DOMINION OF CANADA
DEPARTMENT OF AGRICULTURE
DOMINION EXPERIMENTAL FARMS

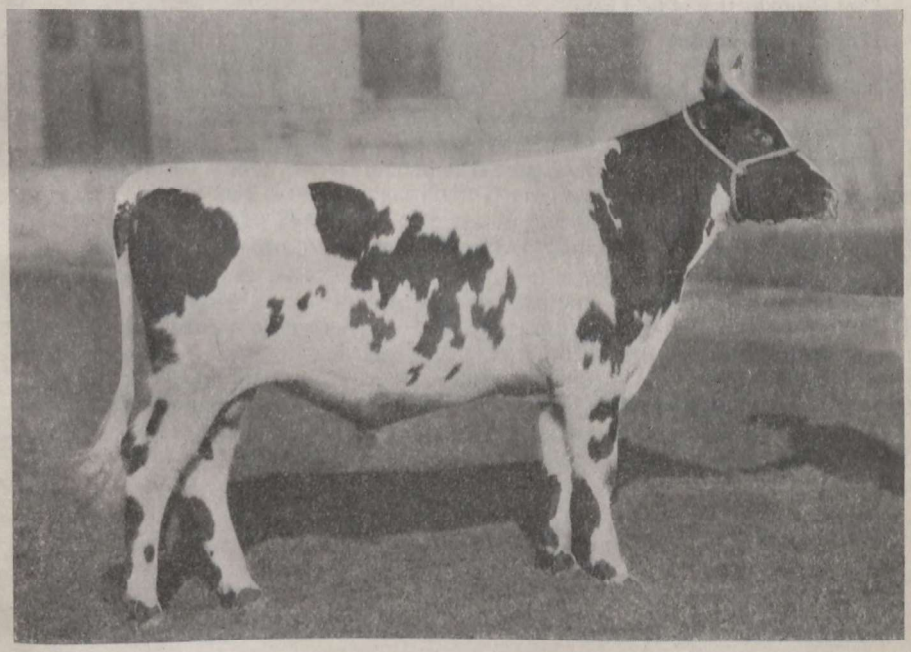
EXPERIMENTAL STATION

CHARLOTTETOWN, P.E.I.

REPORT OF THE SUPERINTENDENT

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

FOR THE YEAR 1924



OTTAWA LORD KYLE 8TH, 81816
The present head of the Ayrshire herd at the Dominion Experimental Station, Charlottetown.

Printed by Authority of the Hon. W. R. Motherwell. Minister of Agriculture, Ottawa, 1925

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

Report of the Superintendent, J. A. Clark, B.S.A., for the year 1924

SEASONAL NOTES

The autumn of 1923 was mild and open. The mean temperatures for November and December were the highest since records were started at this Station in 1909. The rainfall was abundant. The winter was mild up to the 22nd of January, when a month of cold weather set in. A heavy fall of snow on December 28 made good hauling, and the roads remained good throughout the winter. The blanket of snow remained on most of the fields and gardens until the last of March. There was very little frost in the ground, and the snow gradually melted and soaked in during March and April. The rainfall of April was about 30 per cent below the average. May was cool, due to heavy floes of ice that grounded around the shores, and very dry, with scarcely any rain until the last week. The land dried out earlier than usual; seeding, however, was delayed until about the usual time, owing to the cool weather. The grain germinated evenly and came along well. There were two soaking rains in June, on the 16th and on the 26th, and one heavy shower on July 18. The growing season, however, had much less moisture than usual, less than 8 inches of rain falling during the four months April, May, June and July. The hay crop was not so heavy as early indications promised, but was harvested in excellent condition. The harvest matured quickly; the grain threshed out well but the straw was short. Harvest weather was very catchy and a considerable amount of grain was discoloured. The early autumn weather was very favourable for harvesting the biggest crop of potatoes Prince Edward Island has grown. The late autumn was open, with the first killing frost on October 21 and the first flurry of snow on November 18. The freeze-up did not occur until December 11.

PRECIPITATION AT CHARLOTTETOWN, P.E.I., 1901-1924

Month	1901	1902	1903	1904	1905	1906	1907	1908	1909	1910	1911	1912	1913	1914	1915	1916	1917	1918	1919	1920	1921	1922	1923	1924	Avge. 24 yrs.
January	2·82	2·07	2·85	3·05	3·66	2·20	3·33	4·67	3·06	4·76	3·81	3·45	3·58	3·93	5·32	3·61	4·13	3·91	3·10	1·45	3·78	4·43	4·57	3·00	3·52
February	2·08	1·40	2·39	2·79	4·44	3·05	2·48	3·02	3·65	3·61	1·17	5·58	2·52	3·63	2·34	2·80	3·95	3·73	2·48	4·81	2·55	2·75	0·55	2·65	2·93
March	1·60	3·18	4·71	3·98	2·67	4·18	2·31	3·95	4·09	2·70	2·07	3·63	4·61	3·42	2·35	6·60	2·59	4·78	3·25	4·75	3·80	1·35	4·93	3·99	3·56
April	1·15	2·26	4·37	3·77	1·69	6·10	2·36	4·69	4·20	3·28	0·93	3·16	3·86	3·78	2·50	3·28	3·46	0·89	4·09	4·66	3·27	2·21	2·30	2·17	3·10
May	3·43	1·67	0·83	1·78	3·42	5·85	3·14	4·13	3·10	2·38	0·32	2·64	3·00	2·05	3·97	2·08	3·52	1·84	2·91	0·99	1·68	2·17	2·91	1·35	2·55
June	1·29	3·78	2·24	1·56	2·88	5·37	1·41	1·93	0·73	4·69	2·91	2·49	1·27	5·32	3·13	2·74	2·54	3·25	2·22	2·49	1·14	4·72	3·63	3·47	2·80
July	0·81	1·25	3·22	1·90	2·67	1·87	5·18	4·28	3·31	3·14	1·42	6·83	4·01	2·84	1·95	4·14	1·92	4·53	3·29	2·38	0·80	3·73	2·09	1·00	2·86
August	3·12	3·31	2·22	2·95	2·26	1·47	3·54	5·53	5·54	1·09	3·36	2·68	2·89	2·43	2·22	1·79	4·93	1·37	4·13	3·56	3·61	3·95	2·23	5·38	3·15
September	2·63	3·45	4·17	4·26	4·82	3·00	3·63	1·81	3·84	2·84	6·26	2·90	3·98	5·02	3·98	2·02	1·71	5·60	4·78	3·76	4·15	2·01	4·61	2·88	3·67
October	2·91	3·14	3·66	4·11	1·61	4·41	4·54	2·08	7·33	6·78	1·37	3·72	7·71	3·57	3·83	4·22	7·02	5·51	3·71	0·60	2·32	2·48	5·30	2·29	3·93
November	1·98	3·74	7·90	5·67	6·12	8·00	1·72	1·88	2·42	4·89	6·39	4·24	2·09	2·65	4·51	3·74	4·06	3·52	3·17	2·20	4·18	2·21	3·41	3·31	3·92
December	8·19	10·12	4·32	1·90	4·84	7·25	4·01	4·43	6·44	3·63	1·84	6·45	3·76	2·02	7·35	4·55	5·65	5·26	2·60	3·72	5·48	4·35	4·36	3·33	4·83
Total	32·00	39·4	42·9	37·7	41·1	52·8	37·7	42·4	47·7	43·8	31·8	47·8	43·3	40·7	43·5	41·6	45·5	44·2	39·7	35·4	36·8	36·4	40·9	34·8	40·8

METEOROLOGICAL RECORDS, 1924

Month	Temperature Fahrenheit					Precipitation					Total Bright Sunshine
	Highest	Date	Lowest	Date	Mean	Rainfall		Snowfall		Total Precipitation	
1924	°		°		°	Days	Inches	Days	Inches	Inches	Hours
January	45	12	−15	28	18·370	7	1·04	14	19·6	3·0	101·5
February	46	21	−10	14	13·534	.....	.....	6	26·5	2·65	156·8
March	40	24	11	1 & 5	29·258	6	1·59	10	24·0	3·99	91·6
April	55	30	9	2	34·366	8	0·62	5	15·5	2·17	125·1
May	75	18	20	10	49·274	9	1·35	.....	.....	1·35	233·9
June	81	23	38	5	58·633	11	3·47	.....	.....	3·47	236·5
July	84	10 & 11	45	27	67·098	6	1·0	.....	.....	1·0	304·0
August	85	6	50	2 & 16	65·765	15	5·38	.....	.....	5·38	215·2
September	72	21, 27, 28	41	27	57·708	11	2·88	.....	.....	2·88	185·6
October	66	6	30	31	47·508	13	2·29	.....	.....	2·29	151·9
November	60	2	19	20	39·183	8	2·41	2	9·0	3·31	107·8
December	46	9 & 10	− 5½	21	21·202	5	1·13	11	22·0	3·33	71·7
	.....	.....	.....	.....	41·824	99	23·16	48	116·6	34·82	1,981·6
Average for 16 years	.....	.....	.....	.....	41·591	.....	30·05	.....	108·3	38·47	1,860·0

HOURS SUNSHINE 1911-24 INCLUSIVE

Year	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1911	98·5	135·6	158·7	196·2	264·5	220·7	292·7	253·5	154·8	150·7	66·6	57·7
1912	128·3	118·1	149·6	163·1	233·3	250·1	195·8	181·9	167·9	134·2	51·7	68·7
1913	82·6	117·6	131·0	148·5	195·6	255·5	223·1	251·2	182·3	66·3	101·6	62·5
1914	79·6	138·3	128·5	194·9	190·4	247·7	277·9	247·9	191·0	135·9	96·5	99·9
1915	72·4	94·6	86·4	140·9	160·1	193·2	238·9	203·3	169·9	146·0	58·6	48·1
1916	91·6	117·4	129·8	164·2	209·4	202·7	233·4	251·7	188·6	120·0	88·2	32·7
1917	114·8	128·4	178·2	96·8	121·3	179·9	186·2	227·9	246·5	136·9	73·5	46·2
1918	111·9	104·3	139·9	183·0	234·2	245·7	181·9	254·1	153·1	108·1	62·6	49·7
1919	70·9	99·1	129·2	100·2	215·2	230·5	208·9	209·3	151·2	113·8	52·0	86·1
1920	87·9	73·2	130·4	150·7	312·4	247·5	272·9	226·2	150·7	160·4	83·1	45·8
1921	81·1	113·8	128·4	151·3	255·4	231·0	253·0	261·9	229·0	135·7	45·6	37·0
1922	117·0	113·6	170·7	129·8	218·1	190·6	176·1	213·7	212·4	141·6	38·3	67·7
1923	80·6	165·2	137·3	129·5	181·7	217·7	219·9	255·4	189·6	157·3	73·2	45·8
1924	101·5	156·8	91·6	125·1	233·9	236·5	304·0	215·2	185·6	151·9	107·8	71·7
Total	1,318·7	1,676·0	1,889·7	2,074·2	3,025·5	3,149·3	3,264·7	3,253·2	2,572·6	1,858·8	999·3	81·96
Average	94·19	119·71	134·98	148·16	216·11	224·95	233·19	232·37	183·76	132·77	71·38	58·54

EXTREME HIGHEST, EXTREME LOWEST AND MEAN TEMPERATURES AT CHARLOTTETOWN, P.E.I., 1917-1924

Month	1924			1923			1922			1921			1920			1919			1918			1917		
	Highest	Lowest	Mean	Highest	Lowest	Mean	Highest	Lowest	Mean	Highest	Lowest	Mean	Highest	Lowest	Mean	Highest	Lowest	Mean	Highest	Lowest	Mean	Highest	Lowest	Mean
January	45	−15	18·370	44	−23	14·532	43	−12·5	16·524	45	− 7	19·080	35	−17	8·115	44	−13	21·177	42	−11	15·379	48	−21	15·05
February	46	−10	13·534	35	−15	6·660	45	−21·0	15·017	40	− 8	15·411	44	−15	20·517	35	5	22·858	45	−14	13·607	45	−16	14·82
March	40	11	29·258	46½	−15	19·282	50	− 1·0	27·640	56	12	31·725	60	− 7	29·483	43	4	27·610	45	−12	19·951	51	4	26·60
April	55	9	34·366	54	5	34·383	56	22·0	36·616	74	15	40·165	58	20	35·716	55	23	37·965	62	12	35·499	57	24	37·199
May	75	20	49·274	72	32	46·410	76	28·0	48·435	80	29	49·756	76	28	47·822	74	27	47·903	79	28	50·370	60	28	41·257
June	81	38	58·633	83	35	56·765	82	45·0	62·283	81	38	58·050	79	38	57·816	83	34	59·233	79	37	56·816	81	37	60·266
July	84	45	67·096	83	41	63·064	84	46·0	63·902	90	46	68·653	86½	49	67·282	81	39	64·064	83	46	65·032	85	50	65·564
August	85	50	65·765	80	41	61·951	82	48·0	66·193	80	46	62·661	91	46	68·306	78	41	63·915	82	42	62·161	88	49	68·209
September	72	41	57·708	74	35	56·933	76	33·0	57·015	85	37	59·450	83	40	57·849	75	36	55·950	78	32	58·740	76	39	56·033
October	66	30	47·508	70	30	50·548	74	26·0	47·080	68	26	48·564	71	31	50·951	65	26	44·048	65	28	47·610	69	32	48·758
November	60	19	39·183	60	19	40·616	49	17·0	32·948	59	13	33·265	60	18	32·900	55	10	26·683	63	13	35·930	56	13	33·249
December	46	− 5½	21·202	53	8½	32·218	45	−11·0	19·193	47	0	24·048	48	− 1	26·112	55	− 14	19·112	47	5	25·016	45	− 7	19·790
Yearly Mean Temp.			41·824			40·280			41·070			42·569			41·905			40·960			40·509			40·566

Average Mean Temperature, 16 years, 41·591°

EXTREME HIGHEST, EXTREME LOWEST AND MEAN TEMPERATURES AT CHARLOTTETOWN, P.E.I., 1909-1916

Month	1916			1915			1914			1913			1912			1911			1910			1909		
	Highest	Lowest	Mean	Highest	Lowest	Mean	Highest	Lowest	Mean	Highest	Lowest	Mean	Highest	Lowest	Mean	Highest	Lowest	Mean	Highest	Lowest	Mean	Highest	Lowest	Mean
January	43	−10	18·88	48	−14	21·58	45	− 6	10·310	50	− 3	24·17	43	−14	12·51	49	−15	18·16	47	8	24·2	54	−11	17·951
February	45	−16	17·10	49	−13	22·624	43	−21	9·82	48	− 17	13·46	42	−15	17·38	40	− 9	13·07	41	0	21·2	49	−24	17·892
March	47	−10	19·54	45	10	25·774	44	8	28·95	60	− 4	30·80	48	− 9	25·88	48	− 7	22·99	46	14	30·1	46	− 5	28·403
April	55	24	36·82	57	20	37·55	56	8	32·60	79	17	40·06	62	12	35·72	75	9	35·90	64	23	42·5	59	21	35·9
May	65	30	47·36	68	31	44·74	76	26	48·548	69	28	45·07	79	27	50·53	83	28	53·19	71	33	49·5	72	30	46·3
June	76	38	59·17	77	35	54·76	79	34	54·741	73	33	59·06	84	36	57·82	79	34	58·57	76	34	56·0	87	37	60·3
July	86	48	64·45	81	42	63·64	82	37	63·201	83	44	64·19	91	39	64·90	87	52	68·97	84	50	66·55	86	49	66·1
August	81	42	65·55	81	42	63·64	84	46	64·00	79	43	64·42	81	45	61·675	87	45	66·00	80	41	64·29	87	45	66·2
September	79	39	59·23	80	35	57·23	87	35	59·016	75	39	53·13	73	38	54·02	73	32	55·26	72	40	57·53	78	41	60·1
October	78	28	48·84	67	31	47·66	72	26	47·823	70	33	55·06	73	28	47·71	62	27	44·47	69	29	46·66	71	32	50·1
November	55	10	32·93	54	21	38·48	59	11	35·284	61	18	38·82	65	27	37·01	58	13	33·71	56	22	37·88	59	21	39·5
December	50	1	28·27	50	11	29·71	50	−10	22·709	56	7	27·64	50	2	26·60	53	7	28·70	46	0	23·89	44	4	28·1
Yearly Mean Temp.			41·511			42·282			39·750			43·240			40·979			41·582			43·358			43·070

ANIMAL HUSBANDRY

HORSES

The number of horses at the Station on December 31, 1924, was seven, made up as follows: four pure-bred Clydesdale mares, one pure-bred Clydesdale gelding, one express gelding and one light driving mare.

The horses have been in good, thrifty condition throughout the year. One grade mare, Nell, having completed her years of usefulness, was disposed of during the year; it was deemed unnecessary to replace her.

The tractor relieves the horses of considerable heavy work during the spring and autumn; practically all of the heavy harrowing during the spring, and such ploughing and harrowing as is required during the hot weather is done with the tractor.

During the busy season the ration for work-horses was as follows:—

15 pounds hay..
2 pounds carrots.. } per day.
17 pounds ground oats..

In seasons of lighter work this was reduced to:—

15 pounds hay..
3 pounds bran.. } per day.
13 pounds oats..

In comparatively idle periods during winter the ration was approximately:—

14 pounds hay..
3 pounds bran.. } per day.
11 pounds oats..

DAIRY CATTLE

The Ayrshire herd at this Station at the end of the calendar year December 31, 1924, numbered twenty-one, and is headed by Ottawa Lord Kyle 8th, No. 81916.

The herd was declared fully accredited on August 9, 1922, under certificate No. 219, and has successfully passed all tests since that date.

The herd was not shown at the Provincial Exhibition this year; five animals, however, were sent to the "Royal" at Toronto in December, and gave a good account of themselves.

The following is a list of cows completing Record of Performance during the year 1924, together with amount of production. Three of these cows qualified in the Honour Roll.

R.O.P., Ayrshire Herd, Charlottetown

Name and Number of Individual	Class	Milk	Average test	Butter fat	Butter 8% fat	Days in test
		lb.	%	lb.	lb.	
Jean of Craggan, No. 43008	Mature	12,308	4·02	495	619	349
Buttercup of Glenholm, No. 56491	Mature	12,432	3·86	480	600	357
Ravenwood Milkmaid, No. 73374	3-year-old	10,149	3·85	391	489	305
Cora of Craggan, No. 55891	Mature	9,667	3·95	382	478	305
Ravenwood Buttercup, No. 77482	2-year-old	7,804	4·55	355	444	305
Belle of Sunnyslope, No. 76560	2-year-old	9,563	3·67	351	439	365

This gives an average production for six animals of 10,321 pounds of milk, and 409 pounds of fat equal to 512 pounds of 80 per cent butter.

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

Date of Dropping Calf	Number of days lactation	Total pounds of milk in period	Daily average of milk	Average per cent fat in milk	Pounds butter produced in period 80% fat	Value of butter at 40 cents per pound	Value of skim milk	Total value of product	Amount of meal eaten at $1.92 per cwt.	Amount of silage and roots eaten at $2 per ton	Amount of hay eaten at $10 per ton	Amount of green feed at $4 per ton	Months on pasture at $1.50 per month	Total cost of feed for period	Cost to produce 100 pounds milk	Cost to produce one pound butter, skim milk neglected	Profit on one pound butter, skim milk neglected	Value of calf when born	Profit on cow during period, labour and calf neglected
		lb.	lb.	p.c.	lb.	$ c.	$ c.	$ c.	lb.	lb.	lb.	lb.		$ c.	$ c.	cts.	cts.	$ c.	$ c.
Jean of Craggan, No. 43008	349	12,308	35·3	4·02	619	247 60	53 29	300 89	4,920	12,435	3,019	3,010	4	134 01	1·09	21·6	18·4	15 00	166 88
Buttercup of Glenholm, No. 56491	357	12,452	34·8	3·86	600	240 00	54 16	294 16	5,503	13,965	2,772	2,458	4	144 40	1·16	24·0	16·0	25 00	149·76
Ravenwood Milkmaid, No. 73374	305	10,149	33·3	3·85	489	195 60	44 23	239 83	4,274	12,118	2,138	1,200	4	113 27	1·12	23·2	16·8	20 00	126 56
Cora of Craggan, No. 55891	305	9,667	31·7	3·95	478	191 20	41 97	233 17	4,188	12,800	2,460	2,070	3½	114 65	1·19	24·0	16·0	15 00	118 52
Ravenwood Buttercup, No. 77482	305	7,804	25·6	4·55	444	177 60	33 11	210 71	4,152	11,312	2,001	1,200	4	109 43	1·40	24·6	15·4	20 00	101 28
Belle of Sunnyslope, No. 76590	365	9,563	26·2	3·67	439	175 60	41 97	217 57	4,813	16,458	2,933	950	3	129 94	1·36	29·6	10·4	20 00	87 63
Total	1,986	61,923	.....	.....	3,069	1,227 60	268 73	1,496 33	27,850	79,088	15,323	10,888	22½	745 70	.....	.....	.....	.....	750 63
Average	331	10,321	31·18	3·96	512	204 60	44 79	249 39	4,642	13,181	2,554	1,815	3¾	124 28	1·20	24·3	15·7	19·17	125 11
Average of all R.O.P. tests completed at the Station, 1920-1924 inclusive (23 records)																			
	342	11,497	33·62	4·06	583	233 20	49·71	282 91	5,165	11,178	3,230	2,743	4½	138 74	1·21	23·8	16·2	.....	144 17

TABLE SHOWING RECORD MADE BY BUTTERCUP OF GLENHOLM, No. 56491 IN FIVE R.O.P. TESTS

Name	Age at commencement of test	Number R.O.P. test	Number days in test	Pounds of milk	Pounds of fat	Pounds of 80% butter
	yrs. mos. dys.					
Buttercup of Glenholm, No. 56491..	4 1 18	1914	365	16,444	662	827·50
	5 4 2	2126	326	14,273	585	731·25
	6 5 17	2325	345	14,637	527	658·75
	7 8 0	2547	357	12,432	480	600·00
	2 11 23	1547	357	9,192	351	438·75
Totals.....	.....	.....	.....	66,978	2,605	3,256·25

STEER FEEDING EXPERIMENT

Twenty-four steers were fed on test in 1924. These were a medium to good lot of feeders, purchased on the open market in the autumn of 1923. Pen 1 consisted of four pure-bred Shorthorn feeder steers which were above the average at the start of the test, and were purchased at a higher price than the balance of the lot. The entire lot were bought between November 3 and 16, 1923, and given a preliminary feeding until December 10, 1923, when the official test was started. At that date pen 1 had cost $6.34 per cwt., and the balance $5.43 per cwt. The steers averaged from 24 to 30 months, and were divided into six lots as follows:—

Pen 1. Four steers, pure-bred Shorthorns, horned, tied in stalls.

Pen 2. Four steers, dairy type, horned, tied in stalls.

Pen 3. Four steers, dehorned, tied in stalls (two dehorned on December 8, 1923, 2 dehorned as yearlings and carrying stubs).

Pen 4. Four steers, grades, medium feeders, horned, tied in stalls.

Pen 5. Four steers, dehorned as yearlings, loose in box stall, these steers all carried stubs from 1 to 2 inches long.

Pen 6. Four steers, dehorned (December 18, 1923) loose in box-stall.

FEEDING PLAN FOR STEERS, DECEMBER 10, 1923. MARCH 14, 1924

Group	Material	1st Period Dec. 19, 1923 to Dec. 31, 1923.	2nd Period Jan. 1, 1924 to Jan. 31, 1924.	3rd Period Feb. 1, 1924, to Feb. 29, 1924.	4th Period March 1, 1924, to March 14,1924
1 and 2.....	Hay.....	32	30	30	28
	Turnips.....	160	120	100	80
	Grain mixture	40	45	50	54
3 and 4.....	Hay.....	36	32	32	30
	Turnips.....	180	140	160 ensil.	160 ensil.
	Grain mixture	45	50	55	58
5 and 6.....	Hay.....	40	36	36	32
	Turnips.....	200	160	140	120
	Grain.....	50	55	60	64

It will be noticed in the foregoing table that the " First Period," dates from December 19, 1923. While the experiment started on December 10, the feeding plan just shown did not go into effect until the 19th; from the 10th to the 18th of December, inclusive, mixed grain (oats, peas, vetches, etc.) was fed. Account is taken of this in the summary tables which follow.

The grain mixture remained unchanged throughout the test, but the quantity fed was changed as the fattening period advanced. This mixture was made up as follows:—

Oats	100 lb.
Bran	100 "
Cornmeal	40 "
Oilcake	10 "

The value per cwt. (actual cost price) was $1.53. Hay was charged at $12 per ton, turnips at $2 per ton, mixed grain chop at $1.25 per cwt., and ensilage at $3.50 per ton.

The item of cost of labour is considered as being offset by the value of the manure produced, so neither of these items appears in the tables.

The following is an itemized list of the total feed consumed by the 24 steers from December 10, 1923 to March 14, 1924, inclusive:—

FEED EATEN PER PEN OF FOUR STEERS

Feeding Material	Groups 1 and 2		Groups 3 and 4		Groups 5 and 6	
	Amount	Value	Amount	Value	Amount	Value
	lb.	$ cts.	lb.	$ cts.	lb.	$ cts.
Hay at $12 per ton	2,968	17 81	3,168	19 01	3,480	20 88
Turnips, $2 per ton	11,620	11 62	8,480	8 48	15,100	15 10
Ensilage, $3.50 per ton	.....	.....	6,880	12 04	.....	.....
Grain mixture, $1.53 cwt	4,121	63 05	4,542	69 49	4,991	76 36
Mixed grain chop at $1.25 cwt	224	2 80	224	2 80	224	2 80
Total for 4 steers	.....	95 28	.....	111 82	.....	115 14

STEER FEEDING EXPERIMENT—COMPARISON OF SIX GROUPS

		1	2	3	4	5	6
Number steers in group		4	4	4	4	4	4
Initial gross weight pen	No.	3,350	3,370	3,730	3,720	4,030	4,050
Initial average weight steer	lb.	838	843	933	930	1,008	1,013
Finished weight pen	"	4,300	3,990	4,560	4,535	4,710	4,820
Finished weight average steer	"	1,075	998	1,140	1,134	1,178	1,205
Total gain 96 days	"	950	620	830	815	680	770
Average gain steer 96 days	"	238	155	208	204	170	193
Average daily gain steer	"	2·47	1·61	2·16	2·12	1·77	2·01
Daily gain group	"	9·90	6·46	8·65	8·49	7·08	8·02
Gross cost of feed per pen	$	95 28	95 28	111 84	111 84	115 16	115 16
Cost 1 lb. gain	c.	10·03	15·37	13·47	13·72	16·93	14·95
Value of group at start of test	$	212 30	182 99	202 54	202 00	218 83	219 92
Total cost to produce beef	$	307 58	278 27	314 38	313 84	333 99	335 08
Sale price per pen	$	398 21	293 47	382 22	357 24	380 75	352 75
Profit per pen	$	90 63	15 20	67 84	43 40	46 76	17 67
Profit per steer	$	22 66	3 80	16 96	10 85	11 69	4 42
Average value per steer at start	$	53 08	45 75	50 64	50 50	54 71	54 98
Average sale price per steer at finish	$	99 55	73 27	95 56	89 31	95 19	88 19
Average increase in value	$	46 47	27 62	44 92	38 81	40 48	33 21
Average cost of feed per steer	$	23 82	23 82	27 96	27 96	28 79	28 79

STEER FEEDING EXPERIMENT—TABLE OF WEIGHTS AND GAINS

Group 1

Number	Weight Dec. 10, 1923	Weight March 15, 1924	Gain in 96 days	Value at start	Average cost of feed per steer	Total cost	Sale price	Profit or loss
	lb.	lb.	lb.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.
277	950	1,150	200	60 20	23 82	84 02	106 38	22 36
278	670	910	240	42 45	23 82	66 27	83 04	16 77
279	850	1,070	220	53 87	23 82	77 69	97 64	19 95
280	880	1,170	290	55 78	23 82	79 60	111 15	31 55
Total	3,350	4,300	950	212 30	95 28	307 58	398 21	90 63
Average	838	1,075	238	53 08	23 82	76 90	99 55	22 66

Group 2

281	920	1,110	190	49 96	23 82	73 78	79 09	5 31
282	860	1,030	170	46 70	23 82	70 52	83 69	13 17
283	850	950	100	46 15	23 82	69 97	67 69	−2 28
284	740	900	160	40 18	23 82	64 00	63 00	−1 00
Total	3,370	3,990	620	182 99	95 28	278 27	293 47	15 20
Average	843	998	155	45 75	23 82	69 57	73 37	3 80

Group 3

285	1,010	1,230	220	54 84	27 96	82 80	87 64	4 84
286	880	1,130	250	47 78	27 96	75 74	98 88	23 14
287	910	1,070	160	49 42	27 96	77 38	86 94	9 56
288	930	1,130	200	50 50	27 96	78 46	108 76	30 30
Total	3,730	4,560	830	202 54	111 84	314 38	382 22	67 84
Average	933	1,140	208	50 64	27 96	78 60	95 56	16 96

Group 4

289	960	1,120	160	52 12	27 96	80 08	78 40	−1 68
290	920	1,190	270	49 96	27 96	77 92	96 69	18 77
291	920	1,090	170	49 96	27 96	77 92	89 93	12 01
292	920	1,135	215	49 96	27 96	77 92	92 22	14 30
Total	3,720	4,535	815	202 00	111 84	313 84	357 24	43 40
Average	930	1,134	204	50 50	27 96	78 46	89 31	10 85

Group 5

293	1,040	1,230	190	56 47	28 79	85 26	107 63	22 37
294	890	1,010	120	48 33	28 79	77 12	82 06	4 94
295	1,010	1,100	90	54 84	28 79	83 63	79 75	−3 88
296	1,090	1,370	280	59 19	28 79	87 98	111 31	23 33
Total	4,030	4,710	680	218 83	115 16	333 99	380 75	46 76
Average	1,008	1,178	170	54 71	28 79	83 50	95 19	11 69

STEER FEEDING EXPERIMENT—TABLE OF WEIGHTS AND GAINS—*Con.*

Group 6

Number	Weight Dec. 10, 1923	Weight March 15, 1924	Grain in 96 days	Value at start	Average cost of feed per steer	Total cost	Sale price	Profit or loss
	lb.	lb.	lb.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.
297	980	1,210	230	53 21	28 79	82 00	86 21	4 21
298	1,020	1,230	210	55 39	28 79	84 18	99 94	15 76
299	1,050	1,250	200	57 02	28 79	85 81	87 50	1 69
300	1,000	1,130	130	54 30	28 79	83 09	79 10	−3 99
Total	4,050	4,820	770	219 92	115 16	335 08	352 75	17 67
Average	1,013	1,205	193	54 98	28 79	83 77	88 19	4 42

From a consideration of the foregoing tables it is observed that pens 1, 2 and 4 all contained horned cattle tied in stalls.

Pen 1, a pure-bred Shorthorn lot, made a gross profit of $90.63 for the four steers, or an average of $22.66 per steer.

Pen 2, a group of dairy type steers, made a total profit of $15.20 per pen, or only $3.80 per steer.

Pen 4, a group of grades, classed as medium feeders, made a profit of $43.40 per pen, or $10.85 per steer.

Despite the fact that the initial cost of pen 1 amounted to $6.34 per cwt., as compared with $5.43 per cwt. paid for the other two pens, this lot made a greater profit. This is a strong argument in favour of feeding only the best or at least the better type of steer.

Pen 3, four animals dehorned and tied in stalls, made a profit of $57.84 or $16.96 per steer.

Pen 4, consisting of four animals horned and tied in stalls, made a profit of $43.40 per pen or $10.85 per steer.

From this it would appear that dehorned cattle, even when tied in stalls, make more economical gains than do cattle similarly treated, but carrying horns.

Pens 5 and 6 were both dehorned and fed loose in stalls, the only difference being that the steers in pen 5 were dehorned as yearlings, or at least twelve months previous to the test, while those in pen 6 were dehorned on December 18, 1923, or after the test was started. A comparison of the gains in weight made by the two pens shows that pen 5 made a gain of 170 pounds per steer, while pen 6 made a gain of 193 pounds.

This Station has always advocated the dehorning of feeders, maintaining that no loss or set back would occur from the operation. A comparison of the two pens mentioned above would seem to bear out this recommendation.

SWINE

BREEDING STOCK

"Ottawa Lass 387"—97020—arrived from the Central Experimental Farm, March 1, 1924. This is a good type of bacon sow. She farrowed March 28, with a litter of nine, by Dalmeny A. R. (Imp.)—88840—four males and five females. One male died at birth. Three males and two females were registered and sold after weaning, at from $10 to $15 each. Three sows from this litter were retained for brood sows. "Ravenwood Girl 6"—75648—farrowed on May 12, with a litter of 18, ten males and 8 females. Eight of these died at birth. Two sows were sold for breeding, the balance were sold to produce pork.

Cost of Maintenance of Brood Sows

The cost of feeding "Ottawa Lass 387" from March 1, 1924, to December 31, 1924, a period of nine months, was $22.30. Pasture was charged 50 cents per month, and garbage from the farm at 20 cents per week. This garbage was obtained without charge for its removal from the houses. The grain mixture of which 277 pounds were eaten after farrowing, cost 1¾ cents per pound; while 1,590 pounds of mangels were valued at 5 cents per bushel, and 1,155 pounds of refuse potatoes at 25 cents per bushel.

The cost of feeding "Ravenwood Girl 6" for one year was $24.74; the feed was similar to that given the other sow.

Raising Brood Sows to Nine Months of Age

The three sows farrowed by "Ottawa Lass 387" on March 28, were supplied with a good growing ration. They were each fed one pound of skim-milk per day for four weeks after they were weaned. During this period they each had about one pound of meal per day mixed as follows: 25 pounds of bran, 50 pounds of middlings and 25 pounds of crushed oats. The hulls were sifted out of the oats. This meal costs $1.88 per cwt. The pigs were also charged with four months of pasture at 50 cents, garbage for thirty weeks, 628 pounds of mangels, and 250 pounds of potatoes, or a total of $16.18 per sow at nine months of age.

Raising Litter for Pork

The eight pigs from the litter of "Ravenwood Girl 6" were fed a growing ration to produce pork. Their ration was similar to that fed to the other litter, for ten weeks after weaning. From that time on their grain ration was increased, but not enough to check their growth. On December 3, 1924, they had cost $15.83 per head, and were about seven and a half months old. They topped the market at 10¾ cents, when sold at nine months of age, graded select bacon, and averaged $25 each.

The number of swine on hand at the close of the year was thirteen, this includes five brood sows and the eight feeders.

FIELD HUSBANDRY

THE SEASON

Farm work was well completed in 1923, owing to the very open mild autumn season. There were good roads for hauling manure and supplies during the winter, and the fields were well protected with snow during the cold part of January and February. There was very little frost in the ground, potatoes producing volunteer plants in the grain fields. The snow melted and soaked in with very little run off. Planting was early, the weather being cool and dry, and the spring work was quickly completed. The land worked well and the cool weather was favourable for horses. The crops germinated well except for hemp and sunflowers, and with these the seed was poor. The pastures were good throughout the summer. There was good drying weather for making hay, and for the early grain harvest. Rains discoloured the later sown cereals, but all were saved with small loss. The autumn was very favourable for harvesting potatoes and turnips; August rains made early ploughing easy, and the autumn work was well cleaned up before the freeze-up, December 11, 1924.

CROP ROTATIONS

Greater interest, year by year, is being shown in farm rotations, this being particularly true of the shorter rotations. No doubt this is in part due to the increased acreage in seed potatoes as a cash crop. Where large areas of seed potatoes are being grown, the farmer finds greater necessity for returning to the same land at shorter intervals with the same crop. Whereas many farmers previously practised a six- or a seven-year rotation, four-year rotations are now becoming common. In some districts farmers are even making use of the three-year type.

Five of our experimental rotations started in 1912 are still being continued. In addition to their value as actual, visible demonstrations, they provide a medium for supplying data on cost of production for various crops and different types of rotations.

In connection with these rotations a table of fixed charges, as follows, has been adopted:—

COSTS

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

RETURN VALUES

Oats, per bushel	0 60
Barley, per bushel	0 75
Wheat, per bushel	2 00
Hay, per ton	10 00
Roots, per bushel	0 07½
Potatoes, per bushel, field run	0 30
Oat straw, per ton	4 00
Wheat straw, per ton	2 00
Barley straw, per ton	2 00

ROTATION "A"

(Five years' duration: suitable for dairy farming)

First year.—Hoed crop. Twenty-five tons of manure are used in preparation for this crop, usually about one-half being applied on stubble the previous autumn, the balance in the spring, and worked in with a cutaway disk harrow. Charge 40 per cent of total cost of manure to this crop.

Second year.—Grain, seeded down with 10 pounds red clover, 2 pounds alsike and 12 pounds timothy per acre. This crop is charged with 25 per cent of cost of manure.

Third year.—Clover hay, charged with 20 per cent of cost of manure.

Fourth year.—Timothy or pasture, ploughed in August or early September, top-worked during the balance of the season. This crop is charged with 10 per cent of cost of manure.

Fifth year.—Grain, seeded with 8 pounds of red clover and 2 pounds of alsike per acre; land ploughed in autumn for roots; crop charged with 5 per cent of cost of manure.

ROTATION SUMMARY—ROTATION A, FIVE YEARS DURATION
Summary of Yields, Value and Profit and Loss (per acre), 1924

Crop	Yields		Value	Cost of production	Profit or loss (−)
	Average for 13 years	1924			
	tons	tons	$ cts.	$ cts.	$ cts.
Mangels	* 21·1405 bush.	17·725 bush.	53 18	77 82	−24 64
Banner oats	71·41 3,225 lb. straw	79·88 1,754 lb. straw	51 44	32 68	18 76
Clover hay	5,251·3 lb.	5,505 lb.	27 53	21 49	6 04
Timothy hay	4,552·6 bush.	4,548 bush.	22 74	16 46	6 28
Charlottetown No. 80 barley	43·74 2,483 lb. straw	34·79 1,430 lb. straw	27 52	22 85	4 67
Totals	.....	.....	182 41	171 30	11 11
Per acre	.....	.....	36 48	34 26	2 22

* Average 12 years.

ROTATION "B"

(Five years' duration for the control of daisies and other perennial weeds)

First year.—Hoed crop, to receive 15 tons manure per acre in spring; charged with 40 per cent of total cost of manure applied.

Second year.—Grain, seeded down with 10 pounds red clover, 2 pounds alsike and 6 pounds timothy per acre. Charged with 25 per cent of cost of manure.

Third year.—Clover hay, ploughed in autumn, charged with 20 per cent of cost of manure.

Fourth year.—Grain seeded down with 10 pounds red clover, 2 pounds alsike and 12 pounds timothy per acre; charged with 10 per cent of cost of manure.

Fifth year.—Clover hay or pasture, top dressed with 10 tons manure per acre in early autumn, and ploughed in preparation for hoed crop. Clover hay charged with 5 per cent of cost of manure.

This rotation has been found to satisfactorily control many bad weeds.

ROTATION SUMMARY—ROTATION B, FIVE YEARS DURATION
Summary of Yields, Value and Profit and Loss (per acre), 1924

Crop	Yields	Value	Cost of production	Profit or loss (−)
	1924			
	tons	$ cts.	$ cts.	$ cts.
Potatoes	5·8725	78 30	81 50	−3 20
Wheat	Wheat 31·7176 bush. straw 1·3235 ton	66 08	29 80	36 28
Clover	2·805 tons	28 05	22 92	5 13
Oats	Oats 68·6176 bush. straw 1·431 ton	46 89	26 29	20 60
Clover	1·6 ton	16 00	14 80	1 20
Totals	.....	235 32	175 31	60 01
Per acre	.....	47 06	35 06	12 00

ROTATION "C"

(Four years' duration: suitable for stock farming)

This rotation produces relatively more hay and roots and less grain than those already described. This is desirable where the farmer is interested in live stock and wishes to produce only sufficient grain for his own feeding purposes.

First year.—Hoed crop, ten tons manure applied in spring; roots charged with 40 per cent of cost of manure.

Second year.—Grain, seeded down with 10 pounds red clover, 2 pounds alsike and 12 pounds timothy; charged with 30 per cent of manure applied.

Third year.—Clover hay, charged with 20 per cent of manure.

Fourth year.—Timothy or pasture, ten tons of manure applied early in autumn, and ploughed down in preparation for roots. The hay crop is charged with 10 per cent of total cost of manure applied.

ROTATION SUMMARY—ROTATION C, FOUR YEARS DURATION

Summary of Yields, Value and Profit and Loss (per acre), 1924

Crop	Yields 1924	Value	Cost of production	Profit
	bush.	$ cts.	$ cts.	$ cts.
Potatoes	284·2	113 93	79 42	34 51
Wheat	Wheat 32·7167 bush. straw 1·1675 ton	67 77	30 64	37 13
Clover hay	3·013 ton	30 13	20 54	9 59
Timothy hay	2·559 ton	25 58	16 26	9 32
Totals	.....	237 41	146 86	90 55
Per acre	.....	59 35	36 71	22 64

ROTATION "F"

(Four years' duration; suited to the production of large quantities of grain).

First year.—Hoed crop, manured in spring at the rate of 12 tons per acre, hoed crop charged with 36 per cent of total cost of manure applied during rotation.

Second year.—Grain, seeded down with 10 pounds red clover, 2 pounds alsike and 6 pounds timothy per acre; 26 per cent of total manure applied is charged to the grain crop.

Third year.—Clover hay, top dressed in autumn with 8 tons manure per acre before ploughing for grain. Clover is charged with 16 per cent of cost of manure.

Fourth year.—Grain, seeded down with 8 pounds red clover and 2 pounds alsike per acre; 22 per cent of total manure is charged to grain crop.

ROTATION "G"

(Seven years' duration)

This is a long rotation, at one time commonly practised on Prince Edward Island.

First year.—Oats, seeded down with 8 pounds red clover and 2 pounds alsike per acre; this crop is charged with 8.5 per cent of total manure.

Second year.—Hoed crop, manured in spring at rate of 20 tons per acre; crop charged with 27 per cent of total manure.

Third year.—Grain, seeded down with 10 pounds red clover, 2 pounds alsike and 12 pounds timothy; 16.5 per cent of total manure charged to this crop.

Fourth year.—Clover hay, charged with 11.5 per cent of manure.

Fifth year.—Timothy hay, top dressed in August with 15 tons manure per acre; crop charged with 5.7 per cent of entire manure applied.

Sixth year.—Timothy or pasture, charged with 20 per cent of manure.

Seventh year.—Timothy or pasture, charged with 10.8 per cent of manure.

ROTATION SUMMARY—ROTATION G, SEVEN YEARS DURATION

Summary of Yields, Value and Profit and Loss (per acre), 1924

Crop	Yields 1924	Value	Cost of production	Profit or loss (−)
		$ cts.	$ cts.	$ cts.
Oats	Oats 69·20 bush. straw 1·455 ton	47 35	34 68	12 67
Turnips	tons 19·5315	58 60	83 85	−25 25
Wheat	Wheat 25·3 bush. straw 2·004 tons	54 58	33 56	21 02
Clover	tons 2·0875	20 88	18 62	2 26
Timothy	3·32	33 20	15 06	18 14
Timothy	4·3575	43 57	25 28	18 29
Timothy	3·4825	34·82	18 35	16 47
Totals	.....	293 00	229 40	63 60
Per acre	.....	41 86	32 77	9 09

CROP YIELDS, SEASON 1924

Crop	Preceding Crop	Acreage	Yield per acre
			bush. lb.
Wheat, Early Red Fife	Potatoes (C-II)	0·57	32 43
Wheat, Huron	Potatoes (B-V)	1·0	31 43
Wheat, Charlottetown No. 123	Turnips (G-V)	0·4	25 20
Oats, Banner, Ottawa No. 49	Mangels (A-V)	1·0	79 30
" O.A.C. No. 72	Timothy (G-III)	0·4	69 7
" Banner, Ottawa No. 49	Clover (B-II)	1·0	68 21
" " " "	Roots (Con. Field)	3·0	50 31
Barley, Charlottetown No. 80	Roots (Connolly F.)	5·0	40 11
" " "	Roots (CC-IV)	5·0	40 —
" " "	Timothy (A-III)	1·0	34 38
Potatoes, Irish Cobbler	Timothy (C-I)	0·57	284 00
" "	Clover (B-IV)	1·0	195 45
" "	Hay (Matheson F.)	6·0	193 24
Turnips	Oats (G-IV)	0·4	781 13
"	Pasture (Blake F.)	4·0	720 —
Mangels	Barley (A-IV)	1·0	709 —
"	Hay (Connolly F.)	5·0	523 13
			Pounds
Clover	Wheat (C-III)	0·57	6,026
"	" (B-I)	1·0	5,610
"	Oats (A-I)	1·0	5,505
"	Wheat (G-VI)	0·4	4,175
"	Barley (Blake F.)	8·0	4,000
"	Oats (Connolly)	10·0	3,500
"	Oats (B-III)	1·0	3,200
"	Barley (CC-II)	5·0	3,000
"	Grain (FF-IV)	2·0	2,000
Timothy	Timothy (G-I)	0·4	8,715
"	Timothy (G-II)	0·4	6,965
"	Clover (G-VII)	0·4	6,640
"	Clover (C-IV)	0·57	5,118
"	Clover (CC-I)	5·0	5,000
"	Timothy (CC-III)	5·0	5,000
"	Clover (A-II)	1·0	4,548
"	Timothy Blake F.)	10·0	4,000

COST OF PRODUCTION OF FIELD CROPS

For a number of years accurate records of cost of production have been kept of all field operations on the experimental rotation areas. The "Cost of Production" estimates given below have been compiled from these figures with the idea in mind that they may be of value to the farmer in arriving at an approximate cost of producing certain farm crops. It must be borne in mind, however, that such costs, as given below, would not apply under all circumstances. Under different climatic conditions, in other locations, or by the use of different machinery or men, such prices might readily vary. Soil fertility and resultant crop yield are prime factors in altering cost of production, as is also the value placed upon "fixed charges," as rent, use of machinery, etc.

The fixed charges and return values used for our purposes are given below, and are those agreed upon for use on the eastern Farms and Stations of the Experimental Farms system.

COST OF PRODUCING WHEAT AFTER HOED CROP

(Figures based on one acre of wheat grown on Rotation B for 1924)

Rent	$ 3 00
Share manure, 25 per cent of 25 tons at $2 per ton	12 50
Use of machinery	3 00
Seed, 1¾ bushels at $2	3 75
Twine, 3¾ lb. at 13¼ cents	0 42
Ribbing (previous autumn), 2¼ hours, 2-horse team at 45 cents	1 01
Harrowing, 2 11-12 hours, 2-horse team at 45 cents	1 32

COST OF PRODUCING WHEAT AFTER HOED CROP—*Con.*

Rolling, ½ hour, 2-horse team at 45 cents	0 15
Seeding, ¾ hour 2-horse team at 45 cents	0 34
Cutting, 1 hour, 2-horse team	0 45
Stooking, 2 hours manual labour at 25 cents	0 50
Loading and unloading, 3 hours manual labour at 25 cents	0 75
Loading, unloading and hauling, 2½ hours, 2-horse a. 45 cents	1 13
Raking, ½ hour, 1-horse at 35 cents	0 12
Thrashing, 5½ hours manual labour at 25 cents	1 38
Total cost	$29 82

Yield of grain, 1,903 lb. (31 bush. 43 lb.).	
Yield of straw, 2,647 lb.	
Cost of producing 1 bushel grain	90·2 cts.
Cost of producing 1 ton straw	90·4 cts.
Average cost of producing 1 bushel grain, 10-year period	42·21 cts.

COST OF PRODUCING OATS AFTER MANGELS

(Figures based on 1 acre, Rotation A, for year 1924)

Rent	$ 3 00
Share of manure, 25 per cent of 25 tons at $2	12 50
Use of machinery	3 00
Seed, 2¾ bushels at $1	2 75
Twine, 3 lb. at 13½ cents	0 40
Ribbing and ploughing (previous autumn), 9½ hours, 2 horses at 45 cents	4 28
Disking, 3 hours tractor at 80 cents	2 40
Spike harrow, ¾ hour 2-horse team at 45 cents	0 30
Rolling, ½ hour, 2-horse team at 45 cents	0 15
Seeding, ¾ hour, 2-horse team at 45 cents	0 34
Cutting, ¾ hour, 2-horse team at 45 cents	0 38
Stooking, 2 hours manual labour at 25 cents	0 50
Loading and unloading, 3½ hours manual labour at 25 cents	0 87
Hauling, 1 hour, 2-horse team at 45 cents	0 45
Raking, ½ hour, 1-horse at 35 cents	0 12
Thrashing, 5 hours manual labour at 25 cents	1 25
Total cost	$32 69

Yield of grain per acre, 79 bushels, 30 lb.	
Yield of straw per acre, 1,754 pounds.	
Cost of producing 1 bushel grain	38·1 cts.
Cost of producing 1 ton straw	$ 2 54
Average cost of producing 1 bushel grain over 11-year period	14·75 cts.

COST OF PRODUCING BARLEY AFTER HAY

(Figures based on one acre, Rotation "A", for year 1924.)

Rent of land	$ 3 00
Manure, 5 per cent of 25 tons at $2 per ton	2 50
Machinery	3 00
Seed, 1¾ bushels at $1.50	2 63
Twine, 2¾ lb. at 13½ cents	0 37
Autumn work, (previous year):—	
Ploughing, 5 hours, 2-horse team at 45 cents	2 25
Rolling, ½ hour, 2-horse team at 45 cents	0 15
Disking, 1½ hours tractor at 80 cents	1 20
Ribbing, 2 hours, 2-horse team at 45 cents	0 90
Spring work:—	
Disking, 3 hours tractor at 80 cents	2 40
Harrowing, 1 5/12 hours, 2-horse team at 45 cents	0 64
Rolling, ½ hour, 2-horse team at 45 cents	0 15
Seeding, ¾ hour, 2-horse team at 45 cents	0 34
Cutting, ¾ hour 2-horse team at 45 cents	0 38
Stooking, 2 hours manual labour at 25 cents	0 50
Loading and unloading, 3 hours manual labour at 25 cents	0 75
Hauling, 1 hour, 2-horse team at 45 cents	0 45
Raking, ½ hour, 1-horse team at 35 cents	0 12
Thrashing, 4½ hours manual labour at 25 cents	1 12
Total cost	$22 85

Yield of grain per acre, 34 bushels, 38 lb.	
Yield of straw per acre, 1,430 lb.	
Cost to produce one bushel of grain	62·3 cts.
Cost to produce one ton of straw	$ 1 66
Average cost per bushel over 11-year period	31·67 cts.

Cost of Producing Hay after Wheat

(Figures based on one acre, Rotation C, for year 1924.)

	per acre
Rent of land	$ 3 00
Manure, 20 per cent of 20 tons, at $2	8 00
Use of machinery	3 00
Grass and clover seed	2 07
Cutting, ¾ hour 2-horses at 45 cents	0 34
Coiling and shaking, 2¾ hours manual at 25 cents	0 67
Raking, ⅝ hour, 1-horse at 35 cents	0 29
Loading and unloading, 7 hours manual labour at 25 cents	1 75
Loading, 1¾ hours, 2-horse team at 45 cents	0 79
Unloading, 1⅝ hours 1-horse at 35 cents	0 64
Total cost	$20 55
Yield per acre, 6,026 lb.	
Cost of producing one ton	$ 6 82
Average cost of production over 11-year period	$ 4 96

Cost of Producing Mangels after Barley

(Figures based on one acre, Rotation A, for year 1924)

Rent of land	$ 3 00
Manure, 40 per cent of 25 tons at $2	20 00
Grass seed (sown with previous crop for green manure)	2 10
Use of machinery	3 00
Seed, 8 pounds at 75 cents	6 00
Autumn work, 1923:—	
Ploughing and ribbing, 7½ hours, 2-horse team at 45 cents	3 38
Spring work:—	
Disking, 4½ hours tractor at 80 cents	3 60
Spring tooth harrow, 1¾ hours, 2-horse team at 45 cents	0 79
Rolling, ⅓ hour, 2-horse team at 45 cents	0 15
Seeding, 2½ hours manual labour at 25 cents	0 63
Hoeing, 64 hours manual labour at 25 cents	16 00
Cultivating, 4½ hours one-horse at 35 cents	1 58
3 hours, 2-horse team at 45 cents	1 35
Pulling and loading, 51 hours manual labour at 25 cents	12 75
Hauling, 10 hours 1-horse at 35 cents	3 50
	$77 83
Yield per acre, 17 tons, 1,450 pounds, or 709 bushels.	
Cost of producing one ton	4 39
Cost of producing one bushel	10·98 cts.
Average cost per bushel over 11-year period	7·1 cts.
Average cost per ton over 11-year period	2 84

Cost of Producing Turnips after Oats

(Figures based on one acre Rotation G for the year 1924)

Rent of land	$ 3 00
Manure	19 00
Grass seed (ploughed down as green manure)	2 10
Machinery	3 00
Seed, 5 pounds at 75 cents	3 75
Autumn work (from 1923):—	
Ploughing, harrowing and ribbing, 18¾ hours, 2-horse team at 45 cents.	8 44
Spring work:—	
Harrowing, 8¾ hours, 2-horse team at 45 cents	3 94
3½ hours tractor at 80 cents	3 00
Rolling, ⅝ hours, 2-horse team at 45 cents	0 38
Seeding, 3¾ hours manual labour at 25 cents	0 92
Hoeing and thinning, 67½ hours manual labour at 25 cents	16 87
Cultivating, 4½ hours, 2-horse team at 45 cents	1 88
3¾ hours, one-horse at 35 cents	1 31
Pulling, 30 hours manual labour at 25 cents	7 50
Hauling, 25 hours one-horse at 35 cents	8 75
Total cost	$83 84
Yield per acre, 19 tons, 1,063 lb., or 781 bush. 13 lb.	
Cost of producing one ton	$ 4 29
Cost of producing one bushel	10·73 cts.
Average cost per ton over a 5-year period	$ 3 29
Average cost per bushel over 5-year period	8·22 cts.

CULTURAL EXPERIMENTS

RATES OF SEEDING CLOVER AND TIMOTHY

FOUR-YEAR ROTATION: ROOTS, GRAIN, HAY, HAY

Plot No.	Rates of Seeding, per acre		Yield Clover, per acre		Yield Timothy, per acre		Nine-year average yield of clover and timothy combined
	Red Clover	Alsike	1924	Nine-year average	1924	Nine-year average	
	lb.	lb.	lb.	lb.	lb.	lb.	lb.
1	2	.....	1,664	2,345	3,081	2,885	2,615
2	4	.....	2,185	3,325	3,426	3,018	3,172
3	8	.....	2,435	3,695	3,853	3,615	3,655
4	12	.....	3,091	3,903	4,145	3,807	3,855
5	8	1	2,333	4,028	4,855	4,148	4,088
6	8	2	3,290	3,921	4,574	3,962	3,942
7	.....	4	1,886	3,414	2,306	2,896	3,155
8	.....	6	2,580	2,958	3,164	2,529	2,744
9	.....	8	2,520	2,867	2,537	2,060	2,464

NOTE.—All plots seeded with 2½ bushels oats and 10 pounds timothy per acre.
Yields for 1924 are given in pounds per acre of hay containing 12 per cent of moisture.
Yields for years previous to 1924 are taken at air-dried weight.

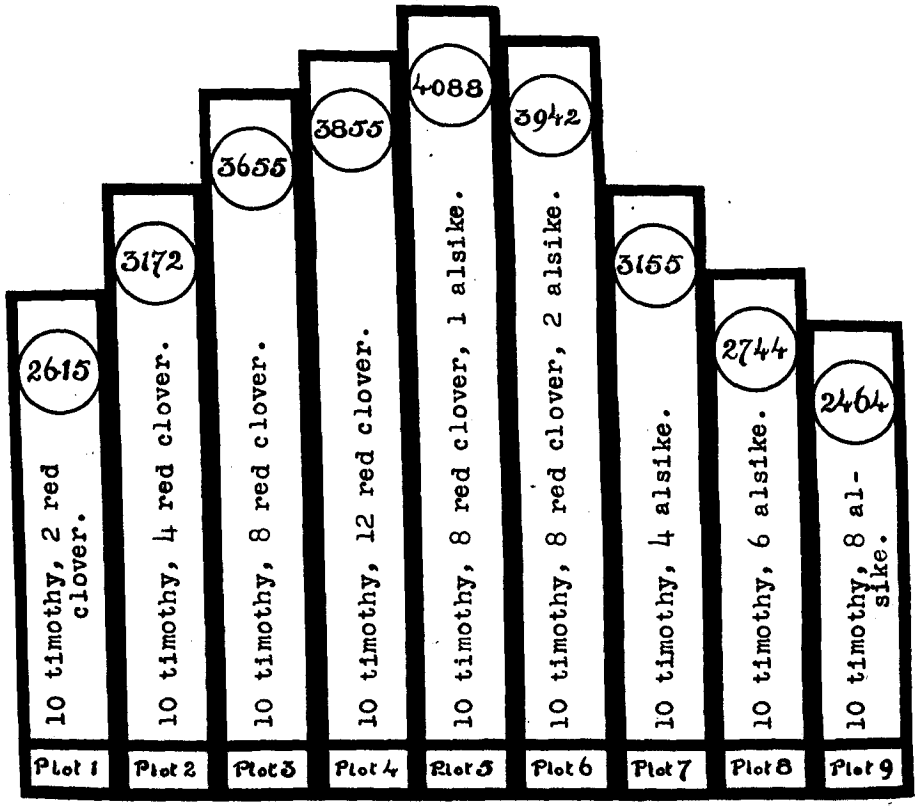


Diagram showing, in circles, average yields of hay in pounds per acre over a nine-year period on the "Rates of seeding clover" experiment recorded elsewhere in this report. Timothy was seeded at the uniform rate of 10 pounds per acre, the red and alsike clovers varying in the rate of seeding. The nurse-crop used was oats, seeded uniformly at 2½ bushels per acre.

It will be noticed in the columns giving averages of clover and of timothy for a nine-year period, as well as the average of the two taken together, that there is a gradual increase in yield until plot 5 is reached. Plot 5 is closely followed by plot 6.

We recommend seedings of at least 8 pounds red clover per acre, and one or two pounds of alsike, along with the regular seedings of timothy.

METHODS OF APPLYING BARNYARD MANURE—FOUR-YEAR ROTATION—POTATOES, GRAIN, HAY, HAY

Plot No.	Amount of manure and crop or crops to which it was applied during rotation				Nine-year average yield in pounds per acre				Average feed units produced per cycle of rotation, per acre	
	Potatoes	Oats	Clover	Timothy	Potatoes	Oats	Clover	Timothy	Actual	Relative
1	.....	Check—	No manure	.....	6,353	1,755	2,199	2,217	4,273	100·0
2	.....	.....	.....	20 tons before ploughing this sod for potatoes.	10,882	1,884	3,221	2,947	5,797	135·7
3	10 tons for potatoes	.....	10 tons after removing clover.	.....	8,413	2,162	3,414	3,538	5,912	138·4
4	.....	.....	.....	20 tons for potatoes after ploughing this sod.	10,613	1,740	3,264	2,677	5,549	129·9
5	20 tons for potatoes over fall ploughing of sod.	.....	.....	.....	10,891	1,812	3,079	2,340	5,474	128·1
6	.....	.....	20 tons after removing clover.	.....	8,600	1,830	2,696	3,727	5,417	126·8
7	.....	10 tons top dress after grain is up.	.....	10 tons after ploughing sod for potatoes.	9,816	1,819	4,050	2,887	5,872	137·4
8	.....	20 tons top dress after grain is up.	.....	.....	7,825	1,875	4,588	3,586	6,039	141·3
9	.....	.....	.....	20 tons in piles in fall, spread in spring for potatoes.	11,529	1,854	3,321	2,298	5,701	133·4

METHODS OF APPLYING MANURE

In the last two columns of the accompanying table an effort has been made to evaluate each different method of application by the use of the Scandinavian Feed-Unit System. This system aims at bringing different feeds, etc., to a common basis for comparison.

According to this system, 1·1 pound of oats equals one feed unit. Six pounds of potatoes, 2·5 pounds clover hay or 3 pounds of timothy hay are equal to one unit also.

Using these figures, each crop is reduced to feed units. By adding the units for the four years of the rotation under each different system of application, we obtain a figure which is satisfactory for purposes of comparison from a feeding value standpoint.

Plot No. 1 as a check received no manure. All other plots received 20 tons manure per acre at some time during the rotation.

It will be noted by a study of the above averages that the practice of applying all the manure to the hoed crop is apparently not the most economical. Allowing the check plot the value of 100 it will be seen that plot 8 assumes the highest relative standing, followed fairly closely by plot 3 and plot 7. All of these get away from the system of applying all the manure to the hoed crop.

METHODS OF AFTER-HARVEST CULTIVATION OF SOD LAND FOR GRAIN

The data in the table following would indicate that early ploughing with top-working the balance of the season, or early ploughing with reploughing or ribbing again in late autumn, is preferable to late ploughing either top-worked or not top-worked.

Plot	After-harvest cultivation of sod land in preparation for oats	Yield per acre			
		1924 crop		Nine-year average	
		bush.	lb.	bush.	lb.
1	Plough 5 inches deep early August, top-work balance of season	20	20	44	5
2	Plough 5 inches deep early September, top-work balance of season	22	32	44	19
3	Plough 5 inches deep early October, top-work balance of season	35	..	40	18
4	Plough 5 inches deep early October, without top-working	25	..	40	28
5	Plough 5 inches deep early November, without top-working	25	20	40	23
6	Plough August, top-work, replough late autumn	28	28	44	5
7	Plough August, top-work, rib late autumn	29	14	45	24
8	Stiff tooth rip in August and September, plough late autumn	29	14	40	17
9	Plough 5 inches deep in spring	22	32	32	27

The sod on plot 8 is worked up with a disk-harrow several times during August and September, and is ploughed late in autumn. Harrowing with the disk does not seem to produce any better results than does ploughing the sod late without previous harrowing. Under the circumstances, therefore, it cannot be recommended.

On this type of fairly heavy sandy loam soil, spring ploughing of sod for oats is not to be recommended.

METHODS OF AFTER-HARVEST CULTIVATION OF ROOT LAND FOR GRAIN

(Five-year rotation: Grain, roots, grain, clover, timothy. Experiment conducted on oats, third year of experiment.)

Plot	After-harvest treatment of root land	Yields of oats per acre			
		1924		Nine-year average	
		bush.	lb.	bush.	lb.
1	No autumn treatment	55	30	50	32
2	Ploughed shallow in autumn	62	22	47	20
3	Ribbed in autumn	71	6	51	18
4	Ploughed shallow in spring	71	6	50	15
5	No autumn treatment	69	24	54	16
6	Ploughed shallow in autumn	68	8	49	19
7	Ribbed in autumn	62	12	51	3
8	Ploughed shallow in spring	68	8	52	7
9	No autumn treatment	58	28	*43	31

* Eight-year average.

From the data at hand it would appear that the method of handling the land after harvesting the preceding root crop has little or no effect on the oat crop following. Ribbing admits of getting on the land somewhat earlier in the spring, and if done across the slope will assist in preventing soil washing. From the standpoint of labour involved, and the fact that returns are equally great, it is suggested that root land be kept without treatment previous to its spring harrowing, when preparing the seed-bed for grain.

EFFECT OF VARIETY OF NURSE CROP ON SUCCEEDING HAY CROPS

In this experiment all plots are seeded down at the rate of 12 pounds timothy and 10 pounds red clover per acre. They receive similar treatment throughout, with the exception of the nurse crop, which varies for each plot.

Plot	Variety of nurse crop used	Yield clover per acre		Yield timothy per acre	
		1924	Nine-year average	1924	Nine-year average
		lb.	lb.	lb.	lb.
1	2½ bushels oats per acre	3,136	3,353	2,490	3,681
2	1½ bushels barley per acre	4,049	3,472	2,925	3,223
3	1½ bushels wheat per acre	4,953	3,604	3,509	3,230
4	3½ bushels mixed peas and oats for hay	3,823	3,211	3,157	3,122
5	3 bushels mixed peas and oats for grain	3,217	3,140	2,950	3,106

From the above table it would appear that oats form the best nurse crop for hay provided both the clover and timothy years are considered; followed in order by wheat, barley, peas and oats. If the clover-year alone is considered, wheat forms the best nurse crop, followed by barley, oats, peas and oats in order.

METHOD OF SEED-BED PREPARATION FOR GRAIN

(Three-year rotation:—Roots, grain, hay.)

In this experiment the first plot of oats is sown on the root ground in the spring without any seed-bed preparation. The seed is covered by only one cut of the smoothing harrow. From this primitive method the various plots range up to a very completely prepared seed-bed. Little difference is noted in the yields under various treatments, so long as a good seed-bed is prepared. On a fairly heavy sandy loam soil such as prevails in this particular area, an excessive number of cuts of the harrow did not produce compensating increases in yields.

RATE OF SEEDING NURSE CROP OF OATS

(Four-year rotation: Hoed crop, grain, clover, timothy.)

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

Plot	Rate seeding acre	Yield of oats per acre		Yield of clover per acre		Yield of timothy per acre	
	Oats	1924	Nine-year average	1924	Nine-year average	1924	Nine-year average
	bush.	lb.	lb.	lb.	lb.	lb.	lb.
1	1½	1,690	1,422	3,135	2,795	3,819	2,898
2	2	1,120	1,507	4,358	3,002	2,553	2,507
3	2½	1,910	1,711	2,911	2,691	1,694	2,261
4	3	2,080	1,656	3,481	3,054	2,195	2,044

Averaged for nine years the heaviest yield of oats is found on plot No. 3, seeded with 2½ bushels per acre. With the hay crop following, the heaviest yield is found on Plot No. 1, where the nurse crop of oats had been seeded at 1½ bushels per acre. This was followed fairly closely by Plot No. 2. A considerable drop occurs after the rate of seeding nurse crop passes the two bushel mark. Little difference is found between the 2½ and 3 bushel rates.

DEPTH OF PLOUGHING SOD LAND FOR ROOTS

This experiment was started in 1916, using turnips as the root crop. The turnip crop failed in 1920, and the area was planted to potatoes in 1921 and 1922. It is difficult to draw conclusions from the limited data available. However, observation, together with a consideration of the available data, leads to the belief that ploughing 3 to 5 inches deep on this type of soil is equal, if not superior, to ploughing at depths of 7, 9 or 11 inches. The soil in this area is fairly heavy sandy loam, with a rather stiff subsoil.

A consideration of the averages in the following table shows but little difference in yield between shallow and deep ploughing. Plot No. 4, which was ploughed nine inches deep, shows a slightly higher average yield, and it might be pointed out that, with few exceptions, it has had a slightly greater yield each year. However, ploughing to a depth of nine inches is rather expensive, and decidedly heavy work for horses, and is not suggested as a general practice. There was more uniformity in the yields from one year to another on the land ploughed 7 inches deep. Wide variations in yield were found in the plots ploughed in the spring; spring ploughing of sod land for grain is not usually satisfactory.

DEPTH OF PLOUGHING SOD LAND FOR GRAIN

(Five-year rotation: Grain, roots, grain, hay, hay.)

Plot No.	Depth of ploughing sod for grain	Yield per acre			
		1924 crop		Nine-year average	
		bush.	lb.	bush.	lb.
1	Plough 3 inches deep in autumn	35	20	40	20
2	Plough 5 inches deep in autumn	30	20	41	..
3	Plough 7 inches deep in autumn	32	32	39	22
4	Plough 9 inches deep in autumn	46	16	*42	28
5	Plough 4 inches deep in spring	38	18	36	29
6	Plough 6 inches deep in spring	37	22	38	3

* Eight-year average for this plot.

RATE OF SEEDING NURSE CROP OF BARLEY

(Four-year Rotation: Roots, grain, hay, hay)

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

Plot No.	Rate of seeding per acre	Yield clover per acre		Yield timothy per acre	
	Barley	1924	Nine-year average	1924	Nine-year average
	bush.	lb.	lb.	lb.	lb.
1	1	3,840	2,864	3,999	3,235
2	1½	3,278	3,000	2,768	2,881
3	2	2,525	2,561	4,585	2,434
4	2½	1,808	2,521	*	†1,952

* Yield of timothy on plot 4 destroyed in 1924, no record available.
† Eight-year average for this plot.

By averaging the yields in the above table we find that the amount of hay produced decreases in correspondence with the increase of the amount of seed sown for nurse crop.

The following was the average yield of barley at the different rates over an eight-year period: One bushel rate, 26 bushels, 31 pounds; 1½ rate, 29 bushels, 9 pounds; 2 bushel rate, 32 bushels, 24 pounds; and at the 2½ bushel rate, 30 bushels, 11 pounds.

METHODS OF TREATING NEGLECTED LAND

From the available data it is difficult to say which method has proved superior. There seems to be little trouble, however, in reclaiming neglected land. Plough in early August or even earlier, and keep top-worked during the season. In the spring apply 1,000 to 1,400 pounds per acre of home-mixed fertilizers, and plant to potatoes. If these are cultivated, sprayed and otherwise well cared for, the crop should not only pay the cost of fertilizing, but should yield a fair profit over investment. The land is left in good tilth for producing paying crops of grain and hay.

DEPTHS OF LAYING UNDERDRAINS

This experiment is being conducted on a four-year rotation of potatoes, oats, clover, hay. Drains are set at depths of 24, 30, 36, 42 and 48 inches. To date only two cycles of the rotation have been completed. Evidence tends to prove that on this type of soil, underlaid by brickclay subsoil, it is quite unnecessary to set drains at a greater depth than 36 inches.

DEPTH OF SEEDING CEREALS

The following table indicates that barley seems to profit little from the deeper seedings. With oats a seeding of approximately 3 inches has given best returns. Very shallow seeding with either oats or barley is not to be recommended owing to danger of drought injury after seeding.

DEPTH OF SEEDING CEREALS

Plot	Depth of seeding cereals	Yield of barley per acre (2nd year of rotation)				Yield of oats per acre (4th year of rotation)			
		1924		Nine-year average		1924		Nine-year average	
		bush.	lb.	bush.	lb.	bush.	lb.	bush.	lb.
1	Seeded 1 inch deep	40	..	27	35	37	32	42	9
2	Seeded 2 inches deep	36	32	25	46	35	10	44	16
3	Seeded 3 inches deep	35	40	26	27	30	20	46	28
4	Seeded 4 inches deep	32	24	27	17	33	18	40	9

OPERATION OF TRACTOR

There is being operated at this Station at the present time a Moline Universal Tractor Model "D". It is of the forward-wheel-drive type, with a 4-cylinder, 4-cycle engine, practically the entire weight being supported by the two large drive wheels. It has given fairly satisfactory service, with very little delay for repairs during busy seasons. The following statement shows the amount of outlay during 1924, and the actual work performed. Incidentally it might be pointed out that we consider a day's work with this machine equal to a day for five horses. This is the third season this machine has been in operation.

MOLINE TRACTOR—MODEL "D"

Gasoline, 435½ gals.	$132 00
Cylinder oil, 19½ gals.	13 94
Overhauling and incidental repairs	63 82
Total	$209 76
Work performed—	
Belt work	6 hours
Double cutaway disk-harrow	206½ "
Spring-tooth harrow 4 sections	154 "
Ploughing 2-12 inch bottoms	40½ "
	"
Cost per hour	51½ cents

Charges for interest and depreciation have not been considered.

It is hardly fair to charge the entire cost of overhauling and repair to this one season, as the machine is still in excellent order, and with little or no additional outlay is ready for the spring work of 1925.

We have found the chief value of the tractor to be the relief of horse labour during the extremely busy seasons of seeding and fall ploughing and harrowing. By handling a four or five-horse hitch for from ten to fourteen hours per day during spring seeding, it materially reduces the number of horses that would otherwise be required.

HORTICULTURE

SEASON

The open autumn of 1923 was very favourable for trees and perennials. The wood matured and hardened well. The absence of frost in the ground during most of the winter and the good covering of snow that protected the shrubs and plants bought them through in splendid shape.

The cold, dry spring retarded the fruit bloom so that it escaped frost. The trees made fair growth and matured a fair crop of well-coloured fruit. The growing season was very favourable for vegetables and roots. The mild autumn was favourable for the flowers and made possible the completing of preparations for winter in the gardens.

ORCHARDS

The orchards are all making fair growth. Early in the year a number of young trees were planted, replacing those that had died; these made exceptionally good growth during the season. All orchards are ploughed deeply in the interspaces, and are intercropped with buckwheat or vegetables. All trees are protected from mice during the winter, by using tar paper hilled about with clay.

APPLES

The trees made good growth and wintered well; little winter-killing was reported. Yields were only fair this season, Ribston Pippin, Duchess, Astrachan, Pewaukee, Horace and Congo were among the highest yielding varieties.

CHERRIES

Our cherry orchard, on the whole, is doing fairly well. One of our greatest difficulties has been to protect it from the birds. In many instances trees producing large crops lost them, the birds devouring the fruit, thus destroying the records before harvesting. Yields in general this year were poor.

PLUMS

Considerable difficulty is experienced in saving the plum trees; many are beginning to die back, and during the winter or during heavy storms many branches are broken off by winds. Yields this year were below average.

PEARS

The pear orchard is making slow headway, yields were small this season. The trees made very good growth; there was plenty of bloom, but a poor set of fruit.

SMALL FRUITS

STRAWBERRIES—TEST OF VARIETIES

No.	Name or variety	Type of flower	Size	First and last picking of season	Yield in boxes per acre
1	Warfield	Inperfect	Medium	July 7–24	10,335
2	Francis	Perfect	"	" 7–24	8,987
3	Glen Mary	"	Large	" 9–24	7,076
4	Parker Earle	"	"	" 9–27	6,695
5	Dr. Burrill	"	"	" 5–24	6,550
6	Superb	"	"	" 9–27	6,378
7	Portia	Imperfect	"	" 9–24	6,326
8	Senator Dunlap	Perfect	Medium	" 5–21	5,625
9	Valeria	"	"	" 9–24	5,540
10	Beder Wood	"	"	" 5–24	5,268
11	Lavinia	"		" 11–27	5,202
12	Steven Late Champion	"	Large	" 11–24	4,959
13	Kellogg Prize	Imperfect	Medium	" 5–24	4,718
14	Early Jersey Giant	Perfect	"	" 7–24	4,667
15	Sample	Imperfect	Large	" 7–24	4,569
16	McAlpine	Perfect	"	" 9–24	4,304
17	Nettie	Imperfect	Medium	" 5–16	3,681
18	Pocomoke	Perfect	Large	" 7–21	3,663
19	Parson Beauty	"	"	" 7–22	3,594
20	Americus	Imperfect	Medium	" 7–21	2,825
21	Cassandra	Perfect		" 7–24	2,713
22	Bubach	Imperfect	Large	" 7–24	2,655
23	Desdemona	Perfect	"	" 7–22	2,333
24	Hermia	"	Medium	" 7–21	2,186
25	Charles First	"	"	" 5–18	1,995
26	Premier	"	"	" 5–24	1,952
27	Splendid	"	Small	" 7–22	612

The strawberry yields recorded are given in boxes (standard size) per acre. These boxes hold approximately one quart.

RASPBERRIES

Raspberries were below average yield this season. The following table gives the number of standard-size boxes per acre for the highest yielding varieties:—

Variety	Yield per acre in boxes
Baumforth	2,850
Shaffer (purple)	2,672
Herbert (red)	2,269

CURRANTS

Currants this year were considerably below average yield. Black currants have a ready market at good prices, but there is usually difficulty in disposing of the red and white sorts.

Black Currants

Name of Variety	Yield in boxes per acre
Topsy	6,050
Climax	4,396
Eclipse	3,267
Kerry	2,541
Victoria	2,360
Buddenborg	2,178
Champion	1,936
Boskoop Giant	968
Beauty	605

Red Currants

Name of Variety	Yield in boxes per acre
Red Grape	3,570
La Conde	3,267
Knight Large	1,694
Holland Red	1,331
Perfection	968
Long Bunch	786
New Red Dutch	242

White Currants

Name of Variety	Yield in boxes per acre
White Cherry	484

Gooseberries

Name of Variety	Yield in boxes per acre
Keepsake	4,211
Pearl	4,114
Mabel	3,388
Downing	2,904
Smith Improved	726

A ready market for gooseberries is found in this locality.

VEGETABLES

ASPARAGUS

The asparagus set out in the autumn of 1920 suffered severely during the heavy gale of October 1, 1923. A large portion of the entire plantation was broken off and carried away by the wind, the crowns were badly damaged, and as a result a very weak growth was recorded for the season of 1924. Conover Colossal, a late variety, proved the best for this locality, followed by Columbia Mammoth and Giant Argenteuil, although it may be noted that this latter variety is not entirely hardy. Palmetto and Washington have proved of little or no value at this station.

BEANS

Twenty varieties and strains of beans were planted for test purposes on May 30, 1924. Each lot occupied 30 feet of drill, the plants being 2 inches apart in the drill and the drills 30 inches apart. The following table gives date when ready for use, length of season, and yield in pounds per acre of green beans.

BEANS—TEST OF VARIETIES

No.	Variety and Source of Seed	Ready for use and Length of season	Yield in Lb. per Acre
1	Improved Refugee (Steele Briggs)	Aug. 8– Sept. 26	24,248
2	Hodson Long Pod (Ott. 2748)	Aug. 5– " 10	20,183
3	Yellow Eye (Yellow Pod) (Ott. 2821)	July 28– " 26	19,312
4	Masterpiece (Ott. 2746)	July 28– " 26	18,440
5	Currie Rust Proof (Graham)	July 28– " 2	18,440
6	Refugee or 1,000—1 (Ott. 1631)	Aug. 6– " 10	18,005
7	Giant Stringless Green Pod (Burpee)	July 28– " 2	17,569
8	No. 1 Pole Bean (Ott. 5964)	Aug. 7– " 7	17,279
9	Plentiful French (Ott. 2824)	July 28– " 3	16,988
10	Red Hidasta (Wills)	July 28– " 26	16,698
11	Extra Early Valentine (Ott. 1479)	July 28– " 10	16,408
12	Bountiful Green Bush (Ott. 2825)	July 28–Aug. 28	15,391
13	Davis White Wax (McDonald)	July 28–Sept. 10	15,100
14	Davis Wax (Ott. 2772)	July 28– " 10	14,810
15	Round Pod Wax (McDonald)	July 28– " 2	14,665
16	Wardwell Kidney Wax (Graham)	July 28– " 26	14,230
17	Wardwell Kidney Wax (Ott. 2823)	July 28– " 10	13,283
18	Round Pod Kidney Wax (Ott. 5232)	July 28– " 3	12,098
19	Stringless Green Pod (Ott. 2747)	Aug. 1– " 10	12,052
20	Challenge Black Wax (Ott. No. 592)	July 28–Aug. 9	9,002

The following varieties are recommended: Round Pod Kidney Wax, Hodson Long Pod, Extra Early Valentine, Stringless Green Pod.

THINNING BEANS.—Two varieties, Round Pod Kidney Wax (McDonald) and Stringless Green Pod (Graham) were seeded May 30, 1924. Each row was 30 feet long, 30 inches apart, and the plants of each variety were later thinned to 2 inches, 4 inches and 6 inches apart.

The following table gives the yield in pounds per acre for each variety, at the various distances, both green and ripe.

Distance of planting	Round Pod Kidney Wax		Stringless Green Pod	
	Green lb. per acre	Ripe, lb. per acre	Green, lb. per acre	Ripe, lb. per acre
2 inches	17,860	2,940	12,487	3,086
4 "	15,100	2,686	13,794	2,468
6 "	13,649	2,033	10,600	1,815

It would appear from the figures that planting two inches apart in the drill is most satisfactory for either of these two varieties.

BEETS

VARIETIES.—Eight varieties were grown; these were planted on May 26, and were ready for use July 24. Each variety occupied one row 30 feet long, 30 inches apart, with plants about 2 inches apart in the row. The yield is recorded in bunches per acre. Each bunch contained five beets of marketable size, and were sold on the local market.

No.	Variety and Source of Seed	Yield in bunches per acre
1	Crosby Egyptian (Steele Briggs)	19,166
2	Early Model (Graham)	18,586
3	Eclipse (McDonald)	18,295
4	Detroit Dark Red (McDonald)	15,972
5	Detroit Dark Red (Ott. 3494)	15,682
6	Early Black Red Ball (Burpee)	15,682
7	Detroit Turnip (Graham)	14,810
8	Early Wonder (Ewing)	14,500

DATES OF SEEDING.—Each seeding was in one drill 30 feet long and the drills were 30 inches apart. The first seeding was made May 14, 1924, other seedings took place at ten-day intervals. Fifteen feet of each drill were harvested early in the season, and the balance left until the end of the growing season. The following table gives the yield in bunches per acre of marketable and unmarketable vegetables; the variety used was Detroit Dark Red:—

Date of planting	Early Harvesting	Late Harvesting	
	Marketable	Marketable	Unmarketable
	Bunches per acre	Bunches per acre	Bunches per acre
May 14	20,328	9,292	4,646
May 24	20,908	9,292	3,484
June 3	16,844	8,132	3,484
June 13	13,938	11,616	2,324
June 23	13,358	11,616	2,324

For early-season vegetables, early plantings gave the best returns. Where beets are required for late-season use, the late seedings give fair yields, and the latest showed a very small percentage of unmarketable beets.

BRUSSELS SPROUTS

Three varieties were planted on May 7, 1924, and made good growth. In order of merit these were as follows: Paris Market (Ewing), Dalkeith (McDonald) and Amager Market (Ewing).

CABBAGE

VARIETIES.—Seed was started in the open on May 7, 1924, and plants set out May 21. Thirty plants were used in each test set 20 inches apart in the row with the rows 30 inches apart.

No.	Variety and Source of Seed	Yield in lb. per acre
1	New Flat Swedish (Dupuy & Ferguson)	66,893
2	Dala (McDonald)	60,622
3	Succession (Ewing)	60,622
4	Volga (Harris)	55,396
5	Danish Roundhead (Dupuy & Ferguson)	49,124
6	Marblehead Mammoth (Ewing)	48,079
7	Danish Ballhead (Steele Briggs)	48,079
8	Danish Ballhead Short Stem (Harris)	47,034
9	Danish Ballhead Solid Emperor Strain (Harris)	43,898
10	Danish Delicatesse (Red Variety) Dupuy & Ferguson)	43,898
11	Danish Ballhead, Intermediate (Harris)	41,808
12	Dutch Pickling (Red Variety) (McDonald)	39,718
13	All Seasons (Steele Briggs)	37,627
14	Early Jersey Wakefield (McDonald)	36,582
15	Golden Acre (Harris)	36,582
16	Early Paris Market (McDonald)	35,537
17	Improved American Curled Savoy (Farquhar)	35,537
18	Early Winnigstadt (Steele Briggs)	34,492
19	Chester Savoy (Steele Briggs)	33,446
20	Extra Amager Danish Ballhead (Ott. No. 3422)	16,026

Recommended varieties are: Early Paris Market, Volga, Early Jersey Wakefield, Danish Ballhead and Roundhead.

DATE OF SEEDING AND EFFECT ON KEEPING QUALITY.—Two varieties, Copenhagen Market (Graham) and Extra Amager Danish Ballhead (Ott. No. 3422) were seeded for storage purposes, there being twenty-five plants of each variety, 18 inches apart in the row and the rows 30 inches apart. Seedings were made on the dates indicated below. The heads were placed in storage last year (1923) in a cement root cellar, protected from frost, and removed in the spring of 1924. The data given below is for the 1923-grown crop. A similar experiment with five seedings is being conducted this year. Information on keeping quality, however, is not available, as the material is still in storage.

Date of Seeding	Variety and Condition on Removal from Storage, May 4, 1924	
	Copenhagen Market (Graham)	Ex. Amager Danish Ballhead (Ott. 3422)
May 14	Not satisfactory	Good. Quality medium.
" 24	Fair only	Kept well, quality excellent when removed.
June 3	Not satisfactory	Kept well, quality excellent when removed.
June 13	Not satisfactory	Only fair keeping qualities.

CARROTS

VARIETIES.—Six varieties were planted May 14, 1924. Plantings were made in the garden and also in the field some considerable distance from the garden to avoid injury from rust fly. The varieties were planted in rows 30 feet long and 2 feet wide, with the plants about 1½ inches apart in the row. Little or no injury from rust fly was noted either in the garden or in the field. Yields are computed in bunches of five carrots each, as this is the way they were sold on the local market.

CARROTS—TEST OF VARIETIES

No.	Variety and Source of Seed	Yield in bunches per acre	
		Garden	Field
1	Nantes Half Long (McDonald)	17,061	24,684
2	Improved Danvers Half Long (Dupuy & Ferguson)	12,342	23,232
3	Chantenay (McDonald)	21,054	20,691
4	Hutchison (Gregory)	13,068	19,965
5	Chantenay (Ott. No. 2011)	21,417	15,246
6	Oxheart (Steele Briggs)	13,794	15,246

Chantenay, Nantes Half Long and Improved Danvers Half Long are recommended varieties.

DIFFERENT DATES OF SEEDING—Variety used "Chantenay" (McDonald).—Each seeding was put in one drill 30 feet long, drills 30 inches apart; and the seedings were made in field and garden at ten-day intervals for five sowings. Fifteen feet of each row were used to determine earliness, yield, etc., as a green table vegetable. Fifteen feet of each row were left till end of season. The yield of marketable and unmarketable vegetables is reported in bunches of 5 carrots each.

Date of seeding	Date ready for use	Field Grown				Garden Grown			
		Early Harvesting		Late Harvesting		Early Harvesting		Late Harvesting	
		Marketable	Unmarketable	Marketable	Unmarketable	Marketable	Unmarketable	Marketable	Unmarketable
May 14	Aug. 1	13,358	.....	6,970	8,131	12,777	.....	13,939	13,939
" 24	" 1	13,939	.....	9,293	5,808	12,777	.....	13,939	13,939
June 3	" 15	10,454	.....	5,808	10,454	19,747	.....	17,424	10,454
" 13	" 29	6,970	.....	6,970	9,293	19,747	.....	15,101	12,778
" 23	" 29	18,560	.....	8,131	8,131	12,778	.....	20,909	6,970

CAULIFLOWER

Two varieties of cauliflower were tested this year, Early Dwarf Erfurt (McDonald) and Early Snowball (Graham). Both varieties gave the same yield, being at the rate of 10,454 pound per acre, and both were satisfactory in quality.

CELERY

VARIETIES.—Twelve varieties of celery were sown in hotbeds on April 21, 1924; pricked out May 30-June 2, and set out June 27. The varieties were planted in rows 5 feet apart, plants 6 inches apart in the row.

No.	Variety and Source of Seed	Average weight of 12 bunches	Yield in pounds per acre
		Lb. per doz.	
1	Winter Queen	31	45,012
2	Rose Ribbed Self Blanching (Vaughan)	24	34,848
3	Giant Pascal (Graham)	24	34,838
4	Evans Triumph (Dupuy & Ferguson)	24	34,848
5	Paris Golden Yellow (Steele Briggs)	23	33,396
6	Easy Blanching (McDonald)	22	31,944
7	Golden Self Blanching (McDonald)	22	31,944
8	Easy Blanching (Graham)	22	31,944
9	Golden Blanching (Ott. -3410)	21	80,492
10	White Plume	18	26,136
11	Paris Rose Ribbed (Bruce)	18	26,136
12	French Success (Harris)	18	26,136

Golden Self Blanching (early), White Plume (early), Giant Pascal (medium early), Rose Ribbed Self Blanching (main crop) and Winter Queen (main crop) are recommended varieties.

METHODS OF BLANCHING CELERY—GOLDEN SELF BLANCHING (GRAHAM) USED IN EACH TRIAL

No.	Method of Planting and Blanching	Results
1	Plants grown on the level, plants set 6 inches apart each way.	Blanched unevenly, flavour and crispness medium. Very large yield of small bunches, owing to large number of plants per acre.
2	Rows 5 feet apart, plants 6 inches apart in the row, grown on level and earthed up.	Blanched well with good flavour.
3	Plants grown in double row 6 inches apart, plants 6 inches apart in row, double rows 5 feet from each other, plants alternated in row. Blanched with roofing or like material.	Blanched early—medium flavour and crispness.
4	Rows 5 feet apart, plants 6 inches apart in row. Plants started in trench 6 inches deep and earthed up.	Blanched well with good flavour. Recommended.
5	Rows 5 feet apart, plants 6 inches apart in row. Grown on level and blanched with boards.	Blanched early, medium crispness and flavour.

SWEET CORN

VARIETIES.—Corn was sown on June 12, 1924.—Recommended varieties are: Early Malcolm, Malakoff and Extra Early Cory, all early varieties. Pickaninny, a purple-coloured sort, ripened earliest, and produced the largest number of ears. These are small and not so popular as some of the other varieties.

SWEET CORN

No.	Variety and Source of Seed	Ready for use and length of season	Yield in ears per acre
1	Pickaninny (Ott. No. 2567)	Aug. 28–Sept. 6	32,912
2	Early Malcolm (Ott. No. 860)	Sept. 2–Sept. 24	31,460
3	Pocahontas (Harris)	Sept. 15–Oct. 8	28,556
4	Malakoff (Vaughan)	Sept. 5–Oct. 15	28,556
5	Howling Mob (Burpee)	Oct. 2–Oct. 15	26,136
6	Whipple Yellow	Sept. 22–Oct. 15	25,652
7	Golden Bantam (Rennie)	Sept. 22–Oct. 15	25,168
8	Golden Bantam Selected (McDonald)	Sept. 15–Oct. 15	24,684
9	Extra Early Cory (Graham)	Sept. 15–Oct. 8	23,716
10	Sweet Squaw (Ott. No. 1445-47)	Sept. 10–Oct. 24	23,232
11	Golden Justice (Bruce)	Sept. 22–Oct. 15	23,232
12	Whipple Early (Harris)	Oct. 2–Oct. 24	22,748
13	Yellow Assiniboine (Wills)	Sept. 5–Oct. 2	22,748
14	Gehu (Wills)	Sept. 5–Oct. 2	21,296
15	Early Fordhook (Burpee)	Sept. 22–Oct. 15	20,812
16	Golden Giant (Rennie)	Oct. 2–Oct. 24	20,812
17	Metropolitan (Vaughan)	Oct. 2–Oct. 15	19,360
18	Sweet Nuetta (Wills)	Sept. 5–Sept. 24	17,908
19	Black Mexican (McDonald)	Oct. 1–Oct. 24	17,908
20	Extra Early Adam (Ferry)	Sept. 5–Oct. 2	17,424
21	Evergreen Bantam (Graham)	Oct. 8–Oct. 24	14,520
22	Earliest Catawba (Burpee)	Oct. 1–Oct. 15	11,132
23	Stowell Evergreen (Graham) (Not suited for this climate).	.....	3,388
24	Country Gentleman (Graham). (Did not ripen fit for use).		

SUCKERING EXPERIMENT.—To determine earliness, yield, etc.—Two varieties were used, Golden Bantam (Graham) and Early Malcolm (Ottawa).

(*a*) All suckers removed as they appeared.

(*b*) Suckers left on.

Three plants were left to a hill in both tests; hills 36 inches apart each way.

SWEET CORN—SUCKERING EXPERIMENT

Suckers removed		Suckers left on	
Yield in ears per acre		Yield in ears per acre	
Golden Bantam	Early Malcolm	Golden Bantam	Early Malcolm
Ready for use Sept. 13 26,862	Ready for use Sept. 8 27,346	Ready for use Sept. 22 30,250	Ready for use Sept. 8 33,880

CUCUMBERS

VARIETIES.—Cucumbers were planted in hills six feet apart each way.

Improved Long Green and Davis Perfect are suitable varieties for this province.

CUCUMBERS—TEST OF VARIETIES

No.	Variety and source of seed	Yield in pounds per acre
1	Improved Long Green (McDonald)	24,351
2	Davis Perfect (Graham)	20,267
3	Extra Early Russian (Burpee)	18,150
4	Early Fortune (McDonald)	17,999
5	Prolific (McKenzie)	15,579
6	Davis Perfect (Ott. 5621-13)	12,100
7	Snow Pickling (Rennie)	11,344
8	XXX Table (Rennie)	7,865
9	The Vaughan (Vaughan)	6,958
10	Small Gherkin (Ferry)	3,630

EGG PLANT

Three varieties were planted, Black Beauty, Extra Early Dwarf and New York Purple. These did not mature. We do not recommend the growing of egg plant in this province, as we have raised only one satisfactory crop in several years.

LETTUCE

Fourteen varieties of lettuce were tested. In the head varieties we recommend: Crisp as Ice, All Heart and All Seasons in the order named. In the curled or loose-leaf varieties we recommend: Grand Rapids, Hanson and Salamander.

MUSK MELONS

Four varieties were grown, Golden Champlain, Emerald Gem, Irondequoit and Golden Cassaba. All except the last set a fair amount of fruit. Musk melons cannot be recommended for this province.

ONIONS

VARIETIES.—Extra Early Flat Red is earliest, Yellow Globe Danvers and Large Red Wethersfield are recommended for main crop.

ONIONS—TEST OF VARIETIES

No.	*Variety and source of seed	Yield in pounds per acre
1	Southport White Globe (Steele Briggs)	30,492
2	Yellow Globe Danvers (Steele Briggs)	30,492
3	Large Red Wethersfield (Ott. No. 3408)	30,202
4	Ailsa Craig (Graham)	29,040
5	Yellow Globe Danvers (Graham)	29,040
6	Yellow Globe (Lethbridge)	28,459
7	Japanese or Ebenezer (Schell)	27,588
8	Giant Yellow Prize Taker (Steele Briggs)	27,298
9	Large Red Wethersfield (McDonald)	27,298
10	Large Red Wethersfield (Graham)	26,426
11	Southport Red Globe (Steele Briggs)	25,555
12	Extra Early Flat Red (Graham)	22,361
13	Southport Yellow Globe (McKenzie)	22,070
14	Giant Prize Taker (Graham)	20,618
15	Silver King (Graham)	17,134
16	Australian Brown (McDonald)	14,520
17	White Barletta (McDonald)	10,454

* Sown May 7, 1924 in rows 15 inches apart.

Onions grown for actual onion production. Note the coarse, strong growth due to thinning.

Onions grown for the production of sets. Note the fine growth due to the plants being left close together in the rows.

ESCHALOTS.—Eschalots grown from seed produced at the rate of 25,555 pounds per acre, while those grown from small eschalots produced 29,040 pounds per acre.

ONIONS GROWN FROM SETS.—Both red and yellow sets were planted this year, the red yielding at the rate of 22,651 pounds per acre, and the yellow at the rate of 15,682 pounds per acre. The use of sets is recommended when earliness is desired in onion growing.

PARSLEY

Three varieties were tested this year:

Moss Curled (Ewing)—Quality good.
Triple Curled (Ewing)—Quality and yield extra good.
XXX Parsley (Vaughan)—Quality good.

PARSNIPS

VARIETIES.—Hollow Crown is a recommended variety for our conditions.

PARSNIPS—TEST OF VARIETIES

No.	Variety and source of seed	Yield in pounds per acre		
		Marketable	Unmarketable	Total
1	Hollow Crown (Ott. Sel. 3421)	7,744	3,872	11,616
2	Cooper Champion (Dupuy & Ferg.)	8,228	2,904	11,132
3	Hollow Crown (McKenzie)	7,260	3,872	11,132
4	XXX Guernsey (Rennie)	3,388	2,904	6,292

DIFFERENT DATES OF SEEDING.—Seedings were made at ten-day intervals in rows 30 inches apart; yields are reported in bunches (five roots to a bunch); variety used, Hollow Crown (Graham).

PARSNIPS—DIFFERENT DATES OF SEEDING

Date of Seeding	Marketable	Unmarketable	Total	Per cent of marketable roots to total roots
May 8	8,712	4,646	13,358	65·2
" 18	8,712	5,227	13,939	62·5
" 28	7,550	5,808	13,358	56·5
June 7	7,550	6,389	13,939	54·2
" 17	2,904	9,293	12,197	23·8

It will be noted that little or no difference is found between early and late seedings insofar as yield is concerned. However, the earlier seedings give the higher percentages of marketable roots, many of the late seedings being small, rooty and pronged.

GARDEN PEAS

VARIETIES.—The following varieties are recommended: Gregory Surprise (extra early), Thomas Laxton and Prosperity (early heavy yielders Stratagem (late), Quite Content (large-growing very strong).

GARDEN PEAS—TEST OF VARIETIES

No.	Variety and source of seed	Ready for use and length of season	Yield in pounds per acre. Green, unshelled
1	Quite Content (McDonald)	July 17–Aug. 16	12,221
2	Prosperity (Rennie)	" 13– " 16	11,495
3	Thomas Laxton (McDonald)	" 12– " 16	11,011
4	The Lincoln (Invermere)	" 17–July 25	10,648
5	Advancer (Harris)	" 17–Aug. 1	10,406
6	First and Best (McKenzie)	" 10– " 16	10,324
7	Gregory Surprise X English Wonder (Ott. 2344)	" 13– " 1	10,043
8	Seedling No. 3 (Invermere)	" 17– " 7	9,801
9	Potlatch (Buckbee)	" 23– " 7	9,680
10	American Wonder (Graham)	" 17– " 1	9,012
11	Gradus X Amer. Wonder (Ott. 3679)	" 13–July 25	8,954
12	Market Garden (Gregory)	" 12–Aug. 12	8,751
13	British Wonder (Burpee)	" 17– " 1	8,712
14	McLean Advancer (Livingston)	" 17– " 7	8,712
15	Gradus (Ott. 2348)	" 13– " 16	8,470
16	Seedling No. 1 (Invermere)	" 23– " 1	8,470
17	Seedling No. 8 (Invermere)	" 17–July 25	8,349
18	Carter Daisy (Patmore)	" 24–Aug. 1	8,228
19	Advancer (Ott. 1068–69)	" 17– " 1	7,623
20	Seedling No. 6 (Invermere)	" 17–July 25	7,502
21	Sutton Excelsior (Harris)	" 17– " 25	7,381
22	Danby Stratagem (Ott. 5146)	" 23–Aug. 1	7,260
23	American Wonder (Ott. 3332)	" 17– " 1	7,139
24	Seedling No. 2 (Invermere)	" 17–July 25	7,018
25	Stratagem (Graham)	" 23–Aug. 16	7,018
26	Laxtonian (Graham)	" 12–July 25	6,815
27	McLean Advancer X Gregory Surprise (Ott. 2336)	" 17–Aug. 1	6,592
28	English Wonder (Ott. 2347)	" 17–July 25	6,534
29	Gregory Surprise (Gregory)	" 10–Aug. 16	6,350
30	Laxton Progress (Ott. 2334)	" 13– " 16	3,388

DISTANCE OF PLANTING.—Three varieties were planted in rows 36 inches apart, and 1, 2 and 3 inches apart in the row, to determine effect on earliness and yield. The spacing of the plants apparently had no effect on earliness, as the Thomas Laxton variety at all different distances was fit for use on July 13; English Wonder was ready for use July 17, and Stratagem on July 23. The following table gives the yield, in pounds per acre, of unshelled green peas for each variety at each distance:—

GARDEN PEAS—DISTANCE OF PLANTING

Variety and source of seed	Distance between plants in row		
	1 inch	2 inches	3 inches
	Pounds per acre	Pounds per acre	Pounds per acre
English Wonder (Ott. 3426)	5,929	6,655	5,747
Thos. Laxton (McDonald)	8,914	8,228	6,655
Stratagem (Graham)	7,462	4,840	3,347

Apparently 3 inches is too far apart for best yields. The difference between 1 inch and 2 inches is only slight, but tends to favour the thicker planting.

PEPPERS

Three varieties were grown, Harris Earliest (Harris) gave the highest yield, followed by Long Red Cayenne (McDonald) and Red Chili (McDonald) in the order named.

PUMPKINS

VARIETIES.—Connecticut Field and Sugar Pumpkin (main crop), Small Sugar (table use) are recommended varieties.

PUMPKINS—TEST OF VARIETIES

No.	Variety and source of seed	Yield per acre
		lb.
1	Connecticut Field (McDonald)	60,500
2	King of Mammoths (Graham)	39,258
3	Sugar Pumpkin (Graham)	34,418
4	Quaker Pie (McDonald)	13,444
5	Small Sugar (Ott. 5548-No. 7-selfed)	11,024
6	Large Cheese (Steele Briggs)	5,378

RADISH

Eight varieties were sown. In point of yield the following three varieties head the list in the order mentioned: Extra Early Scarlet White Tip (Graham), XXX Scarlet Oval (Rennie) and French Breakfast (Graham). All radishes grown this season are reported of fair quality.

SQUASH

VARIETIES.—Hubbard and Delicious are recommended varieties.

SQUASH

No.	Variety and source of ssed	Yield in pounds per acre
1	Green Hubbard (Graham)	25,813
2	Golden Hubbard (McDonald)	22,587
3	Delicious (Graham)	21,511
4	Warted Hubbard (Steele Briggs)	16,133
5	Golden Hubbard (Ott. 5546-No. 5 selfed, 1923)	15,864
6	Kitchenette (Wedge)	15,596
7	Golden Hubbard (Harris)	12,369
8	New Acorn (Buckbee)	8,336

TOMATOES

VARIETIES.—Alacrity, Earliana and Bonny Best are good, early ripening sorts.

TOMATOES—TEST OF VARIETIES

No.	Variety and source of seed	Yield in pounds per acre			Ripe per cent total crop
		Green	Ripe	Total	
1	Danish Export (Wiboltt)	29,947	29,811	59,758	49·9
2	Rosy Morn (Livingston)	39,204	15,798	54,994	28·7
3	Prosperity (Patmore)	17,424	35,392	52,816	67·0
4	Bonny Best (Keith)	35,937	16,743	52,680	31·8
5	Sunnybrook Earliana (Burpee)	10,618	39,885	50,503	79·0
6	John Baer (Steele Briggs)	32,670	16,607	49,277	33·7
7	XXX Round Scarlet Skin (Ren.)	15,518	33,623	49,141	68·4
8	Sparks Earliana (Ewing)	10,890	36,890	47,780	77·2
9	Matchless (Livingston)	40,837	4,220	45,057	9·4
10	Greater Baltimore (Stokes)	35,392	6,806	42,198	16·1
11	Chalks Early Jewel (St. Brig.)	16,335	24,366	40,701	59·9
12	Matchless (Burpee)	35,392	4,900	40,292	12·2

TOMATOES—TEST OF VARIETIES—*Con.*

No.	Variety and source of seed	Yield in pounds per acre			Ripe per cent total crop
		Green	Ripe	Total	
13	Earliana, Grade 3 (Langdon)	7,895	31,989	39,884	80·2
14	Sparks Earliana (Burpee)	16,879	22,733	39,612	57·4
15	Bonny Best (Stokes)	20,691	17,832	38,523	46·3
16	Pink (Ott. 3039)	28,858	8,440	37,298	22·6
17	Earliest Market (Buckbee)	7,895	27,769	35,664	77·9
18	Early Prosperity (Buckbee)	32,670	1,906	34,576	5·5
19	Alacrity X Hipper (Ott. 3040)	11,435	22,587	34,022	66·4
20	Norton (Livingston)	29,947	3,811	33,758	11·3
21	Stone (Livingston)	29,947	2,178	32,125	6·8
22	Pepper Tomato (Diener)	24,502	7,078	31,580	22·4
23	Early Detroit (Ferry)	25,591	4,356	29,947	14·5
24	Alacrity (Ott. 492)	5,173	22,460	27,633	81·3
25	Earliana, Grade 2 (Langdon)	8,168	16,063	24,231	66·3
26	Self Pruning (Burpee)	13,612	10,345	23,957	43·2
27	Burbank (Bruce)	5,989	17,696	23,685	74·7
28	Alacrity X Earlibell (O. 3035)	8,168	15,382	23,550	65·3
29	Gulf State Market (Ferry)	18,513	4,084	22,597	18·1
30	Coreless (Livingston)	20,146	1,361	21,507	6·3
31	New Ponderosa (Buckbee)	16,335	2,450	18,785	13·0

All varieties were planted on the same day, and harvesting was done from time to time as the fruit ripened. At the end of the season the balance of the fruit was harvested, weighed and recorded as the "amount of green fruit" produced. In the light of the foregoing it will be seen that a consideration of the percentage of ripe fruit produced (as shown in the table) indicates the relative earliness or lateness of the variety. Varieties in the above table showing high percentage of ripe fruit may be taken as the earlier varieties.

METHODS OF PRUNING AND HEADING PLANTS.—Two varieties were used in this experiment, Bonny Best (Stokes) and Alacrity (Ott. 5469). They were planted on the same day in rows 4 feet apart, with plants one foot apart in the row. All plants were pruned down to one stem, and tied up to stakes. Plants were headed back in different ways as indicated below; the method of treating apparently exercised no influence on the date of ripening of fruit.

TOMATOES—METHODS OF PRUNING

Method of pruning	Yield in Pounds per Acre							
Pruned to 1 stem and	Bony Best (Stokes)				Alacrity (Ott. 5469)			
	Green	Ripe	Total	% of ripe fruit	Green	Ripe	Total	% of ripe fruit
Not headed back	12,415	40,293	52,708	76·4	6,752	32,670	39,422	82·9
Headed back at 3rd truss of fruit	1,089	43,778	44,867	97·5	2,614	38,333	40,947	93·6
Headed back at 2nd truss of fruit	218	32,452	32,670	99·3	436	35,066	35,502	98·8
Headed back at 1st truss of fruit	.....	21,018	21,018	100·0	.....	20,473	20,473	100·0

As previously noted, the method of pruning apparently had little effect on the date of maturity of the fruit, but heading back the plants increased the amount of fruit ripened, as will be seen on referring to the column headed "per cent of ripe fruit." To procure a large amount of ripe fruit at little sacrifice in yield it is recommended to prune to a single stem and head back the plant at the third fruit truss.

POTATOES

USE OF SPROUTED VS. DORMANT SEED-PIECES.—Two varieties were used, Irish Cobblers and Green Mountains. These were planted in rows 30 inches apart,

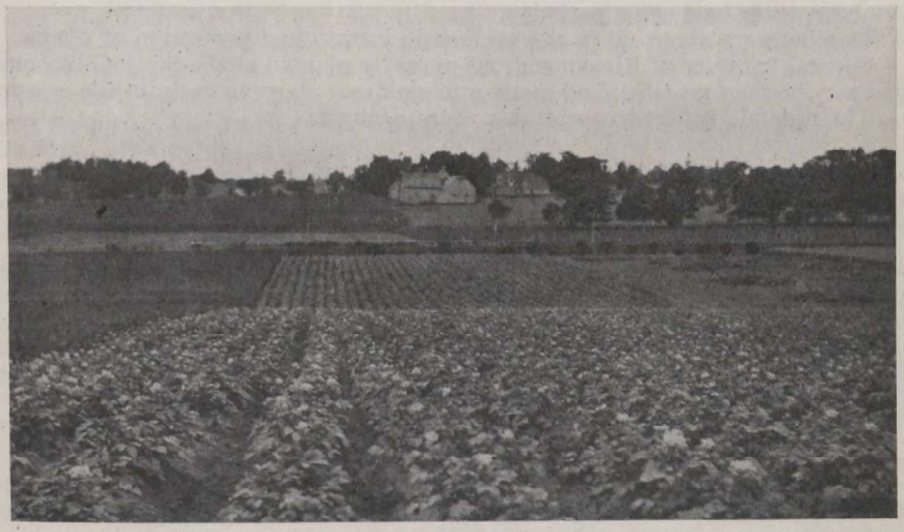
sets 14 inches apart in the row. They were planted on May 17, and note taken of yield, and also of the date when ready for use.

POTATOES—SPROUTED VS. UNSPROUTED SEED-PIECES

Ready for use	Sprouted		Unsprouted	
	I. Cobblers	G. Mountains	I. Cobblers	G. Mountains
	July 14	July 20	July 28	Aug. 4
	Bus. Lb.	Bus. Lb.	Bus. Lb.	Bus. Lb.
Marketable	445 1	557 45	585 22	388 56
Unmarketable	96 10	110 38	73 10	175 1
Total	541 11	668 23	658 32	563 57

The experiment has not been conducted for a period sufficiently long to warrant conclusions. Sprouting is only practicable for small areas. As the crop from the sprouted seed pieces was ready for use much earlier than that from the unsprouted, it would seem advisable to sprout the seed if early potatoes are desired

DATES OF PLANTING.—Again two varieties were used Irish Cobblers and Green Mountains. Rows were 30 inches apart with seed-pieces 14 inches apart in the row.



Dominion Experimental Station, Charlottetown—Certified potato seed production.

POTATOES—DATES OF PLANTING

Yields in bushels and pounds

Dates of Seeding	Irish Cobblers							Green Mountains						
	Market-able		Unmark-etable		Total		% Crop Market-able	Market able		Unmark-etable		Total		% Crop Market-able
May 17	585	22	73	10	658	32	88·9	388	56	175	1	563	57	69·0
" 27	587	25	101	59	689	24	85·2	566	46	91	54	658	40	86·0
June 6	421	15	99	34	520	49	80·9	356	8	141	42	497	50	71·5
" 16	279	5	113	8	392	13	71·2	301	50	219	30	521	20	57·9
" 28	199	8	81	28	280	36	71·0	183	34	101	59	285	33	64·3

Apparently for a so-called "early variety" such as the Irish Cobbler, seeding at about May 17 to 27 gives the best results. For dates later than this, both the yield and percentage of marketable tubers gradually decline.

With a "main crop" variety such as the Green Mountain, it would seem that May 17 is too early for planting. The planting made ten days later gave an increased yield of approximately 100 bushels per acre, with the highest percentage of marketable tubers for the variety. Plantings later than this, however, declined both in yield and percentage of marketable tubers produced.

TREES, SHRUBS, FLOWERS AND LAWNS

The trees, shrubs and perennial flowers wintered well and made a very fine showing this season. The paeonies made a splendid display, and the roses were perhaps finer and had a greater profusion of bloom than during any previous year at this Station.

The perennial border continues to improve year by year, and comes in for very favourable comment by all visitors to the station. The Kentucky water lilies, in the pond to the west of the buildings also were very fine this season, many of the blooms measuring at least seven inches, with a few as large as eight inches, in diameter.

The sweet peas were below average in amount of growth and quality of bloom this year, due, no doubt, to the dry weather prevailing during what should have been their best show period.

Dahlias were about up to the average in growth and perfection of bloom.

Several varieties of Rhododendrons, recently planted at the Station, bloomed this year for the first time, and made a magnificent showing early in the season.

The annuals suffered considrably from drought.

CEREALS

THE SEASON

Heavy autumn rains, a blanket of snow on the fields during the winter that prevented the frost from penetrating and allowed the snow to melt and soak into the ground in April, enabled the cereals to germinate well and withstand the dry, cool spring of 1924. Seeding was comparatively early, but growth slow the first part of the season. Maturity came rapidly, however, giving an excellent crop of grain, but less than the average crop of straw.

ROTATION FOR VARIETY TEST

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

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

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

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

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

This rotation is planned to give a maximum area devoted to the production of cereals.

UNIFORM TEST PLOTS OF CEREALS

The early season was fairly favourable for cereals, although the mid-season was very dry. Fair yields were realized. Rain at harvest time discoloured

much of the grain. All seed was treated either with formalin, copper carbonate or hot water, and little or no smut was noted.

Two systems for comparative testing were used this year. Many of the varieties were grown, as in former years, on plots of one-sixtieth acre, sown in duplicate. These plots were carefully rogued during the summer to remove impurities, etc., and, just previous to cutting the crop, a hand selection was made from them to obtain sufficient seed to sow the plot next year. This system of massed hand-selection is the same as that followed by Canadian Seed Growers' Association.

In addition to the above, a method, new to this Station, was inaugurated this year, known as the "*Rod-Row-Plot Method of Testing.*" In this system the plots are very small, and thus may be repeated many times. Numerous replications tend to reduce the error due to variation in soil, loss of single plots, non-uniformity of stand, etc. Averages obtained from several replications are considered to be more reliable than from duplicates.

At Charlottetown this year plantings for rod-row work were made as follows:—

Three rows of a variety were planted side by side; these rows were eighteen and one-half feet long, seven inches apart, and contained a definite number of seeds. Alongside this, three rows of the next variety were planted, and so on until the entire number of varieties on test were planted. This then was repeated until four plantings of each variety had been made. At harvest time the two outside rows of each three-row plot were discarded, leaving only the centre row for record work. This row was trimmed to a length of sixteen and one-half feet (1 rod) and the grain harvested. Each plot was saved separately, threshed and weighed. The yields of the four plots were then averaged and worked out to an acre basis.

It is felt, in introducing such a system of testing at this Station, that more may be accomplished in the way of accurately measuring the producing ability of different varieties. It will also permit more extensive tests to be carried on.

BARLEY

TEST OF VARIETIES

Barley plots on the whole were good this year. These plots were seeded on May 21. Rainy weather after cutting somewhat discoloured the seed. Ten varieties were tested on one-sixtieth-acre plots (in duplicate) with the following results:—

*Barley—Test of Varieties

Name of Variety	Date of Ripening	Number of days Maturing	Average Length straw including Head	Strength Straw, scale of 10 points	Actual yield per acre	Average Yield	
						Number of years	Bush. Lb.
					Bush. Lb.		
Duckbill Ott. 57	Aug. 12	83	36	10·0	88 11	7	51 3
Horn	" 11	82	37	9·5	85 19	2	77 15
Chinese Ott. 60	" 8	79	47	9·5	78 23	4	56 13
**Himalayan Ott. 59	" 7	78	34	6·0	78 12	4	49 1
O. A. C. 21	" 8	79	43	9·5	75 8	15	58 11
Ch'town No. 80	" 16	87	40	10·	74 16	13	62 4
Albert Ott	" 7	78	48	7·5	71 2	15	49 18
Ped. Beardless	" 7	78	47	8·5	67 29	5	49 19
Gold	" 12	83	40	10·0	60 41	15	57 15
Swed. Chevalier	" 12	83	31	10·	54 16	15	57 15

*Average of duplicate plots.
**Hulless calculated at 48 pounds per bushel.

OATS

TEST OF VARIETIES

Thirteen varieties were seeded in one-sixtieth-acre plots (in duplicate) on May 21, 1924.

OATS—VARIETY TEST

Variety	Date of ripening	Number of days to mature	Average length of straw including Head.	Strength of straw on scale of 10	Actual yield of grain per acre	Average yield	
						Number of years	Bush. Lb.
			Ins.		Bus. Lb.		
Victory	Aug. 20...	91	51	9·	92 2	15	83 13
O.A.C. 72	" 20...	91	54	9·5	89 16	11	78 22
Northland	" 24...	95	48	7·5	85 12	4	63 26
Prolific Ott. 77	" 24...	95	46	8·5	85 9	3	74 27
Longfellow	" 18...	89	46	6·5	83 20	5	61 27
*Liberty Ott. 480	" 19...	90	48	9·5	80 14	4	**51 5
*Laurel Ott. 474	" 20...	91	45	9·	79 12	1	79 12
Columbian Ott. 78	" 20...	91	41	9·5	77 1	3	75 5
Daubeney Ott. 47	" 6...	77	47	10·	73	14	61 1
Banner Ott. 49	" 20...	91	45	10·	68 2	15	78 7
Gold Rain	" 17...	88	48	10·	61 1	15	78 8
O.I. Black	" 17...	88	46	9·5	57 27	13	**69 1
Alaska	" 8...	79	41	10·	43 22	1	43 22

*Liberty and Laurel—hulless varieties figured at 34 lb. per bushel.
**One year omitted with each of these varieties, Liberty, 1923, Old Island Black 1919.

One of the outstanding features in the above table is the very high yield of the varieties Liberty and Laurel. It must be remembered that the yield per acre shown is for the naked kernel, as these varieties carry no vestige of hull whatsoever. Provided these varieties had produced 25 per cent hull in addition to the above weight of kernel per acre, the yields would have been at the rate of 107 bushels 8 pound per acre for Liberty, and 105 bushel 28 pound per acre for Laurel. In previous years these varieties were badly smutted; this season, however, the seed was treated with copper carbonate dust at the rate of 2 ounces per bushel of seed. The control of smut was practically complete, while very little, if any, of the seed was killed. As far as could be noted under field conditions, a full stand was realized.

TEST OF STRAINS OF BANNER

In addition to the regular test of varieties of oats in large plots, there was conducted this season a test of various strains of Banner oats. These were sown May 21, 1924, on one-sixtieth-acre plots in the same section as the regular variety tests.

TEST OF STRAINS OF BANNER OAT

Strain or number	Date of ripening	Number of days maturing	Average length of straw	Strength of straw, scale of 10	Actual yield of grain per acre
			Inchss		Bus. Lb.
Langille	Aug. 20.....	91	48	10	74 14
Saskatchewan 99	" 20.....	91	48	10	69 3
Ottawa 49	" 20.....	91	45	10	68 2
Dow	" 20.....	91	41	10	56 11
MacDonald 44	" 20.....	91	41	10	55 16
Waugh	" 20.....	91	43	10	54 33
Dixon	" 20.....	91	42	10	45 3

SPRING WHEAT

TEST OF VARIETIES

The spring wheat plots this year were seeded on May 21, 1924, in duplicate one-sixtieth-acre plots.

SPRING WHEAT—VARIETY TEST

Name of variety	Date of ripening	Number of days to mature	Average length of straw	Strength of straw on scale of 10	Actual yield of grain per acre	Average yield	
						Number of years	Bush. Lb.
Early Russian	Aug. 21	92	41	9·5	47 1	**9	40 32
Huron	" 21	92	44	10	45 32	15	37 6
Marquis (for Chemist)	" 21	92	41	10	45 28	15	34 54
*Charlottetown 123	" 25	96	43	10	42 27	**6	39 47
Marquis Ott. 15	" 21	92	41	10	42 10	1	42 10
White Russian	" 25	96	43	10	32 32	15	32 31
Early Red Fife	" 21	92	41	10	31 40	14	33 47
White Fife	" 27	98	41	10	26 30	12	30 51

*Formerly listed as "Whiteheads".
**One year omitted with each of these varieties, 1916 with Early Russian, 1919 with Charlottetown, No. 123.

SEEDING GRAIN ACCORDING TO SIZE AND WEIGHT OF KERNEL

A series of tests was started this year in co-operation with the Industrial and Scientific Research Council of Canada. The experiment is to be conducted for a peiod of not less than three yeais. During that time an effort is to be made to determine whether the present practice of seeding grain at so many pounds per acre, regardless of type or size of seed, is to be recommended. For this purpose use is being made of,—

1. Daubeney Oats, a variety characterized by high tillering tendency and possessing small seeds.
2. Banner Oats, medium tillering and medium-sized seeds.
3. Abundance Oats, little given to tillering and possessing large seed.

By accurate weighing and counting it was ascertained that the Daubeney had about 729,000 seeds per bushel, Banner had about 448,000, while Abundance had only about 389,000 seeds per bushel. Thus it will be noted that when a definite weight per ace of oats of a certain variety is sown, the actual number of kernels planted per acre may vary greatlv from that in an equal weight of another variety. The present effort is an attempt to determine whether better results can be obtained by seeding by weight, without considering size of seed, or whether size of seed should be taken into account.

These three varieties were tested by the Rod-Row method, approximately two thousand separate seedings being made. Seedings were made at rates of from 1 bushel to 4½ bushels per acre. The quantity of grain used to seed each plot was accurately weighed out, and the plots were accurately measured. Indications from the data at present available lead to the belief that some very interesting and valuable information may be obtained. Information secured from this experiment will be published in later issues of this report.

HEAD-ROW WORK WITH CEREALS

A further new departure in cereal work at the Station this year was the introduction of head-row work. In head-row work single heads are saved from outstanding plants or from plants differing markedly from the parent plant. The seed from each head is sown in a single row, the rows being a foot apart

and the seeds two to four inches apart in the row. Opportunity is thus given to study closely the progeny of individual heads. Being self-fertilized, the small grains are peculiarly adapted to careful study by this system. The idea behind the head-row or Pure Line System, as it is called, is that, being self-fertilized, each parent head will reproduce itself, so that the progeny will be exactly the same as the parent. This rule applies if the parent plant be pure. If the parent head be not pure, the progeny will represent the various constituent parts going to make up the parent. By selection and subsequent multiplication, new and superior strains often can be originated.

Approximately three hundred head-rows were grown this season, some of them giving promise of being of considerable value.

It might be stated here that the Superintendent would be pleased to receive from growers throughout the country such odd or outstanding heads as may be found in their grain fields. Some of the most valuable commercial varieties of grain have been discovered by farmers as single outstanding heads in their standard varieties. To mention only one of these, "Dawson Golden Chaff," selected as a single head by Robert Dawson in Ontario, from the variety White Clawson, has proven to be a most valuable and productive winter wheat.

AREAS DEVOTED TO SEED PRODUCTION AT THE STATION, 1924

Crop	Name of Variety	Field	Previous Crop	Acreage	Yield per ac.	
					Bush.	Lb.
Barley	Charlottetown No. 80	Connolly field	Roots	5·	40	11
	Charlottetown No. 80	CC-4	Roots	5·	40	–
	Charlottetown No. 80	A-3	Timothy hay.	1·	34	38
	Banner, Ottawa No. 49	A-5	Mangels	1·	79	30
	O.A.C. No. 72	G-3	Timothy hay.	·4	69	7
Oats	Banner Ottawa No. 49	B-2	Clover hay	1·	68	21
	Banner Ottawa No. 49	Connolly field	Roots	3·	50	31
	Early Red Fife	C-2	Potatoes	·57	32	43
Wheat	Huron	B-5	Potatoes	1·	31	43
	Charlottetown No. 123	G-5	Roots	·4	25	20

OATS—PERCENTAGE OF HULL

Name of Variety	1922	1923	1924	3-year average
	%	%	%	%
Daubeney	21·6	22·0	20·3	21·3
Gold Rain	22·3	25·5	26·5	24·8
O.A.C. 72	26·7	25·6	24·9	25·7
Banner, Ottawa 49	28·2	25·3	27·0	26·8
Victory	28·6	26·3	26·8	27·2
Old Island Black	29·1	30·6	27·6	29·1

FORAGE CROPS

THE SEASON

The spring was cold and backward, and the grass and clover, which wintered well, came on very slowly. The drought during April and May also retarded growth, so that the hay crop was scarcely up to the average.

The cool weather late in the spring gave splendid germination of the roots and corn. There were beneficial showers during July, August and September that kept the forage crops growing; this, with favourable weather for harvesting, gave us good silage, and very satisfactory returns from the root crops.

ENSILAGE CROPS

INDIAN CORN AND SUNFLOWERS

Corn poved reasonably good this year, due, no doubt, to the hot, dry summer season; also the date of the first killing frost was considerably delayed this year, giving the ear a long season to fill. Twitchell's Pride ripened, and the seed obtained is to be planted for test the coming season. This seed was taken from a large block grown for ensilage purposes, and there is reasonable assurance that it is not crossed with other varieties.

INDIAN CORN FOR ENSILAGE—TEST OF VARIETIES

No.	Variety	Average weight	State of maturity	Yield per acre	Per cent dry matter	Dry matter, lb. per acre
				Tons. Lb.		
1	Leaming (Duke)	84	Water	21 600	24·03	10,237
2	Disco 90-day white Dent (Dak. Imp. Seed Co	84	"	19 500	24·32	9,363
3	Golden Glow (Duke)	81	Early Dough.	20 1,000	20·87	8,557
4	Disco Pride Yellow Dent (Dak. Imp. Seed Co.)	69	"	17 1,000	23·22	8,127
5	Burr Leaming (Carter)	84	Water	19 1,600	20·47	8,106
6	North Dakota (Steele Briggs)	90	Milk	16	24·75	7,920
7	Wisconsin No. 7 (Parks)	90	Water	17 80	22·98	7,832
8	Comptons Early (Duke)	84	"	17 1,700	21·58	7,704
9	Disco Longfellow (Disco)	74	Milk	19 1,000	19·69	7,679
10	Disco N.W. Red Dent"	72	Med. Dough.	17 500	20·57	7,097
11	Leaming (Parks)	84	Late Milk	15 500	22·51	6,866
12	Wisconsin No. 7 (Duke)	96	Early Milk	15 375	21·88	6,646
13	Longfellow (Duke)	66	Milk	15 1,400	20·84	6,544
14	Hybrid (Wimple)	84	Late Milk	17 700	18·36	6,371
15	Yellow Dent (Wimple)	84	Milk	13 670	22·99	6,131
16	Northwestern Dent (Brandon)	78	Late Dough.	12 400	24·07	5,873
17	Northwestern Dent (Neb. grown McKenzie)	72	"	12 1,200	22·33	5,627
18	Northwestern Dent (N. Dakota grown McK.)	66	Dough	12 1,000	22·29	5,573
19	Twitchell's Pride (Fredericton)	84	Early Dough.	10 500	26·59	5,451
20	Quebec No. 28 (McDonald College)	78	Glaze	10 700	23·51	4,867
21	Amber Flint (Wimple)	72	Late Dough.	11 1,500	20·23	4,754

SUNFLOWERS FOR ENSILAGE—TEST OF VARIETIES

No.	Variety	Av'ge weight	State of maturity	Yield per acre	Per cent dry matter	Dry matter, lb. per acre
				Tons Lb.		
1	Russian Mammoth (Kenneth McDonald)	90	Water	16 1,600	16·04	5,389
2	Russian Giant (Disco)	84	"	16 400	14·80	4,795
3	Manchurian (McKenzie)	66	"	11 1,200	17·81	4,132
4	Mixed (C.P.R.)	84	"	11 1,600	17·00	4,012
5	Manchurian (C.P.R.)	75	Soft Dough	12 1,600	15·33	3,924
6	Manteca (C.P.R.)	64	Water	8 1,600	19·37	3,409
7	C.E.F. No. 76 (Ottawa)	72	Soft Dough	10 600	15·82	3,259
8	Black (C.P.R)	76	"	11 200	14·67	3,257
9	Russian Mammoth (C.P.R.)	78	Water	9 1,800	15·80	3,128
10	Mennonite (Rosthern)	54	Ripe	6 1,200	16·99	2,243

ROOTS

Dry matter determinations were made on all root crops this year. The following tables for mangels, sugar beets, carrots and turnips are all arranged in order of merit, judged by the pounds of dry matter produced per acre.

MANGELS—TEST OF VARIETIES

Thirty-five varieties were tested this year, and are all listed below in a table giving both gross weight and pounds of dry matter per acre.

MANGELS—TEST OF VARIETIES

No.	Variety and source	Yield	Per cent dry matter	Dry matter, lb. per acre
		tons lb.		
1	Fodersukkeroe Sugar Mangel (B.L. 760-D.L.F. Denmark)	25 600	16·73	8,467
2	Elvetham Mammoth (H. & H. Copenhagen)	28 100	15·06	8,448
3	Red Top White Sugar (Ewing)	16 1,000	24·58	8,113
4	Long Red Mammoth (Ewing)	24 1,200	15·92	7,833
5	Svalof Red (Gen. Sw. Seed Co., Svalof)	23 1,700	16·18	7,716
6	Long Red Mammoth (Halifax Seed Co.)	24 1,200	15·49	7,620
7	Yellow Intermediate (C.E.F. Ottawa)	24 300	15·23	7,356
8	White Red Top Half Sugar (H. & H. Copenhagen)	23 1,600	15·17	7,222
9	Golden Tankard (Halifax Seed Co.)	23 1,400	14·05	6,662
10	Barres Stryno (H. & H. Copenhagen)	24 1,600	13·36	6,625
11	Barres Sludstrup (B.L. 752-D.L.F. Denmark)	22 1,600	14·23	6,488
12	Barres Rosted (H. & H. Copenhagen)	23 800	13·68	6,400
13	Barres Taaroje (H. & H. Copenhagen)	24 500	13·03	6,318
14	Svalof Original Alpha (Gen. Sw. Seed Co., Svalof)	21 400	14·84	6,293
15	White Green Top Half Sugar (H. & H. Copenhagen)	21 1,200	14·46	6,246
16	Giant White Half Sugar (Ewing)	17 800	17·81	6,199
17	Danish Sludstrup (Ewing)	18 1,400	16·56	6,192
18	Barres Stryno (B.L. 748-D.L.F. Denmark)	24 400	12·73	6,162
19	Eckendorfer Yellow (H. & H. Copenhagen)	24 600	12·57	6,109
20	Red Globe (Dupuy & Ferguson)	21 700	14·01	5,983
21	Eckendorfer Red (H. & H. Copenhagen)	23 800	12·73	5,955
22	Danish Sludstrup (McDonald)	21	14·12	5,931
23	Giant Yellow Globe (Ewing)	23	12·52	5,760
24	Barres Oval (Gen. Sw. Seed So. Svalof)	18 1,200	15·43	5,739
25	Barres Tystofte (B.L. 749-D.L.F. Denmark)	20 500	14·00	5,671
26	Eckendorfer Red (Gen. Sw. Seed Co., Svalof)	21 400	13·26	5,622
27	Barres Half Long (Gen. Sw. Seed Co., Svalof)	19 1,200	14·33	5,617
28	Giant Yellow Intermediate (Halifax Seed Co.)	21 700	13·03	5,565
29	Barres Fjerritslev (N. & H. Copenhagen)	22 1,200	12·25	5,539
30	Barres Sludstrup (H. & H. Copenhagen)	20 1,600	13·31	5,538
31	Giant Yellow Intermediate (Ewing)	19 500	14·01	5,393
32	Red Globe (Ewing)	19 400	14·01	5,381
33	Barres Sludstrup (Gen. Sw. Seed Co. Svalof)	21 1,200	12·40	5,357
34	Eckendorfer Yellow (Gen. Sw. Seed Co. Svalof)	20 1,000	12·60	5,166
35	Golden Tankard (Ewing)	18 1,900	13·35	5,059

SUGAR BEETS—TEST OF VARIETIES

Seven varieties of sugar beets were successfully grown at the Station this season. By a consideration of the following table it will be noted that the pounds of dry matter produced per acre run exceedingly high. As the dry matter is really the valuable feeding part of the crop, and as the quantity of dry matter produced surpasses that of any other of our root crops, it might be concluded that the growing of sugar beets as a stock food should be recommended. The only difficulty in the handling of this crop is in the harvesting. Sugar beets will do well on any land that will produce a good crop of mangels; the beets, however, grow almost entirely beneath the surface of the soil, making it almost impossible to pull them. They may be readily lifted with a fork, and, although it has never been tried at this Station, it might be feasible to plough a furrow as close to the drill as possible, and pull them by hand after thus loosening the soil. It is regrettable that a root crop so valuable as sugar beets offers such difficulties in its production.

TEST OF VARIETIES—SUGAR BEETS

No.	Variety and Source	Yield per acre	Per cent dry matter	Dry matter lb. per acre	Per cent sugar in juice	Co-efficient of purity per cent
		ton lb.				
1	Dr. Burgmann (Dom. Sug. Co.)	18 1,500	26·13	9,797	18·42	86·20
2	Dieppe (Dom. Sugar Co.)	17 1,200	26·39	9,291	19·60	90·88
3	Henning & Harving (Dom. Sugar Co.)	16 700	26·49	8,663	19·22	90·10
4	Vilmorin's Improved (Vil.)	15 1,300	25·11	7,860	17·79	86·96
5	Schreiber & Son (Dom. Sug. Co.)	13 1,700	25·92	7,179	20·42	95·57
6	Kitchener (Dom. Sug. Co.)	12 1,400	26·67	6,776	19·07	90·97
7	Horning (Dom. Sug. Co.)	13	25·94	6,744	20·13	94·14

CARROTS—TEST OF VARIETIES

Seventeen varieties of field carrots were grown at this Station this year. Carrots produce a very satisfactory crop in this province, and are easily grown and readily harvested. They cannot be recommended as a feed for dairy cows, as they are likely to impart a strong flavour to the milk; but they are valuable for horses, particularly as a conditioner, and a small area might be grown on every farm.

CARROTS—TEST OF VARIETIES

No.	Variety and Source	Yield	Per cent dry matter	Dry matter, lb. per acre
		tons lb.		
1	Champion (Gen. Sw. Seed Co. Svalof)	18 700	13·01	4,777
2	White Belgian (1,207 Trifolium Denmark)	14 1,600	14·78	4,375
3	Yellow Belgian (Ewing)	17 1,600	11·88	4,231
4	Improved White Vosges (McDonald)	17 1,400	11·49	4,068
5	White Belgian (French)—(Ewing)	16 100	12·25	3,934
6	Large White Belgian (Rennie)	14 1,800	11·37	3,387
7	Large White Vosges (Dupuy & Ferguson)	14 1,200	11·59	3,384
8	White Belgian (H. & H. Copenhagen)	15 100	11·00	3,313
9	Half Long White (Gen. Sw. Seed Co. Svalof)	13 400	12·18	3,215
10	New Yellow Intermediate (Halifax Seed Co.)	10 1,400	12·69	2,716
11	Improved Intermediate White (Ewing)	12 400	10·72	2,615
12	Champion (H. & H. Copenhagen)	10 1,000	12·35	2,593
13	White Belgian (Halifax Seed Co.)	12 500	10·39	2,546
14	New Yellow Intermediate (Ewing)	11 700	11·16	2,533
15	White Belgian (Graham)	10 1,000	11·73	2,463
16	Danish Champion (C.E.F. Ottawa)	7 600	12·43	1,815
17	James B.L. 781 (D.L.F. Denmark)	5 900	12·92	1,408

SWEDE TURNIPS—TEST OF VARIETIES

Thirty-three varieties were grown as listed in the following table:—

SWEDE TURNIPS

No.	Variety and source	Yield per acre	Per cent dry matter	Dry matter lb. per acre
		tons lb.		
1	Swede Bangholm (Trifolium, Denmark)	26 700	13·60	7,169
2	" " (No. 1116 Trifolium Denmark)	25 1,400	13·82	7,106
3	" " (McKenzie)	24 1,900	14·08	7,026
4	" " (Lyngby, D.L.F. Denmark)	24 400	14·31	6,924
5	" " (Ewing)	24 1,400	13·25	6,545
6	" " (Gen. Swed. Seed Co.)	25 600	12·75	6,449
7	" " (Nappan)	20 1,900	14·07	5,897
8	" Ditmar's (H. H. McNutt)	23 —	12·10	5,566
9	" Yellow Tankard (B.L. 351 D.L.F. Denmark)	24 300	11·42	5,515

SWEDE TURNIPS—*Con.*

No.	Variety and source	Yield per acre	Per cent dry matter	Dry mat er lb. per acre
10	" Dalis (B.L. 773-D.L.F. Denmark)	18 500	11·83	5,503
11	" Bangholm Purple Top (Rennie)	21 300	12·80	5,414
12	" Fynsk Bortfelder (Parti 2660 D.L.F. Denmark)	28 200	9·60	5,398
13	" Sutton's Champion Purple Top (Rennie)	18 900	14·58	5,379
14	" Kaalrabifro Bangholm 7021 (Disco)	18 800	14·15	5,209
15	" Hall's Westbury (McDonald)	18 1,500	13·42	5,031
16	" Funen Bortfelder (Hjalmar Hartman, Copenhagen)	26 1,500	9·27	4,961
17	" Bangholm Studsgaard (D.L.F. Denmark)	17 1,300	14·05	4,961
18	" Hall's Westbury (Ewing)	19 700	12·11	4,687
19	" Magnum Bonum (Ewing)	16 200	14·18	4,566
20	" Kaalrabifro Bangholm 7022 (Disco)	15 —	14·43	4,329
21	" Bangholm Purple Top (Halifax Seed Co.)	16 1,600	12·74	4,282
22	" Kaalroc Wilhelmsburger (D.L.F.) (Denmark)	16 —	13·26	4,243
23	" Imp. Yel. Swed. (Gen. Sw. Seed Co.)	14 1,500	13·65	4,027
24	" Olsgaard Bang. (H. & H. Copenhagen)	15 400	13·15	3,997
25	" Kangaroo Bronze Top (Graham)	14 1,300	13·45	3,941
26	" Shepherd, Golden Globe (H. & H. Copenhagen)	14 800	13·39	3,858
27	" Elep. or Jumbo (Hal. Seed Co.)	15 800	12·26	3,777
28	" Invicta Bronze Top (Ewing)	14 500	13 25	3,777
29	" Kangaroo (Ewing)	12 1,400	12·99	3,300
30	" Halewood's Green Top (Ewing)	12 400	13·34	3,255
31	" Sutton's Champion Purple Top (Ew.)	12 1,200	12·69	3,199
32	" Shepherd (Trifolium, Denmark)	11 500	12·91	2,905
33	" Elephant or Monarch Improved (Ewing)	10 1,800	12·39	2,601

CLOVERS AND GRASSES

FIELD CROPS OF HAY

Kind of Hay	Field	Preceding Crop	Acreage	Yield per acre
				Pounds
Timothy	G-I	Timothy	0·4	8,715
Timothy	G-II	Timothy	0·4	6,965
Timothy	G-VII	Clover	0·4	6,640
Clover	C-III	Wheat	0·57	6,026
Clover	B-I	Wheat	1·0	5,610
Clover	A-I	Oats	1·0	5,505
Timothy	C-IV	Clover	0·57	5,118
Timothy	CC-I	Clover	5·0	5,000
Timothy	CC-III	Timothy	5·0	5,000
Timothy	A-II	Clover	1·0	4,548
Clover	G-VI	Wheat	0·4	4,175
Clover	Blake Field	Barley	8·0	4,000
Timothy	Blake Field	Timothy	10·0	4,000
Clover	Connolly Field	Oats	10·0	3,500
Clover	B-III	Oats	1·0	3,200
Clover	CC-II	Barley	5·0	3,000
Clover	FF-IV	Grain	2·0	2,000

Thirty-seven grass plots were seeded July 11, 1923, with a cover-crop of barley. These proved to be in an unfortunate location, and much of the data had to be discarded on account of invasions of weeds and wild grasses.

Orchard grass, meadow fescue and timothy were each tried with late red and early red clover. Four strains of timothy, six strains of white Dutch and three varieties of sweet clover were sown. Little or nothing is to be gained by a consideration of the yields, so a table of these is not given. Observation and field notes, however, tend to show that meadow fescue may prove valuable as a fodder crop in this province. The sweet clovers made no headway at all; among the white Dutch clovers the variety Ladino, first imported by the

United States Department of Agriculture from Italy, gave great promise as a bottom clover for pasture lands. This variety has proved very valuable in certain sections of the United States. It is grown in a manner similar to other clovers, using a thinly seeded nurse-crop of barley or wheat. Three to six pounds is the normal rate for seeding this clover, and it should be seeded early for best results.

A new series consisting of seventy-six plots of grasses and clovers was sown without nurse crop on June 18-20, 1924. The following is a list of these, each being sown in duplicate:—

Red Clovers at 12 lb. per acre—
- Early Swedish
- Medium late Swedish
- Late Swedish
- Alta Swede
- Kenora
- Alfred
- Ottawa
- Châteauguay
- St. Clet
- Dauphine
- Transylvania
- Spadone
- Umbria
- Marche
- Emilia
- Mts. Central Italy
- Padua
- Sicily

White Dutch at 10 lb. per acre—
- Morso
- Stryno
- Ladino
- Wild Scottish

Timothy at 20 lb. per acre—
- Ohio No. 6779
- Ohio No. 3937
- Ohio No. 9349
- Ohio commercial
- Boon, C.E.F. 23

Sweet Clovers at 20 lb. per acre—
- Dwarf
- Zouave
- Arctic
- Maccor
- Hubam (annual)

Miscellaneous grasses—
- Reed Canary at 10 pounds per acre
- Red Top at 12 pounds per acre
- Kentucky Blue Grass at 25 pounds per acre
- Meadow fescue at 20 pounds per acre
- Tall Oat grass at 30 pounds per acre
- Orchard grass at 15 pounds per acre

These plots are planted in what is considered a satisfactory area; the weeds were kept cut during the season. During the next several years valuable data should be obtained from these.

INVESTIGATIONAL WORK IN CO-OPERATION WITH THE DIVISION OF CHEMISTRY, CENTRAL EXPERIMENTAL FARM, OTTAWA

DRY MATTER DETERMINATIONS

Late in the season new equipment was installed for determining the amount of absolute dry matter contained in many of our crops. Determinations are made on all grass and clover crops, corn and sunflowers, as well as on all field root crops, i.e., mangels, turnips, carrots, sugar beets, etc.

It has long been felt that reporting weights, as determined in the field, is not a fair means of comparison. The state of maturity at date of cutting, the subsequent curing, the state of the weather at and immediately preceding the weighing of a hay crop all contribute to influence in the final result. Fields cut when over-ripe suffer by comparison with those cut at the proper stage of maturity and containing plenty of moisture.

With root crops it is a recognized fact that wide differences occur in the water content. Certain varieties of mangels may give a high tonnage per acre, but are found to be comparatively low in solids, or dry matter, and after all it is in the dry matter that the food value is found.

Realizing this, it has been decided that dry matter determinations shall be made in all of our crops influenced by the above factors.

EXPERIMENTS WITH FERTILIZERS

SOURCES OF PHOSPHORIC ACID—BASIC SLAG EXPERIMENT

This experiment was started in 1923, with barley as a nurse crop for clover hay. Six different brands of basic slag were applied at two different rates per acre; superphosphate was used at two different rates, and ground rock phosphate was applied at three different rates per acre. There were six check plots (no basic slag) distributed regularly over the field. The plots receiving the lowest application of superphosphate also received a coating of ground limestone. The entire area, including checks, received (previous to the application of specific fertilizers mentioned below), an application of 100 pounds nitrate of soda and 50 pounds muriate of potash per acre. Absolute dry matter determinations were made on all hay crops this year. The yields in the following table are given in equivalent amounts of hay containing 12 per cent moisture.

BASIC SLAG EXPERIMENT

Yields of hay per acre—12 per cent moisture

Treatment, Application per acre	Per cent P_2O_5	Checks	Supplying P_2O_5		
			70 lb.	140 lb.	280 lb.
		lb.	lb.	lb.	lb.
No treatment—6 checks	.....	*1,609	.....	.....	.....
Acid phosphate 437 lb. and 4,000 lb. ground limestone	16	.....	2,791	.....	.....
Acid phosphate, 437 lb	16	.....	2,334	.....	.....
Acid phosphate, 875 lb	16	.....	.....	3,064	.....
Ground rock phosphate, 1,000 lb	28	.....	.....	.....	2,259
Ground rock phosphate, 500 lb	28	.....	.....	960	.....
Ground rock phosphate, 250 lb	28	.....	1,293	.....	.....
Victory slag, 1,750 lb	8	.....	.....	2,197	.....
Victory slag, 875 lb	8	.....	2,462	.....	.....
English slag, 875 lb	16	.....	.....	**2,931	.....
English slag, 437 lb	16	.....	x2,241	.....	.....
Open Hearth slag, 1,270 lb	11	.....	.....	1,844	.....
Open Hearth slag, 635 lb	11	.....	1,328	.....	.....
Best of All slag, 700 lb	20	.....	.....	2,674	.....
Best of All slag, 350 lb	20	.....	1,728	.....	.....
XXX Fortified slag, 825 lb	17	.....	.....	2,022	.....
XXX Fortified slag, 412 lb	17	.....	1,820	.....	.....
XX Fortified slag, 1,000 lb	14	.....	.....	1,584	.....
XX Fortified slag, 500 lb	14	.....	1,818	.....	.....

* Average of 6 plots.
** One plot only.
x Average of 3 plots.
NOTE.—All plots, including checks, received 100 pounds nitrate of soda and 50 pounds muriate of potash per acre in addition to the materials applied as per above table.

NITRATE OF SODA AT DIFFERENT DATES AND NITRATE OF SODA VS. SULPHATE OF AMMONIA

In 1923 an area of potatoes was devoted to the determination of best dates for the application of nitrate of soda, and also to a comparison of nitrate of soda with sulphate of ammonia as a source of nitrogen for potatoes. The result of the work with potatoes was given in the 1923 report of this Station. This season the area was seeded to barley. While little or no residual effect was expected from either of these fertilizers this year, it was thought it might be of interest to follow these plots through to the grain crop.

After a careful consideration of the yields obtained, it could not be definitely stated that any effect was noticeable due to the previous year's fertilizing, although there was some indication that a percentage of the sulphate of ammonia, at 250 pounds per acre, had remained in the soil and increased the grain crop this year.

MANURE VS. FERTILIZERS FOR POTATOES

This experiment was started in 1923. It is the intention to carry this along for several years so that reliable results may be obtained. The yields, however, are given herewith, as an indication of what may be expected.

YIELD POTATOES, FERTILIZER EXPERIMENT, CONNOLLY FIELD

POTATOES IN ROTATION (4 YEARS: POTATOES, OATS, HAY, HAY)

Fertilizer applied	1923			1924			Average for two years			
	Large	Small	Total	Large	Small	Total	Large	Small	Total	Marketable
	lb.	lb.	lb.	lb.	lb.	lb.	lb.	lb.	lb.	per cent
Manure, 20 tons per acre	6,460	1,564	8,024	14,400	2,400	16,800	10,430	1,982	12,412	84
No manure. Nitrate of soda, 130 pounds per acre. Acid phosphate, 500 pounds per acre. Sulphate of ammonia, 100 pounds per acre. Muriate of potash, 160 pounds per acre	9,010	3,247	12,257	7,280	1,120	8,400	8,145	2,183	10,328	79
Manure, 10 tons per acre. Nitrate of soda, 65 pounds per acre. Acid phosphate, 250 pounds per acre. Sulphate of ammonia, 50 pounds per acre. Muriate of potash, 80 pounds per acre	7,735	1,547	9,282	15,520	2,080	17,600	11,628	1,814	13,442	87
No manure or fertilizer	748	1,020	1,768	4,960	800	5,760	2,854	910	3,764	76

POTATOES CONTINUOUSLY

Fertilizer applied	1923			1924			Average for two years			
	Large	Small	Total	Large	Small	Total	Large	Small	Total	Marketable
	lb.	lb.	lb.	lb.	lb.	lb.	lb.	lb.	lb.	per cent
Manure, 20 tons per acre	5,287	3,315	8,602	12,560	2,960	15,520	8,924	3,137	12,061	74
Nitrate of soda, 130 pounds per acre. Acid phosphate, 500 pounds per acre. Sulphate of ammonia, 100 pounds per acre. Muriate of potash, 160 pounds per acre.	6,001	3,400	9,401	11,200	640	11,840	8,600	2,020	10,620	81
Manure, 10 tons per acre. Nitrate of soda, 65 pounds per acre. Acid phosphate, 250 pounds per acre. Sulphate of ammonia, 50 pounds per acre. Muriate of potash, 80 pounds per acre	6,409	2,601	9,010	11,840	2,400	14,240	9,125	2,501	11,626	78
No manure or fertilizer	1,751	2,601	4,352	2,240	1,760	4,000	1,996	2,180	4,176	48

In 1923 the yields from plots receiving chemical fertilizers only were the highest of the series. In the 1924 results, the yields from the plots receiving only chemical fertilizers are decidedly lower than those from plots receiving manure. The low yields of fertilizer plots for 1924 may be due, in part at least, to the extremely dry weather following late planting. The manure used was applied

the previous winter, and had an opportunity to absorb, and no doubt retained, considerable moisture. The chemical fertilizers received little or no rain throughout a large part of the season, and undissolved chemicals were found in the soil at harvest. It is felt that this had considerable to do with the reduced yields on these plots.

This year a crop of oats followed the potatoes in rotation.

YIELD OF OATS, IN ROTATION FOLLOWING POTATOES

Fertilizers applied to potato crop, 1923	Yield in pounds per acre, 1924	
	Straw	Oats
Manure, 20 tons per acre	2,738	2,222
No manure: 500 lb. superphosphate, 160 lb. muriate of potash, 130 lb. nitrate of soda, 100 lb. sulphate of ammonia	1,167	2,497
Manure, 10 tons: 250 lb. superphosphate, 80 lb. muriate of potash, 65 lb. nitrate of soda, 50 lb. sulphate of ammonia	2,331	2,645
No manure, no fertilizers	2,930	1,820

MALAGASH SALT VS. COMMON SALT

This experiment was undertaken to determine the fertilizing value, if any, of Malagash salt, and to compare the relative merits of Malagash and common salt.

Common salt, or sodium chloride, as purchased for agricultural fertilizing purposes, does not contain, as a rule, any chloride of potash.

Malagash salt, on the other hand, according to the claims of the distributors, contains appreciable amounts of potash, although several analyses by the Division of Chemistry at Ottawa disprove the presence of a sufficiently high percentage to be of value agriculturally.

Three tests were made this year, on mangels, on turnips and on oats. Four replications of each treatment were sown, the plots being each one-three-hundred-and-twentieth of an acre in size. The root land was uniformly treated with 15 tons of manure per acre in addition to the treatments mentioned in the following table. The plots sown to Banner oats were not treated with manure, but in some instances received supplements of nitrate of soda and superphosphate as outlined below. The grain crop is in rotation as follows: oats, clover, timothy. This experiment is being continued.

MALAGASH VS. COMMON SALT ON MANGELS AND TURNIPS

Applications in pounds per acre	Average yield in pounds per acre	
	Mangels	Turnips
	Field weight	Field weight
	lb.	lb.
200 lb. Malagash salt	34,640	39,360
400 lb. Malagash salt	37,600	39,520
600 lb. Malagash salt	41,120	40,400
200 lb. common salt	35,920	40,800
400 lb. common salt	35,280	38,720
Checks, no treatment	35,200	39,800

As indicated by the table there is apparently some slight influence due to Malagash salt in the case of mangels; with turnips the increase is so slight as to be negligible. It might be pointed out that on application of statistical methods to the above experiment, any differences noted are found to be quite within the possibility of experimental error, and therefore the apparent gains are not to be relied upon as definite gains due to the fertilizers used.

MALAGASH SALT VS. COMMON SALT ON OATS

Applications in pounds per acre	Average yield in pounds per acre oats
	lb.
Check, no treatment	1,430
100 lb. Malagash salt	1,490
200 lb. Malagash salt	1,485
400 lb. Malagash salt	1,440
100 lb. Common salt	1,410
200 lb. Common salt	1,715
100 lb. Malagash salt plus 100 lb. nitrate of soda	1,765
200 lb. Malagash salt plus 100 lb. nitrate of soda	1,605
100 lb. Malagash salt plus 100 lb. nitrate of soda and 300 lb. superphosphate	1,400
200 lb. Malagash, 100 lb. nitrate of soda and 300 lb. superphosphate	1,485

As previously mentioned, these plots receive no manure. From the table it is seen that there is little or no effect from applications at the different rates. These plots were seeded down and should produce a clover crop in 1925. It should then be possible to learn the residual effect of the various applications, as no further treatment is to be given.

FERTILIZER FORMULAE FOR POTATOES

Seventy-five one-fortieth-acre plots in the " Cultural Area " are set aside and designated as the " Permanent Fertilizer Area." In the spring of 1922 fertilizers were applied to potatoes in this area; in 1923 the crop was wheat, and in 1924 clover hay. The following table gives the average yields of all three crops:—

FERTILIZER FORMULAE FOR POTATOES

Application in pounds per acre				Pounds per acre supplied of:			Actual weight applied per acre	Equal to	Yield in pounds per acre		
Nitrate soda	Sulphate ammonia	Superphosphate	Muriate potash	N	P_2O_5	K_2O			Potatoes, 1922	Wheat, 1923	Clover, 1924
								Lb. Goods			
390	300	750	240	120	120	120	1,680	2,000 of 6–6–6	21,080	1,400	4,501
325	250	750	240	100	120	120	1,565	2,000 of 5–6–6	19,280	1,490	4,664
260	200	750	240	80	120	120	1,450	2,000 of 4–6–6	20,100	1,210	4,119
195	150	750	240	60	120	120	1,335	2,000 of 3–6–6	18,820	1,130	*4,225
325	250	1,000	240	100	160	120	1,815	2,000 of 5–8–6	20,760	1,180	*4,336
260	200	1,000	240	80	160	120	1,700	2,000 of 4–8–6	20,360	1,160	4,226
195	150	1,000	240	60	160	120	1,585	2,000 of 3–8–6	22,900	960	4,620
260	200	1,000	400	80	160	200	1,860	2,000 of 4–8–10	26,920	1,170	4,753
260	200	1,000	320	80	160	160	1,780	2,000 of 4–8–8	21,680	1,130	4,808
260	200	1,000	160	80	160	80	1,620	2,000 of 4–8–4	18,940	1,180	3,655
290	225	560	180	90	90	90	1,255	1,500 of 6–6–6	18,720	1,160	4,208
245	190	560	180	75	90	90	1,175	1,500 of 5–6–6	16,620	1,220	4,072
195	150	560	180	60	90	90	1,085	1,500 of 4–6–6	16,600	1,060	4,567
145	115	560	180	45	90	90	1,000	1,500 of 3–6–6	19,160	1,020	4,489
245	190	750	180	75	120	90	1,365	1,500 of 5–8–6	16,200	1,110	4,208
195	150	750	180	60	120	90	1,275	1,500 of 4–8–6	15,600	590	4,450
145	115	750	180	45	120	90	1,190	1,500 of 3–8–6	15,720	860	4,835
195	150	750	300	60	120	150	1,395	1,500 of 4–8–10	18,260	1,180	4,945

FERTILIZER FORMULAE FOR POTATOES—*Con.*

Application in pounds per acre				Pounds per acre supplied of:			Actual weight applied per acre	Equal to	Yield in pounds per acre		
Nitrate soda	Sulphate ammonia	Superphosphate	Muriate potash	N	P_2O_5	K_2O			Potatoes, 1922	Wheat, 1923	Clover, 1924
								Lb. Goods			
195	150	750	240	60	120	120	1,336	1,500 of 4–8–8	18,880	1,070	4,459
195	150	750	120	60	120	60	1,215	1,500 of 4–8–4	15,360	860	4,250
195	150	375	120	60	60	60	840	1,000 of 6–6–6	16,080	1,070	3,911
165	125	375	120	50	60	60	785	1,000 of 5–6–6	16,620	1,100	4,190
130	100	375	120	40	60	60	725	1,000 of 4–6–6	15,400	950	4,195
100	75	375	120	30	60	60	670	1,000 of 3–6–6	15,620	900	4,064
165	125	500	120	50	80	60	910	1,000 of 5–8–6	15,260	960	4,118
130	100	500	120	40	80	60	850	1,000 of 4–8–6	15,120	1,330	4,358
100	75	500	120	30	80	60	795	1,000 of 3–8–6	18,700	1,120	4,510
130	100	500	200	40	80	100	930	1,000 of 4–8–10	17,740	1,230	4,573
130	100	500	160	40	80	80	890	1,000 of 4–8–8	17,460	990	4,541
130	100	500	80	40	80	40	810	1,000 of 4–8–4	14,800	1,170	4,182
Permanent check									6,720	120	1,627
Check									5,680	320	2,670
Check—no fertilizer (13 plots)									8,926	1,171	3,301

* One plot only.

POULTRY

The poultry work at the Station this season is a continuation of that carried on for the past several years, namely, the building up, by judicious mating and selection, of uniformly high-producing strains of Barred Plymouth Rocks and Single-Comb White Leghorns. These two breeds are the most popular in this province.

To this end, all birds are trap-nested throughout the year and only those giving a high production are carried over for breeding purposes. Male birds raised at this Station from high-producing dams, are used in pedigree breeding work. New blood from high-producing strains was introduced in 1922. Since that time it was felt that our own matings would prove superior to any introduced stock.

The stock on hand November 1, 1924, consisted of 45 males and 374 females, as shown in the following table:—

Breed	Males	Hens	Pullets	Totals
Barred Plymouth Rocks	24	68	35	127
White Leghorns	21	151	120	292
	45	219	155	419

HOUSING

The poultry buildings in use at the present time are:

One Poultry Administration building, with offices and sleeping accommodation for the poultryman containing also rooms for incubation, for candling eggs, for storing coal, and storeroom for feed.

Two permanent cotton-front, straw-loft laying houses, 32 by 16 feet, each of 100-hen capacity.

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

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

Twenty-two cotton-front, shed-roof contest houses, 12 by 10 feet.

(*a*) Thirteen of these have a solid partition through the centre.

(*b*) Nine of these have no partition.

In addition to the above, there are several older houses used for feed and other storage purposes.

During the season, the yards were all ploughed and cultivated to renew and freshen the soil.

EGG PRODUCTION

The pullets commenced laying in early September, and by November practically all were laying. The first B.R. pullet laid on September 17, and the first W.L. pullet on September 15. The birds received no check for the balance of the year, and production averages were high.

Lights were used to aid production from December 24, 1923, and were continued until about March 15, 1924. Lights have proved of decided benefit in increasing winter egg production. The mature hens are not fed for high production until the beginning of the breeding season.

The following tables have been prepared from records covering the year from November 1, 1923, to October 31, 1924:—

EGG YIELD OF HENS VERSUS PULLETS

—	Hens			Pullets		
	Number	Total eggs	Average per hen	Number	Total eggs	Average per pullet
1923						
November	171	515	3·0	178	1,345	7·5
December	168	536	3·2	169	2,748	16·3
1924						
January	146	611	4·2	166	3,045	18·3
February	144	966	6·7	163	2,893	17·7
March	143	2,195	15·3	159	2,678	16·8
April	138	2,414	17·5	157	1,676	10·7
May	127	2,382	18·8	146	2,336	16·0
June	113	1,970	17·5	140	2,074	14·8
July	95	1,516	15·9	129	2,016	15·6
August	92	1,046	11·4	120	1,717	14·3
September	68	754	11·0	96	1,217	12·7
October	64	215	3·4	90	536	6·0
Totals	.....	15,120	.....	.....	24,281	.....

Average per bird per year, hens, 127·9; pullets, 166·7.
Average per bird per month, hens, 10·6; pullets, 13·9.
Average for all birds per year, 148·3.
Average for all birds per month, 12·4.

INDIVIDUAL RECORDS OF SINGLE-COMB WHITE LEGHORN PULLETS BRED AND RAISED AT THE DOMINION EXPERIMENTAL STATION, CHARLOTTETOWN, PRINCE EDWARD ISLAND

225 Eggs and over			200 to 224 eggs			175 to 200 eggs		
Band No.	Number of eggs	Date of first egg	Band No.	Number of eggs	Date of first egg	Band No.	Number of eggs	Date of first egg
		1923			1923			1923
287	268	Oct. 16	141	222	Nov. 23	299	199	Oct. 3
152	267	Nov. 27	158	220	" 25	161	198	Nov. 21
140	262	" 11	224	220	" 17	143	195	" 30
240	259	Oct. 29	264	219	Oct. 30	252	195	" 26
241	257	" 28	265	218	" 29	212	193	" 30
223	255	Nov. 17	165	217	Nov. 16	285	193	Oct. 18
162	254	" 17	147	216	" 16	238	191	" 30
139	250	Dec. 17	270	214	Oct. 24	274	191	" 22
204	248	Nov. 11	156	213	Dec. 3	154	189	Dec. 10
145	246	.....	271	213	Oct. 24	231	189	Nov. 11
148	245	Nov. 9	239	212	" 30	159	187	" 7
155	243	" 26	251	212	Nov. 27	266	183	Oct. 28
138	241	" 8	294	210	Oct. 7	229	182	Nov. 12
282	239	Oct. 19	160	208	Dec. 2 1924	261	181	" 3
164	239	Nov. 6	142	207	Jan. 21 1923	150	180	" 25
149	234	" 30	209	204	Dec. 2	144	178	" 9
163	231	" 18	221	204	Nov. 11	.....	.....	.....
157	230	" 11	293	204	Oct. 7	.....	.....	.....
272	227	" 23	248	203	" 10	.....	.....	.....
289	227	" 10	166	202	Dec. 4 1924	.....	.....	.....
153	226	Nov. 1	151	201	Jan. 1 1923	.....	.....	.....
216	225	" 27	290	201	Oct. 14	.....	.....	.....
.....	.....	.....	243	200	" 24	.....	.....	.....
22 Birds laid 5,373 eggs. Average per bird, 244·2			23 birds—4,840 Average per bird, 210·4			16 birds—3,024 eggs. Average per bird, 189		

61 Birds laid 13,237 eggs.
Average per bird, 217 eggs.

Single-comb White Leghorn Cockerel No. 13, whose dam laid 219 eggs, was mated to 15 single-comb White Leghorn hens, whose average production was 170 eggs per hen. These produced the following female offspring with their year's egg production:—

Bird No.	Number of eggs	Bird No.	Number of eggs
140	262	224	220
162	254	251	212
139	250	293	204
145	246	248	203
148	245	243	200
138	241	299	199
282	239	252	195
149	234	212	193
272	227	261	181
153	226	144	178
158	220		

Single-comb White Leghorn Cockerel No. 14, whose dam laid 228 eggs, was mated to 15 single-comb White Leghorn hens, whose average production was

177 eggs per hen. These produced the following female offspring with their year's egg production:—

Bird No.	Number of eggs	Bird No.	Number of eggs
204	248	270	214
155	243	271	213
157	230	294	210
141	222	285	193

INDIVIDUAL RECORDS OF BARRED PLYMOUTH ROCK PULLETS BRED AND RAISED AT THE DOMINION EXPERIMENTAL STATION, CHARLOTTETOWN, P.E.I., 1923-24.

225 eggs or over			200 to 225 eggs			175 to 200 eggs		
Bird No.	Number of eggs	Date of first egg	Bird No.	Number of eggs	Date of first egg	Bird No.	Number of eggs	Date of first egg
		1923			1923			1923
H84	248	Dec. 10	H32	222	Oct. 10	D187	194	
122	246	" 4	65	222	Nov. 11	D183	192	
132	235		127	220		H58	189	Nov. 8
92	234		72	209	Dec. 5	71	189	Dec. 5
63	232	Nov. 11	133	208		78	188	" 7
121	230	Dec. 1	46	206	Nov. 11	64	187	Nov. 21
30	228	Oct. 5	2	204	Sept. 9	3	186	Sept. 8
			60	203	Nov. 9	66	185	Nov. 28
			76	201	Dec. 7	117	185	
						62	183	Nov. 12
						44	181	Dec. 21
						23	178	Nov. 29
						56	178	" 4
						90	178	Dec. 16
						75	175	" 6
7 birds laid 1,653 eggs. Average per bird, 236·1			9 birds laid 1,895 eggs. Average per bird 210·5			15 birds laid 2,768 eggs. Average per bird 184·5		

31 birds laid 6,316 eggs.
Average per bird 203·7 eggs.

Single-comb White Leghorn Cock No. 5, whose dam laid 198 eggs, was mated to the four birds mentioned below, and the following tables show the results of these matings:—

HEN NO. 2318 (WITH 181 EGGS) PRODUCED:

1923		1924	
Bird No.	Number of eggs	Bird No.	Number of eggs
E153	211	H216	225
E158	227	H241	257
E159	210	H290	201
E181	243	H154	189

HEN No. 2104 (WITH 198 EGGS) PRODUCED:

1923		1924	
Bird No.	Number of eggs	Bird No.	Number of eggs
E155	170	H264	219
E182	182	265	218

HEN No. E31 (WITH 219 EGGS) PRODUCED:

1924	
Bird No.	Number of eggs
H160	208
162	254
165	217

HEN No. E79 (WITH 204 EGGS) PRODUCED:

1924	
Bird No.	Number of eggs
H156	213
164	239

STATEMENT Covering Production, Profit and Loss and Feed Consumed by White Leghorn Pullets, bred and raised at Dominion Experimental Station, Charlottetown, Prince Edward Island, from November 1, 1923, to October 31, 1924.

Month	Number Birds	Eggs laid	Average per bird	Average price per dozen	Total market value	Cost per dozen	Total cost of feed	Cost feed for 1 bird	Total monthly profit	Total monthly loss	Grain	Mash	Grit	Shell	Charcoal	Roots	Oat sprouts	Total amount feed	Cost grain	Cost mash	Cost Grit	Cost shell	Cost charcoal	Cost roots	Cost oat sprouts
		No.	No.	c.	$ cts.	c.	$ cts.	c.	$ cts.	$ cts.	Lb.	Lb.	Lb.	Lb	Lb	Lb.	Lb.	Lb.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	c.	$ cts.
1923																									
November	99	1,055	10·6	30	26 37	18·4	16 34	17	10 03	.....	430	65	15	24	8	200	200	945	2 26	3 16	1 25	1 75	4 00	20	1 61
December	97	1,778	18·3	40	59 26	10·5	15 70	16	43 56	.....	380	77	18	18	4	200	250	947	2 26	2 58	1 25	1 75	4 00	20	1 61
1924																									
January	94	1,707	18·1	45	64 05	12·0	17 30	18	46 75	.....	380	123	18	24	10	200	300	1,055	2 11	3 01	1 25	1 75	4 00	20	1 35
February	93	1,607	17·2	37	49 55	12·4	16 73	18	32 82	.....	355	125	15	22	4	300	300	1,121	2 11	3 01	1 25	1 75	4 00	20	1 38
March	91	1,549	17·0	30	38 73	13·2	17 05	19	21 68	.....	405	105	19	16	2	300	300	1,147	2 11	3 01	1 25	1 75	4 00	20	1 38
April	91	902	9·9	21	15 79	22·3	16 80	18	.....	1 01	405	95	21	20	6	330	273	1,150	2 11	3 01	1 50	1 85	4 50	20	1 38
May	82	1,502	15·9	20	21 70	13·0	14 10	17	7 60	.....	395	70	13	10	.....	.....	246	734	2 11	3 01	1 50	1 85	4 50	20	1 38
June	80	1,258	15·7	20	20 97	11·1	11 64	15	9 33	.....	360	55	7	15	.....	.....	150	587	2 11	3 01	1 25	1 50	.....	.....	1 38
July	73	1,228	16·8	24	24 56	12·2	12 58	17	11 98	.....	370	47	.....	22	.....	.....	150	589	2 22	2 52	1 05	1 50	.....	.....	1 91
August	69	1,007	14·5	24	20 14	9·0	8 08	12	12 06	.....	364	27	.....	2	4	.....	150	547	2 22	2 40	1 05	1 50	3 25	.....	1 91
September	54	800	14·8	25	16 67	16·0	11 04	12	5 60	.....	332	24	.....	9	9	.....	150	524	2 22	2 40	1 05	1 50	3 25	.....	1 91
October	49	324	6·6	30	8 10	34·0	9 08	18	.....	0 98	300	16	4	6	.....	.....	100	426	2 22	2 40	1 05	1 50	3 25	.....	1 91
Tota's		14,518	175·4	.....	365 89	.....	166 44	$ 1 97	201 41	1 99	4,476	829	130	188	47	1,530	2,569	9,769	.....	.....	.....	.....	.....	.....	.....

Net gain over cost of feed $199.45.

STATEMENT Covering Production, Profit and Loss and Feed Consumed by Barred Rock Pullets, bred and raised at Dominion Experimental Station, Charlottetown, Prince Edward Island, from November 1, 1923, to October 31, 1924.

Month	Number birds	Eggs laid	Average per bird	Average price per dozen	Total market value	Cost per dozen	Total cost of feed	Cost of feed for 1 bird	Total monthly profit	Total monthly loss	Grain	Mash	Grit	Shell	Charcoal	Roots	Oat sprouts dry	Total amount feed	Grain	Mash	Grit	Shell	Roots	Oat sprouts	Charcoal
		No.	No.	c.	$ cts.	c.	$ cts.	c.	$ cts.	$ cts.	Lb.	Lb.	Lb.	Lb.	Lb.	Lb.	Lb.	Lb.	$ cts.	$ cts.	$ cts.	$ cts.	c.	$ cts.	$ cts.
1923																									
November	75	290	4·0	30	7 25	57·3	13 87	18	.....	6 62	375	53	4	2	3	150	200	787	2 26	3 16	1 25	1 75	20	1 61	4 90
December	75	970	13·0	40	32 33	20·7	16 77	22	15 56	.....	435	70	12	23	4	200	250	994	2 26	2 58	1 25	1 75	20	1 61	4 00
1924																									
January	72	1,337	18·5	45	50 13	14·7	16 48	22	33 65	.....	395	95	11	12	10	200	300	1,023	2 11	3 01	1 25	1 75	20	1 38	4 00
February	70	1,286	18·3	37	39 66	13·6	14 64	20	25 02	.....	335	75	13	19	4	300	300	1,046	2 11	3 01	1 25	1 75	20	1 38	4 00
March	68	1,129	16·6	30	28 23	17·0	15 80	23	12 43	.....	400	67	22	14	2	300	300	1,105	2 11	3 01	1 25	1 75	20	1 38	4 00
April	68	774	11·3	21	13 54	20·6	13 35	19	0 19	.....	365	53	13	14	6	272	200	923	2 11	3 01	1 50	1 85	20	1 38	4 50
May	64	1,034	16·1	20	17 23	14·5	12 55	20	4 68	.....	375	55	10	10	.....	.....	192	642	2 11	3 01	1 50	1 85	20	1 38	4 50
June	60	816	13·6	20	13 80	17·0	11 83	23	1 97	.....	340	45	7	9	.....	.....	150	551	2 11	3 01	1 25	1 50	.....	1 38	.....
July	56	788	14·0	24	15 76	20·0	13 19	24	2 57	.....	355	50	.....	12	.....	.....	150	567	2 22	2 52	1 05	1 50	.....	1 91	.....
August	51	710	14·0	24	14 20	10·0	8 96	17	5 24	.....	232	32	.....	4	4	.....	150	422	2 22	2 40	1 05	1 50	.....	1 91	3 25
September	42	417	9·9	25	8 67	18·0	6 37	15	2 30	.....	195	20	5	5	.....	.....	75	300	2 22	2 40	1 05	1 50	.....	1 91	.....
October	41	212	5·3	30	5 30	35·0	6 28	15	.....	0·98	195	16	.....	8	.....	.....	75	294	2 22	2 40	1 05	1 50	.....	1 91	.....
Totals	.....	9,763	154·6	.....	246 10	.....	150 09	$ 2 38	103 61	7 60	3,997	631	97	132	.....	1,422	2,342	8,654	.....	.....	.....	.....	.....	.....	.....

Net gain over cost of feed $96.01.

FEEDING EXPERIMENT—HOME-MIXED VS. COMMERCIAL MASH

An experiment was conducted for a period of six months, using a home-mixed mash consisting of 100 pounds bran, 100 pounds shorts, 100 pounds finely cut oatmeal, 100 pounds cornmeal and 60 to 80 pounds beef scrap, against a commercial mash purchased locally.

The home mixture cost $3 per 100 pounds, while the cost of the commercial mixture was $3.43 per 100 pounds.

The two tables following give a summary of the results of the experiment:—

HOME-MIXED MASH EXPERIMENT, FROM JANUARY 1, TO JUNE 30, 1924

Month	No. of birds	Total lb. feed	Total cost feed	Total eggs laid	Selling price doz.	Value	Profit over cost feed	Loss	Cost per bird	Eggs per bird	Cost per doz.	Profit per bird
1924			$		$	$	$	c.	c.		c.	c.
January.....	47	503	8 09	775	0 45	29 03	20 94	.....	17·4	16·7	12·5	45
February...	46	553	8 33	826	0 37	25 46	17 13	.....	18·1	17·9	12·1	37
March.....	45	578	8 98	796	0 30	19 86	10 88	.....	19·9	17·7	13·5	24
April.....	45	562	8 42	457	0 21	8 00	.....	42	18·7	10·1	22·1	−1
May.....	41	376	7 30	703	0 20	11 67	4 37	.....	17·8	17·1	12·4	11
June.....	41	307	6 08	660	0 20	11 00	4 92	.....	14·8	16·0	11·0	12
	44·1	.....	47 20	4,217	.....	105 02	57 82	.....	$1·07	95·6	13·4	$1·31

COMMERCIAL MASH EXPERIMENT FROM JANUARY 1, TO JUNE 30, 1923

Month	No. of birds	Total lb. feed	Total cost feed	Total eggs laid	Selling price doz.	Value	Profit over cost feed	Loss	Cost per bird	Eggs per bird	Cost per doz.	Profit per bird
1924			$		c.	$	$	c.	c.		c.	c.
January.....	47	552	9 39	933	45	31 98	22 59	.....	19·9	19·8	12·0	48
February...	47	568	9 14	781	37	24 05	14 91	.....	19·4	16·6	13·7	32
March.....	46	569	9 11	753	30	18 81	9 70	.....	18·0	16·3	14·5	21
April.....	46	555	8 45	445	21	7 77	.....	68	18·4	9·6	22·7	− 1·4
May.....	41	362	7 09	599	20	10 00	2 91	.....	17·3	14·6	14·2	7
June.....	39	283	5 74	598	20	9 97	4 23	.....	14·1	15·3	11·5	10
	44·3	.....	48 92	4,109	.....	102 58	53 66	.....	$1.10	92·7	14·2	$1·21

INCUBATION AND BROODING

The following tables compare the fertility and hatchability of eggs hatched in April with that of eggs hatched in May:—

COMPARING APRIL AND MAY HATCHING

Month hatched	Total eggs set	Number fertile	Per cent fertile	Number of chicks	Per cent total eggs hatched	Number chicks alive when wing banded	Per cent chicks alive when banded	Total eggs required for one chick hatched	Total eggs for one chick when leg banded
April.....	1,318	1,046	79	491	30	232	47	2·7	5·6
May.....	1,939	1,500	77	766	38	292	38	2·5	6·6
Totals and avge.	3,257	2,546	78	1,257	39	524	42	2·6	6·2
B.R.....	2,487	2,033	82	1,035	51	451	44	2·4	5·5
W.L.....	773	513	66	222	43	73	33	3·5	10·6

EGGS SET IN APRIL, HATCHED IN APRIL

——	W.L.	B.R.
Total eggs set	1,026·0	307·0
Number fertile	873	185
Per cent fertile	85	60
Number of chicks hatched	378	71
Per cent total eggs hatched	37	23
Per cent fertile eggs hatched	43	38
Total eggs required for one chick	2·7	4·3
Total fertile eggs required for one chick	2·3	2·4

EGGS SET IN APRIL, HATCHED IN MAY

——	W.L.	B.R.
Total eggs set	1,458·0	466·0
Number fertile	1,160·0	328·0
Per cent fertile	79·0	70·0
Number of chicks hatched	657·0	151·0
Per cent total eggs hatched	45·0	32·0
Per cent fertile eggs hatched	56·0	46·0
Total eggs required for one chick	2·2	3·1
Total fertile eggs required for one chick	1·8	2·1

STORING EGGS

The experiments undertaken last year in co-operation with the Prince Edward Island Egg and Poultry Association with storage eggs were continued. The plan of the experiment and one case of infertile eggs were supplied by the Experimental Station; the Central Candling Station of the P.E.I. Egg and Poultry Association doing the candling, grading, storing, weighing and checking. The eggs were placed in storage June 5, 1924, and were taken out of cold storage November 27, 1924. The eggs all graded fresh firsts when stored. The results for the season and the average of the two-years' work are given in the following table:—

EGG STORAGE EXPERIMENTS

No. of Exp.	Case No.	Lot No.	Details of Experiment	No. of eggs	Grade when stored	Grade when taken out	Average grade for two years
			Tight vs. Open Case			doz. eggs	doz. eggs
(a)	1	A	Tight home-made case	30	Fresh firsts.	22 6 firsts 6 11 seconds 6 cracked 1 bad	23 11 firsts 5 6 seconds 3½ cracked 3½ bad
(a)	2	B	Open commercial case	30	Fresh firsts	24 4 firsts 5 3 seconds 3 cracked 2 bad	25 5 firsts 4 4½ seconds 1½ cracked 1 bad
			Clean vs. Dirty vs. Washed Eggs				
(b)	3	A	½ case dirty eggs	15	.....	3 1 firsts 10 9 seconds 4 cracked 10 bad	Poor.
(b)		B	½ case washed eggs Commercial case used	15	.....	5 3 firsts 8 3 seconds 3 cracked 1 3 bad	30% rotten
	2	C	1 case clean commercial eggs	30	.....	24 4 firsts 5 3 seconds 3 cracked 2 bad	Good

EGG STORAGE EXPERIMENTS—*Con.*

No. of Exp.	Case No.	Lot No.	Details of Experiment	No. of eggs	Grade when stored	Grade when taken out	Average grade for two years
			Clean vs. Dirty Flats and Fillers			doz. eggs	doz. eggs
		A	½ case with clean flats and fillers...	15	.....	11 1 firsts 3 6 seconds 5 bad	11 6½ firsts 2 5 seconds 1 ½ bad
(c)	5						
		B	½ case with dirty flats and fillers...	15	.....	10 10 firsts 3 8 seconds 4 cracked 2 bad	12 3 firsts 2 3½ seconds 2 cracked 3½ bad
			Exp. Farm infertile eggs vs. Commercial eggs				
	6	A	1 case Exp. Farm eggs.....	30	Infertile eggs	29 6 firsts 4 seconds 1 cracked 1 bad	29 8 firsts 2 seconds 1 cracked 1 bad
(d)							
	7	B	1 case commercial eggs.....	30	Fresh firsts	9 9 firsts 18 7 seconds 1 0 cracked 8 bad	18 7½ firsts 10 6½ seconds 6 cracked 4 bad
			Small end up vs. small end down				
	8	A	1 case commercial small end up....	15	Fresh firsts	6 9 firsts 8 2 seconds 1 bad	11 5 firsts 3 7 seconds
(e)							
		B	½ case commercial eggs with small end down.	15	Fresh firsts	13 7 firsts 1 5 seconds	13 2⅔ firsts 1 9 seconds ⅓ cracked

(*a*) A comparison of the tight home-made case with the regular export case shows the export case to be quite superior.

(*b*) In the comparison of clean eggs with dirty eggs and with washed eggs that had previously been dirty, the clean eggs came out good, the dirty ones were mostly seconds, and the dirty ones that were washed had a large percentage of rotten eggs.

(*c*) In the comparison of clean flats and fillers with soiled flats and fillers, the results are not conclusive, but the 1924 record shows some advantage for the clean fillers.

(*d*) In comparing Experimental Station infertile eggs with commercial eggs, the infertile eggs show their great superiority over commercial eggs for storage purposes.

(*e*) In the comparison of eggs placed with the small end up in the case with those placed with the small end down, this year's result favours the small end down. Last year the small end up was slightly in the lead.

EGG-LAYING CONTEST

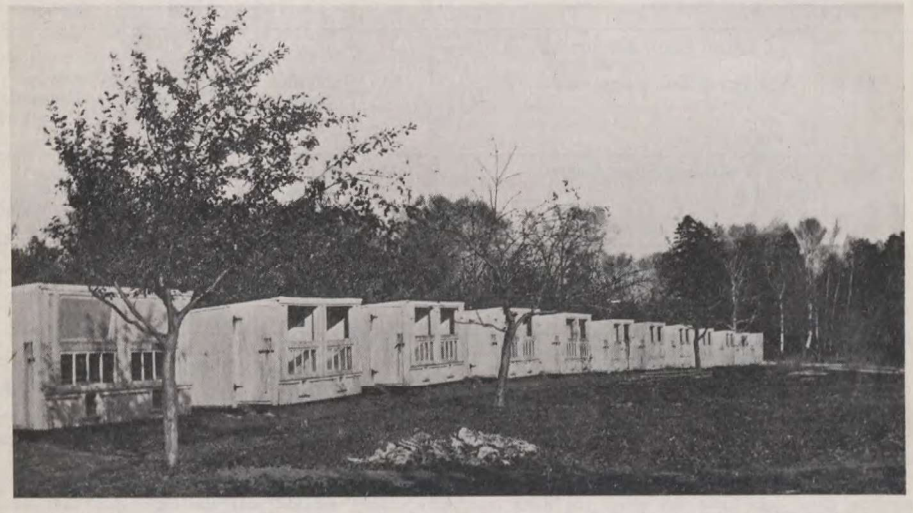
The annual Egg-Laying Contest is very useful in stimulating interest in improved poultry breeding. It furnishes a standard by which many in the province compare their own production of eggs. The weekly contest news item is read very generally throughout the country, and the competition is not confined to the contest alone.

The registration of hens has greatly increased the usefulness of this work. When registered males are available a much greater interest will no doubt be shown. The demand for the very best males is rapidly increasing.

The sixth Prince Edward Island Egg-Laying Contest was started November 1, 1923, and continued for fifty-two weeks, for purposes of registration. Only birds that are free from standard disqualifications and that are representative of some standard breed are eligible to enter, and only those that lay 200 eggs or more in the contest are eligible for registration.

The twenty pens entered in the contest were made up of the following breeds: 9 pens Barred Plymouth Rocks, 9 pens Single-Comb White Leghorns and 2 pens White Wyandottes. Forty-nine hens laid 200 eggs or over during the fifty-two weeks, and four others passed the 200 mark before the end of their

pullet year. Of these, eleven were disqualified because their eggs averaged under 24 ounces to the dozen. Forty-two birds qualified and were registered by the Canadian National Poultry Records Association. The highest hen, No. F139, a White Leghorn owned by the Experimental Station, Charlottetown, laid 267 eggs. Eighteen hens laid 225 eggs or over. The average number of eggs laid per hen was 170.8 during the year. This was a gain of over 10 eggs per hen over last year's contest, and 60 eggs per hen over any other previous P.E.I. contest. One hundred and forty-four of the hens exceeded the old Record of Performance Standard.



Poultry houses, Prince Edward Island Egg-laying Contest, Dominion Experimental Station, Charlottetown, P.E.I.

The methods of feeding were similar to those of previous years. The scratch feed that was scattered in the litter morning and evening consisted of equal parts cracked corn and wheat. The dry mash that was always before them in hoppers was made by mixing 100 pounds bran, 100 pounds middlings, 100 pounds cornmeal, 100 pounds oatmeal and from 50 to 75 pounds beef scrap together. Grit, shell, charcoal and fresh water were provided regularly. Sprouted oats, mangels and garden waste were used for green feed.

Complete records of the contest will be found in a forthcoming Bulletin soon to be issued by the Dominion Department of Agriculture entitled "Fourth and Fifth Canadian National Egg-Laying Contests."

BEES

Weather conditions were fairly favourable for bees during 1924. April and May were cool and dry. Early spring flowers and the fruit bloom opened about the usual time and the bees secured a good supply of pollen. The colonies all came through the winter with a generous supply of stores and were not fed in the spring. The rainfall during the spring and early summer was much below average. The summer was fairly favourable, there being an absence of heavy windstorms. The clover flow of honey was short owing to the dry season, but there was a good late summer flow that brought the yield per colony up to average. The bees were fed sugar syrup October 3 and October 29, 1924. Colonies were all brought to 75 pounds each for winter.

WINTERING

The eleven colonies wintered inside during the winter of 1923-24 came out very weak. The bees covering on an average only about four and a half frames. Two lost their queens and died. The sixteen colonies wintered in four-colony winter cases outside, came through the winter in good shape, the bees covering about seven and a half frames each. Two colonies lost their queens and died. The colonies that died all had plenty of good stores.

INCREASE

There was no natural increase. Eight nuclei were started with queens bred at the Station which developed four fairly strong colonies that are being wintered in double hives. One increase was made by division. The weak colonies that came out of the cellar produced a small amount of honey and built up into strong colonies late in the summer. The net loss of bees for the year was one colony.

Four queens were received from Kapuskasing, Ontario, so late in the season that little could be done with them. They seemed weak and only one colony was successfully requeened.

HONEY FLOW

One colony was placed on scales June 15 and weighed daily until August 25. During this period it increased 148 pounds in weight. The bees were allowed to use a super as an additional brood chamber so that the amount of honey produced by this colony was estimated at 120 pounds.

The first heavy honey flow occurred from July 1 to June 12. The average increase for this period was 3.5 pounds for the colony per day. The second heavy honey flow commenced July 25 and continued until August 8. The gain during this period averaged 4 pounds per day. A third honey flow was observed from August 22 to August 24 when the colony increased almost 4 pounds per day for three days. The greatest increase recorded for any one day was 7 pounds gathered July 30, 1924. The increase by months was as follows: June, 16 pounds; July 82 pounds and August 50 pounds.

FEEDING

The prolonged cool springs that frequently occur on Prince Edward Island greatly extend the period that bees have to live on stored honey or sugar syrup. They should, therefore, be given an abundance of wholesome stores in the fall. A two to one mixture of pure granulated sugar and water was used. Feeding commenced October 3 and was completed by October 29. The mild open autumn made the bees quite active and they used up a lot of stores during this period. The final weight, not including cover, was 75 pounds per colony. Twenty-four single and two double colonies were placed in winter quarters for the winter 1924-25.

ECONOMIC FIBRE PRODUCTION

THE SEASON

The season was not the most suitable for fibre crops. Seeding was not accomplished until late, and a very dry season rather limited the growth.

THE LAND

For the flax plots an area immediately north of the farm buildings was used; the land is not so uniform as might be desired.

The hemp was seeded on a portion of the Blake Farm; the area was reasonably uniform and fairly fertile.

TEST OF VARIETIES OF FLAX

Four varieties were seeded in triplicate, on plots of one-sixtieth acre plus border, the border being removed previous to harvesting. Only fair growth was realized. The yields were as follows:—

Pure Line, Ottawa No. 5	2,060 lb. per acre
Riga Blue	1,940 "
Saginaw	1,800 "
Longstem	1,660 "

The above weights are for air-dried, unthrashed straw. The crop was pulled and shipped to the Fibre Division, Ottawa, for scutching.

DATES OF SEEDING FLAX

The dates of seeding were June 4, 11, 18 and 25; variety, Riga Blue. All plots were in triplicate. Yields were as follows:—

June 4 seeding	1,940 lb. per acre.
" 11 "	2,120 "
" 18 "	1,400 "
" 25 "	1,880 "

Little or no information can be drawn from the preceding figures.

HEMP

Two varieties of hemp were seeded in triplicate on plots of one-sixtieth acre plus border, the border being removed before harvesting. Minnesota No. 8 did not germinate, and was a complete failure. Chington germinated successfully, and yielded at the rate of 8,480 pounds per acre. This was shipped to Ottawa for scutching, etc.

EXTENSION AND PUBLICITY

The only exhibit shown this year was at the Provincial Exhibition, Charlottetown, P.E.I. This exhibit was placed immediately to the left of the main entrance, and dealt in general with many farm subjects, but more particularly with questions relating to fertilizers, plant diseases and beekeeping.

The superintendent or assistant judged at the Kings County Exhibition at Georgetown, the Exhibition at Souris, the Prince County Exhibition at Summerside and the fair at Egmont Bay. In addition, judging was done at a number of school fairs.

While school fairs this year were about up to the average, the larger fairs, owing to continued dry weather during the growing season, were below their usual standard. Egmont Bay Fair was perhaps equal to that of previous years.

Considerable extension work has been done during the past year by distributing bulletins and reports. In addition to the distribution of bulletins, etc., a great many personal letters are written to farmers furnishing information on specific questions.

Many press articles are prepared for publication in local and other papers and magazines. Through our bulletins, press articles and personal letters it is felt that the farmers of the province are in close touch with the work of this Station.

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