DOMINION OF CANADA
DEPARTMENT OF AGRICULTURE
DOMINION EXPERIMENTAL FARMS

EXPERIMENTAL STATION

CHARLOTTETOWN, P.E.I.

INTERIM REPORT OF THE SUPERINTENDENT

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

FOR THE YEAR ENDING MARCH 31, 1921

Dairy Building. Completed in 1920.

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EXPERIMENTAL STATION, CHARLOTTETOWN, P.E.I.

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

SEASONAL NOTES

The winter of 1919-20 was unusually severe. The cold weather started early, frost being recorded on twelve days in October. The first snow was on November 20, when 1·5 inches fell. December was cold, with six days registering below zero. January was unusually severe, the thermometer registering below zero continuously from the 19th to the 31st inclusive, and having a total of twenty days in the month registered at considerably below zero. February had six days below zero, and March had three. The latter part of March was mild, with a total snowfall of 10 inches for the month; April was cooler, with 18·25 inches of snowfall, and May was fine and warm, with very light precipitation, totalling only 0·99 inches for the month. Practically no rain fell from May 11 until June 2. Because of this, many crops suffered, and germination was very slow and unsatisfactory.

The trees appeared green on May 23, about four days earlier than the average date. The various crops germinated quickly, and for a time made extraordinary growth. Large and small fruits set well. The root crop had many misses, owing to the drought and insects. The hay crop was below average, but saved in excellent condition. From June 2 on, the balance of the summer was exceptionally fine growing weather; the first two weeks of August were very hot for this country. All cereals ripened very rapidly during this period, and it is assumed that this excessive heat and rapid ripening were, to some extent, the cause of shrivelling in the grains, which tended towards producing grain light in weight per measured bushel. Wheat cutting commenced about August 20, and was general by August 25. Harvesting operations proceeded favourably except toward the latter part of the season, when rain caused some little damage. Stem rust, which appeared in some fields at the Station, did very little damage in this neighbourhood, but a severe attack caused a great deal of injury to the wheat along the north shore of the island, extending fifteen miles or more inland from Alberton on the north to St. Peter's on the east. In that section there will be very little seed wheat, a very limited quantity of milling wheat, and, in some sections, only a poor quality of feed wheat for poultry. Early potatoes were sound, corn matured so as to make first-class ensilage, turnips and other root crops were below the average, owing to drought.

The autumn was very fine, with open weather well into November, giving ample opportunity for completing fall work. A snowfall on November 24 made good sleighing until the end of the month. December was dull, with frequent showers. January was fine and mild. February was cold, with wonderfully regular temperatures, and a good blanket of snow lay on the ground. March was mild and broken; the ice cleared out of the rivers and harbours on the 28th. The prevailing winds were westerly, and there is a prospect of an early spring.

METEOROLOGICAL RECORDS

Month	Temperature Fahrenheit					Precipitation					Bright Sunshine
	Maximum		Minimum		Mean	Rainfall		Snowfall		Total	
	Date	Deg.	Date	Deg.	Degree	Days	Ins.	Days	Ins.	Ins.	Hours
April	30	58	1	20	35·716	10	2·84	6	18·25	4·665	150·7
May	28	76	5	28	47·822	6	0·99	.....	.....	0·99	312·4
June	28	79	18	38	57·816	10	2·49	.....	.....	2·49	247·5
July	14	86½	28	49	67·282	7	2·38	.....	.....	2·38	272·9
August	9	91	19, 26	46	68·306	12	3·56	.....	.....	3·56	226·2
September	24	83	19	40	57·849	11	3·76	.....	.....	3·76	150·7
October	1	71	21	31	50·951	8	0·60	.....	.....	0·60	160·4
November	3	60	22, 23	18	32·9	9	1·38	3	8·25	2·205	83·1
December	2	48	26	−1	26·112	13	2·8	5	9·25	3·725	45·8
1921											
January	15	45	29	−7	19·08	5	1·03	9	27·5	3·78	81·1
February	17	40	22	−8	15·411	2	0·3	5	22·5	2·55	106·6
March	27	56	5	12	28·08	17	2·97	4	8·3	3·8	128·4
Totals for year	.....	.....	.....	.....	.....	110	25·10	32	94·05	34·505	1,965·8

GENERAL NOTES

BUILDINGS

A new wagon shed, 25 feet by 80 feet, was constructed just west of the main barn. This is a frame building on cement block foundation, with a carpenter's shop in the east end.

Three box stalls were removed in the basement of the main barn, and a first-class cow stable, with calf pens, was installed.

The carriage house was built over into a modern dairy with a small steam plant. sinks and refrigerator. A tool house and mixing shed for the gardener was built on to the east side of the dairy.

The Superintendent's residence was repaired by removing a large chimney and adding a bathroom in the main part of the house.

Five additional contest houses were constructed for the third Prince Edward Island Egg-Laying Contest.

UNDERDRAINAGE

The underdrainage systems have worked satisfactorily, and good crops were harvested on what was waste land before being drained.

PICNICS, DEMONSTRATIONS AND AGRICULTURAL MEETINGS

The larger picnics were confined to breeders' and growers' associations. The Ayrshire Breeders' Club held an educational meeting and annual picnic at the Station, with a number of speakers, including the general secretary of the Canadian Ayrshire Breeders' Association. The Prince Edward Island Potato Growers' Association held a field day at the Farm, with addresses and demonstrations. The Prince of Wales College students held their annual picnic here, and many of the city schools had their students out for a half day at a time, under supervision. The American Press Association was entertained to lunch at the Experimental Station on June 12, and conducted through all the departments of our Experimental Farm work.

The superintendent conducted the course in field husbandry at the Agricultural Short Course held at the Technical and Agricultural School. He gave a series of lectures on horticultural subjects at the Home Economics Course, and attended a conference on soldier settlement problems.

Addresses were also delivered at the Central Farmers' Institute, the Dairymen's Association and at other agricultural meetings. The superintendent, assistant and bee-keeper attended many of the school fairs in different parts of the province, judging the school children's exhibits. The superintendent also attended the several live stock conventions in the province, the Maritime Provinces, and the Canadian Ayrshire Breeders' Association in Montreal. He attended and took part in the several association meetings that met at the Maritime Winter Fair and Fat Stock Show.

ANIMAL HUSBANDRY

HORSES

The draught horses at this Station at the close of the year consisted of three pure-bred Clydesdale mares, one two-year-old Clydesdale filly, one Clydesdale gelding, and one grade mare. In addition to these there was one express horse and a driving mare.

A grade draught gelding was sold in the autumn of 1920, after the fall work was completed. All the above-mentioned horses have been in a healthy, thrifty condition throughout the year. The work of the draught horses was supplemented by a tractor, which relieved them of much of the heaviest farm work.

The ration for the heavy horses during the summer consisted of 20 pounds of hay, 14 pounds of oats and 2 pounds of bran; the two younger horses being on pasture during the summer months. The winter ration of the draught horses was 20 pounds of hay, 12 pounds of oats and 3 pounds of bran. The horses are at heavy work during the summer, and are given moderate work daily throughout the winter season, weather permitting.

The following table gives the amount and cost of feed, and number of hours each horse worked during the year; in figuring out the cost of horse labour, the following values were used: oats, 75 cents per bushel; bran, $50 per ton; hay, $15 per ton. In cost of raising the filly, skim-milk was valued at 50 cents per cwt.

HORSE FEED AND LABOUR

Name	Age	Oats	Bran	Hay	Cost of feed 1 yr.	Hours of work	Total Days fed
		lbs.	lbs.	lbs.			
Darling	14	5,032	726	7,280	$183 45	2,299	365
Mattie	12	4,797	771	7,280	179 40	2,348	365
Nell	9	5,015	723	7,280	183 00	2,585	365
Roe	6	5,017	720	7,280	182 97	2,425	365
Kate	7	420	61	840	17 04	200	40
Minnie	7	332	50	700	13 80	78	34
Frank	5	3,113	409	5,400	119 20	1,780	264
Beauty	13	3,737	322	5,475	131 32	2,166	365
Mary	4	2,264	500	4,641	97 10	120	365
Bess	2	1,644	407	3,250	70 70	.....	365
Rose	5	3,065	390	4,680	112 28	1,193	* 311
Totals	.....	34,436	5,079	54,106	1,290 26	15,194	3,204

*Bought May.

The average cost of horse labour, including young stock, but neglecting care and manure, was 85 cents for every ten hours' actual work. The average cost of feeding all the horses was 40¼ cents per day. The cost of feed for the filly until she was two years of age was $112.44.

DAIRY CATTLE

Good progress has been made with the dairy herd of Ayrshire cattle during the year. A number of excellent young bulls were sold, and two very promising yearling bulls are being held for the Experimental Stations at Fredericton, N.B., and Ste. Anne de la Pocatière, P.Q. The herd bull, "Ottawa Ivanhoe," No. 60140, received from the Central Experimental Farm in 1919, stood second in a strong class at the Charlottetown Exhibition, and is leaving stock that will be a credit to him. The young stock have been thrifty and have developed well. The six Ayrshire cows have milked well, and won several first placings at the Charlottetown Exhibition, including the Ayrshire championship (female). "Diana" developed milk fever a few days before freshening, and died. "Pandora of Glenholm" failed to breed, and was sold for beef.

FEEDING DAIRY CATTLE

Rations were prepared to suit the different classes of stock. The following tables show the amount and kinds of feed supplied to the dairy bull, to dairy calves five months old, and to cows giving about 25 pounds, 50 pounds, and 65 pounds of milk per day, and weighing about 1,000 pounds.

RATION FOR BULL, NINETEEN MONTHS OLD

Feed	Lbs.	Dry matter	Crude protein	Carbo-hydrates and Fat	Nutritive ratio
Oats	4	3·74	0·388	2·424	
Bran	2	1·78	0·238	1·0	
Screenings	2	1·79	0·192	1·106	
Oil cake	1	0·90	0·30	0·476	
Turnips	40	4·36	0·4	3·334	
Hay	15	13·055	0·795	6·6	
	64	25·631	2·313	15·01	1:6·5

RATION FOR DAIRY CALVES, FIVE MONTHS OLD

Feed	Lbs.	Dry Matter	Crude Protein	Carbo-hydrates and fat	Nutritive ratio
Oats	2	1·82	0·194	1·212	
Bran	1	0·89	0·119	0·5	
Screenings	1	0·898	0·096	0·553	
Oil cake	½	0·45	0·15	0·238	
Turnips	14	1·526	0·14	1·283	
Hay	6	5·222	0·318	2·669	
	25	10·806	1·017	6·455	1 : 6·4

RATION FOR DAIRY COWS GIVING 25 POUNDS MILK

Feed	Lbs.	Dry Matter	Crude protein	Carbo-hydrates and fat	Nutritive ratio
Oats	8	7·26	0·776	4·848	
Bran	8	7· 4	0·952	4·0	
Oil cake	3	2·7	0·9	1·431	
Hay	18	15·66	0·954	7·992	
	37	32·76	3·582	18·271	1 : 0·51

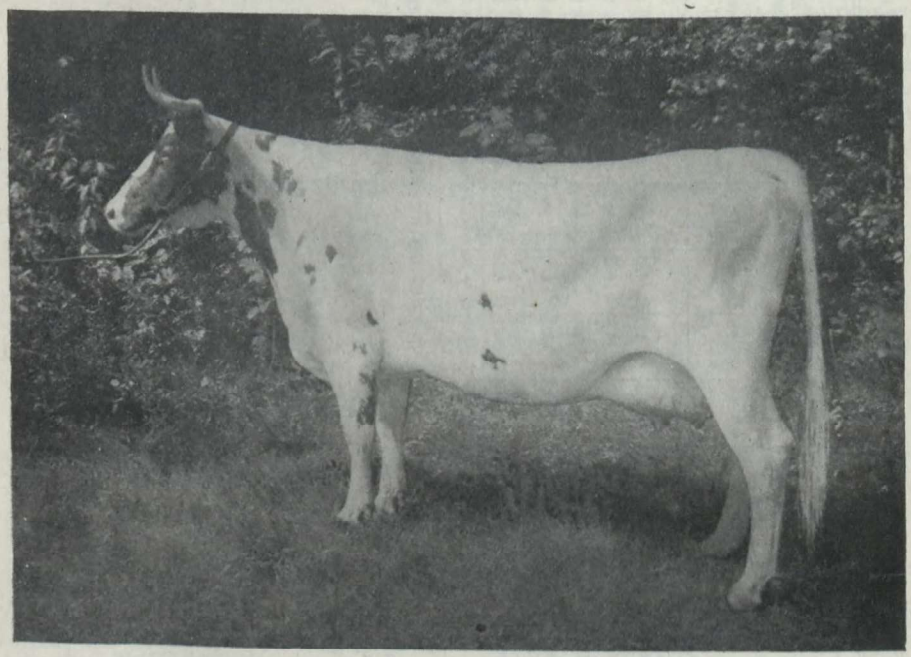
RATION FOR DAIRY COWS GIVING 50 POUNDS OF MILK, WEIGHING 1,000 POUNDS

Feed	Lbs.	Dry matter	Crude protein	Carbo-hydrates and fat	Nutritive ratio
Oats	8	7·48	0·776	4·848	
Bran	8	7·12	0·952	4·0	
Oil cake	6	5·4	1·80	2·856	
Cotton seed	2	1·84	0·668	0·84	
Hay	18	15·66	0·954	7·992	
Beet meal	10	8·65	0·692	5·8	
	52	46·15	5·842	26·336	1 : 4·5

RATION FOR DAIRY COWS GIVING OVER 65 POUNDS OF MILK, WEIGHING 1,000 POUNDS

Feed	Lbs.	Dry matter	Crude protein	Carbo-hydrates and fat	Nutritive ratio
Oats	16	14·96	1·552	9·696	
Oilcake	6	5·4	1·80	2·856	
Beet meal	10	8·65	0·692	5·8	
Cotton seed	4	1·84	0·668	0·84	
Pasture—R. Clover	7½	5·0	0·20	0·64	
Pasture—Timothy	23½	15·0	0·465	3·30	
	67	50·85	5·3777	23·132	1 : 4·3

In the table that follows, the records of all cows are included whose lactation period came largely within the fiscal year. "Buttercup of Glenholm" broke the 4-year-old Canadian Ayrshire record, with 16,444 pounds of milk and 662 pounds of butter-fat in the year.



Buttercup of Glenholm—56491—as Four-year old. 16,444 pounds milk, 662 pounds butter fat. Percentage of fat, 4.02.

DAIRY CATTLE PRODUCTION

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-fat produced in period	Value of butter-fat at 50c. per lb.	Value of skim-milk at ½ cent per lb.	Total value of product	Amount of meal eaten at 2½c. per lb.	Amount of roots eaten at $4 per ton	Amount of hay eaten at $15 per ton	Amount of green feed at $7.50 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-fat skim-milk neglected	Profit on 1 lb. butter-fat, skim-milk neglected	Value of calf when born	Profit on cow during period, labour and calf neglected
			lbs.			$ c.	$ c.	$ c.						$ c.		c.	c.	$ c.	$ c.
Sylvia of Glenholm, May 15, 1920	365	10,899	29¾	4·29	457	228 50	52 21	280 71	5,942	7·811	3,858	1,260	6	206 82	1 89	45¼	4¾	25 00	73 89
Buttercup of Glenholm May 14, 1920	365	16,444	45	4·02	662	331 00	78 91	409 91	7,122	9,423	3,750	1,260	6	238 73	1 45	36	14	30 00	171 18
Lily of Melrose, July 21, 1920	365	12,154	33⅓	3·87	460	230 00	58 97	288 97	5,921	8,079	3,686	1,260	6	205 52	1 69	44⅝	5⅜	25 00	83 45
Lily Helen, July 19, 1920	359	10,259	28½	4·71	483	241 50	48 88	290 38	6,144	7,973	3,686	1,260	6	210 90	2 05	43⅝	6⅜	20 00	79 48
Pandora of Glenholm, Sept. 25, 1919	365	8,634	23⅝	4·7	406	203 00	41 14	244 14	3,814	9,903	4,034	1,050	5	156 83	1 82	38⅜	11⅞	20 00	87 31
Diana, Sept. 15, 1919	364	9,938	27⅓	4·00	397	198 50	47 70	246 20	4,598	10,168	4,034	1,050	5	176 96	1 78	44⅜	5⅜	25 00	69 24
Average	364	11,054	31¼	4·26	477½	238 75	54 63	293 38	5,590	8.893	3.831	1,190	5⅔	199 29	1 78	42 1/10	8	24 16	94 09

COST OF REARING CALVES AND FEEDING YOUNG STOCK ONE YEAR

Date born	Number of days in period	Name	Registration No.	Value of skim-milk fed at ½ cent per lb.	Value of new milk at 4c. per lb.	Amount of meal eaten at 2½c. per lb.	Amount of roots eaten at $4 per ton	Amount of hay eaten at $15 per ton	Amount of green feed at $7.50 per ton	Months on pasture at $1.50 per month	Total cost of feed for period	Age March 31, 1921	Average cost to date
				$ c.	$ c.						$ c.	months	$ c.
July 9, 1918	365	Ottawa Ivanhoe	60140			3 472	6,705	5,250	2,480		147 89	32⅓	
Aug. 20, 1918	365	Ravenwood Victoria	66311			1,356	4,689	2,658	808	4½	73 00	19½	119 03
May 14, 1920	321	Ravenwood Ivanhoe	72901	21 67	430	1,120	1.943	1,910			74 24	10½	
May 15, 1920	320	Ravenwood Victor	72902	21 68	420	1,120	1,943	1,908			73 82	10½	74 03
July 19, 1920	285	Ravenwood Heir	73373	18 70	458	614	1,216	1,243			54 77	8⅓	
July 21, 1920	283	Ravenwood Milkmaid	73374	18 65	437	614	1,216	1,243			53 91	8⅓	54 34

The cost of rearing the heifer to 19½ months was $119.03. The average cost of rearing two calves to 10½ months was $74.03, and of raising two others to 8⅓ months, was $54.34.

In estimating the cost of feed, the following values were used:—

Meal (oats, bran, oilcake, cotton-seed and screenings) at 2½ cents per pound. Roots at $4 per ton. Hay at $15 per ton. Green feed (corn and mixed grain) at $7.50 per ton. Pasture at $1.50 per month. Skim-milk at 50 cents per cwt. New milk at $4 per cwt.

The cost of labour, and the value of the manure and of the calf were not included in the calculations. It is purely a comparison between cost of feed and value of the dairy products.

BEEF CATTLE

METHODS OF FEEDING STEERS

Sixteen Shorthorn grade steers of good quality and fairly typical of the breed were purchased, dehorned, tested for tuberculosis, and allowed to run on pasture with soiling crops of corn and rape, during a preliminary period. They were weighed into pens of four each on November 27, 1920. The experiment continued to March 4, 1921.

The steer feeding experiment was confined to methods of feeding to determine whether it pays to chop hay and pulp roots, and when mixed whether it is better to feed dry or to feed moistened. This work was to link up what had previously been learned re rations for steers, and to show which was the best method for the fattening of steers.

The following was the grain mixture used: 100 pounds oats, 100 pounds screenings, 50 pounds bran, 50 pounds barley, 25 pounds cotton-seed meal, 25 pounds cornmeal.

The feeding instructions when the test started were as follows. All the pens were fed the same quantity of the several feeds. The meal ration was gradually increased from 25 pounds per pen per day to 35 pounds per pen per day by the end of January, and to 40 pounds by the middle of February. The quantity of turnips fed was reduced from February 14th to 120 pounds per pen per day.

Method and Quantities of Feed fed at Commencement

Pen I.—40 pounds hay, not chopped, 200 pounds turnips, whole, 25 pounds grain mixture.

Feeds not mixed

Pen II.—40 pounds hay, chopped, 200 pounds turnips, pulped, 25 pounds grain mixture.

Pulped Turnips and Meal Mixed

Pen III.—40 pounds hay, chopped, 200 pounds turnips pulped, 25 pounds grain mixture.

Feeds Mixed and Fed Dry.

Pen IV.—40 pounds hay, chopped, 200 pounds turnips, pulped, 25 pounds grain mixture.

Feeds mixed and fed moistened, after being allowed to stand two hours. The extra time required in feeding three different lots of food to pen I about equalled the time required to cut the hay and pulp the roots for the other pens.

The following table shows the total feed consumed by each pen, with the values charged:

3,920	pounds hay at 75 cents per cwt	$ 29 40
14,935	pounds roots at 10 cents per bush	29 87
957½	pounds oats at 75 cents per bush	21 12
957½	pounds screenings at $36 per ton	17 24
526	pounds bran at $50.10 per ton	13 18
242	pounds cornmeal at $70 per ton	8 47
239	pounds cotton-seed meal at $60 per ton	8 17
118	pounds oilcake at $60 per ton	3 54
137½	pounds barley at 3 cents per pound	4 12
170	pounds straw at 50 cents per cwt	0 85
		$135 96

STEER FEEDING EXPERIMENTS—COMPARISON OF THE FOUR FEEDING METHODS

Number of steers in lot		4	4	4	4
First weight, gross	lbs.	4,025·0	4,025·0	4,020·0	4,020·0
First weight, average	"	1,006·0	1,006·0	1,005·0	1,005·0
Finished weight, gross	"	4,930·0	4,950·0	4,760·0	4,895·0
Finished weight, average	"	1,232·0	1,237·0	1,190·0	1,224·0
Total gain in 98 days	"	905·0	925·0	740·0	875·0
Average gain per steer	"	226·25	231·25	185·0	219·0
Daily gain per steer	"	2·3	2·37	1·9	2·23
Daily gain per lot	"	9·3	9·5	7·6	8·94
Gross cost of feed	$	135·96	135·96	135·96	135·96
Cost of one lb. gain	$	0·15	0·14¾	0·18½	0·15½
Value of cattle at beginning	$	386·27	393·81	371·84	408·77
Total cost to produce beef	$	522·23	529·77	507·80	544·73
Sale price of pen	$	534·33	565·44	467·02	501·05
Profit or loss	$	12·10	35·67	*40·78	*43·68
Profit or loss per steer	$	3·02	8·92	*10·20	*10·92
Average valuation of steer at start	$	96·57	98·45	92·96	102·19
Average sale price of steer at finish	$	133·58	141·36	116·75	125·26
Average increase in value	$	37·01	42·91	23·79	23·07
Average cost of feed per steer	$	33·99	33·99	33·99	33·99

*Loss.

STEER FEEDING EXPERIMENT—TABLES OF WEIGHTS AND GAINS

PEN No. 1

No.	Weight Nov. 27	Weight March 5	Gain 98 days	Value at start	Average cost feed per steer	Total cost	Sale price	Profit or loss
	lbs.	lbs.	lbs.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.
236	865	1,095	230	89 57	33 99	123 56	125 92	2 36
232	1,200	1,485	285	108 27	33 99	142 26	152 21	9 95
237	1,075	1,260	185	101 92	33 99	135 91	141 75	5 84
243	885	1,090	205	86 51	33 99	120 50	114 45	*6 05
Total	4,025	4,930	905	386 27	135 96	522 23	534 33	12 10
Average	1,006	1,232	226	96 57	33 99	130 56	133 58	3 02

*Loss.

PEN No. II

Number	Weight Nov. 27	Weight March 5	Gain 98 days	Value at start	Average cost feed per steer	Total cost	Sale price	Profit or loss
	lbs.	lbs.	lbs.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.
242	1,120	1,405	285	114 25	33 99	148 24	172 11	23 87
245	1,035	1,255	220	92 18	33 99	126 17	144 33	18 16
244	900	1,400	240	89 08	33 99	123 07	128 25	5 18
234	970	1,150	180	98 30	33 99	132 29	120 75	*11 54
Total	4,025	4,950	925	393 81	135 96	529 77	565 44	35 67
Average	1,006	1,237	231	98 45	33 99	132 44	141 36	8 92

PEN No. III

Number	Weight Nov. 27	Weight March 5	Gain 98 days	Value at start	Average cost feed per steer	Total cost	Sale price	Profit or loss
	lbs.	lbs.	lbs.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.
241	1,170	1,390	220	101 90	33 99	135 89	121 63	*14 26
230	1,000	1,240	240	96 40	33 99	130 39	151 90	21 51
231	830	975	145	80 88	33 99	114 87	85 31	29 56
239	1,020	1,155	135	92 66	33 99	126 65	108 18	18 47
Total	4,020	4,760	740	371 84	135 96	507 80	467 02	*40 78
Average	1,005	1,190	185	92 96	33 99	126 95	116 75	*10 20

PEN No. IV

Number	Weight Nov. 27	Weight March 5	Gain 98 days	Value at start	Average cost feed per steer	Total cost	Sale price	Profit or loss
	lbs.	lbs.	lbs.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.
233	1,190	1,450	260	119 50	33 99	153 49	188 50	35 01
240	1,050	1,175	125	108 04	33 99	142 03	105 75	*36 28
238	980	1,260	280	104 45	33 99	138 44	126 00	*12 44
235	800	1,010	210	76 78	33 99	110 77	80 80	*29 97
Total	4,020	4,895	875	408 77	135 96	544 73	501 05	*43 68
Average	1,005	1,224	219	102 19	33 99	136 18	125 26	*10 92

*Loss.

Steer No. 240 in pen 4 went off his feed badly after being dehorned. This set him back a month. The other cattle were scarcely affected by the operation, and remained in good condition throughout. A pen of three of the steers was shown at the Prince Edward Island Fat Stock Show. The pen won first place, and the individual steers won first, third and fourth places in their class.

DATA FROM THE EXPERIMENT

It is difficult to draw any very definite conclusions from one year's feeding test. The individuality of the animals causes variations. The cost price of the pens differed considerably. The auctioning of the individual animals causes variations in price that are not always based upon quality. Further work will be necessary before definite conclusions are reached.

Results, however, would indicate that cut hay and pulped roots are more economical. The mixing of the roots and meal (pen II), gave better returns than the separate feeding (pen I). The mixing of the cut hay with the meal and roots did not give such good results, either dry (pen III), or moistened (pen IV), as where the cut hay was fed separately.

The splendid gains in weight of all the pens indicate that all the methods tried are good. The selection of the one to be followed on any farm would depend somewhat upon the system of barn chores followed. By having the hay cut ahead and the food mixed, the time actually taken in feeding the animals at each meal would be greatly lessened. It is planned to continue the work so that averages over several years may be obtained.

SWINE

A small herd of pure-bred Yorkshire pigs was maintained to study the problems relative to successful swine breeding, and to distribute good stock, particularly to the boys and girls in the pig clubs.

At the close of the fiscal year the herd consisted of three brood sows and twelve autumn pigs that are ready for market. The average litters from the spring and autumn farrowing of all the sows was a little over nine pigs that grew to maturity.

HOUSING

The swine were kept in portable cabins in summer. During the winter they were moved into the sheep barn. Previous experience indicated that more food was required to overcome the cold conditions of the portable cabin for fattening hogs.

FEEDING

The following ration was fed to young brood sows:—

RATION FOR BROOD SOWS, NINE TO TEN MONTHS OLD

Feed	Lbs.	Dry matter	Crude protein	Carbo-hydrates and fat	Nutritive ratio
Oats	150	136·2	14·55	90·9	
Bran	50	44·7	5·95	25·0	
Screenings	100	89·8	9·6	55·3	
Middlings	25	22·4	3·35	13·95	
Oilcake	25	22·5	7·5	11·92	
	350	315·6	40·95	197·07	
Amounts fed to each—					
Pounds mixture	3½	3·156	0·4095	1·97	
Turnips	14	1·526	0·14	1·283	
	17½	4·682	0·5495	3·253	1 : 6

The cost of 3½ pounds grain at $2.40 per cwt. was 8½ cents, and of the 14 pounds roots at 20 cents per cwt. was 2·8 cents; total cost per day each was 9·3 cents. The sows continued in healthy, thrifty condition, two produced litters of fourteen, and each of these saved eleven that grew to maturity.

The stock boar was fed 3 pounds of the same grain ration supplied to the sows, and 25 pounds of turnips at a cost of 12·2 cents per day. He remained in thrifty condition, and fit for service.

The cost of feeding pigs to three months of age was recorded. They were weaned at six weeks, and fed shorts, oatmeal, oilcake meal and buttermilk. The ration of meal was increased from time to time. The average amount fed per pig per day for

the period was 7 pounds of the grain mixture, and 4 pounds of buttermilk. The grain mixture contained 125 pounds shorts, 75 pounds crushed oats with the hulls removed, and 25 pounds oilcake meal. These pigs averaged 65 pounds each at thirteen weeks old, and the cost of feed averaged $3 each for the seven-week period.

COST OF PORK PRODUCTION

Two lots of pigs were fed during the winter 1919-20 on different rations, until they reached the best bacon weights, and sold at market price.

The following rations were used in the experiment.

MIXTURE OF CONCENTRATES FOR YOUNG PIGS, TWO TO THREE MONTHS OLD

Feed	Lbs.	Dry matter	Crude protein	Carbohydrates and fat	Nutritive ratio
Oats (ground)	100	90·8	9·7	60·6	
Bran	100	89·4	11·9	50·0	
Middlings	200	179·2	26·8	111·6	
Oil cake	50	45·0	15·0	23·85	
	450	404·4	63·4	246·05	
Fed as follows—					
Mixture	2	1·8	0·28	1·09	
Milk	1	0·099	0·036	0·055	
	3	1·899	0·316	1·145	1 : 3·6

MIXTURE OF CONCENTRATES FOR YOUNG PIGS, THREE TO FIVE MONTHS OLD

Feed	Lbs.	Dry matter	Crude protein	Carbohydrates and fat	Nutritive ratio
Oats (ground)	50	45·4	4·85	30·3	
Bran	50	44·7	5·95	25·0	
Middlings	100	89·6	13·4	55·8	
Wheat Screenings (ground)	200	179·6	19·2	110·6	
Oilcake	50	45·0	15·0	23·85	
	450	404·3	58·4	245·55	
Fed as follows—					
Mixture	2½	2·25	0·305	1·362	
Milk	1	0·099	0·036	0·055	
	3½	2·349	0·341	1·417	1 : 4·0

SUGGESTED MIXTURE OF CONCENTRATES FOR PIGS FROM 100 POUNDS TO 150 POUNDS EACH

Feed	Lbs.	Dry matter	Crude protein	Carbohydrates and fat	Nutritive ratio
Oats	300	272·4	29·1	181·8	
Bran	150	134·1	17·85	75·0	
Oil cake	50	45·0	15·0	23·85	
	500	451·5	61·95	280·65	
Fed as follows—					
Per hog—Mixture	3	2·7	0·37	1·74	
Potatoes	6	1·3	0·08	0·96	
	9	4·0	0·45	2·7	1 : 6

MIXTURE OF CONCENTRATES FOR PIGS FROM 150 POUNDS TO 200 POUNDS EACH

Feed	Lbs.	Dry matter	Crude protein	Carbo-hydrates and fat	Nutritive ratio
Oats	200	181·6	19·4	121·2	
Bran	100	89·4	11·9	50·0	
Wheat screenings	150	124·7	14·4	82·95	
Oilcake	50	45·0	15·0	23·85	
	500	441·7	60·7	278·0	
Fed as follows—					
Per hog—Mixture	4	3·53	0·486	2·22	
Potatoes	8	1·69	0·088	1·28	
	12	5·2	0·574	3·5	1 : 6·1

The following table gives the details of the experiment:—

——	Lot I. First fed Ration (a) finished with Ration (c). No wheat screenings	Lot II. First fed Ration (b) finished with Ration (d). Wheat screenings fed
Number of pigs in lot	6	6
Age of pigs at commencement of test	2 months	3 months
Length of period fed	5 mos. 8 dys.	4 mos. 25 dys.
Value at commencement	$ 30 00	$ 50 00
Sale value—Lot I, 750 lbs. at 18c	135 00	
Lot II, 1,200 lbs. at 18c	.....	216 00
Cost of feed for period	117 36	104 22
Total cost	147 36	154 22
Gain or loss on lot	*12 36	61 78
Gain or loss on pig	* 2 06	8 82
Amounts of feed used—		
Meal mixture (a) 2,275 lbs. at $3.50	79 62	
" (b) 2,800 lbs. at 2.50	.....	70 00
" (c) 714 lbs. at 2.46	17 56	
" (d) 560 lbs. at 2.36	.....	13 22
Potatoes at 60c. per bush., Lot I, 1,224 lbs	12 24	
Potatoes at 60c. per bush., Lot II, 1,120 lbs	.....	11 20
Buttermilk at 70 cts. per cwt., Lot I, 1,134 lbs	7 94	
Buttermilk at 70 cts. per cwt., Lot II, 1,400 lbs	.....	9 80
	$117 36	$104 22

These results would indicate that when the price of other meals is abnormally high, it pays to feed wheat screenings to hogs during the fattening period.

BEES

The bees were wintered in a four-colony wintering case during the winter of 1919-20. They were left in the wintering case until May 1, when the first thorough examination was made. Three colonies came out strong, with all the queens laying normally. The fourth colony was destroyed one unusually warm day late in the autumn of 1919, when, the colony being too tightly closed, the combs were melted down, destroying large numbers of bees.

Dandelion blossoms became plentiful by May 22, and the apples were in full bloom on July 2. The early clover honey flow lasted about twenty days, from July 2 to

July 20. Basswood honey flow also lasted about twenty days, to August 11. A buckwheat and golden rod flow of honey occurred from August 24 to 30.

The three colonies produced 212 pounds honey, 4 pounds wax and three nuclei that were united to make one strong colony. Autumn feeding commenced on October 8, and was completed by October 14. The four colonies wintered outdoors, and came through in good shape.

The bee-keeper at the Farm was appointed Provincial Bee Inspector, under the "Act for the Prevention of Infectious and Contagious Diseases, and for Instruction in Beekeeping." He made two careful inspections of all apiaries in the province, and found only four diseased apiaries. These were all in one locality, and measures were taken to have the disease stamped out.

CEREALS

CEREAL AREA

In 1914 a four-year rotation was laid off for variety test work, planned to devote the maximum area to cereals and yet maintain the fertility of the land.

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

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

Third year.—Clover hay, 8 tons manure per acre applied immediately after haying, and ploughed down early in fall.

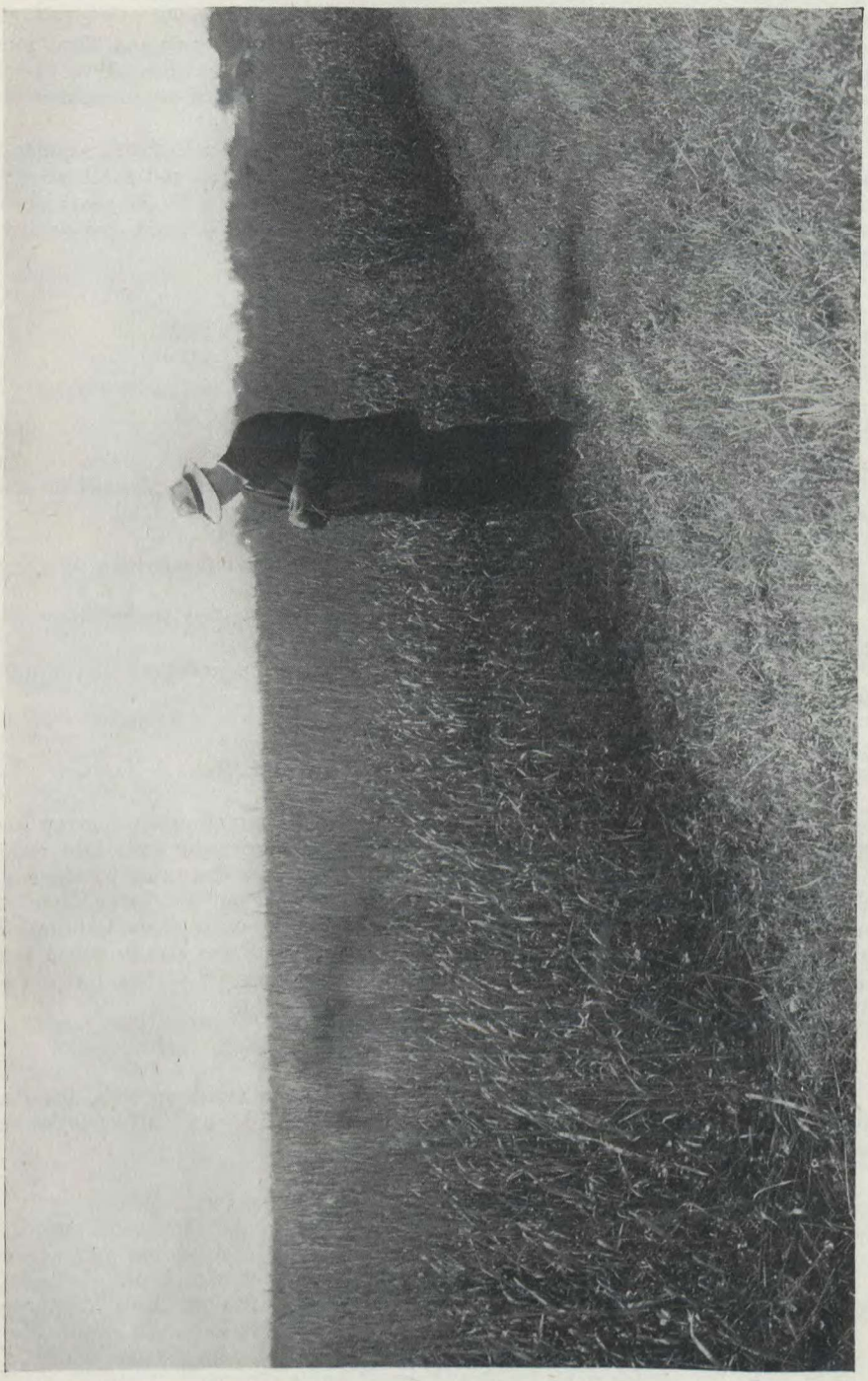
Fourth year.—Grain, oat plots, seeded down with 8 pounds red clover and 2 pounds alsike.

UNIFORM TEST PLOTS OF CEREALS

Exceedingly dry weather in the spring retarded germination, and many crops suffered considerably from this cause. Early seeding apparently gave best results. No smut treatment was given in the spring, but with the exception of some new varieties received from outside sources, the seed was remarkably free from this disease. In barley, Nugent E. and Pedigree (beardless) came from Ottawa. All varieties of peas were forwarded from Ottawa. Liberty oats was also procured at the Central Farm. The balance of the seed was procured from the variety test plots of 1919, by mass head selection.

EXPERIMENTS WITH SPRING WHEAT

The wheat plots this year were very fine. All plots stood up well, the straw being bright and clean, and all were cut and saved in good shape. All varieties were sown on May 19.



Early Red Fife Wheat, Charlottetown.

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	Average length of head	Actual yield of grain per acre	Per cent stand	Remarks
			inches		inches	lbs.		
White Russian	Aug. 25	102	50	10	3·75	2,574	100	Very fine crop.
Early Red Fife	" 25	102	45	10	3·0	2,535	100	Very fine crop.
Early Russian	" 25	102	46	10	3·25	2,516	100	Very fine crop.
Marquis	" 25	102	42	10	3·0	2,358	100	Very fine crop.
Chelsea	" 25	102	46	10	3·0	2,233	95	Too thin.
Red Fife	" 25	102	46	10	2·75	2,218	100	Very fine crop.
Ruby	" 17	94	44	10	2·75	2,143	100	
Campbell's White Chaff	" 25	102	50	10	3·75	1,946	100	Very fine crop.
Huron	" 25	102	46	10	3·75	1,924	100	Excellent crop.
The following varieties were sown in single plots:								
Whiteheads	Aug. 25	102	48	10	3·75	1,766	100	A little uneven.
*Keyes	" 25	102	36	10	3·0	1,387	80	Very badly mixed.

*Keyes very badly mixed. About 50 per cent of plot composed of a variety possessing white chaff and bearded. Of this selected for propagation, 10 per cent was white chaffed and bald, 10 per cent red chaffed and bald, 10–20 per cent bearded, red chaffed with loose open head.

Liberty oats were very badly smutted, the balance of the plots being free from disease. There was considerable lodging from rain and wind, but very little rust, except in plots of Early Blossom. The single plot of Old Island Black was exceptionally fine and worthy of special mention. It was entirely free from smut or rust, and was not lodged. All varieties were sown on May 19.

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	Average length of head	Actual yield of grain per acre	Per cent stand	Per cent loss from any cause which did not affect the stand	Remarks
			inches		inches	lbs.			
†O. I. Black	Aug. 18	95	52	10	10·5	2,794	100	.....	Very fine crop.
Victory	" 22	99	46	7	7·0	2,571	100	3	Very ripe and broken by rain.
Gold Rain	" 19	96	42	10	7·0	2,370	100	.....	Uneven in growth.
Early Blossom	" 19	96	44	5	9·0	2,227	100	5	Lodged and rusty.
Swedish Select	" 20	97	46	8	8·0	2,139	100	.....	Uneven in length. Badly lodged.
478-D	" 16	93	41	10	8·5	2,026	100	.....	Uneven in growth.
Banner	" 24	101	46	9·5	7·5	2,017	100	.....	Uneven in growth.
O.A.C. No. 72	" 23	100	45	9	8·5	1,940	95	1	Thin and lodged by rain.
Lincoln	" 24	101	42	9·5	7·5	1,940	98	.....	Uneven in growth and a little thin.
Daubeney	" 14	91	40	10	6·5	1,565	98	1	Thin and shelled.
*Liberty	" 17	94	44	10	7·5	1,350	100	25	Very badly smutted.

*Figured out at 34 lbs. per bushel.
†Single plot.

EXPERIMENTS WITH BARLEY

The barley plots this year suffered very materially from wind and rain, nearly all being very badly lodged. Pedigree beardless was heavily smutted, the only one of the series. All varieties were sown May 19.

BARLEY—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	Average length of head	Yield of grain per acre
			inches		inches	lbs.
Stella	Aug. 17	94	46	5	3	3,603
Manchurian	" 17	94	44	5	3	3,406
Charlottetown No. 80	" 18	95	44	10	3·5	3,354
Nugent	" 17	94	45	6	3·25	3,009
Swedish Chevalier	" 19	96	40	8	4	2,857
O. A. C. No. 21	" 17	94	34	6	2·25	2,795
Gold	" 18	95	38	9·5	3	2,776
Nugent E. Ottawa	" 16	93	34	2	3	2,690
Duckbill	" 19	94	40	9·5	3	2,519
Odessa	" 18	95	38	1	2·75	2,518
Pedigree Beardless	" 16	93	42	3	3·5	2,130
Albert	" 14	91	38	9·5	2	2,111

EXPERIMENTS WITH PEAS

The peas did exceptionally well this season, but the ravages of the pea weevil were so great that from 90-98 per cent of the crop was totally ruined for seed purposes and rendered almost unfit for feed as well. All varieties were sown on May 19.

PEAS—TEST OF VARIETIES

Name of Variety	Date of ripening	Number of days maturing	Average length of straw	Average length of pod	Actual yield of grain per acre	Per cent stand	Per cent loss from any cause which did not affect the stand	Remark
			inches	inches	lbs.			
30-K2	Aug. 24	98	38	2.25	2,257	100	90	Badly damaged by weevil
Arthur	" 22	96	34	2.0	2,197	100	98	" "
30D	" 23	97	38	2.0	1,972	100	95	" "
32-D	" 21	95	40	2.5	1,785	100	99	" "
Golden Vine	Sept. 3	108	36	2.25	1,425	100	95	" "

BANNER OATS—TEST OF STRAINS

Besides the "Test of Varieties" work with oats, this year an experiment was carried on with various strains of Banner oats procured from farmers in widely separated sections. These men are all careful farmers, all members of the Canadian Seed Growers' Association, and each strain has been produced by mass head selection. The strain grown at the Experimental Station was received from the Dominion Cerealist at Ottawa, and was originated from a single "mother plant" known as Ottawa 10. Each strain was grown on a plot containing one acre of ground, and the whole seven were as even and uniform, in so far as soil was concerned, as could reasonably be asked for.

EXPERIMENT WITH DIFFERENT STRAINS OF BANNER OATS

Seed grown by	Source of seed	Yield per acre	
		Bush.	Lbs.
Experimental Station, Charlottetown	Ottawa 10 C.E.F., Ott	68	21
Millman, J. B., Kensington, P.E.I	Selected by Mr. Millman	66	29
McGregor, W. H., Central Lot 16, P.E.I	" McGregor	66	21
Creed Richard, Mt. Albion, P.E.I	" Creed	65	23
Waugh, Thomas, Wilmot, P.E.I	" Waugh	64	31
Marchbank, James, New Annan	" Marchbank	60	13
Murphy, J. E., Augustine Cove	" Murphy	57	27

MULTIPLYING AREAS OF CEREALS

Much of the grain on the multiplying areas this year was somewhat below average in yield, and considerable of the late harvested crops was of poor colour, owing to continued rains while the grain was in stock. The stand of some fields, however, particularly the early Red Fife on CC-V, was very fine. With the exception of this area, smut was rather bad this season.

SPRING WHEAT

Variety	Field	Preceding Crop	Acreage	Yield per acre	
			acres	bush.	lbs.
Early Red Fife	C–2	Potatoes	0·4	36	45
Early Red Fife	CC–5	Potatoes	2·0	32	40
Huron	CC–4	Mangel stecklings	1·0	26	44
Huron	B–4	Mangels	1·0	25	22
White Russian	CC–5	Potatoes	2·0	19	47

OATS

Variety	Field	Preceding Crop	Acreage	Yield per acre	
			acres	bush.	lbs.
Banner	A–1	Clover hay	1·0	62	8
Banner	B–1	Clover hay	1·0	59	9
O. A. C. No. 72	G–7	Timothy	0·57	36	32
O. A. C. No. 72	G–2	Corn	0·57	36	24
Banner	CC–6	Beans, etc	2·0	32	24

BARLEY

Variety	Field	Preceding Crop	Acreage	Yield per acre	
			acres	bush.	lbs.
Charlottetown No. 80	CC–6	Mangel stecklings	2	52	3
Charlottetown No. 80	D–2	Clover hay	1	42	42
Charlottetown No. 80	A–2	Timothy hay	1	32	17
Charlottetown No. 80	D–3	Turnips	1	27	34

FIELD HUSBANDRY

DATES OF FARM OPERATIONS

The principal farm operations were begun on the following dates:—

Rolling meadows	April 30
Preparation for field crops	May 7
Spraying orchard	May 18
Spraying potatoes for blight	Aug. 16
Seeding wheat	May 8
Seeding oats	May 8
Seeding barley	May 8
Seeding clover and grasses	May 8
Seeding corn	June 11
Seeding buckwheat	July 15
Seeding mangels	May 14
Seeding turnips	June 19
Seeding potatoes	May 25
Cutting clover	July 16
Cutting timothy	July 16
Cutting wheat	Aug. 23
Cutting oats	Aug. 16
Cutting barley	Aug. 18
Cutting corn	Oct. 8
Harvesting mangels	Oct. 16
Harvesting turnips	Oct. 27
Harvesting potatoes	Sept. 23
Threshing	Aug. 28
Ploughing	Oct. 1
Summer ploughing of sod	Aug. 3
Autumn ploughing of stubble	Sept. 8
Autumn ridging of cultivated land	Nov. 2
Cultivating hoed crop	June 25
"Freeze up"	Nov. 12

CROP YIELDS

The following crops were grown on the rotations and fields during the season 1920:—

FIELD CROPS, AREAS AND YIELDS, CHARLOTTETOWN, 1920

Crop	Preceding Crop	Acreage	Total yield	Yield per acre
		acres	bush. lbs.	Bush. lbs.
Wheat—				
Early Red Fife	Potatoes (Rotation C-2)	0·57	14 42	25 48
Early Red Fife	Potatoes (CC-5)	2·0	65 20	32 40
Huron	Mangel stecklings (CC-4)	1·0	26 44	26 44
Huron	Mangels (B-4)	1·0	25 22	25 22
White Russia	Potatoes (CC-5)	2·0	39 34	19 47
Oats—				
Banner	Turnips, Connolly Field	7·0	450 29	64 14
Banner	Clover hay (A-1)	1·0	62 8	62 8
Banner	Clover hay (B-1)	1·0	59 9	59 9
O.A.C. 72	Timothy hay (G-7)	0·4	21 12	53 13
O.A.C. 72	Corn (G-2)	0·4	20 31	52 10
Banner	Beans (CC-6)	2·0	65 14	32 24
Barley—				
Charlottetown No. 80	Mangel stecklings (CC-6)	2·0	104 6	52 3
"	Clover hay (D-2)	1·0	42 42	42 42
"	Timothy hay (A-2)	1·0	32 17	32 17
"	Turnips (D-3)	1·0	27 34	27 34
Potatoes—				
Irish Cobbler	Timothy (C-1)	0·57	169 15	296 56
Green Mountain	Clover hay (B-3)	1·0	293 21	293 21
Green Mountain	Oats (CC-3)	2·0	287 19	143 40
Turnips	Oats (G-1)	0·4	177 28	443 45
Turnips	Mangel seed, Con. Field	7·0	1,404 20	200 30
Mangels	Barley (A-3)	1·0	534 5	534 .5
			lbs.	lbs.
Clover hay	Wheat (C-3)	0·57	3,525	6,184
"	Oats (A-5)	1·0	6,490	6,490
"	Wheat (B-5)	1·0	4,465	4,465
"	Grain (FF-2)	1·5	6,330	4,220
"	Oats (B-2)	1·0	3,625	3,625
"	Wheat (G-3)	0·4	1,973	4,932
"	Wheat (D-1)	1·0	3,410	3,410
"	Wheat (Matheson Field)	6·5	19,500	3,300
"	Oats (Connolly Field)	10·0	24,000	2,400
Timothy hay	Clover (C-4)	0·57	3,080	5,403
"	Timothy (G-5)	0·4	2,763	6,907
"	Clover (A-1)	1·0	4,630	4,630
"	Clover (G-4)	0·4	2,603	6,501
"	Timothy (G-6)	0·4	2,485	6,212
"	Timothy (Below Orchard)	2·0	3,467	1,734
Alfalfa		1·5	2,950	1,966

COST OF PRODUCTION OF FIELD CROPS, 1920-21

The data on the cost of production of the various crops have been compiled from the records kept in connection with the rotation experiments. The land in the rotation is fairly uniform, and results may therefore be taken as a good average.

The values are those that have been fixed for the rotation work on all the eastern Experimental Stations. Owing to changes, chiefly in cost of labour, many of these are much below actual cost.

Average Cost of Production of Wheat after Hoed Crop

No. of acres, 1. Preceding crops (Rotation B): Hay, Oats, Hay, Roots—

Rent of land at $3 per acre	$ 3 00
Share of manure at $1 per ton, at rate of 25 tons per acre	5 00
Use of machinery	0 60
Seed	1 00
Twine	0 52
Ploughing in autumn	0 80
Harrowing in spring	1 06
Rolling	0 17
Sowing	0 23
Cutting	0 35
Stooking	0 30
Loading and unloading	0 38
Hauling	0 33
Threshing	0 72
	$14 46

Average yield of grain per acre, 1,673 pounds, or 27 bushels, 53 pounds.
Average yield of straw per acre, 2,921 pounds.
Valuing straw at $4 per ton, the average cost to produce 1 bushel of grain is 30.9 cents.

Average Cost of Production of Barley after Hay

No. of Acres, 1. Preceding Crops (Rotation A): Hay, Hay, Oats, Roots.

Rent of land	$ 3 00
Share of manure at rate of 25 tons per acre, at $1 per ton	5 00
Use of machinery	0 60
Seed	1 00
Twine	0 55
Work in autumn	3 03
Harrowing in spring	1 40
Rolling	0 13
Sowing	0 26
Cutting	0 37
Stooking	0 32
Loading and unloading	0 44
Hauling	0 30
Threshing	0 65
	$17 05

Average yield of grain, 2,228 pounds or 46 bushels, 12 pounds.
Average yield of straw, 2,921 pounds.
Valuing straw at $4 per ton, the average cost to produce 1 bushel of grain is 26·5 cents.

Average Cost of Production of Oats after Mangels

No. of Acres, 1. Preceding Crops (Rotation A): Hay, Hay, Barley, Mangels.

Rent of land at $3 per acre	$ 3 00
Share of manure at rate of 25 tons per acre at $1 per ton	5 00
Use of machinery	0 60
Seed	1 00
Twine	0 61
Fall work	0 84
Harrowing in spring	1 31
Rolling	0 11
Sowing	0 25
Cutting	0 36
Stooking	0 32
Loading and unloading	0 48
Hauling	0 33
Threshing	0 74
Cost per acre	$14 95

Yield of grain, 2,525 pounds, or 74 bushels 9 pounds per acre.
Yield of straw, 3,201 pounds per acre.
Valuing straw at $4 per ton, the cost to produce 1 bushel of grain is 11·51 cents.

Average Cost of Production of Mangels after Barley

No. of Acres, 1. Preceding Crops (Rotation A): Oats, Hay, Hay, Barley.	
Rent of land at $3 per acre	$ 3 00
Share of manure at rate of 25 tons per acre at $1 per ton	5 00
Use of machinery	0 60
Seed	3 70
Fall work	2 48
Harrowing in spring	2 22
Rolling	0 35
Ridging	1 50
Sowing	0 42
Thinning and hoeing	22 26
Cultivating	2 93
Pulling, topping and loading	6 90
Hauling	3 58
Total	$54 94

Average yield of roots per acre: 39,462 pounds, 19 tons, 1,462 pounds, or 789 bushels, 12 pounds.
Cost to produce 1 ton, $2.78.
Cost to produce 1 bushel, 6·95 cents.

Average Cost of Production of Turnips after Hay

No. of Acres, 1. Preceding Crops (Rotation B): Wheat, Hay, Oats, Hay.	
Rent of land	$ 3 00
Share of manure at rate of 25 tons per acre at $1 per ton	5 00
Use of machinery	0 60
Seed	0 70
Fall work	1 54
Harrowing in spring	1 35
Rolling	0 34
Ridging	0 85
Sowing	0 34
Hoeing and thinning	15 55
Cultivating	1 52
Pulling, loading, etc	7 31
Hauling	4 92
	$43 02

Yield per acre, 42,180 pounds, 21 tons, 180 pounds, or 843 bushels, 30 pounds.
Cost to produce 1 ton, $2.03.
Cost to produce 1 bushel, 5·1 cents.

Average Cost of Production of Potatoes after Clover Hay

Number of Acres, 1. Preceding Crops (Rotation D): Wheat, Hay.	
Rent of land at $3 per acre	$ 3 00
Share of manure at rate of 15 tons per acre at $1 per ton	5 00
Use of machinery	0 60
Seed	8 09
Fall work	2 72
Harrowing in spring	1 45
Rolling	0 11
Cutting sets	2 02
Planting, horse labour	1 19
Planting, manual labour	0 64
Spraying	0 57
Cultivating	3 38
Spray materials	6 39
Picking potatoes, manual	10 58
Digging potatoes, horse labour	2 53
Hauling	1 86
Average cost per acre	$50 13

Yield of potatoes per acre, 291 bushels, 3 pounds.
Cost to produce 1 bushel, 17·22 cents.

Average Cost of Production of Hay after Wheat

Number of Acres, 1. Preceding Crops (Rotation D): Potatoes, Wheat.	
Rent of land	$ 3 00
Share of manure at rate of 15 tons per acre at $1 per ton	5 00
Use of machinery at 60 cents per acre	0 60
Seed	4 43
Cutting	0 33
Coiling and tedding	0 72
Raking	0 23
Loading and unloading	0 86
Cost per acre	$15 17

Average yield per acre, 4,118 pounds.
Cost to produce 1 ton $7.36.

Average Cost of Production of Hay after Oats

No. of Acres, 1. Preceding Crops (Rotation A) Hay, Barley, Mangels, Oats.	
Rent of land	$ 3 00
Share of manure at rate of 15 tons per acre, at $1 per ton	5 00
Use of machinery	0 60
Grass seed	2 59
Cutting	0 36
Coiling and tedding	0 77
Raking	0 22
Loading and unloading	1 06
	$13 60
Average yield per acre..Lb	5,994
Average cost to produce 1 ton	$4 54

The following table gives a summary of the average cost of production of wheat, oats, barley, mangels, turnips, potatoes and hay. In computing the cost of cereals, the straw was valued at $4 per ton.

AVERAGE COST OF PRODUCTION OF FIELD CROPS, CHARLOTTETOWN, P.E.I.

Crop	Area	Average yield per acre		Average for	Cost to produce		
					Per acre	Per ton	Per bush.
	acres	tons lbs.	bush. lbs.	yrs.	$	$	cts.
Wheat	1	.....	27 53	6	14 46	.....	30·9
Oats	1	.....	74 9	7	14 95	.....	11·51
Barley	1	.....	46 12	7	17 05	.....	26·59
Mangels	1	19 1,462	789 12	7	54 94	2 78	6·95
Turnips	1	21 180	843 30	1	42 92	2 03	5·1
Potatoes	1	.....	291 3	4	50 13	.....	17·22
Hay after wheat	1	2 118	.....	7	15 17	7 36	
Hay after oats	1	2 1,994	.....	7	13 60	4 54	

ROTATION OF CROPS

Wherever adopted, a systematic rotation of crops has proved beneficial. A few of these advantages might be stated as follows:—

(*a*) Adequate preparation may be made for any crop one or even several years prior to its growth.

(*b*) The rotation may be planned to meet the particular requirements of any specialized line of farming.

(*c*) The control, or even complete eradication of weeds may be more easily accomplished by adopting special rotations for this purpose.

(*d*) Many plant diseases may be controlled or checked by employing certain rotations.

(*e*) By carefully planned rotations and a judicious use of clover and stable manure, the fertility of the soil will not only be maintained, but may be gradually improved.

(*f*) Farm work may be more systematically planned, thereby eliminating all useless or unnecessary labour.

(*g*) A definite farm plan eliminates unnecessary fencing. Permanent fences only need be erected.

(*h*) With a definite rotation it is usually possible to keep land in better tilth.

The following rotations were started in 1912. They meet a number of the requirements of this province:—

Rotation A (5 years' duration) suitable for dairy farming.

First year: Hoed crop. Twenty-five tons manure are used in preparation for this crop, usually about half being applied on stubble the previous fall. The stubble land is ridged up over the winter, the balance of the manure worked into the land in the spring.

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

Third year: Clover hay. This clover was found to winter very satisfactorily.

Fourth year: Timothy or pasture. Broken in August or early September and topworked throughout the balance of the season.

Fifth year: Grain. Barley was used for this crop, seeded with 8 pounds red clover per acre. The clover was sown for fertilizing purposes, and was ploughed under after receiving a topdressing of manure. The clover was found to add very materially to the humus content of the soil.

This rotation supplies large quantities of roots and grain, and also permits of one year's pasturage for dairy farming.

Rotation "B" (5 years' duration).—This rotation was planned primarily for the control of ox-eye daisy and other perennial weeds.

First year: Hoed crop. This crop receives 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 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, and after it has been in operation for several years, may be extended another year (six years) in order to provide pasture.

Rotation "C" (4 years' duration).—Suitable for stock farming, as it produces relatively more hay and roots and less grain than the former ones; the proportion being about right where it is desired to grow only the grain required 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.

Fourth year: Timothy or pasture, ten tons manure applied in early autumn and ploughed down in preparation for roots.

Rotation "D" (3 years' duration).—Suitable for a stock farm that has a lot of rough pasture land. Is admirably adapted for the eradication of ox-eye daisy, yarrow, sow-thistle, Canada thistle and couch grass.

First year: Hoed crop, fifteen tons manure per acre applied previous fall.

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

Third year: Clover hay, cut early before weed seeds have ripened, 15 tons manure per acre applied after clover is removed, land ploughed early, and thoroughly topworked during the balance of the season.

Rotation "F" (4 years' duration).—This rotation gives the maximum area under grain, and would be well adapted to the production of large quantities of seed grain for sale.

First year: Hoed crop, manured in spring at 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, topdressed 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.

This rotation also is well adapted for the eradication of weeds, if the clover is cut early, and the land ploughed and topworked.

Rotation "G" 7 years' duration.—This rotation has been very generally followed in this province, and is commonly known locally as "The Old P.E. Island Rotation."

First year: *Oats,* seeded down with 8 pounds red clover and 2 pounds alsike per acre. Seeding down with this crop is not always practised throughout the province, but observation and experiment have led to the belief that it ensures a better catch of clover in the third and fourth years of the rotation.

Second year: *Hoed crop,* manured in spring with 20 tons manure 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: *Timothy hay,* topdressed in August with 15 tons manure per acre.

Sixth year: *Timothy or pasture.*

Seventh year: *Timothy or pasture.*

It is believed that plant diseases affecting hoed crops, such as club root of turnips, are materially checked by the use of a long rotation, similar to this one.

CHARGES, ETC

The following fixed values are being used in this and similar work on all the eastern Farms and Stations:—

Cost Values

Manual labour, per hour	$0 17
Horse labour, including teamster—	
Single horse	0 27
Two-horse team	0 34
Three-horse team	0 41
Additional horses	0 07
Rent of land, per acre	3 00
Machinery, per acre, including use of thresher	0 60
Barnyard manure (spread), per ton	1 00
Commercial fertilizer at cost.	
Seed wheat, oats, barley, buckwheat and rye, per acre	1 00
Seed peas, per acre	2 00
Turnip, mangel, potato and corn seed at cost.	
Grass and clover seed charged at cost, total cost to be distributed over the number of years in hay and pasture.	
Twine charged at cost.	
Threshing charged according to actual labour expended.	

Return Values

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

Rotation Record

Rotation A.—Description of Rotation—1st year, Roots; 2nd year, Grain; 3rd year, Hay; 4th year, Hay; 5th year, Grain.

Rotation year	Crops: Last year	Crops: This year	Area	Items of Expense in Raising Crop: Rent and manure	Seed, twine and use of machinery and spraying material	Manual Labour: Hours manual labour	Manual Labour: Cost of manual labour	Horse Labour (including teamster): Hours: Single horse	2 horse team	3 horse team	Tractor	Value of horse labour	Cost of threshing	Total cost	Cost for 1 acre	Cost of 1 bushel	Cost for 1 ton	Particulars of Crop: Weight: Grain	Straw	Hay	Hoed crop	Total value	Value of crop per acre	Profit or loss per acre
			acres	$ c.	$ c.	No.	$ c.	No.	No.	No.	No.	$ c.	$ c.	$ c.	$ c.	$ c.	$ c.	lb.	lb.	lb.	lb.	$ c.	$ c.	$ c.
4	Hay	Hay	1	8 00	3 63	4 2/3	0 79	3/30	2	.....	.....	0 86	.....	13 28	13 28	.....	5 74	.....	.....	46 30	.....	16 21	16 21	2 93
5	Hay	Barley	1	8 00	2 15	2 3/30	0 48	.....	2 3/4	7 3/3	3/30	4 43	0 34	15 40	15 40	0 48	.....	1,553	1,997	.....	.....	19 52	19 52	4 12
1	Barley	Mangels	1	8 00	9 07	118	20 06	19 1/2	13 3/4	6 1/3	2 1/30	13 79	.....	50 92	50 92	.....	3 81	.....	.....	.....	26,705	26 71	26 71	*24 21
2	Mangels	Oats	1	8 00	2 27	2 2/3	0 48	.....	5	1 1/3	1	2 80	0 51	14 06	14 06	0 23	.....	2,116	2,124	.....	.....	25 40	25 40	11 34
3	Oats	Hay	1	8 00	4 71	5 1/3	0 93	3/4	3 1/4	.....	.....	1 28	.....	14 92	14 92	.....	4 13	.....	.....	7,220	.....	25 27	25 27	10 35
	Aggregate		5	40 00	21 83	133 2/3	22 74	20 1/6	26 7/12	15 1/3	4	23 16	0 85	108 58	.....	.....	.....	.....	.....	.....	.....	113 11	.....	.....
	Average per acre 1920		.....	8 00	4 37	26 23/30	4 55	4 1/6	5 1/30	3 1/15	1	4 63	.....	.....	21 72	.....	.....	.....	.....	.....	.....	.....	22 62	0 91

*Loss

Rotation Record

Rotation B.—Description of Rotation—1st year, Hoed Crop; 2nd year, Grain; 3rd year, Hay; 4th year, Grain; 5th year, Hay.

Rotation year	Crops: Last year	Crops: This year	Area	Items of Expense in Raising Crop: Rent and manure	Seed, twine and use of machinery and spraying material	Manual Labour: Hours manual labour	Manual Labour: Cost of manual labour	Horse Labour (including teamster): Hours: Single horse	Hours: 2 horse team	Hours: 3 horse team	Hours: Tractor	Value of horse labour	Cost of threshing	Total cost	Cost for 1 acre	Cost of 1 bushel	Cost for 1 ton	Particulars of Crop: Weight: Grain	Weight: Straw	Weight: Hay	Weight: Hoed crop	Total value	Value of crop per acre	Profit or loss per acre
			acres	$ c.	$ c.	No.	$ c.	No.	No.	No.	No.	$ c.	$ c.	$ c.	$ c.	$ c.	$ c.	lb.	lb.	lb.	lb.	$ c.	$ c.	$ c.
4	Hay	Oats	1	8 00	2 29	2⅜	0 48	.....	15⅔	2⅓	.....	6 42	0 51	17 70	17 70	0 29	.....	20·81	2,275	.....	.....	25 36	25 36	7 66
5	Oats	Hay	1	8 00	7 77	4⅛	0 79	1⅓	1⅓	.....	.....	0 81	.....	17 37	17 37	.....	9 58	.....	.....	3,625	.....	12 69	12 69	*4 68
1	Hay	Potatoes	1	8 00	40 81	85	14 45	14	7⅓	15⅓	2	13 78	.....	77 04	77 04	0 26	.....	.....	.....	.....	17,601	146 68	146 68	69 64
2	Mangels	Wheat	1	8 00	2 17	2⅜	0 48	.....	.7⅓	⅓	.....	2 76	0 51	13 92	13 92	0 55	.....	15 22	2.588	.....	.....	20 40	20 40	6 48
3	Wheat	Hay	1	8 00	8 82	6	1 02	⅔	3¼	.....	.....	1 28	.....	19 12	19 12	.....	7 26	.....	.....	5,265	.....	18 43	18 43	*0 69
	Aggregate		5	40 00	61 86	101⅓	17 22	16	35½	18⅝	2	25 05	1 02	145 15	.....	.....	.....	.....	.....	.....	.....	223 56	.....	.....
	Average per acre 1920		.....	8 00	12 37	2⁴⁄₁₅	3 44	.....	7⅓₀	.....	.....	5 01	.....	.....	29 03	.....	.....	.....	.....	.....	.....	.....	44 71	15 68

*Loss.

Rotation Record

Rotation C.—Description of Rotation—1st year, Hoed Crop; 2nd year, Grain; 3rd year Hay; 4th year, Hay.

Rotation year	Crops: Last year	Crops: This year	Area	Items of Expense in Raising Crop: Rent and manure	Seed, twine and use of machinery and spraying material	Manual Labour: Hours manual labour	Manual Labour: Cost of manual labour	Horse Labour (including teamster): Hours: Single horse	2 horse team	3 horse team	Tractor	Value of horse labour	Cost of threshing	Total cost	Cost for 1 acre	Cost of 1 bushel	Cost for 1 ton	Particulars of Crop: Weight: Grain	Straw	Hay	Hoed crop	Total value	Value of crop per acre	Profit or loss per acre
			acres	$ c.	$ c.	No.	$ c.	No.	No.	No.	No.	$ c.	$ c.	$ c.	$ c.	$ c.	$ c.	lb.	lb.	lb.	lb.	$ c.	$ c.	$ c.
1	Timothy	Potatoes	0·57	4 56	24 57	40¼	6 88	8¼	10½	3⅔	1	7 86	.....	43 87	76 97	0 26	.....	.....	.....	.....	10,155	84 62	148 46	71 49
2	Potatoes	Wheat	0·57	4 56	3 06	1⅝	0 24	.....	2⅛	.....	1	1 43	0 25	9 54	16 74	0 65	.....	8·82	1,198	.....	.....	11 22	19 69	2 95
3	Wheat	Hay	0·57	4 56	2 68	2¾	0 40	¼	1	.....	.....	0 43	.....	8 07	14 16	.....	4 58	.....	.....	3,525	.....	12 34	21 65	7 49
4	Clover	Hay	0·57	4 56	2 68	2¾	0 40	¼	1	.....	.....	0 43	.....	8 07	14 16	.....	5 24	.....	.....	3,080	.....	10 78	18 91	4 75
	Aggregate		2·28	18 24	32 99	46⅞	7 92	8½	14⅔	4	2	10 15	0 25	69 55	.....	.....	.....	.....	.....	.....	.....	118 96	.....	.....
	Average per acre 1920		.....	8 00	14 47	204	3 47	.....	6·4	.....	.....	4 45	.....	.....	30 50	.....	.....	.....	.....	.....	.....	.....	52 17	21 67

Rotation Record

Rotation G.—Description of Rotation—1st year, Grain; 2nd year, Hoed Crop; 3rd year, Grain; 4th year, Hay; 5th year, Hay; 6th year, Hay; 7th year, Hay.

Rotation year	Crops: Last year	Crops: This year	Area	Items of Expense in Raising Crop: Rent and manure	Seed, twine and use of machinery and spraying material	Manual Labour: Hours manual labour	Manual Labour: Cost of manual labour	Horse Labour (including teamster): Hours: Single horse	2 horse team	3 horse team	Tractor	Value of horse labour	Cost of threshing	Total cost	Cost for 1 acre	Cost of 1 bushel	Cost for 1 ton	Particulars of Crop: Weight: Grain	Straw	Hay	Hoed crop	Total value	Value of crop per acre	Profit or loss per acre
			acres	$ c.	$ c.	No.	$ c.	No.	No.	No.	No.	$ c.	$ c.	$ c.	$ c.	$ c.	$ c.	lb.	lb.	lb.	lb.	$ c.	$ c.	$ c.
2	Oats	Turnips	0·4	3 20	4 61	44	7 48	6½	8	2	1½	6 02	.....	21 31	53 28	.....	4 80	.....	.....	.....	8,878	8 88	22 20	*31 08
3	Corn	Oats	0·4	3 20	0 94	1⁵⁄₁₂	0 24	.....	1½	.....	1½	1 35	0 26	5 99	14 97	0 29	.....	711	929	.....	.....	8 97	22 42	7 45
4	Wheat	Hay	0·4	3 20	1 06	1¾	0 28	¾	1⅓	.....	.....	0 63	.....	5 17	12 93	.....	.....	.....	.....	1,973	.....	6 91	17 27	4 35
5	Hay	Hay	0·4	3 20	0 85	2½	0 40	¾	1	.....	.....	0 43	.....	4 88	12 20	.....	3 75	.....	.....	2,603	.....	9 11	22 77	10 57
6	Hay	Hay	0·4	3 20	0 67	2½	0 40	¾	¾	⅓	.....	0 46	.....	4 73	11 82	.....	3 42	.....	.....	2,763	.....	9 67	24 17	12 35
7	Hay	Hay	0·4	3 20	0 74	2½	0 40	½	.....	.....	.....	0 37	.....	4 71	11 77	.....	3 79	.....	.....	2,485	.....	8 70	21 73	9 97
1	Hay	Oats	0·4	3 20	0 88	1½	0 28	.....	6½	1	1	3 06	0 26	7 68	19 20	0 36	.....	7 26	864	.....	.....	8 99	22 47	3 27
	Aggregate		2·8	22 40	9 75	55¼	9 48	8½	19⅝	3½	3½	12 32	0 52	54 47	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
	Average per acre 1920		.....	8 00	3 48	19·9	3 38	.....	.....	.....	.....	4 40	.....	.....	19 45	.....	.....	.....	.....	.....	.....	.....	21 86	2 68

*Loss.

CULTURAL AREA

The so-called cultural area was drained, graded, staked and fitted for the 1916 crop. This area comprises 309 plots of one-fortieth acre each, all carefully measured and staked. The land is now becoming more uniform, and reliable data can be obtained.

CULTURAL EXPERIMENTS STARTED IN 1916

No.	Experiment to Determine Best—	Plots	Rotation	Total Plots
			Years	
1	Rate of seeding clover and timothy	9	4	36
2	Method of applying barnyard manure	9	4	36
3	Method of after-harvest cultivation of sod land for grain	9	5	45
4	Variety of nurse crop for yield of hay	5	4	20
5	Method of seed bed preparation	11	3	33
6	Rate of seeding nurse crop of oats	4	4	16
7	Depth of ploughing sod for roots	6	4	24
8	Depth of ploughing sod for grain	6	5	30
9	Rate of seeding nurse crop of barley	4	4	16
10	Method of treating neglected land	4	4	16
11	Depths for underdrainage	21	4	21
12	Depth of seeding cereals	4	4	16

Results and information gathered over a five-year period (1916-20) would seem to warrant the following tentative conclusions, although a much longer period will be necessary before definite decisions can be arrived at:—

Experiment I.—Rates of Seeding Clover and Timothy

All plots received a uniform seeding of 10 pounds timothy seed per acre; clover and alsike were added at the following rates per acre: plot I—2 pounds red clover; plot II—4 pounds red clover; plot III—8 pounds red clover, plot IV—12 pounds red clover, plot V—8 pounds red clover and 1 pound alsike, plot VI—8 pounds red clover and 2 pounds alsike, Plot VII—4 pounds alsike, plot VIII—6 pounds alsike, and plot IX—8 pounds alsike.

A seeding of 10 pounds timothy, 8 pounds red clover and either 1 or 2 pounds alsike (plots 5 and 6) has given best results to date.

It is a common belief throughout the province and elsewhere that alsike, when seeded in a hay mixture, winters over better than red clover, and ensures a better catch of clover for the second hay crop. Observation has shown that in no case where timothy and alsike alone were sown (as in plots 7, 8 and 9), has any clover whatsoever survived the first winter; contrary to this, there has always been a good catch in the second's year's hay where red clover or red clover and alsike have been used.

Experiment II—Methods of Applying Barnyard Manure

Plot I.—Check, no manure.

Plot II.—20 tons manure before ploughing sod for roots.

Plot III.—10 tons manure after roots, and 10 tons, as topdress after clover.

Plot IV.—20 tons manure after ploughing sod for roots.

Plot V.—20 tons manure in spring after fall ploughing of sod for roots.

Plot VI—20 tons manure topdress after clover.

Plot VII.—10 tons manure topdress on grain in spring, and 10 tons after reploughing sod for roots.

Plot VIII.—20 tons manure topdress on grain in spring.

Plot IX.—20 tons manure in piles in fall, after ploughing sod. Spread in spring.

It is almost impossible, with the data at present available, to draw any conclusions.

Experiment III.—After Harvest Cultivation of Sod Land for Grain

Plot I.—Ploughed 5 inches deep early in August, topworked balance of season.

Plot II.—Ploughed 5 inches deep early in September, topworked balance of season.

Plot III.—Ploughed 5 inches deep early in October, topworked balance of season.

Plot IV.—Ploughed 5 inches deep early in October, no topworking.

Plot V.—Ploughed 5 inches deep early in November, no topworking.

Plot VI.—Ploughed shallow in August, topworked, reploughed late.

Plot VII.—Ploughed shallow in August, topworked, ribbed late.

Plot VIII.—Stiff tooth rip three or four times in August or September, ploughed late in autumn.

Plot IX.—Ploughed 5 inches deep in spring.

It would appear from results available that,—

(*a*) Early ploughing gives good results if the land can be thoroughly topworked, but

(*b*) If topworking cannot be attended to, November ploughing is to be preferred.

(*c*) When plots were ploughed shallow in August and topworked, ribbing up late in season gave better results than did reploughing.

(*d*) Spring ploughing of sod for grain gave very low yields, and would appear to be wholly undesirable. Ploughing 5 inches deep in November, with no topworking (plot 5), gave the greatest average yield of grain for the 5-year period, closely followed by August ploughing, ribbed up late in fall (plot 7, as above).

Experiment IV.—Effect of Variety of Nurse Crop on Yield of Hay

Plot I.—2½ bushels oats per acre as nurse crop.

Plot II.—1½ bushels barley per acre as nurse crop.

Plot III.—1½ bushels wheat per acre as nurse crop.

Plot IV.—3½ bushels peas and oats (cut early for hay) as nurse crop.

Plot V.—3 bushels peas and oats (cut for grain) as nurse crop.

All plots were seeded uniformly with grass as follows: 12 pounds timothy and 10 pounds red clover per acre.

Over a five-year average, oats has proved the best nurse crop, both the clover and timothy giving greatest yields following this crop.

Experiment V.—Seed bed preparation for Grain following Roots.

Plot I.—Seeded, smooth harrowed.

Plot II.—Disced, seeded, smooth harrowed.

Plot III.—Disced, smooth harrowed, seeded, smooth harrowed.

Plot IV.—Double disced, smooth harrowed, seeded, smooth harrowed.

Plot V.—Smooth harrowed as early as possible in spring, then double disced, smooth harrowed, seeded, smooth harrowed.

Plot VI.—Double disced, smooth harrowed, seeded, smooth harrowed, rolled.

Plot VII.—Double disced, smooth harrowed, seeded, smooth harrowed, rolled, when grain is 4-5 inches high.

Plot VIII.—Three cuts spring tooth harrow, smooth harrowed, rolled, seeded, smooth harrowed.

Plot IX.—Double cut of disc, smooth harrowed, seeded, rolled, smooth harrowed.

Plot X.—Double disced, smooth harrowed, rolled, seeded, smooth harrowed.

Plot XI.—Disced, rolled, disced, smooth harrowed, rolled, seeded, smooth harrowed.

Plot No. 10 as above gave best yields over five-year period. In all cases, thorough cultivation gave greatest yields.

Plot No. 5 gave lowest yields.

Experiment VI.—Rates of Seeding Nurse Crop of Oats

Plot I.—1½ bushels of oats per acre.
Plot II.—2 bushels of oats per acre.
Plot III.—2½ bushels of oats per acre.
Plot IV.—3 bushels of oats per acre.

All seeded down with 12 pounds timothy and 10 pounds red clover per acre.

The greatest yield of oats was received from a seeding of 2½ bushels per acre.

Averaging the clover and timothy together for a five-year period, the greatest yields have been received from lighter sowing, decreasing as rate of seeding was increased. Clover has given good yields following a seeding of 4 bushels of oats per acre.

Experiment VII.—Depth of Ploughing Sod for Roots

Plot I.—Ploughed 3 inches deep early in fall, topwork balance of season.
Plot II.—Ploughed 5 inches deep early in fall, topwork balance of season.
Plot III.—Ploughed 7 inches deep early in fall, topwork balance of season.
Plot IV.—Ploughed 3 inches deep in fall, subsoil 4 inches, topwork balance of season.
Plot V.—Ploughed 5 inches deep in fall, subsoil 4 inches, topwork balance of season.
Plot VI.—Ploughed 7 inches deep in fall, subsoil 4 inches, topwork balance of season.

A 3-inch ploughing without subsoiling has given the best yields to present time. In the subsoiled plots, a 5-inch ploughing gave greatest yields. Subsoiling or even deep ploughing for roots would not appear to pay on this type of soil, which is a sandy loam over a gravelly clay bottom.

Experiment VIII.—Depth of Ploughing Sod for Grain

Plot I.—Ploughed 3 inches deep in fall.
Plot II.—Ploughed 5 inches deep in fall.
Plot III.—Ploughed 7 inches deep in fall.
Plot IV.—Ploughed 9 inches deep in fall.
Plot V.—Ploughed 4 inches deep in spring.
Plot VI.—Ploughed 6 inches deep in spring.

Deep autumn ploughing has given best returns, 9 inches leading. Spring ploughing gives a low yield compared with fall ploughing; ploughing 6 inches deep has given a better yield than the 4-inch ploughing.

Experiment IX.—Rates of Seeding Nurse Crop of Barley

Plot I.—1 bushel barley per acre.
Plot II.—1½ bushels barley per acre.
Plot III.—2 bushels barley per acre.
Plot IV.—2½ bushels barley per acre.

All plots were uniformly seeded down with 12 pounds timothy and 10 pounds red clover per acre.

In yield of grain over a period of five years, a seeding of 2½ bushels per acre has given the greatest yield; but as a nurse crop, the yield of clover and timothy has invariably been greatest after a seeding of 1½ bushels barley per acre.

Experiment X.—Treatment of Neglected Land

The land is being brought into shape, but no conclusion can be arrived at from this experiment for several years yet.

Experiment XI.—Depths of Underdrainage

Plot I.—No drain, check.
Plot II.—No drain.
Plot III.—Drain 24 inches deep.
Plot IV.—No drain.
Plot V.—No drain, check.
Plot VI.—No drain.
Plot VII.—Drain 30 inches deep.
Plot VIII.—No drain.
Plot IX.—No drain, check.
Plot X.—No drain.
Plot XI.—Drain 36 inches deep.
Plot XII.—No drain.
Plot XIII.—No drain, check.
Plot XIV.—No drain.
Plot XV.—Drain 42 inches deep.
Plot XVI.—No drain.
Plot XVII.—No drain, check.
Plot XVIII.—No drain.
Plot IX.—Drain 48 inches deep.
Plot XX.—No drain.
Plot XXI.—No drain, check.

As will be noted, each drain was placed in the centre of a plot with an undrained plot on either side, in order to observe the effect of drainage on surrounding areas. A check plot was placed between each lot.

On this type of soil (a sandy loam with gravelly clay subsoil) shallow drains, in addition to being cheaper to install, have proved superior to deep drains. Drains 30 inches deep seem to have given about the best average results, although 24-inch drains have proved entirely satisfactory.

Experiment XII.—Depths of Seeding

Plot I.—Grain seeded 1 inch deep.
Plot II.—Grain seeded 2 inches deep.
Plot III.—Grain seeded 3 inches deep.
Plot IV.—Grain seeded 4 inches deep.

Over a period of five years, seeding barley at 4 inches deep has given best yields, while oats at 3 inches deep has given the greatest returns. All grain was seeded with a disc drill in well-prepared land.

FORAGE CROPS

Drought conditions prevailed from May 11 to June 2, causing very slow germination, considerable of the field root seed failing to come through the ground at all.

Following this drought period, the growing season was very favourable, with an exceptionally early grain harvest. Owing to the warm season corn did very well. Roots, if anything, were a little below average. Not much injury was done by cutworms, but club root caused considerable damage in some areas.

INDIAN CORN FOR ENSILAGE—TEST OF VARIETIES

No.	Variety	Average Height	Stage of maturity	1st Plot	
		inches		tons	lbs.
1	Twitchell's Pride	78	Dough	27	
2	Compton's Early	94	Milk	24	800
3	Improved Leaming	86	Milk	24	
4	White Cap Yellow Dent	84	Dough	23	1,100
5	Bailey	87	Milk	23	100
6	Wisconsin No. 7	86	Milk	22	1,000
7	Quebec No. 28	66	Dough	22	1,000
8	Yellow Flint	72	Dough	22	1,000
9	North Dakota	89	Milk	19	1,000
10	Yellow Flint (McConnel)	78	Milk	19	300
11	Longfellow	81	Milk	19	

TURNIPS—TEST OF VARIETIES

This season an effort was made to test varieties purchased on the local market from different merchants handling seeds. Unfortunately, seed of similar varieties (with the exception of Haszard's Improved) could not be obtained. All of the varieties handled by two leading seed merchants were obtained and grown side by side in one-hundredth-acre plots. The following is a summary of the yields, with source of seed supply.

TURNIPS—TEST OF VARIETIES

Variety	Yield per acre			Seed purchased from
	tons	lbs.	bush.	
Haszard's Improved	12	1,000	500	Canadian Farm Products.
Carter's Best of All, Hardy Swede	12		480	Carter & Co.
Haszard's Improved	11	500	450	"
New Century Swede	11	500	450	"
Magnum Bonum	11		440	Canadian Farm Products.
Jumbo	10	500	410	Carter & Co.
Greystone	10		400	Canadian Farm Products.
Millpond	8	1,000	340	Carter & Co.
Purple Top	7		280	Canadian Farm Products.
Average	10	833	416	

MANGELS—TEST OF VARITIES

No.	Variety	Source of Seed	Yield per Acre		
			Tons	lbs.	bush.
1	Mammoth Long Red	Canadian Farm Products	23	500	930
2	Sutton's Yellow Globe	Sutton's	18	1,000	470
3	Sutton's Mammoth Long Red	"	18	1,000	740
4	Yellow Intermediate	Canadian Farm Products	18	500	730
5	Yellow Intermediate	Ottawa	18		720
6	Sutton's Sugar Mangel	Sutton's	17	1,000	700
7	Sutton's Yellow Intermediate	"	17	1,000	700
8	Danish Sludstrup	Kentville	16	1,500	670
9	Half Sugar White	Charlottetown	16	1,000	660
10	Sutton's Prize Winner Yellow Globe	Sutton's	16	1,000	660
11	Sutton's Yellow Devon Intermediate	"	16	1,000	660
12	Sutton's Red Intermediate	"	16		640
13	Yellow Intermediate	Charlottetown	16		640
14	Yellow Leviathan	Agassiz	15	1,500	630
15	Golden Tankard		15	1,500	630
16	Half Sugar White	Charlottetown	15	1,000	620
17	Sludstrup	Summerland	15		600
18	Long Yellow	Canadian Farm Products	14	500	570
19	Giant Sugar Mangel	Carter & Co	14		560
20	Sutton's Golden Globe	Sutton's	11	1,500	470
21	Perfection Mammoth Long Red	Carter & Co	7	1,000	300
22	Dignity Mangel	Canadian Farm Products	7	1,000	300
23	Sutton's Devon Yellow Globe	Sutton's	6	1,000	260
		Average	15	717	614 17

MANGELS—TEST OF VARIETIES

EXPERIMENTAL FARM SEED VERSUS COMMERCIAL SEED OF SAME VARIETY

No.	Variety	Source of Seed	Yield per acre		
			tons	lbs.	bush.
	Yellow Intermediate	Canadian Farm Products	18	500	730
	Yellow Intermediate	Ottawa (C.E F.)	18		720
	Yellow Intermediate	Sutton's	17	1,000	700
	Yellow Intermediate	Charlottetown Exp. Station	16		640
	Danish Sludstrup	Kentville Experimental Farm.	16	1,500	670
	Danish Sludstrup	Summerland	15		600

SUGAR BEETS—TEST OF VARIETIES

No.	Variety	Source of Seed	Yield per acre		
			tons	lbs.	bush.
1	Sugar Beet	B.C. grown	10	1,000	420
2	Jumbo White Sugar Beet	Carter & Co.	8	1,000	340
3	Sugar Beet	Chatham grown	7		280
		Average	8	1,333	346

CLOVER, ALFALFA AND GRASSES

The clover and grasses wintered well, and in spite of very severe weather conditions, little or no clover winter-killed. In the early part of the season, owing to drought conditions, the stand was light, but good growing weather just previous to haying thickened up the bottom growth, and a very good crop was harvested.

RESULTS OF EXPERIMENTS WITH GRASS AND CLOVER MIXTURES SOWN IN 1917

In 1917, twenty-eight plots were seeded at the Station with the following grasses and clovers, singly, and in varying mixtures and rates, the object being to determine the relative value of these as forage and pasture plants, reckoned on their ability to winter over under our generally severe weather conditions, and to hold their own against the "natural grasses" (Red Top and Brown Top), which infest the land, and kill out practically all cultivated grasses after several years:—

Red clover,
Timothy,
Western rye,
Orchard grass,
Red Top,
Meadow fescue,
Tall oat grass,
Kentucky Blue grass,
White Dutch clover,
Alsike

Under prevailing winter conditions, the clovers have difficulty in surviving over one winter or, at the most, over two.

Timothy, the standard hay grass for this province.

Western Rye, unsuitable for this province.

Orchard Grass made good showing when grown alone or with clover and other grasses. A promising grass, especially where early hay crops followed by pasture are desired.

Red Top gave first-class yields grown either alone or with other grasses. Should prove a valuable grass for general use.

Meadow Fescue made a good showing grown alone and with clovers and other grasses. It is a promising grass, and does well where hay is cut early and land used for pasture after hay is harvested.

Tall Oat Grass. Of doubtful value in this province. Grown alone or with other grasses, it was found to die out after the first winter, only one crop being obtained.

Kentucky Blue Grass starts slowly, and if sown with clovers proved better in the second and third years than in the first; in fact, it developed into a good, thick-bottomed pasture in the third year. When sown with other grasses, or if land is infested with "natural grasses" (Red and Brown Top), this grass does not seem capable of making any headway. Its value in this province is problematical. In view of present data, one would hesitate to recommend its use either as a hay or pasture grass.

HORTICULTURE

ORCHARDS

The orchards made a wonderful growth during the past season, and formed a great number of fruit buds. The trees, which were set on a loam soil, underlaid with gravelly brick clay, were very slow in becoming firmly established. The pulling of clay towards the trees during the past year, covering the roots, which had been lifted by frost, to a greater depth, has practically made a new orchard of the trees. As in other years, the orchard was cultivated and intercropped with vegetables and garden truck, the western section of the old orchard being sown down with buckwheat about the middle of July. The trees were sprayed on June 7 and 25, with poisoned Bordeaux mixture, for insects and apple scab. They were protected from mice by wrapping them with tar paper about 18 inches from the ground, and covering the lower end of the paper with clay. During the March pruning, a careful search was made for insect eggs, which were gathered and destroyed.

APPLES

About one hundred varieties of apple trees were planted in 1910. These, besides the leading commercial varieties, contain many new varieties, which are being tested for hardiness and fruitfulness. There was a very fair amount of bloom on the young trees, but a very heavy drop during June, so that there was only a small number of trees on which the fruit reached maturity. The section of the orchard exposed to the west and northwest winds has not made such good growth as the more sheltered section immediately south of the Farm buildings. The trees were carefully pruned and sprayed, and have made vigorous growth during the season. Quite a few of the varieties recommended in last year's report gave some fruit of excellent quality.

PEARS

The pear orchard is located in a very sheltered position northwest of the plant pathological laboratory. The soil is a rich clay loam, and the trees have made very good growth since transplanting. Quite a few of the early sorts gave a small quantity of fruit, sufficient to demonstrate that pears of size and quality can be grown in this section.

PLUMS

There was rather a light bloom on the plum trees, and quite a heavy drop after the fruit set, so that a very small quantity of fruit matured. The trees in general have made vigorous growth, and had a very great number of healthy fruit buds in the autumn. They were pruned, sprayed and protected from mice in the same way as the apple orchard.

CHERRIES

There was a magnificent bloom on the cherry trees. The fruit set well, but the birds destroyed it while it was green, so that it was impossible to get accurate records of the different sorts. The sweet sorts seem to be rather shy bearers; the sour sorts have a much larger lot of fruit.

SMALL FRUITS

RASPBERRIES

The 1916 plantation of raspberries continued to fruit well in 1920. The following table gives the yields of the varieties:—

RASPBERRIES—TEST OF VARIETIES

Variety	Yield per Acre Quarts
Herbert (red)	3,938
Cuthbert (red)	3,124
Shaffers (purple)	2,178
Golden Queen (white)	1,936
Columbia	880

GOOSEBERRIES

A few of the old gooseberries set out in 1911 bore fruit. The fruit was of good size and quality. The currant worm was killed by spraying with hellebore. The yields were as follows:—

GOOSEBERRIES—TEST OF VARIETIES

Variety	Yield per Acre Quarts
Pearl	1,588
Crown Bob	907
Downing	756
Red Jacket	605
May Duke	605
Lady Houghton	303

WHITE CURRANTS

The white currants have been very prolific. It is difficult to get sale for them. The five varieties gave the following yields:—

Variety	Yield per Acre Quarts
White Pearl	2,420
Large White	2,178
Verrieres White	1,936
White Kaiser	1,936
White Grape	1,936

RED CURRANTS

The red currants on the plantation set in 1911 were pruned and tied up in the winter to protect them from the snow, which usually lies quite heavily over them. The bushes were sprayed with "Black Leaf 40" to control the aphis, which curled many of the leaves. The following yields were recorded:—

RED CURRANTS—TEST OF VARIETIES

Variety	Yield per Acre Quarts
Cumberland Red	2,662
La Conde	2,662
London	2,420
Moore Seedling	1,934
Benwell	1,694
Large Bunch Holland	1,694
Raby Castle	1,694
Knight's Large	1,452
Wilder	1,210
Greenfield Red	968
Red Grape	726
Large Red	726
Comet	484
New Red Dutch	484
Early Scarlet	484

BLACK CURRANTS

The black currant plantation has grown well, but has not produced much fruit since set. There is a good demand for the fruit. The following yields were recorded:—

BLACK CURRANTS—TEST OF VARIETIES

Variety	Yield per Acre Quarts
Kentish Hero	1,210
Monarch	1,210
Ethel	1,089
Ontario	968
Winona	726
Eagle	726
Saunders	605
Bang Up	484
Topsy	484
Merveille de la Gironde	484
Kerry	484
Beauty	242

STRAWBERRIES

The new strawberry plantation set out in 1919 bore a very fair crop during the season. The first picking was made on the 3rd of July, and the crop was over by July 27. The following table gives the yield, size and season of the varieties tested in the uniform test plots:—

STRAWBERRIES—TEST OF VARIETIES

Variety	Size	Season	Yield per acre
			quarts
Glen Mary	M	10–27	10,205
Senator Dunlap	L	5–22	9,438
Parker Earl	L	12–26	7,462
Early Jersey Giant	L	5–22	7,340
Warfield	L	3–22	6,857
Desdemona	L	5–22	6,292
Charles I.	L	3–22	6,211
Bederwood	L	3–22	5,808
Parson's Beauty	M	8–22	5,647
Splendid	L	5–22	5,566
Kellog's Premier	L	3–22	5,364
Stern's Late Champion	L	12–27	5,163
Americus	S	3–22	5,152
Pocomoke	L	8–22	5,071
Francis	M	3–20	4,588
Portia	M	8–20	4,275
Bubac	L	3–20	3,993
Kellog's Prize	M	3–20	3,791
Sample	L	5–22	2,460
Dr. Burrell	L	3–22	2,057
McAlpine	L	8–22	2,017
Superb	M	5–20	1,129

VEGETABLES

ASPARAGUS

The following three sorts of asparagus were sown outside in a well prepared bed on May 21, 1920: Columbia Mammoth, Giant Argenteuil and Washington. The seed germinated strongly, and the three sorts made vigorous growth during the season.

BEANS

Fourteen sorts of beans were planted in the open on June 9. The following table gives the date ready for use, the length of their season and the yield per acre:—

BEANS—TEST OF VARIETIES

Variety	Ready for use and season	Yield per acre green beans
	August	pounds
Masterpiece	2–24	17,134
Bountiful Green Bush	2–23	16,553
Wardwell's Kidney Wax	1–23	15,682
Plentiful French	2–18	15,101
Pencil Pod Kidney Wax	3–23	13,520
Grenell's Rustless Wax	2–23	12,197
Round Pod Kidney Wax	2–23	12,197
Fordhook Favorite	2–23	12,197
Extra Early Valentine	1–23	11,037
Davis Kidney Wax	3–23	9,583
Refugee	18–23	9,373
Hudson's Long Pod	18–23	4,937
Stringless Green Pod	4–23	4,937

BEETS

Seven sorts of beets were grown. They were thinned out by using as soon as ready for canning on August 5, and were pulled again on the 9th and 26th of August. The balance was harvested October 5. The following table gives the yields in order:—

BEETS—TEST OF VARIETIES

Variety	Yield per acre	
	Bush.	Bush. lbs.
Crimson Globe	44,140	882 40
Extra Early Eclipse	30,202	604 02
Crosby's Egyptian	29,620	592 20
Black Red Ball	29,620	592 20
Early Model	27,878	557 28
Early Wonder	24,103	482 03
Detroit Dark Red	22,942	458 42

BRUSSELS SPROUTS

The Amager Market and the Dalkeith, sown on May 6, were both good. They matured abundant stocks of excellent sprouts.

CABBAGE

Eight sorts of cabbage, sown on May 8 and planted out July 7, gave excellent returns, as recorded in the following table. The Chinese cabbage bloomed on July 29, and went to seed. Perfection Drumhead Savoy did not head up:—

CABBAGE—TEST OF VARIETIES

Variety	Yield per acre
	lbs.
Succession	14,810
Danish Ballhead (Charlottetown seed)	12,632
Marblehead Mammoth	10,890
Extra Amager Danish Ballhead	10,381
Enkhuisen Glory	10,164
Volga	8,712
Delicatesse	6,243

CARROTS

The test of varieties of carrots was injured by the carrot rust fly. The sorts recommended are: Improved Danvers, Danvers, Half Long Scarlet and Chantenay.

CELERY

The seven sorts of celery were sown in hot-beds April 15. They were pricked out on May 27, set out in June, and the earliest variety was ready for use November 4. This crop was the outstanding among the many fine vegetables at the Station. It required a great deal of labour, but returned much revenue. The following table is compiled from the yields recorded from thirty trimmed heads of each sort.

Variety test of Celery, Charlottetown.

CELERY—TEST OF VARIETIES

Variety	Average weight of head	Yield per acre
	lbs.	lbs.
Giant Pascal	2¼	43,872
Winter Queen	2	36,715
Easy Blanching	1¾	34,848
French Success	1¾	31,115
Paris Golden Yellow	1⅓	24,892
White Plume	1¼	22,402
Evans Triumph	1 1/10	21,780

CORN

Eighteen sorts of corn matured. The season was favourable and good yields were obtained, as recorded in the following table. Sorts not maturing were: Country Gentleman, Earliest Catawba and Tom Thumb Pop.

GARDEN CORN—TEST OF VARIETIES

Variety	Yield per acre
	Ears
Extra Early Adams	22,748
Sweet Kloochman	22,022
Sweet Squaw	20,570
S weet Otta	20,086
Whipples Early	17,424
Piccaninny	16,456
Early Mayflower	12,342
Early Malcolm	12,100
Golden Giant	8,470
Howling Mob	7,502
Pocahontas	4,598
Golden Bantam (McDonald)	4,598
Black Mexican	3,630
Early Fordhook	3,630
Extra Early White Corey	3,388
Stowell's Evergreen	726
Golden Bantam (Burpee)	484
Malakoff	242

CUCUMBERS

The season was favourable, and the six sorts tested gave excellent returns of choice vegetables. The season extended from August 4 to September 8.

CUCUMBERS—TEST OF VARIETIES

Variety	Yield per acre
	Green cucumbers
Davis Perfect	40,333
Giant Pera	39,526
Davis Perfect (McDonald)	34,283
Improved Long Green	29,443
Early Russian	21,376
West India Gherkin	14,116

EGG PLANT

Black Beauty, which matured September 25, was the best sort. The New York Improved was second in order of merit.

LETTUCE

The eleven sorts of lettuce grown were all so good that it was hard to choose among them, but the improved Hanson was considered best by many who used it.

ONIONS

The yields of the thirteen sorts of onions were reduced by the injury caused by the onion maggot. The yields recorded are given in the following table:—

ONIONS—TEST OF VARIETIES

Variety	Yield per acre
	lbs.
Yellow Globe Danvers 0–9290	14,520
Mammoth Silver King	10,454
Southport Yellow Globe	10,454
Large Red Wethersfield –9518	10,454
Ailsa Craig	9,874
Prize Taker	9,583
Australian Brown	8,131
Red Globe	6,389
White Globe	5,808
Extra Early Flat Red	5,518
Large Red Wethersfield (McDonald)	3,775
Yellow Globe Danvers (Graham)	3,192
White Barletta	2,323

PARSLEY

The three sorts of parsley grown, Champion Moss Curled, Triple Curled and Double Curled, were sown on May 25, and were ready for use August 10. They all gave satisfactory yields.

PARSNIPS

Two sorts of parsnips were sown May 15. They were injured by the carrot rust fly, and yielded as follows:—

Variety	Yield per acre
	Lbs.
Hollow Crown	18,004
New Model	12,196

GARDEN PEAS

Sixteen sorts of peas were tested in uniform test plots. They were sown on the 8th of May and allowed to climb on chicken wire for support. The following table gives the weight of green peas in the pods, and the season. The pea weevil did a great deal of damage towards the end of the season.

GARDEN PEAS—TEST OF VARIETIES

Variety	Season	Yield per acre Green in pods
	July Aug.	lbs.
Potlatch	23–13	11,580
Pioneer	23–13	10,164
Danby Stratagem	Aug. 1–13	10,164
Gradus (Kentville)	July 23–13	8,954
Telephone	Aug. 1–13	8,712
American Wonder	July 22–29 Aug.	8,228
Little Marvel	12–10	8,107
Blue Bantam	23–13	7,986
Sutton's Excelsior	18–18	7,744
Thomas Laxton	12–10	7,018
Gregory Surprise	10–10	7,018
English Wonder	23–13	6,292
Laxtonian	18– 5	6,050
Carter's Eight Weeks	18– 5	6,050
Early Moon	July 13–26 Aug.	5,566
Gradus (Carter)	18– 5	3,388

PEPPERS

Two sorts of peppers were grown from seed obtained from Summerland. Sown April 15, they were ready for use on September 25. The Harris Early was a week or more earlier than the Neapolitan, and a heavier cropper.

PUMPKINS

Three sorts were grown; the Mammoth led in yield, the Small Sugar was second and the Large Connecticut Field third.

RADISHES

Five strains of Scarlet Turnip White Tip radishes were sown May 11, and were ready for use June 14. They were all good.

SALSIFY

Three sorts of salsify were grown; the Mammoth Sandwich Island was best.

SPINACH

The Ottawa strain of Victoria spinach was sown May 11; it was ready for use June 16, and was a good crop.

SQUASH

Five sorts of squash were grown. They all gave large yields. The Hubbards and the Delicious produced excellent keeping squash of good quality. The English Vegetable Marrow and Long White Bash gave yields over 50,000 pounds per acre; but there is very little demand for these sorts on this market.

TOMATOES

Twelve strains of tomatoes were planted in hot-beds, April 14, and were pricked out on the 13th of May. They were set out June 14, and ripened a large percentage of fruit. The following table gives the yields and the season during which the sorts ripened:—

The green tomatoes were harvested September 16 and 18, and met with a ready sale.

TOMATOES—TEST OF VARIETIES

Variety	Season	Yield per acre Ripe	Yield per acre Green
	Aug. Sept.	lbs.	lbs.
Langdon Earliana	16–16	14,429	25,591
Alacrity	16–16	11,706	28,858
Prosperity	16–16	11,026	22,869
Earlibell	25–16	9,937	21,780
Northern Adirondack No. 2	21–16	9,664	21,780
Burbank Early	16–16	9,210	34,848
Alacrity A-1	16–16	8,848	37,026
John Baer	25–16	7,623	14,157
Red Head	21–16	5,989	23,413
Chalk's Early Jewel	25–16	4,219	19,057
Danish Export	21–16	2,178	21,780
	Aug.		
Bonny Best	21–28	680	32,670

TURNIPS

Four sorts of garden turnips were grown. They gave large crops of splendid vegetables. The yields were as follows:—

Variety	Yield per acre
	lbs.
Red Top Strap Leaf	59,241
Extra Early Purple Top Milan	56,918
Early Snowball	55,756
Golden Ball	40,656

CULTURAL EXPERIMENTS

Many of the cultural experiments that were dropped under war conditions were taken up again, and the following are some of the most interesting results obtained:

BEANS

A comparison of the relative advantages of a succession of varieties of different seasons, with the same variety planted at intervals of a week apart for four weeks.

BEANS—CULTURAL EXPERIMENTS

Variety	Date planted	Ready for use	Green. Yield per acre	Ripe. Yield per acre
			lbs.	lbs.
Round Pod Kidney	June 23	Aug. 14	11,906	Did not ripen
Extra Early Valentine	" 9	" 5	8,379	1,914
Stringless Green Pod	" 9	" 19	7,316	1,045
Round Pod Kidney	" 16	" 18	7,115	1,161
Refugee	" 9	" 18	5,922	2,613
Round Pod Kidney	" 30	" 21	3,484	Did not ripen
Round Pod Kidney (cut-worm)	" 9	" 5	1,914	696

BEETS.

A thinning experiment with Detroit Dark Red beets was carried on. The beets were sown May 17; they were thinned to 2, 3 and 4 inches apart, and harvested on August 9 and 26 and October 5. The largest quantity at the first pulling of beets ready for the table was obtained from those 2 inches apart; the second pulling gave the largest quantity from those 3 inches apart; while at the third pulling those 4 inches apart were too large for table use, but gave the largest yield.

CARROTS

A thinning experiment with Chantenay carrots was carried on. The carrots were sown May 14, and harvested October 6. They were injured by the carrot rust fly. The thinning to 3 inches gave the largest quantity of roots. The 2-inch thinning gave better results than the 1½-inch thinning.

ONIONS

The series of experiments with onions was carried out. All rows were 15 inches apart. Three varieties were sown in the open, and thinned to 1, 2 and 3 inches apart. They were harvested September 6 and 8. The results were as follows:—

ONIONS—CULTURAL EXPERIMENT

Variety	Distance between plants	Yield per acre
		lbs.
Prize Taker	2	9,931
Yellow Globe Danvers	3	8,363
Large Red Wethersfield	3	8,102
Yellow Globe Danvers	2	7,318
Yellow Globe Danvers	1	6,795
Prize Taker	3	6,795
Large Red Wethersfield	2	5,488
Prize Taker	1	4,958
Large Red Wethersfield	1	1,829

(2) Three varieties were sown in hotbeds April 15, and transplanted to open ground, 3 inches apart, June 11. They were harvested September 12. The following table gives the results:—

Variety	Yield per acre
	lbs.
Large Red Wethersfield	13,165
Prize Taker	13,165
Yellow Globe Danvers	12,390

(3) Onion sets were planted May 8, and harvested August 28, yielding 11,671 pounds of first quality onions. Onion sets furnished the earliest onions for table use.

PEAS

For a comparison of the relative advantages of a succession of varieties of different seasons with the same variety planted at intervals of a week apart for four weeks, four varieties were sown May 8, and Thomas Laxton was sown again on May 15, 22, and 29. The following table gives the results:

PEAS—CULTURAL EXPERIMENTS

Variety	Date seeded	Yield per acre green	Yield per acre ripe
		lbs.	lbs.
Advancer	May 8	7,548	1,675
Thomas Laxton	" 15	6,534	1,451
Danby Stratagem	" 8	5,863	1,465
Thomas Laxton	" 29	5,372	1,161
"	" 22	5,227	1,306
"	" 8	4,816	1,151
Gradus	" 8	2,303	628

PARSNIPS

Hollow Crown parsnips were sown May 15 in the open, and harvested October 15. They were thinned to 2, 3, and 4 inches apart in the row. The results were as follows:

Variety	Distance apart in rows	Yield per acre	
	inches	bush.	lbs.
Hollow Crown	4	464	28
"	3	406	25
"	2	371	31

TOMATOES

The shrubs, trees and perennial flowers came through the mild winter of 1918-19 14, they were pricked out May 13, and transplanted to the open June 14. The rows were 4 feet apart. The following table gives details of planting and management, and the results obtained:—

TOMATOES—CULTURAL EXPERIMENTS

Variety	Method of Support and Pruning	Yield per acre Ripe	Yield per acre Green
		lbs.	lbs.
Alacrity	Plants 4 feet apart, lying on ground	47,780	43,560
"	" 2 " trained 2 stems on poles	36,754	40,837
Bonny Best	" 2 " " 2 "	28,858	58,261
Alacrity	" 2 " " 1 "	28,586	18,513
"	" 2 " " 1 stem on wire	27,633	20,146
"	" 2 " " 2 "	26,136	41,382
Bonny Best	" 2 " " 2 "	25,319	58,806
"	" 2 " " 1 "	24,911	38,115
"	" 4 " " lying on ground	24,639	54,450
"	" 2 " " 1 stem on poles	22,325	44,921

TREES, SHRUBS, FLOWERS AND LAWNS

The shrubs, trees and perennial flowers came through the mild winter of 1918-19 in splendid condition. There were scarcely any losses. During the summer there was a succession of bloom throughout the entire season, from the time the Myserium Daphne bloomed in April until the last perennial aster faded in December. An outbreak of green aphis was controlled by spraying with "Black Leaf 40" and ice cold water. The latter proved very effective.

The flowers in the large beds and borders about the lawns made a magnificent showing from May until November. Some of the outstanding perennials were:

OUTSTANDING PERENNIALS

Perennials	Blooming Period
Narcissus	May 19 to June 5
Tulips	May 18 to June 8
Iris	June 15 to July 29
Paeonies	" 26 to July 21
Dahlias	July 29 to Oct. 9
Spiraea	July 2 to Aug. 18
Golden Glow	Aug. 7 to Sept. 1
Phlox	Aug. 2 to Oct. 25
Aster	June 10 to Oct. 26
Water lilies	June 16 to Sept. 29

The annual flowers made a wonderful display along either side of the direct driveway to the Mount Edward Road. There was a profusion of bloom throughout the season. The sweet peas were again general favourites.

POULTRY

HOUSING

The poultry plant was further enlarged during the year, to give the young chicks more ground to run over. The Contest Houses were moved to the orchard. Five new contest houses were built to enable the Second Prince Edward Island Contest birds to remain up to December 31, 1920, to qualify under the rules of the Record of Performance.

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. Since putting in this partition, stopping the circular draught, the houses have been dry and comfortable. Each section of these houses is complete with trap-nests, charcoal, grit, shell hoppers, and watering device.

THE STOCK

The total number of chicks hatched in April was 613; in May, 1,126; and in June, 469; total, 2,208. Of these, 122 were sold as day-old chicks; 1,490 were reared to maturity, with a loss of 596 deaths from all causes; 320 pullets were transferred to laying pens, and 193 others were sold for breeding purposes to farmers. The cockerels were sold for breeding stock, or retained for mating in the breeding pens. There were 38 culls, and 654 broilers and chickens were sold at an average price of 62 cents each.

All the laying stock at the Station are trap-nested for Record of Performance. Most of the birds that lay over 150 eggs in their pullet year are kept for breeding stock.

EGG PRODUCTION

HENS VS. PULLETS BY MONTHS

Date	Hens			Pullets		
	No.	Eggs	Average per hen	No.	Eggs	Average per pullet
1919						
November	79	20	0·25	160	348	2·17
December	79	0	0·0	337	904	2·68
1920						
January	78	69	0·88	335	2,602	7·76
February	78	161	2·06	333	2,816	8·45
March	77	759	9·85	327	3,342	10·22
April	77	1,228	15·95	319	4,405	13·80
May	76	1,214	15·97	309	3,994	12·92
June	69	727	10·54	261	3,135	12·01
July	63	565	8·97	215	2,923	13·59
August	54	745	13·79	182	2,558	14·03
September	54	472	8·74	179	1,435	8·02
October	53	242	4·56	110	456	4·14
Average per bird per year			91·56			109·79
Average per bird per month			7·63			9·15

The hens in the above table were mostly a year old and kept for breeding purposes. They were not pushed for egg production until the breeding season, commencing in April, when they quickly passed the pullets that had been forced for winter production, using light in the evening during November and December. The table of vitality among the hatching records shows that the use of lights and the forcing for winter eggs greatly reduces the hatchability of the eggs and the vitality of the chicks.

HATCHING RESULTS

The eleven laying and breeding pens were made up of 77 hens and 319 pullets as follows:—

—	Pullets	Hens	Males
Single Comb White Leghorns	220	57	12
Barred Plymouth Rocks	99	20	6

HATCHING RESULTS FOR SETTINGS BY THE MONTH

Time set	Total eggs set	Per cent fertile	Per cent total eggs hatched	Per cent fertile eggs hatched	Per cent chicks hatched alive in July	Total eggs required for one chick hatched
March	862	74·7	33·1	44·4	80·4	3·0
April	2,144	80·9	51·6	63·8	77·9	1·9
May	2.197	81·9	37·1	45·5	48·6	2·6

HATCHING RESULTS FROM DIFFERENT MAKES OF INCUBATORS

Incubator	Total eggs set	Per cent fertile	Per cent total eggs hatched	Per cent fertile eggs hatched	Per cent chicks hatched alive July 1	Total eggs required for one chick hatched
Buckeye	4,403	80·8	42·7	52·8	68·0	2·3
Prairie State	446	73·3	43·2	59·0	80·8	2·3
Tamlin	354	83·0	37·8	45·5	40·3	2·6

HATCHING RESULTS FROM THE VARIOUS BREEDS

Variety	Total eggs set	Per cent fertile	Per cent total eggs hatched	Per cent fertile eggs hatched	Number chicks alive July 1	Per cent chicks hatched alive July 1	Total eggs required for one chick hatched
Rocks	2,418	75·8	39·9	52·7	756	78·1	2·4
Leghorns	2,785	84·3	44·5	52·8	734	59·1	2·2

VITALITY OF CHICKS

An investigation on the vitality of chicks has been carried on for two years. The breeding pens of mature hens each contain one cockerel from selected stock, mated with from 12 to 15 hens that have produced 150 or more eggs in their pullet year. These are housed in portable, cotton-front colony houses, and are not pushed for egg production until the eggs are needed for hatching.

The pullets, on the other hand, are housed in permanent 100-hen houses, divided by wire partitions, and during the early winter they are forced for egg production, lights being used for a few hours each night until about New Year's. The eggs from both were hatched under as nearly identical conditions as possible. The following table gives the results for the hatching seasons of 1919 and 1920:—

HATCHING RESULTS FROM HENS AND PULLETS

—	1919				1920			
	Total eggs set	Per cent fertile	Per cent fertile eggs hatched	Per cent chicks hatched alive July 1	Total eggs set	Per cent fertile	Per cent fertile eggs hatched	Per cent chicks hatched alive July 1
Hens	3,282	96·6	53·6	85·0	2,190	84·2	57·7	82·1
Pullets	769	94·0	45·6	63·4	3,013	77·4	48·9	53·8

The mature hens produced a greater number of fertile eggs; they hatched over 8 per cent better, and were very much stronger and more rugged. On July 1 of each year the comparative number of chicks living from the mature hens was 20 per cent greater.

FREE RANGE VS. SMALL PEN FOR GROWING CHICKS

Investigational work has been continued for many years in the rearing of chicks on free range compared with allowing them a more or less confined area. This was continued in 1920.

Flock "A" was composed of fifty of the most mature and promising Barred Rock pullets selected from our entire flock. They were confined on a sod plot 40 feet by 100 feet for six weeks.

Flock "B" was composed of fifty Barred Rock pullets, chosen from the above flock after flock "A" had been selected. They were less mature and were given free range for the same six weeks. Both flocks were fed in the same manner, all of the same food they would eat up clean.

Those given free range improved very much more rapidly, and at the end of the six weeks they were superior to flock "A" in condition and maturity.

The following food was consumed by the two flocks:—

—	Grain at $2.70	Moist mash at 1·5c.	Value
	lbs.	lbs.	$ c.
Flock "A"	210	975	20 29
Flock "B"	195	840	17 82

FEEDS AND FEEDING

FISH MEAL IN DRY MASH

Occasionally it is very difficult to obtain beef scrap. A substitute in the form of fish meal was tried out. The procedure was as follows:—

Pen "C," a lot of mature White Leghorn hens that were being fed whole wheat in the litter morning and evening, were given a dry mash made up as follows:—

	Lb.
Oats	100
Bran	100
Middlings	100
Cornmeal	50
Fish meal	39

This was fed in dry-mash hopper.

Pen "D," a lot of 15 mature White Leghorn hens that were fed the same grain and other poultry requirements as pen "C," were given the above mash in the dry mash hopper, except that no fish meal was added. This was continued for one month with the following results:—

Pen	Grain	Mash	Fish meal	Grit	Shell	Cost of feed	Eggs laid	Value	Gain
						$ c.		$ c.	$ c.
"C"	40	36	4	3	3½	2 92	229	8 59	5 67
"D"	42	38	0	3	3	2 88	174	6 53	3 65

Further work along this line is planned, as the experiment was unavoidably discontinued before sufficient data were obtained to form definite conclusions.

EFFECT OF FISH MEAL ON FLAVOUR OF EGGS

Strictly fresh eggs marked from pens "C" and "D" in the above experiment were sold in mixed lots to regular customers. Inquiries were made from time to time regarding the flavour of these eggs. No difference was detected.

A strictly fresh lot of mixed eggs from the pens was sold for preserving in sodium silicate (waterglass) and no mention was made of the origin of the eggs.

Four months afterwards, when using the eggs, the customer complained that certain eggs had a decidedly fishy flavour. The shells from these eggs were returned to the Station, and they were found to be eggs from pen "C" that had been fed on fish meal.

EXPERIMENT P. 2

September 1, 1920—October 31, 1920

Regular Dry Mash, without beef scrap, vs. a Commercial Laying Mash

Pen 1

Thirty White Leghorn hens aged 1 year 5 months

Feed:—Whole wheat in litter morning and evening, dry mash (regularly used on plant) made up as follows:—

100 lbs.	crushed oats.
100 "	bran.
100 "	middlings.
50 "	corn meal.
300 "	wheat screenings.
650 lbs.	

Grit and shell, hopper-fed. Dry mash, moistened with buttermilk, fed in troughs at noon. Limited range.

RESULT

Kind	Wheat	Dry Mash	Noon Mash	Butter milk	Grit	Shell	Green feed	Lot cost feed	Eggs laid	Gain or loss
Price per 100	$4.50	2·91	2·91	0·70	2·00	2·50	.....	.....	doz. 58c.	
Amount pounds	169	30	183	160	2½	4	Range	15·07	265	
Value	7·60	0·87	5·33	1·12	0·05	0·10	.....	15·07	12·81	loss 2·26

Pen 2

Thirty White Leghorn hens aged 1 year 5 months

Feed:—Whole wheat in litter morning and evening. "Commercial" Laying Mash, grit and shell hopper-fed. No moist mash. Limited range.

RESULT

Kind	Wheat	Commercial mash	Noon Mash	Buttermilk	Grit	Shell	Green feed	Lot cost of feed	Eggs laid	Gain or loss
Price	$4 50	5·34	.....	70c.	2·50	2·50	.....	.....	58c.	
Amount	220	75	.....	.....	6	6	Range	14.18	425	
Value	9.90	4·01	.....	.....	0·12	0·15	.....	14.18	20·54	gain 6.36

Remarks:—A marked advantage appeared in Pen 2, in rapidity of recovery from moult.

The experiment was continued by experiment P. 2-1.

EXPERIMENT P. 2-1

November 1, 1920—February 28, 1921

Dry Mash with Beef Scrap vs. Commercial Laying Mash

Pen 1

Twenty Barred Rock pullets aged 6 months

Feed:—Cracked corn and whole wheat, equal parts, in litter morning and evening. Dry mash made up as follows:—

100 lbs. bran.
100 " shorts.
100 " oatmeal.
33 " beef scrap.

Grit, shell and beef scrap, hopper fed, turnips as green feed. Dry mash, moistened with water, fed in troughs at noon. Confined in colony house 10 feet by 12 feet.

RESULT

Kind	Mixed grain	Dry mash	Beef scrap	Grit	Shell	Green feed	Total cost feed	Eggs laid	Gain or loss
Price per 100	$3.30	4.30	7.00	1.50	2.00	0.40	.....	.....	.....
Amount pounds	327	181	29	17	14	138	21.68	368	
Value	$10.79	7.78	2.03	0.25	0.28	0.55	21.68	18.85	loss 2.83

Pen 2

Twenty Barred Rock pullets aged 6 months

Feed: Cracked corn and whole wheat, equal parts, in litter morning and evening. Commercial laying mash, grit and shell, hopper-fed. No moist mash. Turnips as green feed, confined in colony house 10 feet by 12 feet.

RESULT

Kind	Mixed grain	Commercial mash	Beef scrap	Grit	Shell	Green feed	Total cost feed	Eggs laid	Gain or loss
Price per 100	$3.30	5.34	7.00	1.50	2.00	0.40			
Amount	465 lbs.	80 lbs.	.....	11	12	145	$20.59	447	
Value	$15.34	427	.....	0.16	0.24	0.58	20.59	23.09	gain 2.50

NOTE.—In the two foregoing experiments, P. 2 and P. 2-1, it must be noted that it was not a test between home-made mash and commercial mash, but a mash *without* animal feed and a mash *with* animal feed. The results dmonstrated the value of animal feed in the ration for hens recovering from moult and for pullets in winter production.

FINANCIAL STATEMENT OF POULTRY FOR YEAR ENDING MARCH 31, 1921

	Dr.	Cr.
Breeding stock on hand April 1, 1920 (22 males, 404 females)	$ 896 00	
Eggs for hatching on hand April 1, 1920	67 97	
Marketable eggs on hand April 1, 1920	25 50	
Fowls and young stock disposed of during year	.....	$1,151 36
Eggs disposed of during year	.....	1,008 43
Breeding stock on hand March 31, 1921 (20 males, 352 females)	.....	784 00
Eggs for hatching on hand March 31, 1921	.....	133 49
Marketable eggs on hand March 31, 1921	.....	24 50
Cost of feed for year	1,522 62	
Gain over cost of feed	589 69	
	$3,101 78	$3,101 78

PRINCE EDWARD ISLAND EGG LAYING CONTEST

The second Egg Laying Contest for Prince Edward Island started November 1, 1919. Each of the contestants sent in a pen of ten birds of a standard variety. The birds were to be typical of the breed, and free from standard disqualifications. Two substitutes per pen were allowed in case of death.

The birds during the contest received the best of feed and care. The feed was uniform for all, but the quantity supplied to each pen was increased according to their requirements. The amount of feed actually consumed was charged to each pen. The system of feeding was to supply whole grain in the litter morning and evening, with dry mash in the hopper before them all the time; green feed, shell, grit, charcoal, and buttermilk were regularly supplied; beef scrap and green bone were supplied as required.

An egg record was kept of each individual bird by means of trap nests. These records by pens were sent to the contestants and others weekly. Records were also kept of the amount of feed consumed by pens, and the cost of production of the eggs.

The birds that laid 150 eggs or over in 52 consecutive weeks were eligible for a certificate of Record of Performance AA. Those laying 225 were eligible to receive certificate of Advanced Record of Performance.

Twenty-two pens, representing six of the utility breeds of fowl, were entered in the contest.

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

Second Prince Edward Island Egg Laying Contest

Pen No.	Name and Address of owner	Breed	Number of eggs laid to March 27, 1920	Total number eggs laid	Weight of eggs laid	Cost of feed	Revenue from eggs	Profit over cost of feed	Cost of feed per doz. eggs	No. of hens qualifying in R.O.P. before Dec. 31, 1920
					ozs.	$ cts.			cts.	
1	Warren, H. L., St. Lambert, P.Q.	W. W.	344	1,215	2,425·23	36 44	52 51	16 07	35·9	1
2	Millman, J. B., Kensington, P.E.I.	B.R.	297	1,424	2,816·79	42 90	60 17	17 27	36·1	2
3	Fuller, V. G., box 355, Amherst, N.S.	W.L.	327	1,359	2,610·33	35 88	55 53	19 65	31·6	2
4	Machon, H. L., Murray Harbour, P.E.I	B.R.	145	1,403	2,830·98	44 14	59 40	15 26	37·7	4
5	Howatt, E. French River, P.E.I.	R.I.R.	141	1,032	2,136·97	38 03	44 82	6 79	44·6	1
6	Moar, J. S., Summerville, P.E.I.	B. R.	76	974	1,894·69	36 94	40 61	3 67	45·5	
7	Hamilton, R.C., Inverness, N.S.	S.W.	217	947	1,694·42	29 63	35 58	5 95	37·5	
8	Annear, Mont., Lower Montague, P.E.I.	B.R.	182	1,085	2,068·85	41 98	44 20	2 22	46·4	
9	Cain, James, Cardigan, P.E.I.	B.R.	43	1,227	2,571·25	42 61	53 62	11 01	41·6	2
10	Campbell, P. L., Montague, P.E.I.	W.L.	318	1,393	2,954·73	39 70	64 23	24 53	34·1	2
11	Haslam, F. W. E., Springfield, P.E.I.	W.L.	122	957	2,094·86	38 89	44 35	5 46	48·7	1
12	Rodd, B., Brackley Point Road, P.E.I.	B.R.	200	1,092	2,165·74	38 39	46 33	7 94	42·1	
13	McMullen, J. R., Truro, N.S.	S.S.	261	979	1,847·51	34 38	40 46	6 08	42·1	
14	McLean, Mrs. Mort, Montague, P.E.I.	B.R.	184	1,088	2,177·05	39 60	46 67	7 07	43·6	2
15	Chapman, C. B., Amherst, N.S.	W.L.	309	1,196	2,307·61	37 60	58 33	10 73	37·7	1
16	McLaren, R. G., New Perth, P.E.I.	B.R.	64	1,217	2,494·49	41 81	53 12	11 31	41·2	2
17	Lelacheur, F. C., Murray Harbour, P.E.I.	W.L.	213	1,426	2,805·94	38 35	58 46	20 11	32·2	1
18	Fraser, H. C., Montague, P.E.I.	B.R.	292	1,153	2,295·85	36 16	48 32	12 16	37·6	1
19	Bullpitt, Mrs. R. W., Cardigan, P.E.I.	W.L.	490	1,525	3,008·73	35 40	66 33	30 93	27·8	1
20	Speirs, James, St. Avards, P.E.I.	W.W.	199	957	1,799·86	35 27	38 19	2 92	44·2	
21	Horsfall, Bert, St. Lambert, P.Q.	W.L.	224	1,153	2,357·52	34 26	49 55	15 29	35·6	
22	Experimental Station, Charlottetown	W.L.	365	1,325	2,735·65	40 34	18 91	18 91	36·5	2
	Totals		4,923	26,117	52,095·05	838 76	1,110 15	271 39	38·5	25

Profit per bird over cost of feed and number of birds of the breeds included in above table were:—

Breed	No. of Birds	Profit on Feed
White Leghorns	80	$1 82
White Wyandottes	20	0 99·9
Barred Rocks	90	0 97·7
R. I. Reds	10	0 67·9
S. S.	10	0 60·8
Silver Wyandottes	10	0 59·5

The following prizes were awarded at the close of the contest:—

1. To the pen showing the largest revenue over cost of feed, from sale of eggs, in the year ($30.93½). One pen of Barred Rocks, 5 pullets and 1 cockerel, valued at $30 won by Mrs. R. W. Bullpitt.

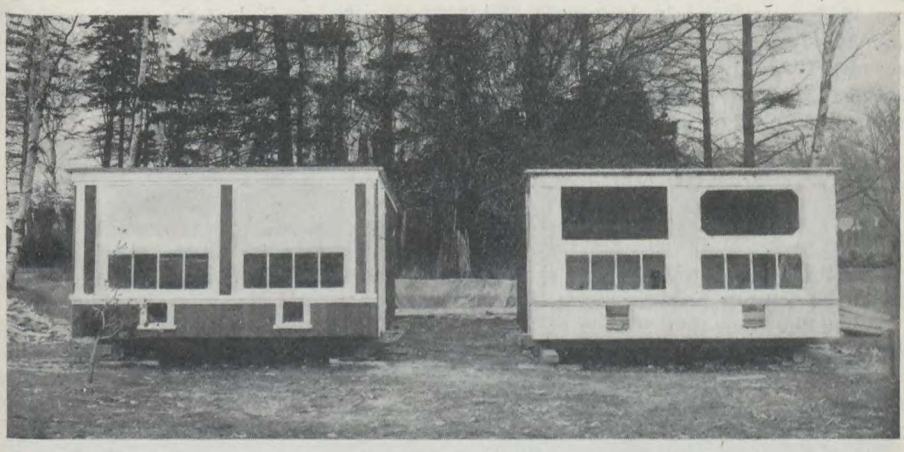
2. To the pen showing the second largest revenue over cost of feed, from sale of eggs, in the year ($24.53). One pen of White Leghorns, 5 pullets and 1 cockerel, $25. Won by Mr. P. L. Campbell.

3. To the pen laying the largest number of eggs in the year (1,525). Cash prize, $20. Won by Mrs. R. W. Bullpitt.

4. To the pen laying the second largest number of eggs in the year (1,426). Cash prize, $15. Won by Mr. F. C. Lelacheur.

5. To the pen laying the third largest number of eggs in the year (1,424). Cash prize, $10. Won by Mr. J. B. Millman.

6. To the pen laying the fourth largest number of eggs in the year (1,404). Cash prize, $5. Won by Mr. H. L. Machon.



Contest Houses.

7. To the bird laying the largest number of eggs in the year. One silver cup, donated by the Caldwell Feed and Cereal Company, to be won twice out of three contests, and to remain at the Experimental Farm until finally won. Value $50. Won for the year by hen No. 199 in Mrs. R. W. Bullpitt's pen, with 196 eggs for the year.

8. To the bird laying the second largest number of eggs in the year (195). Cash prize, $10. Won by Mr. F. C. Lelacheur's hen No. 175.

9. To the bird laying the third largest number of eggs in the year (191). Cash prize, $5. Won by Mr. Benjamin Rodd's hen No. 129.

10. To the pen laying the largest number of eggs each four weeks. Cash prize (four-weekly), $2.

11. To the bird laying the second largest number of eggs each four weeks. Cash prize (four-weekly), $1.

12. To the pen laying the largest weight of eggs in the year (3,008·73 ounces). One pedigree cockerel, Barred Rock or White Leghorn, $10. Won by Mrs. R. W. Bullpitt.

13. To the pen laying the largest number of eggs before New Year's (108). One pedigree cockerel, Barred Rock, $10. Won by Mr. Benjamin Rodd.

14. To the pen laying the largest number of eggs during the first five months (515). One pedigree cockerel, Barred Rock or White Leghorn, $10. Won by Mrs. R. W. Bullpitt.

15. To the pen having the largest number of birds qualify for Record of Performance (150 eggs). One pedigree cockerel, Barred Rock or White Leghorn, $10. Won by Mr. H. L. Machon, who had two hens qualify.

PRESERVATION OF EGGS

A lot of strictly fresh, infertile eggs were treated with "Fleming's Egg Preserver" as per the manufacturer's directions, on February 10, 1920. They were stored for four months in a room where the temperature varied from 40 degrees to 70 degrees F. During the following six months the temperatures of the room varied from 60 degrees F. to 90 degrees F. The last two months of the year the temperatures ranged from 40 degrees F. to 60 degrees F. These eggs were candled at the start, again on June 10, 1920; at which time they showed a very slight evaporation. Candled February 10, 1921, the air cell was found to extend down about one-eighth inch. On February 20, 1921, samples were boiled and used for food. They were found by the poultryman to be as good in every respect as ordinary cold storage eggs.

EXHIBITIONS

Exhibits were prepared and shown at the Provincial Exhibition, Charlottetown, and at the County Exhibitions at Souris, Georgetown, and Summerside.

With the exception of that at Summerside, the weather was ideal, and the fairs very largely attended, Charlottetown having one of the record attendances of its history. Grain, field roots, vegetables, fruits and flowers were judged at these fairs, either by the superintendent or his assistants. Many school fairs also were attended during the early autumn, where judging was done.

At the Provincial Exhibition, Charlottetown, the greater part of the Station herd of Ayrshires, as well as some Clydesdale horses, were entered. A championship, as well as many other prizes, was won.

Clydesdales were again entered at the Horse Show, and a number of steers entered at the Fat Stock Show during the winter. These again carried off many valuable ribbons.

His Grace the Duke of Devonshire, Governor-General of Canada, and staff, visited the Station on July 16, 1920. The vice-regal party inspected the live stock and growing crops, and expressed themselves as being well pleased with the appearance of the Station. As a memento of the visit, His Grace, before departing, planted a Norway maple on the lawn, just south of the superintendent's residence.