost	Actual cost
Field "A"—Clover hay	1·1 ton	$6.68 per ton	$7.17 per ton
Field "B"—Hoed crop (potatoes)	157 bush.	0.35 per bush.	0.48 per bush.
Field "B"—Turnips	500 bush.	0.06 per bush.	0.08 per bush.
Field "C"—Oats	50·1 bush.	0.41 per bush.	0.52 per bush.
Field "D"—Hay	1 ton	4.10 per ton	4.77 per ton

NORTH EAST MARGAREE, INVERNESS COUNTY—*Operator, Thomas E. Ross.*

The development at this Station has been very marked and the crops show a record of exceptionally high yields. The first seeding was possible on the 16th of May, the land being naturally fairly well drained. The turnip crop, it will be noticed, was a large one of uniform quality. The potato crop consisted of the Green Mountain variety, supplied by the Department, and was oustanding in growth throughout the season.

The yield as shown below was the best ever known in that section.

The yield of oats was heavy, the season being particularly favourable for this kind of soil. The clover from the 1921 seeding was very heavy, but much difficulty was experienced in getting it cured because of the continuous damp weather. The 1922 seeded areas are all in fine condition and the clover gives promise of being a good crop in 1923. The operator at this Station is a great believer in lime for land, and, with his own kiln built in the side of a bank, has been able to burn lime for application to the land.

An area seeded to sweet clover made very inferior growth and many of the plants turned yellow and died during the latter part of the season. This, doubtless, was partly due to a lack of lime in the soil, and in part to the strong growth of oats. The stand is not at all satisfactory and the area will be reseeded next season.

Field days held at this Station during the summer, doubtless will aid the farmers very much, as all the crops were a credit to the operator and indicate what production is possible on these lands.

The results from the rotation areas were as follows:—

FOUR-YEAR ROTATION

Field	Yield per acre	Standard cost	Actual cost
Field "A"—Wheat	20 bush.	$0.80 per bush.	$1.01 per bush.
Field "B"—Clover hay	2½ tons	3.31 per ton	3.63 per ton
Field "C"—Clover hay	2½ tons	3.13 per ton	3.40 per ton
Field "D"—Potatoes	567 bush.	0.17 per bush.	0.19 per bush.
Field "D"—Oat hay	4 tons	4.20 per ton	5.02 per ton
Field "D"—Turnips	1,150 bush.	0.04 per bush.	0.05 per bush.
Field "E"—Oats	52 bush.	0.43 per bush.	0.56 per bush.

SYDNEY RIVER, CAPE BRETON COUNTY—*Operator, Melvin R. Morsehead.*

Seeding operations started at this Station on May 23. The turnip crop was fair though the yield was reduced because of excessive moisture during the fall. The yield of potatoes was two hundred and eighty-six bushels per acre on the old sod area, planted with certified Green Mountain seed. A row of this seed in the regular rotation yielded at the rate of 435·6 bushels per acre, and the regular Green Mountain seed alongside yielded one hundred and fifty-four bushels per acre. This is convincing evidence of the value of good seed stock.

The yield of oats was good and quite marked gains were noticed on the areas limed and slagged with nitrate of soda added. The area that was the second year in hay gave a better yield than did the 1921 seeded area. This was due to the poor growth of clover on the 1921 seeding, because of the dry season. This operator was successful in taking many prizes at the fall fairs.

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

FOUR-YEAR ROTATION

Field	Yield per acre	Standard cost	Actual cost
Field "A"—Oats	40 bush.	$0.32 per bush.	$0.42 per bush.
Field "B"—Hay	3½ tons	3.99 per ton	4.55 per ton
Field "C"—Potatoes	271 bush.	0.27 per bush.	0.34 per bush.
Field "C"—Turnips	500 bush.	0.14 per bush.	0.19 per bush.
Field "D"—Clover hay	2 tons	4.12 per ton	4.81 per ton

TATAMAGOUCHE, COLCHESTER COUNTY—*Operator, G. B. Clark.*

Seeding began at this Station on May 22, the growth continued without interruption and good yields were obtained. The turnip area was uniform and a good crop was gathered. The Green Mountain potato seed supplied by the Department made excellent growth and gave satisfactory returns. There was considerable rot, however, which very materially reduced the quantity of stock fit for storage. The crop stored is of excellent quality for seed.

The wheat crop on the rotation area made strong growth, but was rather thin, the germination having been retarded and some of the seed killed by the treatment for smut. The oat crop on the whole was good, considering the land, which, for most part, was old pasture areas which have been brought under crop without the use of stable manure. In field "E", trials were conducted with different quantities of nitrate of soda per acre. The application was one hundred to two hundred and three hundred pounds per acre. The difference was very marked when the grain was growing. The area where one hundred pounds was applied did not lodge, the area treated with two hundred pounds lodged slightly in places and where three hundred pounds was used the grain lodged badly. It is evident that in a season like the past one, with abundant moisture, an application greater than one hundred and fifty pounds per acre is not desirable because of the development of a weak straw. The growth averaged ten inches higher on the plot where three hundred pounds of nitrate of soda was applied than on the area not so treated, but otherwise treated alike.

The yield of clover hay was light, due entirely to the poor growth the clover plants made in 1921, because of the very dry summer. The stand on the newly seeded area is good.

A field seeded to white sweet clover on the whole has made excellent growth and this will be tried out for pasture next season to illustrate its advantage, if any.

The yield from the rotation areas and the two fields not in the regular rotation is given below:—

FOUR-YEAR ROTATION

Field	Yields per acre	Standard cost	Actual cost
Field "A"—Hay	1¾ tons	$3.83 per ton	$4.68 per ton
Field "B"—Wheat	16 bush. 1 peck	1.04 per bush.	1.13 per bush.
Field "C"—Hay	2 tons	3.27 per ton	3.46 per ton
Field "D"—Turnip	900 bush.	0.06 per bush.	0.07 per bush.
Field "D"—Potatoes	300 bush.	0.28 per bush.	0.31 per bush.
Field "E"—Oats	38 bush.	0.39 per bush.	0.42 per bush.
Field "F"—Oats	30 bush.	0.43 per bush.	0.44 per bush.

YARMOUTH, YARMOUTH COUNTY—*Operator, Dr. I. M. Lovitt.*

This Station is one of the earliest in season in Nova Scotia and seeding was done May 5. The turnips were unusually good and were very uniform. This crop is apparently well suited to this section with its rather humid atmosphere. Here also loss from rot in the potato crop is reported, due to the excessive late summer and fall rains. The plants were dusted with copper arsenic dust and while the area so treated produced some tubers free from rot, the not-treated area was worthless.

The grain made strong growth, but where areas were treated with nitrate the excessive growth resulted in lodging. These fields are in good fertility, and with a season such as the one just past, the excessive growth may result in loss in yield from the plants having lodged, and the crop as a result not maturing its seed properly.

One of the rotation areas was in greenfeed, two and a half bushels oats, half a bushel peas and one-third bushel vetch being used per acre. This was seeded at different dates. It was noticed particularly that seed after the middle of June gives yields much less than if done before that date. The latter seeding runs into warm and dry weather and the yield per acre is much less. For successional seedings, May 1, 15, June 1 and June 15 are advised for best returns in yield of greenfeed and this will carry the stock well into the fall with good succulent feed.

The results from the rotation areas were as follows:—

FOUR-YEAR ROTATION

Field	Yield per acre	Standard cost	Actual cost
Field "A"—Oats	51·3 bush.	$0.43 per bush.	$0.52 per bush.
Field "B"—Oats	51·3 bush.	0.43 per bush.	0·52 per bush.
Field "C"—Greenfeed	15 to 12 tons	4.62 per ton	5.57 per ton
Field "D"—Turnips	750 bush.	0.09 per bush.	0.12 per bush.