DOMINION OF CANADA
DEPARTMENT OF AGRICULTURE
DOMINION EXPERIMENTAL FARMS

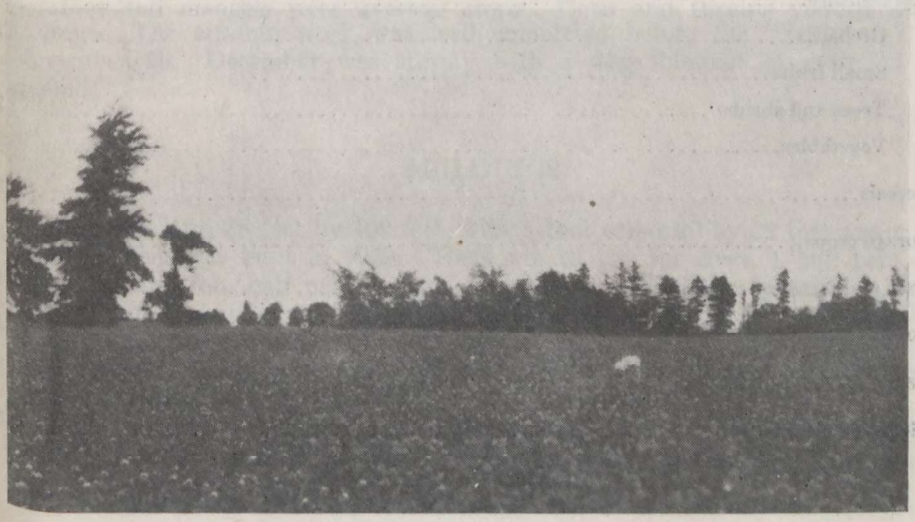
EXPERIMENTAL STATION

CHARLOTTETOWN, P.E.I.

REPORT OF THE SUPERINTENDENT

J. A. CLARK, M.S.A.

FOR THE YEAR 1929



Second crop of red clover, rotation "A", 1929, Charlottetown Experimental Station.

Published by authority of the Hon. W. R. Motherwell, Minister of Agriculture,
Ottawa, 1930

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DOMINION EXPERIMENTAL STATION, CHARLOTTETOWN, P.E.I.

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

THE SEASON

A heavy snowfall on November 27, 1928, stopped the plough when autumn work was well completed. This snow went away quickly. The snowfall of 128 inches during the winter did not lie deep at any time. Rain frequently followed the snow and bared the ground during the early winter. The heavy snowfalls of February and March remained as a deep blanket for a time, but went quickly in April. Frequent rains in May greatly delayed seeding, but grass made splendid growth. First cereals were sown on May 18, and June was dry and very favourable for seeding. Germination was rapid and the grain developed a splendid colour. The hay crop was above average and was saved in splendid condition during the favourable weather of July and August. September was fine and the harvest was well saved; October and November, however, were showery. Early potatoes were small and below average, but late potatoes and mangels were average crops. Corn and turnips yielded above average. The autumn work was well completed before the "freeze-up" on November 29. December was stormy with a deep blanket of snow on the ground.

BUILDINGS

A dairy barn 38 feet by 100 feet, with a root cellar 20 by 22 feet and a silo 13 by 30 feet was built in 1929. There are 29 ties for cows, 1 bull pen, two box stalls and four calf pens to hold four calves each. The foundation, floor, mangers and root cellar are concrete. The superstructure is of wood with asphalt slate shingles. The stanchions, including calf pen stanchions, are of steel. Plank frame construction was used throughout. The electric wiring throughout is in metal conduits.

The barn was built just north of the picnic grove, where land was available for paddocks and bull pens, and far enough away from the other buildings to lessen the fire risk.

THE STATION AREA

The original "Ravenwood" property of 29½ acres has been increased from time to time by purchase by the Federal Government of adjoining properties amounting to 143½ acres, and the leasing, on short term leases, of 161¾ acres. The total area of the station at the close of 1929 was 334¾ acres.

GENERAL NOTES

The weather conditions were ideal for the Charlottetown Exhibition from August 19 to 23, 1929. This brought out a record attendance of 40,000. The Experimental Station booth was redecorated and several very interesting panels replaced those used the previous year. In one, the Illustration Station work was featured with a map of Prince Edward Island, giving the location and the name of the operator of each station. Some outstanding features of the different divisions of the Station work were featured on the other panels, and two were used by the Plant Pathology Laboratory. The exhibit attracted much attention, and a great deal of information was given out. A suitable exhibit was shown at Georgetown. The application of nitrogenous fertilizers on timothy hay land was featured, and the increased yields obtained throughout the Island were shown graphically.

A series of midwinter agricultural meetings were held throughout the province, which were well attended by the farmers and their wives in the different localities. Addresses were delivered at these and at a series of Illustration Station Field Days during the summer of 1929 by the Superintendent and his assistants.

The annual picnic of the Prince Edward Island Potato Growers' Association brought about 1,000 interested growers to the Station. A great many groups of farmers held picnics at the Farm from time to time throughout the months of July and August. The Illustration Station operators held their annual gathering at the station on August 9. They were given luncheon at noon and attended a Field Day at Rustico that afternoon. The Associated Boards of Trade held their annual meeting and luncheon in the station picnic grove. It was attended by about 150 delegates, including many representatives from the Women's Institutes of the province.

The staff judged at the exhibitions at Charlottetown, Georgetown, Souris, Alberton and Egmont Bay, and at many school fairs.

Agricultural articles were prepared for the press, and the Superintendent spoke over a radio hook up of Maritime stations from C.N.R.A. Moncton.

1929 METEOROLOGICAL RECORDS—EXPERIMENTAL STATION, CHARLOTTETOWN, Prince EDWARD ISLAND

	Temperature (° F.)						Precipitation				Sunshine	
	Mean		Maximum		Minimum		Rain	Snow	Total precipitation			Average 19 years 1911 to 1929
	1929	Average 21 years	Highest	Mean maximum	Lowest	Mean minimum			1929	Average 29 years 1901–29	1929	
							in.	in.	in.	in.	hours	hours
January	19·387	17·473	51	27·968	−12	10·806	1·02	33·0	4·32	3·74	94·3	92·483
February	18·500	16·544	40	25·893	− 9	11·107	0·58	35·2	4·10	3·09	129·0	115·224
March	27·113	26·576	50	35·322	−13	18·903	1·48	29·7	4·45	3·56	160·1	137·233
April	35·917	36·626	64	42·767	18	29·067	2·28	2·5	2·53	3·99	173·8	154·921
May	48·790	47·916	79	57·903	30	39·677	5·02	6·0	5·62	2·71	202·8	209·253
June	59·967	58·315	83	70·000	37	49·934	1·65	.....	1·65	2·76	236·8	227·478
July	66·000	65·621	83	75·322	44	56·677	3·32	.....	3·32	2·87	303·5	237·083
August	65·338	64·733	80	73·744	48	56·903	2·22	.....	2·22	3·22	243·8	230·944
September	59·383	57·318	78	67·233	40	51·533	3·97	.....	3·97	3·69	154·2	178·262
October	48·048	48·124	70	55·000	29	41·096	4·61	.....	4·61	4·06	115·3	129·308
November	34·967	35·884	56	41·100	7	28·833	2·92	16·0	4·52	3·92	97·8	77·333
December	21·274	25·112	42	27·903	− 1	14·645	3·68	38·2	7·5	4·92	64·0	60·874
Totals and averages	42·057	41·687	.....	50·015	.....	34·098	32·75	160·6	48·81	41·55	1,975·4	1,850·396

ANIMAL HUSBANDRY

DAIRY HERD

The Ayrshire herd at the close of the year 1929 numbered forty-three animals, headed by Ottawa Supreme 14th 94146, A.R. No. 76—Class A.A. The herd has been fully accredited under certificate No. 219, since August 9, 1922.

DAIRY HERD RECORDS OF PRODUCTION

Following is a tabulated record of cows completing their lactation period during the year 1929. The following fixed charges were employed in compiling this table:—

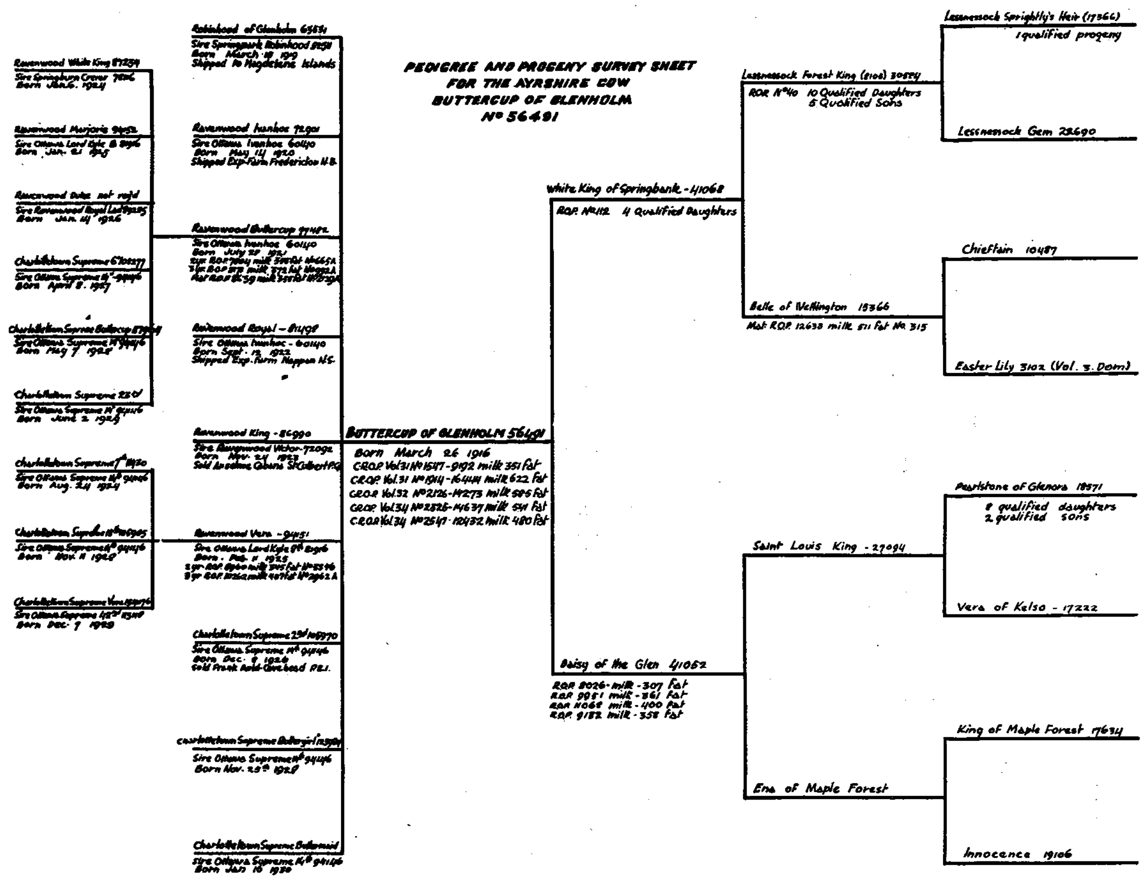
Pasture, per month, per head		$ 1 50
Meal, per ton	varied from $42.00 to	45 00
Hay, per ton		11 00
Roots and ensilage, per ton		2 00
Green feed, per ton		4 00

In calculating the value of products, 40 cents per pound has been allowed for butter and 50 cents per cwt. for new skim-milk. Butter production has been figured on a basis of 85 per cent fat content, and skim-milk on the basis of cream containing 30 per cent fat.

Labour charges are omitted as it is considered that these are offset by the value of the calves dropped and the manure produced.

New dairy barn, Charlottetown Station.

Name and number of animal	Date of freshening	Number of days in lactation period	Total pounds of milk for period	Daily average yield of milk	Average per cent fat in milk	Pounds butter produced—86 per cent fat	Value of butter at 40 cents per pound	Value of skim-milk at 50 cents per cwt.	Total value of product	Amount of meal eaten at $42 to $45 per ton	Amount roots and ensilage at $2 per ton	Amount of hay at $11 per ton	Amount green feed at $4 per ton	Months pasture at $1.50 per month	Total cost of feed for period	Cost to produce 100 pounds milk	Cost 1 pound butter, skim-milk neglected	Profit on 1 pound butter, skim-milk neglected	Profit on cow, labour and calf neglected
			lb.	lb.	%	lb.	$	$	$	lb.	lb.	lb.	lb.	mos.	$	$	cts.	cts.	$
Ravenwood Jessie—94153	1/11/28	372	11,902	32·0	3·98	557	222 80	51 60	274 42	4,365	11,480	2,495	1,155	4½	126 83	1 07	22·8	17·2	147 59
Ravenwood Vera—94151	11/11/28	346	10,600	30·6	3·95	493	197 20	41 02	238 22	4,010	9,965	2,171	1,155	4½	115 93	1 09	23·5	16·5	122 29
Ravenwood Helen—83094	22/3/28	381	10,400	27·3	4·16	509	203 60	44 78	248 38	3,939	12,840	2,805	1,360	5	126 11	1 21	24·8	15·2	122 27
Fairvue Clarice—85792	1/2/28	314	8,926	28·4	4·42	465	186 00	38 05	224 05	3,417	9,215	2,162	1,360	5	108 23	1 21	23·3	16·7	115 82
Ravenwood Lily—77867	30/5/28	460	10,074	21·9	4·12	488	195 20	46 72	241 92	4,543	11,400	2,777	1,360	7⅔	141 01	1 40	28·9	11·1	100 91
Ravenwood Butterfly—96321	24/10/28	356	7,573	21·3	4·36	388	155 20	32 36	187 56	3,420	10,744	2,361	1,050	4	104 79	1 38	27·0	13·0	82 77
Ravenwood Belle—85970	16/2/28	414	7,833	18·9	4·78	441	176 40	32 92	209 32	3,989	14,472	3,212	1,360	5	131 48	1 68	29·8	10·2	77 84
Ravenwood Buttercup—77842	7/5/28	311	7,793	25·1	3·85	353	141 20	33 97	175 17	3,184	9,420	1,972	1,360	5	97 37	1 25	27·6	12·4	77 80
Ravenwood Nora—89286	3/5/28	346	7,646	22·1	4·16	374	149 60	32 93	182 53	3,274	10,940	2,266	1,390	4⅔	105 70	1 38	28·3	11·7	76 83
Charlottetown Queen—98434	27/2/28	393	8,401	21·4	3·73	369	147 60	36 78	184 38	3,201	13,413	2,736	1,610	4⅔	109 66	1 31	29·7	10·3	74 72
Ravenwood Innocent—81998	15/3/28	295	6,948	23·6	4·27	349	139 60	29 80	169 40	3,144	8,355	1,938	1,360	6	101 40	1 46	29·1	10·9	68 00
Ravenwood Snow—91548	6/5/28	343	7,800	22·7	3·67	337	134 80	34 23	169 03	3,245	10,990	2,248	1,360	5	105 47	1 35	31·3	8·7	63 56
Charlottetown Lady—101045	17/10/28	371	6,751	18·2	4·53	360	144 00	28 66	172 66	4,058	10,200	2,105	1,295	4½	117 32	1 74	32·6	7·4	55 34
Charlottetown Duchess—99602	18/10/28	363	7,297	20·1	3·99	343	137 20	31 63	168 83	3,965	10,575	2,218	1,295	4½	116 09	1 59	33·8	6·0	51 74
Total for all cows	.....	5,065	119,994	.....	.....	5,826	2,329 60	515 47	2,845 87	51,754	154,099	33,466	18,470	69½	1,607 39	.....	.....	.....	1,237 48
Average for all cows	.....	362	8,567	23·7	4·13	416	166 40	36 82	203 28	3,697	11,007	2,390	1,319	5	114 81	1 34	27·6	12·4	88 39
Total for 5 best cows	.....	1,873	51,902	.....	.....	2,512	1,004 80	222 19	1,226 99	20,274	54,900	12,410	6,390	26½	618 11	.....	.....	.....	608 88
Average for 5 best cows	.....	375	10,380	27·7	4·11	502	200 96	44 44	245 40	4,055	10,980	2,482	1,278	5½	123 62	1 19	24 6	15·4	121 78


PEDIGREE AND PROGENY SURVEY SHEET
FOR THE AYRSHIRE COW
BUTTERCUP OF GLENHOLM
Nº 56491
BUTTERCUP OF GLENHOLM 56491
Born March 26 1916
White King of Springbank - 41068
R.O.P. Nº112 4 Qualified Daughters
Daisy of the Glen 41052
Lessnessock Forest King (8106) 30574
R.O.R. Nº40 10 Qualified Daughters 5 Qualified Sons
Belle of Wellington 18366
Saint Louis King - 27094
Ena of Maple Forest
Lessnessock Sprightly's Heir (17366)
1 qualified progeny
Lessnessock Gem 28690
Chieftain 10487
Easter Lily 3102 (Vol. 3. Dom)
Pearlstone of Glenora 18571
8 qualified daughters
2 qualified sons
Vera of Kelso - 17222
King of Maple Forest 17634
Innocence 19106

OFFICIAL RECORD OF PERFORMANCE AYRSHIRE COWS, CHARLOTTETOWN EXPERIMENTAL STATION, JANUARY 1, 1929 TO DECEMBER 31, 1929

Name and number of cow	Age at start of test		Number of days in test	Pounds of milk	Pounds of fat	Average per cent fat	Official record
	years	days		lb.	lb.	%	
Ravenwood Helen 83094	5	.....	365	10,386	432	4·16	Vol. 39–3823
Fairvue Clarice 85792	4	359	305	8,906	394	4·42	Vol. 39–2498A
Ravenwood Nora 89286	4	8	305	7,525	312	4·15	Vol. 39–2754A
Ravenwood Vera 94151	3	273	305	10,262	407	3·97	Vol. 39–296ZA
Ravenwood Jessie 94153	3	287	365	11,757	471	4·01	Vol. 39–3962
Charlottetown Queen 98434	2	115	365	8,262	308	3·73	Vol. 39–3781

BEEF CATTLE

STEER FEEDING EXPERIMENTS

Twenty-four steers were purchased on July 24, 1928, and turned out to pasture, to be used later in the year for experimental feeding purposes. The steers were carried on pasture, supplemented when necessary, by the use of green corn and oat sheaves, until December 5, when they were divided into six lots of four steers each, and placed on test. All horned steers were dehorned before being placed in the feed lots. Each group of four was fed loose in a roomy box stall, the experimental feeding period continuing until March 22, 1929, a total of 107 days.

The work undertaken was somewhat similar to that conducted for the two previous seasons, that is, a comparison of the feeding value of swede turnips and cull potatoes, and also of the relative value of each of these when fed at different rates.

The average live-weight cost of the steers when weighed into the pens was $7.25 per cwt.

The grain ration used was composed of:—

Crushed barley	200 pounds
Crushed oats	300 "
Oilcake meal	150 "
Bran	100 "

This meal mixture was fed at the rate of 26 pounds per pen of four animals at the start of the experiment, and increased one pound per week until the close of the feeding period when each pen was receiving 40 pounds of meal per day.

Hay was fed uniformly throughout the feeding period at the rate of 40 pounds per pen per day.

The feeding of roots varied with each pen, and was as follows:—

Pen I received swede turnips at the rate of 160 pounds per pen per day, which was decreased by 4 pounds per week until the close of the experiment, when they were receiving 104 pounds per day.

Pen II received swedes at the rate of 60 pounds per pen per day throughout the duration of the feeding period.

Pen III started at 80 pounds of swedes per pen per day, decreased by 2 pounds per pen per week until at the close of the period they were receiving 52 pounds per pen per day.

Pen IV received 100 pounds of cull potatoes per pen per day throughout the experiment.

Pen V received 60 pounds of cull potatoes per pen per day during the entire experiment.

Pen VI acted as a check pen and received neither swedes nor potatoes.

The following table gives the amounts and value of the feed consumed:—

STEER FEEDING EXPERIMENT—AMOUNT AND VALUE OF FEED

Item	Pen number												Total	
	I		II		III		IV		V		VI		Amount	Value
	lb.	$	lb.	$	lb.	$	lb.	$	lb.	$	lb.	$	lb.	$
Swede turnips at $2 per ton	13,860	13 86	6,300	6 30	6,930	6 93	.....	.....	.....	.....	.....	.....	27,090	27 09
Potatoes at $4 per ton	.....	.....	.....	.....	.....	.....	*10,500*	*21 00*	*6,300*	*12 60*	.....	.....	*16,800*	*33 60*
Mixed hay at $12.00 per ton	4,280	25 68	4,280	25 68	4,280	25 68	4,280	25 68	4,280	25 68	4,280	25 68	25,680	154 08
Meal mixture at $2.16	4,865	105 08	4,865	105 09	4,865	105 08	4,865	105 08	4,865	105 09	4,865	105 08	29,190	630 50
Total cost per pen	.....	144 62	.....	137 07	.....	137 69	.....	151 76	.....	143 37	.....	130 76	.....	845 27
Average cost per steer	.....	36 15	.....	34 27	.....	34 42	.....	37 94	.....	35 84	.....	32 69	.....	35 22

STEER FEEDING EXPERIMENT—COMPARISON OF DIFFERENT PENS

Item	Pen No. 1	Pen No. 2	Pen No. 3	Pen No. 4	Pen No. 5	Pen No. 6	Pen totals and averages
Number of steers in lot	4	4	4	4	4	4	24
Initial gross weight per pen.....lb.	3,530	3,490	3,520	3,510	3,500	3,510	21,060
Initial average weight.....lb.	883	873	880	878	875	878	878
Finished weight per pen.....lb.	4,425	4,395	4,285	4,555	4,280	4,400	26,340
Average finished weight per steer.....lb.	1,106	1,099	1,071	1,139	1,070	1,100	1,098
Total gain in 107 days.....lb.	895	905	765	1,045	780	890	5,280
Average gain per steer.....lb.	224	226	191	261	195	222	220
Daily gain per pen.....lb.	8·36	8·46	7·15	9·77	7·29	8·32	8·22
Daily gain per steer.....lb.	2·09	2·12	1·79	2·44	1·82	2·08	2·06
Value of cattle at beginning of test..... $	255 92	253 01	255 20	254 48	253 76	254 48	1,526 85
Average value per steer at start..... $	63 98	63 26	63 80	63 62	63 44	63 62	63 62
Gross cost of feed per pen..... $	144 62	137 07	137 69	151 76	143 37	130 76	845 27
Average cost of feed per steer..... $	36 15	34 27	34 42	37 94	35 84	32 69	35 22
Total cost—purchase price plus cost feed... $	400 54	390 08	392 89	406 24	397 13	385 24	2,372 12
Cost of one pound gain.....cts.	16·2	15·1	18·0	14·5	18·4	14·7	16·0
Average increase in value per steer..... $	57 69	52 72	55 63	57 54	53 49	43 93	53 50
Sale price per pen..... $	486 67	463 92	477 70	484 65	467 70	430 20	2,810 84
Sale price per steer..... $	121 67	115 98	119 43	121 16	116 93	107 55	117 12
Profit per pen..... $	86 13	73 84	84 81	78 41	70 57	44 96	438 72
Profit per steer..... $	21 53	18 46	21 20	19 60	17 64	11 24	18 28

TABLE OF WEIGHTS AND GAINS—STEER FEEDING EXPERIMENT

Pen No.	Steer No.	Weight Dec. 5, 1928	Weight Mar. 22, 1929	Gain	Value at start	Cost of feed	Total cost	Sale price	Profit or (−) loss
		lb.	lb.	lb.	$	$	$	$	$
I.....	22	850	1,035	185	61 62	36 16	97 78	108 67	10 89
	27	780	975	195	56 55	36 15	92 70	97 50	4 80
	28	960	1,240	280	69 60	36 16	105 76	139 50	33 74
	37	940	1,175	235	68 15	36 15	104 30	141 00	36 70
	Total.....	3,530	4,425	895	255 92	144 62	400 54	486 67	86 13
	Average..	883	1,106	224	63 98	36 16	100 14	121 67	21 53
II.....	20	930	1,140	210	67 42	34 26	101 68	114 00	12 32
	26	780	1,010	230	56 55	34 27	90 82	101 00	10 18
	30	950	1,170	220	68 87	34 27	103 14	119 92	16 78
	38	830	1,075	245	60 17	34 27	94 44	129 00	34 56
	Total.....	3,490	4,395	905	253 01	137 07	390 08	463 92	73 84
	Average..	873	1,099	226	63 26	34 27	97 52	115 98	18 46
III.....	18	870	1,100	230	63 07	34 43	97 50	132 00	34 50
	24	860	1,000	140	62 35	34 42	96 77	100 00	3 23
	31	890	1,100	210	64 53	34 42	98 95	115 50	16 55
	40	900	1,085	185	65 25	34 42	99 67	130 20	30 53
	Total.....	3,520	4,285	765	255 20	137 69	392 89	477 70	84 81
	Average..	880	1,071	191	63 80	34 42	98 22	119 43	21 20
IV.....	23	830	1,050	220	60 18	37 94	98 12	110 25	12 13
	29	980	1,250	270	71 05	37 94	108 99	125 00	16 01
	32	870	1,195	325	63 07	37 94	101 01	143 40	42 39
	33	830	1,060	230	60 18	37 94	98 12	106 00	7 88
	Total.....	3,510	4,555	1,045	254 48	151 76	406 24	484 65	78 41
	Average..	878	1,139	261	63 62	37 94	101 56	121 16	19 60
V.....	19	780	1,020	240	56 55	35 85	92 40	117 30	24 90
	35	870	1,070	200	63 08	35 84	98 92	107 00	8 08
	36	980	1,220	240	71 05	35 84	106 89	146 40	39 51
	39	870	970	100	63 08	35 84	98 92	97 00	−1 92
	Total.....	3,500	4,280	780	253 76	143 37	397 13	467 70	70 57
	Average..	875	1,070	195	63 44	35 84	99 28	116 93	17 64
VI.....	21	910	1,140	230	65 98	32 69	98 67	136 80	38 13
	25	1,040	1,335	295	75 40	32 69	108 09	120 15	12 06
	34	800	1,020	220	58 00	32 69	90 69	91 80	1 11
	F.S.	760	905	145	55 10	32 69	87 79	81 45	−6 34
	Total.....	3,510	4,400	890	254 48	130 76	385 24	430 20	44 96
	Average..	870	1,100	223	63 62	32 69	96 31	107 55	11 24
	Gr. total.	21,060	26,340	5,280	1,526 85	845 27	2,372 12	2,810 84	438 72
	Average..	878	1,098	220	63 62	35 22	98 84	117 12	18 28

DEDUCTIONS

The following deductions would seem to be warranted:—

(*a*) The feeding of swede turnips or cull potatoes to short-keep steers would appear to be a commendable practice, in view of the increased profit attained in this experiment.

(*b*) When swede turnips were fed in amounts decreasing as the feeding period progressed, Lot III that started at 80 pounds per pen per day and

decreased to 52 pounds, turned in a profit equal, within a few cents per animal, to Lot I receiving just double this amount, although the gross gain in weight was not so great.

(*c*) Lot II fed swedes at a uniform rate of 60 pounds per pen per day throughout the feeding period, made a greater gain in weight, but showed a smaller profit when sold, than did Lot III fed swedes in decreasing amounts, although the total amount of roots fed was practically the same in each case.

(*d*) Lot V receiving 60 pounds of cull potatoes per pen per day during the entire period, may be compared directly with Lot II, fed in a similar manner and at the same rate, with swede turnips. Lot II made greater gains, and the pen showed a slightly higher profit than did Pen V. It must be noted, however, that Lot V contained one steer (No. 39) that proved to be a poor feeder, and on which a loss was shown. The balance of the animals did excellently on this ration, and proved to be of fine quality and finish. Even including the poor steer, the selling price on the open market averaged higher than for Lot II. It must be remembered too, that the potatoes were charged against this pen at just double the price charged for turnips.

(*e*) Pen IV receiving 100 pounds of potatoes per pen per day throughout the feed period, made the greatest gain in weight, and was the second highest in return value when sold, being topped only by Pen I, receiving the heavy turnip ration.

In general it may be said that either swede turnips or cull potatoes, fed in reasonable amounts, will produce satisfactory gains in steers, and that within the limits of this experiment there would appear to be little difference in feeding value between the two.

HORSES

Three pure-bred Clydesdale mares, three draught geldings, and two general purpose horses, a total of nine, were on hand December 31, 1929. During the spring of 1929, one draught gelding was purchased, and later in the season, a driving mare was sold, as well as one draught gelding.

HORSE LABOUR

The following amount of horse labour was performed during the year:—

	hours
Farm work	12,718
Horticulture	140
Roads	46
Hauling manure	2,352
Miscellaneous	4,192
	19,448

This makes an average per horse of 2,161 hours.

The tractor assisted very largely with the heavy work during the rush of the spring season.

SWINE

Three brood sows farrowed thirty-nine pigs during the twelve months. Three young sows were retained for breeding purposes, twelve animals were sold for breeding purposes and the balance disposed of for slaughter.

There were on hand, December 31, 1929, six brood sows and twelve young pigs, a total of eighteen.

FIELD HUSBANDRY

SEASONAL NOTES

Autumn work closed with a snow storm November 27, 1928. The snowfalls of December, January and early February were followed by rain that kept the ground bare most of the winter. Heavy falls of snow late in February and in March remained as a deep blanket until April. The snow then went quickly, and the ground was bare during the spring frosts. May was showery, and seeding was delayed until the 18th. The grass started well, germination was good, and growth was rapid. Planting was quickly completed during the fine weather of early June. There were periods of dry weather in June, July and August. The hay crop was above average, and was saved in splendid condition. Harvest was comparatively early, and some wheat did not fill owing to dry weather. Cereals were saved almost without rain. October and November were showery. Some early Irish Cobbler potatoes were small, but the late potatoes and mangels were average crops. Corn and turnips were full crops. Autumn work was well completed before the "freeze up" on November 29.

CROP ROTATIONS

Figures relative to the cost of production of different crops on several types of rotations, have been collected for many years at this Station.

Not only do the various rotations supply cost data for such studies, but they also prove of very practical benefit during the growing season, as demonstrations of the types of rotations most commonly practised in Eastern Canada.

The following items show the fixed charges adopted for the season of 1929:—

Costs

Rent of land	$ 3 00
Manure, per ton (spread)	1 50
Seed oats, per bushel	1 50
Seed barley, per bushel	2 00
Seed wheat, per bushel	3 00
Use of machinery, per acre	2 85
Manual labour, per hour	0 25
Horse labour, per hour	0 10
Tractor labour, per hour	0 55
Grass seed	at cost
Seed of mangels, turnips, potatoes, etc	at cost
Twine	at cost
Spray materials	at cost

Return Values

Oats, per bushel	$ 0 68
Barley, per bushel	0 96
Wheat, per bushel	1 80
Hay, per ton	11 00
Potatoes, per bushel (field run)	0 50
Oat straw, per ton	4 00
Barley straw, per ton	4 00
Wheat straw, per ton	2 00

The above values we believe to be a fair estimate of prevailing market prices for the items mentioned.

ROTATION "A"

This five-year rotation should be fairly suitable for dairy farming in this province. It is just possible that for this purpose it might be improved somewhat by adding another year, making six years in all, three under meadow, the last of which could be used for pasture. It provides relatively large amounts of grain, which would be highly desirable for the handling of a dairy herd.

First Year—hoed crop.—Mangels have been used as the intertilled crop on this area for several years. Twenty-five tons of manure are applied in preparation for the crop, about half of which is applied the previous autumn. The balance, applied in the spring, is worked thoroughly into the soil, using a double cutaway harrow for the purpose. Forty per cent of the total cost of manure is charged against the crop.

Second Year—grain.—The crop used on this area is Banner oats, seeded down with grass seed at the rate of 6 pounds red clover, 4 pounds alfalfa, 2 pounds alsike and 12 pounds timothy per acre. Twenty-five per cent of the cost of manure applied to the rotation is charged against this crop.

Third Year—clover hay.—This crop stands the cost of 20 per cent of the manure applied to the rotation.

Fourth Year—timothy hay, or pasture.—Charged with 10 per cent of the total cost of manure. This area is ploughed after the removal of the timothy crop, and is topworked during the balance of the season.

Fifth Year—grain.—This area is planted to barley and seeded with grass seed at the rate of 8 pounds of red clover and 2 pounds of alsike per acre. This serves as a green manure for the crop following.

SUMMARY ROTATION "A"—FIVE YEAR'S DURATION

Crop	Yields		Value 1929	Cost of production	Profit or (−) loss
	18-year average	1929			
			$	$	$
Mangels—Yellow Inter.....tons	18·96*	†5·84	.....	59 38	.....
Oats—Banner.....bush.	68·86	65·0	44 20	25 23	23 16
Straw.....tons	1·469	1·0475	4 19	.....	.....
Clover.....tons	2·498	2·733	30 06	19 27	10 79
Timothy.....tons	2·294	1·831	20 14	13 57	6 57
Barley—Ch'town No. 80.....bush.	44·47	20·52	19 70	19 20	2 53
—Straw.....tons	1·106	0·5075	2 03	.....	.....

*17 years. †Bacterial seedling wilt, very poor crop.

ROTATION "B"

This rotation has been found valuable for the suppression of daisies and other perennial weeds.

First year—hoed crop.—About one-half (15 tons) of the manure for this rotation is applied in the spring and well worked into the soil for the growing of this hoed crop. This crop bears 40 per cent of the total cost of the manure applied.

Second year—grain.—Huron wheat has been used as the grain crop for several years. The area is also seeded out to grasses with 6 pounds red clover, 4 pounds alfalfa, 2 pounds alsike and 12 pounds timothy per acre. Twenty-five per cent of the manure applied is charged to this crop.

Third year—clover hay.—If this rotation is to prove beneficial in the control of weeds, it is necessary that the clover crop be cut early to prevent the ripening and distribution of weed seeds. The land should be ploughed after the removal of the clover crop and topworked as often as necessary during the remainder of the season. The clover crop is charged with 20 per cent of the value of the manure applied.

Fourth year—grain.—Ten pounds red clover, 2 pounds of alsike and 6 pounds of timothy per acre are sown on this area with Banner oats as a nurse crop. Ten per cent of the value of manure is charged to the grain crop.

Fifth year—clover hay.—This crop must be cut early before weed seeds ripen and drop. Ten tons of manure are spread immediately after the removal of the clover crop and the land ploughed in preparation for roots. The clover crop bears five per cent of the cost of manure applied.

SUMMARY ROTATION "B"—FIVE YEARS' DURATION.

Crop	Yields		Value 1929	Cost of production	Profit or (−) loss
	17-year average	1929			
			$ cts.	$ cts.	$ cts.
Potatoes—Irish Cobbler.....bush.	*255·1	304·0	152 00	66 54	85 46
Wheat—Huron.....bush.	†25·1	17·0	30 60	26 88	5 60
Straw.....tons	1·243	0·9425	1 88	.....	
Clover.....tons	2·345	2·9875	32 86	20 51	12 35
Oats—Banner.....bush.	61·24	59·41	40 40	21 70	22 23
Straw.....tons	1·221	0·8825	3 53	.....	
Clover.....tons	1·537	1·671	18 38	13 72	4 66

*Eleven-year average. †16-year average.

ROTATION "C"

This rotation makes for an intensive system of farming and is suitable for live stock raising.

First year—hoed crop.—Potatoes are used as the inter-tilled crop on this rotation. These are charged with 40 per cent of the total cost of manure applied.

Second year—grain.—Wheat is used as a nurse crop, seeded down with 6 pounds red clover, 4 pounds alfalfa, 2 pounds alsike and 12 pounds timothy per acre. Thirty per cent of the manure applied is charged to the grain crop.

Third year—clover hay.—Charged with 20 per cent of manure.

Fourth year—timothy hay.—Ten tons of manure per acre are applied to this area after the removal of the hay crop, an additional ten tons per acre being applied the following spring in preparation for the potato crop. Ten per cent of the total manure applied is charged to the timothy crop.

SUMMARY ROTATION "C"—FOUR YEAR'S DURATION

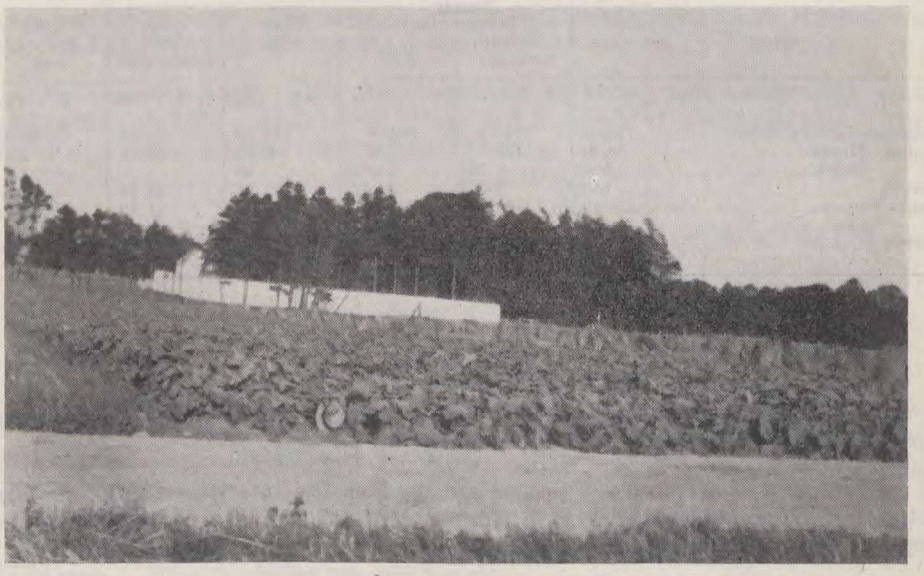
Crops	Yields		Value 1929	Cost of production	Profit or (−) loss
	Average	1929			
			$ cts.	$ cts.	$ cts.
Potatoes—Irish Cobbler.....bush.	(a) 287·6	381·0	190 50	62 07	128 43
Wheat—E.R. Fife.....bush.	(b) 28·1	20·47	36 84	26 93	12 85
Straw.....tons	1·747	1·469	2 94	.....	
Clover Hay.....tons	(c) 2·804	2·332	25 65	17 91	7 74
Timothy hay.....tons	(d) 2·924	2·3475	25 82	13 23	12 59

(a) 12-year average. (b) 15-year average. (c) 17-year average. (d) 16-year average.

ROTATION "G"

This is a seven-year rotation at one time fairly widely practised and referred to as the old "Scotch" or old "P.E.I." rotation. While the use of a long-cycle rotation is commonly deprecated, rotation "G" has given good returns at this station, and especially some good yields of hay.

First year—grain.—Oats is used as a nurse crop for a seeding of 6 pounds red clover, 4 pounds alfalfa, 2 pounds alsike and 12 pounds timothy per acre. This crop is charged with 8·57 per cent of the manure applied or $4.50 per acre.



Turnips on rotation "G" September 4, 1929. Early Red Fife in rotation "C" showing in the background.

Second year—hoed crop.—Manure is applied in the spring for a turnip crop at the rate of 20 tons per acre. The crop is charged with 27·14 per cent of the total manure applied or $14.25.

Third year—grain.—Six pounds red clover, 4 pounds alfalfa, 2 pounds alsike and 12 pounds timothy per acre are sown on this area with a nurse crop of wheat. Of the total manure applied, 16·43 per cent is charged against the wheat crop, or at $1.50 per ton this amounts to $8.63.

Fourth year—clover hay.—This crop is charged with 11·43 per cent of the total manure applied, or $6.

Fifth year—timothy hay.—Charged with 5·71 per cent of the total manure applied, or $3.

Immediately following the removal of this hay crop, a top dressing of manure is applied at the rate of 15 tons per acre.

Sixth year—timothy hay or pasture.—In ordinary farm practice this and the following year of the rotation would be used as pasture. This is impossible, however, under our present system, and the hay crops are cut and recorded. The sixth year is charged with 20 per cent of the total manure, or $10.50.

Seventh year—timothy hay, or pasture.—Charged with 10·71 per cent of the manure applied, or $5.62.

Manure being applied at two different times during such a long rotation, it is difficult to divide the charges on a percentage basis. The figures given above are sufficiently accurate for field work.

SUMMARY ROTATION "G"—SEVEN YEARS' DURATION.

Crop	Number of years grown	Yields		Value 1929	Cost of production	Profit or (−) loss 1929
		Average	1929			
				$ cts.	$ cts.	$ cts.
Oats—O.A.C. No. 72....bush.	13	53·3	55·88	38 00	33 43	7 47
Straw.....tons	.....	1·159	0·725	2 90	.....	.....
Turnips.....tons	10	17·65	20·0375	.....	56 55	.....
Wheat—Ch'town, No. 123.....bush.	8	24·4	18·13	32 64	37 68	−2 95
Straw.....tons	.....	1·526	1·044	2 09	.....	.....
Clover.....tons	17	2·754	2·7585	30 34	17 95	12 39
Timothy.....tons	16	2·918	2·4375	26 81	13 18	13 63
Timothy.....tons	16	3·581	2·9880	32 87	20 65	12 22
Timothy.....tons	16	3·000	2·3875	26 26	15 60	10 66

COST OF PRODUCTION OF FIELD CROPS

The following information is compiled from records kept on rotation work. In making use of these figures it must be borne in mind that fixed charges, conditions of plant growth, cost of horse and manual labour, soil types, state of

A heavy crop of mixed grain in rotation H-1.

soil fertility, climate, etc., are all modifying features that vary to a very considerable extent within comparatively short distances. For the reasons given it is well to use such figures with an appreciation of their limitations. The fixed charges and return values employed are listed on a previous page.

COST OF PRODUCING WHEAT AFTER HOED CROP

(Figures based on 1 acre of wheat grown on rotation "B", 1929)

Item	1929	Average 16 years
	$ cts.	$ cts.
Rent of land	3 00	3 00
Manure	9 38	9 38
Use of machinery	2 85	2 85
Seed, 1¼ bushels at $3	5 25	3 72
Twine	0 18	0 38
Manual labour at 25 cents per hour	4 14	4 20
Horse labour at 10 cents per hour	2 08	1 96
Total cost per acre	26 88	25 49
Yield per acre—grain ..... bush.	17·0	25·1
Yield per acre—straw ..... tons	0·9425	1·243
Value per acre—grain ..... $	30 60	45 18
Value per acre—straw ..... $	1 88	2 49
Total value ..... $	32 48	47 67
Profit or loss per acre ..... $	5 60	22 18
Cost per bushel (value of straw considered) ..... $	1 49	0 96

It will be noted that there is a considerable decrease in the yield of grain and straw this season, when compared with the figures over a 16-year period. It is obvious that any notable difference in yield is one of the main factors governing cost of production per unit.

COST OF PRODUCING CLOVER HAY AFTER WHEAT

(Figures based on one acre, rotation "C", year 1929)

Item	1929	Average 17 years
	$ cts.	$ cts.
Rent of land	3 00	3 00
Manure	6 00	6 00
Use of machinery	2 85	2 85
Grass and clover seed at cost	3 15	2 76
Manual labour at 25 cents per hour	2 22	2 45
Horse labour at 10 cents per hour	0 69	0 61
Total cost per acre	17 91	17 67
Yield per acre ..... tons	2·332	2·804
Value per acre ..... $	25 65	30 84
Profit per acre ..... $	7 74	13 17
Cost per ton ..... $	7 68	6 30

Here again a decrease in yield has increased the cost of production per unit.

COST OF PRODUCING OATS AFTER HOED CROP

(Figures based on one acre, rotation "A" for the year 1929)

Item	1929	Average 18-years
	$ cts.	$ cts.
Rent of land	3 00	3 00
Manure	9 38	9 38
Use of machinery	2 85	2 85
Seed, 2¾ bushels at $1.50 per bushel	4 12	2 90
Twine	0 42	0 41
Manual labour at 25 cents per hour	3 44	4 61
Horse labour at 10 cents per hour	2 02	2 34
Total cost per acre	25 23	25 49
Yield per acre—grain ..bush.	65·0	68·86
Yield per acre—straw ..tons	1·048	1·469
Value per acre—grain $	44 20	46 82
Value per acre—straw $	4 19	5 88
Total value $	48 39	52 70
Profit per acre $	23 16	27 21
Cost per bushel—(value of straw considered) ..cts.	35·4	32·9

A decrease of about four bushels of grain and four hundred pounds per acre of straw has increased the cost of production by two and one-half cents per bushel.

COST OF PRODUCING MANGELS AFTER BARLEY

(Figures based on one acre, rotation "A" for the year 1929)

Item	1929	Average 17 years
	$ cts.	$ cts.
Rent of land	3 00	3 00
Manure	15 00	15 00
Use of machinery	2 85	2 85
Clover seed (sown with preceding crop as green manure)	2 58	3 27
Seed, 7 pounds at 50 cts. per pound	3 50	4 20
Manual labour at 25 cts. per hour	26 83	41 85
Horse labour at 10 cents per hour	5 62	5 99
Total cost per acre	59 38	76 16
Yield per acre ..tons	5·84	18·96
Cost of producing one ton $	10 17	4 02
Cost of producing one bushel ..cts.	25·4	10·0

Here we see in almost an exaggerated form the effect of decrease in yield on the cost of production per unit. This crop of mangels was affected while the plants were still in the seedling stage by a foot-rot similar in appearance to the "Damping-off" disease found in hot-bed and green-house work. The stand was very greatly reduced, but as the season was late, it was decided not to replant to improve this. The resultant crop, as may be noted above, was reduced to only about 30 per cent of the average yield over a 17-year period, and the cost per unit was increased enormously.

COST OF PRODUCING TURNIPS AFTER OATS

(Figures based on one acre, rotation "G" for the year 1929)

Item		1929	Average 10 years
		$ cts.	$ cts.
Rent of land		3 00	3 00
Share of manure	$ 14 25	19 37	14 76
*Share of chemical fertilizers	5 12		
Use of machinery		2 85	2 85
Clover seed (sown with preceding crop for green manure)		3 30	3 51
Seed, at 60 cents per pound		2 25	3 09
Manual labour at 25 cents per hour		22 82	33 84
Horse labour at 10 cents per hour		6 26	7 24
Total cost per acre		59 85	68 29
Yield per acre	tons	20·038	17 65
Cost of producing one ton	$	2 99	3 87
Cost of producing one bushel	cts.	7·44	9·67

*This is the first year in which chemicals have been used.

A two and one-half tons per acre increase reduced the cost of production per unit by $1.05 per ton.

COST OF PRODUCING POTATOES AFTER SOD

(Figures based on one acre. rotation "C" for the year 1929)

Item		1929	Average 11 years
		$ cts.	$ cts
Rent of land		3 00	3 00
Share of manure	$ 12 00	17 96	12 54
*Share of chemical fertilizers	5 96		
Use of machinery		2 85	2 85
Seed		3 07	18 60
Spray material at cost		3 46	5 76
Manual labour at 25 cents per hour		23 57	21 35
Horse labour at 10 cents per hour		8 16	8 81
Total cost per acre		62 07	72 91
Yield per acre	bush.	381·0	287·6
Cost of producing one bushel, field run	cts.	16·3	25·4

*This is the first year in which chemical fertilizers have been used.

A heavy increase in production, possibly due to an application of chemicals, aided in reducing the cost of these potatoes. It must also be noted that the exceedingly low cost of seed in the spring of 1929 also helped materially to increase the profit from this area.

The following table gives, in readily available form, figures showing the cost of production of various crops on the different rotations over the past ten years. An outline of the rotations mentioned is given in the preceding pages, to which one should refer when studying this table.

SUMMARY COST OF PRODUCTION OF VARIOUS CROPS

(Figures covering 10-year period (1920-29) on rotations A, B, C and G)

Crop	Rotation and duration in years			
	"A", 5 years	"B", 5 years	"C", 4 years	"G", 7 years
Oats—cents per bush	35·7	37·9	.....	50·8
Wheat—$ per bush	.....	1 20	1 09	1 26
Barley—cents per bush	55·4	.....	.....	.....
Potatoes—cents per bush	.....	33·9	25·9	.....
Turnips—$ per ton	.....	.....	.....	4 31
Mangels—$ per ton	4 92	.....	.....	.....
Clover hay—$ per ton	9 48	*9 93	7 43	8 08
Timothy hay—$ per ton	6 60	.....	5 41	†5 94

*Average of 3rd and 5th years of rotation.
†Average of 5th, 6th and 7th years of rotation.

Average yields per acre for the same rotations, over the same period of years, are given in the following table:—

SUMMARY OF PRODUCTION OF VARIOUS CROPS

(Figures covering 10-year period (1920-29) on rotations A, B, C and G)

Crop		Rotation and duration of years			
		"A", 5 years	"B", 5 years	"C", 4 years	"G", 7 years
Oats	bush.	65·2	58·0	.....	55·3
Wheat	bush.	.....	24·4	26·5	26·3
Barley	bush.	36·6	.....	.....	.....
Potatoes	bush.	.....	253·4	299·3	.....
Turnips	tons	.....	.....	.....	17·635
Mangels	tons	17·049	.....	.....	.....
Clover	tons	2·17	*2·06	2·72	2·40
Timothy	tons	2·28	.....	2·82	†3·23

*Average of 3rd and 5th years of rotation.
†Average of 5th, 6th and 7th years of rotation.

From a study of the two preceding tables it will be noted that there is an intimate correlation between yield and cost of production.

CULTURAL EXPERIMENTS

Approximately four hundred plots, each 1-40th acre in size are employed at this station for the purpose of comparing various agricultural practices.

Records have been taken continuously since 1916.

The soil is rather fine in texture, and would class as a "fine sandy-clay loam". There is a certain tendency to heaviness, and the entire area is tile-drained to relieve this condition.

RATES OF SEEDING CLOVER AND TIMOTHY

Using 10 pounds of timothy per acre as a base, seedings of at least 8 pounds of red clover and 1 or 2 pounds of alsike per acre have, almost consistently, given the highest yields over the period mentioned.

METHODS OF APPLYING BARNYARD MANURE

Lacking a common basis of comparison, it is very difficult to interpret the results of this experiment. With potatoes at high prices, any system which tends to increase this crop will naturally show good returns. Half the amount of manure applied for the potato crop and the balance applied as a top dressing after the removal of the clover or grain crop has also proven fairly satisfactory.

Four different methods of applying the entire amount of manure to the potato crop have shown little difference in point of yield.

METHODS OF AFTER-HARVEST CULTIVATION OF ROOT LAND FOR GRAIN

From data so far collected there would seem to be nothing gained by ploughing root land in the autumn in preparation for a spring-sown grain crop. No increase in yield could be noted in land ploughed or ribbed over that not so treated.

AUTUMN TREATMENT OF SOD LAND IN PREPARATION FOR GRAIN

If ploughing of sod is done in late summer or early autumn, some slight gain in yield is noted from topworking land so ploughed. If, however, sod is not ploughed until late autumn, no beneficial results follow topworking. In all cases, the autumn ploughing of sod land for grain proved more satisfactory than spring ploughing, both from a standpoint of yield and uniformity of crop.

EFFECT OF VARIETY OF NURSE CROP ON YIELDS OF HAY

Wheat and barley have been found to be satisfactory as a nurse crop for red clover, alsike and timothy. Oats also has proven satisfactory, but mixtures of oats, peas and vetches were found to smother out the young seedling grass and clover plants.

SEED BED PREPARATION

A thoroughly prepared seed bed for the oat crop has given the best returns, both from the oat crop and from the clover crop following.

DRY MATTER DETERMINATIONS

For the past several years the absolute dry weight has been determined for all hay and forage crops. Yields of all hay crops are then adjusted to a uniform content of 12 per cent moisture, or 88 per cent dry matter, and are so given in this report.

COST OF OPERATING TRACTOR

Moline tractor, Model D, purchased February, 1920, horse-power 8-16.

MOLINE TRACTOR MODEL "D"

	$ cts.
Depreciation, 10 per cent of initial cost	148 50
Interest 6 per cent on ½ initial cost	44 55
Gasoline, 381½ gallons	95 37
Cylinder oil, 17 gallons	10 54
Grease, 5 pounds at 12 cents	0 60
Transmission grease, 1 gallon	0 70
Overhauling and repairs	5 90
Operator, 338·75 hours at 35 cents	118 56
Total	424 72

WORK PERFORMED

	Hours
Belt work	110·00
Ploughing (2-12 inch bottoms)	51·50
Springtooth harrowing (4 sections)	82·25
Double cutaway disk harrow	87·00
Stumping	8·00
Total	338·75
338·75 hours at 1·25 cents	$424 72

HORTICULTURE

The autumn of 1928 closed with a heavy snowfall late in November. The lawns and orchards cleared off early in December, and there was very little snow for the protection of the perennials and shrubs until late in February. A heavy blanket of snow lay on the ground during most of March, but disappeared quickly in April. There were many severe frosts when the ground was bare in April. Many arbor vitae trees were winter killed but only slight damage was noticed among other shrubs. The rhododendrons wintered safely. Seeding of vegetables was late. The growing season was favourable and good crops were harvested of almost all kinds. Corn did very well. Aphis was worse than usual due to several dry periods that gave them a chance to multiply rapidly. Early Irish Cobbler potatoes died during the hot weather of August with a fair yield of small potatoes. Later potatoes and Cobblers planted late gave excellent yields.

TREE FRUITS

APPLES

All trees in the variety orchard wintered well and made a fair growth during the past season. There was a large quantity of bloom and a good setting of medium sized fruit. The varieties Clair, Crusoe, Galetta, Gideon, Granby, Jonathan, Langford Beauty, Lubsk, Magnet, Ottawa, Pike Seedling, O-758, Roberval, Rouleau and Rupert, tested at this station for sixteen years and over, have been found distinctly inferior to many other varieties of the same season. They are, therefore, not recommended for planting in this province. A list of the varieties recommended will be found in the annual report for 1928.

PLUMS

In the spring of 1924 and of 1926, a number of two-year-old plum trees were planted in the variety orchard to replace varieties which had proven to be tender or short-lived. The following list gives the date of first fruit and the yield in pounds since the trees began to bear.

LIST OF PLUM TREES PLANTED IN 1924 AND 1926

Variety	Date planted	Date of first fruit	Yield in pounds		
			1927	1928	1929
Coe Golden Drop	1924	.....	0	0	0
Grand Duke	1924	1927	¼	21	30
"	1924	1927	¼	20	10½
McLaughlin	1926	.....	0	0	0
"	1926	1929	0	0	4
Monarch	1924	.....	0	0	0
"	1924	1929	0	0	8½
"	1924	1928	0	2½	1
"	1924	1928	0	12½	12½
Reine Claude	1926	1929	0	0	9
"	1924	1929	0	0	3½
"	1924	1929	0	0	27½
Shiro	1924	.....	0	0	0
"	1926	.....	0	0	0
Washington	1926	.....	0	0	0
"	1926	.....	0	0	0
"	1926	1929	0	0	¼
"	1924	1929	0	0	¼
"	1924	1929	0	0	3½
Yellow Egg	1924	1928	0	¼	15
"	1924	1928	0	15	18

SMALL FRUITS

STRAWBERRIES

Many plots in the strawberry plantation were severely injured by ice during the winter of 1929. Those which escaped winter injury were considerably damaged by the strawberry weevil. As a result the crop was exceptionally small, and no comparison of varieties could be made.

RASPBERRIES

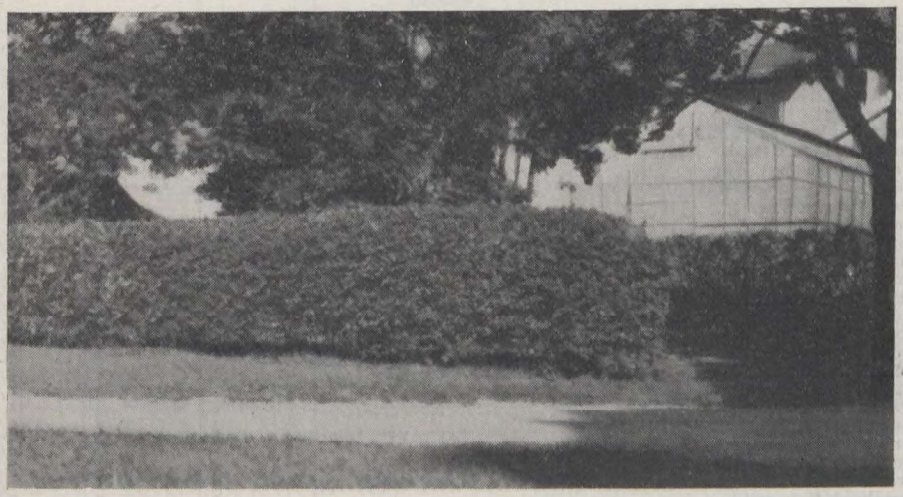
All varieties of raspberries under test showed injury from mosaic. Herbert is apparently the most resistant variety, and gave about one-third of a normal yield.

Schwedler's maple (*Acer platanoides, Schwedleri*), planted in 1910. In 1929 it was 31 feet high with a width of 22 feet. A beautiful and rapidly growing shade tree.

ORNAMENTALS

The annual report of this station for the year 1928 contains a list of various ornamentals recommended for planting in this province. Results of tests continued in 1929 serve only to confirm former recommendations. In the spring

of 1929 a collection of the newer varieties of irises and paeonies was received from Ottawa. They were planted in nursery rows and made good growth during the past season. When they have attained a size sufficient to make a showing, they will be planted in the perennial borders and tested for hardiness, longevity and ornamental value.



Buckthorn hedge (*Rhamnus frangula*), planted in 1912.

VEGETABLES

BEANS

Since 1919, forty-one varieties and strains of beans have been grown at Charlottetown to determine their value for use as green or snap beans. They were sown in drills 2½ feet apart, and each variety occupied 30 feet of drill. The plants were spaced approximately 2 inches apart in the row. The following table shows the number of years each variety was grown, the total number of trials, and the yield per acre in pounds of green pods.

BEANS—RESULTS OF TEST OF VARIETIES FROM 1919 TO 1929 INCLUSIVE

Variety and class	Number of years grown	Total number of trials	Average yield per acre
			lb.
Dwarf or Bush.			
Masterpiece (C.E.F.)	4	4	15,965
Hodson Long Pod Wax (C.E.F.)	5	5	15,329
Hidasta	5	5	13,732
Plentiful French (C.E.F.)	9	9	12,317
Wardwell Kidney Wax (C.E.F.)	7	7	11,633
Refugee	7	10	11,577
Davis White Wax (C.E.F)	6	6	11,402
Bountiful Green Bush	5	5	11,413
Wardwell Kidney Wax	6	6	10,935
Round Pod Kidney Wax	9	9	10,888
Davis White Wax	7	7	10,670
Curry Rustless Wax	6	6	10,512
Interloper Challenge Black Wax (C.E.F.)	8	8	10,272
Stringless Green Pod	11	15	9,608
Princess Artois	4	4	12,995
Stringless Green Pod (C.E.F.)	7	7	9,367
Round Pod Kidney Wax (C.E.F.)	7	7	8,986
Masterpiece	3	3	15,778
Yellow Pod Bountiful	3	3	16,956
Pencil Pod Kidney Wax	3	3	14,182
Extra Early Valentine (C.E.F.)	3	3	12,674
Davis Kidney Wax	2	2	18,295
Refugee (C.E.F.)	2	2	17,489
Grenells Rustless	2	2	13,145
Improved Golden Wax	2	2	11,906
Pencil Pod	2	2	9,583
Fordhook Favourite	2	2	7,333
Pencil Pod Black Wax (C.E.F.)	2	2	6,389
Hodson Long Pod	2	2	5,808
V. I-3	1	1	13,358
Pencil Pod	1	1	12,783
Longport Wonder	1	1	10,019
Davis Kidney Wax	1	1	9,583
Jones White	1	1	8,131
Grant	1	1	7,840
Garden King	1	1	7,115
Keeney Rustless Kidney Wax	1	1	6,534
Grenells Rustless (C.E.F.)	1	1	4,646
Poll Beans			
Kentucky Wonder Wax	4	4	18,199
No. 1 Pole (C.E.F.)	3	3	15,528
Golden Cluster	1	1	13,358

For home use, home canning and local market, Round Pod Kidney Wax is recommended. While not the earliest, it is in the early class; and produces a uniformly good yield of round, fleshy, brittle, waxy yellow, well flavoured pods that remain stringless over a long period. Its season may be lengthened by making three sowings at intervals of two weeks. Hodson Long Pod has proven much superior in yield and in resistance to anthracnose, but develops strings soon after becoming fit for use.

In green pod varieties for home use, Stringless Green Pod is recommended. It has proven to be an early variety, producing round pods of uniform size and high quality, which remain stringless for some time after they have reached their full size. Other varieties have excelled Stringless Green Pod in point of yield and freedom from anthracnose, but each has proven inferior in other important qualities.

Kentucky Wonder Wax is a high yielding early variety of pole bean, but develops strings early. Golden Cluster, another pole variety, was grown here for the first time in 1929. Though later than Kentucky Wonder Wax, its pods were attractive in appearance, free from strings and of exceptionally high quality and flavour.

BEETS

Variety Test.—Five varieties were sown on May 29, 1929. Yields are reported in bunches of five marketable roots harvested from one row 30 feet long and 30 inches wide, and also in bunches per acre.

BEETS—RESULTS OF TEST OF VARIETIES

Standing	Variety and source of seed	Date ready for use	Yield per plot	Yield per acre
			bunches	bunches
1	Flat Egyptian (James)	July 28	30	17,424
2	Detroit Dark Red (McDonald)	" 28	21	12,197
3	Half Long (Kelway)	" 28	19	11,035
4	Detroit Dark Red (O-8935)	" 28	19	11,035
5	Early Wonder (Burpee)	" 28	16	9,293

Early Wonder and Detroit Dark Red are recommended.

CABBAGE

During the fifteen-year period, 1915 to 1929, forty-four varieties and strains of cabbage were tested at this station to determine yield and other desirable qualities.

The following table shows the number of years each variety was grown, the total number of trials during the period and the average yield per acre.

VARIETIES AND STRAINS OF CABBAGE TESTED AT CHARLOTTETOWN FROM 1915 TO 1929 INCLUSIVE

Variety and class	Number of years grown	Total number of trials	Average yield per acre
			lb.
Early Varieties			
Copenhagen Market	11	18	40,297
Golden Acre	6	13	36,637
Early Jersey Wakefield	11	12	33,439
Paris Market	9	9	24,870
German Nofalt	2	2	43,270
Early Etamps	1	1	36,575
Charleston Wakefield	2	2	29,269
Second Early Varieties			
Succession	9	9	49,517
Marblehead Mammoth	7	7	45,585
Volga	7	7	43,507
Glory of Enkhuizen	4	4	45,738
Winnigstadt	5	5	32,255
All Seasons	4	4	30,857
All Head Early	1	1	39,204
Early Summer	1	1	36,066
Early Winter Varieties			
Flat Swedish	8	8	38,756
Fottlers Improved Brunswick	7	8	37,153
Danish Summer Ballhead	4	4	32,448
Midseason Market	2	2	62,551
Kildonan	1	1	34,848
Brunswick Short Stem	1	1	72,310
Dala	1	1	38,551
Flat Dutch	1	1	37,462
Late Winter Varieties			
Danish Roundhead	9	10	60,266
Danish Ballhead	8	9	55,898
Extra Amager Danish Ballhead (C.E.F.)	6	7	55,256
Danish Ballhead, Short Stem Strain	3	4	53,441
Danish Ballhead, Solid Emperor Strain	3	3	54,877
Danish Ballhead (C.E.F.)	2	2	65,340
Improved Amager Danish Roundhead	2	3	28,459
Extra Amager Danish Roundhead	3	3	22,845
Extra Amager Danish Ballhead	3	3	17,738
Danish Hollander	1	1	80,150
Autumn King	1	1	36,590
Red Varieties			
Haco	5	5	47,600
Red Dutch	3	4	48,507
Delicatesse, New Danish	4	4	31,097
Delicatesse (C.E.F.)	2	2	28,097
Danish Red Stonehead	1	1	30,492
Savoy Varieties			
Chester Savoy	7	7	39,224
Improved American Savoy	1	1	49,658
Perfection Savoy	1	1	36,590
Best of All Savoy	2	2	27,962
Keniver Globe Savoy	1	1	28,220

Where earliness is an important factor, Golden Acre is recommended; at this station it has proven to be about a week earlier than Early Jersey Wakefield. The heads are round, firm, of good quality and free from heavy midribs. It produces few outer leaves and therefore is suitable for close planting. Copenhagen Market is about ten days later than Golden Acre, but has given a considerably higher yield. It produces a very hard, round head of good quality,

has a short stem with few outer leaves, and is a sure header. It is highly recommended where extreme earliness is not important.

In second early, or main crop varieties, when yield and quality are considered, Succession and Glory of Enkhuizen are recommended in the order named. Danish Roundhead and Danish Ballhead are outstanding late varieties and have given a uniformly high yield of round, solid, crisp heads, that keep well throughout the winter. They are recommended in the order named.

Haco and Red Dutch have proven to be desirable red varieties.

Chester Savoy has given a uniformly high yield. The heads are of good quality and flavour.

The cabbage worm, the larva of a white butterfly, may be controlled by spraying the plants with arsenate of lime mixed with water at the rate of two pounds dry arsenate of lime to forty gallons of water. When it is inconvenient to spray, the poison may be applied dry. Mix one pound arsenate of lime with ten pounds air-slaked lime, and shake it over the plants early in the morning or late in the evening.

CARROTS—RESULTS OF TEST OF VARIETIES

Standing	Variety and source of seed	Yield per plot	Yield per acre
		bunches	bunches
1	Chantenay (McDonald)	14	8,131
2	Chantenay (O-285A)	13	7,550
3	Improved Danvers (D. & F.)	12	6,970

Different Dates of Seeding.—Five seedings were made at ten-day intervals starting on June 8, 1929. The variety Chantenay was used for all seedings. Yields are reported in bunches of five marketable roots.

CARROTS—RESULTS OF DATES OF SEEDING

Date of seeding	Early harvesting			Late harvesting		
	Marketable	Unmarketable	Total	Marketable	Unmarketable	Total
	lb.	lb.	lb.	lb.	lb.	lb.
June 8	10,454	3,485	13,939	12,778	4,646	17,424
" 18	15,101	8,131	23,232	6,970	4,646	11,616
" 28	13,939	8,131	22,070	16,262	8,131	24,393
July 8	8,131	4,646	12,777	12,778	6,970	19,748
" 18	6,970	2,323	9,293	3,485	10,454	13,939

(Sixth seeding did not mature.)

CAULIFLOWER

The varieties Early Dwarf Erfurt and Early Snowball were planted this season. While there was no significant difference in the weight of heads produced, Early Snowball was superior in quality, and over a period of 6 years has given a slightly higher yield.

CELERY

Test of Varieties.—Four varieties were planted in the hotbeds on April 23, transplanted into flats on May 31, and planted out in the open on July 9, 1929. Yields are reported in pounds in the following table:

CELERY—RESULTS OF TEST OF VARIETIES

Standing	Variety and source of seed	Average weight of five heads	Yield per acre
		lb.	lb.
1	Golden Self Blanching (McDonald)	6	17,424
2	Giant Pascal (Graham)	6	17,424
3	Emperor (Schell)	6	17,424
4	Golden Self Blanching (C.E.F.)	4	11,616

Golden Self Blanching (early) and Giant Pascal (late) are recommended.

CITRON

The varieties Red Seeded and Colorado were sown this year. Colorado gave a larger yield than Red Seeded and was also superior in quality.

CORN

Test of Varieties.—Seven varieties of sweet corn were sown on June 14, 1929. Each plot consisted of two rows 30 feet long and 3 feet apart. The plants were thinned so as to stand 8 inches apart in the row. The following table gives yields in number of marketable ears per plot and also per acre:

SWEET CORN—RESULTS OF TEST OF VARIETIES

Variety and source of seed	Ready for use and length of season	Yield per plot	Yield per acre	Average yield per acre, three years
		ears	ears	ears
Golden Bantam (McDonald)	Sept. 16–Oct. 4...	65	15,730	21,135
Pickaninny (C.E.F.)	Sept. 2–Sept. 16...	37	8,954	20,812
Golden Bantam (Moore)	Sept. 10–Sept. 26...	58	14,036	20,731
Early Malcolm (C.E.F.)	Sept. 16–Oct. 4...	46	11,132	20,247
Banting (C.E.F.)	Sept. 2–Sept. 16...	49	11,858	18,553
Mammoth White Cory (Graham)	Sept. 10–Sept. 28...	66	15,972	18,150
Sixty Day Golden (Child)	Sept. 2–Sept. 16...	34	8,228	17,989

Golden Bantam has been grown at this station for eighteen years. It has proven to be hardy and a prolific yielder. The ears are from four to six inches long, plump and closely set, with broad, deep creamy yellow kernels of exceptional quality and flavour. This variety is highly recommended for home use.

Pickaninny has been tested for ten years. It is a very early, hardy variety and has given a good yield. The ears average about four inches in length, and are purplish-black when mature, but are white and pale purple when fit for use as green corn. The kernels are plump, tender, sweet and well flavoured. It is recommended as an early corn for home use.

Banting has been grown for five years. It is about twelve days earlier than Golden Bantam, and almost as early as Pickaninny. The ears are from four to five inches long, well set with plump, yellow kernels of good quality and flavour. It is a promising variety for early use.

EGG PLANT

One variety only, Extra Early Dwarf, was sown in the hotbed on April 23, transplanted into flats on May 30, and planted in the open on July 6, 1929. The fruits produced this year were of good size and quality.

LETTUCE

Of the five varieties tested this year Grand Rapids proved to be the best leaf lettuce; and New York the best of the head types.

ONIONS

Test of Varieties.—Seven varieties were sown on May 27. Each variety occupied 30 feet of row and rows were spaced 15 inches apart. The poor germination of the seed of some varieties caused a thin stand. Onion maggot, though present, did not do any serious damage. There was a large percentage of thick-necks this year; and these are not included in the yields given in the following table:

ONIONS—RESULTS OF TEST OF VARIETIES

Standing	Variety and source of seed	Per cent marketable	Yield in 1929	
			Per plot	Per acre
		%	lb.	lb.
1	Large Red Wethersfield (Graham)	42·86	12½	14,229
2	Selected Red Wethersfield (McDonald)	41·67	12	13,939
3	Flat Red (Graham)	52·63	9½	10,745
4	Yellow Globe Danvers (Graham)	36·00	12½	14,520
5	Southport Yellow Globe (McKenzie)	32·00	12½	14,520
6	Large Yellow Prizetaker (Graham)	20·00	10	11,616
7	Southport Red Globe (S.B.)	28·57	7	8,131

Flat Red is the most reliable variety for the home garden.

PARSLEY

Two varieties were sown. Both Triple Curled and Moss Curled gave good results.

PEAS

Test of Varieties.—Sixteen varieties of peas were sown on May 18, 1929. Each variety occupied 30 feet of row, rows were three feet apart and plants were spaced one inch apart. Wire netting was used for supporting the vines. The yields given in the following table are recorded in pounds of marketable pods.

GARDEN PEAS—RESULTS OF TEST OF VARIETIES

Standing	Variety and source of seed	Date ready for use	Yield per plot	Yield per acre
			lb.	lb.
1	Badger (C.E.F.)	Aug. 1	40·3	19,481
2	Lincoln (Invermere)	July 31	36·3	17,545
3	No. 42 (Invermere)	July 29	33·0	15,972
4	No. 6 (Invermere)	July 25	30·8	14,883
5	Director (Invermere)	July 25	28·3	13,673
6	*Daisy (Patmore)	Aug. 1	24·8	11,979
7	Gregory Surprise x Early Wonder (C.E.F.)	July 25	24·3	11,737
8	Bruce (Invermere)	Aug. 1	23·3	11,253
9	Phenomenon (Sutton)	Aug. 1	21·3	10,285
10	Little Marvel (Rennie)	July 25	21·0	10,164
11	Thomas Laxton (McDonald)	July 25	17·5	8,470
12	Kootenay (Invermere)	Aug. 1	17·5	8,470
13	Gradus x English Wonder (C.E.F.)	July 25	15·3	7,881
14	Horal (C.E.F.)	Aug. 1	15·0	7,260
15	English Wonder x Gradus (C.E.F.)	July 25	13·8	6,655
16	*Quite Content (Vaughan)	July 31	10·3	4,961

*Poor germination.

The leading 6 varieties listed in the foregoing table have been tested for only a short period, but have given a high yield of peas of good quality, and will probably prove superior to many of the older varieties. At present no definite conclusions can be drawn.

PEPPERS

Harris Earliest, the only variety sown, gave a yield of 10 pounds per plot, or 5,800 pounds per acre.

PUMPKINS

Test of Varieties.—For a number of years Connecticut Field has proven to be a high yielder, but lacks the quality of the sugar varieties. Yields for 1929 are given below:—

PUMPKINS—RESULTS OF TEST OF VARIETIES

Standing	Variety and source of seed	Yield from three hills 9 by 9 feet	Yield per acre
			lb.
1	Connecticut Field (McDonald)	310	55,552
2	Small Sugar (Graham)	160	28,672
3	Sweet or Sugar (O-11015)	120	21,504

RADISHES

Saxa and XXX Scarlet Oval were the best of the three varieties tested this season.

SQUASH

Five varieties and strains were seeded in hills 9 feet by 9 feet on May 20, 1929. The varieties Hubbard and Delicious are recommended.

SWISS CHARD

The variety Fordhook was seeded on May 31, 1929, was ready for use on July 8, and gave an exceptionally large crop of excellent quality throughout the season until killed by frost in November. Swiss Chard is one of the most easily grown of all vegetables, and provides a supply of delicious greens throughout the summer. It should be included in every list of vegetables for the home garden.

TOMATOES

Eight varieties of tomatoes were tested in 1929. Herald, Viking and Alacrity are recommended for the production of ripe tomatoes.

CEREALS

THE SEASON

The heavy snow falls of February and March soaked in when they melted in April. This, with the unusual rainfall of May, 5·6 inches, filled the soil with an abundance of moisture that even the long dry periods in June and July did not exhaust. Seeding was greatly delayed, the first grain being sown on May 18. Cereals germinated rapidly, and made splendid growth, developing with a wonderfully strong colour. Harvest conditions in August and September were favourable and yields were good, except that a few fields of wheat did not fill nearly so well as their appearance would indicate.

THE TESTING OF VARIETIES AND STRAINS

At this station, four types of plots are used in the study and testing of varieties and strains of cereals.

HEAD-ROW PLOTS.—These are 36 inches long, with the seeds spaced uniformly at 2 inches apart in the row, all of the seed used being taken from a single ear or head.

SMALL INCREASE PLOTS.—Following a severe culling in the head-rows, the surviving material is transferred to small increase plots. These plots consist of from three to ten rows, each 36 inches long, the seed being spaced uniformly at 2 inches in the row. An opportunity is here given to make a further rigorous selection, as well as an opportunity to multiply a fair quantity of seed from such selections as are considered to be worth propagating.

ROD-ROW PLOTS.—All standard varieties, as well as new selections and hybrid material, are tested for yield in rod-row plots. The type of plot used at Charlottetown consists of 5 drills each 18½ feet long and 7 inches apart. At harvest time, or shortly before, the plots are trimmed to exactly 16½ feet, or one rod, long, and the two outer rows are discarded. This, to a very considerable extent, eliminates border effect.

Each variety or strain is planted not less than four times, and in some instances where comparisons are desired in the shortest possible time, or when determining the relative yielding ability of close competitors, as many as eight plantings are made.

The several plantings are distributed over the area devoted to cereal work so that differences due to variation in soil fertility may be overcome. A check plot is sown every fifth plot which serves to measure the yielding value of varieties under test. The yields reported herein are those obtained from rod-row plots.

ONE-SIXTIETH-ACRE PLOTS.—These are planted in duplicate, and are used for testing leading and important varieties. In addition they offer opportunity for studying varieties under conditions approximating those found in the field. They permit also, of the production of larger quantities of seed where such is required.

Larger multiplying areas are devoted to the production of registered seed.

PRODUCTION OF NEW VARIETIES

For a period dating back to 1922, selections have been made from standard varieties, from naturally-occurring hybrids, and latterly from controlled hybrids, in the hope of obtaining sorts superior in one or several of the most desirable characters. A number of these have reached the rod-row tests for comparative yields, and have been superior to standard varieties in this respect. Others are very promising in the several characters being studied.

SPRING WHEAT

Twenty-one varieties were seeded June 7 and 8, 1929. In addition to these named varieties, sixteen selections and hybrids were tested under number. Several of these appear promising both from the standpoint of yield and other characters. All varieties of wheat were very low in yield this season.

SPRING WHEAT—RESULTS OF TEST OF VARIETIES

Variety or strain	Number of days to mature	Average length of straw	Strength of straw on scale of 10	Relative yield, check equals 100%	Actual yield per acre
		in.			lb.
Checks (Huron, Ott. No. 3)	94·8	40·6	10	100·0	764
Bluestem, 196–C	97·0	45·0	10	118·2	903
Huron, Cap Rouge	94·5	42·5	10	116·2	888
Major, Ottawa No. 522	91·3	41·3	10	110·3	843
White Russian	95·5	42·3	10	107·9	824
Huron, Ottawa No. 3	94·5	40·9	10	107·3	820
Crown, Ottawa No. 353	90·0	38·0	10	100·0	764
White Fife	96·5	42·8	10	98·7	754
Early Russian, Ottawa No. 40	93·8	41·8	10	97·6	746
Chelsea, Ottawa No. 10 (new seed)	92·7	40·0	10	94·6	723
Ruby, Ottawa No. 623	88·7	40·5	10	93·7	716
Early Red Fife, Ottawa No. 16	94·4	43·0	10	93·1	711
Chelsea, Ottawa No. 10 (old seed)	92·5	39·5	10	91·9	702
Marquis, Ottawa No. 15	94·0	40·0	10	91·8	701
Bishop, Ottawa No. 8	93·0	41·0	10	88·6	677
Charlottetown No. 123	94·8	43·3	10	88·6	677
Reward, Ottawa No. 928	85·7	37·0	10	84·3	644
Red Fife, Ottawa No. 17	96·0	41·5	10	76·3	583
Garnet, Ottawa No. 652	88·4	38·5	10	65·3	499
Master, Ottawa No. 520	88·7	33·5	10	65·2	498
Campbell's White Chaff	94·5	43·8	10	63·5	485
Aurore	90·5	39·3	10	57·6	440

AVERAGE YIELDS SPRING WHEAT, 1924–1929 INCLUSIVE

Variety or strain	Number of years grown	Average number days to mature	Average length straw	Average strength straw on scale of 10 points	Relative yield, checks equal 100%	Average actual yield per acre
			in.			lb.
Checks (Huron, Ottawa No. 3)	4	96·3	39·3	10·0	100·0	933
Early Russian, Ottawa No. 40	6	96·9	38·9	10·0	132·3	1,234
Charlottetown No. 123	6	99·4	40·2	10·0	128·8	1·202
White Russian	6	99·7	40·2	10·0	125·9	1,175
Chelsea, Ottawa No. 10 (old seed)	6	95·0	36·6	9·4	123·2	1,149
Huron, Ottawa No. 3	6	97·3	39·2	10·0	118·4	1,105
Ruby, Ottawa No. 623	6	92·0	37·6	9·9	118·0	1,101
Master, Ottawa No. 520	6	90·2	35·0	9·7	115·6	1,079
Huron, Cap Rouge	6	97·3	39·5	10·0	115·2	1,074
Campbell's White Chaff	6	100·2	40·2	10·0	114·9	1,072
Reward, Ottawa No. 928	6	91·6	36·2	10·0	112·4	1,049
Bishop, Ottawa No. 8	6	95·2	38·9	9·9	109·4	1,021
White Fife	5	101·3	39·3	10·0	109·0	1,017
Garnet, Ottawa No. 652	6	90·9	36·5	10·0	108·4	1,011
Major, Ottawa No. 522	6	95·0	38·8	10·0	106·9	997
Marquis, Ottawa No. 15	6	96·3	37·5	10·0	106·4	993
Aurore	5	94·5	37·5	9·8	106·0	989
Early Red Fife, Ottawa 16	6	98·3	40·1	10·0	102·3	954
Crown, Ottawa No. 353	5	94·6	36·0	9·9	101·0	942
Chelsea, Ottawa No. 10 (new seed)	5	94·9	36·3	9·2	99·5	928
Red Fife, Ottawa No. 17	6	99·3	38·2	10·0	97·0	905
Bluestem, No. 196–C	3	98·5	42·0	10·0	78·6	733

OATS—TEST OF VARIETIES

Thirty-six varieties and strains were planted June 11, 1929. The oats made good growth this season, and yields were satisfactory.

OATS—RESULT OF TEST OF VARIETIES

Variety or strain	Number of days to mature	Average length of straw	Strength of straw on scale of 10 points	Relative yield, checks equal 100%	Actual yield per acre
		in.			lb.
Checks—Banner Ottawa 49 (46 plots)	89·5	45·4	9·3	100·0	1,540
Banner McColm	90·0	48·3	9·3	113·7	1,751
Banner, Sask. 99	90·0	46·8	9·3	109·0	1,678
Danish Island	89·8	46·8	9·5	107·9	1,661
O.A.C. No. 144	89·5	48·5	9·3	107·3	1,652
Irish Victor	90·8	48·3	9·8	107·0	1,648
O.A.C. No. 72	90·0	49·8	9·8	105·7	1,628
Banner, Rennie	89·3	43·3	9·3	104·7	1,613
Banner, Cap Rouge	91·0	45·5	9·3	104·5	1,609
Banner, Dow	89·5	46·3	9·8	103·6	1,596
Lincoln	89·3	50·0	10·0	103·6	1,595
Banner Langille	89·8	49·5	8·3	101·2	1,559
Banner, U.B.C	90·5	44·3	9·3	101·2	1,558
Banner, Dixon	89·5	51·3	9·8	100·6	1,550
Banner, Waugh	91·0	44·3	9·0	100·6	1,549
Prolific, Ottawa No. 72	90·5	48·0	10·0	96·8	1,490
*Banner, Mac 4407	90·1	45·8	8·8	95·0	1,463
Abundance	87·5	45·3	8·8	94·7	1,459
Star	89·8	48·0	9·5	94·5	1,456
Banner, Sask. 144	91·0	49·5	9·3	94·2	1,451
Gopher	82·3	38·0	10·0	91·7	1,412
*Gold Rain	89·6	47·3	9·0	90·0	1,386
Mansholts III	89·5	45·3	8·8	89·9	1,385
Columbian, Ottawa No. 78	89·3	45·8	9·8	89·7	1,382
O.A.C. No. 3	79·3	42·0	8·0	89·7	1,382
Longfellow, Ottawa No. 478	84·3	48·7	9·0	89·4	1,376
*Banner, Ottawa No. 49	89·9	47·4	8·2	89·0	1,370
*Legacy, Ottawa No. 678	81·0	41·8	8·8	88·1	1,357
Leader B	89·0	32·5	7·7	86·5	1,332
Banner Griffin	90·0	48·0	8·3	85·5	1,316
*Victory	89·3	45·8	9·0	83·8	1,290
Old Island Black	88·3	44·5	8·5	80·1	1,233
*Daubeney	80·0	40·4	9·6	79·7	1,227
Leader A	81·0	42·8	8·0	76·9	1,185
*Alaska	78·3	45·0	9·0	65·3	1,005
†Laurel, Ottawa No. 477	86·8	45·0	10·0	64·0	986
†Liberty, Ottawa No. 486	81·6	45·8	9·0	55·3	851

†Hulless varieties. *Eight plantings, all others 4 only.

AVERAGE YIELDS OATS—CHARLOTTETOWN, 1924–1929 INCLUSIVE

Variety or strain	Number of years grown	Average number days to mature	Average length of straw	Average strength straw on scale of 10 points	Relative yield, checks equal 100%	Average actual yield per acre
			in.			lb.
Checks (Banner, Ottawa 49)	4	92·7	42·3	8·7	100·0	1,668
Banner, Cap Rouge	6	94·9	39·5	9·0	110·9	1,850
Banner, Rennie	5	94·2	47·3	8·7	108·3	1,807
Banner, Sask. 144	6	95·0	39·9	9·2	107·4	1,791
Lincoln	6	94·5	40·3	8·8	107·1	1,786
Danish Island	6	94·9	39·4	8·8	106·9	1,783
Irish Victor P	6	94·6	40·3	9·0	106·9	1,783
Banner Waugh	6	95·0	39·6	9·1	106·7	1,780
Banner, Sask. 99	6	94·6	39·3	9·3	105·6	1,761
O.A.C. No. 72	6	95·5	40·5	9·1	105·5	1,760
Abundance	6	92·2	38·5	9·1	104·9	1,749
Banner U.B.C	6	94·5	39·7	8·9	104·4	1,742
Banner, McColm	6	95·0	38·8	9·4	104·0	1,735
Banner, Dow	6	94·9	38·6	9·5	103·3	1,723
Columbian, Ottawa No. 78	6	94·6	38·2	8·9	103·1	1,720
Prolific, Ottawa No. 72	6	95·7	39·4	9·2	101·6	1,694
Banner, Langille	6	93·2	39·2	8·6	99·0	1,652
Banner, Dixon	6	94·9	42·6	9·4	98·6	1,644
Banner, Mac 4407	6	93·7	39·6	8·9	97·2	1,622
Victory	6	94·4	39·7	8·9	97·0	1,618
Mansholts III	6	95·0	37·0	9·1	96·1	1,603
Star	2	93·3	40·6	9·8	95·9	1,600
Banner, Griffin	6	93·4	35·8	8·6	95·9	1,599
Legacy, Ottawa No. 678	6	88·6	36·6	8·4	94·1	1,570
Longfellow, Ottawa No. 478	5	92·1	39·7	8·7	93·2	1,554
O.A.C. No. 3	5	90·2	37·7	8·3	92·2	1,538
Leader B	6	93·1	36·1	8·4	91·9	1,533
Gold Rain	6	92·4	39·7	8·7	90·1	1,503
Banner, Ottawa 49	6	93·1	39·6	8·7	87·5	1,459
Leader A	6	89·5	38·8	8·4	85·0	1,417
Gopher	1	82·5	38·0	10·0	84·7	1,412
Alaska	6	85·8	37·8	8·6	83·8	1,397
Old Island Black	2	91·7	43·4	9·2	82·6	1,377
O.A.C. No. 144	3	91·6	43·9	8·9	82·4	1,374
Daubeney	3	84·3	38·7	8·4	75·7	1,263
*Laurel, Ottawa No. 477	6	91·4	35·9	9·2	65·6	1,094
*Liberty, Ottawa No. 486	5	88·1	37·6	8·1	56·9	949

*Hulless varieties.

TEST OF STRAINS OF BANNER OATS

For several years, twelve different strains or selections of Banner oats have been under test for yield. The Cap Rouge selection has done exceptionally well in these tests. The following table is a summary of these tests giving the results for other factors as well as yield:—

TEST OF STRAINS OF BANNER OATS
Five year average—1925 to 1929 inclusive

Strain	Average number of days to mature	Average length of straw	Average strength straw on scale of 10 points	Relative yield, Banner No. 49 equals 100%	Average actual yield per acre
		in.			lb.
Ottawa No. 49	93·2	41·7	8·5	100·0	1,558
Cap Rouge	95·8	42·0	8·9	121·5	1,893
Sask. No. 144	95·9	42·4	9·1	118·2	1,841
Sask. No. 99	95·3	42·2	9·1	117·1	1,825
Waugh	95·9	41·9	9·0	117·0	1,823
McColm	95·7	41·1	9·3	115·7	1,802
U.B.C	95·5	42·0	8·8	114·9	1,790
Dow	95·6	40·6	9·4	113·1	1,762
Dixon	95·5	45·5	9·3	108·1	1,684
Langille	94·0	41·1	8·7	105·4	1,642
Griffin	94·2	39·3	8·6	100·5	1,566
Mac 4407	93·9	41·8	8·8	94·6	1,474

TEST OF VARIETIES OF OATS ON LARGER PLOTS

For many years a number of standard varieties have been tested on duplicate one-sixtieth-acre plots. Under this system of testing, Victory, a strong-growing, plump-seeded variety, has given an average yield per acre of 80 bushels and 24 pounds over a twenty-year period. Gold Rain, a yellow-grained variety, ripening a few days earlier than Victory, has averaged 77 bushels and 14 pounds, and Banner (Ott. No. 49) 76 bushels per acre over the same period of years. Alaska, a very early sort, has averaged 51 bushels and 18 pounds for 6 years, and Laurel, the best of the hulless sorts, has averaged 55 bushels and 17 pounds of hulled grain per acre over a five-year period. Allowing for hull, this yield is about equal to that of Gold Rain.

BARLEY—TEST OF VARIETIES

Twenty-three named varieties and strains were seeded in rod rows between June 4 and June 6, 1929. In addition, twenty-two selections were tested under number. Several of these were found to give very excellent yields, while a number were disappointing in this respect and will be discarded. No report for the present is made on these selections.

BARLEY—RESULT OF TEST OF VARIETIES

Variety or strain	Number of days to mature	Average length of straw	Strength of straw on scale of 10 points	Relative yield, check equals 100%	Actual yield per acre
		in.			lb.
Check (Charlottetown No. 80) (54 plots)	89·6	35·4	9·9	100·0	2,524
*Charlottetown No. 80	89·9	36·0	10·0	102·6	2,589
*Charlottetown No. 80 (reselection)	90·0	35·1	10·0	96·1	2,425
Velvet No. 447 (1)	84·3	41·3	9·0	94·8	2,394
Manchurian, Cap Rouge	84·0	41·3	8·3	93·3	2,355
Hannchen, Sask. No. 229	84·0	34·3	7·3	92·7	2,339
Manchurian, Ottawa No. 50	84·0	39·3	8·3	93·6	2,336
*Bearer, Ottawa No. 475	89·1	37·6	9·8	91·9	2,320
Michigan Black Barbless	84·3	28·5	10·0	91·2	2,303
French Chevalier	88·3	42·8	8·3	91·1	2,299
*O.A.C. No. 21	83·3	35·4	6·6	90·7	2,289
*Star	81·7	30·0	9·4	89·9	2,270
*Early Chevalier, Ottawa No. 51	82·1	40·1	6·9	87·0	2,195
*Chinese, Ottawa No. 60	81·1	38·8	8·0	84·7	2,137
*Horn	90·5	35·6	10·0	83·8	2,115
*Gold	88·3	33·6	9·6	82·5	2,083
Swedish Chevalier	.....	38·0	9·3	79·5	2,007
Guy Mayle (2)	82·8	35·0	10·0	76·5	1,932
Himalayan (2)	82·3	30·8	8·3	75·7	1,911
Duckbill, Ottawa No. 57	89·8	36·0	10·0	74·4	1,878
Duckbill, Mac 207	87·8	35·8	10·0	69·5	1,753
Sacramento	.....	29·3	10·0	54·2	1,369
Albert, Ottawa No. 54	75·8	36·0	10·0	50·8	1,281

*Eight plantings, all others, 4 plantings only. (1) Smooth awned. (2) Hulless.

AVERAGE YIELDS BARLEY AT CHARLOTTETOWN, 1924–1929 INCLUSIVE
(Check variety—Charlottetown No. 80=100%)

Variety or strain	Number of years grown	Average number days to mature	Average length of straw	Average strength straw on scale of 10 points	Relative yield, checks equal 100%	Average actual yield per acre
			in.			lb.
Checks (Charlottetown No. 80)	4	91·6	34·6	9·8	100·0	1,792
Charlottetown No. 80	6	92·1	34·6	9·8	112·6	2,018
O.A.C. No. 21	6	85·9	36·7	8·4	110·3	1,977
Manchurian, Cap Rouge	6	87·4	36·2	9·6	106·9	1,916
Charlottetown No. 80 (reselection)	3	92·0	35·9	9·8	106·5	1,909
Hannchen, Sask. 299	6	89·8	31·5	8·8	106·0	1,900
Velvet No. 447	4	87·1	35·1	9·7	103·7	1,858
Manchurian, Ottawa No. 50	6	88·2	36·6	9·7	102·7	1,840
Early Chevalier, Ottawa 51	6	85·4	38·0	8·1	100·8	1,807
Star	3	85·8	30·3	9·2	99·7	1,787
Bearer, Ottawa No. 475	6	92·4	35·4	9·7	97·9	1,755
Chinese, Ottawa No. 60	6	85·3	37·5	9·1	97·1	1,740
Horn	3	91·0	36·2	9·6	94·9	1,701
French Chevalier	6	92·9	39·0	9·7	94·4	1,691
Gold	6	91·0	31·6	9·3	93·6	1,673
Michigan Black Barbless	4	88·5	28·8	10·0	85·3	1,528
*Guy Mayle	6	84·8	28·8	8·6	79·6	1,426
*Himalayan	6	84·1	29·0	9·0	75·8	1,359
Swedish Chevalier	3	92·3	35·4	9·5	73·5	1,317
Duckbill, Mac No. 207	6	92·4	33·0	9·9	72·4	1,298
Duckbill, Ottawa No. 57	6	94·6	33·4	10·0	67·3	1,206
Albert, Ottawa No. 54	6	81·8	31·6	8·9	63·4	1,137
Sacramento	2	89·3	29·3	10·0	53·2	953

*Hulless variety.

FORAGE CROPS

The snow went quickly in April. Frequent heavy rains in May delayed seeding, but germination and growth were rapid. There were periods of about a fortnight in June and August that were dry and hot. Corn, sunflowers and all roots had very favourable weather late in the summer for growth. They matured well and were saved without injury from frost. A root-rot greatly injured the stand of mangels in some fields. Aphids were numerous on turnips and mangels in some localities.

CORN

Eight varieties were planted on June 21, 1929. The season was late, and the land not in a state of highest fertility, and for these reasons the crop was below average. Three plantings were made of each variety, and the figures in the following table are an average from the three plantings:—

CORN FOR ENSILAGE—RESULT OF TEST OF VARIETIES

Standing	Variety or strain	Height	State of maturity	Green yield per acre	Per cent dry matter	Dry matter per acre
		in.		lb.	%	lb.
1	Leaming No. 9 (Duke)	72	Watery	23,755	18·18	4,319
2	Longfellow (Duke)	64	Watery	23,174	17·33	4,016
3	Bailey (Duke)	78	Watery	23,058	17·36	4,003
4	Golden Glow (Duke)	72	Watery	23,464	14·70	3,450
5	Wisc. No. 7 x Twitchell Pride (Summerland).	58	Watery	23,116	14·35	3,318
6	Quebec No. 28 (McD. Col.)	52	Late dough	15,798	18·85	2,978
7	Dakota White Flint (Will)	42	Glazed	12,836	20·55	2,636
8	North Western Dent	44	Late dough	10,687	22·72	2,428

SUNFLOWERS

One variety only was grown. This was Mammoth Russian (McDonald) seeded June 21, 1930. The yield in pounds per acre was 23,408 with a dry matter content of 16·99 per cent, giving 3,977 pounds of dry matter per acre.

MANGELS

Eleven varieties were seeded in triplicate on June 15, 1929. Yields were above those for the preceding year. Results in the following table are a mean from three plots.

MANGELS—RESULTS OF TEST OF VARIETIES

Standing	Variety and source of seed	Yield in pounds per acre	Per cent dry matter	Dry matter per acre
		lb.	%	lb.
1	Elvetham Mammoth (Hartmann)	62,920	15·36	9,663
2	Yellow Intermediate (C.E.F.)	64,856	13·20	8,564
3	Giant White Half Sugar (Ewing)	65,824	12·79	8,420
4	Stryno Barres (Hartmann)	65,824	11·77	7,749
5	Long Red Mammoth (Ewing)	56,144	13·60	7,635
6	Danish Sludstrup (McDonald)	56,144	12·99	7,294
7	Red Globe (Dupuy and Ferguson)	45,980	14·31	6,581
8	White Red Top Half Sugar (Hartmann)	47,916	13·58	6,505
9	Giant Yellow Intermediate (Ewing)	60,258	10·58	6,377
10	Eckendorfer Yellow (Hartmann)	53,724	11·70	6,286
11	Eckendorfer Red (Hartmann)	51,788	11·60	6,006

SUGAR BEETS

Three varieties were seeded June 15, 1929. In addition to field weight, per cent dry matter and total dry matter per acre there is reported the per cent of sugar and the co-efficient of purity as determined by the Dominion Chemist.

SUGAR BEETS—RESULTS OF TESTS OF VARIETIES

Standing	Variety	Per cent sugar in juice	Coefficient of purity	Field weight per acre	Per cent dry matter	Dry matter per acre
		per cent	per cent	lb.	per cent	lb.
1	Rabbethige & Gieske	18·24	85·78	24,420	24·31	5,936
2	Horning	18·49	85·72	21,780	24·55	5,347
3	Fredericksen	19·06	86·38	19,140	25·25	4,832

SWEDE TURNIPS—TEST OF VARIETIES

Twelve varieties were seeded June 17, 1929. All were in triplicate, and the yields of the following table are an average from three plots. Yields were not so high as in 1928.

SWEDE TURNIPS—TEST OF VARIETIES

Standing	Variety and source of seed	Field weight per acre	Per cent dry matter	Dry matter per acre
		lb.	per cent	lb.
1	Halls Westbury (McDonald)	47,960	8·94	4,290
2	Halls Westbury (Ewing)	43,120	9·69	4,180
3	Ditmars (McNutt)	41,712	9·81	4,092
4	Millpond (Carter)	42,768	9·54	4,081
5	Hazzards Improved (Rennie)	39,424	9·53	3,757
6	Bangholm (Ewing)	36,696	10·02	3,677
7	Champion (Sutton)	38,632	9·32	3,600
8	Bangholm Club Root Resistant (Nappan)	33,132	10·64	3,526
9	Kangaroo (Ewing)	36,960	9·49	3,507
10	Bangholm (Svaloff)	36,520	9·27	3,384
11	Invicta Bronze Top (Ewing)	36,784	9·06	3,333
12	Improved Yellow Swedish (Svaloff)	33,000	9·54	3,149

SOILS AND FERTILIZERS

MANURE VERSUS CHEMICAL FERTILIZERS FOR POTATOES

This experiment was started in 1923 and figures have been collected since that time. The experiment is conducted on a four-year rotation, potatoes, grain, clover, timothy, the fertilizers as outlined below being applied to the potato crop. Treatment number one is stable manure at the rate of 20 tons per acre. Treatment number two consists of chemicals at a rate equivalent to 1,000 pounds per acre of a 4-8-8 commercial mixture. Treatment number three is stable manure at the rate of 10 tons per acre, supplemented by chemicals equivalent to 500 pounds per acre of a 4-8-8 mixture. Treatment number four is a check to which nothing is applied.

MANURE VERSUS CHEMICAL FERTILIZERS ON POTATOES GROWN IN ROTATION

Treatment number	Treatment received per acre	Average total yield pounds per acre, 7 years: 1923-1929
1	Manure. 20 tons	10,280
2	No manure Nitrate soda—130 pounds Sulphate of ammonia—100 pounds Superphosphate—500 pounds Muriate of potash—160 pounds	8,005
3	Manure—10 tons Nitrate soda—65 pounds Sulphate of ammonia—50 pounds Superphosphate—250 pounds Muriate of potash—80 pounds	9,857
4	No manure—no chemicals	3,308

In addition to these, a second series of plots has been given the same treatment as outlined above, and potatoes have been grown each year since 1923. The following table gives the treatment and average yield on these plots:—

MANURE VS. CHEMICAL FERTILIZERS ON POTATOES GROWN CONTINUOUSLY

Treatment number	Treatment received per acre	Average yield in pounds per acre, 1923 to 1929 inclusive
1	Manure—20 tons	11,489
2	No manure Nitrate of soda—130 pounds Sulphate ammonia—100 pounds Superphosphate—500 pounds Muriate potash—160 pounds	7,101
3	Manure—10 tons Nitrate soda—65 pounds Sulphate ammonia—50 pounds Superphosphate—250 pounds Muriate potash—80 pounds	10,481
4	No manure—no chemicals	2,154

From a study of the two foregoing tables it would seem that potatoes may be planted each year in the same area with little decrease in yield. However, the percentage of small or unmarketable tubers is greater than where a rotation is followed, and disease is much more prevalent. This phase of the matter is being investigated.

STABLE MANURE VERSUS CHEMICAL FERTILIZERS FOR POTATOES

An experiment somewhat similar to the foregoing, but more comprehensive in scope, was started in 1927. In addition to studying the effect on yield of stable manure versus chemical fertilizers, alone and in combination, and a rotation versus a continuous cropping of potatoes on the same area, there is also provided an opportunity of comparing the relative merits of nitrate of soda and sulphate of ammonia in the growing of this crop.

Previous to the start of this experiment, samples of both surface and subsoil were taken from each plot and submitted to the Dominion Chemist for chemical and physical analyses. It is the intention to resample the plots later to learn if the various treatments in any way affect the chemical or physical composition of the soil.

In the section on which potatoes are grown in rotation a three-year rotation is followed, viz.: Potatoes, wheat, clover hay. Treatment is given for the potato crop. Following is an outline of the experiment:

POTATOES GROWN ON SAME LAND CONTINUOUSLY

Treatment No. 1—Check—no manure—no chemicals.
Treatment No. 2—Fifteen tons manure per acre.
Treatment No. 3—Two hundred and fifty-eight pounds nitrate soda, 500 pounds superphosphate and 160 pounds muriate of potash per acre.
Treatment No. 4—Two hundred pounds sulphate of ammonia, 500 pounds superphosphate and 160 pounds muriate of potash per acre.
Treatment No. 5—Seven and a half tons manure, 129 pounds nitrate of soda, 250 pounds superphosphate, 80 pounds muriate of potash per acre.
Treatment No. 6—Seven and a half tons manure, 100 pounds sulphate of ammonia, 250 pounds superphosphate, 80 pounds muriate of potash per acre.

POTATOES GROWN IN ROTATION (3-YEAR)

First year—Potatoes—to receive same treatment as above.
Second year—Wheat—seeded down with clover and timothy.
Third year—Hay.
The two tables following give the yields from each series:—

MANURE VERSUS CHEMICAL FERTILIZERS FOR POTATOES GROWN CONTINUOUSLY

Treatment number	Material applied and rate per acre					Plant food supplied by chemicals			Yield per acre						Average per cent of marketable to total crop
									Marketable		Unmarketable		Total		
	*Stable manure	Nitrate of soda (15½%)	Sulphate of ammonia (20%)	Superphosphate (16%)	Muriate of potash (50%)	N	P_2O_5	K_2O	1929	Average 3 years, 1927-29	1929	Average, 3 years, 1927-29	1929	Average, 3 years, 1927-29	
	tons	lb.	lb.	lb.	lb.	lb.	lb.	lb.	lb.	lb.	lb.	lb.	lb.	lb.	%
1	.....	.....	.....	.....	.....	.....	.....	.....	4,400	3,560	1,920	2,280	6,320	5,840	61·0
2	15	.....	.....	.....	.....	.....	.....	.....	10,640	10,213	1,320	2,040	11,960	12,253	83·4
3	.....	258	.....	500	160	40	80	80	7,920	7,413	1,560	2,907	9,480	10,320	71·8
4	.....	.....	200	500	160	40	80	80	6,560	6,360	2,240	1,547	8,880	7,907	80·4
5	7½	129	.....	250	80	20	40	40	9,680	9,413	2,600	3,093	12,280	12,506	75·3
6	7½	.....	100	250	80	20	40	40	5,160	7,987	1,520	1,693	6,680	9,680	82·5

* Composition not determined.

MANURE VERSUS CHEMICAL FERTILIZERS FOR POTATOES GROWN IN ROTATION

Treatment number	Material applied and rate per acre					Plant food supplied by chemicals			Yield per acre						Average per cent of marketable to total crop
									Marketable		Unmarketable		Total		
	*Stable manure	Nitrate of soda (15%)	Sulphate of ammonia (20%)	Superphosphate (16%)	Muriate of potash (50%)	N	P_2O_5	K_2O	1929	Average 3 years, 1927-29	1929	Average, 3 years, 1927-29	1929	Average, 3 years, 1927-29	
	tons	lb.	lb.	lb.	lb.	lb.	lb.	lb.	lb.	lb.	lb.	lb.	lb.	lb.	%
1	.....	.....	.....	.....	.....	.....	.....	.....	8,600	6,173	2,440	2,467	11,040	8,640	71·5
2	15	.....	.....	.....	.....	.....	.....	.....	13,040	11,480	2,040	1,667	15,080	13,147	87·3
3	.....	258	.....	500	160	40	80	80	13,000	11,440	1,480	2,280	14,480	13,720	83·4
4	.....	.....	200	500	160	40	80	80	11,120	10,053	1,760	1,373	12,880	11,426	88·0
5	7½	129	.....	250	80	20	40	40	12,160	11,867	1,600	2,480	13,760	14,347	82·7
6	7½	.....	100	250	80	20	40	40	11,440	11,707	2,600	1,773	14,040	13,480	88·8

* Composition not determined.

This experiment has been conducted for a period of only three years so that, as yet, conclusions are hardly warranted. It would appear, however, that though the use of nitrate of soda produces a greater total crop, sulphate of ammonia produces a higher percentage of marketable tubers.

Stable manure alone has produced large crops, and when used in smaller quantities, supplemented by light applications of chemicals, the yield has been very satisfactory.

It would also appear that yield cannot be maintained where potatoes are grown continuously under conditions as they obtain in this experiment.

In passing it might be stated that chemicals in the amounts as applied to treatments 3 and 4 are equivalent to 1,000 pounds of a 4-8-8 commercial fertilizer per acre, while the rates of application on plots 5 and 6 are equal to 500 pounds of a 4-8-8 mixture.

"NITROPHOSKA" FOR POTATOES

During the past several years many synthetic fertilizer products have been placed on the market. Many of these carry but one element of plant food, but latterly some few have been manufactured that carry two or three of the essential elements of plant food. "Nitrophoska" is such a produce, carrying nitrogen, phosphoric acid and potash in available form. Its greatest claim is its exceedingly concentrated form, the straight goods being equivalent to a 15-30-15 commercial fertilizer. Such concentration would of course greatly reduce transportation charges, and also the amount of handling required for the less concentrated forms of material. It will be noted that the 267 pounds of nitrophoska in treatment No. 1 are equal in plant food value to the 780 pounds of chemicals applied in treatment No. 2.

NITROPHOSKA EXPERIMENT

Treatment No.	Material applied and rate in pounds per acre				Plant food supplied by chemicals			Yield per acre			Per cent marketable
	Nitrophoska	Sulphate of ammonia	Superphosphate	Muriate of potash	N.	P_2O_5	K_2O	Mark.	Unmark.	Total	
1	267	.....	.....	.....	40	80	40	5,520	2,960	8,480	65·1
2	.....	200	500	80	40	80	40	7,093	2,507	9,600	73·9
3	.....	.....	.....	.....	.....	.....	.....	2,660	2,270	4,930	53·9
4	400	.....	.....	.....	60	120	60	5,920	2,720	8,640	68·5
5	.....	300	750	120	60	120	60	6,400	2,853	9,253	69·1

Each treatment was in triplicate, with eight check plots uniformly distributed over the area.

It will be noted from the foregoing that "nitrophoska" in this experiment did not produce yields equal to those from a mixture of sulphate of ammonia, superphosphate and muriate of potash. It will however, be necessary to conduct further work with this material before definite conclusions can be drawn.

FERTILIZER FORMULAE FOR POTATOES

This experiment was started in 1922 to test the value of different fertilizer mixtures applied at different rates, and also to test a new four-year rotation having two of the four years in potatoes as follows:

First year—Potatoes fertilized as per plan.

Second year—Wheat—seeded down.

Third year—Clover hay.

Fourth year—Potatoes—no fertilizer treatment.

The hope was that it might be possible, in the fourth year crop, to measure the residual effect of the chemicals applied to the potato crop four years previously. The crop year 1929 completed the second cycle of this rotation.

With reference to the treatment of checks it may be noted that the so called "permanent check" has received no treatment whatsoever for a great many years. Apart from this the entire area except the second check plot, received an application of shell mud during the autumn or early winter of 1917. The entire area, except the permanent check, received a coating of stable manure the same autumn.

FERTILIZER FORMULAE FOR POTATOES

Applications in 1922 and 1926, in pounds per acre				Equivalent to	Yield of potatoes per acre, 1929
Nitrate of soda	Sulphate of ammonia	Superphosphate	Muriate of potash		
				2,000 pounds of	lb.
390	300	750	240	6-6-6	8,340
325	250	750	240	5-6-6	8,180
260	200	750	240	4-6-6	8,400
195	150	750	240	3-6-6	7,540
325	250	1,000	240	5-8-6	8,140
260	200	1,000	240	4-8-6	8,340
195	150	1,000	240	3-8-6	8,300
260	200	1,000	400	4-8-10	8,740
260	200	1,000	320	4-8-8	9,040
260	200	1,000	160	4-8-4	6,780
				1,500 pounds of	
290	225	560	180	6-6-6	7,360
245	190	560	180	5-6-6	7,940
195	150	560	180	4-6-6	6,880
145	115	560	180	3-6-6	7,660
245	190	750	180	5-8-6	6,180
195	150	750	180	4-8-6	7,200
145	115	750	180	3-8-6	7,520
195	150	750	300	4-8-10	7,360
195	150	750	240	4-8-8	8,100
195	150	750	120	4-8-4	5,240
				1,000 pounds of	
195	150	375	120	6-6-6	5,440
165	125	375	120	5-6-6	5,340
130	100	375	120	4-6-6	6,720
100	75	375	120	3-6-6	5,780
165	125	500	120	5-8-6	6,980
130	100	500	120	4-8-6	7,060
100	75	500	120	3-8-6	4,800
130	100	500	200	4-8-10	5,320
130	100	500	160	4-8-8	6,420
130	100	500	80	4-8-4	4,440
A. Permanent check plot (no chemicals, no manure, no shell mud).....					5,920
B. Check—No chemicals or shell mud, but received manure autumn 1917.....					3,560
C. Check (average 13 plots), manure and shell mud autumn 1917, but no chemicals.....					5,326

The foregoing table indicates the treatment of each plot, together with the yield of potatoes for 1929. So that it may be possible to compare plot yields over a period of years, there is appended herewith a table giving the yield for each successive year of the experiment.

These data have been worked over by statistical methods, and there is considerable evidence to support the belief that, when applied in excess to this type of soil, muriate of potash and superphosphate affect the yields of potatoes grown four years after the original fertilizer application, and without further treatment.

YIELDS FOR EACH YEAR OF THE FERTILIZER FORMULAE EXPERIMENT

Fertilizer applied equivalent to	Crop and yield per acre							
	1922 *Pot.	1923 Wheat	1924 Clover	1925 †Pot.	1926 *Pot.	1927 Wheat	1928 Clover	1929 Pot†
	lb.	lb.	lb.	lb.	lb.	lb.	lb.	lb.
2,000 pounds								
6-6-6	21,080	1,400	4,501	7,960	9,540	1,120	4,452	8,340
5-6-6	19,280	1,490	4,664	7,220	14,270	950	4,160	8,180
4-6-6	20,100	1,210	4,119	7,140	8,260	1,050	3,558	8,400
3-6-6	18,820	1,130	4,225	7,460	11,300	990	3,582	7,540
5-8-6	20,760	1,180	4,336	8,520	12,540	970	3,286	8,140
4-8-6	20,360	1,160	4,226	8,560	12,520	1,080	3,525	8,340
3-8-6	22,900	960	4,620	7,660	11,700	980	3,541	8,300
4-8-10	26,920	1,170	4,753	9,520	12,420	1,120	4,093	8,740
4-8-8	21,680	1,130	4,808	8,060	13,540	880	4,272	9,040
4-8-4	18,940	1,180	3,655	7,360	10,340	940	4,034	6,780
1,500 pounds								
6-6-6	18,720	1,160	4,208	5,680	9,520	840	4,611	7,360
5-6-6	16,620	1,220	4,072	6,040	10,100	850	4,420	7,940
4-6-6	16,600	1,060	4,567	5,640	9,580	850	3,642	6,880
3-6-6	19,160	1,020	4,489	4,960	10,300	780	3,651	7,660
5-8-6	16,200	1,110	4,208	5,600	10,720	900	3,967	6,180
4-8-6	15,600	590	4,450	6,720	11,480	780	4,035	7,200
3-8-6	15,720	860	4,835	6,760	11,580	800	3,779	7,520
4-8-10	18,260	1,180	4,945	6,240	10,580	910	3,315	7,360
4-8-8	18,880	1,070	4,459	5,720	12,420	890	3,662	8,100
4-8-4	15,360	860	4,250	6,440	9,600	900	3,476	5,240
1,000 pounds								
6-6-6	16,080	1,070	3,911	5,680	8,520	840	3,257	5,440
5-6-6	16,620	1,100	4,190	7,800	8,000	810	4,024	5,340
4-6-6	15,400	950	4,195	5,160	6,960	700	3,215	6,720
3-6-6	15,620	900	4,064	6,140	8,260	670	3,511	5,780
5-8-6	15,260	960	4,118	4,840	7,260	620	3,402	6,980
4-8-6	15,120	1,330	4,358	7,540	9,280	850	3,823	7,060
3-8-6	18,700	1,120	4,510	7,180	7,940	920	3,986	4,800
4-8-10	17,740	1,230	4,573	6,820	9,400	970	4,068	5,320
4-8-8	17,460	990	4,541	6,240	9,860	830	3,333	6,420
4-8-4	14,800	1,170	4,182	5,840	7,240	780	4,084	4,440
A. Permanent check	6,760	120	1,627	4,560	3,200	320	2,016	5,920
B. Check—no mud or chemicals	5,680	320	2,620	6,400	3,160	380	2,437	3,560
C. Checks	8,926	1,171	3,301	5,572	3,485	665	2,598	5,326

*Fertilizer applied.
†Grown withour fertilizer.

POULTRY

For the past two years the entire effort in poultry work at the station has been toward the breeding of birds, typical of the breed, with high production and with heavy egg weight. The results of this work, as measured by this year's production records, have been very gratifying. Production has been increased to a very measurable extent, and egg weight has been maintaind or increased.

The breeding stock on hand as at November 1, 1929, consisted of 82 males and 363 females, as follows:—

BREEDING STOCK AT THE CHARLOTTETOWN STATION

Breed	Males	Hens	Pullets	Total
Barred Plymouth Rocks	52	90	133	275
S.C. White Leghorns	30	57	83	170
Totals	82	147	216	445

HOUSING AND YARDS

There were no new buildings erected during the year. Yards were fenced off during the season sufficiently large to accommodate all of the laying stock. The yards were fenced with hurdles, and proved satisfactory. The hurdles were made with rough lumber, were 6 feet high by 12 feet long, covered with 2-inch-mesh poultry netting stretched tightly. Posts properly spaced were sunk a short distance into the ground and the hurdles wired to these. In the autumn it was a simple matter to remove these fences so that the yards might be ploughed and worked with a team. The hurdles were carefully piled and covered so as to prevent injury by snow and ice.

FEEDS AND FEEDING

A very light feeding of scratch grain is given in the litter morning and noon, and a heavy feeding in the evening.

Mangels were fed as a green feed from November until May. These are fed whole by being stuck on a heavy spike driven into the wall about one foot from the floor. Mangels are given about 11 a.m., and left until about 2 p.m., when the uneaten portion is removed.

The scratch grain used was a commercial product composed of corn, wheat, oats, barley, buckwheat, sunflower seed and milo maize, in varying amounts. This grain gave excellent satisfaction.

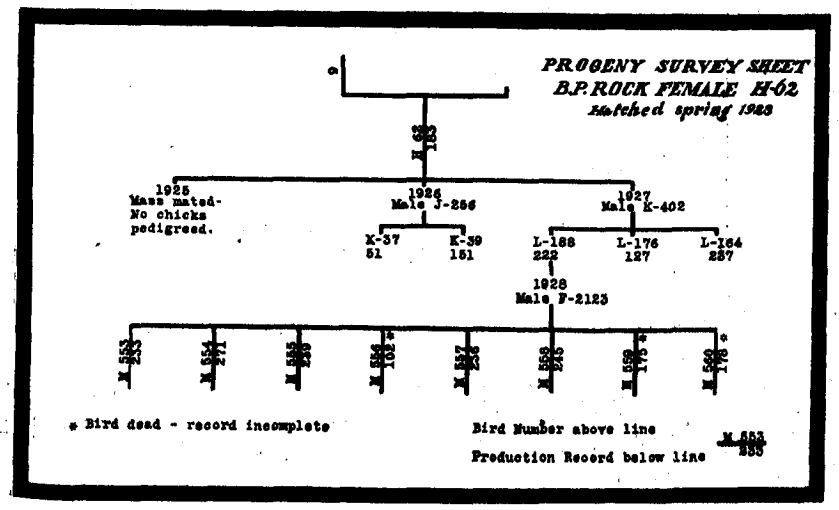
The birds had access at all times to dry mash, grit and shell, all hopper-fed, and an abundant supply of drinking water was always available. The home-mixed dry mash used was composed of 100 pounds bran, 100 pounds shorts, 100 pounds cornmeal, 100 pounds oatmeal (Scotch cut), 100 pounds meat scrap, 50 pounds charcoal and 1 gallon cod liver oil.

During the hatching season some of the pens were fed buttermilk. The meat scrap for these pens was reduced to 5 per cent of the mixture.

BREEDING STUDIES

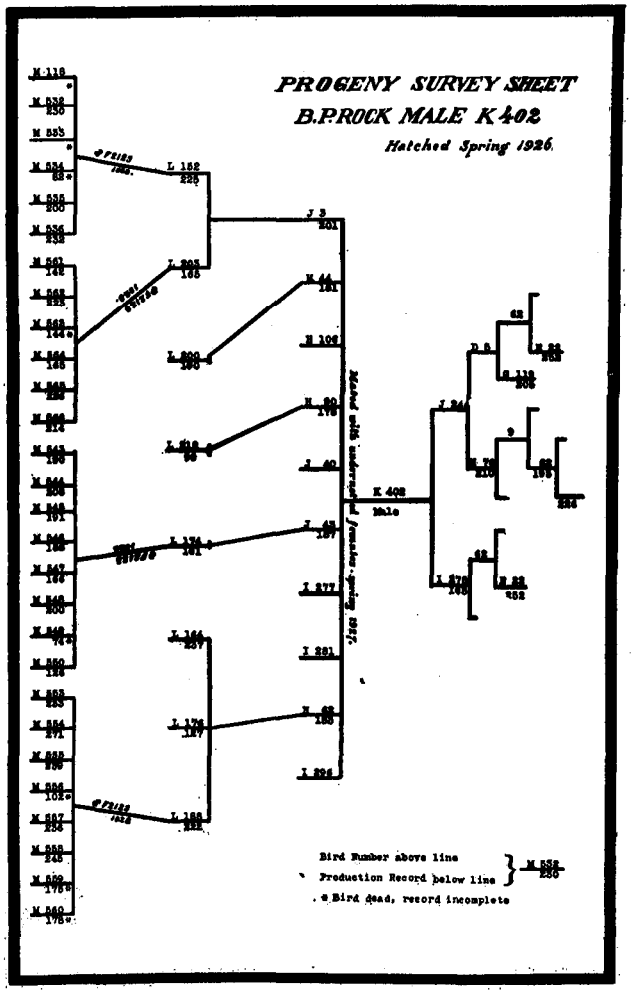
In the autumn of 1926 it was decided that some serious consideration should be given to problems involved in the breeding of poultry. While some experimental matings were made in the spring of 1927, it was not until the autumn and winter of 1927-28 that any large amount of time was devoted to this work.

As a preliminary it was felt that a progeny study of the various birds at the station would form the best ground work on which to plan future projects.



To facilitate this work a progeny survey sheet, suitable to our needs, was devised. With the aid of this sheet the pedigree and history of the progeny of every bird was plotted. Interlocking surveys of sires and dams gave a very great deal of useful information. A sample survey sheet for the Barred Plymouth Rock hen No. H-62 is given as an illustration. Little or no pedigree work was done previous to 1923, so that records cannot be followed beyond that date, and in many instances cannot be traced that far back.

It will be noted that the most successful line derived from H-62 has come down through male bird K-402. So that the pedigree and relationship of other lines to K-402 may be made plain, his progeny survey sheet is given in the following chart.



The matings as judged by the above progeny sheet we consider to be very satisfactory. Notable in this respect are the five pullets from Dam L-188, that had an opportunity of completing their pullet-year. These five birds made an average of 245 eggs.

Noteworthy also are the results obtained by the use of the Barred Rock male No. F-2123, part of whose progeny survey appears above in the sheet for K-402. Of the pullets sired by this bird in 1928, thirty lived to complete their pullet year and gave an average production of a little better than 206 eggs each. The best twenty birds from this lot averaged 225 eggs each.

A full brother of the above bird, namely F-2127 was also used in 1928. Mated to Barred Rock hen No. NB-92 this bird produced five pullets that completed their pullet-year with an average of 262 eggs each.

A study of the numerous sheets that were prepared showed many interesting features. Certain families were found to be uniformly low, and are being weeded out completely. Other lines were found to be what we termed "spotty", that is, one or two of the progeny would show excellent production while the balance of the line were low. It was felt that here was excellent material for a genetic study of the factors affecting production. The theory might be advanced that lines showing uniformly high or uniformly low production were homozygous for the factors affecting production, while those lines showing a "spotty" production might be intermediate,or heterozygous for these factors. However, lack of accommodation for the birds, as well as lack of the highly skilled help necessary to conduct such a study, made it imperative that many of these birds be eliminated. With increased accommodation and additional help much valuable work along such lines might be undertaken.

Owing to the different system of culling adopted during the past several years, it is impossible to show the rate of progress made by the whole flock. The following table, however, shows the varying percentages of birds producing 180 or more eggs in the different years mentioned.

BIRDS PRODUCING DIFFERENT NUMBERS OF EGGS

Year	Percentage producing		
	225 or more eggs	200 to 224 eggs	180 to 199 eggs
	%	%	%
1929	29·08	39·29	31·63
1928	15·25	45·76	38·99
1927	5·56	36·11	58·33
1926	16·00	46·00	38·00

It must be remembered that this is an analysis of only the better part of the flock, but figures for the past year tend to show a drop in the percentage of birds at the low end of the scale, with an increase in those producing 225 or more eggs.

EGG PRODUCTION

In the table following, the average production per hen is 115·3 eggs, and per pullet 173·7 eggs. This compares with 121·4 eggs per hen for 1928, 108·9 eggs per hen for 1927, and 178·5 eggs and 141·6 eggs per pullet for 1928 and 1927 respectively.

EGG YIELDS—HENS VS. PULLETS

Month	Hens			Pullets		
	Average number birds for month	Total eggs laid	Average per bird	Number birds for month	Total eggs laid	Average per bird
1928						
November	138	86	0·62	511	6,219	12·17
December	135	476	3·53	498	6,974	14·00
1929						
January	132	790	5·98	481	4,651	9·67
February	127	964	7·59	444	6,847	15·42
March	79	868	10·99	437	9,167	20·98
April	77	1,313	17·05	415	9,306	22·42
May	74	1,448	19·57	401	8,150	20·32
June	73	1,138	15·59	389	7,093	18·23
July	73	1,278	17·51	373	5,775	15·48
August	72	748	10·39	365	4,891	13·40
September	71	386	5·44	292	2,553	8·74
October	71	76	1·07	275	777	2·83
Totals and Averages	.....	9,571	115·33	.....	72,403	173·66

AVERAGE ANNUAL PRODUCTION PER BIRD

The following table gives the average annual production per hen and per pullet per year for the 10-year period 1920 to 1929 inclusive:—

AVERAGE ANNUAL PRODUCTION PER BIRD

Year	Hens	Pullets
1929	115·3	173·7
1928	121·4	178·5
1927	108·9	141·6
1926	124·5	151·8
1925	122·4	143·7
1924	127·9	166·7
1923	119·3	144·2
1922	118·2	131·7
1921	116·2	140·9
1920	91·6	109·8

It will be noted from the above table that average production for the flock has dropped off this year. A word of explanation may be in order on this point. It was the custom in previous years to cull the flock rather severely before the start of the laying season, and also during the production period. Experimental breeding work this season make it desirable to retain all birds for the purpose of making a progeny study, irrespective of what their production might be. Many birds were retained that gave very poor records, thus lowering the average production. Had the flock been culled as severely as in previous years, there is no question but that average production would have been well advanced this season.

PRODUCTION OF S. C. WHITE LEGHORNS AND BARRED PLYMOUTH ROCK PULLETS AT CHARLOTTETOWN

In the two following tables is shown the pullet-year record for S. C. White Leghorns and B. P. Rocks bred and raised at the Experimental Station, Charlottetown, P. E. Island, for the laying season 1928-1929:

INDIVIDUAL RECORDS OF S. C. WHITE LEGHORN PULLETS BRED AND RAISED AT THE EXPERIMENTAL STATION, CHARLOTTETOWN, PRINCE EDWARD ISLAND

225 or more eggs			200 to 224 eggs			175 to 199 eggs		
Band number	Number of eggs	Date of first egg	Band number	Number of eggs	Date of first egg	Band number	Number of eggs	Date of first egg
M424	255	Oct. 8	M309	223	Oct. 26	M270	199	Nov. 11
M197	254	Oct. 6	M331	223	Oct. 3	M244	198	Oct. 5
M211	253	Oct. 31	M422	223	Oct. 5	M195	197	Oct. 5
M282	251	Oct. 25	M445	223	Oct. 8	M409	197	Nov. 2
M444	250	Oct. 28	M390	222	Oct. 7	M439	197	Oct. 4
M403	250	Nov. 3	M303	220	Oct. 9	M183	196	Oct. 14
M410	245	Dec. 2	M443	220	Nov. 9	M375	196	Oct. 6
M437	243	Oct. 7	M499	219	Oct. 6	M482	196	Nov. 1
M210	240	Oct. 4	M280	217	Oct. 8	M287	196	Oct. 13
M457	239	Nov. 7	M384	217	Oct. 11	M260	194	Nov. 15
M412	237	Nov. 15	M255	216	Oct. 7	M473	193	Nov. 2
M186	236	Oct. 16	M281	216	Oct. 23	M333	192	Oct. 9
M200	236	Oct. 4	M428	215	Oct. 16	M272	191	Nov. 20
M393	234	Nov. 12	M176	214	Oct. 9	M466	191	Oct. 31
M356	234	Oct. 25	M182	214	Oct. 9	M265	190	Oct. 13
M193	233	Oct. 13	M279	214	Oct. 17	M301	190	Oct. 8
M425	233	Oct. 14	M418	214	Oct. 5	M404	190	Nov. 23
M405	230	Oct. 31	M464	214	Oct. 30	M394	190	Oct. 30
M222	229	Oct. 12	M208	214	Oct. 21	M413	189	Nov. 7
M308	228	Oct. 21	M284	213	Oct. 31	M440	189	Oct. 6
M286	227	Oct. 16	M414	213	Nov. 15	M194	188	Oct. 4
M398	225	Oct. 8	M189	211	Oct. 5	M335	188	Oct. 22
			M199	211	Oct. 4	M386	187	Oct. 10
			M452	210	Oct. 26	M481	187	Oct. 30
			M196	209	Oct. 8	M492	187	Oct. 27
			M289	208	Oct. 23	M276	186	Oct. 5
			M180	207	Oct. 15	M468	186	Nov. 2
			M467	206	Oct. 6	M201	184	Oct. 22
			M198	205	Oct. 9	M487	184	Oct. 4
			M179	204	Oct. 12	M368	183	Oct. 16
			M450	204	Oct. 25	M372	183	Oct. 10
			M185	203	Oct. 19	M369	182	Oct. 18
			M216	203	Nov. 2	M399	182	Oct. 27
			M364	203	Oct. 18	M419	182	Nov. 30
			M240	202	Oct. 21	M365	181	Nov. 14
			M408	202	Oct. 28	M436	181	Oct. 5
			M426	202	Nov. 19	M358	180	Oct. 9
			M433	202	Oct. 25	M420	180	Oct. 5
			M283	201	Nov. 18	M496	180	Nov. 14
			M370	201	Oct. 6	M416	180	Oct. 12
						M249	179	Nov. 1
						M483	179	Oct. 20
						M285	178	Oct. 24
						M305	178	Oct. 31
						M453	178	Nov. 2
						M485	178	Oct. 5
						M225	177	Nov. 2
						M489	177	Nov. 20
						M190	176	Oct. 4
						M237	176	Oct. 5
						M355	176	Oct. 5
						M402	176	Oct. 14
						M239	175	Oct. 6
						M455	175	Jan. 29
						M476	175	Oct. 30
22	5,262	.....	40	8,458	.....	55	10,195	
Total for 22 birds—5,262 eggs			Total for 40 birds—8,458 eggs			Total for 55 birds—10,195 eggs		
Average per bird—239·2 eggs			Average per bird—211·5 eggs			Average per bird—185·4 eggs		

Total for 117 birds—23,915 eggs. Average per bird—204·4 eggs.

INDIVIDUAL RECORDS OF BARRED PLYMOUTH ROCK PULLETS BRED AND RAISED AT THE EXPERIMENTAL STATION, CHARLOTTETOWN, PRINCE EDWARD ISLAND

225 or more eggs			200 to 224 eggs			175 to 199 eggs		
Band number	Number of eggs	Date of first egg	Band number	Number of eggs	Date of first egg	Band number	Number of eggs	Date of first egg
		1928			1928			1928
M172	314	Oct. 21	M104	224	Dec. 2	M12	199	Oct. 4
M513	273	Oct. 8	M502	223	Nov. 24	M23	199	Nov. 29
M554	271	Oct. 6	M562	223	Nov. 3	M126	199	Oct. 31
M100	268	Nov. 23	M13	222	Nov. 1	M111	197	Nov. 7
M156	266	Nov. 21	M122	222	Oct. 7	M531	197	Oct. 21
M155	262	Oct. 7	M132	222	Oct. 6	M73	196	Dec. 12
M168	260	Oct. 8	M59	221	Nov. 17	M9	195	Nov. 6
M506	255	Oct. 16	M164	219	Oct. 26	M514	194	Nov. 25
M505	253	Nov. 16	M529	219	Oct. 16	M49	191	Nov. 9
M74	251	Oct. 8	M112	218	Oct. 17	M80	191	Oct. 6
M171	246	Oct. 25	M115	217	Oct. 18	M124	191	Dec. 2
M170	245	Oct. 6	M154	217	Nov. 30	M152	191	Oct. 5
M558	245	Oct. 18	M134	215	Nov. 11	M545	191	Oct. 5
M169	244	Oct. 5	M566	214	Nov. 4	M543	190	Oct. 5
M555	239	Oct. 10	M31	213	Oct. 7	M136	189	Nov. 3
M123	238	Oct. 6	M150	213	Oct. 5	M148	189	Nov. 16
M107	237	Oct. 5	M17	212	Nov. 7	M546	188	Oct. 5
M557	236	Oct. 5	M36	212	Oct. 8	M21	187	Nov. 6
M95	236	Jan. 27*	M42	212	Oct. 23	M45	185	Oct. 25
M62	233	Nov. 21	M539	211	Nov. 28	M85	185	Nov. 5
M553	233	Oct. 12	M130	208	Oct. 28	M30	180	Oct. 28
M536	232	Oct. 6	M91	208	Nov. 24	M175	180	Oct. 22
M106	232	Oct. 6	M72	207	Nov. 5	M560	178	Nov. 5
M135	231	Nov. 28	M144	207	Nov. 11	M6	176	Oct. 8
M48	230	Oct. 25	M151	207	Oct. 15	M518	176	Nov. 3
M103	230	Oct. 5	M510	207	Nov. 2	M559	175	Oct. 28
M520	230	Oct. 5	M117	205	Oct. 30			
M532	230	Oct. 17	M503	205	Nov. 14			
M7	228	Oct. 6	M83	204	Oct. 15			
M121	228	Oct. 12	M24	203	Oct. 7			
M101	227	Oct. 5	M125	203	Oct. 15			
M114	227	Oct. 9	M11	202	Oct. 15			
M102	226	Oct. 23	M46	202	Oct. 4			
M565	226	Nov. 14	M145	201	Oct. 13			
M110	225	Oct. 30	M535	200	Oct. 7			
			M540	200	Oct. 7			
			M548	200	Oct. 5			
35	8,507	.....	37	7,818	.....	26	4,909	.....
Total for 35 birds—8,507 eggs			Total for 37 birds—7,818 eggs			Total for 26 birds—4,909 eggs		
Average per bird—243·1 eggs			Average per bird—211·3 eggs			Average per bird—188·9 eggs		
Total for 98 birds—21,234 eggs			Average per bird—216·7 eggs					

*1929.

A study of the foregoing tables, and particularly that for Barred Plymouth Rock pullets, shows a very marked increase in production. The most outstanding observation is the high percentage of heavy producers in the Rocks, there being a greater number of birds in the "200 to 224 egg" class than in the "175 to 199 egg" class, and very nearly as many in the "225 or more eggs" class as in the "200 to 224 egg" class. This is a result never before attained at this station.

CONTEMPLATED REVISION OF WORK

As mentioned in the preceding pages, for the past three years a more intensive study has been undertaken to demonstrate a practicable breeding program that would develop a vigorous, high-producing strain of birds laying eggs of large size. Very encouraging results, particularly with Rocks, have followed

these efforts, and while no reflection is cast upon the vigour or producing ability of the S. C. White Leghorns, it has been decided that this breed will be abandoned so that our efforts may be concentrated on the improvement of one breed. An investigation such as we have undertaken requires a very considerable amount of room or accommodation for birds, and when carrying two breeds we have found it necessary to curtail the scope of our work to prevent over-crowding. A greater number of birds admits of quicker results from our experiments, and as the result of our findings should be applicable to other breeds, we feel justified in taking this step.

Below is given a summary of production and costs of the two breeds during the past three years, or since our present research work has started:—

SUMMARY OF PRODUCTION AND COSTS, BARRED PLYMOUTH ROCKS AND S. C. WHITE LEGHORNS, CHARLOTTETOWN, PRINCE EDWARD ISLAND, FOR THE PERIOD NOV. 1, 1926 to OCT. 31, 1929

Breed	Average number birds kept	Average annual production per bird	Average market value of eggs	Average cost per dozen	Average cost of feed per bird	Average net profit per bird
			$	cts.	$	$
B. P. Rocks	81·8	175·9	4 43	18·9	2 77	1 66
S. C. White Leghorns	107·3	167·4	4 09	18·7	2 61	1 48

PRINCE EDWARD ISLAND EGG LAYING CONTEST

The evening of October 23, 1929, saw the completion of the eleventh consecutive annual Prince Edward Island Egg Laying Contest. Competition was keen during the greater part of the contest, but particularly so during the last several weeks.

From the standpoint of productiveness and quality the contest was by far the most successful yet conducted, and reflects great credit on those poultry breeders whose birds were competing.

Mr. S. R. Pendleton's pen of Barred Rocks took first place with 2,532·6 points (2,253 eggs) for the fifty-one weeks of the contest. Mrs. A. H. McPhail's Barred Rocks ran a close second, with 2,520·7 points (2,297 eggs). The Barred Rock pen owned by the Experimental Farm, Fredericton, N.B., came third, with 2,467·2 points (2,229 eggs); the Charlottetown Experimental Station's Barred Rocks were fourth with 2,373·2 points (2,203 eggs), and Mr. George Boswall's Barred Rocks were fifth, with 2,309·5 points (2,204 eggs).

Points were awarded as in previous contests, that is, one point for each egg weighing at the rate of 24 ounces per dozen, and one-tenth of one point per egg added or deducted for each ounce per dozen the eggs may weigh above or below 24 ounces. The minimum weight accepted is for eggs averaging 20 ounces per dozen (each egg having a value of ·6), below which the egg is discarded; and the maximum weight is 27 ounces per dozen (each egg having a value of 1·3 points), above which no additional credit is given.

S. R. Pendleton's hen No. 6 led the contest with 325 points (288 eggs). The Experimental Farm, Fredericton, N.B., took second, fourth and ninth places with 310·4, 303·6 and 280·3 points, 265, 252 and 218 eggs respectively. Charlottetown Experimental Station took third and seventh places, with records of 306·2 and 283·5 points, and 308 and 260 eggs respectively.

This is the first contest in which the Barred Rock birds claimed all prize money.

The Charlottetown Experimental Station's Barred Rock hen number 152 has the distinction of being the first Prince Edward Island bird to make a record

exceeding 300 eggs. During the 51 weeks of the contest she produced 308 eggs, and she had 6 eggs to her credit before entering the contest pen, or a total for her pullet year of 314 eggs.

Perhaps the most outstanding point with respect to this contest was the number of birds laying 200 or more eggs, and the number qualifying for registration. Ninety birds laid 200 or more eggs, and of these 81 qualified for registration by producing eggs averaging 24 or more ounces per dozen. This compares with 32 birds qualifying for registration in the 1928 contest, which was the greatest number in any one year up to that time.

In the following table is given a list of the 81 birds qualifying, together with their production, total points, official tattoo marks, average egg weight, and the name and address of the owner of each.

LIST OF BIRDS (WITH OWNERS) REGISTERED IN 1928-29 PRINCE EDWARD ISLAND EGG LAYING CONTEST

Name and address of owner	Breed	Pen number	Bird number	Official tattoo number	Total eggs	Total points	Average egg weight per dozen
							oz.
Charles A. McKenna, Newton Cross, P.E.I.	S.C.W.L.	1	3	HK1G	217	220·4	24·4
" " "	S.C.W.L.	1	4	HK4G	204	192·5	24·0
" " "	S.C.W.L.	1	7	HK2G	236	232·6	24·2
" " "	S.C.W.L.	1	10	HK3G	201	201·5	24·3
Exp. Station, Charlottetown, P.E.I.	S.C.W.L.	2	5	AT1G	206	206·9	24·7
" "	S.C.W.L.	2	7	AT5G	215	207·2	24·1
" "	S.C.W.L.	2	8	AT2G	207	220·2	25·1
" "	S.C.W.L.	2	304	AT3G	207	214·9	25·0
" "	S.C.W.L.	4	3	AT4G	250	256·5	24·8
Exp. Farm, Fredericton, N.B.	B.P.R.	6	2	AR5G	208	247·1	26·3
" "	B.P.R.	6	3	AR6G	252	303·6	26·2
" "	B.P.R.	6	4	AR7G	203	230·3	26·0
" "	B.P.R.	6	5	AR12G	261	266·9	24·7
" "	B.P.R.	6	7	AR8G	270	259·4	24·0
" "	B.P.R.	6	8	AR9G	218	280·3	28·4
" "	B.P.R.	6	10	AR11G	265	310·4	26·4
" "	B.P.R.	6	311	AR10G	201	206·1	24·5
Harold Laird, Kelvin, P.E.I.	B.P.R.	7	7	TG2G	240	251·6	24·6
" "	B.P.R.	7	9	TG1G	281	269·3	24·0
Begin & Dube	B.P.R.	8	4	ZE1G	235	267·2	25·0
"	B.P.R.	8	6	ZE2G	224	251·8	25·6
"	B.P.R.	8	7	ZE3G	214	243·2	25·7
A. L. Rogers, Kensington	B.P.R.	9	7	ZN1G	220	244·7	25·4
" "	B.P.R.	9	8	ZN2G	217	245·6	25·2
Kensington Baby Chick Hatchery	B.P.R.	10	1	XO4G	200	206·9	24·3
" "	B.P.R.	10	6	XO1G	233	241·6	24·5
" "	B.P.R.	10	7	XO2G	219	248·7	25·8
" "	B.P.R.	10	10	XO3G	201	234·9	26·0
H. C. Muttart, Marshfield, P.E.I.	B.P.R.	11	2	UT1G	205	211·5	24·6
" "	B.P.R.	11	3	UT2G	225	260·0	25·8
" "	B.P.R.	11	4	UT9G	202	227·8	25·2
" "	B.P.R.	11	8	UT3G	245	285·3	26·0
" "	B.P.R.	12	1	UT8G	203	227·9	26·0
" "	B.P.R.	12	4	UT4G	217	243·2	25·6
" "	B.P.R.	12	6	UT5G	212	246·5	26·0
" "	B.P.R.	12	9	UT6G	243	246·0	24·1
" "	B.P.R.	12	10	UT7G	212	211·4	24·5
T. H. Foster, Marshfield	B.P.R.	13	1	LN1G	213	235·5	25·5
" "	B.P.R.	13	4	LN2G	234	274·3	26·2
" "	B.P.R.	13	9	LN4G	230	226·5	24·0
" "	B.P.R.	13	10	LN3G	220	228·8	24·4

LIST OF BIRDS (WITH OWNERS) REGISTERED IN 1928-29 PRINCE EDWARD ISLAND EGG LAYING CONTEST
—*Concluded*

Name and address of owner	Breed	Pen number	Bird number	Official tattoo number	Total eggs	Total points	Average egg weight per dozen
							oz.
Model Poultry Yards	B.P.R.	14	6	ZM1G	204	199·9	24·0
" "	B.P.R.	14	7	ZM2G	232	262·5	25·5
Exp. Station, Charlottetown, P.E.I.	B.P.R.	15	1	AT6G	246	275·8	25·6
" "	B.P.R.	15	2	AT7G	308	306·2	24·4
" "	B.P.R.	15	3	AT8G	245	251·4	24·7
" "	B.P.R.	15	8	AT9G	260	283·5	25·2
" "	B.P.R.	15	9	AT10G	236	284·8	26·3
" "	B.P.R.	15	10	AT12G	207	208·0	24·6
" "	B.P.R.	16	7	AT13G	208	246·1	26·1
" "	B.P.R.	16	9	AT11G	244	261·5	25·2
Mrs. Alfred Gorrill, Glenwood, P.E.I.	B.P.R.	17	1	ACM1G	216	261·7	26·3
" "	B.P.R.	17	4	ACM2G	201	232·9	26·0
" "	B.P.R.	17	8	ACM3G	220	265·4	26·2
" "	B.P.R.	17	10	ACM4G	207	233·5	25·3
George Boswall, Frenchfort, P.E.I.	B.P.R.	18	1	AAO1G	224	226·6	24·8
" "	B.P.R.	18	2	AAO2G	224	243·6	25·5
" "	B.P.R.	18	4	AAO3G	215	213·3	24·3
" "	B.P.R.	18	5	AAO4G	234	225·1	24·0
" "	B.P.R.	18	6	AAO5G	245	263·9	25·2
" "	B.P.R.	18	7	AAO6G	270	301·0	26·0
" "	B.P.R.	18	8	AAO7G	249	241·2	24·0
" "	B.P.R.	18	336	AAO8G	202	227·3	25·7
S. R. Pendleton, Kensington, P.E.I.	B.P.R.	19	1	US1G	211	255·2	26·8
" "	B.P.R.	19	2	US2G	264	262·3	24·0
" "	B.P.R.	19	4	US3G	242	300·2	27·4
" "	B.P.R.	19	5	US4G	221	256·6	26·0
" "	B.P.R.	19	6	US5G	288	325·0	25·8
" "	B.P.R.	19	7	US6G	221	223·1	24·0
" "	B.P.R.	19	8	US7G	216	275·3	27·7
" "	B.P.R.	19	10	US8G	249	269·8	25·4
Mrs. J. H. McPhail, New Haven, P.E.I.	B.P.R.	20	1	AAP1G	224	268·7	26·5
" "	B.P.R.	20	2	AAP2G	258	298·8	26·0
" "	B.P.R.	20	3	AAP10G	212	220·2	25·0
" "	B.P.R.	20	5	AAP3G	210	230·2	25·0
" "	B.P.R.	20	6	AAP4G	250	269·1	24·8
" "	B.P.R.	20	7	AAP5G	255	244·6	24·0
" "	B.P.R.	20	8	AAP6G	236	280·8	26·7
" "	B.P.R.	20	9	AAP7G	239	258·1	25·5
" "	B.P.R.	20	10	AAP8G	248	275·7	25·4
" "	B.P.R.	20	340	AAP9G	205	215·0	24·5

Average production 81 birds—228·5 eggs.

The following table shows the mean egg production in each of the eleven contests so far held. It will be noted that there is a marked increase in production this year.

EGG PRODUCTION IN THE VARIOUS CONTESTS

Number of contest	Year	Number of birds entered	Annual mean production per bird
*First	1918–1919	160	129·2
Second	1919–1920	220	118·8
Third	1920–1921	250	119·7
Fourth	1921–1922	200	125·8
Fifth	1922–1923	200	160·8
Sixth	1923–1924	200	170·8
Seventh	1924–1925	200	173·5
Eighth	1925–1926	200	169·8
Ninth	1926–1927	200	163·6
Tenth	1927–1928	200	163·8
Eleventh	1928–1929	200	187·0

*The first contest was for eleven months only, and consisted of twenty pens of eight birds each. All other contests, except the tenth and eleventh, were for 52 weeks, and the pens consisted of ten birds each. The last two contests have been for 51 weeks, 10-bird pens.

It is apparent from a study of the above table that a marked increase is to be noted in production. The number of birds registering also indicates an increase in egg weight, for in previous years many birds were disqualified for producing eggs under weight.

APIARY REPORT

Weather conditions in the winter of 1928-29 were good for the bees, and all hives came through with plenty of stores.

The average number of frames covered by bees in the spring of 1929 was 6·2. One colony died during the winter; this was the only winter loss of the 29 colonies put away in the fall of 1928. Four other colonies had poor or drone laying queens; these were united with other colonies.

The spring was cold and backward, being two weeks later than the average; the bees did not have more than 48 hours flying weather when the willows and maples were in bloom. This retarded brood production to a great extent.

INCREASE

The apiary was increased to 34 colonies during the summer. Increase was made by taking two or three frames of brood and introducing a young laying queen. These made strong colonies by autumn.

HONEY FLOW

Summer conditions were ideal, and the yield of clover honey was above the average. A hive was placed on the scales and weighed daily until August 19. From June 8 to June 30 the total gain of 13 pounds was made; for the month of July there was a gain of 165¼ pounds; and from August 1 to August 19 a gain of 20 pounds was made. There was practically no fall honey flow. The average for the overwintered colonies was 92·1 pounds, and for increase made during the summer, 8·8 pounds.

QUEEN BREEDING

Twenty-six queens were raised at the station this season. Twenty-two of these were introduced to single colonies, and four are being carried over in double colonies. Five queens were imported in June to start nuclei.

EXPERIMENTS

Experiments carried on this year were the same as those reported last year. These were:—

(1) Best methods of detecting and controlling swarming.

(2) Study of honey flow.

(3) Different methods of wintering.

SWARM CONTROL BY SEPARATION OF QUEEN AND BROOD

Four colonies that showed preparation for swarming by having larvae in queen cells were treated by separating the queen and brood. All combs containing brood were taken from the brood chamber and replaced by drawn comb. The queen and bees shaken from one or two frames were left in the brood chamber, and the combs containing brood were raised above the queen excluder. Colonies treated by this method made no further attempt at swarming and produced an average of 153½ pounds of honey.

SWARM CONTROL BY DEQUEENING AND REQUEENING

Four colonies were used in this experiment. When colonies showed signs of swarming by having larvae in queen cells, they were dequeened and all queen cells cut out. Ten days later the hives were again examined and all newly formed queen cells were removed and a young laying queen introduced. One colony having been so treated made one cell, but when this was destroyed no other cells were made. Two of the colonies clustered at the entrance for several days during the time the hive was queenless. When the young laying queen was introduced the cluster disappeared. This group gave an average production of 89 pounds of honey.

METHOD OF DETECTING PREPARATIONS FOR SWARMING

When the colonies showed signs of congestion in the spring, the brood chamber was enlarged by adding a shallow super filled with drawn comb. When these colonies were examined for swarming, the shallow super was tipped from the rear in order to determine whether swarming could be detected by queen cells on the bottom bars of the shallow super. Two hives that were in this experiment made cells. In one hive twenty-eight cells were found in the top super and one small cell in the bottom brood chamber. In the other hive all cells were made in the shallow super. The two colonies treated by this method gave an average of 136 pounds of honey.

SURPLUS QUEENS IN THE SPRING

In order to have young laying queens to replace those that are poor in the spring, or to requeen colonies that are queenless, divide a ten-frame Langstroth hive with a tight-fitting division board. Place a queen in each side, feed, and pack in the wintering case in the usual way. Care should be taken with the tunnel in the wintering case so that bees cannot drift to the wrong hive. Should these queens not be required in the spring, the hive may be divided and allowed to build up for the honey flow.

WINTERING IN FOUR-COLONY CASES

Wintering outside in four-colony cases is recommended for this locality, where bees must have some protection for seven months of the year.

KOOTENAY CASE

This case is recommended for those who have only one or two colonies. It is a single, permanent packing case. The hive is packed in the case with planer shavings, or other material, and is insulated from extremes in climatic changes during all seasons. Only one such case is used at this station, and for years it has not been found necessary to replace queens or build up the hive in any way to prepare it for the honey flow.

FEEDING

Preparations for winter storage commenced on October 2, and were completed October 16. The bees were packed in the cases and then fed a mixture of one part water to two parts sugar. The eight-frame hives were given syrup to bring them up to 65 pounds, and ten-frame hives to 75 pounds less covers. Thirty-one single colonies and two double colonies were packed in four-colony cases and one colony in a Kootenay case.

ILLUSTRATION STATIONS

In Prince Edward Island there are at present twelve Illustration Stations. The names of the operators and the locations of the stations are as follows: Sylven Peters, Palmer Road; Alfred Gorrill, Glenwood; Cephas Grigg, West Devon; Thomas Noonan, Richmond; William E. Johnstone, New London; Malcolm McKenzie, Rose Valley; John L. Clark, Rustico; Clifford McEwen, St. Peters; Nelson R. Stewart, Red Point; Fred McIntyre, Montague; Alexander Matheson, Wood Islands; and James E. Daly, Iona. Four of these are in Prince county, five in Queens and three in Kings. All are well situated and are becoming better known each year. The stations include 120 acres of land, and in 1929, 128 plots of varying sizes were employed outside the stations, for tests with commercial fertilizer.

Owing to hot, dry weather in June and August, yields of all crops, with the exception of corn, and timothy with nitrate of soda, were, on the average, lower in 1929 than in 1928. The yield of potatoes in 1929 was but 78 per cent of that of the previous year.

On all farms a definite crop rotation is followed. In this way production is increased, and the land generally improved. All cultural practices, ploughing, rolling, cultivating and hoeing, are performed as nearly as possible at the right time. This saves labour. The seed used is the best available, because poor seed often means poor crops. Commercial fertilizers, in medium amounts, are used on timothy and on all hoed crops. This practice has been found most profitable.

The live stock on the stations receive due attention. In 1929, eight of the operators weighed the milk from their cows regularly and the milk was tested for butter fat periodically. One operator has his herd entered in the Record of Performance.

The following table gives the average yields and the cost of production per unit for 1929:—

AVERAGE YIELDS AND COST OF PRODUCTION FOR STATIONS, 1929

Crop		Yield per acre	Cost per unit housed
Potatoes	bush.	274·1	$ 0 19
Swedes	tons	24·20	1 99
Corn	tons	15·32	2 71
Oats	bush.	36·4	0 65
Timothy	tons	1·61	8 04
Clover	tons	1·12	13 03

The potato yield given above includes both the marketable and unmarketable tubers, and from this the cost per unit was obtained. Now, if one desires to find the cost of a bushel of potatoes landed at the car, the small potatoes must first be deducted, storage and shrinkage must be considered, the cost of grading, the cost of bags, and finally hauling.

As in 1928, the extra yields obtained by the use of commercial fertilizer on potatoes, turnips, corn, sunflowers and timothy were more than sufficient to pay for the cost of the fertilizer and the labour expended in mixing and sowing it. The following table gives the average results obtained with and without fertilizer.

FERTILIZER EXPERIMENT ON P.E. ISLAND ILLUSTRATION STATIONS, 1929

Crop	Fertilizer used	Yield per acre		
		With fertilizer	Without fertilizer	Increase due to fertilizer
		bush.	bush.	bush.
Potatoes	1,200 pounds of a 4-8-8 mixture	273·5	189·8	83·7
		tons	tons	tons
Swedes	1,100 pounds of 4-8-4 mixture	24·42	14·32	10·10
Corn	900 pounds of a 3-8-8 mixture	15·24	10·37	4·92
Timothy	125 pounds of nitrate of soda	1·61	0·78	0·83

A number of interesting fertilizer experiments besides the above were carried on outside the station. The most important were:—

(1) Manure vs. commercial fertilizer for potatoes.
(2) Effect of varying amounts of potash on the potato crop.
(3) Nitrophoska for the potato and Swede crop.
(4) Nitrochalk, nitrate of soda and sulphate of ammonia compared for timothy.

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

Oats for seed	1,020 bushels
Wheat for seed	38 "
Barley for seed	24 "
Potatoes for seed	5,403 "
Cattle for breeding purposes	7 head
Eggs for hatching	237 dozen

Eleven Field Days, with an average attendance of 80 persons, were held during the growing season. Nine winter meetings, with an average attendance of 60 people, were held at various centres throughout the province. An exhibit demonstrating the work of the Illustration Stations was also displayed at the Charlottetown and Georgetown Exhibitions.

The above is only a summary prepared by Mr. R. C. Parent, Supervisor of the Prince Edward Island Station. A full report of each station will be found in the Report for Eastern Canada of the Chief Supervisor of Illustration Stations.

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