DOMINION OF CANADA
DEPARTMENT OF AGRICULTURE
DOMINION EXPERIMENTAL FARMS

EXPERIMENTAL STATION

CHARLOTTETOWN, P.E.I.

REPORT OF THE SUPERINTENDENT

J. A. CLARK, B.S.A.

FOR THE YEAR 1922

Sunflowers grown for ensilage, Charlottetown Experimental Station, season 1922. Height when cut about 14 feet.

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

TABLE OF CONTENTS

	PAGE
Seasonal Notes	5
Animal Husbandry	6
Horses	6
Dairy Cattle	6
Beef Cattle	9
Swine	12
Field Husbandry	12
Crop Rotations	12
Cost of Production of Field Crops	20
Cultural Experiments	22
Horticulture	26
Orchards	26
Small Fruits	27
Vegetables	29
Cereals	40
Forage Crops	44
Ensilage Crops	44
Roots	45
Clover and Grasses	47
Agricultural Chemistry	49
Poultry	50
Bees	61
Exhibition Extension Work	62

EXPERIMENTAL STATION, CHARLOTTETOWN, P. E. I.

REPORT OF THE SUPERINTENDENT, J. A. CLARK, B.S.A.

FOR THE YEAR 1922

SEASONAL NOTES

The "freeze-up" occurred on November 23, 1921. The autumn was very favourable for farm work. Many of the showers of rain fell at night. There were frosts on October 10, 17, and again on the 27th, which killed the flowers and tender plants. December was very stormy. Travelling was very good up to the 30th, when a heavy storm blocked traffic. The early part of January was fair and had moderate temperatures. A cold wave from the 23rd to the 26th kept the thermometer below zero, the lowest being —15 on the 24th. February was a month of sudden changes, with four cold periods. On the 18th the thermometer reached 21 below zero, the coldest recorded since 1914. The ground remained covered with snow throughout the winter until it gradually went away without any freshet. The fields were practically bare by March 17, the snow melting and soaking into the unfrozen ground.

The spring of 1922 came very slowly. There was a great deal of north-east wind, which delayed growth. The frost disappeared quickly and the ground was firm enough to roll the new meadows by April 10. Garden peas, onions, and sweet peas were planted on the 17th. The heavy blanket of snow during the winter protected the clover, perennials and shrubs, so that they were very promising. The first half of May was very backward and seeding was later than usual. The latter part of the month was very fine and favourable for all crops. Grain germinated and could be seen above ground in five days.

There were frequent showers and plenty of sunshine throughout June and July. The fruits set well and all farm crops were very promising except mangels, which germinated poorly and were greatly injured by cutworms.

The pastures remained in first-class condition throughout the whole summer, a very fair crop of hay being cut and saved from some of them.

Several heavy wind and rain storms in August lodged large areas of grain. Harvest started with barley on August 2, and became general by the 10th. September was a beautiful autumn month of bright sunshine with a few showers of rain. Harvest was nearly completed before its close.

October had much broken weather. The first killing frost occurred on the 19th of the month. Most of the roots were harvested and the autumn work well advanced before the month closed.

November was one of the dullest months on record. Rain fell on ten different days and there were five snow flurries. Fall work was well completed as there was no frost to stop the plough. December had a succession of storms starting on the 4th, and the ground was covered with snow from that date with scarcely any frost in it. From the 16th on the snow continued to deepen. The coldest spell occurred on the 20th, when the thermometer went down to 11 below zero.

Month	Temperature (Fahrenheit)					Precipitation					Bright Sunshine Hours
	Maximum		Minimum		Mean	Rainfall		Snowfall		Total	
	Date	Deg.	Date	Deg.	Deg.	Days	Inches	Days	Inches	Inches	
January	12	43	25	−12½	16·524	4	1·68	13	27·5	4·43	117·1
February	20	45	18	−21	15·017	1	1·15	6	26·0	2·75	113·6
March	29	50	2	− 1	27·640	5	1·05	2	3·0	1·35	170·7
April	9	56	1	22	36·616	11	2·16	1	15	2·21	129·8
May	20	76	1	28	48·435	13	2·17	.....	.....	2·17	218·1
June	8	82	16	45	62·283	16	4·72	.....	.....	4·72	190·6
July	17	84	10	46	63·902	13	3·73	.....	.....	3·73	176·1
August	2	82	18	48	66·193	11	3·95	.....	.....	3·95	213·7
September	1	76	28	33	57·015	10	2·01	.....	.....	2·01	212·4
October	2	74	20	26	47·080	13	2·46	1	0·25	2·48	141·6
November	4	49	18	17	32·949	10	1·51	5	7·0	2·21	38·3
December	13	45	20	−11	19·193	2	0·15	8	42·0	4·35	67·7
Total	.....	.....	.....	.....	.....	.....	25·74	.....	106·25	36·36	1,789·7
Average for 14 years	.....	.....	.....	.....	.....	.....	30·67	.....	89·92	39·64	1,854·4

ANIMAL HUSBANDRY

HORSES

The number of draught horses at the Station at the present time (Dec. 31, 1922) is six, made up as follows: Four pure-bred Clydesdale mares, one grade mare, one gelding, one express horse and one light driving mare.

The horses throughout the year have been in good, thrifty condition. The mare that was reported lame in last year's report remained lame during a greater part of the season; but eventually quite fully recovered. The driver, while being put through heavy snow in the early part of the season, received a rather nasty flesh wound on the off foreleg, necessitating stitching. This finally healed, but has left a rather disfiguring scar.

The tractor relieved the horses from much of the heavy work during the busy seasons. It did most of the heavy harrowing in the spring, and in the early autumn. Thirty acres of sod were ploughed with it during the hot weather and when the flies were at their worst on the horses.

During the busy season the work-horses receive approximately the following rations:—

Sixteen pounds crushed oats, to which is added about one quarter pound oilcake and 20 pounds hay per day. This ration is fed horses weighing about 1,500 pounds each.

This grain ration is reduced to 12 pounds oats, 2 pounds bran, 18 pounds hay per horse per day, for horses weighing approximately 1,500 pounds each, in the autumn and winter, after the busy season is over.

DAIRY CATTLE

The Ayrshire herd at this Station at the end of the calendar year (December 31, 1922) number eighteen, headed by "Ravenwood Victor" No. 72902.

On August 9, the herd was declared fully accredited, under certificate number 219. Part of the herd was shown at the Provincial Exhibition at Charlottetown, and carried off many prize ribbons; "Buttercup of Glenholm"

No. 56491, taking first in the three-day milk test, with 96 pounds of milk and 4·67 pounds of fat.

Part of the herd was shown at the Royal Agricultural Winter Fair at Toronto, and the Maritime Winter Fair at Amherst, N.S. At Toronto, "Buttercup" again entered in the three-day test, took third place in the Ayrshires, with 174 pounds of milk and 6·6654 pounds of butter fat, and stood fourteenth in all entries. At Amherst, "Buttercup" stood fourth in milk test, and "Ravenwood Milkmaid" No. 73374, stood first in the two-year-old class with a production of 101·6 pounds of milk and 3·76 pounds of fat. Quite a number of ribbons were also taken.

The following is a list of cows completing Record of Performance in 1922, together with amount of production:—

Name and Number	Milk	Butter fat	Average Test
	lbs.	lbs.	per cent
Lily of Melrose No. 30634	14,708·5	588·3	4·0
Lily Helen No. 53710	14,106·0	677·0	4·8
Cora of Craggan No. 55891	9,798·3	362·6	3·7
Jean of Craggan No. 55895	11,875·1	475·0	4·0
Buttercup of Glenholm No. 56491	14,272·5	585·2	4·1
Ravenwood Victoria No. 66314	10,684·1	460·0	4·3

This gives an average production for six animals of 12,574 pounds of milk and 524·7 pounds of fat.

The following table gives a recapitulation of the period-in-milk for each of the above cows:—

Date of Dropping Calf	No. of Days in period	Total pounds of Milk for period	Daily average Yield of Milk	Average per cent Fat in Milk	Pounds of Butter produced in period	Value of Butter at 40 cts. per lb.	Value of Skim Milk at ½ ct. per lb.	Total Value of Product	Amount of Meal eaten at 2 cts. per lb.	Amount of Roots eaten at $4.00 per ton	Amount of Hay eaten at $15.00 per ton	Amount of Green Feed at $4.00 per ton	Months on Pasture at $1.50 per month	Total cost of Feed for period	Cost to produce 100 lbs. Milk	Cost to produce 1 lb. Butter, Skim Milk neglected	Profit on 1 lb. Butter, Skim Milk neglected	Value of Calf when Born	Profit on Cow during period, labour and calf neglected
						$ c.	$ c.	$ c.						$ c.	$ c.	c.	$ c.	$ c.	$ c.
Lily of Melrose — No. 30634, Oct. 18, 1921	365	14,708·5	40·3	4·0	687	274 80	70 60	345 40	5,832	13,110	3,760	2,715	4½	183 24	1 24	26·7	13·3	20 00	162 16
Lily Helen No. 53710, Oct. 31, 1921	365	14,106	38·7	4·8	790	316 00	67 15	383 15	5,577	12,650	3,688	2,735	4½	176 72	1 25	22·3	17·7	15 00	206 43
*Cora of Craggan No. 55891, Mar. 22, 1922	281	9,798	34·8	3·7	423	169 20	47 18	216 38	3,957	8,190	1,950	2,935	4½	116 01	1 18	27·4	12·6	20 00	100 37
Jean of Craggan No. 55895, Jan. 13, 1922	355	11,875	34·4	4·0	554	221 60	57 00	278 60	4,955	12,310	3,292	2,945	4½	161 05	1 35	29·0	11·0	15 00	117 55
Buttercup of Glenholm No. 56491, July 28, 1921	326	14,272	43·7	4·1	683	273 20	68 44	341 64	5,518	14,820	3,782	4,580	5	185 02	1 29	27·1	12·9	25 00	156 62
Ravenwood Victoria No. 66314, Feb. 9, 1922	328	10,684	32·5	4·3	537	214 18	51 12	265 30	4,710	11,010	2,742	2,735	5	149 75	1 40	27·8	12·2	12 00	115 55
Total	2,020	75,443	224·4	24·9	3,674	1,468 98	361 49	1,830 47	30,549	72,090	19,214	18,645	28	971 79	7 71	160·3	79·7	107 00	858 68
		lb.	lb.	%	lb.	$ c.	$ c.	$ c.	lb.	lb.	lb.	lb.		$ c.	$ c.	c.	c.	$ c.	$ c.
Average	336	12,574	37·4	4·15	612	247 16	60 25	305 08	5,091	12,015	3,202	3,108	4½	161 96	1 28	26·7	13·3	17 83	143 11

*This cow only milked for eight months. The record given above is calculated to the end of the year (December 31, 1922).

BEEF CATTLE

STEER FEEDING EXPERIMENT

The steer feeding experiment completed in 1922 was a repetition of the experiment carried on the previous year for the purpose of comparing results with those previously obtained. Sixteen steers were purchased in the early autumn of 1921, and allowed to run on pasture with a soiling crop of corn and sunflowers supplied as supplementary feed. They successfully passed the tuberculin test, and, when cold weather set in, were divided into four lots of four steers each. The animals were dehorned, and given a short preliminary feeding, later being placed on experimental ration as follows:—

STEERS—RATION PER PEN PER DAY

Lot I—
40 pounds hay not chopped.
150 " turnips not chopped.
25 " grain mixture.

Lot II—
40 pounds hay chopped.
150 " turnips chopped.
25 " grain mixture.
All feeds given separately.

Lot III—
40 pounds chopped hay
150 " chopped turnips
25 " grain mixture.
All feeds thoroughly mixed together before feeding.

Lot IV—
40 pounds chopped hay.
150 " chopped turnips.
25 " grain mixture.
Thoroughly mixed and moistened before feeding.

Forty pounds of hay per pen per day was fed throughout the experiment. Owing to shortage of supply, roots were cut down and finally discontinued altogether. The grain ration was increased accordingly.

The grain ration used at beginning of experiment was as follows:—

100 pounds	crushed oats.	15 pounds	oilcake.
100 "	middlings.	25 "	cornmeal.
50 "	bran.	25 "	cotton-seed meal.

At the close of the experiment each pen was receiving 45 pounds of grain mixture per day, made up as follows:—

130 pounds	crushed oats.	20 pounds	oil cake.
160 "	middlings.	75 "	cornmeal.
50 "	bran.	20 "	cotton-seed meal.

Hay ration 40 pounds per pen per day.

The experiment was conducted primarily to determine whether it pays to chop hay or roots, and whether it is better, when mixing feeds, to feed dry or moistened.

The following table shows the total feed consumed per pen, with the values charged:—

Turnips	22,050 pounds	at 10c. per bush		$44 10
Hay	5,880 "	at $30.00 per ton		88 20
Middlings	1,560 "	at 30.50 "		23 79
Oats	1,423 "	at 0.55 per bush		23 02
Bran	643 "	at 32.00 per ton		10 29
Cornmeal	508 "	at 40.00 "		10 16
Oilcake	241 "	at 60.00 "		7 23
Cotton-seed	222 "	at 60.00 "		6 66
Barley	175 "	at 0.80 per bush		2 92
Total cost of feed per pen				$216 37

STEER FEEDING EXPERIMENT—COMPARISON OF THE FOUR METHODS OF FEEDING

—	Lot I	Lot II	Lot III	Lot IV
Number of steers in lot	4	4	4	4
Initial gross weight per pen lb.	3,440	3,440	3,440	3,435
Initial weight, average lb.	860	860	860	859
Finished weight, per pen lb.	4,665	4,870	4,770	4,830
Finished weight, average lb.	1,166	1,217	1,192	1,207
Total gain in 147 days lb.	1,225	1,430	1,330	1,395
Average gain per steer lb.	308	357	332	349
Daily gain per steer lb.	2·09	2·43	2·26	2·37
Daily gain per lot lb.	8·33	9·80	9·04	9·49
Gross cost of feed per pen $	216 37	216 37	216 37	216 37
Cost of 1 pound gain cts.	17·6	15·1	16·2	15·5
Value of cattle at beginning $	181 28	181 28	181 28	181 02
Total cost to produce beef $	397 65	397 65	397 65	397 39
Sale price per pen $	445 50	465 08	455 53	461 26
Profit per pen $	47 85	67 43	57 88	63 88
Profit per steer $	11 96	16 86	14 47	15 97
Average value per steer at start	45 32	45 32	45 32	45 25
Average sale price per steer at finish $	111 37	116 27	113 88	115 31
Average increase in value $	66 05	70 95	68 56	70 06
Average cost of feed per steer $	54 09	54 09	54 09	54 09

STEER FEEDING EXPERIMENTS—TABLES OF WEIGHTS AND GAINS

Pen I

No.	Weight Nov. 1, 1921	Weight Mar. 27, 1922	Gain in 147 days	Value at Start	Average Cost of Feed per Steer	Total Cost	Sale Price	Profit or Loss
	lb.	lb.	lb.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.
264	990	1,350	360	52 17	54 09	106 26	128 92	22 66
251	760	1,015	255	40 05	54 09	94 14	96 93	2 79
252	880	1,215	335	46 38	54 09	100 47	116 03	15 56
258	810	1,085	275	42 68	54 09	96 77	103 62	6 85
Total	3,440	4,665	1,225	181 28	216 36	397 64	445 50	47 86
Average	860	1,166	308	45 32	54 09	99 41	111 37	11 96

Pen II

262	935	1,250	315	49 27	54 09	103 36	119 37	16 01
265	800	1,150	350	42 16	54 09	96 25	109 82	13 57
261	870	1,250	380	45 85	54 09	99 94	119 37	19 43
257	835	1,220	385	44 00	54 09	98 09	116 51	18 42
Total	3,440	4,870	1,430	181 28	216 36	397 64	465 07	67 43
Average	860	1,217	357	45 32	54 09	99 41	116 27	16 86

Pen III

263	935	1,350	415	49 27	54 09	103 36	128 92	25 56
253	820	1,160	340	43 21	54 09	97 30	110 78	13 48
259	860	1,080	220	45 32	54 09	99 41	103 14	3 73
256	825	1,180	355	43 48	54 09	97 57	112 69	15 12
Total	3,440	4,770	1,330	181 28	216 36	397 64	455 53	57 89
Average	860	1,192	332	45 32	54 09	99 41	113 88	14 47

Pen IV

254	910	1,320	410	47 96	54 09	102 05	126 06	24 01
260	850	1,150	300	44 79	54 09	98 88	109 82	10 94
255	820	1,140	320	43 21	54 09	97 30	108 87	11 57
250	855	1,220	365	45 06	54 09	99 15	116 51	17 36
Total	3,435	4,830	1,395	181 02	216 36	397 38	461 26	63 88
Average	859	1,207	349	45 25	54 09	99 34	115 31	15 97

It is difficult to draw deductions from this experiment, but, figuring from the following basis, we find:—

Pen I, fed unpulped turnips, grain and hay, all fed separately (the more common practice on the ordinary farm) made an average profit per steer of $11.96.

Pen II, fed pulped turnips and chopped hay, made a profit of $16.86 per steer, or $4.90 per steer more than Pen I.

Pen III, in addition to having hay and roots pulped, had these ingredients mixed together before feeding, and made a profit per steer of $14.47, or only $2.51 more per steer than did pen I.

Pen IV, besides having the feed prepared as for pen III, had all feeds thoroughly moistened. This pen made a profit per steer of $15.97, or $4.01 more per steer than did pen I.

It would appear from these data that it is rather doubtful whether elaborate preparations of feed are necessary or profitable. If labour were plentiful, chopping of hay and turnips might be recommended (as for pen II), but if labour were scarce and high, it would be better to feed unchopped hay and whole turnips.

This bears out the conclusions arrived at for the previous years' work.

Steer Feeding, Winter 1922-23

Thirty-two steers were purchased early in the autumn of 1922 for experimental feeding during the winter. These all successfully passed the tuberculin test, and a number were dehorned before being placed in the barns.

The steers were weighed in and the following experiments started on November 17, 1922:—

All pens are to consist of four animals, and are to receive the following amounts of feed per pen per day: 40 pounds hay, 150 pounds turnips, 30 pounds grain mixture.

Pen I.—Dehorned, tied in stalls.

Pen II.—Horned, tied in stalls.

These two pens to receive unchopped hay, unchopped turnips, and all feed to be given separately.

Pen III—Dehorned, tied in stalls.

Pen IV—Horned, tied in stalls.

These two pens to receive chopped hay, chopped turnips, all feeds given separately.

Pen V—Dehorned, loose in pen.

Pen VI—Horned, tied in stalls.

These two pens fed chopped turnips, chopped hay, all feeds mixed together and fed dry.

Pen VII—Dehorned, loose in pen.

Pen VIII—Horned, tied in stalls.

Hay and turnips chopped, all feeds to be thoroughly mixed together and moistened, before being fed.

Grain mixture used at beginning of experiment:—

100 pounds oats,
100 pounds middlings,
60 pounds bran,
30 pounds cornmeal,
20 pounds oilcake,
10 pounds cotton-seed.

It will be noted that the experiment of the two previous years has been included in this year's work, with this difference—Pens I and III this year are tied in stalls, whereas, in the previous two years, pens corresponding to these were running loose.

It is the intention to obtain as much information as possible on the question of gain, etc., by comparing horned and dehorned steers.

BEEF BULLETIN

During the latter part of the year a bulletin was prepared dealing with various phases of winter feeding for beef production, and giving the results of many of the experiments carried on at this Station for a number of years past. At date of writing this report, this bulletin had not been published, but will no doubt be ready for distribution in the very near future. If any reader wishes to procure a copy, he may do so by forwarding his name to the Superintendent, Experimental Station, Charlottetown, P.E.I.

SWINE

Three young sows farrowed the last of April and early in May; their litters totalled twenty-four. Nineteen of the these lived and were weaned. The ten best were sold to boys and girls who were members of pig clubs. Two were entered in the R.C.P. test. The other seven were fed a good growing ration for the summer, they were finished in the autumn, and sold at the best bacon price in November. Two old brood sows were fattened and sold in October. They weighed 578 and 612 pounds. No fall litters were raised, but the young sows were bred for early spring litters.

FIELD HUSBANDRY

THE SEASON

Weather conditions were favourable for autumn work, which was well completed before the " freeze-up " on November 23, 1921. The winter was cold, with a heavy snowfall, which came early and remained as a good blanket on the fields until March 17, 1922.

The timothy, pasture, grasses and clover came through the winter well, and the cool, moist spring was favourable for them. Spring work on the land was commenced early in May, and one field was sown on the 6th. Then backward weather set in, and it was not until after the middle of the month that seeding became general. Very favourable weather from that time on made it possible for the crop to be put in rapidly. The growing season was very favourable for all field crops. With the exception of a few storms that lodged many fields of oats, the harvest weather was satisfactory, and good crops were safely harvested.

CROP ROTATIONS

A number of experimental rotations, started in 1912, are still being carried on. In addition to their value for demonstration purposes, they supply reliable data on " cost of production ", etc. of various crops. Accurate records of all field operations are kept throughout the season. These are charged up according to a fixed set of values, as follows:—

COSTS

Rent of land, per acre	$ 3 00
Manure (spread), per ton	1 00
Seed, wheat, oats, barley, buckwheat or rye, per acre	1 00
Seed peas, per acre	2 00
Use of machinery, per acre	0 60
Manual labour, per hour	0 17
Single horse and teamster, per hour	0 27
Two horses and teamster, per hour	0 34
Three horses and teamster, per hour	0 41
Grass seed	At cost
Twine	"
Seed turnips, mangels, potatoes, corn	"

Threshing charged according to actual labour expended.
Commercial fertilizer at cost.

RETURN VALUES

Wheat, oats, barley, buckwheat, rye, per lb	$ 0·01
Peas	0 01½
Hay (timothy, clover, alfalfa or mixed), per ton	7 00
Corn (ensilage)	2 00
Sugar beets	3 00
Forage crops (green)	2 00
Turnips, carrots, mangels	2 00
Straw	4 00
Potatoes, per bushel	0 50
Pasture—	
Horses, per head, per month	1 00
Cattle, " "	1 00
Sheep, " "	0 25

The following is an outline of the rotations as carried on at the Station:—

ROTATION "A" (FIVE YEARS' DURATION), SUITABLE FOR DAIRY FARMING

First year.—Hoed crop; 25 tons manure is used in preparation for this crop, usually about one-half being applied on stubble the previous autumn, the balance in the spring, and worked in with the disc harrow.

Second year.—Grain, seeded down with red clover 10 pounds, alsike 2 pounds, and timothy 12 pounds per acre.

Third year.—Clover hay.

Fourth year.—Timothy or pasture, broken in August or early September, topworked during the balance of the season.

Fifth year.—Grain, seeded with 8 pounds of red clover. Break in autumn for roots.

ROTATION "B" (FIVE YEARS' DURATION) FOR THE CONTROL OF DAISIES AND OTHER PERENNIAL WEEDS

First year.—Hoed crop, to receive 15 tons manure in spring.

Second year.—Grain; seeded down with 10 pounds red clover, 2 pounds alsike and 6 pounds timothy per acre.

Third year.—Clover hay, ploughed in autumn.

Fourth year.—Grain, seeded down with 10 pounds red clover, 2 pounds alsike and 12 pounds timothy per acre.

Fifth year.—Clover hay or pasture, top-dressed with 10 tons manure per acre in early autumn, and ploughed in preparation for hoed crop.

This rotation has been found to destroy many bad weeds.

ROTATION "C" (FOUR YEARS' DURATION)

This rotation is suitable for stock farming, as it produces relatively more hay and roots and less grain than the former ones. This is desirable when the farmer wishes to produce only sufficient grain for feeding purposes.

First year.—Hoed crop; receives 10 tons manure per acre in spring.

Second year.—Grain; seeded down with 10 pounds red clover, 2 pounds alsike and 12 pounds timothy per acre.

Third year.—Clover hay.

Fouth year.—Timothy hay or pasture. Ten tons manure is applied early in autumn and ploughed under in preparation for roots.

ROTATION "F" (FOUR YEARS' DURATION

This is a grain-growing rotation, especially suited to the production of large quantities of seed grain for sale.

First year.—Hoed crop; manured in spring at the rate of 12 tons per acre.

Second year.—Grain; seeded down with 10 pounds red clover, 2 pounds alsike and 6 pounds timothy per acre.

Third year.—Clover hay; top-dressed in autumn with 8 tons manure per acre before ploughing.

Fourth year.—Grain; seeded down with 8 pounds red clover and 2 pounds alsike per acre.

ROTATION "G" (SEVEN YEARS' DURATION)

This is commonly called "Old P.E. Island Rotation."

First year.—Oats; seeded down with 8 pounds red clover and 2 pounds alsike per acre.

Second year.—Hoed crop; manured in spring at the rate of 20 tons per acre.

Third year.—Grain; seeded down with 10 pounds red clover, 2 pounds alsike and 12 pounds timothy per acre.

Fourth year.—Clover hay.

Fifth year.—Tomothy hay; top-dressed in August with 15 tons manure per acre.

Sixth year.—Timothy or pasture.

Seventh year.—Timothy or pasture.

The following is a recapitulation of expenditures and returns from four experimental rotations for the season of 1922:—

Crops			Items of Expense in Raising Crop															Particulars of Crop						
					Manual Labour		Horse Labour (including Teamster)											Weight						
							Hours																	
Last Year	This Year	Area	Rent and Manure	Seed, Twine and use of Machinery	Hours Manual Labour	Cost of Manual Labour	Single Horse	2 Horse Team	3 Horse Team	Tractor	Value of Horse Labour	Cost of Threshing	Total Cost	Cost for 1 Acre	Cost for 1 Bushel	Cost for 1 Ton	Height of Stubble	Grain	Straw	Hay	Hoed Crop	Total Value	Value of Crop per Acre	Profit or Loss per Acre
1921	1922	Acres	$ c.	$ c.	No.	$ c.	No.	No.	No.	No.	$ c.	$ c.	$ c.	$ c.	cts.	$ c.	Ins.	Lb.	Lb.	Lb.	Lb.	$ c.	$ c.	$ c.
Barley	Mangels	1	8 00	7 34	98¼	16 74	16	11 11/12	.....	4½	10 85	.....	42 93	42 93	.....	1 73	.....	.....	.....	.....	49,585	49 58	49 58	6 65
Mangels	Oats	1	8 00	2 00	5	0 85	½	4½	1	3½	4 04	0 34	15 23	15 23	0 21	.....	.....	2,464	3,221	.....	.....	31 08	31 08	15 85
Oats	Hay	1	8 00	3 50	6½	1 10	1½	1½	.....	.....	1 02	.....	13 62	13 62	.....	9 00	.....	.....	.....	3,025	.....	10 59	10 59	*-3 03
Hay	Hay	1	8 00	5 68	6½	1 10	2½	.....	.....	.....	0 95	.....	15 73	15 73	.....	6 98	.....	.....	.....	4,505	.....	15 77	15 77	0 04
Hay	Barley	1	8 00	1 98	2⅝	0 49	1½	10½	½	3½	6 37	.....	16 84	16 84	0 40	.....	.....	2,011	1,999	.....	.....	24 11	24 11	7 27
Aggregate		5	40 00	20 50	119½	20 28	22½	29½	1½	11½	23 23	0 34	104 35	.....	.....	.....	.....	.....	.....	.....	.....	131 13	.....	.....
Average per acre, 1922		.....	8 00	4 10	23·86	4 05	4·46	5·9	0·33	2·35	4 64	0 06	.....	20 87	.....	.....	.....	.....	.....	.....	.....	.....	26 22	5 35

*Loss.

ROTATION "B"—FIVE YEARS

Crops		Area	Items of Expense in Raising Crop															Height of Stubble	Particulars of Crop						
					Manual Labour		Horse Labour (including Teamster)												Weight						
							Hours																		
Last Year	This Year		Rent and Manure	Seed, Twine and use of Machinery and Spray Materials	Hours Manual Labour	Cost of Manual Labour	Single Horse	2 Horse Team	3 Horse Team	Tractor	Value of Horse Labour	Cost of Threshing	Total Cost	Cost for 1 Acre	Cost for 1 Bushel	Cost for 1 Ton		Grain	Straw	Hay	Hoed Crop	Total Value	Value of Crop per Acre	Profit or Loss per Acre
1921	1922	Acres	$ c.	$ c.	No.	$ c.	No.	No.	No.	No.	$ c.	$ c.	$ c.	$ c.	cts.	$ c.	Ins.	Lb.	Lb.	Lb.	Lb.	$ c.	$ c.	$ c.
Hay	Potatoes	1	8 00	21 96	52	8 84	11	14½	11	5½	15 38	.....	54 18	54 18	0 27	.....	.....	.....	.....	.....	11,356	94 63	94 63	40 45
Potatoes	Wheat	1	8 00	2 01	7½	1 25	½	5½	1	1½	3 13	0 68	15 07	15 07	0 58	.....	.....	1,486	2,814	.....	.....	20 49	20 49	5 42
Wheat	Hay	1	8 00	6 40	6½	1 10	1½	1	.....	.....	0 79	.....	16 29	16 29	.....	6 99	.....	.....	.....	4,655	.....	16 29	16 29	−0 00
Hay	Oats	1	8 00	1 98	7½	1 27	½	10½	1	3½	6 07	0 68	18 00	18 00	0 27	.....	.....	2,155	2,130	.....	.....	25 81	25 81	7 81
Oats	Hay	1	8 00	5 56	5½	0 93	1	2	.....	.....	0 95	.....	15 44	15 44	.....	8 04	.....	.....	.....	3,840	.....	13 44	13 44	*−2 00
Aggregate		5	40 00	37 91	78 83	13 39	14·33	34·16	13	10	26 32	1 36	118 98	.....	.....	.....	.....	.....	.....	.....	.....	170 66	.....	.....
Average per acre, 1922		.....	8 00	7 58	15·76	2 67	2·86	6·83	2·6	2	5 26	.....	.....	23 79	.....	.....	.....	.....	.....	.....	.....	.....	34 13	10 34

*Loss.

ROTATION "C"—FOUR YEARS

Crops		Area	Items of Expense in Raising Crop														Height of Stubble	Particulars of Crop						
			Rent and Manure	Seed, Twine and use of Machinery and Spraying materials.	Manual Labour		Horse Labour (including Teamster)					Cost of Threshing	Total Cost	Cost for 1 Acre	Cost for 1 Bushel	Cost for 1 Ton		Weight				Total Value	Value of Crop per Acre	Profit or Loss per Acre
							Hours				Value of Horse Labour													
Last Year	This Year				Hours Manual Labour	Cost of Manual Labour	Single Horse	2 Horse Team	3 Horse Team	Tractor								Grain	Straw	Hay	Hoed Crop			
1921	1922	Acres	$ c.	$ c.	No.	$ c.	No.	No.	No.	No.	$ c.	$ c.	$ c.	$ c.	cts.	$ c.	Ins.	Lb.	Lb.	Lb.	Lb.	$ c.	$ c.	$ c.
Wheat	Hay	0·57	4 56	1 99	2¾	0 47	¾	1 11/12	.....	.....	0 49	.....	7 51	13 17	.....	3 47	.....	.....	.....	4,327	.....	15 14	26 56	13 39
Hay	Hay	0·57	4 56	3 24	3½	0 55	.....	1 11/12	.....	.....	0 53	.....	8 88	15 57	.....	5 32	.....	.....	.....	3,337	.....	11 68	20 49	4 92
Hay	Potatoes	0·57	4 56	15 70	22	3 74	7¾	7¾	1¼	1 5/12	6 02	.....	30 02	52 66	0 15	.....	.....	.....	.....	.....	11,990	99 92	175 29	122 63
Potatoes	Wheat	0·57	4 56	1 11	3¼	0 63	¼	3	¾	¾	1 81	0 34	8 45	14 82	0 51	.....	.....	978	2,002	.....	.....	13 78	24 17	9 35
Aggregate		228	18 24	22 04	31·75	5 39	9·83	12·58	2·25	2·16	8 85	0 34	54 86	.....	.....	.....	.....	.....	.....	.....	.....	140 52	.....	.....
Average per acre, 1922		.....	8 00	9 66	13·92	2 36	4·31	5·51	0·98	0·94	3 88	.....	.....	24 05	.....	.....	.....	.....	.....	.....	.....	.....	61 63	37 58

ROTATION "G"—SEVEN YEARS

Crops		Area	Items of Expense in Raising Crop														Height of Stubble	Particulars of Crop						
			Rent and Manure	Seed, Twine and use of Machinery	Manual Labour		Horse Labour (including Teamster)					Cost of Threshing	Total Cost	Cost for 1 Acre	Cost for 1 Bushel	Cost for 1 Ton		Weight				Total Value	Value of Crop per Acre	Profit or Loss per Acre
							Hours																	
Last Year	This Year				Hours Manual Labour	Cost of Manual Labour	Single Horse	2 Horse Team	3 Horse Team	Tractor	Value of Horse Labour							Grain	Straw	Hay	Hoed Crop			
1921	1922	Acres	$ c.	$ c.	No.	$ c.	No.	No	No.	No.	$ c.	$ c.	$ c.	$ c.	cts.	$ c.	Ins.	Lb.	Lb.	Lb.	Lb.	$ c.	$ c.	$ c.
Wheat	Hay	0·4	3 20	0 74	3⅜	0 65		1⅛			0 63		5 22	13 05		4 74				2,200		7 70	19 25	6 20
Hay	Hay	0·4	3 20	1 14	2⅛	0 42		1			0 85		5 61	14 02		3 90				2,875		10 06	25 15	11 13
Hay	Hay	0·4	3 20	1 06	3⅛	0 59		1⅛			0 63		5 48	13 70		2 85				3,840		13 44	33 60	19 90
Hay	Hay	0·4	3 20	0 85	3	0 51					0 46		5 02	12 55		3 87				2,590		9 06	22 65	10 10
Hay	Oats	0·4	3 20	0 84	3⅜	0 62		5	½	1⅝	2 76	0 34	7 76	19 40	48·8			540	670			6 74	16 85	*2 55
Oats	Turnips	0·4	3 20	2 36	21	3 57	7	2⅜			2 97		12 10	30 25		1 55					15,600	15 60	39 00	8 75
Turnips	Wheat	0·4	3 20	0 86	3⅜	0 62		2	½	¼	1 58	0 34	6 60	16 50	5·54			714	1,086			9 31	23 27	6 77
Aggregate		2·8	22 40	7 85		6 98					9 88	0 64	47 79									71 91		
Average per acre, 1922														17 07									25 68	8 61

*Loss.

CROP YIELD, SEASON 1922

Crop	Preceding Crop	Acreage	Total yield	Yield per acre	
			lb.	bush.	lb.
Wheat, Whiteheads	Turnips (G-VII)	0·4	714	29	45
" Early Red Fife	Potatoes (C-IV)	0·57	978	28	36
" Early Red Fife	Mangels (CC-I)	1·0	1,667	27	47
" White Fife	Mangels (CC-I)	1·0	1,617	26	57
" Huron	Potatoes (B-II)	1·0	1,486	24	46
Oats, Banner	Mangels (A-II)	1·0	2,464	72	16
" Banner	Clover (B-IV)	1·0	2,155	63	13
" O.A.C. No. 72	Timothy (G-V)	0·4	540	39	24
Barley, Charlottetown No. 80	Timothy (A-V)	1·0	2,011	41	43
" Charlottetown No. 80	Mangels (CC-1)	1·25	1,313	21	42
Potatoes, Green Mountain	Timothy (C-III)	0·57	11,990	350	35
"	Pasture (CC-II)	1·22	14,846	202	49
" Irish Cobblers	Clover (B-I)	1·0	11,356	189	16
Turnips	Oats (G-VI)	0·4	15,600	780	..
Mangels*	Barley (A-I)	1·0	49,485	989	35
Mangels*	Pasture (CC-II)	3·0	69,105	460	35
Clover hay*	Wheat (C-I)	0·57	4,327		7,591
"	" (B-III)	1·0	4,655		4,655
" *	" (G-I)	0·4	2,200		5,500
"	Oats (B-V)	1·0	3,840		3,840
"	Grain (Blake F.)	5·0	18,000		3,600
"	Wheat (CC-III)	6·0	20,398		3,400
"	Oats (Con. Field)	10·0	32,000		3,200
"	Oats (A-III)	1·0	3,025		3,025
Timothy hay*	Timothy (G-III)	0·4	3,840		9,600
" *	Clover (G-II)	0·4	2,875		7,187
"	Timothy (G-IV)	0·4	2,590		6,475
"	Clover (A-IV)	1·0	4,505		4,505
"	Clover (CC-V)	6·0	22,210		3,701
"	Clover (Con. F.)	19·0	60,000		3,158
"	Clover (Bl. F.)	10·0	20,000		2,000

† Two cuttings.
* First seeding of mangels was destroyed by cutworms; plot was reseeded with turnips as mangels could not be obtained, the crop was mixed roughly half and half turnips and mangels.

Cost of Production of Field Crops, Season 1922

Accurate records are kept of all field operations on the experimental rotations. From these records, the following "cost of production" estimates have been compiled. The values used and the prices charged are those fixed for use on all eastern farms in the system. Owing to changes in prices and in cost of labour, many of these are very much below actual cost.

Cost of Production of Wheat after Hoed Crop

Number of acres, 1; Preceding crop (Rot. "B"): hay, oats, hay, roots.

	1922	8-year average
Rent of land at $3 per acre	$3 00	$3 00
Share of manure at rate of 25 tons per acre, at $1 per ton	5 00	5 00
Use of machinery	0 60	0 60
Seed	1 00	1 00
Twine, 3·3 lb. at 12½c. per lb	0 41	0 51
Ribbing in autumn, 1¾ hours 2-horse team at 34c	0 60	0 76
Harrowing, spring: 2⅞ hours at 34c., 2-horse at 34c., 74c.; 1½ hour tractor at 55c., 69c	1 43	1 12
Rolling, ⅓ hour 2 horse at 34c	0 11	0 15
Seeding, ¾ hour 2-horse at 34c	0 25	0 23
Cutting, 1 hour 3-horse	0 41	0 34
Stooking, 2 hours manual at 17c	0 34	0 30
Loading and unloading, 1⅔ hour manual at 17c	0·23	0·34
Raking, ⅓ hour 1-horse at 27c	0 09	0 10
Hauling, ⅞ hour 2-horse at 34c	0 23	0 32
Threshing, 4 hours manual at 17c	0 68	0 65
	$14 38	$14 42

Yield of grain per acre	1,486 lb.
Yield of straw per acre	2,814 "

Valuing straw at $4 per ton, cost to produce 1 bushel of grain is 35·34 cents.
Average cost of production per bushel for 8 years, 31·63 cents.

Cost of Production of Barley after Hay

Number of acres, 1. Preceding crop (Rotation "A"): Roots, Grain, hay, hay.

	1922	Average for 9 years
Rent of land, at $3 per acre	$3 00	$3 00
Share of manure	5 00	5 00
Use of machinery	0 60	0 60
Seed	1 00	1 00
Twine, 3 lb. at 12½c. per lb	0 38	0 50
Autumn work, 1921: Ploughing, 6⅔ hours 2-horse at 34c., $2,30; harrowing, 2½ hours tractor at 55c., $1.38	3 68	3 19
Spring work, horrowing: 2½ hours 2-horse at 34c., 74c.; 1½ hour tractor at 55c., 70c	1 44	1 38
Rolling, ⅓ hour 2-horse at 34c	0 11	0 13
Seeding, ¾ hour 2-horse at 34c	0 26	0 26
Cutting, ⅞ hour 3-horse at 41c	0 28	0 34
Stooking, 1⅓ hours manual at 17c	0 23	0 30
Loading and unloading, 1⅔ hour manual at 17c	0 26	0 39
Raking, ⅓ hour 1-horse at 27c	0 09	0 10
Hauling, ⅓ hour 2-horse at 34c	0 17	0 28
Threshing, 1⅓ hour manual at 17c	0 26	0 56
	$16 76	$17 03

Yield of grain	2,011 pounds
Yield of straw	1,999 "
Valuing straw at $4 per ton, the cost to produce 1 bushel of grain is	30·62 cents.
Average cost of production over 9-year period	27·18 "

Cost of Production of Oats after Mangels

Number of acres, 1. Preceding crops (Rotation "A"): Hay, hay, barley, mangels.

	1922	Average for 9 years
Rent of land at $3 per acre	$3 00	$3 00
Share of manure	5 00	5 00
Use of machinery	0 60	0 60
Seed	1 00	1 00
Twine, 3·2 lb. at 12½c. per lb.	0 40	0 58
Autumn work, 1921: 1¾ hours 2-horse at 34c.	0 60	0 80
Harrowing in spring: 3½ hours tractor at 55c., $1.92; ⅔ hour 2-horse at 34c., 22c.	2 14	1 42
Rolling, ⅓ hour 2-horse at 34c.	0 12	0 11
Seeding, 1 hour 2-horse	0 34	0 26
Cutting, 1 hour 3-horse	0 41	0 35
Stooking, 1½ hours manual at 17c.	0 26	0 30
Raking, ⅓ hour 1-horse at 27c.	0 09	0 10
Hauling, 1 hour 2-horse	0 34	0 33
Threshing, 2 hours manual at 17c.	0 34	0 65
Loading and unloading 1½ hour manual at 17c.	0 25	0 43
	$14 89	$14 93

Yield of grain per acre ..... 2,464 pounds
Yield of straw per acre ..... 3,221 "
Valuing straw at $4 per ton, the cost to produce 1 bushel of grain is 11·63 cents.
Average cost of production per bushel for nine-year period ..... 12·32 cents

Cost of Production of Mangels after Barley

Number of acres, 1. Preceding crops (Rotation "A"): Oats, hay, hay, barley.

	1922	Average for 9 years
Rent of land at $3 per acre	$3 00	$3 00
Share of manure	5 00	5 00
Use of machinery	0 60	0 60
Seed, 6 lb. at 55c.	3 30	3 63
Clover and aliske, sown previous year and ploughed down	3 44	
Autumn work, 1921: Ploughing, 5 hours 2-horse at 34c., $1.70; ribbing, 1⅔ hour 2-horse at 34c., 60c.	2 30	2 33
Spring work, 1922: Ploughing, 3 hours, 2-horse at 34c.	1 02	1 56
Harrowing: 4½ hours tractor at 55c., $2.47; 1½ hour, 2-horse at 34c., 51c	2 98	2 21
Rolling, ⅔ hour 2-horse at 34c.	0 23	0 31
Seeding, 2½ hours manual at 17c.	0 42	0 45
Hoeing and thinning, 56 hours at 17c.	9 52	19 71
Cultivating, 6 hours 1-horse at 27c.	1 62	2 69
Pulling, topping and loading, 40 hours manual at 17c.	6 80	6 86
Hauling, 10 hours 1-horse at 27c.	2 70	3 44
	$42 93	$51 79

Yield per acre of roots, 49,585 lb., 24 tons, 1,585 lb., or 991 bush., 35 lb.
Cost to produce 1 ton $1 73
Cost to produce 1 bushel ..... 4·32 cents
Cost to produce 1 ton, 9-year averags $2 57
Cost to produce 1 bushel, 9-year average ..... 6·35 cents

Cost of Production of Hay after Wheat

Number of acres, ·57. Preceding crops (Rotation "C"): Timothy, hoed crop, wheat.

	1922	Average for 9 years
Rent of land at $3 per acre	$1 71	$1 71
Share of manure at $5 per acre	2 85	2 85
Use of machinery at 60c. per acre	0 34	0 34
Grass seed	1 65	1 65
Cutting, ⅛ hour 2-horse at 34c. per hour	0 14	0·13
Coiling and stooking, 1½ hours manual at 17c.	0 21	0 24
Raking, ⅓ hour 1-horse at 27c.	0 09	0 12
Loading and unloading: 1½ hours manual at 17c., 25c.; ½ hour 2-horse at 34c., 17c.; ⅓ hour 1-horse at 27c., 09c.	0 51	0 60
	$ 7 50	$ 7 64
Cost per acre	13 15	13 40

Yield per acre, 7,591 lb. or 3 tons, 1,591 lb.
Cost to produce 1 ton $3 46
Average cost to produce 1 ton (9-year average) 4 68

CULTURAL EXPERIMENTS

Depths of Seeding Cereals

Four-year rotation: Roots, grain, hay, grain

Plot No.	Depth of Seeding Cereals	Yield of Barley per acre (2nd year rotation)		Yield of Oats per acre (4th year rotation)	
		1922	7-yr. av.	1922	7-yr. av.
		Bush. lb.	Bush. lb.	Bush. lb.	Bush. lb.
1	Seeded 1 inch deep	19 28	23 27	27 12	42 9
2	Seeded 2 inches deep	11 12	22 41	52 2	45 9
3	Seeded 3 inches deep	13 46	23 27	52 2	49 19
4	Seeded 4 inches deep	17 44	25 17	32 12	38 28

Seeding cereals at depth of approximately 3 inches, seems to have given best average results.

Depth of Ploughing Sod for Roots

Four-year Rotation: Hoed Crop, Grain, Clover, Timothy.

Plot No.	Depth of Ploughing Sod for Roots	Yield of Roots per acre 1922 Crop
		bush. lb.
1	Plough 3 inches early autumn, topwork balance of season	159 10
2	" 5 " " " " "	167 10
3	" 7 " " " " "	174 20
4	" 3 " " subsoil 4 inches deep. topwork balance of season	125 30
5	" 5 " " " 4 " " " "	158 20
6	" 7 " " " 4 " " " "	144 40

For the four years, 1916-1919 inclusive, turnips were grown in this experiment. In 1920, turnips were sown, but owing to club root and attacks by cutworms, proved a total failure. Potatoes were used for the 1921 crop, but for the 1922 crop, turnips were again sown, using a club root resistant variety, which proved quite satisfactory. Owing to loss of records for 1920 and 1921, as explained above, it is difficult to arrive at conclusions. The following is a five-year average of the turnips grown for the years 1916-17-18-19-22:—

Plot I	807 bushels per acre	Plot IV	765 bushels per acre
" II	766 " "	" V	787 " "
" III	778 " "	" VI	692 " "

Shallow ploughing, or ploughing without subsoiling on this type of soil (a sandy loam with heavy, gravelly clay subsoil) is apparently as effective as deeper ploughing.

EFFECT OF VARIETY OF NURSE CROP ON YIELD OF HAY

Plot No.	Variety of Nurse Crop Used	Yield Clover per acre		Yield Timothy per acre	
		1922	7-year average	1922	7-year average
		lb.	lb.	lb.	lb.
1	2½ bush. oats, 12 lb. timothy, 10 lb. red clover per acre	2,720	3,531	4,480	3,863
2	1½ bush. barley, 12 lb. timothy, 10 lb. red clover per acre	3,680	3,434	3,320	3,185
3	1½ bush. wheat, 12 lb. timothy, 10 lb. red clover per acre	3,720	3,485	2,960	3,180
4	3½ bush. mixed peas and oats for hay, 12 lb. timothy, 10 lb. red clover per acre	4,120	3,194	2,840	2,968
5	3 bush. mixed peas and oats for grain, 12 lb. timothy, 10 lb. red clover per acre	4,600	3,234	3,480	2,943

According to the above averages, it would appear that oats is superior to any other grain as a nurse crop; followed by wheat and barley respectively.

SEED BED PREPARATION FOR GRAIN

Three-year Rotation: Hoed Crop, Grain, Clover.

Plot No.	Seed Bed Preparation for Grain after Roots (Potatoes)	Yield per acre			
		1922		7-year average	
		bush.	lb.	bush.	lb.
1	Seed, smoothing harrow	60	20	45	2
2	Disc, seed, smoothing harrow	53	18	49	4
3	Disc, smooth harrow, seed, smoothing harrow	57	22	50	24
4	Double disc, smooth harrow, seed, smooth harrow	51	6	50	14
5	Smooth harrow as early as possible, double disc, smooth harrow, seed, smooth harrow	50	..	44	31
6	Double disc, smooth harrow, seed, smooth harrow, roll	57	22	54	7
7	Double disc, smooth harrow, seed, smooth harrow, roll when grain is 4 inches or 5 inches high	37	22	48	..
8	Spring harrow, then double angle spring harrow, smooth harrow, roll, seed, smooth harrow	47	2	53	22
9	Double disc, smooth harrow, seed, roll, smooth harrow	68	28	51	4
10	Double disc, smooth harrow, roll, seed, smooth harrow	50	..	45	21
11	Disc, roll, disc, smooth harrow, roll, seed, smooth harrow	43	18	37	14

It is rather difficult to arrive at conclusions in an experiment of this sort, owing to the effect of weather conditions at the time of seeding, but it seems apparent that a thorough preparattion of seed-bed previous to seeding is to be recommended.

RATES OF SEEDING NURSE CROP OF OATS

Four-year Rotation: Hoed Crop, Grain, Hay

Plot No.	Rates of Seeding Nurse Crop of Oats per acre			Yield Clover per acre		Yield Timothy per acre	
	Oats	Timothy	Red Clover	1922	7-year average	1922	7-year average
	bush.	lb.	lb.	lb.	lb.	lb.	lb.
1	1½	12	10	2,880	2,525	2,520	3,109
2	2	12	10	3,520	2,671	3,480	2,514
3	2½	12	10	3,280	2,523	3,760	2,460
4	3	12	10	2,840	2,837	3,680	2,048

Averaging results of both years in hay, the plots have the following standing:—

Plot I.....2,817 pounds per acre
" II.....2,592 " "
Plot III.....2,491 pounds per acre
" IV.....2,442 " "

Averaging clover and timothy yields together for a 7-year period, the greatest yield of hay has been obtained after a light seeding of oats.

EFFECT OF RATE OF SEEDING NURSE CROP OF BARLEY ON FOLLOWING CROPS OF HAY

Plot No.	Rate of Seeding Nurse Crop of Barley per acre			Yield of Clover per acre		Yield of Timothy per acre	
	Barley	Timothy	Red Clover	1922	7-year average	1922	7-year average
	bush.	lb.	lb.	lb.	lb.	lb.	lb.
1	1	12	10	3,440	2,706	4,360	3,023
2	1½	12	10	4,600	2,988	3,960	2,960
3	2	12	10	3,840	2,503	2,800	1,971
4	2½	12	10	4,120	2,525	3,280	1,866

Covering a seven-year period, a seeding of 1½ bushels of barley per acre has been followed by the best crops of hay.

DEPTH OF PLOUGHING SOD FOR GRAIN (OATS)

Plot No.	Depth of Ploughing Sod for Grain	Yield per acre			
		1922 Crop		7-year average	
		bush.	lb.	bush.	lb.
1	Plough 3 inches deep in autumn	40	30	40	21
2	" 5 " "	42	12	41	30
3	" 7 " "	41	6	40	13
4	" 9 " "	38	28	42	4*
5	" 4 " spring	43	18	36	30
6	" 6 " "	41	6	37	5

*Six-year average.

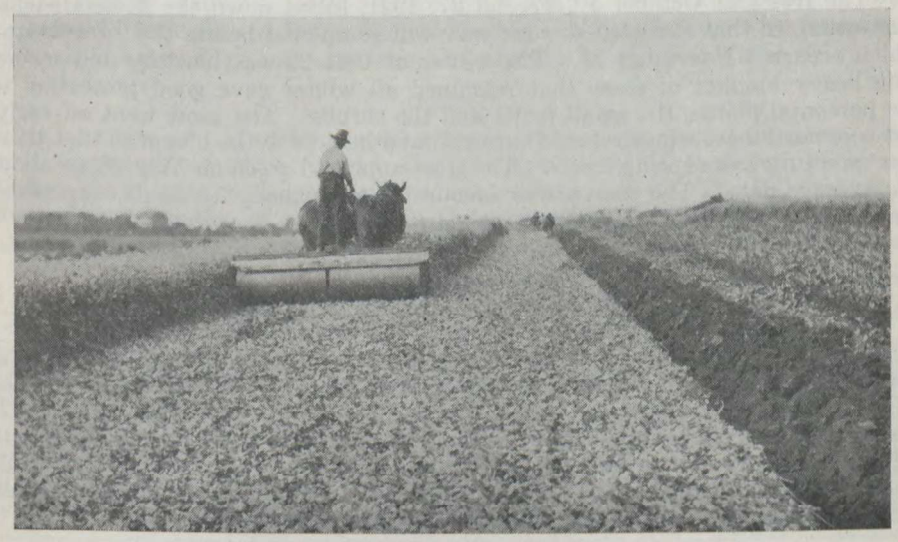
Very deep ploughing on this type of soil (a sandy loam with heavy, gravelly clay subsoil) would seem to be unnecessary. As will be noted, 5-inch ploughing gives yields very nearly equal to 9-inch ploughing; the extra increase in yield would not repay the added labour required for the deeper ploughing. Spring ploughing of sod for grain cannot be recommended as a general practice in this province.

DEPTHS OF UNDERDRAINAGE

Four-year rotation: roots, grain, clover, timothy.

Drains are at depths of 24, 30, 36, 42 and 48 inches, with suitable checks. On soil such as this (sandy loam, with heavy clay subsoil) drains laid at 30-inch or 36-inch depths have been found equal if not superior to those placed at greater depths.

As yet we have not collected sufficient data on this experiment to warrant the drawing of a conclusion.



Soil Improvement: Rolling and ploughing under a heavy crop of Buckwheat at the Experimental Station, Charlottetown.

RATES OF SEEDING CLOVER AND TIMOTHY

Four-year Rotation: Roots, Grain, Hay, Hay

Plot No.	Rates of Seeding per acre				Yield Clover per acre		Yield Timothy per acre		7-year average of Clover and Timothy combined
	Oats	Timothy	Red Clover	Alsike	1922	7-year average	1922	7-year average	
	bush.	lb.	lb.	lb.	lb.	lb.	lb.	lb.	lb.
1.....	2½	10	2	.....	3,120	2,354	2,040	2,965	2,660
2.....	2½	10	4	.....	5,080	2,323	1,680	2,625	2,974
3.....	2½	10	8	.....	5,120	3,660	2,320	3,325	3,492
4.....	2½	10	12	.....	5,960	3,820	2,640	3,468	3,644
5.....	2½	10	8	1	5,360	4,034	2,360	3,720	3,877
6.....	2½	10	8	2	5,360	3,845	3,440	3,703	3,774
7.....	2½	10	.....	4	5,000	3,520	2,360	2,743	3,131
8.....	2½	10	.....	6	3,760	3,000	1,560	2,263	2,631
9.....	2½	10	.....	8	3,520	2,851	1,720	1,914	2,382

A study of the foregoing table tends to the conclusion that a seeding of 10 pounds timothy, 8 pounds red clover and 1 or 2 of alsike per acre, as in plots 5 and 6 above, will give the greatest average yield of hay. The attached chart very graphically shows the yields of hay as given in the table.

HORTICULTURE

THE SEASON

The frosts of October 10, 17 and 27, 1921, killed down the flowers earlier than usual, so that the garden work was well completed before the " freeze up " which occurred November 23. The winter of 1921-22 was blustery and severe. The heavy blanket of snow that remained all winter gave good protection to the perennial plants, the small fruits and the shrubs. The snow went off early, but cool north-east winds retarded growth, and held back the bloom so that there was no injury from spring frosts. The trees appeared green on May 28, or about the average date. The season was favourable throughout for fruits, vegetables and flowers, which all gave excellent returns.

ORCHARDS

The orchards are making strong growth. Deep ploughing in the interspaces is being continued, and is giving good results insofar as growth and general health are concerned. All orchards are intercropped with vegetables and buckwheat. Trees were sprayed with Bordeaux mixture on June 23, 1922; practically no oyster shell scale is present. When pruning in March and April, all cocoons and nests of insect eggs that could be located were destroyed; this assisted materially in limiting insect outbreaks. All trees were protected from mice during the winter by tar paper, hilled about with clay.

APPLES

Practically all of the one hundred sorts of apples planted in 1910 are now bearing. The trees made good growth, and matured well for wintering over, but, on the whole, yields were very low this year. Red Astrachan and Pewaukee, Congo and Horace gave highest yields this season.

CHERRIES

Cherries did fairly well this season, practically all sorts bearing good crops. Quite a number of the sweet varieties, such as Governor Wood, Coes Transparent, Blackheart, May Duke and Windsor, were practically wholly destroyed by birds before starting to ripen, or even before colouring. The following table gives results of some of the highest yielding varieties, total yield per acre computed on the yield of two trees:—

CHERRIES—HIGHEST YIELDING VARIETIES

Name of Variety	Yield per acre
	boxes
Orel No. 24	2,180
Montmorency	1,962
Ostheim	1,417
Wragg	981

Yields are reported in boxes per acre, as most of the crop is sold in this way. The capacity of the box used is approximately one quart.

PEARS

The pear orchard, situated in a very sheltered position to the northwest of the Plant Pathological Laboratory, is ideally placed. The soil is a rich clay loam, and the trees are making good growth. All interspaces are planted with raspberries or rhubarb, and receive considerable cultivation. Yields were superior to last season, Louis Bonne leading the list, followed by Lucrative, Flemish Beauty, Goodale, Lawrence and Sheldon in the order named.

PLUMS

The trees are all making good growth, and, under careful handling, seem to be improving in point of yield. The trees are planted 20 feet apart each way, interspaces cropped with either vegetables or strawberries. The following table shows the production of some of the highest yielding varieties:—

Variety	Yield per acre
	lb.
*Columbia	16,658
Shropshire Damson	8,284
†Saunders	7,412
Diamond	7,194
Long Golden Prolific	7,085
Spaulding	6,867
‡Imperial Gage	6,758
‡Bradshaw	6,540
‡Washington	6,213
Moore Arctic	6,050

*Hardy and prolific, strong grower.
†Regular bearer and of fair quality.
‡Fruit of good quality.

SMALL FRUITS

CURRANTS

White currants, as in former years, gave fair yields. The quality is good, but it is difficult to sell white currants on our markets. Yields are as follows:—

White Currants

Variety	Yield per acre
	quarts
Verrières White	5,388
White Kaiser	5,388
White Pearl	5,388
White Grape	5,388
Large White	2,420

Red Currants

Also difficult to sell on local market.

Variety	Yield per acre
	quarts
Greenfield Red	4,840
London	4,356
Benwell	4,356
Long Bunch Holland	4,356
Cumberland Red	4,114
Moore Seedling	4,114

Black Currants

These always command high prices and a good market.

Variety	Yield per acre
	quarts
Climax	2,904
Kentish Hero	1,936
Eagle	1,452
Bang Up	1,452
Ontario	1,452
Beauty	1,210

GOOSEBERRIES

Many of the gooseberries in the new plantation were found to have washed bare, and had to be lifted and set deeper. Downing and Mabel are proving superior sorts.

RASPBERRIES

The 1916 plantation of raspberries is still bearing well. Yields of some of the better sorts are as follows, computed on one drill, 100 feet long, 6 feet wide:—

Variety	Yield per acre
	quarts
Schaffer (purple) 1916 plantation	3,267
Baumfort Seedling (red) 1919 plantation	2,614
Superlative (red) 1919 plantation	2,486

The Cuthbert and Herbert varieties, that have been leaders in the past, were pruned in the spring and were frozen back after they had put forth about 3 inches of growth.

STRAWBERRIES

The 1921 plantation gave fairly good returns this season, and the crop was readily disposed of on the local market at fair prices. The first picking was made on June 28, and the last on July 22. Strawberries are all planted in plots of four rows, 15 feet long, 3 feet apart.

STRAWBERRIES—TEST OF VARIETIES

No.	Variety	Size	First and Last Picking of Season	Yield per acre
				quarts
1	Valeria	Medium	July 3 to July 20	8,651
2	Beder Wood	Medium	June 28 to July 20	7,925
3	Sample	Large	July 3 to July 22	6,534
4	Senator Dunlap	Medium	June 28 to July 15	5,445
5	Dr. Burrill	Large	June 28 to July 17	5,415
6	Portia	Large	July 3 to July 22	5,324
7	Kellogg Premier	Large	June 30 to July 19	5,142
8	Glen Mary	Large	July 3 to July 22	4,870
9	Francis	Medium	June 28 to July 17	4,356
10	Warfield	Medium	June 30 to July 17	4,265
11	Bubach	Large	July 3 to July 19	4,114
12	Early Jersey Giant	Medium	June 28 to July 15	3,932
13	Kellogg Prize	Medium	June 28 to July 15	3,811
14	Americus	Medium	June 28 to July 15	3,690
15	Superb	Large	July 3 to July 22	3,569
16	Pocomoke	Large	July 3 to July 15	3,206
17	Parker Earle	Large	July 3 to July 22	3,055
18	Steven Late Champion	Large	July 7 to July 20	2,783
19	Parson Beauty	Large	June 30 to July 12	2,601
20	Desdemona	Large	June 29 to July 15	2,571
21	Nettie	Medium	June 28 to July 12	2,178
22	Charles I	Medium	June 28 to July 12	1,996
23	McAlpine	Large	July 3 to July 17	1,936
24	Splendid	Small	July 3 to July 12	1,149

VEGETABLES

BEANS

Twenty-five sorts of beans were planted on June 5. The following table gives date when ready for use, length of season and yield per acre:—

BEANS—TEST OF VARIETIES

No.	Name of Variety	Ready for use and length of season	Yield per acre Green Beans
			lb.
1	Kentucky Wonder	Aug. 17-Sept. 26	27,588
2	Hidasta	Aug. 8-Sept. 8	15,972
3	Masterpiece	Aug. 7-Sept. 1	12,197
4	Hodson Long Pod	Aug. 14-Sept. 8	9,147
5	Yellow Eye	Aug. 7-Aug. 23	8,131
6	Stringless Green Pod	Aug. 7-Aug. 19	7,260
7	Pilot Navy	Aug. 14-Sept. 8	6,679
8	Extra Early Red Valentine	Aug. 7-Sept 8	6,679
9	Challenge Black Wax	Aug. 8-Aug. 30	6,534
10	Stringless Green Pod	Aug. 7-Sept. 8	6,388
11	Refugee	Aug. 14-Sept. 8	6,388
12	Curries Rustless	Aug. 8-Aug. 30	4,936
13	Grennell Rustless	Aug. 7-Aug. 23	4,646
14	Plentiful French	Aug. 7-Aug. 16	3,630
15	Round Pod Kidney Wax	Aug. 7-Aug. 16	3,630
16	Giant Stringless Green Pod	Aug. 8-Aug. 16	3,485
17	Davis White Wax	Aug. 9-Aug. 16	3,194
18	Bountiful Green Bush	Aug. 7-Aug. 16	2,759
19	Fordhook Favourite	Aug. 7-Aug. 16	2,468
20	Pencil Pod Black Wax	Aug. 7-Aug. 16	2,323
21	Davis White Wax	Aug. 8-Aug. 16	2,323
22	Wardwell Kidney Wax (Graham)	Aug. 7-Aug. 16	1,597
23	Wardwell Kidney Wax (Ott-1634)	Aug. 7-Aug. 16	1,452
24	Round Pod Kidney Wax	Aug. 7-Aug. 16	1,161
25	Fordhook Favourite	Poor germination	

Bean rust materially reduced yields this season.

Beans—Cultural Test

A comparison was made of a number of different varieties planted on the same date, with one variety planted at intervals of a week apart for four plantings. Rows 30 inches apart, 100 feet of drill to each plot.

Beans—Cultural Test

No.	Variety	Date planted	Ready for use	Yield per acre Green	Yield per acre Ripe	Total Yield per acre
				lb.	lb.	lb.
1	Refugee	June 5	Aug. 7	7,623	1,132	8,755
2	Stringless Green Pod	June 5	Aug. 7	3,920	958	4,878
3	Round Pod Kidney Wax	June 19	Aug. 13	2,265	87	2,352
4	Round Pod Kidney Wax	June 5	Aug. 7	2,135	87	2,222
5	Round Pod Kidney Wax	June 12	Aug. 11	1,742	87	1,829
6	Round Pod Kidney Wax	June 26	Aug. 17	1,220	43	1,263

BEETS

Nine sorts were grown this year. As soon as large enough for canning, they were thinned out (July 28). They were pulled August 7, 18, 30, and a final harvest was made October 4. The following is a table of yields:—

Beets—Test of Varieties

No.	Variety	Yield per acre	Yield per acre	
		lb.	bush.	lb.
1	Early Wonder	33,977	679	27
2	Crosby Egyptian	33,686	673	36
3	Cardinal Globe	26,717	534	17
4	Detroit Dark Red	25,846	516	46
5	Crimson Globe	25,555	511	5
6	Extra Early	25,265	505	15
7	Black Red Ball	24,394	487	44
8	Eclipse	23,522	470	22
9	Early Model	13,939	278	39

Beets—Cultural Tests

The usual thinning experiment with Detroit Dark Red beets was conducted this year. These were sown on May 26, and thinned to 2 inches, 3 inches and 4 inches apart. They were harvested on August 7, 18, 30 and October 4. In total yields those thinned to 3 inches apart gave the largest weight per acre, followed by those 2 inches apart; those 4 inches apart gave the smallest weight per acre. Beets left at a distance of only 2 inches apart are of superior quality to those thinned to 4 inches, these latter being almost too large and too coarse in quality for best table use.

Brussels Sprouts

Three varieties were planted on May 3, and developed stalks of good quality. The following list is in order of merit: Amager Market, Dalkeith, Paris Market.

CABBAGE

Eighteen sorts of cabbage were sown in hotbeds on May 3, and set out on June 20. The following table gives yield in pounds per acre, drills 30 inches apart, plants 24 inches apart in row.

CABBAGE—TEST OF VARIETIES

No.	Variety	Yield per acre
		lb.
1	Extra Amager Danish Ballhead (O-934)	15,391
2	Extra Amager Danish Ballhead (O-1193)	14,810
3	Marblehead Mammoth	14,520
4	Fottler Improved Brunswick	14,230
5	Enkhuizen Glory	13,939
6	Flat Swedish	12,778
7	Flat Dutch	12,487
8	Autumn King	12,197
9	Perfection Savoy	12,197
10	Chester Savoy	11,616
11	Volga	10,745
12	Red Danish Delicatesse	8,712
13	Early Winigstadt	6,897
14	Succession	5,227
15	All Seasons	5,082
16	Early Paris Market	5,082
17	Wong Bok Went to seed June 27	
18	Pe Tsai went to seed June 27	

CARROTS

Variety tests of carrots this year were removed from the garden in an attempt to prevent injury by carrot rust fly. Sown under field conditions on May 23, the injury was only slight.

CARROTS—TEST OF VARIETIES

No.	Variety	Yield per acre
		lb.
1	Improved Danvers	16,262
2	Chantenay (McDonald)	15,101
3	Ox Heart	13,939
4	Danvers	12,778
5	Chantenay (O-206)	12,778
6	Nantes Half Long	12,197
7	Early Scarlet Horn	12,197

A thinning experiment with Chantenay carrots gave the following results:—

No.	Variety	Distance apart in row	Yield per acre
		inch.	lb.
1	Chantenay	2	17,255
2	Chantenay	1½	14,641
3	Chantenay	3	14,118

CELERY

Eight varieties of celery were sown in hotbeds on April 14, pricked out May 18, and set out June 28. In point of yield and quality this season, celery was very fine.

CELERY—TEST OF VARIETIES

No.	Variety	Average weight per head	Yield per acre
		lb.	lb.
1	Winter Queen	2¼	49,005
2	Evans Triumph	2	43,560
3	White Plume	1⅛	39,930
4	Giant Pascal	1 7/16	37,207
5	French Success	1⅛	36,300
6	Golden Self Blanching	1¼	32,670
7	Golden Yellow	1¼	32,670
8	Easy Blanching	1¼	31,944

CITRON

Only one variety (Red Seeded) was planted this year. Melons were a fair crop, many of them being six inches in diameter.

SWEET CORN

Twenty-five varieties were grown this season. Corn is planted in hills 3 feet apart each way, and yields are computed on crop from twelve average hills.

CORN—TEST OF VARIETIES

No.	Variety	Yield per acre
		ears
1	Golden Bantam	18,392
2	Earliest Catawba	15,488
3	Whipple New Yellow	14,762
4	Extra Early Cory	13,794
5	Early Fordhook	13,552
6	Nuetta	13,310
7	Gehu	13,068
8	Early July	13,068
9	Pickaninny	13,068
10	Howling Mob	12,342
11	Indian Sweet	11,858
12	Tom Thumb (pop)	11,616
13	Pocahontas	11,616
14	Early Adonis	11,374
15	Assiniboine	10,890
16	Early Mayflower	10,648
17	Sweet Squaw	10,648
18	Golden Giant	10,406
19	Malakoff	8,712
20	Early June	8,712
21	Black Mexican	8,712
22	Evergreen Bantam	7,512
23	Metropolitan	7,018
24	Improved Early Dakota	4,598
25	Early Malcolm	3,388

CUCUMBERS

Eight sorts of cucumbers tested gave the following yields in a season extending from August 3 to September 14.

CUCUMBERS—TEST OF VARIETIES

No.	Variety	Yield per acre Green
		lb.
1	XXX Table	16,940
2	Prolific	12,705
3	Improved Long Green	11,293
4	Davis Perfect	10,890
5	Early Russian	8,873
6	Early Fortune	4,739
7	Vaughan	807

West India gherkin was planted, but gave practically no yield.

LETTUCE

Eleven varieties of lettuce were grown this season. We recommend the following: Improved Hansen, Salamander, Iceberg, Grand Rapids and Crisp as Ice. The lettuce did exceptionally well, and, with three or four plantings, gives continuous greens from early to late in the season.

ONIONS—TEST OF VARIETIES

Sown April 30, in rows 15 inches apart.

No.	Variety	Yield per acre
		lb.
1	Large Red Wethersfield	52,272
2	Giant Prize Taker	51,110
3	Giant Yellow Prize Taker	47,627
4	Extra Select Large Red Wethersfield	47,626
5	Ailsa Craig	47,626
6	White Barletta	46,464
7	Yellow Globe Danvers (Steele Briggs)	44,141
8	Yellow Globe Danvers (Graham)	44,141
9	Southport Yellow Globe	39,494
10	Yellow Globe Danvers (Ottawa 931-2)	37,171
11	Mammoth Silver King	36,590
12	Australian Brown	30,202
13	Southport Red Globe	29,040
14	Southport White Globe	27,878
15	Extra Early Flat Red	15,101

Also four varieties were grown in hotbeds, planted April 20, and set out June 15, three inches apart. The following is a table of yields:—

No.	Variety	Yield per acre
		lb.
1	Yellow Globe Danvers	20,909
2	Select Large Red Wethersfield	14,636
3	Giant Yellow Prize Taker	12,197
4	Extra Early Flat Red	6,970

Rows 15 inches apart.

ONION SETS

Onion sets were planted on May 2, yielding as follows:—

Yellow sets..... 23,348 pounds per acre
Red sets..... 16,379 " "

The use of sets gives us our earliest onions.

ONION SEED PLANTED FOR PRODUCTION OF SETS

Two varieties were sown for the production of sets. The following is the yield of sets per acre:—

Variety	Yield per acre
	lb.
Yellow Globe Danvers	20,909
Select Large Red Wethersfield	19,515

THINNING EXPERIMENT

No.	Variety	Thinned to	Yield per acre
		inches	lb.
1	Yellow Globe Danvers	1	45,999
2	Select Large Red Wethersfield	1	36,590
3	Yellow Globe Danvers	2	31,363
4	Giant Yellow Prize Taker	1	29,272
5	Select Large Red Wethersfield	3	29,272
6	Select Large Red Wethersfield	2	28,227
7	Yellow Globe Danvers	3	28,227
8	Giant Yellow Prize Taker	2	21,954
9	Giant Yellow Prize Taker	3	21,954

PARSLEY

Three varieties were grown, Champion Moss Curled, Double Curled and Triple Curled; all proved satisfactory.

PARSNIPS

One variety, Hollow Crown was grown, planted in the field May 23. Clear of the garden, it was entirely free from damage by rust fly. The average yield of duplicate plots was 17,195 pounds per acre.

PARSNIPS, CULTURAL EXPERIMENT

A thinning experiment was conducted, using Hollow Crown parsnips, thinned to 2 inches, 3 inches and 4 inches apart. These were planted on May 23, and harvested October 10.

PARSNIPS—THINNING EXPERIMENT

Variety	Distance apart in rows	Yield per acre	Yield per acre	
	inches	lb.	bush.	lb.
Hollow Crown	2	19,870	397	20
"	3	17,256	345	6
"	4	15,687	313	37

GARDEN PEAS

Sixteen varieties of garden peas were tested this season. The pea moth causes such considerable damage in this section as to make it almost impossible to produce peas of a quality fit for sale. The peas were planted May 3.

PEAS—TEST OF VARIETIES

No.	Name of Variety	Yield per acre, Green, unshelled
		lb.
1	Harrison Glory	15,246
2	Juno	14,278
3	Dwarf Telephone	14,036
4	Gregory Surprise	9,922
5	Pioneer	9,922
6	Sutton Excelsior	9,680
7	Lincoln	8,228
8	Thomas Laxton (McDonald)	7,623
9	Thomas Laxton (O-1648)	6,655
10	Quite Content	5,808
11	English Wonder, Grade A	4,719
12	Eight Weeks	4,719
13	American Wonder	3,630
14	Potlach	3,509
15	Laxtonian	2,783
16	Little Marvel	1,694

The drills are 30 inches apart, 30 feet of drill to each variety.

PEAS—CULTURAL TEST

For comparison of the relative advantages of varieties maturing at different seasons over a single variety planted at intervals of a week apart, four varieties were sown on April 20, and Thomas Laxton was again sown on April 27, May 4 and May 11. The following table gives the result:—

No.	Variety	Dates sown	Yield per acre, Green, unshelled	Yield per acre, Ripe	Total Yield per acre, Green and Ripe
			lb.	lb.	lb.
1	Thomas Laxton	May 4	7,333	1,452	8,785
2	Gradus	April 20	6,897	1,452	8,349
3	Thomas Laxton	" 27	6,824	1,234	8,058
4	Stratagem	" 20	5,227	1,670	6,897
5	Thomas Laxton	May 11	5,808	1,089	6,897
6	McLean Advancer	April 20	4,138	1,016	5,154
7	Thomas Laxton	" 20	1,815	1,525	3,340

A large amount of damage was done by the pea moth. For this year a seeding of one variety at different dates has given the best returns.

The rows are 3 feet apart, 100 feet to each variety, 50 feet picked green and 50 feet allowed to ripen.

PEPPERS

Four varieties of peppers were planted in hotbeds on April 27: Harris Earliest, Neapolitan, Small Red Chili and Long Red Cayenne. Small Red Chili gave the largest yield, followed by Harris Earliest. No fruit was picked from Neapolitan or the Red Cayenne.

PUMPKINS

Six varieties of pumpkins were entered for test this season. They were planted May 17, and gave the following yields:

No.	Variety	Yield per acre
		lb.
1	Connecticut Field	37,274
2	King of Mammoths	32,973
3	Small Sugar	31,106
4	Large Cheese	17,920
5	Fort Berthold	8,960
6	Quaker Pie	3,942

RADISHES

Seven sorts were planted on May 5, but gave very poor germination; the test was discontinued for the year.

SALSIFY

Two varieties, Mammoth Sandwich Island and Long White, were tested. Long White gave the largest yield, although both did well.

SPINACH

Two varieties, Victoria and New Zealand, were grown. Both did well, Victoria proving to be somewhat earlier than the New Zealand.

SQUASH

Four varieties were tested this season with the following results:—

No.	Variety	Yield per acre
		lb.
1	Mammoth Warted Hubbard	17,920
2	Golden Hubbard	17,920
3	Hubbard	17,203
4	Delicious	16,128

TOMATOES

Sixteen varieties were tested with the following results:—

No.	Variety	Season	Yield per acre, Ripe	Yield per acre, Green	Total Yield per acre
			lb.	lb.	lb.
1	Burbank	Aug 31–Sept. 27	13,612	49,549	63,161
2	Sunnybrook Earliana	" 31– " 27	10,618	46,282	56,900
3	Alacrity	" 31– " 27	18,513	32,670	51,183
4	Earlibell	Sept. 18– " 27	6,534	43,015	49,549
5	Earliana	" 6– " 27	14,701	34,303	49,004
6	Northern Adirondack (Grade 2)	Aug. 31– " 27	21,780	26,680	48,460
7	John Baer	" 31– " 27	11,843	36,481	48,324
8	Chalk Jewel	Sept. 9– " 27	11,298	35,392	46,690
9	Crimson Canner	" 6– " 27	8,984	37,026	46,010
10	Bonny Best	" 6– " 27	10,618	35,392	46,010
11	Burbank Early	" 6– " 27	7,078	34,303	41,381
12	Prosperity	Aug. 31– " 27	14,838	26,136	40,974
13	Danish Export	" 31– " 27	6,806	32,670	39,476
14	XXX Round Scarlet Skin	" 31– " 27	13,884	25,047	38,931
15	Matchless (Burpee)	Sept. 23– " 27	2,178	16,335	18,513
16	Matchless (Graham)	– " 27	.....	17,424	17,424

The last of the tomatoes were harvested on September 27. Yields were computed on five plants, 4 feet apart each way.

TOMATOES—CULTURAL TEST

Two varieties, Alacrity and Bonney Best, were again used for the cultural test this year. They were sown in hotbeds April 14, pricked out on May 9, and set out in the open on June 16.

TOMATOES—CULTURAL TEST

No.	Variety	Method of Support and Pruning	Yield per acre Ripe	Yield per acre Green	Total Yield per acre
			lb.	lb.	lb.
1	Alacrity	Planted 4′ x 4′ apart, unpruned, lying on ground	19,547	43,560	63,107
2	Bonny Best	Pl. 4′ x 4′, unpruned on ground	9,066	38,442	47,508
3	Alacrity	Pl. 2′ x 4′, on wire, pruned to 2 stems	26,680	19,602	46,282
4	Bonny Best	Pl. 2′ x 4′, on stakes, pruned to one stem	31,254	7,623	38,877
5	Bonny Best	Pl. 2′ x 4′, on wire, pruned to one stem	31,908	2,178	34,086
6	Alacrity	Pl. 2′ x 4′, on stakes, pruned to two stems	28,641	3,246	31,887
7	Alacrity	Pl. 2′ x 4′, on stakes, pruned to one stem	22,978	8,494	31,472
8	Alacrity	Pl. 2′ x 4′, on wires, pruned to one stem	18,840	6,354	25,374
9	Bonny Best	Pl. 2′ x 4′, on stakes, pruned to two stems	12,632	11,979	24,611
10	Bonny Best	Pl. 2′ x 4′, on wires, pruned to two stems	11,924	4,792	16,716

Yield is computed from twenty-five plants.

The above experiment has been carried on for a number of years, and a summary of yields, and observations for a five-year period (1915-16-17-20-21), tends to the following conclusions:—

(1) The total yield of fruit is apparently adversely affected by the amount of pruning done. It was noted that unpruned vines gave the largest total yield, that pruning to two stems came second, with pruning to one stem giving the smallest total crop.

(2) If large total yield, with little labour, is the result desired, it apparently does not pay to spend time on pruning.

(3) Observation, however, tends to prove that the fruit is of superior quality when the vines are tied up.

(4) A larger percentage of ripe fruit is obtained when vines are pruned and tied up, picking is greatly facilitated, and the ripe fruit has fewer blemishes and less rot.

Conclusion in general.—In view of the fact that a slight pruning (to two stems) does not materially reduce the total yield, that tieing up vines to stakes or wire supplies a far larger amount of ripe fruit of superior quality, and that picking can be done more rapidly, from results obtained it would appear advisable, if growing tomatoes in limited quantities (as is done in Prince Edward Island), to treat and handle as in lot III (pruned to two stems and tied to stakes) or as in lot V (pruned to two stems and tied to wire).

TURNIPS

Five varieties of table turnips were sown, but, owing to infection by club root, reliable yields could not be obtained.

ASPARAGUS

The asparagus set out in 1920 is making good growth; the following list is in order of merit: Conover Colossal, Giant Argenteuil, Palmetto, Columbia Mammoth, Washington.

Conover Colossal is a late variety.

BORECOLE

Two varieties made good growth; there is no sale for this on our local market.

EGG PLANT

Two varieties were planted, but neither one formed fruit. This vegetable is not recommended for planting in this province.

VEGETABLE MARROW

Three varieties were tested this year, and gave large yields; Mammoth White Bush Marrow heading the list, followed by English Vegetable Marrow and Long White Bush.

TREES, SHRUBS, FLOWERS AND LAWNS

The trees, shrubs and perennial flowers wintered well, and made a very fine showing, the pæonies being one of the finest displays seen in the vicinity for some time. Aphis were kept under control by spraying with iced water.

The roses, in their new location, are doing remarkably well, and bore a profusion of bloom throughout the season.

The flowers in the large beds and borders about the lawn made an excellent showing. Some of the outstanding perennials are as follows:—

PERENNIALS—BLOOMING DATES

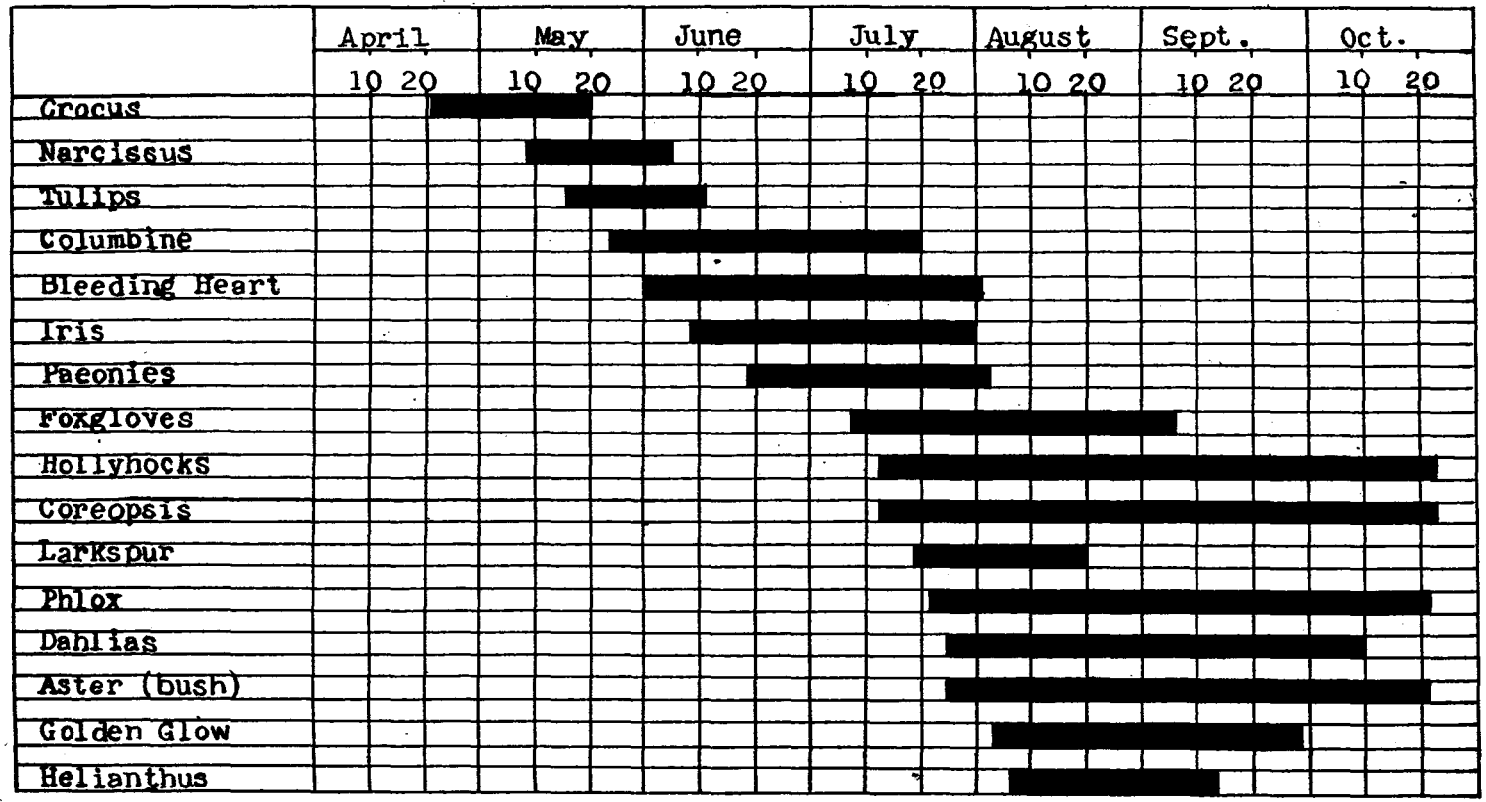
Perennials	Blooming Period
Narcissus	May 8-June 5
Tulips	May 17-June 12
Spiraea	June 6-Aug. 22
Aster (bush)	Aug. 30-Oct 21
Iris	June 9-July 31
Paeonies	June 19-Aug. 2
Phlox	July 24-Oct 21
Dahlias	July 25-Oct 10
Rudbeckia	Aug. 9-Sept 28

The Kentucky water-lilies now cover the entire surface of the pond west of the Station buildings, giving a profusion of bloom throughout the summer.

The following diagram illustrates the blooming period of a list of popular perennials, and graphically portrays how, by judicious planting, the blooming periods may be overlapped, thus ensuring a continuous succession of bloom throughout the entire growing season:—

ANNUAL FLOWERS

The annual flowers made a very fine display along the driveways this season. Sweet peas, as usual, proved the general favourite, and gave a profusion of bloom throughout the season.


April
May
June
July
August
Sept.
Oct.
10 20
Crocus
Narcissus
Tulips
Columbine
Bleeding Heart
Iris
Paeonies
Foxgloves
Hollyhocks
Coreopsis
Larkspur
Phlox
Dahlias
Aster (bush)
Golden Glow
Helianthus

CEREALS

THE SEASON.

The autumn of 1921 was favourable for the preparation of the land for the cereal crop of 1922. The winter was severe, with a heavy blanket of snow that gradually soaked into the soil in the spring, without run-off, insuring a good supply of moisture in the subsoil. The spring of 1922 came slowly; growth was delayed by the continued cool north-east winds. Seeding commenced on May 6, but backward weather set in, and seeding did not become general until May 15. June and July were splendid growing months. Heavy winds and rain in August lodged a great deal of oats; barley was harvested August 2, but cutting was not general until August 10. Harvest conditions were good, and a cereal crop above average was saved satisfactorily.

ROTATION FOR VARIETY TESTS.

A special four-year, grain-growing rotation, started at the Station in 1914, is used for the purpose of testing out different varieties of cereals, the rotation is as follows:—

First year:—Hoed crop, manured 12 tons per acre.

Second year:—Grain, seeded down with 10 pounds red clover, 2 pounds alsike and 5 pounds timothy per acre.

Third year:—Clover hay, eight tons manure per acre, applied immediately after haying, and ploughed down early in autumn.

Fourth year:—Grain, seeded down with 8 pounds red clover and 2 pounds alsike per acre.

It will be noted that this rotation gives a maximum area to the production of cereals.

UNIFORM TEST PLOTS OF CEREALS.

The weather during the grain-growing season was quite favourable; all cereals did well. Wheat especially, in the test plots was very fine. Grain ripened early and rapidly. Barley and wheat were treated with hot water for smut, and were practically free from any traces of this disease.

Test of varieties plots and some sections in the multiplying area were treated with Seed-o-San and Chlorophyl samples of which had been received from the manufacturer's agents. These proved of doubtful value in our work, and we would unhesitatingly recommend the use of either hot water or formalin in treatment of smut.

All variety tests of cereals, unless otherwise noted, are conducted in duplicate on one-sixtieth acre plots. These plots are carefully rogued during the summer, and, just previous to cutting, a hand selection is made from them to obtain sufficient seed to sow a similar plot in the following year.

BARLEY.

Barley plots, on the whole, were fairly good this year. They ripened early and rapidly. Rainy weather, after cutting, discoloured some of the seed.

Twelve varieties were tested with the following results. (All barley plots were seeded on May 18.):—

BARLEY—TEST OF VARIETIES

Name of Variety	Date of ripening	No. of days maturing	Average length of straw, inc. head	Strength of straw on a scale of 10 points	Actual Yield per acre	Weight per measured bushel after cleaning
			inches		bush. lb.	lb.
Swedish Chevalier	Aug. 19	93	50	9·5	57 13	58·2
Stella, Ottawa No. 58	" 14	88	44	10·0	56 5	54·0
Nugent E	" 15	89	35	10·0	55 0	54·0
Chinese, Ottawa No. 60	" 6	80	35	9·7	50 45	52·4
Manchurian, Ottawa No. 50	" 15	89	41	9·5	49 40	53·8
O.A.C. No. 21	" 11	85	38	10·0	47 24	52·0
Gold	" 16	90	38	10·0	43 21	58·0
Charlottetown No. 80	" 21	95	32	10·0	43 6	58·2
Duckbill, Ottawa No. 57	" 21	95	36	10·0	42 24	58·0
Pedigree Beardless	" 12	86	38	9·5	42 2	50·0
*Himalayan (hulless). Ottawa No. 59	" 2	76	30	10·0	41 42	63·0
Albert, Ottawa No. 54	" 3	77	33	10·0	31 42	53·2

*Himalayan (hulless) figured at 48 pounds per bushel.

Table giving yields of a number of the more popular varieties of barley that have been grown at the Charlottetown Station in the past:—

Name of Variety	Type	Number of years grown	Average yield per acre
			bush. lb.
Charlottetown No. 80	2-rowed	11	62 5
Gold	2 "	13	58 30
O.A.C. No. 21	6 "	13	58 11
Swedish Chevalier	2 "	13	57 36
Stella, Ottawa No. 58	6 "	13	56 27
Manchurian, Ottawa No. 50	6 "	12	55 6
Chinese, Ottawa No. 60	6 "	2	53 41
Albert, Ottawa No. 54	6 "	13	49 43
Nugent E (Ottawa)	6 "	3	48 41
Duckbill, Ottawa No. 57	2 "	5	45 2
Pedigree Beardless	6 " (hooded type)	3	44 11
*Himalayan, Ottawa No. 59	6 " (hulless)	2	42 41

*Himalayan (hulless) figured at 48 pounds per bushel.

OATS.

Eleven varieties of oats were tested this year at the Station. Prolific (Ottawa No. 77) and Columbian (Ottawa No. 78) were added to the list as new varieties. Prolific appeared somewhat weak in straw and lodged slightly. Columbian lodged very badly, both plots being practically flat at date of cutting. These varieties, however, will be given further trial next year, if possible. (All the oat plots were sown on May 18.):—

OATS—TEST OF VARIETIES

Name of variety	Date of ripening	Number of days maturing	Average length of straw, including head	Strength of Straw on a scale of 10 points	Actual Yield of grain per acre		Weight per Measured bushel after cleaning
			inches		bush.	lb.	lb.
Banner (Ottawa No. 49)	Aug. 25	99	51	8·0	93	1	43·0
Columbian (Ottawa No. 78)	" 24	98	52	4·0	81	31	40·8
Victory	" 23	97	42	10·0	81	21	46·0
Prolific (Ottawa No. 77)	" 24	98	50	7·5	75	28	44·0
Northland	" 24	98	52	3·0	71	25	43·8
Gold Rain	" 20	94	56	9·5	65	22	46·8
Daubeney (Ottawa No. 47)	" 10	84	48	10·0	64	24	45·0
Longfellow (Ottawa 478)	" 19	93	56	9·5	64	22	44·0
O.A.C. No. 72	" 24	98	50	9·5	63	12	45·0
Old Island Black	" 22	96	50	9·0	58	23	44·0
*Liberty (Ottawa 480)	" 14	88	51	10·0	47	—	53·0

*Liberty is a hulless variety, but was figured at 34 pounds per bushel.

Table giving average yields of a number of varieties of oats that have been grown at the Charlottetown Station in the past:—

Name of variety	Number of years grown	Average yield per acre	
	years	bush.	lbs.
Victory	13	81	30
O.A.C. No. 72	9	80	1
Banner (Ottawa No. 49)	13	78	11
Gold Rain	13	79	9
Old Island Black	11	70	32
Daubeney (Ottawa No. 47)	12	59	22
Longfellow (Ottawa No 478)	3	54	15
Northland	2	51	3
*Liberty (hulless) Ottawa No. 480	3	41	13

*Liberty figured at 34 pounds per bushel.

SPRING WHEAT.

Twelve varieties of spring wheat were tested this season, or one more than last year. " Keyes " wheat, a variety obtained locally for testing, was considered to have no particularly strong points, and, as it was very badly mixed, it was dropped from our lists. White Fife, of the same strain as that formerly grown at the Station, has been again added for test, and a new variety, Master (Ottawa No. 520) was also sown. This latter variety is derived from a cross between Aurora and Red Fife. It is a very early ripening variety, gives a fairly high yield, as reported at Ottawa, is beardless, and produces wheat of good quality. (All wheat plots sown May 18.):—

SPRING WHEAT—TEST OF VARIETIES

Name of variety	Date of ripening	Number of days maturing	Average length of straw, including head	Strength of straw on a scale of 10 points	Actual yield of grain per acre		Weight per measured bushel after cleaning
			inches		bush.	lb.	lb.
Early Russian (Ottawa 40)	Aug. 29	103	48	2·0	47	45	64·8
Huron (Ottawa No. 3)	" 28	102	50	10·0	43	41	65·5
Whiteheads	" 29	103	50	10·0	43	26	64·0
Early Red Fife (Ottawa No. 16)	" 29	103	50	10·0	42	38	63·2
Campbell's White Chaff	" 30	104	51	9·5	41	53	63·5
Ruby (Ottawa 623)	" 23	97	42	10·0	35	27	65·0
Marquis (Ottawa 15)	" 28	102	51	10·0	34	43	65·0
Chelsea (Ottawa 10)	" 29	103	50	10·0	34	11	64·0
White Russian	" 30	104	49	9·5	33	26	63·5
Red Fife (Ottawa 17)	" 30	104	48	10·0	31	32	63·8
White Fife, Ottawa No. 11	" 31	105	48	10·0	28	2	63·5
Master (Ottawa No. 520)	" 16	90	40	10·0	27	4	63·8

Table giving average yields of some of the more popular varieties of grain grown at the Charlottetown Station:—

SPRING WHEAT—AVERAGE YIELDS

Name of Variety	Number of years grown	Average yield per acre	
	years	bush.	lb.
Whiteheads	4	41	40
Early Russian, Ottawa No. 40	7	40	..
Huron, Ottawa No. 3	13	36	32
Chelsea, Ottawa No. 10	13	35	24
Marquis, Ottawa No. 15	13	34	36
Early Red Fife, Ottawa No. 16	12	33	53
White Russian	13	32	50
Campbell's White Chaff	6	32	11
White Fife, Ottawa No. 11	10	31	59
Ruby, Ottawa No. 623	5	31	27
Red Fife, Ottawa No. 17	13	30	48

MULTIPLYING AREAS OF CEREALS

The following is a statement of the areas devoted to seed production at the Station this season:—

SPRING WHEAT

Name of Variety	Field	Preceding crop	Acreage	Yield per acre	
			acres	bush.	lb.
Whiteheads	G VII	Turnips	0·4	29	45
Early Red Fife, Ottawa No. 16	C IV	Potatoes	0·57	28	36
Early Red Fife Ottawa No. 16	CC I	Mangels	1·0	27	47
White Fife, Ottawa No. 11	CC I	Mangels	1·0	26	57
Huron, Ottawa No. 3	B II	Potatoes	1·0	24	46

OATS

Name of Variety	Field	Preceding Crop	Acreage	Yield per acre	
				bush.	lb.
Banner, Ottawa No. 49	A II	Mangels	1·0	72	16
Banner, Ottawa No. 49	B IV	Clover	1·0	63	13
O.A.C. No. 72	G V	Timothy	0·4	39	24

BARLEY

Name of Variety	Field	Preceding Crop	Acreage	Yield per acre	
			acres	bush.	lb.
Charlottetown No. 80	A V	Timothy	1·0	41	43
Charlottetown No. 80	CC I	Mangels	1·25	21	42

Thinking it might be of interest to the farmers of the province, we submit the following as the percentage of hull for several of the more common varieties of oats grown here. These figures are the result of one year's investigation (1922) crop). It is the intention to continue this for several years so as to obtain more reliable averages.

OATS—PERCENTAGE OF HULL

Old Island Black	29·1
Victory	28·6
Banner, Ottawa No. 49	28·2
O.A.C. No. 72	26·7
Gold Rain	22·3
Daubeney	21·6

FORAGE CROPS

THE SEASON

The after grass and pastures were only fair in the autumn of 1921. The heavy blanket of snow during the winter protected the forage plants that had survived the dry season, so that the prospect of grass and clover was better in the spring of 1922 than was expected. The slow backward spring was also favourable for hay. The early mangels germinated poorly, but the weather was more favourable for the later sown root crops. The splendid growing weather of June, July and August brought along all forage crops rapidly, so that good yields of hay, roots, corn and sunflowers were obtained.

ENSILAGE CROPS

INDIAN CORN

Corn did fairly well this year, although, owing to continuous wet weather during the growing season, it did not mature as fully as usual.

INDIAN CORN FOR ENSILAGE—TEST OF VARIETIES

No.	Variety	Average Height	Stage of Maturity	Average Yield per acre	
		inches		tons	lb.
1	Improved Leaming	99	Tassel	18	.....
2	Golden Glow	96	"	18	.....
3	Bailey	105	"	17	1,000
4	Wisconsin No. 7	103	"	17	.....
5	North Dakota	93	"	17	.....
6	Longfellow	89	Milk	16	1,500
7	Leaming	97	"	16	500
8	White Cap Yellow Dent	101	Tassel	15	1,500
9	Compton's Early	101	"	15	1,000
10	Wisconsin No. 7	103	Milk	14	1,500
11	Quebec No. 28	69	Dough	13	.....
12	Twitchell's Pride	67	"	12	500

SUNFLOWERS FOR ENSILAGE—TEST OF VARIETIES

No.	Variety	Average Height	Stage of Maturity	Average Yield per acre	
		inches		tons	lb.
1	Mammoth Russian (Carter & Co.)	111	Dough	25	1,000
2	Mammoth Russain (McDonald)	120	Milk	21	500
3	Mammoth Russian	110	Dough	20	.....
4	Mammoth Early (Ottawa)	105	Dough	18	500
5	Dakota Imp. Seed Co	108	Dough	18	.....
6	Early Ottawa	87	Dough	12	1,700
7	Mixed Mammoth (Rosthern)	72	Ripe	7	1,000

Sunflowers and corn were also grown under field conditions for silage purposes. Sunflowers averaged 19 tons 1,272 pounds, and corn averaged 16 tons, 438 pounds per acre. The sunflowers were all placed in the bottom of the silo, the balance of the silo being filled with corn. A quantity of corn (about 25 tons) was shocked up near the barns, and is to be fed as stover.

ROOTS

FIELD CARROTS

One variety of field carrots, Danish Champion, (Ottawa 1920 seed), gave a yield of 6 tons per acre.

TURNIPS—TEST OF VARIETIES

Poor germination and very considerable damage by cutworms militated against high production, although the very favourable weather conditions during the growing season tended to maintain a fairly good yield.

TURNIPS—TEST OF VARIETIES

No.	Variety	Seed Obtained From	Average yield per acre	
			tons	lb.
1	Ditman's Swede	Ottawa	23	.....
2	Mill Pond	Gill & Lantz	23	.....
3	Carter's Best of All	Carter & Co.	22	.....
4	Elephant or Monarch	Gill & Lantz	21	1,000
5	Monarch	Ottawa	21	.....
6	Haszard's Improved	Gill & Lantz	20	1,000
7	Haszard's Improved	Carter & Co.	20	1,000
8	Magnum Bonum	Gill & Lantz	20	1,000
9	Good Luck	Ste. Anne's, Quebec	20	1,000
10	Jumbo	Carter & Co.	19	1,000
11	Bangholm Selected	Charlottetown	17	1,000
12	Bangholm Selected	Denmark	17	.....
13	Mill Pond	Carter & Co.	16	1,000
14	Purple Top	Gill & Lantz	16	.....

BANGHOLM SELECTED TURNIP SEED

In 1920, a supply of Bangholm seed, selected for resistance to club root, was obtained from Denmark, and planted for the production of stecklings. Seed was produced from these stecklings in 1921, and used in all our field work for the season of 1922. In spite of the fact that our soil is very badly infested with club root, no evidence of the disease was noted in this season's crop. The production of this seed is to be carried on, and it is hoped that a strain entirely immune to attacks of this disease will be established.

It might be noted here that at the time of pulling, and also when putting these roots through the pulper, they seemed to be much firmer and heavier than the ordinary varieties grown. These will be analyzed to determine dry matter content and feed value in comparison with other common varieties.

A further small sample of seed was obtained in 1922 from the original source in Denmark, for the purpose of determining whether the 1920 seed was deteriorating in any way. Grown under similar conditions, there was only the difference of twenty bushels per acre in total yield, as given in the preceding table (quite within the limits of possible experimental error) and as far as could be observed, the crop from seed produced in Charlottetown was equal in every way to that from the imported seed.

MANGELS AND SUGAR BEETS—TEST OF VARIETIES

Owing to poor germination and attacks by cutworms, the test of varieties of mangels and sugar beets this year was a failure. After being once destroyed by cutworms, they were reseeded, but were again destroyed to such an extent as to be useless for record work; so the area was seeded to turnips late in the season.

CLOVER AND GRASSES

FIELD CROPS OF HAY

Kind of Hay	Field	Preceding Crop	Acreage	Yield per acre
				lb.
*Timothy	G III	Timothy	0·4	9,600
*Clover Hay	C I	Wheat	0·57	7,591
*Timothy	G II	Clover	0·4	7,187
Timothy	G IV	Timothy	0·4	6,475
*Clover	G I	Wheat	0·4	5,500
Clover	B III	Wheat	1·0	4,655
Timothy	A IV	Clover	1·0	4,505
Clover	B V	Oats	1·0	3,840
Timothy	CC V	Clover	6·0	3,701
Clover	Blake Field	Grain	5·0	3,600
Clover	CC III	Wheat	6·0	3,400
Clover	Connolly Field	Oats	10·0	3,200
Timothy	Connolly Field	Clover	19·0	3,158
Clover	A III	Oats	1·0	3,025
Timothy	Blake Field	Clover	10·0	2,000

*Two cuttings.

GRASS AND CLOVER MIXTURES

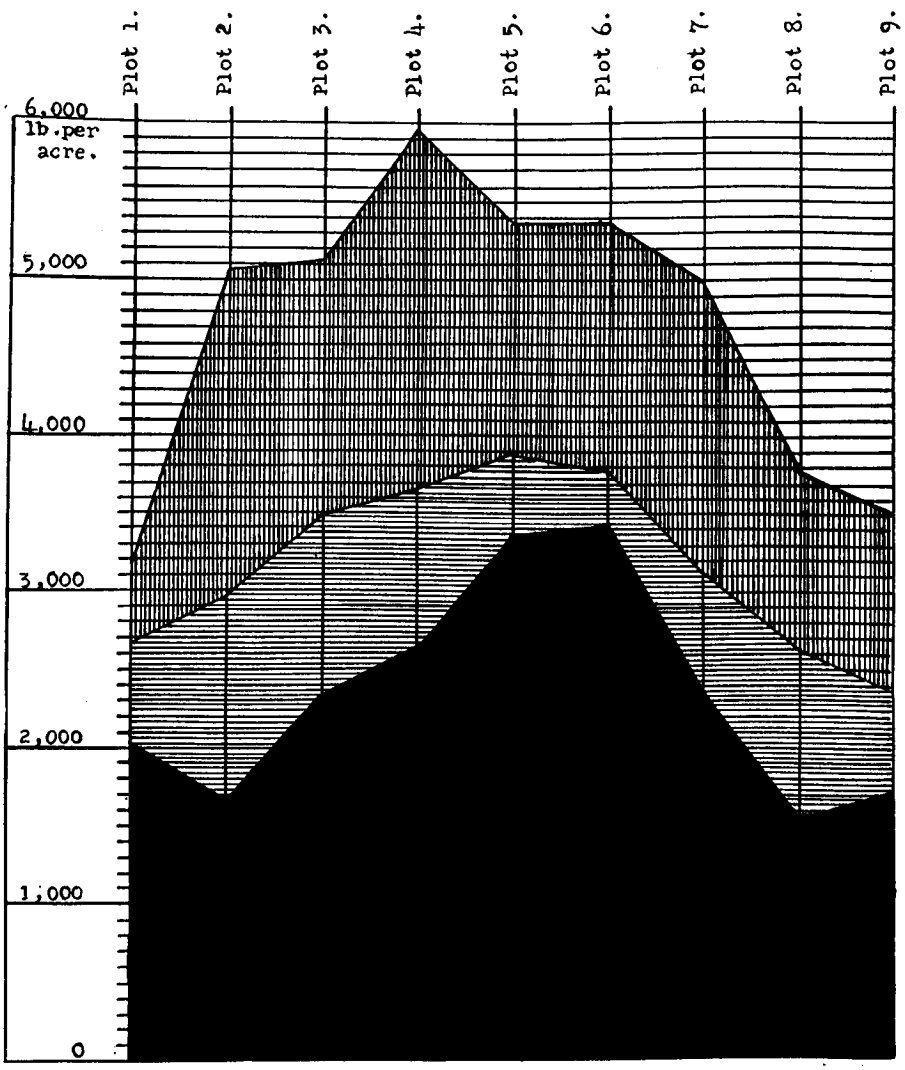
The twenty plots seeded in 1920 produced their second crop of hay this season.

PLAN OF SEEDINGS

SHOWING various mixtures, rates of seeding per acre, and yields for 1921 and 1922.

Plot Number	Red Clover per acre	Timothy per acre	Western Rye Grass per acre	Kentucky Blue Grass per acre	White Dutch per acre	Red Top per acre	Alsike per acre	Orchard Grass per acre	Total Seed per acre	Yield per acre 1921	Yield per acre 1922
	lb.	lb.	lb.	lb.	lb.	lb.	lb.	lb.	lb.	lb.	lb.
1	12								12	3,600	4,800
2	10	8							18	2,960	3,760
3	10		8						18	2,480	2,960
4	10								10	2,620	3,600
5	10			12					22	2,620	3,600
6	10			8	2				20	3,200	4,480
7	10					12			22	3,520	4,400
8	10				2	10			22	4,400	4,880
9	10	6			6				22	5,120	6,240
10	10	10	5	3	2	3			33	5,200	6,400
11	10						4		14	4,560	4,480
12	8	8					2		18	3,520	4,160
13	8		8				2		18	2,560	2,800
14	8						2	15	25	3,280	3,360
15	8			12			2		22	3,440	3,440
16	8			10	2		2		22	2,160	2,560
17	8					12	2		22	2,080	2,160
18	8				2	10	2		22	1,680	3,600
19	8	6	6				2		22	2,320	2,800
20	8	5	5	3	2	3	2		28	2,400	4,240

In observation it was noted that red top proved persistent and gave good yields, Kentucky blue grass and western rye of very doubtful value in this province, orchard grass of possible value, probably as pasture grass. Timothy and the clovers are still considered the standard for this section.



In the above chart the area in solid black shows the yield of timothy, from the different plots, for 1922. The upper shaded portion gives the yield of clover for the same year, and the centre shaded portion gives the seven-year average yield of both timothy and clover combined.

GRASSES AND CLOVER MIXTURES

The new grass plots, seeded in 1921, gave their first cut this season. The following is an outline of the seeding, together with yields:—

Number	Red Clover per acre	Timothy per acre	Alsike per acre	Orchard Grass per acre	Meadow Fescue	Total Seed per acre	Yield per acre	Average Yield per acre
	lb.	lb.	lb.					
1	8	8	2	.....	.....	18	2,660	2,900
7	8	8	2	.....	.....	18	3,140	
2	8	6	2	6	6	28	2,920	
6	8	6	2	6	6	28	3,000	2,777
8	8	6	2	6	6	28	2,410	
3	8	4	2	6	6	26	3,040	2,720
9	8	4	2	6	6	26	2,400	
4	8	4	2	.....	.....	14	3,660	3,660
5	8	8	2	6	6	30	4,140	4,140

All grasses seeded came through the winter fairly well. It remains to learn, another year, whether or not these prove persistent.

SILAGE

A stave silo 20 feet by 12 feet was constructed at the Station during the summer. This was filled with sunflowers and corn. When opened at the first of the New Year, the silage was found to be of excellent quality.

AGRICULTURAL CHEMISTRY

EXPERIMENTAL WORK WITH FERTILIZERS 1922

SOURCES OF LIME

This experiment, to compare the relative value of burned lime, ground limestone, oyster shell mud and basic slag as sources of lime, and started in 1921 on turnips, was in oats this season, but the grain lodged so badly as to make the records somewhat unreliable, except for comparison, as every plot was about equally broken down. Area of plots one-eighth acre each.

Rotation.—First year, turnips; Second year, oats; Third year, clover; Fourth year, timothy. The experiment will be continued during the seasons of 1923 and 1924, and it is hoped that some satisfactory deductions may be made when the investigation is completed.

FISH SCRAP FERTILIZER

In the spring of 1921, fish scrap (tails, fins, trimmings) was obtained from a local fish packing plant, and applied to turnips (first year of rotation) to demonstrate their fertilizing value, if any. Part was applied dry, or as it came from the packing tables. This contained a considerable quantity of coarse salt. The "leached" scrap was emptied out and exposed to the spring rains for a period of about six weeks, or until practically all salt was washed out of it. The plots were very badly lodged. No deductions have been made up to the present stage of the investigation. Area of plots, 1-8 acre each. No value was set on this material by the packing house but it could probably be obtained at a very low price.

In this experiment, started this spring (1922), the first section of the plan, as will be noted, provides for comparing the effects of applying nitrate at different stages. In the second section, each ingredient is decreased in turn, or eliminated entirely. Crop for 1922, potatoes, all plots in duplicate, area one-twenty-fifth acre each.

EXPERIMENTAL WORK WITH FERTILIZERS, 1922

TABLE showing dates of Application of Fertilizer and Crop Yields. (Potatoes).

Plot No.	Fertilizers (in pounds per acre)					Pounds per acre of			Yield per acre in pounds			Yield per acre. Bushels and pounds		Per cent of Marketable Tubers
	Nit. of Soda 15½% N. Date of Application			Superphosphate 16% P_{205}	Muriate of Potash 50% K_{20}	N	P_{205}	K_{20}	Small	Large	Total			
	At-planting	When crop appears	15 days after											
SECTION I:—														
1	Check								1,588	5,275	6,863	114	23	76·8
2	330			300	150	50	48	75	1,350	11,312	12,662	211	2	89·3
3	220	110		300	150	50	48	75	1,650	9,300	10,950	182	30	94·9
4	110	110	110	300	150	50	48	75	1,050	10,600	11,650	194	10	90·9
5	110	220		300	150	50	48	75	2,988	9,600	12,588	209	48	76·2
6		220	110	300	150	50	48	75	2,588	7,775	10,365	172	43	75·0
7	No nitrogen			300	150		48	75	2,412	6,500	8,912	148	32	72·9
SECTION II:—														
8	Check								2,650	8,388	11,038	183	58	75·9
9	220			300	150	33	48	75	1,525	12,438	13,963	232	43	89·0
10	110			300	150	16½	48	75	1,118	11,425	12,613	210	13	90·5
11	220			300	75	33	48	37½	1,550	11,413	12,963	216	3	88·0
12	220			300		33	48		1,425	9,500	10,925	182	5	86·9
13	220			150	150	33	24	75	1,638	9,938	11,576	192	56	85·8
14	220				150	33		75	1,675	10,325	12,000	200	..	86·0
15	220					33			2,125	8,338	10,465	174	23	79·6
16	330					50			1,925	14,125	16,050	267	30	88·6

Planting and first application of fertilizers, June 2, second application of nitrate of soda, June 21, and third application made on July 3.

It was noted on September 22 that, while all other plots were green and fresh, plots 7 and 8 appeared decidedly lighter in colour, in fact, quite yellow.

It is the intention to continue this investigation during the season of 1923.

POULTRY

The poultry work at this Station is devoted mainly to the production of a uniform egg-laying strain of Barred Rocks and Single Comb White Leghorns—the two most popular breeds of fowl in Prince Edward Island. As much attention as circumstances will permit is also given to the solution of problems met with by the poultrymen of this locality.

All birds are trapnested throughout the year, and those that produce consistently year after year are located and recorded. A number of the best layers, when mated with male birds from high producing hens, are used for pedigree improvement work.

One of the chief difficulties in breeding operations is the procuring of reliable male birds. During the past season, Barred Rock cockerels have been obtained, these being highly pedigreed birds from an established line of producers. Arrangements have also been made to obtain two pedigreed S.C. White Leghorn cockerels of a high producing strain. During the breeding season of 1923, these will be mated with the best layers.

The stock on hand April 1, 1922, consisted of 23 males and 332 females as shown in the following table:—

Breed	Males	Hens	Pullets	Totals
S. C. White Leghorns	12	75	134	221
Barred Rocks	11	66	57	134
	23	141	191	355

HOUSING

The poultry buildings now in use are as follows:—

One poultry administration building, with office and sleeping accommodation for poultryman; there are also rooms for incubation, for storing and mixing feed, and for candling and storing eggs.

Two permanent cotton-front, straw-loft laying houses, 32 feet by 16 feet, for 100 hens each.

Two straw-loft portable colony houses, 12 feet by 8 feet.

One shed-roof, cotton-front colony house, 12 feet by 8 feet.

Three shed-roof, cotton-front colony houses, 12 feet by 10 feet.

Three shed-roof, chick rearing houses, 8 feet by 3 feet.

Two shed-roof houses, 8 feet by 6 feet, for the larger pullets when on free range.

Twenty-two cotton-front, shed-roof contest houses, 12 feet by 10 feet, with a solid partition through the centre.

In order to render the two permanent houses more wind-proof, the back wall and ends of each were covered, during the past autumn, with two layers of tarred paper, and shingled. One of the most exposed colony houses was treated in like manner.

During the past season the fences, which had been damaged by the action of snow and frost, received thorough repair, and gates, 8 feet by 5 feet were provided for each yard. This will permit of the yards being cultivated at regular intervals to renew the sod and give the birds fresh ground.

EGG PRODUCTION

In the latter part of October and November, 1921, almost all the early-hatched White Leghorn pullets experienced a partial moult, and thus lost valuable time. During the cold weather in January and February, the White Leghorn pullets were severely injured by frost, which at once caused a great falling off in egg production. A number of the Barred Rock pullets, also, were injured in the same way.

Lights were used, to aid production, during the late fall and early winter months.

The mature hens were not fed highly for eggs until the beginning of the breeding season.

The following tables have been compiled from the records of the year 1921-22:—

EGG YIELDS OF HENS VERSUS PULLETS BY MONTHS

Month	Hens			Pullets		
	No.	Total Eggs	Average per Hen	No.	Total Eggs	Average per Pullet
1921						
November	165	40	0·2	95	56	0·6
December	143	572	4·0	141	1,434	10·2
1922						
January	143	538	3·7	140	1,275	9·1
February	143	533	3·7	140	1,225	8·7
March	143	1,619	11·3	140	1,100	7·8
April	141	2,341	16·6	134	2,113	15·8
May	128	2,444	19·0	118	2,400	20·3
June	118	2,108	17·8	118	2,131	18·0
July	113	1,789	15·8	109	1,910	17·5
August	111	1,484	13·3	109	1,244	11·4
September	110	1,059	9·6	100	903	9·0
October	108	349	3·2	87	292	3·3
Totals	.....	14,876	.....	.....	16,083	
Average per bird per year	.....	.....	118·2	.....	.....	131·7
Average per bird per month	.....	.....	9·85	.....	.....	10·9
Average per bird 1920-21	.....	.....	116·2	.....	.....	140·9

STATEMENT covering Production, Profit and Loss and Feed Consumed by S.C. White Leghorn Pullets, Bred and Raised at Dominion Experimental Farm, Charlottetown, P. E. Island, October 1, 1921, to September 30, 1922.

Month	No. of birds	Average per bird	Total Eggs laid	Average Price per doz.	Total Market Value	Cost per doz.	Total cost of feed	Cost to feed one Bird	Total Monthly Profit	Total Monthly Loss	Feed Consumed								Price per 100 lbs.							Remarks
											Grain	Mash	Beef Scrap	Grit	Shell	Roots	Milk	Total Amount Feed	Grain	Mash	Scrap	Grit	Shell	Roots	Milk	
1921				$ c.	$ c.	$ c.	$ c.	$ c.	$ c.	lb.	lb.	lb.	lb.	lb.	lb.	lb.	lb.	lb.	$ c.	$ c.	$ c.	$ c.	$ c.	$ c.	$ c.	
Oct.	30	7·4	223	0 34	6 32	0 42	7 91	0 26	.....	1 59	250	45		5	5	.....	30	335	2 40	3 60	7 50	1 50	2 00	.....	0 40	
Nov.	50	0·5	26	0 45	0 97	4 21	9 12	0 18	.....	8 15	300	42		3	3	.....	.....	348	2 50	3 60	7 50	1 50	2 00	.....	0 40	All pullets in
Dec.	50	11·4	573	0 50	23 88	0 19	8 87	0 18	15 01	.....	250	83		6	6	130	40	515	2 65	3 05	7 50	1 25	1 50	0 50	0 40	molt.
1922																										
Jan.	50	9·1	458	0 55	20 99	0 27	10 39	0 21	10 60	.....	235	95		7	8	130	40	515	2 72	3 14	7 50	1 25	1 50	0 50	0 40	Many combs
Feb.	50	10·2	514	0 45	19 28	0 21	9 13	0 18	10 15	.....	225	100		8	10	70	35	448	2 35	3 10	7 50	1 25	1 50	0 50	0 40	frozen Jan.
March	48	10·1	486	0 35	14 18	0 21	8 47	0 18	5 71	.....	227	88		9	9	75	35	443	2 20	3 10	7 50	1 25	1 50	0 50	0 40	24 and Feb.
April	47	16·9	794	0 26	17 20	0 16	10 27	0 22	6 93	.....	305	87		15	14	125	40	586	2 20	3 10	7 50	1 25	1 50	0 25	0 40	18
May	44	21·4	944	0 26	20 45	0 13	9 97	0 23	10 48	.....	315	80		6	13	40	30	484	2 20	3 10	7 50	1 25	1 50	0 40	0 40	
June	44	20·0	901	0 27	20 27	0 12	9 22	0 21	11 05	.....	280	86		9	13	.....	25	413	2 20	3 10	7 50	1 25	1 50	.....	0 40	
July	41	20·8	853	0 27	19 19	0 12	8 69	0 21	10 50	.....	265	83		8	10	.....	10	376	2 20	3 10	7 50	1 25	1 50	.....	0 40	
Aug.	40	10·9	438	0 27	9 86	0 20	7 36	0 18	2 50	.....	215	78		5	10	.....	.....	308	2 20	3 10	7 50	1 25	1 50	.....	.....	
Sept.	37	8·1	300	0 30	7 50	0 23	5 78	0 16	1 72	.....	202	44		4	4	.....	.....	254	2 20	2 80	7 50	1 25	1 50	.....	.....	
Totals	.....	146·8	6,510	.....	180 09	0 19	105 18	2 40	84 65	9 74	3,069	911	.....	85	105	570	285	5,025	.....	.....	.....	.....	.....	.....	.....	.....

15% to 20% in dry mash.

Net gain over cost of feed, $74.91.

STATEMENT covering Production, Profit and Loss and Feed Consumed by Barred Rock Pullets, Bred and Raised at Dominion Experimental Farm, Charlottetown, P.E.I., from December 1, 1921, to November 30, 1922.

Month	No. of birds	Average per bird	Total Eggs laid	Average Price per doz.	Total Market Value	Cost per doz.	Total cost of feed	Cost to feed one Bird	Total Monthly Profit	Total Monthly Loss	Feed Consumed								Price per 100 lbs.							Remarks
											Grain	Mash	Beef Scrap	Grit	Shell	Roots	Milk	Total Amount Feed	Grain	Mash	Scrap	Grit	Shell	Roots	Milk	
1921				\$ c.	\$ c.	\$ c.	\$ c.	\$ c.	\$ c.	\$ c.	lb.	lb.		lb.	lb.	lb.	lb.	lb.	\$ c.	\$ c.	\$ c.	\$ c.	\$ c.	\$ c.	\$ c.	
Dec.	45	11·4	514	0 50	21 42	0 19	8 54	0 19	12 88	.....	200	73		6	6	140	40	465	2 65	3 05	7 50	1 25	1 50	0 50	0 40	
1922																										
Jan.	45	8·6	390	0 55	17 87	0 30	9 61	0 21	8 26	.....	265	44		6	6	140	40	501	2 72	3 14	7 50	1 25	1 50	.....	0 40	
Feb.	43	6·5	279	0 45	10 46	0 41	9 48	0 22	0 98	.....	285	65		8	7	80	40	485	2 35	3 10	7 50	1 25	1 50	.....	0 40	
March	42	5·7	245	0 35	7 15	0 43	8 78	0 21	.....	1 63	225	95		9	10	90	45	474	2 20	3 10	7 50	1 25	1 50	.....	0 40	
April	40	15·5	621	0 26	13 45	0 20	10 55	0 26	2 90	.....	305	87		13	11	130	45	591	2 20	3 10	7 50	1 25	1 50	.....	0 40	
May	31	20·2	626	0 26	13 56	0 13	7 00	0 23	6 56	.....	215	55		8	6	50	30	364	2 20	3 10	7 50	1 25	1 50	.....	0 40	
June	30	17·4	522	0 27	11 75	0 12	5 19	0 17	6 56	.....	170	41		4	5	.....	15	235	2 20	3 10	7 50	1 25	1 50	.....	0 40	
July	30	14·4	432	0 27	9 72	0 13	4 86	0 16	4 86	.....	156	42		6	4	.....	.....	208	2 20	3 10	7 50	1 25	1 50	.....	0 40	
Aug.	27	14·7	397	0 27	8 93	0 14	4 53	0 17	4 40	.....	145	39		5	5	.....	.....	194	2 20	3 10	7 50	1 25	1 50	.....	.....	
Sept.	27	11·6	313	0 30	7 82	0 17	4 39	0 16	3 43	.....	157	27		3	4	.....	.....	191	2 20	3 10	7 50	1 25	1 50	.....	.....	
Oct.	24	4·0	96	0 32	2 56	0 54	4 33	0 18	.....	1 77	115	33		4	3	.....	.....	155	2 20	2 80	7 50	1 25	1 50	.....	.....	
Nov.	20	4·4	88	0 36	2 64	0 37	2 69	0 13	.....	0 05	83	27	15% to 20% in dry mash.	5	44	.....	.....	119	2 15	2 80	7 50	1 25	1 50	.....	.....	A number of combs were frozen on January 24 and Feb. 18.
Totals	.....	134·4	4,523	.....	127·33	0 21	79 95	2 29	50 83	3 45	2,321	628		77	71	630	255	3,982	.....	.....	.....	.....	.....	.....	.....	

Net Gain over cost of feed, $47.38.

STATEMENT showing Production, Value of Eggs, Cost of Feed, and Profit and Loss on Barred Rock Pullets bred and raised at Dominion Experimental Farm, Charlottetown, P.E.I., November, 1921 to February 28, 1922:—

Month	Number of Birds	Eggs	Average Yield	Value	Cost of Feed	Profit	Loss	Remarks
				$ cts.	$ cts.	$ cts.	$ cts.	
Nov. 1921....	45	30	0·6	1 12	7 43	.....	6 31	A number of combs frozen Jan. 24 and Feb. 18.
Dec. 1921....	45	514	11·4	21 42	8 54	12 88	.....	
Jan. 1922....	45	390	8·6	17 87	9 61	8 26	.....	
Feb. 1922....	43	279	6·5	10 46	9 48	0 98	.....	
Totals....	.....	1,213	27·1	50 87	35 06	22 12	6 31	

Average production per hen, 27·1 eggs.
Total net profit, $15.81.

STATEMENT showing Production, Value of Eggs, Cost of Feed and Profit and Loss on S.C. White Leghorn Pullets, bred and raised at Dominion Experimental Farm, Charlottetown, P.E.I., November 1, 1921, to February 28, 1922:—

Month	Number of Birds	Eggs	Average Yield	Value	Cost of Feed	Profit	Loss	Remarks
				$ cts.	$ cts.	$ cts.	$ cts.	
Nov. 1921....	50	26	0·5	0 97	9 12	.....	8 15	Moulting.
Dec. 1921....	50	573	11·4	23 88	8 87	15 01	.....	
Jan. 1922....	50	458	9·1	20 99	10 39	10 60	.....	Many combs frozen Jan. 24 and Feb. 18.
Feb. 1922....	50	514	10·2	19 28	9 13	10 15	.....	
Totals....	.....	1,571	31·4	65 12	37 51	35 76	8 15	

Average production per hen, 31·4 eggs.
Total net profit, $27.61.

INDIVIDUAL RECORDS of S.C. White Leghorn Pullets, Bred and Raised at Dominion Experimental Farm, Charlottetown, P.E.I., 1921–1922

200 Eggs and over			170 to 200 Eggs			150 to 170 Eggs		
Band No.	No. Eggs	Date of First Egg	Band No.	No. Eggs	Date of First Egg	Band No.	No. Eggs	Date of First Egg
191	213	Dec. 9, 1921	349	197	Oct. 12, 1921	185	169	Jan. 10, 1922
370	208	Sept. 17, 1921	150	187	Dec. 6, 1921	318	168	Feb. 1, 1922
194	204	Dec. 1, 1921	325	185	Dec. 9, 1921	160	168	Dec. 10, 1921
193	202	Nov. 26, 1921	142	182	Dec. 1, 1921	184	167	Jan. 15, 1922
323	201	Dec. 15, 1921	366	180	Sept. 25, 1921	122	167	Dec. 5, 1921
			153	179	Dec. 6, 1921	321	167	Dec. 16, 1921
			200	179	Dec. 6, 1921	202	166	Jan. 10, 1922
			197	175	Dec. 7, 1921	149	166	Dec. 6, 1921
			328	171	Dec. 9, 1921	374	165	Sept. 8, 1921
			205	170	Jan. 22, 1922	190	165	Jan. 17, 1922
						351	164	Oct. 11, 1921
						186	163	Dec. 31, 1921
						157	163	Dec. 8, 1921
						123	162	Nov. 28, 1921
						355	162	Oct. 10, 1921
						187	162	Jan. 10, 1922
						209	161	Dec. 13, 1921
						344	161	Oct. 18, 1921
						347	160	Oct. 15, 1921
						322	159	Dec. 15, 1921
						364	159	Oct. 3, 1921
						342	158	Oct. 21, 1921
						198	157	Dec. 8, 1921
						357	154	Oct. 18, 1921
						130	153	Dec. 8, 1921
						333	152	Dec. 6, 1921
						119	152	Dec. 13, 1921
						332	151	Dec. 7, 1921
						361	150	Oct. 7, 1921
5 birds laid 1,028 eggs			10 birds laid 1,805 eggs			29 birds laid 4,671 eggs		
Average per bird, 205·6			Average per bird, 180·5			Average per bird, 161		

44 birds laid 7,504 eggs. Average per bird, 170·5 eggs.

Owing to the fact that a large number of the White Leghorn pullets moulted in November, and all suffered severely from frostbite in January and February, their production cannot be taken as indicative of the possibilities of the matings from which they originated.

The matings that produced the above results were as follows:—

(*a*) S.C. White Leghorn cock No. 2460 (dam 198 eggs) and 17 S.C. White Leghorn hens (171-206 eggs).

This mating produced the following female offspring:—

Band Number	Number Eggs	Band Number	Number Eggs
191	213	184	167
194	204	149	166
193	202	190	165
185	169	186	163
318	168	187	162
122	167	130	153

(*b*) S.S. White Leghorn cock No. 253 (record of dam not known) mated with 16 W.L. hens (140-170 eggs), produced the following female offspring:—

Band Number	Number Eggs	Band Number	Number Eggs
370	208	202	166
323	201	157	163
366	180	322	159
153	179	198	157
321	167	119	152

(*c*) S.C. White Leghorn cockrel No. 236 (dam 161 eggs), mated with 17 aged hens produced the following female offspring:—

Band Number	Number Eggs	Band Number	Number Eggs
349	197	357	154
364	159	361	150
342	158		

(*d*) S.C. White Leghorn cock No. 190 (dam 178 eggs), mated with 17 White Leghorn hens (130 to 140 eggs) produced the following female offspring:—

Band Number	Number Eggs	Band Number	Number Eggs
197	175	344	161
351	164	209	161
123	162		

(*e*) Two S.C. White Leghorn cockerels, No. 232 (dam 178 eggs), and No. 264 (record of dam not known) mated with 42 White Leghorn pullets, produced the following female offspring:—

Band Number	Number Eggs	Band Number	Number Eggs
150	187	374	165
325	185	355	162
142	182	347	160
200	179	333	152
205	170	332	151
160	168		

NOTE.—In the above five tables it will be seen that the highest average production of the pullets was made by those from the highest producing ancestry and also the largest number of pullets came from the same pen.

FEEDING EXPERIMENT

To determine the value of milk vs. beef scrap as a food for laying stock, an experiment was conducted for six consecutive months, beginning November 12, 1921.

Twenty White Leghorn pullets were divided into two equal pens, No. 1 and No. 2. Pen 1 had all conditions and feed the same as pen 2, except the animal feed, provided in the form of beef scrap. Pen 2 received animal food

in the form of buttermilk, which was before them at all times. The following table shows the results obtained in this experiment:—

Pen	Number of Birds	Eggs Laid	Value	Cost per Dozen	Cost of Feed	Profit	Loss	Feed Consumed						
								Grain	Mash	Milk	Grit	Shell	Green Feed	Total lb. Feed
			$ c.	$ c.	$c.	$ c.	$ c.	lb.	lb.	lb.	lb.	lb.	lb.	lb.
1.....	10	666	19 74	·242	13 44	6 30	.....	315	162	.....	14	16	84	591
2.....	10	572	16 89	·247	11 78	5 11	.....	300	132	195	13	13	84	737

Pen I.—Average cost per cwt.: Grain, $2.39; mash, $3.11; grit, $1.25; shell, $1.50; green feed, 50c.

Pen II.—Average cost per cwt.: Grain, $2.39, mash, $2.30; milk, 40c.; grit, $1.25; shell, $1.50; green feed, 50c.

It may be seen by the above table that, though pen I laid the greater number of eggs, they consumed the greater quantity of feed, and as a result, the difference in net profit was small. It would appear, however, that pen II did not receive sufficient animal food, as the birds could not be induced to drink large quantities of buttermilk during the cold weather of winter.

FEEDING EXPERIMENT

To determine the value of home-grown grain and mash vs. commercial mixtures, an experiment was conducted for six consecutive months beginning November 12, 1921:—

Twenty White Leghorn pullets were divided into two equal pens, No. 1 and No. 2.

Pen I had all the conditions and feed the same as pen II except the grain and mash feed. Pen I received as grain a commercial scratch feed fed in litter, and a commercial mash obtained at the nearest local market.

Pen II was supplied with a grain mixture made up as follows: 100 pounds wheat, 100 pounds corn, 100 pounds buckwheat, 50 pounds barley, 50 pounds oats, and with mash regularly used on the plant.

The following table shows the results obtained in this experiment:—

Pen	Number Birds	Eggs Laid	Value	Cost per Dozen	Cost of Feed	Profit	Loss	Feed Consumed						
								Grain	Mash	Milk	Grit	Shell	Green Feed	Total lb. Feed
			$ c.	$	$ c.	$ c.	$ c.	lb.	lb.	lb.	lb.	lb.	lb.	lb.
1.....	10	694	21 21	·279	16 14	5 07	.....	305	122	.....	11	15	84	537
2.....	10	635	19 14	·268	14 19	4 95	.....	352	160	.....	14	12	84	522

Pen I.—Average cost per cwt.: Grain, $2.90; mash, $5.33; grit, $1.25, shell, $1.50; green feed, 50c.

Pen II.—Average cost per cwt.: Grain, $2.40; mash, $3.11; grit, $1.25; shell, $1.50; green feed, 50c.

The above table shows that, though pen I produced the larger number of eggs, the cost per dozen was greater than in pen II; and the difference in total net profit was negligible.

THE PRINCE EDWARD ISLAND EGG LAYING CONTEST

The benefits derived from the conducting of Egg Laying Contests at this Station are already manifest. As the poultry industry in Prince Edward Island is carried on almost wholly as a branch of general farm activities, but few flocks are trap-nested. Under these conditions the service rendered the province by an institution such as an egg laying contest has unusual possibilities. It stimulates an interest in poultry, it encourages the keeping of pure-bred stock and the elimination of individuals with standard disqualifications. It affords a broader basis of comparison than can be drawn between neighbouring flocks, and frequently awakens contestants to the lack of productive quality in their flocks. It enables the contestant to locate his best producers to be used in breeding. When followed year after year, it shows the value of care in selecting new males, and the advisability of holding original dams till pullets from the new mating have been tested, thus detecting many a backward step before the original stock has been lost. Frequently males are destroyed before their worth as sires is known. Contests show the value of these sires, and afford the public an opportunity of locating and obtaining them when they are no longer of use to their original owners.

The final records of ten individuals (the number of birds required for a contest pen) enable the purchasing public to judge, to a certain extent, whether the contestants' flocks are of a uniform high order, or contain a few exceptionally high producers and a number of low ones. Farmers who are in need of new breeding stock and who are often at a loss to know where it may be procured, are greatly assisted by the widely published weekly, monthly and annual contest reports, and may avoid those breeders who, in alluring advertisements, make claims they are frequently unable to substantiate.

While stimulating the spirit of friendly rivalry, the Egg Laying Contest may yet be developed to form a co-operative undertaking for mutual advancement in the poultry industry.

The fourth Egg Laying Contest conducted at this Station began November 1, 1921, and continued fifty-two consecutive weeks. Each contestant sent ten birds of some standard variety, each bird representative of the breed and free from standard disqualifications. The equipment used in this work was the same as that described in previous reports, with the exception of the automatic hoppers for the feeding of grit, shell and beef and bone scrap. These did not function properly, and caused a waste of grit, shell and scrap in the litter. They were replaced by wooden boxes divided into three compartments each 4 inches by 4 inches and 5 inches deep. The boxes have the triple advantage of cheapness, simplicity and efficiency.

The birds throughout the contest received the best of care and attention. The feeds and methods of feeding were virtually the same as those of previous years. Grain, consisting of equal parts of wheat and cracked corn, was fed in litter morning and evening. Dry mash, made by mixing 100 pounds bran, 100 pounds shorts, 100 pounds oatmeal, and from 60 to 75 pounds beef scrap, was fed in hoppers. This, together with grit and shell, was before the hens at all times. Mangels, clover and garden chickweed were used as green feed.

An accurate record of eggs laid by each individual was obtained by means of trap-nests. A report of the production of each pen was sent weekly to the contestants and others. In addition, records of weights of eggs, value of eggs, and amount and value of each kind of food supplied, were compiled at the end of each four-weekly period.

Twenty pens were entered in the contest, and were made up as follows: 2 pens White Wyandottes, 5 pens Barred Rocks, and 13 pens White Leghorns.

Fifty-three birds laid 150 eggs or over, and were entitled to a certificate of Record of Performance AA. Ten laid 200 eggs or over and were eligible for registration. One laid over 225 eggs, and was eligible for a certificate of Advanced Record of Performance.

The following is a summary of the fourth Prince Edward Island Egg Laying Contest at the close of the fifty-second week:

SUMMARY of the Fourth Annual Egg Laying Contest, conducted at Charlottetown Experimental Farm from November 1, 1921, to October 30, 1922.

Name and Address of Owner	Pen No.	Breed	Total Average per Hen	Total Eggs laid	Cost per doz.	Cost of Feed	Value of Eggs	Total Loss	Total Gain	Grain	Mash	Milk	Grit	Shell	Green Feed	Weight of Eggs
					$ c.	$ c.	$ c.	$ c.	lb.	lb.	lb.	lb.	lb.	lb.	lb.	Oz.
Mrs. D. J. Carmichael, R.R. 2, Peakes	1	W.L.	126·8	1,268	0 18	19 60	29 69	.....	10 09	526	200	68	31·5	33·5	139	2,645
J. B. Millman, Kensington	2	B.R.	155·9	1,559	0 19	25 01	37 48	.....	12 47	634	294	68	39·5	40	140	3,178
H. S. Moase, Kensington	3	W.L.	107·6	1,076	0 21	19 50	23 96	.....	4 46	526	201	68	27·5	27·5	140	2,258
Harry Hyde, Cornwall	4	B.R.	73·1	731	0 33	20 28	16 56	3 72	.....	561	196	68	26·5	22·5	140	1,470
Mrs. F. Dingwell, Bear River	5	W.L.	116·5	1,165	0 18	17 76	28 28	.....	10 52	478	188	61	23·5	27	127	2,311
H. L. Machon, Murray Harbour	6	B.R.	131·1	1,311	0 19	21 44	31 03	.....	9 59	568	223	68	38·5	36	140	2,604
Geo. L. Seymour, Bedeque	7	W.L.	71·0	710	0 31	18 60	17 62	0 98	.....	469	210	68	25·5	24	138	1,429
Geo. L. Seymour, Bedeque	8	W.W.	57·0	570	0 37	17 77	15 14	2 63	.....	437	212	68	16·5	22	140	1,126
Mrs. R. W. Bullpitt, Cardigan	9	W.L.	156·2	1,562	0 17	23 07	38 49	.....	15 42	565	289	68	30·0	37·5	140	3,141
Pendleton Bros., Suffolk	10	B.R.	147·8	1,478	0·19	24 30	36 51	.....	12 21	601	304	68	29·5	37·0	140	2,933
Everett Howatt, Cape Traverse	11	W.L.	147·0	1,470	0·17	21·97	39·72	.....	17 75	546	265	68	20·5	37·0	140	2,958
J. S. Schurman, North Bedeque	12	W.L.	145·8	1,458	0·18	22 01	36 83	.....	14 82	567	247	68	28·5	37·0	139	2,928
William Neale, Bear River	13	W.L.	125·1	1,251	0 17	17 98	30 91	.....	12 93	468	202	62	24·5	23·5	123	2,454
Mrs. J. J. McLellan, Grand River	14	W.W.	131·4	1,314	0 21	22 92	33 12	.....	10 20	596	255	68	33·5	32·0	140	2,643
Cornelius McLellan, Arlington	15	W.L.	86·0	860	0 28	20 20	19 36	0 84	.....	506	241	68	28·5	26·0	140	1,710
F. W. Woolley, Bedeque	16	W.L.	146·3	1,463	0 17	21 02	38 09	.....	17 07	536	237	68	28·5	34·0	138	2,870
Mrs. R. G. McLaren, New Perth	17	B.R.	136·0	1,360	0 20	23 37	30 21	.....	6 84	566	294	68	34·5	41·0	140	2,692
Exp. Station, Charlottetown	18	W.L.	143·3	1,433	0 18	21 40	35 20	.....	13 80	540	257	68	24·5	32·5	136	2,828
Exp. Station, Charlottetown	19	W.L.	158·0	1,580	0 16	21 37	40 97	.....	19 60	533	256	68	31·5	38·0	138	3,104
Exp. Station, Charlottetown	20	W.L.	155·3	1,553	0 17	22 17	37 45	.....	15 28	547	269	68	36·5	38·0	140	3,068
			125·8	25,172	0 20	421 74	616 62	8 17	203 05	10,770	4,840	1,347	579·5	646·0	2,758	50,350

Average cost per cwt.: Grain, $2.30; mash, $2.84; meat feed, $7.25; milk, 40c.; grit, $1.25; shell, $1.50; 15% to 20% Beef Scrap in mash.

With a view of determining the effect of date of hatching on egg production, an experiment was started in connection with the contest.

Pens 18, 19 and 20, White Leghorn pullets from the Charlottetown Experimental Station, were entered in the Prince Edward Island Egg Laying Contest. The pullets in pen 18 were hatched the first week in June; those in pen 19, the second week in May, and those in pen 20 the third week in April. Seven of the birds in pen 20 had laid previous to November 1, but, at that date, were moulting. They were fed heavily with moist mash in addition to regular feeds, and all underwent a full moult. In January all three pens received a check through frost-bite, and suffered severely again in the latter part of February. Of the three, pen 19 was the most injured.

The following table shows the results by four-weekly periods:—

EFFECT OF DATE OF HATCHING ON EGG PRODUCTION

Pen No.	Four-weekly Period No.—													Total Eggs Laid	Value	Cost of Feed	Profit
	1	2	3	4	5	6	7	8	9	10	11	12	13				
															$ cts.	$ cts.	$ cts.
18	....	18	82	114	95	151	155	170	169	186	153	102	38	1,433	35 20	21 40	13 80
19	2	90	131	122	71	154	167	170	180	169	144	125	55	1,580	40 97	21 37	19 60
20	....	5	57	115	78	183	166	173	188	200	178	132	78	1,553	37 45	22 17	15 28

Though the number of birds used in the experiment was small, the results would indicate that the most desirable date for the hatching of Leghorns in this province is about the second week in May.

BEES

The bees at the Station this year did not make a very large showing. Continued wet weather during the season of the greatest honey flow materially reduced the total yield. Thirteen colonies were placed in wintering cases in the autumn of 1921; these were in a fairly well sheltered spot, but only seven colonies were brought out in the spring. Six colonies were lost by the collapse of two wintering cases from the weight of snow. One more colony was in such a weakened condition that it was doubled up with another colony, making a total of six colonies placed on the stands in the spring of 1922.

The total crop of 175 pounds of honey produced has been saved in the comb for spring feeding. Increase in number of colonies by dividing from the spring count gave a total of thirteen colonies in the fall of 1922, which were put into four-colony wintering cases in fairly strong condition on October 1.

The colonies were first placed in the wintering cases and packed on the bottom with 3 inches, and on the sides with 4 inches, of chaff and shavings. The bees were then given 241 pounds of sugar syrup consisting of two parts granulated sugar and one part water in addition to the natural stores already in the brood chamber. Feeding commenced on October 3 and finished on October 10. The top packing was given October 18, consisting of 12 inches of chaff and shavings. All colonies have sealed covers.

The following notes from the records of the beekeeper indicate sources of honey flow at different seasons:—

June 8.—Dandelions in bloom, and slight flow noticed.

June 10.—Apples in bloom.

June 17.—First white clover noticed.

July 11.—White clover plentiful, with small honey flow.

July 22.—Linden in bloom, but practically no honey flow.

August 8.—Buckwheat in bloom, fair flow.

September 3.—Goldenrod and sunflower, fair flow.

Several bee demonstrations were held in the province during the season. A motor truck was used for carrying supplies, and bees were supplied by the farm where the demonstration was held. Instruction was given in handling bees in the early spring, in the handling and prevention of swarms, the handling and extracting of honey, preparation and feeding for winter, systems of wintering illustrated by types of wintering cases, etc., etc.

It is the intention to increase the apiary at the Station to about forty colonies, as soon as practicable.

Foul brood has been practically wiped out in the province, the area of infection being limited to a very small territory in and about Charlottetown.

EXHIBITION AND EXTENSION WORK

Exhibits, as usual, were shown at the Provincial Exhibition, Charlottetown, P.E.I.; at Prince County Exhibition, Summerside; and at Souris and Georgetown Exhibitions, Kings county.

Charlottetown Exhibition.—A new position was occupied, and as a one-sided exhibit was shown, the reverse side was banked with field corn and used for the display of vegetables. A very pleasing arrangement was arrived at, and it was commented on very favourably by all who saw it. A feature was made of a display of potato and other plant diseases, under the supervision of the Laboratory of Plant Pathology. Such displays are proving very valuable to the potato growers of the province. The live stock exhibit, particularly dairy cattle, was good, the Ayrshire exhibit comparing very favourably with those at the larger exhibitions in the Dominion. The Ayrshire cattle from the Station were entered, and carried off a number of the honours.

The weather during the entire period, September 26 to 29, was rather unfavourable, the total attendance for four days being about 7,000.

Georgetown Exhibition.—This exhibition was held on September 20. The weather was very favourable, and the fair well attended. It is doubtful if this exhibition was up to its usual high standard this year. As a rule, for quality of products, this fair ranks very high; this season, however, there was quite a falling off in some classes. The Superintendent and Assistant judged field roots and vegetables.

Souris Exhibition.—This fair was held on September 18. Weather conditions turned out only fair, and the exhibition was not very well attended. Exhibits on the whole were below average, and the accommodation provided in most instances very poor. The Superintendent judged field roots and vegetables.

Summerside Exhibition was held on October 3 and 4. The weather conditions were decidedly unfavourable and the attendance rather small. The exhibition, on the whole, was below average. The Superintendent and Assistant judged field roots and vegetables.

SCHOOL FAIRS

Several school fairs were attended during the early autumn, where judging of field roots, vegetables, flowers, live stock and poultry was done by the Superintendent or Assistants. On the whole, these fairs are usually of high quality, and well attended.

In addition to exhibition work, the Station annually distributes a large number of bulletins, and reports by letter on hundreds of farm operations, and also prepares numerous articles for the press and departmental publications.

A great many visitors call at the Station, particularly during the summer months. Everything possible is done by both the Superintendent and Assistants to make these visits educational and profitable as well as pleasant.