DOMINION ON 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 1921

"Ravenwood Milkmaid" 73374, a Promising Ayrshire Youngster at the Experimental Station, Charlottetown, P.E.I.

OTTAWA
F. A. ACLAND
PRINTER TO THE KING'S MOST EXCELLENT MAJESTY
1922

38827—1

EXPERIMENTAL STATION, CHARLOTTETOWN, PRINCE EDWARD ISLAND

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

SEASONAL NOTES

The autumn of 1920 was exceptionally fine and favourable for fall ploughing and other farm work, which was continued to November 12. A heavy snowfall on November 24 made good sleighing for a short time. The winter of 1920-21 was comparatively mild and open. December weather was moderate, with many showers of rain. A snow storm on the 26th followed by zero weather made fair sleighing. January was fine and mild, rain falling on five days. Zero weather occurred three times; on the 29th it was 7 degrees below. The ice cleared off the 15th of the month, making good hauling. February passed without a gale, there were very few storms and only two showers of rain. The meadows and pastures were protected with a good blanket of snow. March was broken; a thaw from the 1st to the 4th cleared away most of the winter's snow, and practically all snow was gone from the fields by the 17th. On the 27th the temperature reached 56 degrees F., and the ice broke up in the rivers.

The spring of 1921 was much earlier than usual. The first of April was wet and blustery, but, from the 19th on, it was fine, and gradually became almost summer-like towards the close, with a temperature of 74 degrees on the 29th. Turnip stecklings were planted out on that date, and regular farm work was commenced about two weeks earlier than the average. May was fine and dry, with moderate temperatures; the crops were quickly put in, and seeding was practically completed by the 28th. The trees appeared green ten days earlier than in 1920. June and July were exceptionally fine, with moderately cool weather, which greatly assisted the crops during the long drought which lasted up to July 15. May, June and July had a precipitation of only 3·62 inches, compared with 8·52 inches, the 12-year average at this Station for theso three growing months.

The fruit set well; though a few of the small fruits dried out after a short season. Hay was saved well, and barley was harvested early in August. Owing to the very favourable weather for farm crops the cereal harvest was completed before the end of the month in first-class shape. The autumn was very favourable for work; there was bright sunshine every day in September, yet there were sufficient showers to make the ploughing and other farm work easy. Most of the rain fell at night, and the teams were never stopped from working by unfavourable weather. More autumn work than usual was completed. A light frost occurred on October 10, one that killed the squash vines came on the 17th, and the annual flowers were killed on the 27th. November was dull and cool, and the "freeze-up" occurred on the 23rd. December was stormy, with good sleighing until the heavy storm of the 30th blocked all traffic.

METEOROLOGICAL RECORDS

Months	Temperature Fahrenheit					Precipitation					Bright Sunshine
	Maximum		Minimum		Mean	Rainfall		Snowfall		Total	
	Date	Deg.	Date	Deg.	Deg.	Dys.	Inches	Dys.	Inches	Inches	Hours
1921											
Jan.	15	45	29	-7	19·08	5	1·03	9	27·5	3·78	81·1
Feb.	17	40	22	-8	15·411	2	0·30	5	22·5	2·55	113·8
March	27	56	5	12	31·725	17	2·97	4	8·3	3·80	128·4
April	29	74	[illegible]	15	40·165	9	2·62	4	6·5	3·27	151·3
May	22	80	6	29	49·756	11	1·68	..	..	1·68	255·4
June	10	81	6	38	58·05	10	1·14	..	..	1·14	231·0
July	26	90	[illegible]	46	68·653	5	0·80	..	..	·80	253·0
Aug.	11 & 30	80	5 & 2[illegible]	46	62·661	10	3·61	..	..	3·61	261·9
Sept.	2	85	21	36	59·45	11	4·15	..	..	4·15	229·0
Oct.	4	68	27	26	48·564	14	2·32	..	..	2·32	135·7
Nov.	1	59	23	13	33·265	13	2·91	6	12·75	4·18	45·6
Dec.	18	47	23 & 26	0	24·048	4	·73	12	47·5	5·48	36·1
Total							24·26	..	125·05	36·76	1922·3
Average for 13 years							31·054	..	88·665	39·9	1859·4

DIVISION OF ANIMAL HUSBANDRY

HORSES

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

The horses throughout the year have been in thrifty condition. Owing to the large amount of hauling during the winter of 1920-21, no experimental work was done on the cheap winter feeding of horses. One of the Clydesdale mares received a strain late in the spring while hauling ice and was quite lame during planting, but recovered later.

A tractor supplemented the horses for the spring seeding, and relieved them of much of the heavy work. This machine is giving satisfaction and is used for practically all of the heavy harrowing.

During the summer months the following ration was fed the heavy draught horses: 16 pounds oats, 2 pounds bran, 20 pounds hay. A reduction of from 2 to 4 pounds was made in the oats fed on Sundays. The grain ration is reduced materially in the autumn and winter, after the busy season is over.

DAIRY CATTLE

The Ayrshire herd at this Station at the end of the calendar year (December 31, 1921) consisted of fifteen animals, including the two herd sires, Ottawa Ivanhoe and Ravenwood Victor.

During the year two animals, "Sylvia of Glenholm" and "Ottawa Ivanhoe," reacted to the tuberculin test. "Sylvia" was slaughtered, and Ottawa Ivanhoe is held in isolation until final instructions for his disposal are received.

Part of the herd was shown at the Provincial Exhibition, and carried off many prize ribbons, the bull "Ravenwood Victor" running a very close second in the yearling class.

Only one cow has completed her Record of Performance since the last report was issued, "Cora of Craggan," No. 55891, with 10,933·1 pounds of milk, averaging 4 per cent butter fat.

BEEF CATTLE

PROJECTS 1 TO 9—STEER FEEDING EXPERIMENT

The steer feeding experiment for this season is a repetition of last year's work, for the purpose of strengthening and verifying results previously obtained. Sixteen steers were purchased in early autumn and allowed to run on pasture, with a soiling crop of corn and sunflowers given them as supplementary feed. They successfully passed the tuberculin test, and, when cold weather set in, were divided into four lots of four steers each. The steers were dehorned and given a short preliminary feeding period, later being placed on experimental ration as follows:—

STEERS, RATIONS FED—PER PEN, PER DAY

Lot I—
40 pounds hay.
150 " turnips.
25 " grain mixture.

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

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

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

Forty pounds of hay per pen per day will be fed throughout the experiment. Turnips were started at 150 pounds per pen per day. Owing to shortage of roots, this will be cut down, and finally discontinued toward the latter part of the experiment. Grain feeding was started at 25 pounds per day, and will be increased as the steers gain in weight, and as the root ration is reduced. The grain mixture used at the beginning of the experiment was as follows:—

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

The object of the experiment is to determine the relative value of different methods of preparing and feeding exactly similar rations, using only such feeds and methods of feeding as might be readily employed by the average farmer.

The steers will be sold by public auction in sufficient time to allow slaughtering for Easter market.

SWINE

Three brood sows kept at the Station gave litters in the spring totalling 32 pigs, 29 of which were saved. Three of the sows gave litters in the autumn, totalling 31 pigs, 24 of which were saved.

PROJECT 25—COST OF PRODUCTION OF PORK

During the summer 25 young pigs were fed in an experiment to determine cost of production of pork. Cost of labour and value of manure were neglected in final analysis.

The following table gives a summary of costs and amounts of feed consumed:—

Value of hogs at beginning of experiment, 25 at $7	$175 00
Feed consumed—	
Buttermilk, 7,500 lbs. at 40c. per cwt	30 00
Shorts, 2,035 lbs. at $55 per ton	55 96
Oats, 2,380 lbs. at 75c. per bushel	52 50
Bran, 1,245 lb. at $50 per ton	31 12
Oil cake, 655 lbs. at $65 per ton	21 29
Screenings, 1,245 lbs. at $36 per ton	22 41
Total cost at date of selling	$388 28

Weight of hogs when sold (live weight)—4,150 lbs.
Cost of production, 1 lb. live weight—9.35 cents.
Feed period—118 days.

The value set on pigs at the beginning of the experiment ($7 each) is the price at which pigs were selling at that time. All feeds are charged at prices paid for same in local market. It will be noted that all feed costs and original value of pigs are high, giving a rather high cost per pound for production. In the average season this should be very much lower.

At the end of the year (December 31, 1921) there were on hand at this Station six brood sows and seventeen young pigs.

FIELD HUSBANDRY

THE SEASON

Practically all farm work was completed in the autumn of 1920, owing to the dry, favourable conditions which continued up to November 12. The winter was moderate. The fields were covered with a good blanket of snow until the end of February. March was broken, but the weather was favourable for the protection of grass and clover. Spring was very early; summer temperatures occurred before the end of April, enabling teams to start and do quite a considerable amount of work before the end of that month. Planting was quickly completed under favourable conditions. Trees appeared green on May 18, ten days earlier than usual. The drought of May, June, and July greatly lessened the hay crop and shortened the straw of the cereals. Early potatoes that were planted early were much injured. The summer was favourable for the harvesting of the several crops, and the autumn was open, so that fall work was generally completed before the "freeze-up" that occurred November 23.

CROP ROTATIONS

Projects 59 to 63.—Experimental rotations have been carried on at this Station continuously since 1912. If one is well acquainted with agricultural conditions in the province, one is impressed with the haphazard methods and lack of system employed in rotating of crops.

The rotations at this Station, as originally planned, were chiefly for demonstration purposes, but reliable and accurate data have been collected on cost of production of various crops, as well as on many other problems.

In figuring "cost of production," etc., a fixed set of values has been used throughout, as follows:—

COSTS

Rent of land	per acre	$3 00
Manure (spread)	per ton	1 00
Seed, wheat, oats, barley, buckwheat or rye	per acre	1 00
Seed peas	per acre	2 00
Use of machinery	per acre	60
Manual labour	per hour	17
Single horse and teamster	per hour	27
Two horses and teamster	per hour	34
Three horses and teamster	per hour	41
Grass seed	at cost	
Twine	at cost	
Seed turnips, mangels, potatoes and corn	at cost	
Threshing to be charged according to actual labour expended.		
Commercial fertilizers	at cost	

RETURN VALUES

Wheat, oats, barley, buckwheat, rye	per lb.	01
Peas		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
Straw	per ton	4 00
Potatoes	per bush.	50
Pasture—		
Horses, per head	per month	1 00
Cattle, per head	per month	1 00
Sheep, per head	per month	25

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

Project 59.—Rotation "A" (five 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 autumn, the balance in the spring.

Second year.—Grain, seeded down with ten pounds red clover, two pounds alsike, and twelve pounds timothy per acre.

Third year.—Clover hay.

Fourth year.—Timothy or pasture broken in August or early September, and top-worked during balance of season.

Fifth year.—Grain seeded with eight pounds of clover to be ploughed under for fertilizer.

This rotation gives fair acreage of roots, with large area of grain and grass land, making it suitable for dairy farming.

Project 60.—Rotation "B" (five years' duration). For control of ox-eye daisy and other perennial weeds.

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

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

Third year.—Clover hay, plough in autumn.

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

Fifth year.—Clover hay or pasture, topdressed with ten tons of manure per acre in early autumn, and ploughed in preparation for hoed crop.

This rotation has been found to destroy many bad weeds.

Project 61.—Rotation "C" (four years' duration). Suitable for stock farming, as it produces relatively more hay and roots and less grain than the former ones. This is desirable when the farmer wishes to produce only sufficient grain for feeding purposes.

First year.—Hoed crop, receives ten tons manure per acre in spring.

Second year.—Grain, seeded down with ten pounds red clover, two pounds alsike and twelve pounds timothy per acre.

Third year.—Clover hay.

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

Project 61a.—Rotation "F" (four years' duration). This is a special grain growing rotation, well adapted to the production of large quantities of seed grain for sale.

First year.—Hoed crop, manured in spring at rate of twelve tons per acre.

Second year.—Grain, seeded down with ten pounds red clover, two pounds alsike and six pounds timothy per acre.

Third year.—Clover hay, topdressed in autumn with eight tons manure per acre before ploughing.

Fourth year.—Grain seeded down with eight pounds red clover and two pounds alsike per acre.

Project 63.—Rotation "G" (seven years' duration). This is a rotation quite generally practised in the province, and is commonly called "Old P.E. Island Rotation."

First year.—Oats, seeded down with eight pounds clover and two pounds alsike per acre.

Second year.—Hoed crop, manured in spring with twenty tons per acre.

Third year.—Grain, seeded down with ten pounds red clover, two pounds alsike and twelve pounds timothy per acre.

Fourth year.—Clover hay.

Fifth year.—Timothy hay, topdressed in August with fifteen tons manure per acre.

Sixth year.—Timothy or pasture.

Seventh year.—Timothy or pasture.

The following tables give a recapitulation of the expenditures and returns from four experimental rotations:—

ROTATION "A"—5 YEARS

Rotation Year	Crops: Last Year	Crops: This Year	Area	Items of Expense in Raising Crop: Rent and Manure	Seed, Twine and use of Machinery	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 & Tractor Labour	Cost of Threshing	Total Cost	Cost for 1 Acre	Cost for 1 Bushel	Cost for 1 Ton	Height of Stubble	Particulars of Crop: Weight: Grain	Straw	Hay	Hoed Crop	Total Value	Value of Cropper Acre	Profit or Loss per Acre
			Acres	$ c.	$ c.	No.	$ c.	No.	No.	No.	No.	$ c.	$ c.	$ c.	$ c.	cts.	$ c.	Ins.	Lb.	Lb.	Lb.	Lb.	$ c.	$ c.	$ c.
1	Barley	Mangels	1	8 00	10 62	110	18 70	19½	18⅛	.....	3½	13 29	.....	50 61	50 61	5 03	2 12	.....	.....	.....	.....	47,065	47 06	47 06	−3 55
2	Mangels	Oats	1	8 00	2 13	4½	0 79	½	5⅚	.....	2½	3 17	0 34	14 09	14 09	21 28	.....	7	1,813	1,372	.....	.....	20 87	20 87	6 78
3	Oats	Clover Hay	1	8 00	5 68	4¼	0 71	½	2½	.....	.....	0 89	.....	15 28	15 28	.....	10 66	3	.....	.....	2,865	.....	10 03	10 03	−5 25
4	Clover	Timothy	1	8 00	4 71	4⅝	0 75	1½	1⅚	.....	.....	0 84	.....	14 30	14 30	.....	6 32	3	.....	.....	4,515	.....	15 80	15 80	1 50
5	Timothy	Barley	1	8 00	2 31	4½	0 71	½	9½	.....	4½	5 70	0 26	16 72	16 72	27 36	.....	7	2,218	2,022	.....	.....	26 22	62 22	9 50
	Aggregate		5	40 00	25 45	127⅝	21 66	22½	36½	.....	9½	23 89	0 60	111 00	.....	.....	.....	.....	.....	.....	.....	.....	119 98	.....	.....
	Average per acre, 1921		.....	8 00	5 09	25½	4 33	4½	7½	.....	.....	4 78	.....	.....	22 20	.....	.....	.....	.....	.....	.....	.....	.....	24 00	1 80

ROTATION "B"—5 YEARS

Rotation Year	Crops: Last Year	Crops: This Year	Area	Items of Expense in Raising Crop: Rent and Manure	Seed, Twine and use of Machinery	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 & Tractor Labour	Cost of Threshing	Total Cost	Cost for 1 Acre	Cost for 1 Bushel	Cost for 1 Ton	Height of Stubble	Particulars of Crop: Weight: Grain	Straw	Hay	Hoed Crop	Total Value	Value of Cropper Acre	Profit or Loss per Acre
			Acres	$ c.	$ c.	No.	$ c.	No.	No.	No.	No.	$ c.	$ c.	$ c.	$ c.	cts.	$ c.	Ins.	Lb.	Lb.	Lb.	Lb.	$ c.	$ c.	$ c.
1	Clover	Potatoes	1	8 00	*18 24	35	5 95	4½	17¾	8½	4¾	13 27	.....	45 46	45 46	36 12	.....	.....	.....	.....	.....	7,505	62 54	62 54	17 08
2	Potatoes	Wheat	1	8 00	2 13	2¾	0 46	½	5 11/12	.....	1½	2 76	0 25	13 60	13 60	32 04	.....	7	1,735	2,160	.....	.....	21 67	21 67	8 07
3	Wheat	Clover	1	8 00	10 75	4¼	0 73	½	2½	.....	.....	0 95	.....	20 43	20 43	.....	10 76	3	.....	.....	3.795	.....	13 28	13 28	−7 15
4	Clover	Oats	1	8 00	2 13	2¾	0 45	½	8 7/12	.....	.....	5 04	0 34	15 96	15 96	23 49	.....	7	1,874	1,501	.....	.....	21 74	21 74	5 70
5	Oats	Clover	1	8 00	9 61	2¾	0 45	¼	2 7/12	.....	.....	0 89	.....	18 95	18 95	.....	13 90	3	.....	.....	2,725	.....	9 54	9 54	9 41
	Aggregate		5	40 00	42 86	15½	8 04	6½	35½	8½	10½	22 91	0 59	114 40	.....	.....	.....	.....	.....	.....	.....	.....	128 77	.....	.....
	Average per acre, 1921		.....	8 00	8 57	3	1 61	1¼	7	1¾	.....	4 58	.....	.....	22 88	.....	.....	.....	.....	.....	.....	.....	.....	25 75	2 87

* Spray materials included.

ROTATION "C"—FOUR YEARS

Rotation Year	Crops: Last Year	Crops: This Year	Area	Items of Expense in Raising Crop: Rent and Manure	Seed, Twine and use of Machinery	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 & Tractor Labour	Cost of Threshing	Total Cost	Cost for 1 Acre	Cost for 1 Bushel	Cost for 1 Ton	Height of Stubble	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.	cts.	$ c.	Ins.	Lb.	Lb.	Lb.	Lb.	$ c.	$ c.	$ c.
1	Timothy	Potatoes	0·57	4 56	*10 49	23	3 91	6	9¾	2½	1½	7 06	.....	25 92	45 47	1692	.....	.....	.....	.....	.....	9,190	76 58	134 35	88 88
2	Potatoes	Wheat	0·57	4 56	1 25	2⅞	0 44	¼	4	.....	.....	1 40	0 21	7 65	13 42	·21	.....	7	1,492	1,263	.....	.....	17 45	30 61	17 19
3	Wheat	Clover	0·57	4 56	3 24	2⅞	0 45	⅜	1⅛	.....	.....	0 54	.....	8 79	15 42	.....	7 50	3	.....	.....	2,340	.....	8 19	14 37	−1 05
4	Clover	Timothy	0·57	4 56	2 68	2⅝	0 48	⅜	1¼	.....	.....	0 54	.....	8 26	14 49	.....	5 04	3	.....	.....	3,276	.....	11 47	20 12	5 63
	Aggregate		2·28	18 24	17 66	31¼	5 28	7⅛	15	2½	1½	9 54	0 21	50 62	.....	.....	.....	.....	.....	.....	.....	.....	113 69	.....	.....
	Average per acre, 1921		.....	8 00	7 75	13⅛	2 31	3½	6½	.....		4 18	.....	.....	22 20	.....	.....	.....	.....	.....	.....	.....	.....	49 86	27 66

* Including spray materials.

ROTATION "G"—SEVEN YEARS

Rotation Year	Crops: Last Year	Crops: This Year	Area	Rent and Manure	Items of Expense in Raising Crop: Seed, Twine and use of Machinery	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	Horse Labour including Teamster: Value of Horse & Tractor Labour	Cost of Threshing	Total Cost	Cost for 1 Acre	Cost for 1 Bushel	Cost for 1 Ton	Height of Stubble	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.	cts.	$ c.	Ins.	Lb.	Lb	Lb.	Lb.	$ c.	$ c.	$ c.
1	Timothy	Oats	0·4	3 20	0 79	¾	0 11	⅓	3¾	.....	2⅞	2 47	0 17	6 74	16 85	·205	.....	7	843	827	.....	.....	10 08	25 20	8 35
2	Oats	Turnips	0·4	3 20	4 84	45	7 65	6	7¾	.....	1¾	5 37	.....	21 06	52 65	·0595	2 38	.....	.....	.....	.....	17,585	17 58	43 95	−8 70
3	Turnips	Wheat	0·4	3 20	0 83	1½	0 23	.....	4 11/12	.....	⅓	2 07	0 17	6 50	16 25	·588	.....	7	5 60	5·05	.....	.....	6 61	16 52	0 27
4	Wheat	Clover	0·4	3 20	1 14	2	0 34	1/12	½	.....	.....	0 39	.....	5 07	12 67	.....	6 86	3	.....	.....	1,475	.....	5 16	12 90	0 23
5	Clover	Timothy	0·4	3 20	1 06	2½	0 38	1/12	7/12	.....	.....	0 36	.....	5 00	12 50	.....	5 52	3	.....	.....	1,810	.....	6 33	15 82	3 32
6	Timothy	Timothy	0·4	3 20	0 85	2½	0 38	1/12	½	.....	.....	0 39	.....	4 82	12 05	.....	3 84	3	.....	.....	2,500	.....	8 75	21 87	9 82
7	Timothy	Timothy	0·4	3 20	0 67	2½	0 38	1/12	½	.....	.....	0 39	.....	4 64	11 60	.....	4 26	3	.....	.....	2,175	.....	7 61	19 02	7 42
	Aggregate		2·8	22 40	10 18	55½	9 47	9½	19 11/12	.....	4½	11 44	0 34	53 83	.....	.....	.....	.....	.....	.....	.....	.....	62 12	.....	.....
	Average per acre, 1921		.....	8 00	3 63	19 11/12	3 38	3½	7	.....	1 7/12	4 08	.....	.....	19 22	.....	.....	.....	.....	.....	.....	.....	.....	22 18	2 96

CROP YIELDS, 1921-22

CROP YIELDS, 1921-1922

Crop	Preceding Crop	Acreage	Total Yield		Yield per Acre	
		acre	bush.	lb.	bush.	lb.
Wheat, Early Red Fife	Potatoes (C-I)	0·57	24	42	43	20
" Huron	Potatoes (B-III)	1·0	28	55	28	55
" Early Red Fife	Potatoes (CC-III)	0·97	26	17	27	5
" White Fife	Turnips (G-I)	0·4	9	20	23	20
" Early Red Fife	Potatoes (CC-III)	0·97	20	24	21	2
Oats, Banner	Timothy (G-VI)	0·4	24	27	62	0
" Banner	Clover (B-5)	1·0	55	4	55	4
" Banner	Mangels (A-III)	1·0	53	11	53	11
" Banner	Turnips (Connolly Field)	3·5	148	3	42	10
Barley, Charlottetown No. 80	Timothy hay (A-1)	1·0	46	10	46	10
Potatoes, Green Mountains	Timothy hay (C-IV)	0·57	153	10	269	..
Potatoes, Irish Cobblers	Clover hay (B-II)	1·0	125	5	125	5
Turnips	Oats (G-VII)	0·4	351	35	879	12
Turnips	Clover (Matheson F.)	4·5	2,522	5	560	23
Mangels	Barley (A-II)	1·0	941	15	941	15
Mangels	Oats (CC-I)	3·5	1,662	..	474	46
			lb.			lb.
Clover hay	Wheat (C-II)	0·57	2,340			4,105
" "	Wheat (B-IV)	1·0	3,795			3,795
" "	Oats (G-II)	0·4	1,475			3,678
" "	Grain (FF-3)	1·5	5,470			3,647
" "	Wheat (CC-V)	6·0	17,765			2,961
" "	Barley (CC-VI)	5·0	14,370			2,874
" "	Oats (A-IV)	1·0	2,865			2,865
" "	Oats (B-I)	1·0	2,725			2,725
Timothy hay	Timothy (G-IV)	0·4	2,500			6,250
" "	Clover (C-III)	0·57	3,276			5,747
" "	Timothy (G-V)	0·4	2,175			5,437
" "	Clover (G-III)	0·4	1,810			4,525
" "	Clover (A-V)	1·0	4,515			4,515
" "	Clover (FF-1)	2·0	5,075			2,538

COST OF PRODUCTION OF FIELD CROPS, 1921-22

PROJECT 201

The cost of production, as arrived at below, is compiled from the extensive data collected from the various rotation experiments. The values used are those fixed for use on all eastern Farms in the system. Owing to changes in prices and labour values, many of these are very much below actual cost.

COST OF PRODUCTION OF WHEAT AFTER HOED CROP

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

	1921	7-year Average
Rent of land at $3 per acre	$ 3 00	$ 3 00
Share of manure at rate of 25 tons per acre, at $1 per ton	5 00	5 00
Use of machinery	60	60
Seed	1 00	1 00
Twine, 2.8 lbs. at 18¾c.	53	52
Ploughing in autumn, 2 hours 2-horse team at 34c.	68	78
Harrowing in spring: 1 hour 2-horse at 34c. 34; 1½ hours tractor at 55c. $0 83	1 17	1 08
Rolling, ½ hour 2-horse at 34c.	11	16
Sowing, ⅝ hour 2-horse at 34c.	26	23
Cutting, ⅞ hour 2-horse at 34c.	23	33
Stooking, 1½ hours manual labour at 17c.	23	29
Loading and unloading, 1½ hours manual at 17c.	23	36
Hauling, 1 1/12 hour 2-horse at 34c.	31	33
Threshing, 1½ hours manual at 17c.	25	65
	$13 60	$14 33

Yield of grain per acre, 1,735 lbs. at 1c., $17.35.
Yield of straw per acre, 2,160 lbs. at $4 per ton, $4.32.
Cost to produce 1 bushel of grain, 32.1 cents.
Average cost of production per bushel for seven years. 31.1 cents.

COST OF PRODUCTION OF BARLEY AFTER HAY

No. of acres: 1. Preceding crops (Rotation "A"): Roots, Grain, Hay, Hay.

	1921	Average for 8 years
Rent of land	$ 3 00	$ 3 00
Share of manure	5 00	5 00
Use of machinery	60	60
Seed	1 00	1 00
Twine, 3.8 lbs. at 18¾c. per lb.	71	57
Work in autumn: Ploughing, 7 hours 2-horse at 34c. $2 38; Harrowing, 2⅝ hours tractor at 55c. 1 47	3 85	3 13
Harrowing in spring: 1½ hours tractor at 55c. 82; 1 hour 2-horse at 34c. 34	1 16	1 37
Rolling, ½ hour 2-horse at 34c.	11	13
Sowing, ⅝ hour 2-horse at 34c.	26	26
Cutting, ⅝ hour, 2-horse at 34c.	23	35
Stooking, 1½ hours manual at 17c.	23	31
Loading and unloading, 1½ hours manual at 17c.	22	41
Hauling, 1 1/12 hour 2 horse at 34c.	32	30
Threshing, 1½ hours manual labour at 17c.	26	60
	$16 95	$17 03

Yield of grain per acre, 2,218 lbs.
Yield of straw per acre, 2,022 lbs.
Valuing straw at $4 per ton, the cost to produce one bushel of grain is 27.93 cents.
Average cost of production over eight-year period, 26.75 cents.

COST OF PRODUCTION OF OATS AFTER MANGELS

No. of acres: 1. Preceding crops (Rotation "A"): Hay, Hay, Barley, Mangels.

	1921	Average for 8 years
Rent of land at $3 per acre	$ 3 00	$ 3 00
Share of manure	5 00	5 00
Use of machinery	60	60
Seed	1 00	1 00
Twine, 2.8 lbs. at 18¾c. per lb	53	60
Fall work, ploughing, 2 hours 2-horse at 34c	68	82
Harrowing in spring { 2¼ hours tractor at 55c... $1 24 / 1 hour 2-horse at 34c... 34 }	1 58	1 34
Rolling, ½ hour at 34c	11	11
Sowing, ¾ hour 2-horse at 34c	26	25
Cutting, ⅝ hour 2-horse at 34c	22	34
Stooking, 1½ hours manual à 17c	23	31
Stooking, 1½ hours manual at 17c	23	31
Hauling, 11/12 hour 2-horse at 34c	32	33
Threshing, 2 hours manual labour at 17c	34	69
	$14 09	$14 84

Yield of grain per acre, 1,813 lbs. oats.
Yield of straw per acre, 1,372 lbs.
Valuing straw at $4 per ton, the cost to produce one bushel oats is 21.28 cents.
Average cost of production per bushel for eight-year period, 12.41 cents.

COST OF PRODUCTION OF MANGELS AFTER BARLEY.

No. of acres: 1. Preceding crop (Rotation "A"): Oats, Hay, Hay, Barley.

	1921	Average for 8 years
Rent of land at $3 per acre	$ 3 00	$ 3 00
Share of manure	5 00	5 00
Use of machinery	60	60
Seed, 7 lbs. at 50c	3 50	3 67
Fall work { 1⅞ hours tractor at 55c... $0 92 / 7 hours 2-horse at 34c... 2 38 }	3 30	2 58
Harrowing in spring { 1⅞ hours tractor at 55c... 92 / 1⅓ hours 2-horse at 34c... 45 }	1 37	2 11
Rolling, ½ hour 2-horse at 34c	12	32
Ridging, 7½ hours 2-horse at 34c	2 55	1 63
Sowing, 2 hours 2-horse at 34c	68	46
Thinning and hoeing, 71 hours manual at 17c	12 07	20 98
Cultivating, 7½ hours 1-horse at 27c	2 03	2 82
Pulling, topping and loading, 39 hours manual at 17c.	6 63	6 87
Hauling, 12 hours 1-horse at 27c	3 24	3 54
	$44 09	$53 58

Yield of roots per acre, 47,065 lbs., 23 tons, 1,065 lbs., or 941 bush. 15 lbs.
Cost to produce one ton, $1.86.
Cost to produce one bushel, 4.65 cents.
Cost to produce one ton, 8-year average, $2.69.
Cost to produce one bushel, 8-year average, 6.60 cents.

COST OF PRODUCTION OF HAY AFTER WHEAT.

No. of acres: .57. Preceding crops (Rotation "C"): Timothy, Hoed crop, Wheat.

	1921	Average for 8 years
Rent of land at $3 per acre	$ 1 71	$ 1 71
Share of manure at $5 per acre	2 85	2 85
Use of machinery at 60c. per acre	34	34
Grass seed	2 90	1 65
Cutting, 5/12 hour 2-horse at 34c	14	13
Coiling and tedding, 1 1/12 hours manual at 17c	18	24
Raking, 1/4 hour 1-horse at 27c	14	13
Loading and unloading: 1 7/12 hours manual at 17c. $0 27; 1/3 hour 2-horse at 34c... 27; 1/3 hour 1-horse at 27c.. 09	53	61
Total cost	$ 8 79	$ 7 66
Cost per acre	15 42	13 44

Yield per acre, 4,105 lbs.
Cost to produce one ton, $7.50.
Average cost to produce one ton (8-year average), $4.83.

Project 52—Variety of Nurse Crop for Yield of Hay

Plot No.	Variety of Nurse Crop	Yield clover		Yield Timothy per acre	
		1921	6-yr. av.	1921	6-yr. av.
		lb.	lb.	lb.	lb.
1	2½ bus. oats 12 timothy 10 red clover per acre	4,560	3,666	3,520	3,766
2	1½ bus. barley 12 " 10 " "	3,920	3,398	2,600	3,163
3	1½ bus. wheat 12 " 10 " "	4,600	3,446	2,000	3,220
4	3½ bus. mixed peas and oats for hay, 12 timothy 10 red clover per acre	3,440	3,040	1,520	2,990
5	3 bus. mixed peas and oats for grain, 12 timothy 10 red clover, per acre	3,120	3,006	1,120	2,853

According to data collected on this experiment it would appear that oats is superior to any other grain as a nurse crop, followed by wheat and barley respectively.

Project 53—Seed Bed Preparation for Grain

Three-year Rotation: Hoed crop, Grain, Clover

Plot	Seed-bed Preparation for Grain After Roots	Yield per acre			
		1921		6-year average	
		bush.	lb.	bush.	lb.
1	Seed, smooth harrow	11	30	42	16
2	Disc, seed, smooth harrow	34	16	48	12
3	Disc, smooth harrow, seed, smooth harrow	27	6	49	18
4	Double disc, smooth harrow, seed, smooth harrow	34	16	50	10
5	Smooth harrow as early as possible, double disc, smooth harrow, seed, smooth harrow	28	16	44	2
6	Double disc, smooth harrow, seed, smooth harrow, roll	37	26	53	21
7	Double disc, smooth harrow, seed, smooth harrow, roll when grain is 4 inches to 5 inches high	27	30	49	25
8	Spring harrow, then double angle spring, smooth harrow, roll, seed, smooth harrow	39	26	54	25
9	Double disc, smooth harrow, seed, roll, smooth harrow	29	30	48	6
10	Double disc, smooth harrow, roll, seed, smooth harrow	31	26	53	29
11	Disc, roll, disc, smooth harrow, roll, seed, smooth harrow	34	16	43	23

It would be rather difficult, at this stage of the experiment, to arrive at any conclusion on the best method of seed bed preparation. It does appear, however, that thorough cultivation previous to seeding is to be recommended.

PROJECT 54—RATES OF SEEDING NURSE CROP OF OATS

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

Plot No.	Rates of Seeding Nurse Crop of Oats			Yield Clover per acre		Yield Timothy per acre	
				1921 crop	6-year average	1921 crop	6-year average
	Oats bush.	Timothy lb.	R.Clover lb.	lb.	lb.	lb.	lb.
1	1½	12	10 per acre	1,000	2,466	2,720	3,206
2	2	12	10 "	1,920	2,530	1,920	2,353
3	2½	12	10 "	2,200	2,396	2,560	2,243
4	3	12	10 "	2,080	2,836	2,760	1,776

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

Plot I	2,836	pounds per acre
Plot II	2,441	" "
Plot III	2,320	" "
Plot IV	2,306	" "

A light seeding of oats as a cover crop seems to merit some consideration.

PROJECT 51—DEPTH OF PLOUGHING SOD FOR ROOTS

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

Plot No.	Depth of Ploughing Sod for Roots	Yield of Roots per acre	
		1921 crop	
		bush.	lb.
1	Plough 3 inches early autumn, topwork balance season	100	40
2	" 5 " " " " "	100	..
3	" 7 " " " " "	92	40
4	" 3 inches subsoil 4 inches " " "	72	40
5	" 5 " " 4 " " "	79	20
6	" 7 " " 4 " " "	100	..

For the four years, 1916-19 inclusive, turnips were grown in this experiment. In 1920 turnips were sown, but owing to club root and attacks by cutworms, proved a total failure. The area was harrowed and seeded out to buckwheat late in the season. Potatoes were used for the 1921 crop. Owing to loss of records for 1920, as above explained, and a change of crop in 1921, it is hard to arrive at a conclusion. The following is a four-year average of the turnips grown for the years 1916-17-18-19:—

Plot I	969	bushels per acre
" II	916	" "
" III	929	" "
" IV	925	" "
" V	944	" "
" VI	829	" "

Shallow ploughing or ploughing without subsoiling, is apparently as effective as the deeper ploughing.

PROJECT 56—DEPTH OF PLOUGHING SOD FOR GRAIN

Plot No.	Depth of Ploughing Sod for Grain	Yield per acre			
		1921 crop		6-year average	
		bush.	lb.	bush.	lb.
1	Plough 3 inches deep in autumn	45	10	40	20
2	" 5 " "	39	30	41	27
3	" 7 " "	35	10	40	8
4	" 9 " "	45	22	*42	26
5	" 4 " spring	29	30	35	26
6	" 6 " "	24	16	36	16

*This is a five-year average for this plot.

Evidence seems to be against the practice of very deep ploughing. As will be noted above, ploughing to a depth of 5 inches gave returns almost equal to the 9-inch ploughing. The labour expended in ploughing the extra depth would seem to be quite unprofitable. Spring ploughing of sod for grain is not to be recommended in this province, but where practised, ploughing to a depth of 6 inches proved superior to 4-inch ploughing in almost every instance during a six-year period.

PROJECT 55—EFFECT OF RATE OF SEEDING NURSE CROP OF BARLEY ON FOLLOWING CROPS OF HAY

Plot No.	Rate of Seeding Nurse Crop of Barley			Yield Clover per acre		Yield Timothy per acre	
				1921 crop	6-year average	1921 crop	6-year average
	Barley bush.	Timothy lb.	Red Clover per acre lb.	lb.	lb.	lb.	lb.
1	1	12	10 "	2,920	2,583	3,400	2,800
2	1½	12	10 "	2,480	2,720	2,760	2,793
3	2	12	10 "	2,240	2,280	1,520	1,833
4	2½	12	10 "	2,760	2,260	1,760	1,630

As will be noted, barley as a nurse crop, seeded at one and one-half bushels per acre, has been followed by the best crops of hay. It might also be noted that barley seeded at one and one-half bushels per acre has very nearly equalled in grain the production of areas sown at a higher rate.

PROJECT 204—METHOD OF TREATING NEGLECTED LAND

Previous to starting a regular four-year rotation, this land was to receive the following different treatments:—

Plot I.—Plough 3 inches to 5 inches deep in early spring, roll, three cuts of disc harrow, roll, seed with 1½ bushels buckwheat and finish with smooth harrow. Plough buckwheat under 5 inches when in bloom, roll. double cut of disc, sow 2 bushels oats, 1 bushel barley and 10 pounds red clover per acre for forage.

Plot II.—Same treatment as No. 1, but top-dress before breaking with 8 tons manure; 10 barrels lime per acre to be applied before seeding.

Plot III.—Plough 3 inches to 4 inches deep in early spring, cultivate, sow with oats, barley and Italian rye grass for forage.

Plot IV.—Same as plot III, sow oats and vetches.

Plot V.—Plough 4 inches deep in June, cultivate as necessary.

Plot VI.—Plough 4 inches deep in June, cultivate as necessary, and plough 6 inches deep in September.

Plot VII.—Plough 5 inches deep in August, cultivate as necessary.

Plot VIII.—Plough 5 inches in August, cultivate as necessary. Apply 350 pounds superphosphate, 200 pounds muriate of potash, and sow 10 pounds Red clover per acre.

First year to be treated as above.

Second year, plots to be in potatoes.

Third year, plots to be in barley seeded to clover and timothy.

Fourth year, plots to be in hay.

Fifth year, plots to be in mixed grain, rye grass and clover for forage, then top-dressed with 8 tons manure, and broken to start a regular four-year rotation as follows: Roots, grain, hay, mixed grain.

The preliminary treatment has been completed, and the first year of the rotation started, but as yet not sufficient information has been collected to permit of conclusions being drawn.

PROJECT 57—DEPTHS OF UNDERDRAINAGE

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

Drains were placed at 24 inches, 30 inches, 36 inches, 42 inches and 48 inches deep, with proper check plots, etc. The type of soil is a sandy loam, with heavy gravelly clay subsoil. It has been found that on this type of soil drains 30 inches to 36 inches deep are equal if not superior to deeper drains.

PROJECT 48—DEPTHS OF SEEDING CEREALS

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

Plot No.	Depth of Seeding Cereals	Yield Barley (2nd year) per acre				Yield Oats (4th year) per acre			
		1921 crop		6-year average		1921 crop		6-year average	
		bush.	lb.	bush.	lb.	bush.	lb.	bush.	lb.
1	Seeded at 1 inch deep	6	42	24	11	42	4	44	26
2	" " 2 "	5	20	24	25	36	6	44	7
3	" " 3 "	7	20	25	8	46	12	48	32
4	" " 4 "	9	40	26	28	37	18	39	33

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

HORTICULTURE

THE SEASON

The autumn garden work was well completed before the winter of 1920-21 set in, owing to the fine, open weather of September, October and November. There was sufficient snow to protect the small fruits and shrubs, as the winter was moderate and comparatively short. From March 1 on, the weather was broken. Most of the snow was gone by the 17th, and the ice went out of the rivers and bays on the 27th. Spring came two weeks earlier than usual. The trees appeared green on May 18, or ten days ahead of other years. Weather conditions were favourable for planting flowers and vegetables, and for the setting of fruit. Owing to the drought of early summer the small fruits, which promised abundant crops, dried off with only an average yield. The large fruits were also retarded in growth by the drought, which fortunately ended with frequent showers July 15. The continued bright sunshine matured all vegetables early, and gave a splendid colour to the fruit. Autumn weather conditions were favourable for harvesting all horticultural crops.

ORCHARDS

The orchards have greatly benefited by deep ploughing in the interspaces. The land was ploughed to a depth of from eight to nine inches, to within four feet of the ten-year-old trees on two sides, cutting quite a number of the surface roots. This has caused large numbers of secondary roots to start. The trees were carefully pruned back, resulting in a good crop of fruit from practically all of the trees, and a splendid growth of wood that was well matured in the autumn. The amount of soil covering about the trees was again increased. This no doubt assisted in improving their condition. The orchards were intercropped with vegetables, and buckwheat. The trees were sprayed with poisoned Bordeaux on June 8 and June 25, for insects and apple scab. A few oyster shell lice were seen, but the orchards were practically free from insect pests and scab during the season. The trees were protected from mice by tar paper hilled about with clay. When pruning in March and April, all cocoons and nests of insect eggs were destroyed.

PROJECT 98—APPLES

Almost all of the one hundred sorts of apple trees planted in 1910 bore fruit in 1921. The trees made vigorous growth, and were well matured in the autumn. The area of the orchard exposed to the west and northwest winds also made satisfactory growth, and yielded well. The following should receive special mention for yield: Red Astrachan, Congo, Crimson Beauty, Duchess, Hibernal, Horace, Hyslop Crab, Jonathan, Lowland Raspberry, Martha Crab, Neville, North-west Greening, Pewaukee, Scarlet Pippin, Stark, Trenton, Whitney Crab and Yellow Transparent.

PROJECT 100—PEARS

The pear orchard is situated in a very sheltered position northwest of the Plant Pathological Laboratory. The soil is a rich clay loam, and the trees are making good growth. The interspaces are set out with raspberries and rhubarb, and receive considerable cultivation, especially in the spring. Quite a few of the early varieties gave small quantities of fruit of fair size and quality. Bartlett, Seckel and Goodale gave highest yields.

PROJECT 101—PLUMS

The trees in general are making good growth. All interspaces have been deeply ploughed and thoroughly worked. Spaces are cropped each year either with strawberries or vegetables. The trees were sprayed, pruned and protected from mice in a manner similar to the apple trees. The trees are planted twenty feet apart each way.

The following table shows the production of some of the highest yielding varieties. (Total yield per acre, computed on yield from two trees):—

PLUMS—HIGHEST YIELDING VARIETIES

Variety	Yield per acre
	lb.
Diamond	11,870
*Purple Egg	7,296
Shropshire Damson	6,970
Columbia	6,860
*Washington	6,207
Spaulding	6,207
Coes Golden	5,445
*Lombard	5,445
*Saunders	5,009
Orleans	4,683

*Trees thus indicated produced fruit of fine quality.

PROJECT 99.—CHERRIES

Cherry trees are making fair growth. They were pruned back in spring and gave good yields. Some difficulty is experienced in saving the fruit from attacks by birds. The following table gives results of some of the highest yielding varieties, total yield per acre computed on the yield from two trees:—

CHERRIES—HIGHEST YIELDING VARIETIES

Variety	Yield per acre
	boxes
Dyehouse	4,138
Early Richmond	3,049
Ostheim	2,396
Orel No. 25	1,960

Yields are reported in "boxes per acre," as most of the cherries were sold in this way. Capacity of box used was approximately 1 quart.

SMALL FRUITS

PROJECT 107—RASPBERRIES

The 1916 plantation of raspberries gave fair yields, as follows, size of plot one drill 100 feet long, 6 feet wide:—

Variety	Yield per acre
	quarts
Shaffer (purple)	2,686
Herbert (red)	2,668
Golden Queen (white)	2,033
Cuthbert (red)	1,688
Columbia (purple)	1,325

PROJECT 104—GOOSEBERRIES

A new gooseberry plantation was set out in 1919. As yet the yields are small, but the quality of the fruit is good. Downing and Mabel gave highest yields.

PROJECT 103—WHITE CURRANTS

The white currants, as in former years, gave high yields. The quality is good, but great difficulty is found in getting ready sale for these. Yields are as follows:—

Variety	Yield per acre
	quarts
Verrieres White	3,267
White Kaiser	2,783
Large White	2,299
White Grape	605
White Pearl	24

PROJECT 103—RED CURRANTS

The red curants were sprayed to protect from aphis. The yields were fairly good.

Variety	Yield per acre
	quarts
La Conde	4,840
Moore Seedling	3,630
Cumberland Red	3,025
Wilder	2,904
Benwell	2,662
Holland	2,662

PROJECT 103—BLACK CURRANTS

Black currants did fairly well this season; there is always a ready demand for these at good prices.

Variety	Yield per acre
	quarts
Climax	2,662
Kentish Hero	1,331
Kerry	847
Bang Up	726
Ethel	726
Topsy	484
Ontario	484

PROJECT 108—STRAWBERRIES

The strawberries set out in 1919 gave a fair crop this season. The fruit was readily disposed of on the local market at good prices. The first picking was made on June 27, and the last picking on July 26. The following table gives the yield, size of fruit, and season of the different varieties tested.

Strawberries were planted in a double row, 30 feet long and with 30 inches between drills:—

STRAWBERRIES—TEST OF VARIETIES

Variety	Size	First and Last Picking Season	Yield per acre
			quarts
1. Francis	Medium	June 27–July 20	9,801
2. Portia	Large	July 4– " 26	9,329
3. Glen Mary	"	June 27– " 26	8,588
4. Beder Wood	Medium	June 27– " 20	8,349
5. Parker Earle	Large	July 4– " 26	7,478
6. Early Jersey Giant	"	June 27– " 18	7,478
7. Superb	"	" 27– " 20	7,463
8. Dr. Burrill	Medium	" 27– " 20	6,855
9. Sample	Large	" 27– " 20	6,679
10. Charles I	"	" 27– " 13	6,244
11. Bubach	"	" 27– " 20	5,939
12. Warfield	Medium	" 27– " 20	5,808
13. Americus	"	" 27– " 21	5,445
14. Pocomoke	Large	" 27– " 20	4,995
15. Senator Dunlap	Medium	" 27– " 20	4,719
16. Kellogg Prize	Large	" 27– " 20	4,646
17. Desdemona	Medium	" 30– " 20	4,646
18. Valeria	"	July 2– " 20	4,574
19. Nettie	"	June 27– " 26	4,574
20. Sterns Late Champion	Large	July 4– " 20	4,356
21. Parson Beauty	Medium	June 20– " 20	3,703
22. Splendid	"	" 30– " 20	3,485
23. Kellogg Premier	Large	" 27– " 20	3,485
24. McAlpine	"	July 2– " 20	2,977

A new strawberry plantation was set out just north of the picnic grove. This made excellent growth during the season, and as it is in a very favourable location it is expected that good yields will be obtained when it comes into bearing.

VEGETABLES

PROJECT 205—ASPARAGUS

The asparagus set out in 1920 has made excellent growth; the following list is in order of merit:—

Conover Colossal, Giant Argentueil, Palmetto, Columbia Mammoth, Washington. Conover Colossal is a late variety.

PROJECT 111—BEANS

Seventeen sorts of beans were planted in the open on May 28. The following table gives date ready for use, length of season and yield per acre, size of plot, 30 feet of 30-inch drill:—

BEANS—TEST OF VARIETIES

Variety	Ready for use and Length of Season	Yield per acre Green Beans
		lb.
1. Kentucky Wonder	Aug. 5–Sept. 10	19,612
2. Hodson Long Pod	" 5– " 4	15,246
3. Refugee	July 30– " 4	14,375
4. Hidasta	" 27–Aug. 25	14,084
5. Pencil Pod	" 27– " 20	12,723
6. Pilot	" 30–Sept. 4	12,487
7. Masterpiece	" 27–Aug. 20	12,342
8. Wardwell Kidney Wax	" 27– " 15	12,195
9. Davis White Wax	" 27– " 20	12,052
10. Extra Early Valentine	" 27– " 20	11,761
11. Stringless Green Pod	" 27– " 20	10,454
12. Bountiful Bush	" 28– " 20	10,164
13. Stringless Green Pod	" 27– " 20	9,002
14. Plentiful French	" 30– " 20	8,857
15. Round Pod Kidney Wax	" 28– " 25	7,550
16. Fordhook Bush Lima	Sept. 1–Sept. 4	4,646
17. Bush Lima	Poor germination	No yield

PROJECT 113—BEETS

Nine sorts were grown this season. As soon as ready for canning, they were thinned out (August 1); they were pulled on August 13, 18, and 30, and the final harvest was gathered on October 6.

The following table gives total yields:—

BEETS—TEST OF VARIETIES

Variety	Yield per acre	Yield per acre	
	lb.	bush.	lb.
1. Detroit Dark Red	28,459	569	9
2. Early Model	26,862	537	12
3. Black Red Ball (1)	26,426	528	26
4. Eclipse	25,120	502	20
5. Black Red Ball (2)	23,813	476	13
6. New Dandy	23,522	470	22
7. Early Wonder	22,942	458	42
8. Crosby Egyptian	22,796	455	46
9. Crimson Globe	21,199	423	49

Size of plot used, one drill 30 feet long 30 inches wide.

PROJECT 115—BRUSSELS SPROUTS

Four varieties were planted on May 3, and developed good stocks of excellent sprouts. The following is a list in order of merit:—

Amager Market, Dalkeith, Paris Market, Sutton, Dwarf Gem.

PROJECT 206—BORECOLE

One variety, Dwarf Green Curled, was planted and made good growth. There is no sale for this on our local markets.

PROJECT 116—CABBAGE

Fourteen sorts sown on May 3 and planted out June 15, gave good returns. The following table gives yield in pounds per acre, drills 30 inches apart, plants 24 inches apart in row:—

CABBAGE—TEST OF VARIETIES

Variety	Yield per acre in lb.
1. Marblehead Mammoth	18,876
2. Succession	17,424
3. Extra Amager Danish Ballhead	17,424
4. Volga	15,972
5. Copenhagen Market	14,520
6. Flat Swedish	14,520
7. Fottler Improved Brunswick	13,939
8. Enkhuizen Glory	13,649
9. Delicatesse (red)	12,487
10. New Danish Delicatesse	12,197
11. Kildonan	11,616
12. Danish Red Stonehead	10,164
13. Early Jersey Wakefield	10,164
14. Extra Paris Market	7,260

Perfection Drumhead Savoy did not head up, Wong Bok and Petsai went to seed July 27. Yield was figured on weight of ten average heads.

PROJECT 118—CARROTS

Variety tests of carrots were damaged to a considerable extent by the Carrot Rust Fly. The sorts recommended are: Improved Danvers, Danvers Half Long Scarlet and Chantenay.

PROJECT 121—CELERY

Eight varieties of celery were sown in hot beds on April 27, pricked out May 30, and set out July 1. The earliest variety was ready for use October 28. The celery at this Station for several years has been one of the outstanding vegetable crops and yields considerable revenue.

CELERY—TEST OF VARIETIES

Variety	Average Weight per head	Yield per acre
	lb.	lb.
1. Giant Pascal	1⅞	36,300
2. Winter Queen	1½	34,122
3. Sanford Superb	1½	33,396
4. Evans Triumph	1⅛	30,492
5. French Success	1¼	29,766
6. Golden Self Blanching	1¼	27,588
7. Golden Yellow	1¼	25,002
8. White Plume	1⅛	24,684

PROJECT 207—EGG PLANT

Two varieties were grown, New York Purple and Black Beauty, the New York Purple proving the highest yielder.

PROJECT 123—CITRON

Two varieties of citron gave fair returns. The following yields are recorded:—

Variety	Yield per acre
	lb.
Red Seeded (Ferry)	7,168
" (0-826)	6,810
" (Rennie)	5,734
Preserving (0-822)	5,376

PROJECT 124—CORN

The twenty-one sorts of corn planted at the Station this season all matured; the season was very favourable and high yields obtained.

GARDEN CORN—TEST OF VARIETIES

Variety	Yield per acre, ears
1. Iroquois	23,232
2. Tom Thumb (Popcorn)	22,990
3. Early Malcolm	22,748
4. Evergreen Bantam	21,296
5. Malakoff	20,812
6. Early Mayflower	19,844
7. Sweet Otta	18,634
8. Sweet Kloochman	18,392
9. Sweet Squaw	13,392
10. White Rice (Popcorn)	18,150
11. Extra Early Cory	17,666
12. Stowell Evergreen	16,214
13. Golden Bantam	15,972
14. Pocahontas	15,972
15. Early Fordhook	14,036
16. Black Mexican	13,794
17. Country Gentleman	13,310
18. Whipples Early	13,310
19. Howling Mob	13,068
20. Pickaninny	10,890
21. Golden Giant	4,598

Corn planted in hills three feet apart each way, yield per acre computed on crop from twelve average hills.

PROJECT 125—CUCUMBERS

The season was fairly favourable for the growing of cucumbers, and the five sorts tested gave the following yields, in a season extending from August 12 to September 27:—

Variety	Yield per acre of Green Cucumbers
	lb.
Improved Long Green	34,686
Davis Perfect	24,401
Early Russian	19,662
Giant Pera	19,461
West India Gherkin	3,025

Cucumbers planted in hills six feet apart each way, yield per acre computed from three average hills.

PROJECT 126—LETTUCE

Nine varieties of lettuce were grown. It is rather difficult to place them, as all were good. We recommend "Improved Hanson," "All Heart" and "Salamander" in the order named.

PROJECT 128—ONIONS

ONIONS—TEST OF VARIETIES

Variety	Yield per acre
	lb.
Southport White	20,328
Ailsa Craig	20,328
Extra Early Large Red Wethersfield	18,005
Large Red Wethersfield	17,424
Yellow Globe Danvers	16,843
Prize Taker	16,843
Southport Red Globe	16,262
Yellow Globe Danvers	15,682
Extra Early Flat Red	12,778
Australian Brown	12,197
Southport Yellow Globe	10,454
White Barletta	5,808

Drills 15 inches apart, 30 feet of drill for each variety.

PROJECT 133—PARSLEY

Two varieties of parsley were grown, Champion Moss Curled and Triple Curled. Both proved satisfactory.

PROJECT 135—PARSNIPS

One variety only, Hollow Crown, was grown. It was injured somewhat by carrot rust fly.

PROJECT 137—GARDEN PEAS

Nineteen sorts were tested. These were sown in uniform test plots on April 30, and supported on chicken wire. The pea moth caused a great deal of damage to peas in this section. The total yields were somewhat below those of last year.

GARDEN PEAS—TEST OF VARIETIES

Variety	Yield per acre, green, unshelled
1. Telephone	10,285
2. Early Morn	9,196
3. Gradus	8,954
4. Laxtonian	8,470
5. Thomas Laxton	8,470
6. McLean Advancer	7,865
7. Reliance	7,744
8. American Wonder	7,744
9. Pioneer	7,744
10. Gregory Surprise	7,502
11. Quite Content	7,260
12. Potlatch	5,808
13. Dwarf Pea	5,808
14. Eight Weeks	5,566
15. Little Marvel	5,324
16. Danby Stratagem	5,324
17. English Wonder	4,961
18. Sutton Excelsior	4,235
19. Hybrid of Laxtonian	4,356

Drills 30 inches apart, 30 feet of drill to each variety.

PROJECT 140—PEPPERS

Three varieties of peppers were grown: Chili, Harris Earliest and Large Red Cayenne. Harris Earliest gave the largest yield.

PROJECT 147—PUMPKINS

Three varieties were grown: Connecticut Field gave the highest yield, King of Mammoths second, and Small Sugar third.

PROJECT 148—RADISHES

Two sorts were seeded May 12, and were ready for use on June 10. Both were reported good in quality. The varieties tested were Scarlet Turnip and White Icicle

PROJECT 150—SALSIFY

Only one variety was grown, Long White; the yield was large and the quality good.

PROJECT 151—SPINACH

Two sorts were planted on May 12, Carter's Victoria and New Zealand. Both did well.

PROJECT 152—SQUASH

Three sorts were grown all giving good yields. In order of yield these rate as follows: Golden Hubbard, Hubbard and Delicious. All were of good quality.

PROJECT 153—TOMATOES

Sixteen sorts were planted in hotbeds on April 27, pricked out on May 10, and planted out June 13. On account of the favourable season a large quantity of ripe fruit was produced. A ready market is found for both green and red tomatoes.

The following table shows yield of ripe, of green, and total yield of fruit for each variety, also length of season:—

TOMATOES—TEST OF VARIETIES

Variety	Season	Yield per acre Ripe	Yield per acre Green	Total Yield per acre
		lb.	lb.	lb.
1. Danish Export	Aug. 27–Sept. 30	13,068	32,125	45,193
2. Chalk Jewel	" 27– " 30	12,387	27,225	39,612
3. John Baer (1)	" 27– " 30	13,476	26,136	39,612
4. Crimson Canner	" 22– " 21	13,476	25,047	38,523
5. Wiboltt Danish Export	" 27– " 30	11,434	26,680	38,114
6. Red Head	Sept 3– " 30	12,291	25,591	37,842
7. Bonny Best	" 3– " 30	8,304	28,314	36,618
8 Chalk Early Jewel	Aug. 27– " 30	7,895	25,591	33,486
9. Matchless	Sept. 3– " 30	5,989	25,591	31,580
10. Earlibell	Aug. 27– " 30	16,607	14,157	30,764
11. John Baer (2)	Sept. 3– " 16	5,989	23,958	29,947
12. Alacrity X Earlibell	Aug. 22– " 30	16,335	10,345	26,680
13. Alacrity X Hipper	" 22– " 30	8,994	15,246	24,240
14. Alacrity	" 27– " 30	13,885	7,078	20,963
15. Round Scarlet Skin	" 27– " 30	12,251	8,167	20,418
16.. Burbank Early	" 27– " 21	7,623	8,167	15,790

The last of the green tomatoes was harvested on September 30. Yields computed on five plants, four feet apart each way.

PROJECT 156— TURNIPS

Four varieties were grown. They gave fair yields of excellent quality.

Variety	Yield per acre
	lb.
1. Extra Early Purple Milan	27,878
2. Red Top Strap Leaf	27,878
3. Early Snowball	25,555
4. Golden Ball	23,232

Rows 15 inches apart, 30 feet of drill to each variety.

PROJECT 208—VEGETABLE MARROW

Two varieties were grown, placed in order of yield as follows: English Vegetable Marrow, and Large White Bush Marrow.

CULTURAL EXPERIMENTS

A number of cultural experiments were carried on at the Station this year. The following are some of the very interesting results obtained:—

PROJECT 112—BEANS

A comparison was made of a number of varieties of different seasons with the same variety planted at intervals of a week apart for four weeks:—

BEANS—CULTURED TEST

Variety	Date Planted	Ready for use	Yield per acre Green	Yield per acre Ripe	Total Yield per acre
			lb.	lb.	lb.
1. Refugee	May 28	July 30	8,450	Did not ripen	8,450
2. Extra Early Valentine	May 28	" 28	7,492	do.	7,492
3. Round Pod Kidney	June 11	Aug. 9	5,576	1,285	6,861
4. " "	May 28	July 27	5,532	1,154	6,686
5. " "	June 4	" 30	5,009	1,220	6,229
6. " "	" 18	Aug. 13	4,879	838	5,717
7. Stringless Green Pod	May 28	July 27	5,401	Did not ripen	5,401

Rows 30 inches apart, 100 feet of drill to each variety.

PROJECT 114—BEETS

A thinning experiment with Detroit dark red beets was carried on. The beets were sown on May 6, and were thinned to two inches, three inches and four inches apart, and harvested on August 1, 13, 18, 31, and September 16. At the first picking the largest quantity of beets ready for the table was obtained from those planted four inches apart; the second gave the largest quantity from those four inches apart; the third pulling from those four inches apart; the fourth pulling from those three inches apart; and the final pulling from those two inches apart. In total yield those thinned to four inches apart gave greatest weight, followed by those three inches apart, with those two inches apart giving the smallest yield.

Beets thinned to four inches apart, while giving the highest total yield, are too large for best table use, being rather coarse and poor in quality.

PROJECT 209—CARROTS

A thinning experiment with Chantenay carrots was carried on. These were sown on May 6, and harvested October 6. Considerable damage was done by carrot rust fly. Those thinned to 3 inches gave the highest yield, followed by two inches and one and one-half inches in order.

ONIONS

A series of experiments with onions was carried on. All rows were fifteen inches apart.

(1) *Project 132—Thinning Experiment.*—Three varieties were sown in the open April 30, and thinned to one inch, two inches and three inches apart. Some considerable damage was caused by root maggot. They were harvested August 23, and gave the following yields:—

ONIONS—THINNING EXPERIMENT

Variety	Thinned to:	Yield per acre
	Inches	Lb.
Prize Taker	1	20,916
Yellow Globe Danvers	1	18,824
Large Red Wethersfield	1	17,779
Prize Taker	2	13,595
Large Red Wethersfield	2	11,504
Yellow Globe Danvers	2	10,458
Prize Taker	3	10,458
Large Red Wethersfield	3	7,321
Yellow Globe Danvers	3	7,321

Rows 15 inches apart, 33 1-3 feet for each test.

(2) *Project 128—Test of Varieties of Onions:*—Three varieties were sown in hot-beds on April 27, and transplanted, three inches apart, on June 14. They were harvested between September 12 and September 30. The following table gives results of each:—

Variety	Yield per acre
	Lb.
Large Red Wethersfield	13,591
Prize Taker	13,242
Yellow Globe Danvers	9,060

Rows 15 inches apart, 100 feet of drill to each variety, in all tests with onions.

(3) *Project 130—Onion Sets.*—Onion sets were planted on April 30, and yielded at the rate of 24,045 pounds per acre of fine onions. The use of sets in this work gave earliest onions on August 16.

(4) *Project 131—Onion Seed Planted for Production of Sets.*—Three varieties were sown from seed for the production of sets. The following is the yield per acre of sets produced:—

Variety	Yield per acre
	Lb.
Prize Taker	16,554
Yellow Globe Danvers	16,031
Large Red Wethersfield	14,463

PROJECT 138—PEAS

For comparison of the relative advantages of varieties of different seasons over a single variety planted at intervals of a week apart, four varieties were sown on April 30, and Thomas Laxton was again sown on May 7, May 14 and May 21. The following table gives the results:—

GARDEN PEAS—CULTURAL TEST

Variety	Date sown	Yield per acre. Green	Yield per acre. Ripe	Total Yield per acre. Ripe and Green
		Lb.	Lb.	Lb.
1. Thomas Laxton	May 7	8,276	1,742	10,018
2. "	April 30	7,696	2,033	9,729
3. "	May 14	7,696	1,742	9,438
4. Advancer	April 30	7,405	2,033	9,438
5. Gradus	" 30	6,752	1,888	8,640
6. Thomas Laxton	May 21	7,115	1,452	8,567
7. Danby Stratagem	April 30	4,646	1,162	5,808

Considerable damage was done by the pea moth. It would appear from the above that a succession of seedings of one variety is superior to a seeding of varieties of different seasons.

Rows three feet apart, 100 feet to each variety; 50 feet picked green, and 50 feet allowed to ripen.

PROJECT 136—PARSNIPS

Hollow Crown parsnips were sown in the open on May 6, and harvested on October 12. They were thinned to two, three and four inches apart in the row. The following gives the yields per acre:—

Variety	Distance apart in row	Yield per acre	Yield per acre
		Lb.	bush. lb.
Hollow Crown	4 inches	18,824	418 14
"	3 "	16,733	371 38
"	2 "	15,687	348 27

Row 30 inches apart, 33⅓ feet of drill to each test.

PROJECT 154—TOMATOES

Two varieties of tomatoes, Alacrity and Bonny Best, were sown in hotbeds on April 22, pricked out May 10-14, and transplanted June 13. The rows were four feet apart. The following table gives details of planting, method of handling and yields:—

TOMATOES—CULTURAL TEST

Variety	Method of Support and Pruning	Yield per acre, Ripe	Yield per acre, Green	Total Yield per acre
		lb.	lb.	lb.
1. Bonny Best	Plants 2 feet apart, on stakes, pruned to 1 stem	11,489	23,522	35,011
2. Bonny Best	Plants 4 feet apart, unpruned, lying on the ground	7,024	18,513	25,537
3. Alacrity	Plants 2 feet apart, pruned to 2 stems	16,825	8,712	25,537
4. Alacrity	Plants 2 feet apart, on wire, pruned to 2 stems	18,731	6,534	25,265
5. Bonny Best	Plants 2 feet apart, on wire, pruned to 2 stems	15,137	8,494	23,631
6. Alacrity	Plants 4 feet apart, unpruned, lying on ground	13,640	8,712	22,352
7. Bonny Best	Plants 2 feet apart, on stakes, pruned to 2 stems	14,647	6,970	21,617
8. Alacrity	Plants 2 feet apart, on stakes, pruned to 1 stem	12,142	5,881	18,023
9. Alacrity	Plants 2 feet apart, on wire, pruned to 1 stem	12,306	3,485	15,791
10. Bonny Best	Plants 2 feet apart, on wire, pruned to 1 stem	10,454	3,267	13,721

Yield computed on crop from 25 plants.

TREES, SHRUBS, FLOWERS AND LAWNS

PROJECTS 210 AND 95

The trees, shrubs and perennial flowers wintered well, and made a fine showing; the perennial border is planted so that a succession of bloom is assured throughout the entire season. Aphis and other destructive pests are kept in check by thorough spraying. The roses, which for a number of years have been rather unfortunately placed under the shade of a large tree, were moved to a new location, and although not yet well established, made a very fair showing. They will no doubt given an excellent account of themselves in future seasons.

Aristolochia Sipho (Dutchman's Pipe), and Crimson Rambler, Hardy Climbers at the Experimental Station, Charlottetown, P.E.I.

The flowers in the large beds and borders about the lawns made a magnificent showing from early spring until late autumn. Some of the outstanding perennials are as follows:—

PERENNIALS—BLOOMING PERIODS

Perennials	Blooming Period
Narcissus	May 1—June 7
Tulips	" 10—June 17
Spiraea	" 20—Aug. 15
Water Lilies	" 29—Oct. 7
Aster (bush)	June 8—Oct. 27
Iris	" 13—July 3
Pæonies	" 23—July 17
Phlox	July 20—Oct. 18
Dahlias	" 22—Oct. 22
Rudbeckia (Golden Glow)	Aug. 2—Aug. 28

PROJECT 95—ANNUAL FLOWERS

The annual flowers made a wonderful display along the driveways; there was a profusion of bloom throughout the season. Sweet peas, as usual, proved the general favourites.

CEREALS

THE SEASON

The dry autumn of 1920 was favourable for the preparation of the land for the 1921 cereal crop. There was a good covering of snow on the fields throughout the winter. Spring opened two weeks earlier than usual; this, with a fine dry May, enabled us practically to complete seeding by May 28. A drought that lasted through May, June and up to the middle of July, greatly checked the growth of straw. The precipitation was only 3·62 inches, compared with a twelve-year average of 8·52 inches for these three growing months. Barley ripened early in August, and the cereal harvest was completed before the end of the month. The grain filled well, and the harvest weather was satisfactory.

ROTATION FOR VARIETY TESTS

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

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

Second year.—Grain seeded down with ten pounds red clover, two pounds alsike, five pounds timothy per acre.

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

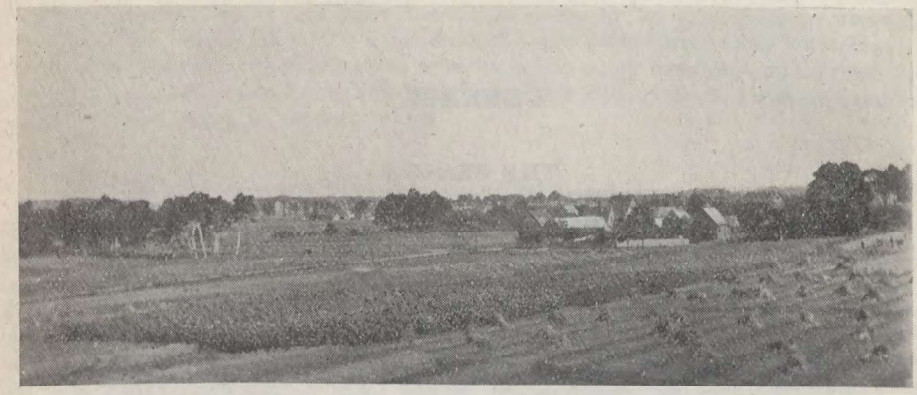
Fourth year.—Grain, seeded down with eight pounds red clover, two pounds alsike per acre.

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

UNIFORM TEST PLOTS OF CEREALS

The weather during the grain growing season was very dry and hot. In many instances germination was poor, with resultant light stands of grain. Seed wheat and barley were subjected to the hot water treatment for smut; this treatment proved entirely satisfactory. Seed oats for these plots was treated with formalin, but for some reason, as yet undiscovered, the treatment did not produce entirely satisfactory results. Quite a few of the plots had a considerable number of smut-infested plants.

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



Charlottetown Experimental Station, View of the Cereal Plots.

PROJECT 45—TEST OF VARIETIES—SPRING WHEAT

Eleven varieties of spring wheat were tested at the Station this year. No glume spot or wheat scab was noted. The variety listed as "Keyes" was obtained locally, several years ago, and came to us with quite a reputation as to quality and high-yielding powers. It proved to be a very bad mixture of several varieties, and as it has given nothing exceptional in the way of yield, it is the intention to drop it from our lists in future.

WHEAT—TEST OF VARIETIES

Name of Variety	Date of sowing	Date of ripening	No. of days maturing	Average length of straw, inc. head	Strength of straw on a scale of 10 points	Average length of head	Yield of grain per acre		Weight per measured bushel after cleaning
				inches		inches	bush.	lb.	lb.
Early Red Fife, Ottawa 16	May 20...	Aug. 25...	96	34	10	3½	31	54	64·5
Early Russian, Ottawa 40..	" 20...	" 25...	96	34	10	3¾	31	11	64·5
Campbell's White Chaff...	" 20...	" 27...	98	40	10	3¾	30	54	63·0
Whiteheads.....	" 20...	" 26...	97	36	10	3½	30	16	63·8
Chelsea, Ottawa 10.....	" 20...	" 16...	87	36	10	3¾	29	58	64·5
Huron, Ottawa 3.....	" 20...	" 17...	88	34	10	3	27	21	63·8
Marquis, Ottawa 15.....	" 20...	" 18...	89	32	10	3	26	17	64·2
Keyes.....	" 20...	" 25...	96	34	10	3	25	52	62·8
White Russian.....	" 20...	" 25...	96	32	10	4	24	49	62·0
Red Fife, Ottawa 17.....	" 20...	" 25...	96	38	10	3¾	24	6	63·0
Ruby, Ottawa 623.....	" 20...	" 12...	83	30	10	2¼	23	23	64·6

The following are the average yields of spring wheat grown for a number of years at the Charlottetown Station:—

SPRING WHEAT—AVERAGE YIELDS

Variety	Number Years Grown	Average Production	
		bush.	lb.
Whiteheads	3	41	4
Early Russian	6	38	42
Huron	12	35	56
Chelsea	12	35	30
Marquis	12	34	35
White Russian	12	33	37
Early Red Fife	11	33	5
*White Fife	9	32	25
Keyes	3	31	22
Red Fife	12	30	45
Ruby	4	30	18
Campbell's White Chaff	5	30	15

*White Fife has not been included in the test of varieties work for the past three years.

PROJECT 42—OATS TEST OF VARIETIES

Nine varieties of oats were grown at the Station this season. Owing to lack of room, Lincoln and Early Blossom were dropped from the list. A new variety, "Northland," which has been grown with great success in certain parts of New Brunswick, was added. It was seeded with the other varieties but failed to germinate; reseeded later, but proved almost a failure. It is planned to give this a further trial next season.

OATS—TEST OF VARIETIES

Name of Variety	Date of sowing	Date of ripening	No. of days maturing	Average length of straw, inc. head	Strength of straw on a scale of 10 points	Average length of head	Yield per acre		Weight per measured bushel after cleaning
				inches		inches	bush.	lb.	lb.
Old Island Black	May 20...	Aug. 16...	87	43	9·5	10·0	69	16	37·0
Gold Rain	" 20...	" 16...	87	38	10·0	8·0	66	4	38·6
Banner, Ottawa 49	" 20...	" 21...	92	40	9·5	8·5	65	27	33·5
O.A.C. No. 72	" 20...	" 17...	88	36	10·0	8·0	56	5	37·2
Victory	" 20...	" 15...	86	36	10·0	7·0	55	3	39·0
Daubeney, Ottawa 47	" 20...	" 8...	79	36	10·0	6·5	52	9	37·5
Longfellow, formerly 478D	" 20...	" 10...	81	30	10·0	8·0	39	3	35·0
*Liberty, Ottawa 480	" 20...	" 9...	80	36	10·0	7·0	37	15	49·0
†Northland	..	..	..	28	10.0	6·0	30	15	36·5

*Figured at 34 lbs. per bushel.
†Missed very badly and was reseeded late in season. Crop was green and immature when cut.

BARLEY—TEST OF VARIETIES

Name of Variety	Date of sowing	Date of ripening	No. of days maturing	Average length of straw, inc. head	Strength of straw on a scale of 10 points	Average length of head	Yield per acre		Weight per measured bushel after cleaning
				inches		inches	bush.	lb.	lb.
Chinese, Ottawa 60	May 20...	Aug. 11...	82	29	10	3·00	56	38	51·0
Duckbill, Ottawa 57	" 20...	" 12...	83	24	10	3·00	56	1	53·0
Stella, Ottawa 58	" 20...	" 15...	86	36	10	3·75	53	2	49·0
Charlottetown No. 80	" 20...	" 13...	84	26	10	3·25	51	4	53·0
O.A.C. No. 21	" 20...	" 15...	86	32	10	3·00	48	29	49·3
Gold	" 20...	" 12...	83	28	10	4·50	46	17	53·5
Pedigree Beardless	" 20...	" 11...	82	36	9·5	3·00	46	12	46·0
Swedish Chevalier	" 20...	" 16...	87	43	10	4·00	43	42	52·5
*Himalayan (Hulless) Ottawa 59	" 20...	" 4...	75	28	10	2·50	43	41	63·2
Nugent E	" 20...	" 14...	85	26	10	3·25	35	26	46·0
†Manchurian, Ottawa 50	" 20...	" 20...	91	32	10	3·00	33	47	49·5
‡Albert, Ottawa 54	" 20...	" 12...	..	30	10	2·75	28	25	49·0

*Himalayan figured 48 lbs. per bushel.
†Manchurian single plot only.
‡Albert missed badly, and was reseeded on June 8, but was too thin to give high yields.

The following table gives the average yields of a number of varieties of oats grown at the Charlottetown Station:—

OATS—AVERAGE YIELDS

Name of Variety	Number of Years Grown	Average Yield per acre	
		bush.	lb.
O.A.C. No. 72	8	82	4
Victory	12	81	30
Gold Rain	12	80	14
Banner	12	77	11
Old Island Black	10	72	5
Daubeney	6	59	6
478-D	2	49	12
*Liberty	2	38	20
Northland	1	30	15

*Figured at 34 lbs. to the bushel.

PROJECT 40—BARLEY

The barley plots this year, on the whole, were fairly good. Two new varieties, Himalayan (hulless) and Chinese, were added to our list, while our own strain of Nugent was supplanted by "Nugent E", seed of which was supplied by the Central Experimental Farm in 1920. Odessa was also dropped from the lists, due chiefly to lack of room in the cereal area.

TABLE GIVING YIELDS OF A NUMBER OF THE VARIETIES OF BARLEY THAT HAVE BEEN GROWN AT THE CHARLOTTETOWN STATION IN THE PAST

Name of Variety	Number of Years Grown	Average Yield	
		bush.	lb
Charlottetown No. 80	10	64	9
Gold	12	59	42
Nugent (Charlottetown Selection)	11	59	29
O.A.C. No. 21	12	59	6
Swedish Chevalier	12	57	46
Chinese	1	56	38
Stella	12	56	29
Odessa	11	56	16
Manchurian	11	55	27
*Albert	12	51	19
Nugent E (Ottawa)	2	45	38
Duckbill	4	45	32
Pedigree Beardless	2	45	15
†Himalayan (hulless)	1	43	41

*Albert missed, was reseeded, but gave a very poor crop in 1921; this reduces the average somewhat.
†Himalayan figured at 48 pounds per bushel.

PROJECT 211—TEST OF STRAINS OF BANNER OATS

As reported last year, a test of different strains of Banner oats, procured from farmers in widely separated sections, was carried on. This test was continued this season, the following table giving the two-year-average yield of each strain:—

EXPERIMENT WITH DIFFERENT STRAINS OF BANNER OATS

Seed Grown By	Source of Seed	Average Yield per acre for 2 years	
		bush.	lb.
McGregor, W. H., Central Lot 16	Selected by Mr McGregor.	57	23
Experimental Station, Charlottetown	Ottawa No. 10, C.E.F., Ottawa.	55	17
Millman, J. B., Kensington	Selected by Mr. Millman	53	27
Waugh, Thos., Wilmot	" Mr. Waugh	53	2
Creed, Richard, Mount Albion	" Mr. Creed	53	
Murphy, J. E., Augustine Cove	" Mr. Murphy	52	12
Marchbank, Jas., New Annan	" Mr. Marchbank	48	4

In 1920 these tests were made in one-acre plots, but in 1921, owing to lack of space, one-half-acre plots were used.

PROJECT 212—MULTIPLYING AREAS OF CEREALS

Considerable of the grain in the larger fields at the Station this year was below the average, owing to drought conditions, which prevailed during the greater part of the growing season.

SPRING WHEAT

Variety	Field	Preceding Crop	Acreage	Yield per acre	
				bush.	lb.
Early Red Fife	C-I	Potatoes	0·57	43	20
Huron	B-III	"	1·0	28	55
Early Red Fife	CC-IV	"	0·97	27	5
White Fife	G-1	Turnips	0·4	23	20
Early Red Fife	CC-III	Potatoes	0·97	21	2

OATS

Variety	Field	Preceding Crop	Acreage	Yield per acre	
				bush.	lb.
Banner	G-VI	Timothy hay	0·4	62	
"	B-V	Clover Hay	1·0	55	4
"	A-III	Mangels	1·0	53	11
"	Connolly Field	Turnips	3·5	42	10

BARLEY

Variety	Field	Preceding Crop	Acreage	Yield per acre	
				bush.	lb.
Charlottetown No. 80	A-I	Timothy hay	1·0	46	10

PROJECT 213—FLAX

Only two varieties of flax were grown for test at the Station this year. The plots were rather poorly situated, and some difficulty was experienced in keeping down a very strong growth of lambs' quarters.

FLAX, TEST OF VARIETIES

No.	Variety	Date of Sowing	Date of Ripening	No. of Days Maturing	Average Length of Plants	Actual Yield of seed per acre	Per cent. stand.	Remarks
					inches	lb.	%	
1	Premost....	May 20...	Aug. 25...	97	24	807	95	Some Lambs' Quarters.
2	Novelty....	May 20...	Aug. 25...	97	17	431	50	Badly infested with Lambs' Quarters.

One variety of flax, Longstem, Ottawa No. 52, was grown for seed. The growth was rather short, and the yield for one acre was 357 pounds.

FORAGE CROPS

THE SEASON

The meadows and pastures were very little injured by tramping in the autumn of 1920, owing to the dry weather conditions. A good blanket of snow protected them during the moderate winter season. March was a succession of thaws starting from the first day. The fields were bare by the 17th, and the ice went out of the rivers and bays on the 27th. The first half of April was wet and blustery. There was scarcely any heaving by frost. The season of 1921 was much earlier than usual. From April 19 on, the weather was fine, and gradually became almost summerlike. On the 29th the temperature reached 74° F. and gave the spring grass an excellent start. Turnip stecklings were planted on that date, and there were very few interruptions of spring work from that time on. The drought hastened the maturity of the grasses and clover; timothy headed out short and the hay crop on the whole was about average. It was saved, however, in excellent condition. June, July and August were first-class growing months for corn and roots.

ENSILAGE CROPS

PROJECT 69—INDIAN CORN

Corn did well this year, due, no doubt, to the long, hot season. Eleven varieties were under test, giving the following yields:—

INDIAN CORN FOR ENSILAGE, TEST OF VARIETY

No.	Variety	Average Height	Stage of Maturity	Yield per acre	
		Inches		tons	lb.
1	Bailey	76	Tassel	20	1,000
2	Leaming	76	"	18	1,500
3	Compton's Early	77	"	18	1,500
4	White Cap Yellow Dent	77	"	18	500
5	North Dakota	74	Milk	17	1,200
6	Longfellow (Ottawa seed)	76	Dough	17	1,100
7	Wisconsin No. 7	78	Milk	17	1,000
8	Canada Yellow	53	Dough	15	500
9	Twitchell's Pride	61	Ripe	14	300
10	Quebec No. 28	57	Dough	13	1,300
11	Longfellow (Seed obtained locally)	62	Ripe	9	500

PROJECT 214—SUNFLOWERS

Two test plots of sunflowers were grown at the Station this year; both were of the Mammoth Russian variety, one obtained from a local seed house, and the other an improved, early-maturing strain selected at Ottawa.

During the late summer and early autumn, a quantity of these was cut and fed as a soiling crop to cattle on pasture. It was noted that beef steers consumed quite a large quantity of these sunflowers with evident relish.

SUNFLOWERS—TEST OF VARIETIES

No.	Variety and Source of Seed	Average Height	State of Maturity	Yield per acre	
		feet ins.		tons	lb.
1	Mammoth Russian (Local Seed House)	6 9	Soft Dough	14	1,000
2	" " (Ottawa selection)	4 11	Ripe	8	1,200

FIELD ROOTS

PROJECT 183—TURNIPS, TEST OF VARIETIES

The season, on the whole, was rather favourable for turnips, although considerable damage by cutworms was reported. In 1920, an experiment was started comparing yields from seed purchased at various local seed houses. This experiment was continued this year.

TURNIPS—TEST OF VARIETIES

No.	Variety	Yield per acre		Seed obtained from
		tons lb.	bush. lb.	
2	Magnum Bonum	18 1,500	750 —	Canadian Farm Products.
5	Millpond	15 —	600 —	Carter & Co.
7	Haszard's Improved	14 —	560 —	"
8	Millpond	12 1,500	510 —	Canadian Farm Products.
9	Haszard's Improved	11 1,500	470 —	" "
10	Greystone	10 1,500	430 —	" "
11	Carter's Best of All	10 1,500	430 —	Carter & Co.
12	Purple Top	8 1,500	350 —	Canadian Farm Products.
1	Shepherd's	23 1,500	950 —	Scandinavian & R. Wiboltt Seed Co., Copenhagen.
3	Bangholm	18 1,000	740 —	" " "
4	Monarch	17 1,000	700 —	Exp. Farm, Nappan.
6	Ditmar's Swede	14 1,500	590 —	R. V. Ditmar, Deep Brook, N.S.

PROJECT 79—BANGHOLM SELECTED TURNIP SEED

For some few years the soil at the Station has been rather badly infested with club root (*Plasmodiophora brassicæ*), to such an extent, in fact, as to make the profit of turnip growing rather doubtful, in many areas. In 1920, a supply of Bangholm seed, selected for club root resistance, was obtained from Denmark and sown in a plot known to be very badly infested. This was sown late in the season for the production of stecklings. At the time of pulling only a few roots showed club root. This season the stecklings were planted, and a total of about 250 pounds clean seed was obtained.

Club root is becoming very prevalent throughout the province, and it is hoped that seed of a strain of turnips can be produced that will successfully resist attacks of this disease.

PROJECT 72—FIELD CARROTS

Three varieties of field carrots were grown at the Station this season; seed was obtained from Central Farm at Ottawa.

FIELD CARROTS—TEST OF VARIETIES

No.	Variety	Yield per acre	Yield per acre
		tons lb.	bush. lb.
1	Danish Champion (Ottawa)	13 500	530 —
2	Danish Yellow Champion (Scandinavian & R. Wiboltt Seed Co.)	11 —	440 —
3	White Belgian (Scandinavian & R. Wiboltt Seed Co.)	10 1,500	430 —

PROJECT 76—MANGELS

Eight varieties of mangels were tested this year. Cutworms did considerable damage, and owing to drought conditions, germination was slow and poor, but, on the average, mangels were an excellent crop.

MANGELS—TEST OF VARIETIES

No.	Variety and Source of Seed	1st Plot Yield per acre	
		tons lb.	bush. lb.
1	Yellow Ovoid Giant (Scandinavian & R. Wiboltt Seed Co.)	29 1,000	1,180 —
2	Yellow Intermediate (Charlottetown)	24 1,000	980 —
3	Danish Sludstrup (Scandinavian & W. Wiboltt Seed Co.)	24 —	960 —
4	Rose Giant (Scandinavian & R. Wiboltt Seed Co.)	22 —	880 —
5	Yellow Intermediate (Ottawa)	21 1,000	860 —
6	Giant White Green Top (Scandinavian & R. Wiboltt Seed Co.)	18 1,000	740 —

PROJECT 74—TEST OF EXPERIMENTAL FARM SEED VS. SEED OBTAINED FROM LOCAL SEED HOUSE

No.	Variety	Source of Seed	Yield per acre	Yield per acre
			tons lb.	bush. lb.
1	Yellow Intermediate	Carter & Co.	25 —	1,000 —
2	Yellow Intermediate	Charlottetown	24 1,000	980 —
3	Yellow Intermediate	Ottawa	21 1,000	860 —

Test of different varieties of mangels obtained from local seedsmen. Unfortunately it was impossible to obtain similar varieties from each house, with the exception of "Dignity".

MANGELS—TEST OF VARIETIES FROM SEED OBTAINED LOCALLY

No.	Variety	Source of Seed	Yield per acre	Yield per acre
			tons lb.	bush. lb.
1	Mammoth Long Red	Carter & Co.	28 —	1,120 —
2	Longfellow	"	26 —	1,040 —
3	Yellow Intermediate	"	25 —	1,000 —
4	Dignity	"	20 1,500	830 —
5	Prize Long Red	Canadian Farm Products	18 —	720 —
6	Dignity	" "	13 500	530 —

SUGAR BEETS—TEST OF VARIETIES

No.	Variety	Yield per acre	Yield per acre
		tons lb.	bush. lb.
1	Klein Wanzleben (Rimpau Germany.)	17 —	680 —
2	Klein Wanzleben (Charlottetown)	14 1,000	580 —
3	British Columbia — Dominion Sugar Co.	14 —	560 —
4	Chatham — Dominion Sugar Co.	14 —	560 —
5	Waterloo — Dominion Sugar Co.	12 1,000	500 —

CLOVER AND GRASSES

The clover and grasses wintered well, but in many instances were rather a poor catch from the previous year. Hot, dry weather resulted in a medium to rather poor crop in practically all sections of the province.

FIELD CROPS OF HAY

Kind of Hay	Field	Preceding Crop	Acreage	Yield per acre
			acres	lb.
Timothy	G-IV	Timothy	0·4	6,250
Timothy	C-III	Clover	0·57	5,747
Timothy	G-V	Timothy	0·4	5,437
Timothy	G-III	Clover	0·4	4,525
Clover	A-V	Clover	1·0	4,515
Clover	B-IV	Wheat	1·0	3,795
Clover	G-II	Oats	0·4	3,687
Clover	FF-III	Grain	1·5	3,647
Clover	CC-V	Wheat	6·0	2,961
Clover	CC-VI	Barley	5·0	2,874
Clover	A-IV	Oats	1·0	2,865
Timothy	B-I	Oats	1·0	2,725
Clover	FF-I	Clover	2,0	2,538
Clover	C-II	Wheat	0·57	4,105
Timothy	Connolly field	Oats	10·0	2,445
	"	Clover	9·0	2,925

PROJECT 94—GRASS AND CLOVER MIXTURES

A series of twenty plots, a continuation of the original series of twenty-eight plots seeded in 1917, was sown in 1920. Owing to lack of space, these plots, unfortunately, had to be made rather small (one-eightieth acre). It is the purpose to determine, if possible, the relative value of various grasses, singly and in mixtures, as forage and pasture plants, based on yield per acre and ability to withstand our, generally, rather severe winters. It is also the desire to note the persistence of these grasses, and to judge their value with respect to use in permanent mixtures. As yet no conclusions can be drawn from these experiments.

PLAN OF SEEDINGS,
Showing various Mixtures, and Rates of Seeding per acre, and giving Yield per acre for 1921.

Plot No.	Red Clover per acre	Timothy per acre	Western Rye Grass per acre	Kentucky Blue Grass per acre	White Dutch per acre	Red Top per acre	Alsike per acre	Orchard Grass per acre	Seed per acre	Yield per acre 1921
	lb.	lb.	lb.	lb.	lb.	lb.	lb.	lb.	lb.	lb.
1	12								12	3,600
2	10	8							18	2,960
3	10		8						18	2,480
4	10								10	2,620
5	10			12					22	2,620
6	10			8	2				20	3,200
7	10					12			22	3,520
8	10				2	10			22	4,400
9	10	6			6				22	5,120
10	10	10	5	3	2	3			33	5,200
11	10						4		14	4,560
12	8	8					2		18	3,520
13	8		8				2		18	2,560
14	8						2	15	25	3,280
15	8			12			2		22	3,440
16	8			10	2		2		22	2,160
17	8					12	2		22	2,080
18	8				2	10	2		22	1,680
19	8	6	6				2		22	2,320
20	8	5	5	3	2	3	2		28	2,400

PROJECT 203

A new experiment was started to ascertain whether or not orchard grass and meadow fescue might be remuneratively added to timothy and clover mixtures in meadow and pasture. One-quarter acre plots have been used. Seeding was done on June 2, 1921, using Banner Oats as a nurse crop.

The following is an outline of the experiment, showing various mixtures with rate per acre of seeding:—

MIXTURES AND RATES OF SEEDING

Plot No.	Red Clover per acre	Timothy per acre	Alsike per acre	Orchard Grass per acre	Meadow Fescue per acre	Rate of Seeding per acre
	lb.	lb.	lb.	lb.	lb.	lb.
1	8	8	2	..	..	18
2	8	6	2	6	6	28
3	8	4	2	6	6	26
4	8	4	2	..	..	14
5	8	8	2	6	6	30
6	8	6	2	6	6	28
7	8	8	2	..	..	18
8	8	6	2	6	6	28
9	8	4	2	6	6	26

CHEMISTRY DIVISION

PROJECT 215—CONTROL OF COLORADO POTATO BEETLE

This experiment, started in 1920, was continued in 1921. The following table shows method of treatment, two-year average yield, etc. It might be stated that in the season of 1920, the first spray was delayed in application, awaiting the arrival of spray material. The vines suffered materially from beetles before the first spray was applied.

In no case were two sprayings sufficient to control insect injury. From 100 to 125 gallons of spray material per acre were applied.

SPRAYING FOR CONTROL OF COLORADO POTATO BEETLE

No.	Insecticide used (amount per 40 gals. of solution)	Fungicide used	Average No. Bugs on 50, after 2nd spray	Percentage small and unmarketable	Average yield per acre dup. plots 1920		Average yield per acre dup. plots 1921		2-year average yield per acre	
				%	bush.	lb.	bush.	lb.	bush.	lb.
1	½-lb. Paris Green..... ¾-lb. dry Arsenate of Lead	Bordeaux 4-4-40	65	14·5	140	..	294	20	217	10
2	½-lb.. Paris Green..... ¾-lb. dry Arsenate of Lead	Blighty Burgundy mixture	35	19·0	155	40	294	..	224	50
3	¾-lb. Paris Green.....	Bordeaux 4-4-40	75	17·6	134	10	271	20	202	45
4	¾-lb. Paris Green.....	Blighty Burgundy mixture	90	20·0	133	5	279	40	206	22
5	¾-lb. White Arsenic....	Bordeaux 4-4-40	125	18·2	90	45	197	..	143	52
6	*1½-lbs. dry Arsenate of Lead.	Bordeaux 4-4-40	50	16·9	139	35	293	20	216	28
7	Check Plot.....	Bordeaux 4—40	200	14·2	...	..	140	27	140	27

*One and one-half pounds arsenate of lime was used in 1920, instead of 1½-lbs. dry arsenate lead as indicated for 1921.

PROJECT 216—CARROT RUST FLY CONTROL

For a number of years it has been practically impossible to grow carrots at this Station, owing to attacks of carrot rust fly. During this period the crop has proved almost a failure. This season an attempt was made to save the crop by applying various mixtures of chemicals to the drill during the period in which this pest is active. All plots were given the same number of applications (five each). These were made on the following dates: June 15, 20, 27, July 4 and 20. No injury from reagents was noted in any case.

The following is a summary of the results:—

SPRAYING FOR CARROT RUST FLY CONTROL

No.	Material Used and Method of Application Employed	Yield per acre. Average Dup. Plots
		lb.
1	Kerosene Emulsion (1-10) sprayed on drill	5,520
2	Kerosene and Sand (1pint kerosene to 3 gals. sand, mixed and sprinkled over drill)	8,118
3	Bichloride of Mercury (1 part to 1,000 parts water sprayed on drill)	11,236
4	Bichloride of Mercury (1 part to 2,000 parts water, sprayed on drills)	10,544
5	Check (single plot only)	12,474
6	Check from a different section of garden	5,227

Observation tended to the belief that, as drills were side by side, one treatment affected another. Note that while the check plot which was in the centre drills of the experiment, produced a large crop in spite of not receiving any treatment, the check in another section of the garden, having no chance of being affected by any treatment, was practically a failure. The experiment is to be continued, having the plots sufficiently separated so that one treatment may not influence another.

PROJECT 217—SOURCES OF CALCIUM

An experiment was started this year using only such "Lime Compounds" as are commonly employed locally. The experiment will be continued over a four-year rotation: Turnips, Grain, Hay, Hay. The land is a medium to sandy loam, sloping towards the south, with ample natural drainage. It is perhaps not so uniform as might be asked for, for experimental work.

TURNIPS: FIRST YEAR OF ROTATION

No.	Fertilizer Applied	Rate of application per acre	Value of fertilizer per ton	Yield per acre Average of dup. plots	
		lb.	$	tons	lb.
1	Burned Lime	1,000	25 00	10	820
2	Burned Lime	2,000	25 00	12	560
3	Ground Limestone (Miminegash)	2,000	7 00	8	960
4	Ground Limestone "	4,000	7 00	5	960
5	Oyster shell mud	20,000	2 00	8	1,660
6	Basic Slag	2,000	26 00	8	1,700
7	Check (no fertilizer)	..	..	16	300

PROJECT 218—FISH SCRAP AS A FERTILIZER

Early in the season a local fish-packing house asked if we could find any use for the salt-fish scrap (tails, fins, bones, skin, trimmings) from their packing tables. It was applied to turnips to determine its value, if any, as a fertilizer. The "leached" scrap was emptied in a pile, outside, early in the spring. Six or seven weeks' spring rains leached out practically all the salt from this material. The unleached scrap contained a considerable amount of coarse salt, and was applied just as it came from the packing tables.

FISH SCRAP AS A FERTILIZER

No.	Fertilizing Material Used	Rate of Application per acre	Yield per acre Average dup. plots	
		lb.	tons	lb.
1	Dry Fish Scrap	500	11	1,080
2	Leached Fish Scrap	400	11	1,740
3	Check	..	16	300

No price was set on this material by the packing house, but it could probably be purchased at a very low figure.

PROJECT 219—SOURCES OF NITROGEN

This experiment was carried out this year on turnips. The soil is medium to sandy loam, with good natural underdrainage, and is only fairly uniform as regards fertility.

Plot	Fertilizer Used	Rate per acre of application	Analysis			Yield per acre Average of dup. plots	
			N	P_2O_5	K_2O		
		lb.	%	%	%	tons	lb.
1	Nitrapo*	200	15	..	15	20	280
2	Nitrate of Soda	200	15	..	..	19	1,540
3	Sulphate of Ammonia	150	20	..	..	12	620
4	Check	...	..	..	..	16	300
5	Nitrapo*	200	15	..	15	22	980
	Superphosphate	300	..	16			
6	Nitrate of Soda	200	15			18	1,860
	Superphosphate	300		16			
7	Nitrate of Soda	200	15			21	1,840
	Superphosphate	300		16			
	Muriate of Potash	60			50		
8	Sulphate of Ammonia	150	20			14	1,420
	Superphosphate	300		16			
9	Sulphate of Ammonia	150	20			20	680
	Superphosphate	300		16			
	Muriate of Potash	60			50		
10	Cyanamide	225	14	..	..	10	520

*"Nitrapo" is a by-product of the Chilean nitrate industry, produced in limited quantity. It consists of a mixture of nitrate of soda and nitrate of potash, and contains 15 per cent of nitrogen and 15 per cent of potash. Nitrapo, therefore, furnishes, in 100-lb., amounts of nitrogen and potash equivalent to 100 lbs. nitrate of soda and 30 lbs. muriate of potash.

The results obtained from this experiment are not dissimilar to those from other investigations with the same fertilizer materials. It will be noted that nitrate of soda in plot 2 proved superior to ammonium sulphate in plot 3, and again proved superior in plot 6, when supplemented by superphosphate, over plot 8 (ammonium sulphate supplemented by superphosphate.)

The potash present in "Nitrapo" gives it an additional value, as compared with nitrate of soda. In combinations containing similar quantities of nitrogen, phosphoric acid and potash, the "Nitrapo" plot proved superior to any others.

Cyanamide apparently had an injurious effect on the roots, and it is probable that it might be more profitably applied two or three weeks before, rather than at the time of planting.

POULTRY HUSBANDRY

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

All birds are trapnested throughout the year, and those that produce consistently year after year are located and recorded. A number of the best layers, when mated with male birds from high-producing hens, are used for pedigree improvement work, which is conducted in the following manner:—

The eggs from each of these hens are hatched separately in wire baskets in the incubator. A numbered aluminum band is wrapped around the leg of each chick hatched. When the chick is from two to three weeks old, this band is transferred to the wing. A record of band numbers is kept, and thus the origin of any wing-banded bird can be ascertained at any time. It is expected that by selecting and breeding from the best, year after year, a uniform strain of high producers will be secured. Though the work has been carried on only for the past three seasons, a marked improvement in the average production has already been obtained.

One of the chief difficulties in breeding operations has been the procuring of reliable male birds.

The increase in housing accommodation, referred to in the Report for 1920 to 1921, afforded an opportunity of dividing the breeding stock into a number of small flocks, each with one male bird. Pullets from these matings are now being trap-nested to establish the Record of Performance of the dams of desirable males.

The stock on hand, April 1, 1921, consisted of 20 males and 254 females, as shown in the following table:—

STOCK ON HAND ,APRIL 1, 1921

Breed	Males	Hens	Pullets	Totals
Single Comb White Leghorns	11	73	65	149
Barred Rocks	9	40	176	225
Totals	20	113	241	374

HOUSING

The poultry buildings now in use are as follows:—

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

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

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

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

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

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

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

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

EGG PRODUCTION

In the winter months the breeding pens were not forced for egg production. Throughout the breeding season, however, in an endeavour to obtain a large number of eggs for hatching, they were undoubtedly forced too strongly, with the result that the hatchability of eggs and the vitality of chicks were disappointing. Lights were used in the pullet pens from December 1 to February 10, and the birds fed heavily for production. The table of vitality among hatching records again shows that the use of lights and forcing for winter eggs reduce the hatchability of eggs and the vitality of chicks.

The egg production of the Barred Rock pullets showed lack of uniformity and a number of ordinary layers. These are being eliminated. The White Leghorn pullets suffered a check in February, when following a sudden change in temperature, more than half the flock were threatened with a moult, necessitating a reduction of feed.

The following tables have been compiled from the records of the year 1920-21:—

PROJECT 220—HENS VERSUS PULLETS, BY MONTHS

	Hens			Pullets		
	No.	Total Eggs	Average per Hen	No.	Total Eggs	Average per Pullet
1920						
November	145	398	2·7	270	123	0·5
December	144	709	4·8	269	1,663	6·2
1921						
January	132	608	4·5	255	2,352	9·2
February	113	160	1·4	253	1,726	6·8
March	113	846	7·5	241	2,696	11·2
April	110	1,936	17·6	232	4,117	17·7
May	108	1,955	18·1	200	4,236	21·1
June	95	1,502	15·8	181	3,192	17·6
July	90	1,477	16·4	159	2,846	17·9
August	84	1,124	13·4	147	2,159	14·7
September	83	845	10·2	126	1,647	13·0
October	80	309	3·8	105	524	5·0
Totals	.....	11,869	.....	.....	27,281	
Average per bird per year			116·2			140·9
Average per bird per month			9·68			11·74
Average per bird per year 1919-20			91·5			109·8
Increased production per bird			14·7			31·1

In the above table it may be noted that the average per hen in 1921-22 was 116·2 eggs. Most of these were birds selected from among the best of the pullets of the previous year, the total number of which had only averaged 109·8 eggs. These included 15 Barred Rocks which averaged 164 eggs, and 21 White Leghorns, which averaged 169 eggs in their pullet year. Fourteen of the pullets that laid an average of 166 eggs each were the progeny of cockerel No. 2460 (Dam 198 eggs), mated with hens whose records were all below 150 eggs. The table well illustrates the benefit that may be looked for through careful selection and breeding.

STATEMENT COVERING PRODUCTION, PROFIT AND LOSS, AND FEED CONSUMED BY BARRED ROCK PULLETS,

Project 221 Bred and raised at Dominion Experimental Farm, Charlottetown, November 15, 1920, to October 31, 1921.

Month	No. of Birds	Average egg per bird	Total Eggs laid	Average Price per doz.	Total Market Value	Cost per doz.	Total cost of feed	Cost to feed one Bird	Total Monthly Profit	Total Monthly Loss	Feed Consumed								Price per 100 lbs.						
											Grain	Mash	Beef Scrap	Grit	Shell	Roots	Milk	Total Amount Feed	Grain	Mash	Scrap	Grit	Shell	Roots	Milk
1920				$ c.	$ c.	$ c.	$ c.	$ c.	$ c.	$ c.	lb.	lb.	lb.	lb.	lb.	lb.	lb.	lb.	$ c.	$ c.	$ c.	$ c.	$ c.	$ c.	$ c.
November	195	0·2	48	0 50	2 00	8 10	32 79	0 17	.....	30 79	461	225	18	16	20	.....	145	885	4 12	4 85	7 50	0 75	2 00	.....	0 70
December	194	3·6	709	0 55	32 50	0 98	58 16	0 30	.....	25 66	1,164	460	27	21	22	.....	140	1,834	3 12	4 00	7 30	0 75	1 50	.....	0 70
1921																									
January	184	8·8	1,613	0 55	73 93	0 48	64 75	0 35	9 18	.....	1,365	365	20	11	25	300	125	2,211	3 05	5 20	7 00	1 50	2 00	0 40	0 70
February	182	7·0	1,283	0 45	48 11	0 58	61 64	0 34	.....	13 53	1,322	410	10	15	27	290	130	2,204	3 00	3 45	7 00	1 50	2 00	0 40	0 70
March	176	11·8	2,090	0 35	60 96	0 24	41 52	0 24	19 44	.....	1,056	390	11	20	24	240	160	1,901	2 00	4 30	7 00	1 50	2 00	0 40	0 70
April	169	17 0	2,878	0 25	59 96	0 18	43 54	0 26	16 42	.....	1,014	385	.....	13	22	310	200	1,944	2 52	3 82	.....	1 50	2 00	0 40	0 70
May	138	20·7	2,871	0 23	55 03	0 21	50 29	0 36	4 74	.....	1,272	425	.....	17	19	360	210	2,303	2 45	3 82	.....	1 50	2 00	0 40	0 40
June	121	16·2	1,965	0 26	42 57	0 26	42 47	0 35	0 10	.....	1,155	273	.....	18	16	160	425	2,047	2 52	3 82	.....	1 50	2 00	0 40	0 40
July	101	17·1	1,730	0 29	41 81	0 23	33 76	0 33	8 05	.....	885	310	.....	10	11	.....	170	1,506	2 40	3 70	.....	1 50	2 00	.....	0 40
August	91	15·9	1,453	0 30	36 32	0 22	27 76	0 30	8 56	.....	685	275	.....	13	15	.....	160	1,348	2 40	3 70	.....	1 50	2 00	.....	0 40
September	76	13 3	1,016	0 31	26 24	0 24	21 03	0 28	5 21	.....	547	195	.....	11	11	.....	125	989	2 40	3 60	.....	1 50	2 00	.....	0 40
October	65	4·5	296	0 35	8 63	0 77	19 00	0 29	.....	10 37	512	165	.....	9	7	.....	125	818	2 40	3 60	.....	1 50	2 00	.....	0 40
Totals	.....	136·1	17,952	.....	488 06	0 33	496 71	3 57	71 70	80 35	11,858	3,878	86	174	219	1,660	2,115	19,990	.....	.....	.....	.....	.....	.....	.....

Average yearly egg production per bird, 136·1

STATEMENT COVERING PRODUCTION, PROFIT AND LOSS, AND FEED CONSUMED BY S.C. WHITE LEGHORN PULLETS

Project 222 Bred and raised at Dominion Experimental Farm, Charlottetown, P.E.I., November 1, 1919, to October 31, 1920.

Month	No. of Birds	Average per bird	Total Eggs laid	Average Price per doz.	Total Market Value	Cost per doz.	Total cost of feed	Cost to feed one Bird	Total Monthly Profit	Total Monthly Loss	Feed Consumed: Grain	Mash	Beef Scrap	Grit	Shell	Roots	Milk	Total Amount Feed	Price per 100 lbs.: Grain	Mash	Scrap	Grit	Shell	Roots	Milk
1920				$ c.	$ c.	$ c.	$ c.	$ c.	$ c.	$ c.	lb.	lb.	lb.	lb.	lb.	lb.	lb.	lb.	$ c.	$ c.	$ c.	$ c.	$ c.	$ c.	$ c.
November	75	1	75	0 50	3 12	3 00	18 79	0 25	.....	15 67	258	150	6	5	6	.....	40	465	4 12	4 85	7 50	0 75	2 00	.....	0 70
December	75	12·7	954	0 55	43 72	0 18	14 38	0 19	29 34	.....	246	140	9	8	7	.....	40	450	3 12	4 00	7 30	0 75	1 50	.....	0 70
1921																									
January	71	10·4	739	0 55	33 87	0 24	15 6	0 21	18 71	.....	245	128	6	3	9	90	5	486	3 05	5 20	7 00	1 50	2 00	0 40	0 70
February	71	6·2	443	0 45	16 61	0 35	13 10	0 18	3 51	.....	320	78	3	4	4	90	15	514	3 00	3 45	7 00	1 50	2 00	0 40	0 70
March	65	9·3	606	0 35	17 67	0 25	12 65	0 19	5 02	.....	315	132	3	6	7	60	.....	523	2 00	4 30	7 00	1 50	2 00	0 40	0 70
April	63	19·5	1,239	0 25	25 81	0 13	14 17	0 22	11 64	.....	335	130	.....	4	8	75	60	612	2 52	3 82	7 00	1 50	2 00	0 40	0 70
May	62	22·0	1,365	0 23	26 18	0 13	14 52	0 23	11 64	.....	340	142	.....	6	6	90	50	634	2 45	3 82	.....	1 50	2 00	0 40	0 40
June	60	20·4	1,227	0 26	26 58	0 16	16 52	0 28	10 06	.....	413	135	.....	4	6	50	145	753	2 52	3 82	.....	1 50	2 00	0 40	0 40
July	58	19·2	1,116	0 29	26·97	0 16	15 11	0·26	11 86	.....	418	125	.....	7	9	.....	45	604	2 40	3 70	.....	1 50	2 00	.....	0 40
August	56	12·6	706	0 30	17 65	0 23	13 42	0 24	4 23	.....	380	108	.....	4	4	.....	41	537	2 40	3 70	.....	1 50	2 00	.....	0 40
September	50	12·6	631	0 31	16 30	0 22	11 45	0 23	4 85	.....	345	85	.....	3	3	.....	30	466	2 40	3 60	.....	1 50	2 00	.....	0 40
October	40	5·7	228	0 35	6 65	0 45	8 59	0 21	.....	1 94	206	95	....	3	3	.....	30	337	2 40	3 60	.....	1 50	2 00	....	0 40
Totals	.....	.....	9,329	.....	261 11	·215	167 86	2 69	110 86	17 61	3,821	1,448	27	57	72	455	501	6,381	.....	.....	.....	.....	.....	.....	.....

Average yearly cost production per bird, 150·05

STATEMENT SHOWING PRODUCTION, VALUE OF EGGS, COST OF FEED, AND PROFIT AND LOSS ON BARRED ROCK PULLETS bred and raised at Dominion Experimental Farm, Charlottetown, P.E.I., November 15, 1920, to February 28, 1921.

Month	Number of Birds	Eggs	Average Yield	Value	Cost of Feed	Profit	Loss	
				$ cts.	$ cts.	$ cts.	$ cts.	
November, 1920..	195	48	0·24	2 00	32 79	.....	30 79	
December, 1920..	194	709	3·6	32 50	58 16	.....	25 66	
January, 1921..	184	1,613	8·7	73 93	64 75	9 18	.....	
February, 1921..	182	1,283	7·0	48 11	61 64	.....	13 53	
Totals.....	.....	3,653	19·3	156 54	217 34	9·18	69 98	Av. production per hen, 19·6 eggs.

STATEMENT SHOWING PRODUCTION, VALUE OF EGGS, COST OF FEED, AND PROFIT AND LOSS ON S.C WHITE LEGHORN PULLETS, bred and raised at Dominion Experimental Station, Charlottetown, P.E,I.. November 1, 1920, to February 28, 1921.

Month	Number of Birds	Eggs	Average Yield	Value	Cost of Feed	Profit	Loss	
				$ cts.	$ cts.	$ cts.	$ cts.	
November, 1920..	75	75	1·0	3 12	18 79	.....	15 67	
December, 1920..	75	954	12·7	43 72	14 38	29 34	.....	
January, 1921..	71	739	10·4	33 87	15 16	18 71	.....	
February, 1921..	71	443	6·2	16 61	13 10	3 51	.....	
	.....	2,211	30·2	97 32	61 43	51 56	15 67	Av. production per hen, 30·3 eggs. Total, Net profit $35.89.

INDIVIDUAL RECORDS OF BARRED ROCK PULLETS bred and raised at the Dominion Experimental Farm, Charlottetown, P.E.I., 1920–1921

PROJECT 223

200 eggs or over			170 to 200 eggs			150 to 170 eggs		
Band No.	No. of Eggs	Date First Egg	Band No.	No. of Eggs	Date First Egg	Band No.	No. of Eggs	Date First Egg
375	204	Jan. 2, 1921	390	198	Nov. 26, 1920	363	168	Jan. 26, 1921
311	204	Dec. 24, 1920	336	195	Dec. 11, 1920	292	168	Dec. 23, 1920
281	204	" 25, 1920	235	194	Jan. 10, 1921	371	167	Jan. 12, 1921
369	202	" 10, 1920	398	191	Dec. 29, 1920	365	167	Dec. 27, 1920
			340	191	" 11, 1920	358	166	" 21, 1920
			256	186	Jan. 1, 1921	310	166	" 5, 1920
			339	184	Dec. 11, 1920	275	166	" 26, 1920
			387	183	Nov. 27, 1920	243	164	Jan. 6, 1921
			280	182	Dec. 27, 1920	229	163	Jan. 12, 1921
			273	180	" 30, 1920	348	162	Nov. 26, 1920
			279	179	" 27, 1920	342	162	Dec. 10, 1920
			328	177	" 14, 1920	248	161	Jan. 5, 1921
			305	174	" 7, 1920	379	160	" 27, 1921
			270	174	" 31, 1920	269	160	Dec. 30, 1920
			306	173	Jan. 13, 1921	250	159	Jan. 3, 1921
			338	171	Dec. 11, 1920	252	158	Dec. 30, 1920
			381	171	" 16, 1920	254	157	" 31, 1920
			297	170	Jan. 4, 1921	317	157	Dec. 18, 1920
						262	156	" 30, 1920
						277	156	" 26, 1920
						224	155	Jan. 15, 1921
						249	155	" 3, 1921
						261	151	Dec. 18, 1920
4 birds laid 814 eggs			18 birds laid 3,273 eggs			23 birds laid 3,704 eggs		
Average per bird, 203·5 eggs			Average per bird, 181·8 eggs			Average per bird, 161 eggs		

45 birds laid 7,791 eggs. Average per bird, 173·1 eggs.

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

(*a*) Barred Rock cock No. A-21149 (dam 217 eggs) and 12 Barred Rock hens (150 to 230 eggs). This mating produced the following female offspring:—

Band No.	No. Eggs	Band No.	No. Eggs	Band No.	No. Eggs
369	202	398	191	363	168
390	198	273	180	365	167
235	194	381	171	358	166

(*b*) Four Barred Rock males as follows: Cockerel No. 192 (dam 222 eggs); cockerel No. 199 (record of dam not known); cockerel No. 2464 (record of dam not known); cockerel No. 197 (record of dam not known), mated with sixty Barred Rock pullets produced the following female offspring:—

Band No.	No. Eggs	Band No.	No. Eggs	Band No.	No. Eggs	Band No.	No. Eggs
375	204	328	177	275	166	252	158
311	204	305	174	243	164	254	157
281	204	270	174	229	163	317	157
336	195	306	173	348	162	262	156
340	191	338	171	342	162	277	156
256	186	297	170	248	161	224	155
387	183	292	168	379	160	249	155
280	182	371	167	269	160	261	151
279	179	310	166	250	159		

Cockerel No. 192 sired most of these pullets that made the above excellent laying records.

INDIVIDUAL RECORDS OF S.C. WHITE LEGHORN PULLETS bred and raised at the Dominion Experimental Farm, Charlottetown, P.E.I., 1920-1921

200 eggs and over			170 to 200 eggs			150 to 170 eggs		
Band No.	No. of Eggs	Date of First Egg	Band No.	No. of Eggs	Date of First Egg	Band No.	No. of Eggs	Date of First Egg
1	228	Oct. 14, 1920	3	198	Nov. 16, 1920	29	167	Nov. 7, 1920
2	219	" 29, 1920	44	198	Dec. 11, 1920	17	166	Dec. 1, 1920
31	219	Dec. 7, 1920	55	198	" 17, 1920	14	164	" 1, 1920
59	211	" 17, 1920	34	194	" 9, 1920	24	163	" 6, 1920
79	204	Nov. 10, 1920	36	194	" 9, 1920	30	161	" 4, 1920
			75	194	Nov. 24, 1920	76	160	" 26, 1920
			50	191	Dec. 13, 1920	80	160	" 29, 1920
			21	189	" 4, 1920	28	159	" 7, 1920
			19	187	" 4, 1920	74	158	" 9, 1920
			8	186	Nov. 25, 1920	26	155	" 6, 1920
			77	186	Feb. 11, 1921	30	155	" 7, 1920
			6	183	Nov. 25, 1920	16	153	" 1, 1920
			23	180	Dec. 5, 1920	22	153	" 6, 1920
			13	173	Nov. 30, 1920	71	152	Jan. 19, 1921
			15	173	Dec. 1, 1920			
5 birds laid 1,081 eggs			15 birds laid 2,824 eggs			14 birds laid 2,226 eggs		
Average per bird, 216·2 eggs			Average per bird, 188·2 eggs			Average per bird, 159 eggs		

34 birds laid 6,131 eggs. Average per bird, 180·5 eggs.

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

(*a*) S.C. White Leghorn cock No. 2460 (dam 198 eggs) and 17 S.C. White Leghorn hens (140-150 eggs). This mating produced the following female offspring:—

Band No.	No. Eggs	Band No.	No. Eggs
3	198	14	164
34	194	80	160
75	194	74	158
8	186	30	155
77	186	16	153
15	173		

(*b*) Four S.C. White Leghorn cockerels as follows: No. 231 (dam 153 eggs); No. 232 (dam 178 eggs); No. 191 (dam 154 eggs); No. 200 (dam 163 eggs); mated with 60 S.C. White Leghorn pullets, produced the following female offspring:—

Band No.	No. Eggs	Band No.	No. Eggs	Band No.	No. Eggs
1	228	50	191	76	160
2	219	21	189	28	159
31	219	23	180	26	155
79	204	13	173	22	153
44	198	29	167	71	152
55	198	24	163		
36	194	20	161		

(*c*) S.C. White Leghorn Cock No. 253 (record of dam not known), mated with sixteen W.L. hens (130 to 145 eggs) produced the following female offspring:—

Band No.	No. Eggs
59	211
19	187
17	166
30	155

(*d*) During the spring of 1920 a pen of S.C. White Leghorn hens with records ranging from 170 to 200 eggs were mated with a S.C. White Leghorn cock said to be from a 256-egg hen, an excellent looking specimen of the breed. Not one of his offspring laid 150 eggs in their pullet year.

This would indicate that it is much better to breed from proven stock of reliable sources than to buy from untried males from unreliable sources, even when they are said to have attractive pedigrees.

HATCHING RESULTS

The laying and breeding pens were made up of 113 hens and 142 pullets as follows:—

Breed	Hens	Pullets	Males
Single Comb White Leghorns	73	65	8
Barred Plymouth Rocks	40	77	8

HATCHING RESULTS FOR SETTINGS BY MONTHS

Time Set	Total Eggs Set	Percent. Fertile	Percent. Total Eggs Hatched	Percent. Fertile Eggs Hatched	Percent. Chicks Hatched Alive July 1	Total Eggs for one Chick
March	1,307	65·3	20·1	30·8	12·1	4·9
April	2,454	88·6	38·4	43·3	57·6	2·6
May	2,794	84·7	39·8	47·0	62·1	2·5

HATCHING RESULTS FROM VARIOUS BREEDS

Variety	Total Eggs Set	Percent Fertile	Percent. Total Eggs Hatched	Percent. Fertile Eggs Hatched	Number Chicks Alive July 1	Percent. Chicks Hatched Alive July 1	Total Eggs Required for one Chick
Barred Rocks	3,033	73·8	23·6	32·0	187	26·0	4·2
White Leghorns	3,522	89·6	45·5	50·8	1,081	67·4	2·1

HATCHING RESULTS FROM HENS AND PULLETS

Age	1920				1921			
	Total Eggs Set	Percent. Fertile	Percent. Fertile Eggs Hatched	Percent. Chicks Hatched Alive July 1	Total Eggs Set	Percent. Fertile	Percent. Fertile Eggs Hatched	Percent. Chicks Hatched Alive July 1
Hens	2,190	84·2	57·7	82·1	2,808	86·4	46·2	71·5
Pullets	3,013	77·4	48·9	53·8	3,747	79·2	40·4	38·7

HATCHING RESULTS FROM BARRED ROCK HENS VS. WHITE LEGHORN HENS

1921	Total Eggs Set	Percent. Fertile	Percent. Fertile Eggs Hatched	Percent Chicks Hatched Alive July 1
Barred Rock hens	992	82·4	34·4	48·2
White Leghorn hens	1,816	88·6	52·2	79·4

HATCHING RESULTS FROM BARRED ROCK PULLETS VS. WHITE LEGHORN PULLETS

1921	Total Eggs Set	Percent. Fertile	Percent. Fertile Eggs Hatched	Percent. Chicks Hatched Alive July 1
Barred Rock Pullets	2,041	69·7	30·6	11·7
White Leghorn Pullets	1,706	90·6	49·3	54·2

PRINCE EDWARD ISLAND EGG LAYING CONTEST

PROJECT 224

The third Egg Laying Contest for Prince Edward Island started November 1, 1920. Each of the contestants sent in a pen of ten birds of a standard variety. The birds were typical of the breed, and free from standard disqualifications. Substitutes were allowed in all cases of death.

The chief object of the contest was for Record of Performance, as conducted under the Dominion Experimental Farms system, but, to those who were unable to trapnest their flock, it also afforded an excellent method of locating the best individuals to be used in breeding. Reports of the production of each pen were published weekly in the newspapers of the province, and furnished a news item of great interest to many readers. Those of the contestants who had good stock thereby received a great amount of reliable advertising.

The birds, throughout the whole year, were confined in portable, shed-roof, glass and cotton colony houses, each house 10 by 12 feet. Owing to the dampness of the previous year, these houses were divided in the middle by a solid board partition, which greatly improved conditions. Each section of these houses was equipped with grain box, roost, dropping-board, water pan and hoppers for the automatic feeding of dry mash, beef scrap, grit, shell and charcoal. At the beginning of the contest year, the above mentioned hoppers, which formerly were placed about one foot from the

floor were raised to the level of the dropping-board, and access to them was afforded by means of a running-board or shelf. This overcame the difficulty formerly experienced in keeping the hoppers free from litter. Pens 23, 24 and 25, entered by the Dominion Experimental Station, Charlottetown, were given different housing accommodation. (See Project No. P5-2, 1920-21.)

The birds during the contest were given the best of feed and care. The feed, which was uniform in kind and quality, was supplied in quantities to suit the varying requirements of the individual pens.

Mixed grain was fed in the litter morning and evening; dry mash, grit, shell and fresh water were before the hens at all times; and buttermilk was supplied when obtainable. Beef scrap, besides making up 10 per cent of the dry mash, was fed separately in hopper until April 28, when buttermilk was first supplied in pans. During the following four weeks, four birds died from internal hemorrhage. The supply of beef scrap was then reduced to the amount contained in the dry mash, and no further trouble was experienced. Turnips, lawn clippings and lettuce, chickweed and clover were used as green feed.

During the winter and spring months cut straw was used as litter. Planer shavings were substituted during the summer and autumn months. Both gave excellent satisfaction during the seasons in which they were used. It was found, however, that in late autumn, winter and early spring, litter about four inches deep was much more easily kept dry and in satisfactory condition than when a depth of eight inches was supplied.

With the exception of colds, which in some pens caused considerable trouble during the cold, raw weather of late fall and early spring, the birds throughout the whole year were absolutely free from any contagious disease.

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

The birds that laid 150 eggs, or over, in fifty-two consecutive weeks, were eligible for a certificate of Record of Performance AA. Those laying 225 eggs or over were eligible for a certificate of Advanced Record of Performance. Those laying 175 eggs or over were eligible for registration by the Canadian National Poultry Association, and those laying 200 and over were eligible for registration by the American Record of Performance Council.

Twenty-five pens were entered in the contest, and were made up as follows: 9 pens White Leghorns, 13 pens Barred Rocks, 3 pens White Wyandottes.

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

Summary Report of the Third Annual Egg Laying Contest

Conducted at Charlottetown Experimental Farm from November 1, 1920, to October 30, 1921.

Owner	Address	Pen No.	Breed	Total Average per Hen	Total Eggs laid	Cost per doz.	Cost of Feed	Value of Eggs	Total Loss	Total Gain	Total Weight of Eggs	Grain	Mash	Meat	Milk	Grit	Shell	Green Feed
						$ c.	$ c.	$ c.	$ c.	$ c.	Oz.	lb.	lb.	lh.	lb.	lb.	lb.	lb.
Percy Mutch	Mount Herbert, P.E.I.	1	W.L.	124·5	1,245	0 25	26 81	38 52	.....	11 71	2,669	458	250	11	382	28	26	93
J. B. Millman	Kensington, P.E.I.	2	B.R.	164·9	1,649	0 23	31 78	50 12	.....	18 34	3,368	514	321	12	400	28	24	125
William Neale	Bear River, P.E.I.	3	W.L.	146·5	1,465	0 20	24 87	43 29	.....	18 42	2,981	429	236	10	352	28	25	97
H. L. Machon	Murray Harbour, P.E.I.	4	B..R	119·3	1,193	0 33	32 85	37 66	.....	4 81	2,441	530	321	16	380	28	26	125
Edwin Reid	Rollo Bay, P.E.I.	5	W.L.	131·6	1,316	0 24	26 97	41 11	.....	14 14	2,783	468	261	10·5	332	29	27	84
Mrs. R. G. McLaren	New Perth, P.E.I.	6	B.R.	118·7	1,187	0 30	29 87	37 43	.....	7 56	2,434	478	289	12	400	28	26	125
Mrs. R. W. Bulpitt	Cardigan, P.E.I.	7	W.L.	125·8	1,258	0 25	27 07	37 27	.....	10 20	2,685	430	274	14·5	332	30	25	97
W. G. Darke	Brookfield, P.E.I.	8	B.R.	103·1	1,031	0 35	30 66	25 96	4 70	.....	2,010	489	311	11	396	28	28	115
J. J. Jenkins	Orwell Cove, P.E.I.	9	W.L.	145·6	1,456	0 23	27 99	44 58	.....	16 59	2,954	502	243	12	332	29	26	95
Walter Buntain	South Rustico, P.E.I.	10	B.R.	95·5	955	0 35	28 56	25 21	3 35	.....	1,869	448	267	16	376	28	25·5	117
Mrs. J. J. McLellan	Grand River, P.E.I.	11	W.W.	144·1	1,441	0 25	30 86	44 20	.....	13 34	2,982	509	291	15	360	28	28	125
J. E. Sinclair	Summerfield, P.E.I.	12	B.R.	85·5	855	0 38	27 51	22 84	4 67	.....	1,748	425	271	16	376	28	24	117
C. McLellan	Arlington, P.E.I.	13	W.L.	126·7	1,267	0 24	25 80	33 11	.....	7 31	2,519	443	236	12	332	28	29	95
James Cain	New Perth, P.E.I.	14	B.R.	112·5	1,125	0 33	31 44	33 12	.....	1 68	2,300	484	319	15	380	28	25	127
H. S. Moase	Kensington, P.E.I.	15	W.L.	110·4	1,104	0 30	28 13	30 27	.....	2 14	2,258	432	269	14	372	27	27	91
H. S. Moase	Kensington, P.E.I.	16	B.R.	58·5	585	0 51	24 92	16 79	8 13	.....	1,122	411	201	20	336	26	26	125
J. D. McLellan	Richmond, P.E.I.	17	W.W.	119·1	1,191	0 27	27 28	30 44	.....	3 16	2,326	434	273	10·5	376	25·5	27	113
Wallace McKay	Stanley Bridge, P.E.I.	18	B.R.	120·0	1,200	0 29	29 09	33 02	.....	3 93	2,397	488	259	8	396	29	27	125
F. W. E. Haslam	Bradlabane, P.E.I.	19	W.L.	96·8	968	0 35	28 61	26 26	2 35	.....	2,055	439	287	17·5	352	28	28	103
Rev. M. Monoghan	Miscouche, P.E.I.	20	W.W.	77·3	773	0 37	23 90	22 32	1 58	.....	1,478	420	191	14	256	28	29	116
Experimental Station	Charlottetown, P.E.I.	21	W.L.	149·2	1,492	0 20	25 77	45 48	.....	19 71	3,002	422	244	15·5	360	28	27	105
" "	" "	22	B.R.	127·6	1,276	0 26	27 68	36 77	.....	9 09	2,500	464	268	10	388	27·5	24·5	117
" "	" "	23	B.R.	115·2	1,152	0 29	28 59	33 36	.....	4 77	2,243	472	276	14	320	27	25	127
" "	" "	24	B.R.	131·4	1,314	0 26	28 68	36 26	.....	7 58	2,564	474	277	11	320	27	25	127
" "	" "	25	B.R.	143·5	1,435	0 22	27 05	46 21	.....	19 16	2,816	523	194	13	380	28	27	125
				119·6	29,933	0 28	702 74	871 60	24 78	193 64	60,494	11,586	6,629	333·5	8,986	697	657	2,811

Average cost per cwt.: Grain, $2.96: Mash, $3.98: Meat feed, $7.00: Milk, $0.42: Grit, $1.50: Shell,

Average cost per cwt: Grain $2.96; Mash, $3.98; Meat feed, $7; Milk, .42; Grit, $1.50; Shell, $2.

With a view of determining the effect of floor space on egg production, this experiment was started in connection with the contest.

Pens 22, 23, 24 and 25, Barred Rock pullets, from Charlottetown Experimental Station, uniform in age and breeding, were selected and entered in the Prince Edward Island Egg Laying Contest, and were housed as follows: Pen 22, the same as all competing pens, i.e., in one section of a contest house; pens 23 and 24 were given one whole house; pen 25 occupied one whole house.

The results are shown in the following table:

EFFECT OF FLOOR SPACE ON EGG PRODUCTION

Pen	Eggs Laid Nov. 1, 1920, to Feb. 20, 1921,	Eggs Laid Feb. 21, 1921, to Oct. 30, 1921	Eggs Laid Nov. 1, 1920, to Oct. 30, 1921
22	160	1,116	1,276
23	192	960	1,152
24	141	1,173	1,314
25	346	1,089	1,435

The increased floor space apparently showed a decided influence in increasing production during winter months, but not during the remainder of the year. However the tendency of so many individuals to swing back to the low-producing line, as seen in the production from pens 23 and 24 which were together as one flock, was sufficient to warrant further investigation. The experiment had to be discontinued through lack of accommodation, but will be taken up again with a uniform strain of White Leghorns.

BEES

Under the continued supervision of an expert bee-keeper, the apiary at the Station has strengthened and improved over its condition during the past several years.

This season was rather poor as regards production of honey, on account of shortage of clover due to drought conditions. Four colonies came out successfully in the spring. Five colonies were purchased, and by hiving several swarms, the total was brought up to thirteen colonies by the autumn. These were placed in four-colony wintering cases out-of-doors.

A total of 364 pounds of honey was produced during the season. Most of this was sold at prices ranging from 28 to 30 cents per pound. The remainder is held for demonstration purposes and for feeding back to the bees in the spring.

A rather extensive series of demonstrations was given during the season at the apiaries of various bee-keepers throughout the Province. A motor truck was used to carry material for demonstrations, while bees were used from the apiary where the demonstration was given. These demonstrations were made with a view of not only educating present bee-keepers, but also of interesting prospective bee-keepers in the industry. Instruction was given in handling bees in early spring, in the handling and prevention of swarms, the handling and extracting of honey, preparation and feeding for winter, systems of wintering, illustrated by types of wintering cases, etc.

These meetings were usually attended by large and enthusiastic audiences.

Three colonies of Italian bees were placed in the cellar of the superintendent's house in November, 1920. Two survived the winter, and came out in fairly strong condition in the spring. The third colony, however, died from dysentery and lack of stores. The colonies were taken from the cellar and placed on hive stands in the

bee yard on April 30. An outer case was put around each hive, with a space of three inches between the hive and the case. This space was filled with planer shavings which gave protection to the colonies. The outside cases were left on all summer, as a protection to the brood chamber. One colony was placed on scales, and an accurate record was kept of the daily gain, or loss, in weight. Notes were taken daily on the weather to determine its effect on the honey flow.

The first nectar obtained in the season was from willows, wild strawberries, and Labrador Tea. Alsike clover commenced to bloom on June 10, but there was no increase in the weight of the colonies until June 17. The greatest flow of nectar in June occurred on the twenty-sixth, when there was an increase in weight of the colony on scales of 13 pounds, and the greatest flow for the season occurred on July 1, when an increase in weight of 16 pounds for one colony was recorded. This was at the height of the Alsike clover bloom. Another heavy honey flow occurred from August 12 to 28, when Fireweed was in full bloom. The honey from Fireweed is very clear and of fine flavour, and equal to that of Alsike or White clover.

An effort will be made to make increase in the apiary, from the colonies least inclined to swarm, thus improving the strain of bees kept. There was no swarming during the season, although preparations were quite persistent with one colony. The colonies were examined once a week, and all queen cells were destroyed. Ample room and good ventilation were also provided. One colony was divided early in July and a new colony started, which built up quite strongly by the end of the season. A queen of select parentage, bred at Duck Island by the Dominion Apiarist, was introduced to this colony. Two new colonies were also started, early in July, from two pound packages of bees. These colonies were also given queens bred at Duck Island.

During the season 400 pounds of honey was extracted. The following is a statement of the honey production and returns for the season:—

Total weight of extracted honey	400 pounds
Average weight produced per colony (Spring count)	200 "
Selling price of extracted honey per pound (after deducting cost of containers)	24 cents
Total value of honey produced	$96
Average value of honey produced, per colony, Spring count	$48

The colonies were left on their stands until November 5, when they were put into the cellar of the new office building, where a temperature of forty to forty-five degrees is maintained.

The apiary work was in charge of the assistant to the superintendent.

EXHIBITIONS

Exhibits were prepared and shown at the Provincial Exhibition, Charlottetown, P.E.I., at Prince County Exhibition, Summerside, at Georgetown and Souris Exhibitions (Kings county), during the autumn of 1921.

A new exhibit, received earlier in the season, was made use of for the first time, and received very high commendation from all visitors.

A new departure this season was the showing, at Charlottetown, of a large exhibit from the Central Experimental Farm at Ottawa. This exhibit interested a great many people, not only for itself, but as to the work that the Experimental Farms system is doing.

The superintendent or assistants judged field roots, vegetables and fruit at Summerside, Georgetown and Souris.

GEORGETOWN EXHIBITION

Georgetown Exhibition (Kings county) was held earlier this year than in previous seasons, the date being September 21. This fair, although small, is usually one of the best on our circuit, and as in former years reached its usual standard this year. The weather was ideal and the attendance large.

CHARLOTTETOWN EXHIBITION

The Provincial Exhibition held at Charlottetown was the next fair attended, the dates being September 27 to October 1, inclusive. The week was fine throughout, and the fair was largely attended. The live stock exhibit, particularly in dairy cattle, was one of the largest ever shown in this province. The Experimental Station Ayrshires were entered, and carried off a large number of prize ribbons.

SUMMERSIDE EXHIBITION

Prince County Exhibition, held at Summerside, October 4 and 5, was very unfortunately handicapped by cold, wet weather, resulting in a small attendance.

SOURIS EXHIBITION

Souris Exhibition (Kings county), held October 6, was also rather handicapped by very rainy, cold weather. This fair was up to its usual high standard, and in spite of inclement weather, was very well attended.

EGMONT BAY EXHIBITION

This fair, held at Egmont Bay on October 15, was very well attended, in spite of the fact that roads were bad and the weather cold and rainy. Live stock exhibits were numerous, but many of the animals were in anything but show form. Very large exhibits of field roots, vegetables and seeds were shown, with perhaps the largest entry of field beans judged at any of the fairs in the province this year.

SCHOOL FAIRS

Several school fairs were attended during the early autumn, where judging of field roots, vegetables, flowers, live stock and poultry was done by the superintendent or assistants. Enthusiasm runs high at these fairs, which are well attended. The exhibitors are to be complimented on both the number and the quality of the exhibits shown.

In addition to exhibition work, the Station distributed a great many bulletins, sent hundreds of reports on various farm operations and prepared for publication numerous articles for the press and departmental publications.

Many Farmers' Institutes and other associations held picnics at the Station during the summer. Everything is done to make these picnics and meetings interesting and instructive.

Throughout the year, particularly during the summer months, many visitors call at the Station, the number running in the neighbourhood of four thousand annually.