DOMINION OF CANADA
DEPARTMENT OF AGRICULTURE
DOMINION EXPERIMENTAL FARMS

EXPERIMENTAL STATION

FREDERICTON, N.B.

REPORT OF THE SUPERINTENDENT

C. F. BAILEY, B.S.A.

FOR THE YEAR 1925

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DOMINION EXPERIMENTAL STATION
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SEASONAL NOTES

The fall of 1924 was very dry and as a result the soil and subsoil were extremely dry when the land froze. The weather was cold during December, January, and the first seven days of February. The snowfall up to February totalled 55 inches and there was 0.44 inches of snow on the ground on February 7. Owing to exceptionally mild weather and warm rain, only 4 inches of snow remained on March 6 and the snow had disappeared from the fields on March 24. Five and one-half inches of snow fell in April as compared with twenty-five inches the previous April. The latter part of April and May were cold and windy. Owing to the high winds and absence of snow in March and April, the fields could be worked earlier than usual. Ploughing started on April 21 as compared with May 3 the previous year. This was the earliest date since 1921, when ploughing started on April 14. The first dates of seeding were as follows: Wheat, April 27; oats, May 14; turnips, May 14; potatoes, May 15; barley, May 16; sunflowers, May 27; and corn, May 30.

Although the land was bare nearly all March and April, grass came through the winter in splendid condition. The clover stands, however, were below the average. The mild weather from February 7 favoured the orchard and the bush fruits, and there was practically no winter-killing.

Only 0.91 inches of rain fell from May 7 to June 15 inclusive. This, together with the lack of moisture in the soil caused the seed to germinate slowly and unevenly. The hoed crop suffered severely from cutworms. Nearly all the early-sown roots had to be reseeded.

Strawberries and bush fruits gave good yields. Apples were of good quality but the yield was slightly below the average.

Owing to rains in the latter part of June and July the hay crop was good. The unsettled weather delayed harvest, however, and most of the hay was too mature when cut. The straw was very heavy and lodged badly after a heavy rain on August 11. The weather was fine the latter part of August and the grain was harvested in good shape considering its lodged condition.

The precipitation in September was 1.98 inches greater, and that in October was 3.03 inches, than the thirteen-year average for those months at this Station. This heavy precipitation, together with the cold weather in October, made it difficult to harvest the potato and root crop. A considerable percentage of the potato crop rotted owing to the wet weather and frost injury.

November was an open month. Breeding ewes were housed on November 13, and the young ewes on November 16. The ground was covered with snow from December 22. There was 21 inches of snow on the ground on December 31.

METEOROLOGICAL RECORD AT FREDERICTON, N. B., 1925

Month	Temperature F.					Precipitation					Bright Sunshine
	Mean	Highest		Lowest		Rainfall		Snowfall		Total	
	°	date	°	date	°	days	inches	days	inches	inches	hours
January	5·63	4	33	19	—38	1	0·02	10	28·0	2·82	132·70
February	22·10	12	51	4	—20	8	1·70	3	7·0	2·40	101·95
March	31·37	28	61	16	—9	12	2·71	6	12·0	3·91	138·00
April	39·3	26	70	5 & 19	18	8	1·92	2	5·5	2·47	206·30
May	48·8	20	73	19	27	12	1·35	–	–	1·35	189·10
June	61·3	4	88	2	37	16	2·41	–	–	2·41	202·40
July	64·6	11 & 20	83	4	43	14	2·49	–	–	2·49	210·65
August	65·3	5 & 25	86	28	40	11	2·32	–	–	2·32	213·90
September	54·45	1	80	23	29	15	5·17	–	–	5·17	158·40
October	39·08	2	63	31	14	12	6·29	3	11·0	7·39	142·45
November	33·2	9 & 16	56	30	—1	12	4·01	1	2·0	4·24	102 30
December	19·33	8	55	31	—15	5	0·78	6	24·5	3·23	82·85
Totals	.....	.....	.....	.....	.....	126	31·20	31	90·0	40·20	1,881·00
Totals for five growing months	.....	.....	.....	.....	.....	68	13·74	.....	.....	13·74	974·45

ANIMAL HUSBANDRY

DAIRY CATTLE

The number of cattle on December 31, 1925, totalled seventy-eight head and consisted of the following:—

PURE-BRED STOCK

Ayrshire: 7 cows, 7 heifers, 5 bulls, 1 steer.
Holsteins: 7 cows, 9 heifers, 1 bull.
Shorthorn: 6 cows, 15 heifers, 1 bull, 1 steer.

GRADE STOCK

14 heifers of mixed breeding.
4 work oxen.

The four oxen are kept for breaking bush land. The remaining cattle are kept for breeding, experimental, demonstrational, and cost of production work.

Heifer calves of good type and breeding were retained in the herd, and the bull calves were disposed of to farmers at reasonable prices. Inferior calves were sold to drovers.

Three Ayrshire cows qualified in the Record of Performance. A new herd sire, "Ottawa Lord Kyle 24th," was obtained from the Central Experimental Farm in 1925.

Six Holstein cows qualified in the Record of Performance. "Cheer Echo" made a two-year-old R.O.P. record of 19,743 pounds milk and 613 pounds fat. The present herd sire, "Korndyke Midnight Boy," was bred by the Central Experimental Farm.

The Shorthorn herd is being gradually improved by breeding and severe culling. Three cows qualified in the Record of Performance. The herd sire, "Brandon Conjuror," was bred at the Brandon Farm.

SUMMER FEEDING

The pastures are unimproved, and were rather poor, therefore the milch cows were fed grain during the entire pasture season. From July 20 the heavy milking cows, and from July 31, all the milch cows, were also fed oats and pea soilage. The grain consisted of bran, oats, brewers' grain, and oil-cake.

WINTER FEEDING

The roughage ration for the winter consisted chiefly of corn silage, swedes, and mixed clover and timothy hay. A small quantity of other feeds as sunflower silage, oats and pea silage, and potatoes,* were also fed, but they are not considered as the main feed.

The meal ration consisted of bran, oats, brewers' grain, and oil-cake. One per cent of salt was added at mixing.

DAIRY HERD RECORDS

Table 2 shows the milk record of all the milch cows that finished their lactation period during the year 1924. In the case of heifers with their first calf, feed is charged from date of freshening. In the case of cows with previous lactation periods, the charge for feed includes the period during which they were dry before beginning the lactation period here recorded. The following prices were charged for feed:—

Hay	$ 8 65 per ton
†Roots	6 60 "
Ensilage	4 05 "
Green feed	2 00 "
Meal mixture	39 00 "
Pasture	1 00 per month

These values represent the cost of production of hay, roots and ensilage for 1925, and the price paid for car load lots, plus a small charge for hauling from car to Station, for the grains which made up the meal mixture.

COST OF REARING DAIRY HEIFERS

Strong calves were fed half skim-milk after four weeks; weak calves were fed whole milk for five weeks. Whole milk was usually discontinued after the eight-week period. Except when there was an over-supply, skim-milk was gradually eliminated after eight months. Calves were fed grain, hay, and roots as soon as they would eat them. The amounts were gradually increased so that the calves were eating an average of three pounds grain, four pounds hay, and twenty pounds either roots or silage, when eight months old. All calves which were seven months of age on June 5 were weaned and put on pasture. The yearlings were housed on October first, and the older heifers on October 14.

The dry meal mixture fed to the calves was composed of bran, three parts; crushed oats, two parts; oil-cake, one part; and brewers' grain, 1 part (when available). Since May 12, 1924, a fat substitute has been added to the skim-milk composed of flax seed, one part; and crushed oats, four parts. This is fed until the calves are three months of age. As the calves grow older one part of the crushed oats is replaced by corn meal. As the animals were stabled in rather poor condition, the yearlings and two-year heifers were fed two to three pounds of grain each this fall. The costs are shown in table 3.

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*Potatoes were fed in the spring of 1925 because there was no demand for them and there was no other succulent feed available.

†The high cost of roots was due to low yields owing to damage by cutworms.

TABLE 2.—INDIVIDUAL MILK RECORDS COMPLETED DURING THE YEAR

Name of cow	Age at beginning of lactation period	Date of dropping calf	No. of days in lactation period	Total pounds of milk for period	Daily average yield of milk	Average p.c. fat in milk	Pounds of butter produced in period	Value of butter at 45c. per pound	Value of skim-milk at 30c. per cwt.	Total value of product	Amount of meal eaten at 1.9c per lb.	Amount of roots at $6.60 per ton and ensilage at $4.05 per ton	Amount of hay eaten at $8.65 per ton	Amount of green feed eaten at $2.00 per ton	Months on pasture at $1.00 per month	Total cost of feed between calvings	Cost to produce 100 lbs. milk	Cost to produce 1 lb. butter skim-milk neglected	Profit on one pound of butter skim-milk neglected	Profit on cow between calvings labour and calf neglected
	yrs.			lb.	lb.	p.c.	lb.	$ cts.	$ cts.	$ cts.	lb.	lb.	lb.	lb.		$ cts.	$ cts.	cts.	cts.	$ cts.
Ayrshires—																				
Spottie	5	Nov. 20-24	312	9,771·1	31·31	3·8	447·64	201·44	18·78	220·22	3,576	13,828	2,399	1,869	5·05	121·81	1·246	·272	·178	98·41
Midnight	4	Feb 23-24	384·5	8,823·2	22·94	4·6	478·68	215·41	16·83	232·24	4,087	15,690	3,202	1,680	5·00	135·08	1·531	·282	·168	97·16
White Bess of Ottawa 2nd	6	Jan. 27-25	291	8,607·1	29·57	3·7	381·96	171·88	16·55	188·44	3,300	13,950	3,029	2,160	4·95	117·96	1·370	·308	·142	70·48
Pansy's Best	4	May 29-24	307	5,944·7	19·36	4·0	283·70	127·67	11·40	139·07	2,734	11,390	2,360	1,240	5·00	94·85	1·595	·334	·116	44·22
Lass of Fredericton	5	Nov. 7-24	229·5	5,097·9	22·21	3·8	229·61	103·33	9·80	113·13	2,524	10,620	2,203	.....	4·19	89·03	1·746	·388	·062	24·10
Average of breed	4·8	.....	304·8	7,644·8	25·08	4·05	364·32	163·95	14·67	178·62	3,244·2	13,095·6	2,638·6	1,389·8	4·84	111·75	1·498	·317	·133	66·87
Holsteins—																				
Cheer Echo	2	Feb. 14-24	405	20,655·6	50·87	3·0	737·59	331·92	40·05	371·97	6,145	18,910	3,135	2,720	5·00	186·60	·903	·252	·198	185·37
Helen Clover Ormsby	5	May 18-24	353	17,442·3	48·99	3·5	728·44	327·80	33·64	361·44	5,687	21,410	3,603	2,875	5·00	184·37	1·057	·253	·197	177·07
May Echo Frances	6	July 17 24	329	16,943·0	51·49	2·9	581·90	261·86	32·89	294·75	5,517	18,515	3,017	2,875	5·59	171·23	1·011	·294	·156	123·52
May Echo Plus Model	5	July 25-24	297·5	13,888·7	46·68	3·3	540·05	243·03	26·85	269·88	4,860	13,255	2,913	2,875	5·00	157·00	1·130	·291	·159	112·88
Lee Keyes Korndyke	7	Apr. 14-24	321	13,730·7	42·77	3·1	501·06	226·83	26·60	253·43	4,901	17,735	2,919	2,875	5·00	153·27	1·138	·310	·140	97·16
Johanna Alcartra Lee	4	Dec. 21-24	328	13,505·6	41·17	3·5	555·70	250·07	26·06	276·13	4,143	16,335	3,511	2,370	5·05	143·39	1·031	·258	·192	132·74
Average of breed	4·8	.....	339·6	16,027·7	47·20	3·22	607·96	273·59	31·01	304·60	5,208·8	18,531·7	3,193,5	2,765	5·11	166·48	1·05	·276	·174	138·12
Shorthorns—																				
Princess of Northlynd	10	May 2-24	333·5	10,555·7	31·65	3·8	473·16	212·92	20·06	232·98	4,265	19,605	3,179	2,875	5·00	149·37	1·415	·316	·134	83·61
Kentville Lady 3rd	2	Nov. 28-24	344	5,794·8	16·84	4·1	283·83	127·73	11·10	138·83	2,441	8,751	2,550	2,105	3·25	85·01	1·467	·300	·150	53·82
Kentville Susan 6th	2	Feb. 9-24	366	5,036·7	13·76	3·9	232·83	104·78	9·67	114·45	2,309	9,803	2,389	1,240	5·00	84·36	1·674	·362	·088	30·09
Lady Betty of Fredericton	2	Dec. 6-24	296·5	3,912·7	13·19	3·6	169·99	76·50	7·53	84·03	2,073	7,113	1,930	1,814	3·25	71·48	1·827	·420	·030	12·55
Average of breed	4·0	.....	335	6,325	18·88	3·9	289·95	130·48	12·09	142·57	2,772	11,325	2,509·5	2,008·5	4·13	97·55	1·596	·349	·101	45·02
Average of herd	4·6	.....	326·8	10,647·3	32·58	3·53	441·94	198·87	20·53	219·40	3,904	147,93	2,826	2,104·9	4·76	129·85	1·345	·309	·141	89·55

TABLE 3—COST OF RAISING DAIRY HEIFERS

Average Cost of Feed—Birth to One Year, for Seventeen Heifers (3 Ayrshires, 7 Holsteins, 7 Shorthorns)

		Amount of feed consumed	Cost of feed
			$
New milk at $30 per ton	lb.	685	10 28
Skim-milk at $4 per ton	"	2,714	5 43
Fat substitute at $57 per ton	"	105	2 99
Meal at $37 per ton	"	726	13 43
Roots at $6.60 per ton	"	1,614	5 33
Ensilage $4.05 per ton	"	225	0 46
Hay at $8.65 per ton	"	895	3 87
Pasture at $1 per month	months	0·96	0 96
Total cost		.....	42 75

Average Cost of Feed—One to Two Years for Three Heifers (2 Ayrshires, 1 Shorthorn)

		Amount of feed consumed	Cost of feed
			$
Meal at $37 per ton	lb.	123	2 28
Roots at $6.60 per ton	"	2,353	7 76
Ensilage at $4.05 per ton	"	2,609	5 28
Hay at $8.65 per ton	"	1,951	8 44
Pasture at $1 per month	months	4·66	4 66
Total cost		.....	28 42

Average Cost of Feed—Two Years to Calving at 2 Years, 7 Months, 10 Days for Eight Heifers (5 Ayrshires, 3 Shorthorns)

		Amount of feed consumed	Cost of feed
			$
Meal at $37 per ton	lb.	424	7 84
Roots at $6.60 per ton	"	1,611	5 32
Ensilage at $4.05 per ton	"	2,497	5 06
Hay at $8.65 per ton	"	1,579	6 83
Green feed at $2 per ton	"	46	0 05
Pasture at $1 per month	months	2·13	2 13
Total cost		.....	27 23

FEEDING EXPERIMENT—HEAVY VERSUS LIGHT FEEDING FOR GROWING HEIFERS

In order to compare a scant ration with a liberal ration for growing heifers, fifteen grade heifer calves of mixed breeding were purchased during April, 1924. The heifers were weighed on April 23. Seven heifers were fed a scanty ration, and eight heifers were fed a liberal ration (for details of feeding to November 1, 1924, see report for this Station for 1924, pages 8, 9 and 10).

During November, 1924, the scantily fed group were fed on five pounds of roots and what hay they would clean up. From December 1 to April 14 they were fed fifteen pounds of roots and what hay they would clean up.

From November 1 to April 14, inclusive, the liberally fed heifers were fed three pounds grain (composed of bran, 3 parts); crushed oats, 2 parts; oil-meal, 1 part; brewers' grain, 1 part); fifteen pounds either roots or silage, and all the hay they could clean up. On February 27 one heifer in this group was sold.

The average cost per heifer for the seven scantily fed heifers and the seven remaining liberally fed heifers from April 23, 1924, to April 14, 1925, when they were approximately one year old, is shown in table 4.

TABLE 4—HEAVY VERSUS LIGHT FEEDING FOR GROWING HEIFERS

		Group 1—heifers fed scanty ration	Group 2—heifers fed liberal ration
Number of animals in group		7	7
Number of days in feeding period April 23, 1924 to April 14, 1925	days	356	356
Gross initial weight April 23, 1924	lb.	596	602
Average initial weight April 23, 1924	"	85·14	86
Gross weight April 14, 1925	"	2,523	3,973
Average weight April 14, 1925	"	360·43	567·57
Gross gain in period	"	1,927	3,371
Average gains in period	"	275·29	481·57
Whole milk eaten per animal in period	"	116	329·5
Skim-milk eaten per animal in period	"	819	2,306·5
Fat substitute eaten per animal in period	"	.....	62·6
Meal eaten per animal in period	"	112	789
Hay eaten per animal in period	"	652·2	1,350
Silage eaten per animal in period	"	.....	560
Roots eaten per animal in period	"	2,164	1,844
Months at pasture	mos.	4·5	.....
Statement of Costs			
Whole milk at $30 per ton	$	1·74	4·94
Skim-milk at $4 per ton	$	1·64	4·61
Fat substitute at $57 per ton	$	.....	1·78
Meat at $36.50 per ton	$	.....	14·40
Meal at $36 per ton	$	2·02	.....
Hay at $9.63 per ton	$	3·14	6·50
Silage at $3.76 per ton	$	.....	1·05
Roots at $3.63 per ton	$	3·93	3·35
Pasture at $1 per month	$	4·50	.....
Total cost per animal	$	16·97	36·63
Cost of feed per cwt. gain	$	6·16	7·61

On April 15 the roots were discontinued on the scantily fed group and they were fed hay alone until they were turned to pasture on May 12.

The liberally fed group were fed grain with roots or silage and good quality mixed hay until they were turned to pasture on May 30. The liberally fed group were housed on October 10.

The feed cost and gains for both groups until October 12, when the heifers were approximately eighteen months of age, are shown in table 5.

TABLE 5—HEAVY VERSUS LIGHT FEEDING FOR GROWING HEIFERS

		Group 1—heifers fed scanty ration	Group 2—heifers fed liberal ration
Number of animals in experiment		7	7
Number of days in feeding period, April 14 to October 12	days	182	182
Average weight April 14	lb.	360·43	567·57
Average weight October 12	"	506·57	621·86
Average gain in period	"	146·14	54·29
Meat eaten in period	"	.....	143
Hay eaten in period	"	178	292·5
Silage eaten in period	"	.....	104
Roots eaten in period	"	15	311
Months at pasture	mos.	5	4·33
Statement of Costs			
Meal at $37 per ton	$	.....	2·65
Hay at $8.65 per ton	$	0·77	1·27
Silage at $4.05 per ton	$	.....	0·21
Roots at $6.60 per ton	$	0·05	1·03
Pasture at $1 per month	$	5·00	4·33
Total feed cost for period	$	5·82	9·49
Cost of gain per cwt.	$	3·98	17·48

From April 14, 1924, to October 12, 1925, the heifers in the scantily fed group made average gains of 421.43 pounds at an average cost of $22.79. The cost per hundred weight gain was $5.41. In the same period the heifers in the liberally fed group made average gains of 535.86 pounds at an average cost of $46.12. The cost per hundred weight gain was $8.61.

The results to October 12 seem to show:—

(1) That heifers fed a liberal ration will make larger gains.

(2) That these gains will be at a greater cost per hundred weight.

(3) That heifers fed a scanty ration during the winter will make larger gains while on pasture than heifers which are fed a liberal ration during the winter months.

HORSES

On December 31, 1924, there were sixteen horses at the Fredericton Station, of which one aged stallion, one two-year-old stallion, five mares, one two-year-old gelding, and two fillies, were registered Clydesdales. There were also one grade Clydesdale gelding, two grade Clydesdale mares, one grade Clydesdale filly, and two general purpose horses.

Two pure-bred Clydesdale fillies, one pure-bred Clydesdale horse foal, and one grade Clydesdale filly, were born during the year. As a preventative of joint-ill the pregnant brood mares were each given a teaspoonful of a saturated solution of potassium iodide on the first and fifteenth of each month. None of the foals had any indication of joint-ill.

A two-year-old Clydesdale stallion "Prolific" C.E.F. 24364, was transferred from the Central Experimental Farm. Two Clydesdale mares were purchased from B. Rothwell, Ottawa, Ontario.

The horses worked a total of 19,293 hours during the year. Four mares raised foals, and three work horses were disposed of, therefore, only three horses worked through the entire year. The average cost of feed for the three horses was $136.77, and they were worked an average of 223.8 days during the year.

The feed consumed by the young horses is shown in table 6.

TABLE 6—FEED COST OF RAISING YOUNG HORSES

—		Birth to 6 months		Birth to 2 years	Birth to 3 years	
		Grace	Duchess of Fredericton	Fredericton Prince	Josie of Fredericton	Kitty
Oats	lb.	386	190	2,835	5,080	5,460
Bran	"	32	25	1,363	1,537	1,610
Hay	"	183	90	6,014	8,581	8,868
Roots	"	.....	.....	314	667	667
Pasture	mos.	1·7	3	5·5	10·5	10·5
Weight at end of period	lb.	740	600	1,400	1,450	1,375
Statement of Costs						
Oats at $36 per ton	$	6·95	3·42	51·03	91·44	98·28
Bran at $32.60 per ton	$	0·52	0·41	22·22	25·05	26·24
Hay at $8.65 per ton	$	0·79	0·39	26·01	37·11	38·35
Roots at $6.60 per ton	$	.....	.....	1·04	2·20	2·20
Pasture at $1 per month	$	1·70	3·00	5·50	10·50	10·50
Total cost of feed	$	9·96	7·22	105·80	166·30	175·57

NOTE:—No charges made for feed consumed by mares when suckling foal.

The last eight horses raised consumed an average of 97 pounds of bran, 398 pounds of oats, 577 pounds of hay, and 12 pounds of roots during the first six months. With feeds at the same relative prices as in this table, the feed cost would be $11.87. They weighed an average of 648 pounds.

The last six horses raised consumed an average of 793 pounds of bran, 2,731 pounds of oats, 5,365 pounds of hay, 344 pounds of roots, and were 5.08 months on pasture during the first two years. With feeds at the same relative prices as in this table, the feed cost would be $91.51. They weighed an average of 1,187 pounds.

The last five horses raised consumed an average of 1,215 pounds of bran, 4,718 pounds of oats, 8,581 pounds of hay, 600 pounds of roots, and were 10.2 months at pasture during the first three years. With feeds at the same relative prices as in this table, the feed cost would average $154.01. They weighed an average of 1,394 pounds when three years of age.

SHEEP

The flock on December 31, 1925, consisted of thirty-eight head, all pure-bred Shropshires. The stock ram "McEwen A 432" was purchased from Alexander Dow & Sons, Metcalfe, Ontario, in 1924. The grade ewes, which have been used in a pasture experiment the two previous years, were disposed of.

During the summer it was noted that the flock was still infested with tape-worm. They were accordingly dosed twice with male fern according to the directions in Experimental Farm Exhibition Circular No. 61. No parasites were noted after the second treatment.

The sheep were sheared on April 22, dipped May 28, dipped again August 22, put with the ram November 2, and housed on November 18.

The pure-bred lambs were weaned on August 2. The ewes and lambs were wintered on hay and turnips.

COST OF MAINTAINING PURE-BRED EWES

The pure-bred sheep were housed on November 18, 1924, and turned to pasture on May 27, 1925. This made a total of 190 days in the barn. They were wintered until March 6 on hay and roots. From that date they were fed one-half pound grain per day. This grain was gradually increased until the ewes and lambs were eating one and three-quarters pounds per ewe when they were turned to pasture. Owing to shortage of roots, the root allowance was reduced on April 23 and discontinued on May 19.

The cost of maintaining eighteen ewes, their twenty-six lambs, and the stock ram (labour, bedding, interest, and depreciation, neglected) was:—

*22,724 lb. roots at $6.60 per ton	$ 74 99	
2,594 lb. meal at $39 per ton	50 58	
11,248 lb. hay at $8.65 per ton	48 65	
Pasture, 19 heads at $1.50 each	28 50	
Pasture, 26 lambs from August 3 at 50 cts. each	13 00	
1,022 lb. meal, fed lambs after weaning at $38 per ton	19 42	
Cost of dipping material	6 00	
Total cost		$ 241 14
The returns from these ewes were:—		
6 XXX rams sold for breeding purposes	$ 111 00	
2 XX rams sold for breeding purposes	27 00	
6 lambs sold to butcher	38 10	
12 ewe lambs kept for breeding purposes, value $15 per head	180 00	
150 pounds wool at 30 cts. per pound	45 00	
Total		$ 401 10
Profit on 18 ewes, labour, interest, and depreciation neglected		159 96
Profit per ewe		8 88

*The high cost of roots was due to small crops owing to damage from cutworms.

COST OF WINTERING LAMBS

Ten pure-bred Shropshire lambs were housed on November 18 and turned to pasture on May 27. They were fed a ration of six pounds roots, and what hay they would clean up, until April 23. After that date they were fed hay alone. The costs and returns per lamb were:—

509 pounds hay at $8.65 per ton	$ 2 20
936 pounds roots at $6.60 per ton	3 09
Total cost of feed	$ 5 29
7·23 pounds wool at 30 cts. per pound	2 17
Cost of wintering lambs over revenue from wool (bedding, labour, and interest neglected)	$ 3 12

SWINE

The swine herd at this Station on December 31, 1925, numbered ten head consisting of the pure-bred Yorkshire boar "Dustan Design 5" (Imp.) —93321— and nine pure-bred Yorkshire sows. The brood sows consist of three mature sows and six 1925 gilts sired by our former herd sire "Rogersfield Wonder" (Imp.) —88844—. This boar could not be retained at this Station due to the number of his daughters in the breeding herd, and hence he was transferred to the Nappan Farm and replaced by Dustan Design, mentioned above, a boar of little merit and consequently used on only a few of the plainer sows. The best sows were bred to the boar "Fredericton Alexander 2" owned in the Fredericton district. He was sired by "Rogersfield Wonder" and out of the sow "Ottawa Alexandria 115". This boar was of good bacon type, with a strong top and good length, combined with refinement and breed type, and should nick well with the strong-boned, vigorous, daughters of "Rogersfield Wonder".

FARROWING RECORDS

The year's farrowing record was, for various reasons, a disappointing one. The Fredericton Station-bred sows farrowed strong litters and reared an average of 8.5 pigs per litter. Most of the new sows that had been added to the herd were, as a rule, poor milkers, and farrowed weak pigs that were anaemic and colourless, and hence losses were heavy. The farrowing records are shown in table 7.

TABLE 7—FARROWING RECORDS

Sow number	Date of birth	Farrowing date	Number of pigs in litter	Number reared
128	May 11, 1922	April 5	10	10
127	May 11, 1922	" 12	12	9
401	Jan. 21, 1924	" 19	10	7
421	Feb. 11, 1924	June 10	12	7
307	Feb. 22, 1923	April 13	11	7
331	Mar. 3, 1923	" 25	15	10
378	Sept. 20, 1923	" 17	13	9
380	Oct. 3, 1923	" 16	6	0
128	May 11, 1922	Sept. 14	10	7
127	May 11, 1922	" 15	13	8
Total			112	74

Average number of pigs farrowed per spring litter	11·1
Average number of pigs reared per spring litter	7·3
Average number of pigs farrowed per fall litter	11·5
Average number of pigs reared per fall litter	7·5

COST OF REARING LITTERS TO SIX WEEKS

Average number of pigs reared per spring litter..... 7·3

Statement of feed fed to sows, from breeding date, in case of young sows, and from date last litter was weaned, in the case of old sows

Mangels, 1,590 lb. at 15 cts. per cwt.	$ 2 38
Turnips, 900 lb. at 15 cts. per cwt.	1 35
Bran, 98 lb. at $1.63 per cwt.	1 59
Crushed oats, 98 lb. at $1.80 per cwt.	1 76
Shorts, 98 lb. at $1.83 per cwt.	1 79
Barley, 98 lb. at $1.82 per cwt.	1 78
Oil-cake, 20 lb. at $2.30 per cwt.	0 46
Skim-milk, 448 lb. at 20 cts. per cwt.	0 89
Total	$ 12 00

Statement of Feed from Birth to Six Weeks

Skim-milk, 1,050 lb. at 20 cts. per cwt.	$ 2 10
Crushed oats, 157 lb. at $1.80 per cwt.	2 82
Middlings, 157 lb. at $2.03 per cwt.	3 18
Oil-cake, 63 lb. at $2.30 per cwt.	1 44
Total	$ 9 54

Statement of Cost

Boar service	$ 2 00
Feed to birth	12 10
Feed, birth to six weeks	9 54
Total cost to six weeks	23 64
Average cost per pig to six weeks	3 02

HEAVY FEEDING OVER A SHORT FEEDING PERIOD VERSUS LIGHT FEEDING OVER A LONG FEEDING PERIOD; AND THE EFFECT ON TYPE OF HOG AND COST OF PRODUCTION

This experiment was undertaken to secure data on the influence of feeding methods on type in hogs. In common practice it is generally assumed that hogs acquire greater length and hence are more desirable for the export trade when fed rather sparingly over a long feeding period. This experiment conducted in 1924 and fully reported in the annual report for that year, demonstrated the fact that a heavy ration from weaning to maturity tended to hasten maturity and to development of a compact type of hog, and conversely, a light ration fed over a long feeding period encouraged development in length rather than compactness, and resulted in a more desirable class of market hog.

Nine pigs were used in the experiment conducted in 1925. These were taken from the litter of one sow, viz., "Ottawa Alexandra 118," and were sired by the Station boar, "Rogersfield Wonder" —88844—. They were divided into three lots, with three pigs in each lot. Lot I was hopper-fed during the experiment, with access to all the feed they could consume. Lot II was pail-fed, receiving all they would clean up. Lot III was pail-fed, lightly, receiving a daily ration, approximately one-half that of the hopper-fed group, until the finishing period when they were put on a full ration. The ration fed to each lot was identical, except in quantity, and was as follows: from six to ten weeks, equal parts of crushed oats and middlings, with skim-milk and green feed. From ten to fourteen weeks, crushed oats, 2 parts; middlings, one part; shorts, 1 part; and corn, 1 part; with skim-milk and green feed. From fourteen weeks to finish, equal parts of crushed oats, shorts, and corn, with skim-milk and green feed. The following prices were charged for the feeds used in this experiment:—

Crushed oats	$ 1 80 per cwt.
Corn	2 25 "
Shorts	1 83 "
Middlings	2 03 "
Skim-milk	0 20 "

TABLE 8—EFFECT OF METHOD OF FEEDING ON TYPE OF BACON HOG AND COST OF PRODUCTION

—		Group I — Hopper-fed	Group II — Pail-fed full ration	Group III — Pail-fed scant ration
Number of pigs in experiment		3	3	3
Number of days in experiment		143	143	143
Gross initial weight at six weeks	lb.	74·0	76·4	73·9
Gross finished weight	"	565	549	454
Average finished weight	"	188·3	183·0	151·3
Gross dressed weight	"	431·0	408·0	336·0
Dressing percentage	%	76·2	74·3	74·0
Total gain per group	lb.	491	472·6	380·1
Average daily gain per animal	"	1·14	1·10	0·886
Average gain per animal	"	163·7	157·5	126·7
Statement of Feeds				
Total meal fed	lb.	1,046	934	828
Total skim-milk fed	"	3,537	3,537	3,537
Meal fed per 100 lb. gain	"	213	197·6	217·8
Statement of Costs				
Cost of pigs at six weeks	$	9 06	9 06	9 06
Total cost of meal fed	$	20 44	18 25	16 18
Total cost of skim-milk	$	7 07	7 07	7 07
Total cost of feed	$	27 51	25 32	23 25
Total cost of hogs	$	36 57	34 38	32 31
Cost per 100 lb. gain	$	5 60	5 35	6 11
Cost per 100 lb. dressed weight	$	8 48	8 42	9 61

An analysis of this experiment, and a similar one carried on in 1924, seems to show that:—

(1) The self-feeder, or hopper method of feeding from weaning to slaughter is not a practical method where the production of quality bacon is the objective. If used, the self-feeder or hopper should be confined to the short finishing period.

(2) A too scant ration in the early stages, up to four and a half months, tends to stunt development.

(3) Extremes in feeding, either very heavy or very light feeding, during the first four or five months are undesirable.

FIELD HUSBANDRY

The land was very dry when winter set in, and the snow was largely removed by exceptionally warm weather in February. The weather during April and May was cold with slight showers which did not penetrate into the subsoil, therefore, the land was dry and could be worked earlier than usual. The first dates of seeding were as follows: Wheat, April 27; potatoes, May 15; oats, May 14; barley, May 16; corn, May 30; sunflowers, May 27. Germination was slow and the root crop was badly damaged by cutworms.

COST OF PRODUCING HAY IN A FOUR-YEAR ROTATION

Hay making was begun on July 10 and finished on August 18. Forty-three acres of rotation land yielded 87 tons, 1,775 pounds, or at the rate of 2 tons, 88 pounds per acre. The cost of production per acre was:—

Rent and taxes		$ 3 00
Manure—2·34 tons at $2 per acre		4 68
Fertilizer—89 pounds acid phosphate at $1 per cwt		0 89
Seed—Timothy ½ of 10 pounds at $12 per cwt		0 60
Seed—Red clover ½ of 8 pounds at $40 per cwt		1 60
Seed—Alsike ½ of 2 pounds at $21 per cwt		0 21
Machinery		3 00
Mowing (man and 2 horses 0·96 hrs. at 45 cts.)	$ 0 43	
Tedding (man and 2 horses 0·48 hrs. at 45 cts.)	0 21	
Raking (man and 2 horses 0·4 hrs. at 45 cts.)	0 18	
Raking (man and 1 horse 0·8 hrs. at 35 cts.)	0 28	
Drawing to barn and pitching (man and 2 horses 2·73 hrs. at 45 cts.)	1 23	
Hand mowing, coiling and shaking out (man 1·03 hrs. at 25 cts.)	0 26	
Pitching and storing in mow (man 4·27 hrs. at 25 cts.)	1 07	
	$ 3 66	3 66
Total cost per acre		17 64
Value per acre 2·04 tons at $11.42		23 30
Profit per acre		5 66

Cost per ton $8.65.

COST OF PRODUCING A CEREAL GRAIN IN A FOUR-YEAR ROTATION

Costs of production were kept on seventeen acres Victory oats, two acres White Russian wheat, and three acres of Charlottetown No. 80 barley. These grains were grown on land which had been in hoed crops the previous year. The cost of production is shown in table 9.

TABLE 9—COST OF PRODUCING CEREALS IN A FOUR-YEAR ROTATION

——		Oats	Spring wheat	Barley
Date of seeding		May 16	April 27	May 20
Date of harvesting		Aug. 25	Aug. 18	Aug. 27
Rate of seeding	bush.	3	1·75	2·00
Rent and taxes	$	3·00	3·00	3·00
30 per cent of manure at $2 per ton	$	9·00	9·00	9·00
Superphosphate at $1 per cwt	$	1·62	0·76	0·92
Seed	$	3·75	4·37	3·20
Machinery	$	3·00	3·00	3·00
Twine at 20 cts. per pound	$	0·40	0 40	0 40
Ploughing, man and 2 horses at 45 cts	$	2 25	4 50	2 25
Harrowing, man and 4 horses at 65 cts	$	1 45	0·65	1·30
Harrowing, man and 2 horses at 45cts	$	0 37	0 22	0 30
Seeding, man and 2 horses at 45 cts	$	0 42	0 45	0 45
Rolling, man and 2 horses at 45 cts	$	0 23	0 23	0 23
Cutting, man and 2 horses at 45 cts	$	0 79	0 45	0 75
Stooking and spreading stooks, man at 25 cts	$	0 44	0 31	0 41
Hauling in, man and 2 horses at 45 cts	$	1 48	0 34	0 60
Pitching and mowing, man at 25 cts	$	*2 47	0 38	0 66
Threshing, oats at 8 cts., wheat and barley at 10 cts. per bushel	$	4 80	1 74	3 23
Total cost per acre	$	35 47	29 81	29 70
Yield of grain per acre	bush.	60	17 35	32 33
Yield of straw per acre	ton	0 49	0 79	0 94
Value of grain per acre	$	34 80	31 92	30 71
Value of straw per acre	$	1 96	1 58	3 76
Total value per acre	$	36 76	33 50	34 47
Profit per acre	$	1 29	3 69	4 77
Cost per bushel of grain	$	0 559	1 64	0 818
Cost per ton straw	$	3 86	1 78	3 45

*The high cost was due to the oats being stored in the barn, while the wheat and barley were hauled to a threshing machine in the field.

COST OF PRODUCING SUCCULENT FOOD FROM DIFFERENT SOURCES

This experiment has been carried on the past four years in order to compare the cost of production and yield per acre of corn, sunflowers, turnips, and oats and peas.

This year the crops were grown on clay loam which had been in hay the two previous years. The land was ploughed in August. In the spring the land was given a broadcast application of manure at the rate of 15 tons per acre. The land was then ploughed and given a broadcast application of 800 pounds 4-8-6 home-mixed fertilizer per acre. The land was prepared for the crop with a stiff-tooth cultivator, disk, and smoothing harrow.

The varieties used in this experiment were White Capped Yellow Dent corn, Russian Giant sunflowers, Victory oats, Canadian Beauty peas, and Ditmar swedes. A summary of the results are given in table 10.

TABLE 10—COST OF PRODUCTION SUMMARY

—	Corn	Sunflowers	Oats and peas	Swedes
Rate of seeding.....lb.	38	10	Oats 68, Peas 60.	2
Date of seeding.....	June 3....	May 27....	May 9....	May 23
Date of harvesting.....	Sept. 23....	Sept. 10....	Aug. 11....	Oct. 17
Rent and taxes..... $	3 00	3 00	3 00	3 00
40 per cent of manure at $2 per ton..... $	12 00	12 00	12 00	12 00
Fertilizer..... $	10 08	11 08	9 60	9 20
[1]Seed..... $	1 04	1 80	5 90	1 30
Machinery..... $	3 00	3 00	3 00	3 00
Ploughing, man and 2 horses at 45 cts. per hour.... $	6 75	6 75	6 75	6 75
Harrowing, man and 4 horses at 65 cts. per hour... $	.....	.....	.....	1 30
Harrowing, man and 2 horses at 45 cts. per hour... $	1 35	1 35	1 35	3 15
Sowing fertilizer, man at 25 cts. per hour..... $	1 00	1 00	1 00	1 00
Ridging, man and 2 horses at 45 cts. per hour..... $	.....	.....	.....	2 70
Seeding, man and 2 horses at 45 cts. per hour..... $	0 67	0 45	0 45	.....
Seeding, man and 1 horse at 35 cts. per hour..... $	.....	.....	.....	0 70
Rolling..... $	0 15	.....	0 23	.....
Cultivating, man and 2 horses at 45 cts. per hour.. $	2 70	2 70	.....	.....
Cultivating, man and 1 horse at 35 cts. per hour... $	.....	.....	.....	1 57
Thinning and hoeing, man at 25 cts. per hour..... $	.....	.....	.....	15 75
Harvesting and storing..... $	8 82	16 09	13 14	13 37
Twine at 20 cts. per pound..... $	0 60	0 60	.....	.....
Total cost per acre..... $	51 16	59 82	56 42	74 79
Yield per acre, green weight.....ton	12 63	15 56	9 38	11 33
Dry matter.....per cent	14 57	14 02	15 43	10 31
Yield per acre, dry weight.....lb.	1 84	2 18	1 45	1 17
Cost per ton, green weight..... $	4 05	3 84	6 01	[2]6 60
[3]Value per ton..... $	2 22	2 13	2 35	1 57

[1]The following prices were charged for seed: Corn, per pound 2½ cts.; sun flowers, 10 cts. per pound: swedes, 65 cts. per pound; oats $1.25 per bushel; peas, $3.40 per bushel.

[2]The low yield and high cost of the swedes was largely due to cutworm damage.

[3]The value per ton is obtained by giving the same value to the dry matter as to the dry matter in hay. A ton of hay containing 75 per cent dry matter is valued at $11.42.

OTHER EXPERIMENTS

Work has been begun on testing various rotations and on rates and dates for seeding oats and wheat. When more data accumulate the results will be reported in the annual report.

HORTICULTURE

ORCHARD

The orchard came through the winter in fairly good condition. A few trees died in the variety orchard. Since some of these were of questionable hardiness, this was to be expected. Fameuse trees, which showed injury the previous year, continued to go back in general condition, and produced little crop.

While the opening up of spring was earlier than the previous year, a period of comparatively cool weather during the latter part of May resulted in the orchard not coming into full bloom until the 5th of June. This was just two days ahead of the previous year. The bloom did not last long, as heavy winds prevailed after the trees came into full bloom. The set of fruit was not large for most varieties, and the crop was about 30 per cent lighter than the previous year. The size and colour of fruit was better than for the previous year.

Three new experiments were begun during the year with commercial fertilizer. The primary object of two of these experiments was to determine the effect of heavy applications of nitrate of soda on the quality of apples. These experiments will be outlined in detail at a later date when results are available. The third experiment was to compare basic slag with acid phosphate for orchard use.

A change was made during the year in the spraying and dusting calendar. In former years one pre-blossom spray or dust was applied, and two after-blossom applications were made. This year two applications were made before the bloom, and one after, excepting for the McIntosh and Fameuse varieties, which were given two after-blossom applications.

The materials used and dates of application were as follows:—

Sprays—

1st application: May 15 to 19, applied when leaf tips showed green.
Materials: 3–10–40 Bordeaux plus 1½ pounds arsenate of lime.

2nd application: May 27 to 28; applied when blossom buds showed pink.
Materials: same as above.

3rd application: June 12, applied when bloom had fallen.
Materials: wettable sulphur 10 pounds, arsenate of lead 2 pounds, water 40 gallons.

4th application: July 4 (McIntosh and Fameuse).
Materials: 3–10–40 Bordeaux plus 1½ pounds arsenate of lime.

Dusts—

1st application: May 15 to 19, applied when leaf tips showed green.
Material: 12–8–80 copper arsenate dust.

2nd application: May 27, applied when blossom buds showed pink.
Materials: 12–8–80 copper arsenate dust.

3rd application: June 12, applied after the bloom had fallen.
Materials: 90–10 sulphur lead arsenate dust.

4th application: July 3 (McIntosh and Fameuse).
Materials: 12–8–80 copper arsenate dust.

SPRAYING AND DUSTING EXPERIMENT

This experiment has now been carried on in co-operation with the Entomological Branch for five years. McIntosh and Fameuse varieties have been used. The dates of spraying and dusting for the season were as shown in the previous paragraph. The results were as shown in table 11 (Project H. 370).

TABLE II (PROJECT H 370)—SPRAYING AND DUSTING EXPERIMENT

Variety	Spray Calendar					Dust Calendar					Check				
	Light scab	Heavy scab	Insect injury	Russet	Total scab, insect injury and russet	Light scab	Heavy scab	Insect injury	Russet	Total scab insect injury and russet	Light scab	Heavy scab	Insect injury	Russet	Total scab, insect injury and russet
	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%
McIntosh	16·5	1·05	1·49	0·72	19·76	19·86	0·5	1·30	1·14	22·80	46·83	3·83	5·49	0	56·15
Fameuse	1·77	0·09	2·00	0·86	4·72	4·3	0·0	2·2	2·45	8·95	7·2	0·5	6·24	0	13·94

DEDUCTIONS. The average results for five years covering experiments with McIntosh and Fameuse varieties show that spraying has given better scab control than dusting. Dusting has been as effective as spraying for the control of insects. Dusting produced less russeting of the fruit every year excepting 1925.

While dusting may not be as effective as spraying for the control of scab, it has certain other advantages. Dusting can be done more rapidly than spraying. The materials cost more for dusting, but the labour required is less. Where water is difficult to obtain for spraying purposes, dusting may be cheaper than spraying. The depreciation on dusting-machinery is probably less than on spraying-machinery.

One of the difficulties of dusting is to get favourable weather conditions for applying the dust. In order to get an even distribution of dust the air must be still, and the best adhesion will be obtained when the leaves are slightly damp. Dusting at this Station has generally been done in the evening or the early morning.

APPLES—CULTIVATION VERSUS SOD CULTURE

This experiment was begun in 1922 with McIntosh, Dudley and Wealthy varieties.

One block is cultivated until the first week in July, after which a cover-crop is sown. Buckwheat was used this year and it was sown on July 7.

A second block is cultivated on one side of the trees one year, and on the opposite side the following year. The cultivated area is cultivated until the first week in July, after which a cover crop is sown, seeded down with clover. The area in grass is cut a couple of times during the season and the grass left as a mulch. Buckwheat and clover were sown this year on July 7.

A third block is kept in sod. The grass is cut and left on the ground as a mulch.

There are five rows of trees in these three blocks. One row in each block was treated with a different fertilizer as mentioned under the outline of experiment on "The Effect of Nitrate of Soda on the Quality of Fruit."

The yields from the different blocks were as shown in table 12 (Project H 543).

TABLE 12 (PROJECT H543)—CULTIVATION VERSUS SOD CULTURE

Variety	Method of Treatment	Number of trees in block	Number of trees bearing age	Average yield per tree bearing age
				pecks
McIntosh	Clean cultivation	5	5	5·61
	Partial cultivation	5	4	5·12
	Sod culture	6	5	7·08
Dudley	Clean cultivation	6	6	11·17
	Partial cultivation	10	8	10·54
	Sod culture	9	8	13·36
Wealthy	Clean cultivation	20	18	12·51
	Partial cultivation	19	14	8·54
	Sod culture	19	16	5·85

GRASS MULCH VERSUS REMOVING HAY IN SOD ORCHARD

This experiment has been carried on with Fameuse and McIntosh trees planted in 1914. In one block the grass is cut and left as a mulch, while in the second block the grass is cut and removed as a hay crop.

The Fameuse in this orchard have suffered from winter injury to quite an extent.

The results were as shown in table 13 (Project H. 542).

TABLE 13 (PROJECT H542)—GRASS MULCH VERSUS REMOVING HAY IN SOD ORCHARD

Variety	Treatment	Number of trees	Number of trees bearing age	Total yield	Average yield per tree bearing age
				pecks	pecks
Fameuse	Grass cut and left as mulch	17	15	108·53	7·23
McIntosh	Grass cut and left as mulch	15	14	134·68	9·62
Fameuse	Grass cut and removed	27	18	113·60	6·31
McIntosh	Grass cut and removed	16	13	88·02	6·77

VARIETY ORCHARD

The three most promising new varieties are listed below:—

Melba: This is a McIntosh seedling. It is of medium size, fair colour, and good quality. It is ready for use about September 2. The tree is a good grower and hardy.

Lobo: This is a McIntosh seedling. The fruit is of good size, highly coloured, and of good quality. Its season is from October to January 1. The tree is hardy and a good grower.

Sandow: This is a Northern Spy seedling. The fruit is of good size, well coloured, and of good quality. Its season is from December to the end of March. The tree is thrifty and apparently hardy.

The Melba apple can be recommended for general planting as an early apple.

The Lobo apple is not of as high quality as the McIntosh and does not keep quite as long. It is probably of better quality, size, and colour than the Wealthy, and is of about the same season. It is good enough to recommend for general planting, but on account of its season approximating that of two standard varieties such as the Wealthy and McIntosh, it probably should be planted in limited quantities until such time as it establishes itself as being definitely superior or inferior to Wealthy.

Sandow approaches the long-sought winter apple for this province. It resembles the Northern Spy somewhat in appearance, but was superior to any Spys grown at this Station this year. The fruit is of as good size as the Bethel, which is being recommended as a winter variety for this province, and it is of better colour, quality, and flavour. The trees are apparently hardy.

BUSH AND SMALL FRUITS

The bush fruit plantation was given an application of about 25 tons of barnyard manure per acre in the fall of 1924.

CURRANTS—VARIETY EXPERIMENT

Fourteen varieties of black currants were grown. The results were as shown in table 14 (Project H. 4).

TABLE 14 (PROJECT H4) BLACK CURRANTS—VARIETY EXPERIMENT

Variety	Yield per acre	Number of years grown	Average yield
	qts.		qts.
Collins Prolific	5,953·2	8	6,999·8
Victoria	5,662·8	8	4,739·6
Lee Prolific	5,517·6	8	5,928·5
Saunders	4,811·6	8	4,749·4
Eagle	4,549·6	8	4,148·1
Black Champion	4,452·8	7	3,951·5
Kerry	4,162·4	8	6,833·4
Buddenborg	3,920·4	8	5,053 0
Clipper	3,654·2	8	3,473·1
Topsy	2,516·8	8	4,968·1
Boskoop Giant	2,129·6	8	3,212·5
Climax	1,452·0	8	3,876·1
Magnus	1,113·2	8	3,113·2
Eclipse	556·6	8	4,848·03

RASPBERRIES—VARIETY EXPERIMENT

Eighteen varieties of raspberries were grown. The results were as shown in table 15 (Project H. 11).

TABLE 15 (PROJECT H11)—RASPBERRIES—VARIETY EXPERIMENT

Variety	Yield per acre	Number of crops grown	Average yield per acre	Remarks, 1925
	qts.		qts.	
Unnamed J 6	4,537·5	7	3,566·9	Wintered well; very vigorous; little mosaic.
Unnamed K 15	3,492·5	7	3,155·4	Wintered fairly well; a few tips injured; considerable mosaic.
Herbert	3,437·5	7	3,294·5	Wintered well; a few tips injured; a little mosaic.
Newman No. 1	2,007·5	7	1,445·1	Wintered well; a few tips injured; a little mosaic.
Sarah	1,787·5	7	1,441·0	Wintered well; vigorous; considerable mosaic.
King	1,741·6	7	1,712·2	
Ruby	1,732·5	7	1,043·9	Not very vigorous; considerable mosaic.
Newman No. 20	1,705·0	7	979·6	Considerable winter injury to tips; vigorous; considerable mosaic.
Marlboro	1,489·5	7	1,654·0	A few tips injured; not very vigorous; considerable mosaic.
Newman No. 6	1,457·5	7	1,181·4	Considerable winter injury to tips; fairly vigorous; considerable mosaic.
Newman No. 24	1,375·0	7	1,720·6	Considerable winter injury; not very vigorous; considerable mosaic.
Brighton	1,301·6	7	1,665·4	Not very vigorous; considerable mosaic.
Newman No. 23	1,265·0	7	2,261·1	Considerable injury to tips; growth not very vigorous; considerable mosaic.
Golden Queen	1,258·1	6	1,393·8	Considerable winter injury.
St. Regis	1,100·0	7	1,364·3	A few tips injured; considerable mosaic.
Count	770·0	6	1,026·6	
Shaffer	742·5	6	1,198·0	Considerable winter injury; considerable mosaic.
Columbian	165·0	6	303·9	

GOOSEBERRIES—VARIETY EXPERIMENT

Seventeen varieties of gooseberries were grown. The results were as shown in table 16 (Project H. 6).

TABLE 16 (PROJECT H6)—GOOSEBERRIES—VARIETY EXPERIMENT

Variety	Yield per acre, 1925	Number of crops grown	Average yield per acre	Remarks
	qts.		qts.	
Oregon Champion	19,178·5	7	6,512·1	Fruit medium size.
Industry	5,372·4	6	1,258·4	Fruit large, slightly hairy.
Lancer	4,936·8	7	1,735·4	Fruit large, smooth.
May Duke	4,840·0	7	2,119·1	Fruit medium size, smooth.
Keepsake	4,251·7	7	2,205·2	Fruit very large, smooth.
Careless	3,811·5	7	1,253·2	Fruit large.
Surprise	3,509·0	7	1,507·6	Fruit large, smooth.
Leader	2,904·0	5	1,380·8	Fruit large, smooth.
Pearl	2,662·0	7	3,201·3	Fruit medium size, smooth.
Whitesmith	2,510·75	7	1,406·1	Fruit large, smooth.
Lancashire Lad	2,359·5	6	822·7	Fruit large, hairy.
Victoria	2,250·6	7	1,247·3	Fruit large, smooth.
Crown Bob	1,613·33	5	965·6	
Glenton Green	1,497·37	6	914·0	Fruit medium size, hairy.
Downing	1,331·0	7	1,805·6	Fruit medium size, smooth.
Catherine	1,290·0	6	1,094·2	Fruit large, smooth.
Ocean	1,089·0	7	812·3	Fruit large, smooth.

STRAWBERRIES—VARIETY EXPERIMENT

The yields from a one-year-old plantation are shown in table 17. The yields from a two-year-old plantation are shown in table 18.

TABLE 17—STRAWBERRIES—VARIETY EXPERIMENT (1-YEAR-OLD PLANTATION)

Variety	Yield per acre	Per cent stand, Fall 1924
	quarts	
Ozark	8,992·5	94·1
Sample	7,669·0	92·1
Warfield	7,600·3	88·2
Lavinia	7,486·8	90·1
Glen Mary	7,205·0	86·2
Black Beauty	6,985·0	92·1
Senator Dunlap	6,682·5	98·0
K Prize	6,579·3	94·1
Beder Wood	6,435·0	94·1
Williams Improved	6,393·75	.....
Bianca	6,125·6	94·1
K Premier	5,097·8	72·5
Portia	5,087·5	94·1
Viola	4,867·5	92·1
Cassandra (mixed with Cordelia)	4,599·3	90·1
Bubach	4,272·8	98·0
Parsons Beauty	4,008·1	88·2
Julia	3,980·6	96·0
Billy Sunday	3,733·1	96·0
Brandywine	3,460·8	82·3
Rewastico	3,423·75	92·1
President	3,341·25	88·2
Splendid	2,794·6	86·2
Charles I	2,399·3	78·4
Jersey Giant	1,895·7	92·1
Ophelia	1,885·4	80·3
Cordelia	1,650·0	88·2
New York	1,416·2	80·3
Premier	1,079·3	66·6

TABLE 18—STRAWBERRIES—VARIETY EXPERIMENT (2-YEAR-OLD PLANTATION)

Variety	Yield per Acre	
	1924	1925
	qts.	qts.
Portia (Imp)	4,413·7	7,981·8
Lavinia (Per)	5,032·5	6,960·9
Senator Dunlap (Per)	3,135·0	6,720·3
Viola (Imp)	4,001·2	6,710·0
K Premier (Per)	5,816·2	6,651·5
Bianca (Per)	4,413·7	6,586·25
Ozark (Per)	5,898·7	6,407·5
Glen Mary (Per)	7,136·2	5,785·3
Cassandra (Per) (variety impure, mixed with Cordelia)	4,372·5	5,663·2
Williams Improved (Per)	3,485·6	5,420·9
Jersey Giant (Per)	2,468·0	4,908·75
Warfield (Imp)	4,661·2	4,774·6
Americus (Per)	2,023·8	4,578·0
Beder Wood (Per)	4,991·2	4,455·0
K Prize (Imp)	2,323·7	4,345·0
Brandywine (Per)	2,083·1	3,790·0
Black Beauty (variety mixed with Ozark)	2,371·8	3,718·0
Julia (Per)	2,928·7	3,509·6
Charles I (Per)	4,042·5	3,368·75
Rewastico	3,712·5	3,306·8
Parsons Beauty (Per)	5,486·25	3,258·0
Ophelia (Per)	1,629·3	3,238·1
Bubach (Imp)	2,660·6	3,135·0
Billy Sunday (Per)	4,455·0	2,915·0
Cordelia (Per)	1,283·8	2,677·1
President	3,114·3	2,646·8
Sample (Imp)	4,785·0	2,158·75
Splendid (Per)	3,217·5	2,012·6
New York	3,093·7	1,869·3
Premier (Per)	1,739·3	128·9

NOTE.—Per.—Flowers perfect.
Imp.—Flowers imperfect.

VEGETABLES

The land devoted to vegetables was manured with barnyard manure at the rate of twenty tons per acre in the fall of 1924. This manure was ploughed under that fall. In the spring one thousand pounds per acre of a 4-8-6 commercial fertilizer was applied broadcast. The soil was worked up for seeding with a stiff-toothed cultivator and harrows.

BUSH BEANS

VARIETY EXPERIMENTS.—Twenty-two varieties of bush beans were planted on May 16. These were planted in duplicate in rows thirty-three feet long and two and one half feet wide. Each plot was divided in two, and records kept from one section for green beans, and from the second section for ripe beans. The yields of green beans are as shown in table 19. (Project H 61).

TABLE 19—YIELD OF GREEN BUSH BEANS

Variety	Source	Amount Anthracnose			Ready for use	No. of plants 33 ft. row	Yield per 33 ft. row	
		July 29	Aug. 13	Aug. 21			lb.	oz.
Hodson Long Pod	O-6904		None	Trace	Aug. 13	96	33	14
*Davis White Wax	O-6903	Slight	Considerable	Considerable	July 25	99	33	2
Hodson Wax	Harris		Trace	Trace	Aug. 13	121	33	-
Dwarf Masterpiece	Sutton	None	None	None	July 29	107	31	13
Masterpiece	Vaughan	None	None	None	July 29	109	28	8
Improved Refugee	Steele Briggs		Trace	Slight	Aug. 13	122	28	1
Stringless Green Pod	O-6877		Considerable	Considerable	July 29	112	27	14
Hodson Long Pod	Rennie		Trace	Trace	Aug. 13	73	27	-
Round Pod Kidney Wax	O-6875	None	Slight	Considerable	July 29	95	26	13
Refugee	Burpee		Considerable	Considerable	Aug. 13	126	21	6
Wardwell Kidney Wax	O-6897	None	Considerable	Considerable	July 29	96	21	4
Stringless Green Pod	Burpee		Considerable	Considerable	July 29	111	20	8
Yellow Eye	O-6950	None	None	None	July 29	100	19	9
Extra Early Red Valentine	Steele-Briggs	None	Slight	Slight	July 29	86	18	13
*Interloper Challenge Black Wax	O-6876	Slight	Considerable	Considerable	July 24	102	18	5
Henderson Bountiful	Dupuy & Ferguson	Slight	Considerable	Considerable	July 29	84	18	1
Dwarf French or Bountiful	Will		Slight	Considerable	July 29	84	17	8
Pencil Pod Black Wax	Burpee	None	Slight	Considerable	July 29	64	14	12
Jones White	Manitoba Agricultural College	None	Considerable	Considerable	July 29	110	13	-
Round Pod Kidney Wax	MacDonald	Slight	Considerable	Considerable	July 29	118	11	9
Improved Golden Wax	Livingston	Slight	Considerable	Considerable	July 29	91	11	2
*Wardwell Kidney Wax	Graham	Considerable	Considerable	Considerable	July 29	93	8	12

*Davis White Wax, variety impure;
Interloper Challenge Black Wax, not a wax bean;
Wardwell Kidney Wax, variety impure.

The results this year, as well as previous years, indicate that Masterpiece is the best yielding green-podded bean. It is a fairly early bean of good quality, and besides being a better yielder than Extra Early Red Valentine or Stringless Green Pod, it is free from anthracnose under our conditions, and the pods thus present a more saleable appearance.

The Hodson Long Pod or Hodson Wax is the best-yielding wax bean, but it is too late in season for early market. It also is fairly resistant to anthracnose. Wardwell Kidney Wax, Davis White Wax, Round Pod Kidney Wax, and Pencil Pod Black Wax are good quality, early varieties, but are liable to develop anthracnose as the season advances.

BEETS

VARIETY EXPERIMENT.—Six varieties of beets were sown on May 25. Eclipse (MacDonald) produced the highest yield, viz., 242 pounds from a sixty-six foot row. It was followed by Detroit Dark Red (O-6050), Cardinal Globe (Rennie), Crosby Egyptian (Dupuy & Ferguson), Crosby Egyptian (Steele-Briggs), and Detroit Dark Red (MacDonald).

The Crosby Egyptian (Steele-Briggs and Dupuy and Ferguson) produced the greatest weight of merchantable table beets followed very closely by Detroit Dark Red (MacDonald). (Project H 68).

DATES OF SEEDING.—In order to determine the best date of sowing beets (1) for green bunch beets, (2) when left in the ground until late fall, Detroit Dark Red beets were sown on May 20, June 1, June 10, June 20, June 30 and July 10. The first two seedings were slow in germinating and poor stands were obtained. The June 10 seeding produced the largest crop of bunch beets for the early market, and the June 20 sowing the largest total crop.

The June 10 seeding produced the largest crop of beets for fall harvest, but the crops from the June 20 and June 30 sowings were smaller beets and more desirable for table purposes. (Project H 65).

CARROTS

VARIETY EXPERIMENT.—Five varieties of carrots were sown on May 25. The carrot rust-fly attacked the plantation and did some damage to the stands. The yields as obtained were (1)) Oxheart (Steele-Briggs) 78¾ pounds from a sixty-six-foot row, (2) Red St. Valery (Rennie) (3) Chantenay (O-3423).

The Red St. Valery produced the largest crop of marketable table carrots, followed by Chantenay O-3423 and Oxheart. (Project H 83).

DATES OF PLANTING.—In order to determine the best date of planting carrots (1) for bunch carrots (2) when left in the ground until fall, Chantenay carrots were sown May 20, June 1, June 10, June 20, and June 30. The first two sowings germinated slowly. The June 10 sowing produced the largest number of bunches before September 1, but was a little below the June 20 sowing in total bunches.

The June 1 sowing produced the largest crop in the fall, followed closely by the June 20 and June 10 sowings. The crops from these three plantings were all of merchantable quality, but the carrots from June 20 planting were slightly smaller than those from the other two plantings. (Project H 79).

CELERY

VARIETY EXPERIMENT.—Sixteen varieties of celery were grown. The seed was planted in the hotbed on April 9 and the young plants were set in the open on June 20. The plants were set out on the level and blanching was done by drawing the earth up from between the rows. Considerable rot developed in the crop in spite of the fact that several applications of Bordeaux were made.

Winter Queen (Graham) produced the largest crop, viz., 56 pounds from twenty-five head. It was followed by Giant Pascal (Graham), Paris Golden Yellow (Steele-Briggs), Fordhook New Emperor (Vaughan), Evans Triumph (Dupuy & Ferguson), Easy Blanching (Garrahan), and Golden Plume (Morse). (Project H 94).

METHOD OF BLANCHING.—In order to determine the best method of growing and blanching celery Golden Self Blanching celery was planted (1) in a bed with the plants six inches apart each way, (2) on the level and blanched with earth, (3) on the level in a double row and blanched with paper, (4) in a trench and blanched with earth, (5) on the level and blanched with boards.

The best yield was obtained from growing on the level and blanching with earth, viz., 60½ pounds from twenty-five head. Planting on the level and blanching with boards gave the second highest yield, and growing in a shallow trench and blanching with earth produced the third best yield. (Project H 90).

CABBAGE

VARIETY EXPERIMENT.—Nineteen varieties of cabbage were grown. Golden Acre (Harris) was the earliest, being ready for use August 3. It was followed by Early Jersey Wakefield (MacDonald), ready for use August 12, Copenhagen Market (Graham) (James), Summer Ballhead (Harris) and Early Winnigstadt (Steele-Briggs) ready for use August 21.

Copenhagen Market (James) was the best yielder of the early varieties, with heads averaging 8.03 pounds. It was followed by Summer Ballhead (Harris) and Copenhagen Market (Graham), Succession (Ewing) and Golden Acre (Harris).

All Head Early (Steele-Briggs), which was cut September 3 with heads averaging 8.62 pounds, was the heaviest yielder of the late varieties. It was followed by Danish Ballhead S.S. (Steele-Briggs), Dala (MacDonald), Marblehead Mammoth (Ewing), and Danish Roundhead (Dupuy & Ferguson). (Project H 77).

DIFFERENT DATES OF PLANTING FOR STORAGE PURPOSES. In order to determine the date of planting cabbage that will give the best results for storage purposes, Copenhagen Market and Danish Ballhead varieties were sown on different dates, harvested with the root on, and stored in order to determine their keeping qualities. The results show that the later sowings of Copenhagen Market kept best. Danish Ballhead sown in the hotbed did not keep as long as when sown outdoors. No difference was observable in the keeping qualities of this variety when sown outside on different dates.

CUCUMBER

VARIETY EXPERIMENT. Eight varieties of cucumbers were sown on May 22. Improved Long Green (MacDonald) led in production with a yield of 552 cucumbers weighing 400.3 pounds from a sixty-six-foot row. It was followed by Davis Perfect (Graham). Extra Early White Spine (Burpee), XXX Table (Rennie) and Fordhook Famous (MacDonald) (Project H 106).

CORN

VARIETY EXPERIMENT. Fifteen varieties were planted on May 22. Banting, a new variety originated at the Central Experimental Farm was the earliest, being ready for use August 22. This is a yellow corn of good quality. Early Malcolm (O-3205) was ready for use September 4, and Golden Bantam (James) and MacDonald) was ready September 4 and September 10.

SUCKERING EXPERIMENT. In order to determine the effect of removing the suckers on the growth of corn, an experiment was carried on with Golden Bantam and Early Malcolm varieties. From duplicate plots of each variety the suckers were kept removed, while on companion plots the suckers were allowed to develop. Removing the suckers hastened the development of the ears for the Golden Bantam variety. Allowing the suckers to grow resulted in a larger total crop for both varieties. (Project H 101).

ONIONS

VARIETY EXPERIMENT. Sixteen varieties were planted on April 28. A bait of sodium arsenite sweetened with molasses was kept in the plantation during the period that the root-maggot flies were emerging, and a good stand was obtained for most varieties. Large Red Wethersfield (O-6041) led in production with a yield of 47½ pounds from a thirty-three-foot row. It was followed by Ailsa Craig (Graham), Prize Yellow Globe (Steele-Briggs), Southport Hollow Crown (Graham) led in total as well as merchantable crop. It was H 138).

PARSNIPS

VARIETY EXPERIMENT. Five varieties of parsnips were sown on May 25. Hollow Crown (Graham) led in total as well as merchantable crop. It was followed by Hollow Crown (MacKenzie) and Guernsey XXX (Rennie). (Project H 145).

DATES OF SEEDING. In order to determine the best date of seeding parsnips, the Hollow Crown variety was seeded on May 20, June 1, June 10, June 20 and June 30. The best yield was obtained from the first sowing. This is in accordance with the results of previous years. (Project H 142).

PEAS

VARIETY EXPERIMENT. The varieties listed in the following table were sown on May 15 in sixty-six-foot rows. The results were as shown in table 20. (Project H 153).

TABLE 20 (PROJECT H153)—PEAS — VARIETY EXPERIMENT

Variety	Source	Per cent stand	Ready for use	Yield per 66-ft. row	
				lb.	oz.
Lincoln	Morse	99·24	July 25	45	9
Seedling No. 1	Invermere	100·0	" 30	44	1
Lincoln	Invermere	100·0	" 25	41	13
Gradus X English Wonder	0–2346	100·0	" 21	41	13
Seedling No. 2	Invermere	100·0	" 21	39	4
Seedling No. 6	Invermere	98·48	" 25	38	14
Telephone	Dupuy & Ferguson.	100·0	" 30	38	2
Danby Stratagem	0–6370	96·96	" 30	37	15
Seedling No. 3	Invermere	100·0	" 25	37	1
Gradus X American Wonder	0–6267	100·0	" 21	36	13
Advancer	Harris	100·0	" 30	36	11
Daisy	Patmore	100·0	" 30	36	1
McLean Advancer	Livingston	96·96	" 28	33	14
Little Marvel	Rennie	97·72	" 18	33	9
English Wonder	0–6369	96·96	" 21	33	6
Laxtonian	Graham	100·0	" 21	32	7
Richard Seddon	MacKenzie	100·0	" 21	31	7
Gradus	0–6739	95·45	" 21	31	7
Gregory Surprise X English Wonder	0–2342	100·0	" 21	30	8
Sutton Excelsior	Harris	100·0	" 21	30	2
Thos. Laxton	MacDonald	99·24	" 18	29	11
Early Morn	Gregory	95·45	" 18	28	14
Gregory Surprise	Gregory	95·45	" 18	28	14
Blue Bantam	Graham	100·0	" 21	28	4
Lincoln	Sharpe	86·36	" 24	27	7
Alaska	Vaughan	100·0	" 18	27	2
Gradus	Carter	100·0	" 21	27	2
Prosperity	Rennie	93·93	" 21	25	7
Extra Early Pedigree	Gregory	98·48	" 18	24	5
American Wonder	MacDonald	96·96	" 18	22	10
Bromfield Six Weeks	Child	92·42	" 18	22	2

DISTANCE APART OF PLANTING. Thomas Laxton, English Wonder, and Stratagem peas were planted one, two, and three inches apart in rows two and one-half feet wide on May 15. The results were in favour of the closer plantings. The close plantings have given the best results (excepting for one variety in 1924) during the three years that this experiment has been carried on. (Project H 148).

SQUASH

VARIETY EXPERIMENT. Four varieties were sown on May 22. Warty Hubbard (Steele-Briggs) gave the largest yield. It was followed by Green Hubbard (Graham) Golden Hubbard (Harris) and Delicious (Graham). Project H 201).

TOMATOES

VARIETY EXPERIMENT. The varieties listed below were planted in the hotbed on April 9 and 10 and transplanted in the open on June 8. The plants were set four feet apart in rows four feet wide and were allowed to grow without pruning. The amount of ripe fruit produced was not large. The yields from eight plants in a thirty-three-foot row were as shown in table 21. (Project H 207).

TABLE 21 (PROJECT H207)—TOMATOES—VARIETY EXPERIMENT

Variety	Source	Ripe to Aug. 31	Ripe Sept. 1 to Sept. 15	Ripe Sept. 16 to Sept. 30	Total ripe	Total green	Total crop
		lb. oz.	lb. oz.	lb. oz.	lb. oz.	lb. oz.	lb. oz.
Alacrity X Earlibell	O-5155	1 7	20 4	31 6	53 1	221 0	274 1
Alacrity X Hipper 5-2-1	O-5153	0 14	18 0	24 9	43 7	134 0	177 7
Early Mascot	Graham	2 0	11 13	19 15	33 12	136 0	169 12
Pepper	Burbank	0 0	7 4	26 4	33 8	130 0	163 8
Sunnybrook Earliana	Burpee	2 1	6 7	20 10	29 2	186 8	215 10
Bonny Best Super Standard	Stokes	1 7	12 7	14 7	28 5	170 0	198 5
North Dakota Earliana	Wedge	0 0	9 5	17 1	26 6	228 0	254 6
First and Best	Bruce	0 11	11 5	11 11	23 11	172 8	196 3
Wayahead	Bruce	0 6	7 4	15 2	22 12	105 0	127 12
Alacrity 10-5-1	O-5168	0 8	4 15	17 4	22 11	213 0	235 11
Bolgiano	Bolgiano	0 0	6 15	15 5	22 4	163 8	185 12
First of All	MacKenzie	1 0	3 12	17 1	21 13	130 0	151 13
Burbank	Bruce	0 11	10 1	11 0	21 12	124 0	145 12
Sparks Earliana	Burpee	0 0	8 8	12 6	20 14	128 0	148 14
John Baer	Carter	3 4	10 12	4 6	18 6	95 8	113 14
Chalk Jewel	Steele-Briggs	0 8	7 3	10 4	17 15	142 0	160 15
Spark Earliana	MacDonald	1 2	3 4	12 10	17 0	200 0	217 0
Prosperity	Patmore	0 0	4 10	9 12	14 6	208 0	222 6
Fifty Day	Buckbee	1 4	5 5	7 12	14 5	172 8	186 13
IXL Extra Early	Rennie	1 8	4 13	7 11	14 0	151 0	165 0
Bonny Best	Stokes	1 0	6 8	5 11	13 3	129 8	142 11
Kelway Eldorado	A. G. Turney	0 9	5 12	6 10	12 15	159 0	171 15
Danish Export	Wibolt	0 5	5 5	6 13	12 7	131 0	143 7
Avon Early	Vaughan	0 4	5 2	6 3	11 9	110 8	122 1
Earliana	Ferry	0 0	2 3	9 3	11 6	151 0	162 6
Red Head	Langdon	0 12	4 0	6 4	11 0	194 8	205 8
Sparks Earliana	Ewing	1 0	5 1	4 6	10 7	148 8	158 15
Self Pruning	Burpee	0 6	3 4	6 12	10 6	186 8	196 14
Abbotsford Argo	A. H. Horn	0 0	1 11	8 2	9 13	121 0	130 13
John Baer	Steele-Briggs	0 6	2 6	5 11	8 7	124 0	132 7
Chalk Early Jewel	Carter	0 0	5 2	3 5	8 7	76 0	84 7
The Burbank	Burbank	0 0	1 7	5 2	6 9	206 0	212 9
Pink No. 1	O-5163	0 4	2 0	3 10	5 14	171 0	176 14
Langpertonian	A. G. Turney	0 7	0 10	4 5	5 6	192 0	197 6
Santa Rosa	Burbank	0 4	2 3	2 14	5 5	126 0	131 5
Manyfold	Livingston	0 0	1 6	3 13	5 3	184 0	189 3
Monumental	Bolgiano	0 0	2 2	2 8	4 10	124 0	128 10
Gulf State Market	Ferry	0 0	1 8	2 9	4 1	146 0	150 1
Greater Baltimore	Stokes	0 0	0 11	2 9	3 4	67 8	70 12
Pepper Tomato	Dieter	0 0	0 14	1 0	1 14	105 0	106 14
Giant Pepper	Burbank	0 0	1 13	0 0	1 13	0 0	1 13
Rosy Morn	Livingston	0 0	0 0	1 2	1 2	116 0	117 2
Early Prosperity	Buckbee	0 0	0 0	0 5	0 5	40 0	40 5
New Albino	Dupuy & Ferguson	0 0	0 0	0 0	0 0	147 0	147 0
Beauty	Livingston	0 0	0 0	0 0	0 0	117 8	117 8
Early Detroit	Ferry	0 0	0 0	0 0	0 0	77 0	77 0
San Jose Canner	Morse	0 0	0 0	0 0	0 0	56 0	56 0
Magnus	Livingston	0 0	0 0	0 0	0 0	54 0	54 0
Norton	Livingston	0 0	0 0	0 0	0 0	51 0	51 0
Favourite	Livingston	0 0	0 0	0 0	0 0	49 0	49 0
Matchless	Burpee	0 0	0 0	0 0	0 0	41 0	41 0
Stone	Livingston	0 0	0 0	0 0	0 0	38 8	38 8
Matchless	Livingston	0 0	0 0	0 0	0 0	36 0	36 0
Coreless	Livingston	0 0	0 0	0 0	0 0	28 0	28 0

METHOD OF PRUNING.—In order to determine the best method of pruning tomatoes to one stem the two varieties listed below were pruned to one stem and treated as follows: (1) not headed back, (2) stopped at third truss of fruit, (3) stopped at second truss of fruit, (4) stopped at first truss of fruit. The yields were taken from twenty-five plants. The results are shown in table 22. (Project H 207). The results of three years' experiments show that the single stem not headed back gives the best results

TABLE 22—TOMATOES — METHOD OF PRUNING

Treatment	Ripe to Aug. 31	Ripe Sept. 1 to Sept. 15	Ripe Sept. 16 to Sept. 30	Total ripe	Total green	Total crop
	lb. oz.	lb. oz.	lb. oz.	lb. oz.	lb. oz.	lb. oz.
Bonny Best—						
Single stem not headed back	19 1	20 14	8 6	48 5	23 8	71 13
Single stem stopped at thir truss fruit	19 5	21 5	3 1	43 11	2 4	45 15
Single stem stopped at second truss fruit	19 15	10 4	– –	30 3	– –	30 3
Single stem stopped at first truss fruit	15 4	– 10	– –	15 14	– –	15 14
Alacrity 0-5465—						
Single stem not headed back	13 9	16 9	3 3	33 5	8 8	41 13
Single stem stopped at third truss fruit	15 5	13 10	2 7	31 6	5 –	36 6
Single stem stopped at second truss fruit	9 5	1 8	– –	10 13	– –	10 13
Single stem stopped at first truss fruit	2 3	– 12	– –	2 15	– –	2 15

SPINACH SEED PRODUCTION

On June 16 one-fifth of an acre of Virginia Savoy spinach was sown for seed production. This was grown on land which was in corn the previous year. The soil was a medium clay loam fertilized with 800 pounds per acre of a 2-8-6 fertilizer, and 100 pounds per acre of nitrate of soda.. The nitrate was applied just as the crop was coming through the ground. (Project H 198).

The cost of production per acre was as follows:—

Rent of land		$ 3 00
Use of machinery		3 00
Fertilizer—		
206·4 lb. nitrate of soda at $58 per ton	$ 5 98	
133·0 lb. acid phosphate at $20 per ton	1 33	
96·0 lb. muriate of potash at $37 per ton	1 77	
	$ 9 08	9 08
Ploughing (man and 2 horses 5 hrs. at 45 cts. per hr)		2 25
Harrowing man and 2 horses 2·75 hrs. at 45 cts per hr.)		1 24
Seed (6 pounds at 15 cts per lb		0 90
Sowing (man 5 hrs. at 25 cts per hr.)		1 25
Cultivating, 4 times (man and 1 horse 6 hrs. at 35 cts per hr.)		2 10
Hoeing and weeding (45 hrs. at 25 cts)		11 25
Applying nitrate of soda (man 15 hrs. at 25 cts per hr.)		3 75
Harvesting (25 hrs. at 25 cts per hr.)		6 25
Turning to dry (1 man 5 hrs. at 25 cts per hr.)		1 25
Hauling in (1 man and 2 horses 5 hrs. at 45 cts per hr.)		2 25
Hauling in (1 man 2½ hrs. at 25 cts per hr.		0 62
Threshing 3 men (7·5 hrs. at 25 cts per hr.)		1 87
Gas and oil		1 00
Total cost per acre		$ 51 06
Value per acre 720 pounds seed at 15 cts		108 00
Profit per acre		56 94

Cost per pound 7·09cts.

POTATOES

STRAIN TEST.—Four strains of Irish Cobblers, three strains of Green Mountains, one strain of Browns No. 1, and a new variety, viz., Hoben, were tested. The results will be published at a later date when the results of several years' work will be available.

DIFFERENT DATES OF PLANTING TO OBTAIN THE BEST YIELDS.—The results this year, as well as in previous years, indicate that where soil conditions are favourable, potatoes should be planted before the last of May to obtain the best yields.

SPROUTED VERSUS NOT SPROUTED FOR EARLINESS.—Green Mountain and Irish Cobbler potatoes were taken from the cellar on April 1 and placed in a room where the temperature was between 40° and 50° F., and the light subdued. They were kept under these conditions until May 16, by which time they had developed short, thick, green sprouts. They were then planted in comparison with a similar lot taken direct from the cellar, in order to determine the effect of sprouting on earliness and yield. The crop was grown on a sandy loam, manured with eighteen tons barnyard manure and 1,000 pounds 4-8-6 commercial fertilizer per acre. The results are shown in table 23 (Project H 183).

This is the third year that this experiment has been carried on. Sprouting did not increase the Cobbler crop this year. In 1924 an increase of about six barrels per acre was obtained from the sprouted Cobblers in the early digging, while for the late digging a smaller crop was obtained. In 1923 a fairly substantial increase in the Cobbler crop was obtained by sprouting.

Sprouting Green Mountains has always resulted in an increased crop.

Observations indicate that the crop from the sprouted potatoes generally is ready for use about a week earlier than the crop from unsprouted potatoes.

TABLE 23 — POTATOES — SPROUTED VERSUS NOT SPROUTED FOR EARLINESS

Variety	Date Dug.	With Sprouts			Without Sprouts		
		Mer.	Small	Total	Mer.	Small	Total
		lb.	lb.	lb.	lb.	lb.	lb.
Irish Cobblers	Aug. 4 & 12	15,048	2,673	17,721	15,345	2,607	17,952
Irish Cobblers	" 25	16,103	2,821	18,924	16,170	2,639	18,809
Green Mountains	" 17	19,272	1,287	20,559	15,048	1,353	16,401
Green Mountains	Sept. 30	22,044	1,914	23,958	19,140	1,188	20,328

DIFFERENT DATES OF PLANTING TO OBTAIN BEST SEED.—Experiments with Irish Cobblers for four years indicate that Irish Cobbler seed potatoes from late plantings will generally give an increased yield over mature seed.

Experiments with Green Mountain potatoes have been carried on for three years. The results this year are not very conclusive. In previous years seed from the earlier plantings has given the best results. This will be reported more fully at a later date.

DIFFERENT DATES OF DIGGING TO OBTAIN BEST SEED.—Green Mountain and Irish Cobbler potatoes planted on May 16, 1924, were dug on two different dates as shown in table 24, in order to determine if the date of digging had any influence on the resultant crop for seed purposes. The progeny of these potatoes dug at different dates was planted May 21, 1925. The results are shown in table 24 (Project H 170).

TABLE 24 — POTATOES — DIFFERENT DATES OF DIGGING TO OBTAIN BEST SEED

Variety	When dug	Yield per acre		
		Merchantable	Small	Total
		lb.	lb.	lb.
Green Mountain	Aug. 15, 1924	16,698	1,980	18,678
Green Mountain	Oct. 16, 1924	15,774	1,716	17,490
Irish Cobblers	Aug. 8, 1924	13,200	3·927	17,127
Irish Cobblers	Sept. 20, 1924	14,487	3,531	18,018

SMALL VERSUS LARGE FOR SEED PURPOSES.—In order to determine the value of small potatoes for seed purposes, a comparison was made of the yields from Irish Cobbler and Green Mountain potatoes of the following weights:—

(1) Cobblers weighing from 6 to 8 ounces were cut in sets averaging 1.9 ounces.

(2) Cobblers weighing from 2½ to 3¼ ounces and averaging 2.8 ounces were planted whole.

(3) Cobblers weighing from 2½ to 3¼ ounces and averaging 2.88 ounces were cut in two for seed.

(4) Green Mountains weighing from 6 to 8 ounces were cut in sets weighing 1.84 ounces.

(5) Green Mountains weighing from 2½ to 3¼ ounces and averaging 2.8 ounces were planted whole.

(6) Green Mountains weighing from 2½ to 3¼ and averaging 2.8 ounces were cut in two for seed.

These were planted in a medium clay loam fertilized with fifteen loads barnyard manure and 950 pounds 4-8-6 fertilizer per acre. The results are shown in table 25 (Project H 546).

In order to determine if the continued planting of small-sized potatoes would result in the reduction of the size of potatoes and the resultant crops, the experiment outlined below was begun in 1923 with Green Mountain potatoes.

(1) Potatoes averaging about 8 ounces in weight were selected and grown in 1923. In 1924 potatoes grown from these and averaging 5.2 ounces were selected and propagated. From the progeny of these, potatoes averaging 8.08 ounces were selected and grown in 1925. These were cut in sets averaging 1.80 ounces.

(2) Small potatoes, hereafter called seconds, averaging 3 ounces, were planted in 1923. From the resultant crop, potatoes averaging 2 ounces were selected and grown in 1924. From the 1924 crop, potatoes averaging 2.56 ounces were selected and grown in 1925. These were planted whole.

(3) From the 1924 crop of the stock mentioned in the previous paragraph, potatoes averaging 1.57 ounces were also selected and grown in 1925. These were planted whole.

(4) Small potatoes averaging 1.5 ounces were selected and planted in 1923. From the progeny of these, potatoes averaging 2.2 ounces were selected and grown in 1924. From the 1924 crop, potatoes averaging 1.73 ounces were selected and grown in 1925. These were planted whole.

These were all grown in 1925 under uniform soil conditions. The results are shown in table 26.

TABLE 25 — POTATOES — SMALL VERSUS LARGE FOR SEED PURPOSES

Kind of seed used	Per cent stand	Yield per acre		
		Mer.	Small	Total
		lb.	lb.	lb.
Cobblers 6-8 ounces, cut in sets	98	11,727	4,467	16,194
Cobblers, average weight 2·8 ounces, planted whole	97	11,029	6,282	17,311
Cobblers, average weight 2·8 ounces, cut in two	98	14,520	3,071	17,591
Green Mountains, 6-8 ounces, cut in sets	87	14,591	3,019	17,610
Green Mountains, average weight 2·8 ounces, planted whole	99	21,432	4,828	26,260
Green Mountains, average weight 2·8 ounces, cut in two	98	17,444	2,251	19,695

TABLE 26 — SMALL VERSUS LARGE POTATOES FOR SEED PURPOSES

Seed used.	Yield per acre		
	Merchantable	Small	Total
	lb.	lb.	lb.
Commercial (8·08 ounces) from Commercial (5·2 ounces) from Commercial (8 ounces)	17,424	1,584	19,008
Seconds (2·56 ounces) from Seconds (2 ounces) from Seconds (3 ounces)	17,424	2,489	19,913
Small (1·57 ounces) from Seconds. (2 ounces) from Seconds (3 ounces)	16,104	2,376	18,480
Small (1.73 ounces) from Seconds (2·2 ounces) from Small (1·5 ounces)	17,787	2,904	20,691

STUDY OF TYPE.—The study of type in Green Mountain potatoes begun in 1923 was continued. Selections were made from the bin of (1) typical oblong type, (2) round type, (3) pointed at seed end, (4) pointed at stem end, (5) wasp waisted. The results were as shown in tables 27, 28, and 29.

TABLE 27—STUDY OF TYPES IN GREEN MOUNTAIN POTATOES

Type used for seed	Type of progeny — Percentage by weight							
	Perfect	Fair	Round	Pointed seed end	Pointed stem end	Wasp waisted	Otherwise off	Small
	%	%	%	%	%	%	%	%
Perfect	·33	46·50	29·48	5·10	3·78	2·59	2·36	9·82
Round	1·66	47·86	28·01	3·20	2·82	0·18	3·61	12·61
Pointed seed end	2·54	43·27	29·68	3·44	3·79	2·45	2·63	12·15
Pointed stem end	1·08	42·34	26·27	4·48	4·94	1·00	1·62	18·23
Wasp waisted	1·41	35·81	20·21	3·19	10·28	4·07	1·24	23·75

TABLE 28 — STUDY OF TYPES IN GREEN MOUNTAIN POTATOES

Type used for seed	Type of progeny — Percentage by count							
	Perfect	Fair	Round	Pointed seed end	Pointed stem end	Wasp waisted	Otherwise off	Small
	%	%	%	%	%	%	%	%
Perfect	·21	34·03	27·94	4·41	3·57	1·26	1·47	27·10
Round	·98	32·67	26·57	1·96	1·96	·19	1·96	33·66
Pointed seed end	1·33	27·91	28·68	1·91	2·67	·95	1·14	35·37
Pointed stem end	·52	27·08	23·17	3·12	3·64	·52	·78	41·14
Wasp waisted	·68	24·65	19·17	1·71	7·19	2·05	1·02	43·49

TABLE 29 — YIELD FROM DIFFERENT TYPES

Type	Yield per acre		
	Merchantable	Small	Total
	lb.	lb.	lb.
Perfect type	17,315	1,887	19,202
Round	17,097	2,468	19,565
Pointed seed end	18,383	2,544	20,927
Pointed stem end	13,599	3,059	16,658
Wasp waisted	13,227	4,122	17,349

STUDY OF TYPE IN THIRD GENERATION.—In 1923 different types found in Green Mountain potatoes were selected and propagated. The progeny of these were grouped according to their type and propagated in 1924 when sufficient seed was available. The 1924 progeny of these types was again grouped together and three types were planted, viz: (1) good type grown from good type grown from good type, (2) round type grown from round type grown from round type, (3) pointed at seed end grown from pointed at seed end grown from pointed at seed end. The results from these selections in 1925 are shown in tables 30, 31, and 32.

The sets from the round potatoes germinated very poorly. This gave the plants that grew an opportunity to make very vigorous growth, with the result that the type of tubers was affected.

TABLE 31—STUDY OF TYPE IN GREEN MOUNTAIN POTATOES — 3RD GENERATION

Progeny of	Type of progeny — Percentage by weight							
	Perfect	Fair	Round	Pointed seed end	Pointed stem end	Wasp waisted	Otherwise off	Small
	%	%	%	%	%	%	%	%
Good type from good type from good type	2·01	44·02	21·47	4·83	9·12	2·41	1·07	15·03
Round type from round type from round type	3·09	53·87	32·89	·35	3·57	–	–	6·19
Pointed seed from pointed seed from pointed seed.....	1·04	47·97	32·85	1·04	3·52	–	–	13·55

TABLE 31 — STUDY OF TYPE IN GREEN MOUNTAIN POTATOES — 3RD GENERATION

Progeny of	Type of progeny — Percentage by count							
	Perfect	Fair	Round	Pointed seed end	Pointed stem end	Wasp waisted	Otherwise off	Small
	%	%	%	%	%	%	%	%
Good type from good type from good type	·90	30·61	19·27	2·94	5·44	1·13	·68	39·00
Round type from round type from round type	1·81	41·21	35·15	·60	2·42	–	–	18·78
Pointed seed from pointed seed from pointed seed.....	·50	29·29	30·80	·50	2·52	–	–	36·36

TABLE 32 — YIELDS FROM DIFFERENT TYPES

Type	Per cent stand	Yield per acre		
		Merchantable	Small	Total
		lb.	lb.	lb.
Good type from good type from good type.....	1·87	11,488	2,032	13,520
Round type from round type from round type.....	1·43	7,140	471	7,611
Pointed seed end from pointed seed end from pointed seed end.....	94·28	17,187	2,296	19,483

METHOD OF STORAGE.—In order to obtain information on the best storage temperature for potatoes, Green Mountain potatoes were stored (1) in cold storage (temperature 33° to 35° F.) from December 30 until planting time, (2)

in potato cellar on the Station, (3) in a house cellar with a furnace in it. The cellar temperatures were as shown in table 33 (Project H. 178). The yields from the different lots are shown in table 34.

TABLE 33 — STORAGE TEMPERATURES

Month	Potato Cellar			House Cellar		
	Max.	Min.	Average	Max.	Min.	Average
	°	°	°	°	°	°
January	48	34	39·8	56	44	50·8
February	40	34	38·1	55	50	52·8
March	40	34	37·4	56	50	52·3
April	50	42	43·6	55	52	53·0
Average for period	.....	.....	39·7	.....	.....	52·2

TABLE 34 — POTATOES — METHOD OF STORAGE — YIELDS.

Where stored	Per cent stand	Yield per acre		
		Merchantable	Small	Total
		lb.	lb.	lb.
Cold storage	99·49	17,407	2,032	19,439
Potato cellar	100	*13,552	2,156	15,708
House cellar	74·74	14,983	1,531	16,514

*Possible effect of willows growing adjacent to potato field.

METHOD OF APPLYING FERTILIZER FOR POTATO CROP.—In order to determine the best method of applying fertilizer for the potato crop, the experiment begun two years ago was continued. A 4-8-6 home-mixed fertilizer was used for this experiment. The materials used in this fertilizer were nitrate of soda, sulphate of ammonia, acid phosphate, and muriate of potash. Applications of 1,000, 1,500, and 2,000 pounds per acre were made (1) broadcast, (2) in the row and mixed with earth, (3) in the row in direct contact with the seed. The soil was a medium clay loam. Planting was done on May 28. The results are shown in table 35 (Project H. 383).

TABLE 35 — METHOD OF APPLYING FERTILIZER FOR POTATO CROP

Method of application	Rate of application	Per cent stand	Yield per acre		
			Mer.	Small	Total
	lb.		lb.	lb.	lb.
Broadcast	1,000	74·33	18,411	1,568	19,979
In the row in direct contact with seed	1,000	72·66	18,469	2,003	20,472
In the row and mixed with earth	1,000	74·49	18,933	2,090	21,023
Broadcast	1,500	74·66	18,614	1,916	20,530
In the ow in direct contact with seed	1,500	70·16	17,423	2,148	19,571
In the row and mixed with earth	1,500	71·16	17,481	2,351	19,832
Broadcast	2,000	75·99	18,730	1,626	20,356
In the row in direct contact with seed	2,000	67·33	17,452	1,800	19,252
In the row and mixed with earth	2,000	66·66	18,411	1,480	19,891

In order to obtain some information on what constituents in fertilizer were responsible for seed-injury, plots were treated with nitrate of soda, sulphate of ammonia, acid phosphate and muriate of potash, used alone in quantities that would be found in a ton of a 4-8-6 fertilizer. These chemicals were distributed in the row and the seed planted in direct contact with them. The results are shown in table 36.

TABLE 36 — SOURCE OF FERTILIZER INJURY

Chemical used	Rate per acre	Per cent stand
	lb.	
Nitrate of sod	533	59·0
Sulphate of ammonia	400	66·7
Acid phosphate	1,000	68·7
Muriate of potash	240	72·2

SPRAYING AND DUSTING EXPERIMENT. A spraying and dusting experiment was carried on in co-operation with the Entomological Division. One-half acre of Green Mountain potatoes was sprayed and one-half acre was dusted. A check plot of two adjacent rows was neither dusted nor sprayed. Late blight began to develop the third week in August, and by September 1 the check plot was practically dead.

The sprays used were as follows:—

July 20, 4-4-40 Bordeaux plus 1½ pounds arsenate of lime.
July 29, 4-4-40 Bordeaux plus 1½ pounds arsenate of lime.
August 11, 4-4-40 Bordeaux plus 1½ pounds arsenate of lime.
August 21, 4-4-40 Bordeaux.
September 2, 4-4-40 Bordeaux.

The dusts used were as follows:—

July 20, 20-20-60 copper arsenate dust.
July 29, 20-20-60 copper arsenate dust.
August 11, 20-20-20 copper arsenate dust.
August 21, 20-80 copper arsenate dust.
September 2, 20-80 copper arsenate dust.
The yields were as shown in table 37. (Project H 182).

The results this year, as well as in the previous year, show a small gain in yield from spraying over dusting. This is the first year at this Station that dusting was really put to the test for the control of late blight. The results indicate that dust, applied timely and carefully, may be depended upon for the control of this fungus.

TABLE 37 — SPRAYING AND DUSTING

Treatment	Yield per acre			
	Merchantable	Small	Rotten	Total
	lb.	lb.	lb.	lb.
Sprayed	15,969	913	–	16,882
Dusted	15,223	1,035	–	16,258
Check	12,084	1,900	1,710	15,694

COST OF SPRAYING AND DUSTING.—The costs of spraying and dusting per acre for one application, as obtained by applying one application of spray and one application of dust to the Station potato crop, was as follows:—

Cost of spraying:	
Amount of 4-4-40 poisoned Bordeaux .. ..gals.	80
Time to apply, 1 man and team.. .. ..hours	1.03
Time to prepare stock solution, 1 man.. .. .. ..hours	0.25
Materials:	
8 pounds copper sulphate at 7½ cents per pound ..	$0.60
8 pounds hydrated lime at 1 cent per pound..	0.08
3 pounds arsenate of lime at 19 cents per pound ..	0.57
Labour:	
1.28 man hours at 25 cents per hour	0.320
1.03 team hours at 20 cents per hour..	0.206
Total cost per acre..	1.776
Cost of dusting:	
Amount of 20-20-60 copper arsenate dust ..pounds	33
Time to apply, 1 man and team .. ..hours	0.5
Material:	
33 pounds 20-20-60 copper arsenate dust at 6 cents per pound..	$1.98
Labour:	
0.5 man hours at 25 cents per hour..	0.125
0.5 team hours at 20 cents per hour	0.10
Total cost per acre	2.205

Cost of Production.—A record was kept of the cost of producing potatoes in a three-year rotation. An acre block was planted one-half with Green Mountains and one-half with Irish Cobblers. The soil varied from a medium clay loam to a sandy loam, and was very couchy. Barnyard manure at the rate of 15 tons, and 4-8-6 fertilizer at the rate of 950 pounds per acre, was applied for this crop. The stand obtained was below average, and the resultant crop was also below the average. The yield was 12,480 pounds merchantable and 1,402 pounds small potatoes. The cost of production was $85.55, which is practically 68½ cents per 100 pounds when the small potatoes are disregarded.

Rent and taxes			$ 3 00
Use of machinery			3 00
Manure, 50 per cent of 15 tons at $2 per ton			15 00
Fertilizer, 126½ pounds nitrate of soda at $2·90 per cwt			3 66
95 pounds sulphate of ammonia at $3·40 per cwt			3 23
158⅓ pounds acid phosphate at $1·00 per cwt			1 58
114 pounds muriate of potash at $1·85 per cwt			2 10
Seed, 1,300 pounds potatoes at 75 cts per cwt			9 97
Fall ploughing (man and 2 horses 10 hrs. at 45 cts)		$ 4 50	
Spring ploughing (man and 2 horses 9 hrs. at 45 cts)		4 05	
Harrowing (man and 2 horses 3 hrs. at 45 cts)		1 35	
Cutting and Disinfecting (1 man 10 hrs. at 25 cts)		2 50	
Planting (2 men and 2 horses 3½ hrs. at 70 cts)		2 45	
Cultivating (1 man and 1 horse 8 hrs. at 35 cts)		2 80	
Horse-hoeing (1 man and 2 horses 8 hrs. at 45 cts)		3 60	
Spraying (5 times)		8 85	
Digging (1 man and 2 horses 6 hrs. at 45 cts)		2 70	
Picking (30·86 hrs. at 25 cts)		7 71	
Loading, hauling and unloading (2 men and 2 horses 5 hrs. at 70 cts)		3 50	
			44 01
Total cost per acre			$ 85 55
Yield—			
Green Mountains	Mer. 5,515 lb.	Small 412 lb.	
Irish Cobblers	" 7,365 lb.	" 990 lb.	
Total per acre	12,480 lb.	1,402 lb.	
Value per acre 12,480 lbs., mer. at $1.80 per cwt		$ 224 64	
1,402 lbs., small at $0.20 per cwt		2 80	
		$ 227 44	
Profit per acre			$ 141 89

CEREALS

The experimental work with grain this season included variety tests of spring wheat, oats, barley, beans, peas, and buckwheat; and tests of various mixtures of wheat, oats and barley, and of oats and barley. Tests were also conducted with different selections of wheat, barley and buckwheat. The oats were treated with formalin solution (one pint to forty gallons of water).

The 1/100-acre test plots of wheat, oats, barley and peas, as well as those of the various grain mixtures, were located on a rather light clay loam, which was broken in 1922. This land was ploughed again in 1923 and sown with buckwheat. The buckwheat was ploughed under in the fall, and in the following spring the land was given an application of 15 tons barnyard manure per acre. This was ploughed under, after which 800 pounds of 4-8-6 home-mixed fertilizer was applied broadcast. The land was then ribbed up and sown with rape, which was used to pasture sheep. The land was then fall-ploughed and put in good tilth in the spring with a spring-tooth cultivator and smoothing harrow.

In order to obtain field conditions the two outside rows of each side of each plot were removed at harvest time and discarded, while a foot was trimmed off each of the two ends. The size of plots given represents the size after the sides and ends had been removed.

SPRING WHEAT—VARIETY TEST

Five varieties of spring wheat were sown in quadruplicate 1/100 acre plots. The seed germinated well, but the stooling was poor and uneven. White Russian was badly affected by glume spot. The plots were sown on May 14 at the rate of two bushels per acre. The yields are shown in table 38.

TABLE 38 — SPRING WHEAT — VARIETY TEST

Name of variety	No. of days maturing	Average length of straw including head	Strength of straw on scale of 10 points	Yield of grain per acre	Weight per measured bushel after cleaning
		inches		bush. lb.	lb.
Huron, Ottawa 3	99	39·5	9·75	23 20	61·35
Early Red Fife Ottawa 16	99	42·0	9·5	21 58	60·80
Marquis, Ottawa 15	96	37·0	9·0	20 12	61·00
White, Russian	100	42·7	8·87	18 7	59·25
Ruby, Ottawa 623	95	34·5	8·25	14 16	61·00

The average yields of these varieties for the last five years are: White Russian, 23 bushels, 28 pounds; Huron, 22 bushels, 40 pounds; Early Red Fife, 21 bushels, 35 pounds; Marquis, 20 bushels, 33 pounds; Ruby, 18 bushels, 44 pounds. The low yield of White Russian this year appeared to be due chiefly to glume spot. This variety is very susceptible to this disease, although most seasons it does not appear to effect the yield to any appreciable extent.

OATS—VARIETY TEST

Five varieties of oats were tested this year. Good stands were secured. The straw, however, was damaged by a rain of .97 inches on the 7th of August. The oats were sown on May 14 in quadruplicate plots of 1/100-acre each at the rate of three bushels per acre. The yields are shown in table 39.

The average yields for the varieties grown during the past five years are: Victory, 67 bushels, 30 pounds; Gold Rain, 64 bushels, 5 pounds; Banner, 62 bushels, 19 pounds. Victory has outyielded every other variety in nine of the

past eleven years. The straw, however, is not as strong as either Gold Rain or Banner. Alaska is an early oat, but it has been a light yielder here and very susceptible to stripe disease the two years it has been grown at this Station.

TABLE 39 — OATS — VARIETY TEST

Name of variety	Number of days maturing	Average length of straw including head	Strength of straw on scale of 10 points	Yield of grain per acre	Weight per measured bushel after cleaning	Per cent hull	Yield of kernel per acre
		inches		bush lb.	lb.		lb.
Victory	103	45·2	7·00	77 19	37·0	28·53	1,884
Gold Rain	102	46·0	8·50	70 7	38·25	27·16	1,739
Banner, Ottawa 49	103	46·7	7·75	69 29	34·70	28·93	1,688
Alaska	92	38·0	7·37	60 22	35·65	22·19	1,604
*Laurel	93	46·7	7·75	47 2	48·50	0	1,600

*Laurel is a hulless variety but is figured at 34 pounds per bushel.

BARLEY—VARIETY TEST

Five varieties of barley were tested this year. The heavy rain on August 7 damaged all standing barley considerably. As Himalayan was cut before that date it escaped. The barleys were sown on May 17 in quadruplicate plots of 1/100-acre each, at the rate of two and one-half bushels per acre. The yields are shown in table 40.

For the last five years the average yields are: Charlottetown No. 80, 40 bushels, 3 pounds; Chinese, 33 bushels, 38 pounds; O.A.C. No. 21, 32 bushels, 44 pounds; Duckbill, 27 bushels, 13 pounds; Himalayan, 25 bushels, 29 pounds. Charlottetown No. 80 appears to be well adapted for this district. Himalayan is a hulless variety but it has such brittle straw that it is doubtful if it has any economic value here.

TABLE 40 — BARLEY — VARIETY TEST

Name of variety	No. of days maturing	Average length of straw including head	Strength of straw on scale of 10 points	Yield of grain per acre	Weight per measured bushel after cleaning
		inches		bush. lb.	lb.
Charlottetown No. 80	98	36·2	8·5	46 42	51·80
O. A. C. No. 21	93	36·0	7·25	35 7	45·50
Chinese Ottawa 60	98	40·2	7·75	30 22	44·55
Himalayan Ottawa 59	83	29·0	8·0	26 10	58·95
Duckbill Ottawa 57	98	37·5	8·75	23 21	49·20

GRAIN MIXTURES

Tests of grain mixtures were begun in 1923 to determine (1) whether a combination of grain would outyield the same grains sown separately, (2) which were the best varieties to combine, (3) what proportion of each grain should be in the mixture.

BARLEY, WHEAT AND OATS COMBINATION.—On May 15 triplicate plots of 1/100-acre each were sown with Huron wheat, Victory oats and Charlottetown No. 80 barley in combination, at the rates shown in the table. The results obtained are compared with those from these grains sown alone. The yields are shown in table 41.

This year Victory oats were slightly later maturing than Huron wheat or Charlottetown No. 80 barley. Banner oats, the variety used during the two previous years in this test, were more satisfactory in this respect.

TABLE 41 — BARLEY, WHEAT AND OATS — SOWN IN COMBINATION

Mixture per acre, bushels	Date of ripening	Number of days maturing	Yield of grain per acre
			lb.
Wheat 1, oats 1, barley 1	Sept. 26	103	2,250
Wheat ½, oats 1, barley 1	" 26	103	2,250
Wheat ¼, oats 2, barley 1	" 26	103	2,383
Wheat 2			1,400
Oats 3			2,250
Barley 2½			2,637

BARLEY AND OATS COMBINATION.—On May 15 triplicate plots of 1/100-acre each were sown with Victory oats and Charlottetown No. 80 barley in combination, at the rates per acre shown in table 42. The results obtained are compared with those from these grains sown alone. This experiment, which has been under way for the past three years, does not appear to show any advantage in sowing these grains in combination.

TABLE 42 — BARLEY AND OATS — SOWN IN COMBINATION

Mixture per acre, bushels	Date of ripening	Number of days maturing	Yield of mixture per acre
			lb.
Oats 1, barley 1	Sept. 26	103	2,250
Oats 1½, barley 1½	" 26	103	2,266
Oats 2, barley 1	" 26	103	2,416
Victory oats 3			2,637
Charlottetown No. 80 barley 2½			2,250

BEANS—TEST OF VARIETIES

Eight varieties of beans were tested this year. The land on which the beans were grown grew a crop of mangels the previous year. For that crop it was given an application of 15 tons of barnyard manure and 800 pounds of 4-8-6 home-mixed fertilizer per acre. This spring the land was ploughed and given an application of 800 pounds 4-8-6 home-mixed fertilizer per acre. The beans were sown in quadruplicate plots on May 28. Results are shown in table 43. The average yields realized from those varieties which have been tested during each of the past five years are as follows: Navy, 30 bushels, 32 pounds; Norwegian, 27 bushels, 45 pounds; Beauty, 18 bushels, 8 pounds; Large White, 18 bushels, 4 pounds. White Marrowfat and Soldier are the best in quality. The yields of Beauty were greatly reduced by anthracnose.

TABLE 43 — BEANS — TEST OF VARIETIES

Name of variety	Date of ripening	Number of days maturing	Average length of straw	Average length of pod	Yield per acre	Weight per measured bushel after cleaning
			inches	inches	bush lb.	lb.
Navy Ottawa 711	Sept. 23	118·2	13·5	3·69	27 19	63·3
White Pea	" 25	120·0	14·5	4·12	23 4	63·6
Norwegian Ottawa 710	" 18	113·0	10·2	5·00	23 2	61·0
White Marrowfat	" 23	118·2	11·7	3·75	22 13	63·0
Yellow Eye Kentville	" 18	113·0	12·5	4·62	22 13	63·8
Soldier	" 18	113·0	11·2	6·25	19 2	62·1
Large White Ottawa 713	" 19	114·7	12·0	3·75	18 28	64·4
Beauty Ottawa 712	" 18	113·0	11·0	3·37	14 34	64·3

PEAS—VARIETY TESTS

Five varieties of peas were tested this year. They were sown on May 14 in quadruplicate plots of 1/100-acre each. Results are shown in table 44. For the varieties grown the last five years the average yields are MacKay, 28 bushels, 22 pounds; Arthur, 25 bushels, 59 pounds; Canadian Beauty, 22 bushels, 19 pounds; Prussian Blue, 20 bushels, 27 pounds. Chancellor has only been grown two years but has given a higher average yield than any other variety except MacKay. MacKay is an exceptionally good yielding variety, and has outyielded every other variety practically every year.

TABLE 44 — PEAS — VARIETY TEST

Name of variety	Date of ripening	Number of days maturing	Average length of plant	Yield per acre	Weight per measured bushel after cleaning
			inches	bush lb.	lb.
MacKay, Ottawa 25	Sept. 9	118	74·7	30 –	62·7
Chancellor, Ottawa 26	Aug. 29	107	66·0	26 2	63·1
Arthur, Ottawa 18	Sept. 2	111	47·2	25 37	62·7
Canadian Beauty	" 9	118	77·5	24 10	62·3
Prussian Blue	" 9	118	64·2	20 12	63·7

ROD-ROW VARIETY TESTS OF CEREALS

During the past two years a series of variety tests of cereals in rod-row plots have been made. Each plot consisted of three drills 18½ feet long, the drills being 7 inches apart. At harvest time a foot was taken off the ends of each plot in order to obtain field conditions. The yield of only the centre row was taken, the other two rows being disregarded. Each variety occupied four of these plots.

The land on which the rod-row plots were located was a medium clay loam of rather low natural fertility. Plots of corn and sunflowers, fertilized at the rate of 1,000 pounds of 4-8-6 home-mixed fertilizer, occupied this land the previous year. This spring the land was ploughed and given a broadcast application of 800 pounds of 2-8-6 fertilizer per acre, and put in good tilth with the spring-tooth cultivator and smoothing harrow. All the plots were hand sown.

Eighteen varieties of wheat were sown on May 7, and one variety, Bald Huron, was sown on May 19, owing to its late arrival. Red Fife, Ottawa 17, gave the largest yield. Twenty-nine varieties of oats were sown on May 13. Lincoln gave the largest yield. Twenty-one varieties of barley were sown on May 16. Mandscheuri, MacDonald 1807, gave the largest yield. These varieties were all sown in quadruplicate plots. Owing to lack of space, yields cannot be reported.

BUCKWHEAT—VARIETY TEST IN ROD-ROWS

Fifteen varieties or strains of buckwheat were sown in duplicate rod-row plots on June 19. Tartarian D, Rye F, and Rye A, gave the highest yield, in the order named.

TESTS OF FARMERS' GRAINS

In order to compare the yielding qualities and the purity of the oats sown by the average New Brunswick farmer, a number of farmers were invited to send a sample of their seed to the Station. This seed was tested in quadruplicate rod-row plots, Victory being used as a check variety. The plots were sown on May 20. The average yields are shown in table 45.

TABLE 45 — OATS — TEST OF FARMERS' GRAIN

Name of variety	Remarks	No. of days maturing	Average length of straw including heads	Strength of straw on scale of 10 points	Yield of grain per row
			inches		
Victory	Ottawa, 1915	95·0	42·0	6·7	312·8
Banner		95·5	41·0	6·7	298·8
Banner	Originally Waugh	95·5	41·5	7·2	296·3
Banner	Grown by farmer 3 years	96·5	42·0	8·0	281·7
Unknown	Obtained from Peace River 1921	95·5	38·7	6·0	281·2
Gold Rain	Obtained from Ottawa 1923	95·0	38·0	6·2	266·7
Banner	Originally from Co-Operative Society, Quebec	96·5	41·7	8·2	265·7
Grainery Filler		96·5	41·7	7·0	265·4
Unknown		94·0	39·5	4·7	265·1
Banner	Grown by farmer 2 years	95·5	42·5	7·0	255·3
Mammoth Cluster		95·5	40·0	5·5	253·9
Banner	Purchased from Wm. Rennie 1922	95·5	42·0	6·2	253·8
Ligowa	Grown by farmer 3 years	95·5	40·0	6·0	248·8
Unknown	Western oats grown by farmer 2 years	96·5	41·0	7·0	247·8
Unknown		95·5	41·5	6·25	247·2
Unknown	Originally No. 3 C.W. Grown by farmer 1924	96·0	39·0	7·75	241·9
Unknown	Western oats a few years ago	95·5	40·5	6·5	241·1
Storm King	Grown by farmer 3 years	96·0	42·2	7·5	226·9
Unknown	Obtained from pedlar a few years ago	95·5	40·0	5·25	224·7
Unknown		92·0	33·5	4·75	219·0
Banner	Grown by farmer 2 years	95·5	41·0	6·2	209·7

FORAGE CROPS

The fall of 1924 was dry. The December, January, and February snowfall was largely removed by warm weather in February, and did not incorporate any moisture in the soil. The snowfall was light in March and April. Therefore, the land was dry and could be worked earlier than usual. The dryness of the soil, together with the light rainfall and high winds in May and the early part of June, delayed germination and retarded growth. All root crops were damaged by cutworms. The growing conditions during July, August, and September were favourable.

FIELD ROOTS

The land on which the variety tests of swedes, mangels, sugar beets, carrots, kale and rape were conducted was a clay loam. In the fall of 1923 a two-year-old sod was broken up. In the spring of 1924 this land was given an application of 15 tons barnyard manure and 800 pounds of 4-8-6 home-mixed fertilizer per acre. This spring it was again manured with 15 tons barnyard manure per acre on fall-ploughed land. This manure was ploughed under, after which 800 pounds of 4-8-6 home-mixed fertilizer per acre was applied broadcast. The land was then put in good tilth with a disk and smoothing harrow and ribbed up into 30-inch drills with a double-mouldboard plough. When the crops were harvested a composite sample was taken from all the plots of each variety and sent to Ottawa for dry-matter determination.

SWEDES—VARIETY TEST

Twenty-two varieties of swedes were sown on May 16. They were thinned to one foot on June 13, and were harvested on October 30. All varieties were sown in quadruplicate plots. In harvesting, however, the yields from only three

plots of each variety were taken, the stand on the remaining range of plots being so badly damaged by cutworms that the yields were disregarded. The average yields are shown in table 46.

TABLE 46 — SWEDES — VARIETY TESTS

Name of variety	Source of seed	Yield per acre green weight	Yield per acre dry weight
		ton lb.	ton lb.
Bangholm	Halifax Seed Co	29 1,571	3 726
Kangaroo Bronze Green Top	Wm. Rennie Seed Co	30 205	3 677
Ditmars	H. H. McNutt	32 455	3 645
Olsgaard Bangholm	Hjalmar, Hartmann & Co., Copenhagen	32 241	3 527
Mammoth Clyde Purple Top	Wm. Ewing Co	29 6	3 526
Best of All	Wm. Rennie Seed Co	30 184	3 373
Bangholm Purple Top	Wm. Rennie Seed Co	28 216	3 195
Shepherd Golden Globe	Hjalmar, Hartmann & Co., Copenhagen	31 1,177	3 97
Bangholm	General Swedish Seed Co., Svalof	29 1,933	3 89
Kangaroo	Wm. Ewing Co	30 363	3 36
Universal	Wm. Ewing Co	31 290	2 1,986
Improved Yellow Swedish	General Swedish Seed Co., Svalof	28 644	2 1,976
Bangholm	Wm. Ewing Co	28 13	2 1,949
Bangholm	Nappan	24 1,580	2 1,885
Garton's Superlative	Wm. Ewing Co	31 1,246	2 1,882
Invicta Bronze Top	Wm. Rennie Seed Co	29 660	2 1,637
Irish King	Wm. Rennie Seed Co	29 759	2 1,623
Bangholm (Club Root Resistant)	Charlottetown	26 1,456	2 1,554
Shepherd 1283	Trifolium	30 106	2 1,518
Best of All	Wm. Ewing Co	27 613	2 1,461
Bangholm 1322	Trifolium	26 618	2 1,099
New Century	Wm. Rennie Seed Co	23 1,637	2 616

MANGELS—VARIETY TEST

Thirty-one varieties of mangels were sown on May 15. They were thinned to 10.2 inches on June 26, and were harvested on October 17. All the varieties were sown in quadruplicate plots. The stands, however, were poor owing to damage by cutworms. In harvesting, all uneven stands were disregarded, and the yields from those portions of the four plots of each variety which had a perfect stand were grouped as one plot. The yields are shown in table 47.

TABLE 47 — MANGELS — VARIETY TESTS

Name of variety	Source of seed	Yield per acre green weight	Yield per acre dry weight
		ton lb.	ton lb.
Giant White Half Sugar	Wm. Ewing Co	36 1,483	4 98
Stryno Barres	Hjalmar, Hartmann & Co., Copenhagen	40 1,137	3 1,603
Yellow Intermediate	C. E. F	38 135	3 1,583
Red Top White Sugar	Wm. Ewing Co	16 170	3 1,576
Golden Tankard	Wm. Ewing Co	33 1,163	3 1,529
Elvetham Mammoth	Hjalmar, Hartmann & Co., Copenhagen	30 333	3 1,234
Barres Half Long	General Swedish Seed Co., Svalof	31 36	3 1,029
Svalof Original Alfa	General Swedish Seed Co., Svalof	30 1,494	3 468
White Red Top Half Sugar	Hjalmar, Hartmann & Co., Copenhagen	30 1,494	3 414
Red Eckendorffer	General Swedish Seed Co., Svalof	35 1,743	3 364
Perfection Mammoth Long Red	Wm. Rennie Seed Co	33 525	3 340
Yellow Leviathan	Wm. Rennie Seed Co	30 602	3 272
Eckendorffer Yellow	Hjalmar, Hartmann & Co., Copenhagen	40 1,690	3 257
Giant Yellow Intermediate	Wm. Ewing Co	38 135	3 7
Golden Tankard	Wm. Rennie Seed Co	29 611	2 1,996

TABLE 47—MANGELS—*Con.*

Name of variety	Source of seed	Yield per acre green weight	Yield per acre dry weight
		ton lb.	ton lb.
Rosted Barres	Hjalmar, Hartmann & Co., Copenhagen	32 1,842	2 1,682
Svalof Original Rubra	General Swedish Seed Co., Svalof	25 9	2 1,666
Yellow Eckendorffer	General Swedish Seed Co., Svalof	29 1,164	2 1,544
Fjerritslev Barres	Hjalmar, Hartmann & Co., Copenhagen	37 108	2 1,328
Danish Sludstrup	Kenneth McDonald & Son	27 661	2 1,253
Improved Giant Sugar	Wm. Rennie Seed Co	24 325	2 1,132
Taaroje Barres	Hjalmar, Hartmann & Co., Copenhagen	33 618	2 1,103
Eckendorffer Red	Hjalmar, Hartmann & Co., Copenhagen	32 1,419	2 1,057
Giant Yellow Globe	Wm. Rennie Seed Co	27 661	2 356
Giant Yellow Globe	Wm. Ewing Co	29 1,034	2 333

CARROTS—VARIETY TEST

On May 16 fourteen varieties of carrots were sown in quadruplicate plots. They were all destroyed by cutworms. The plots were therefore reseeded on June 12. Splendid stands were secured from June 12 seeding. The carrots were thinned to 4.5 inches on July 30, and harvested on October 22. The yields are shown in table 48.

TABLE 48 — CARROTS — VARIETY TESTS

Name of variety	Source of seed	Yield per acre green weight	Yield per acre dry weight
		ton lb.	ton lb.
Improved Intermediate White	Wm. Ewing Co	15 1,961	1 960
Danish Champion	C. E. F.	13 391	1 763
White Belgian	Hjalmar, Hartmann & Co., Copenhagen	11 1,808	1 557
White Belgian	Dupuy & Ferguson	11 1,796	1 491
White Belgian	Graham Bros.	12 485	1 488
Half Long White	General Swedish Seed Co	10 1,646	1 461
Mammoth White	Wm. Rennie Seed Co	13 371	1 431
Danish Champion	Hjalmar, Hartmann & Co., Copenhagen	11 813	1 370
Large White Belgian	Wm. Rennie Seed Co	12 1,087	1 323
Mammoth Short White	Wm. Rennie Seed Co	11 73	1 243
White Belgian 9008	Trifolium	10 234	1 143
White Belgian	Wm. Ewing Co	10 1,882	1 103
Yellow Belgian	Wm. Ewing Co	11 617	1 49
New Yellow Intermediate	Wm. Ewing Co	11 1,985	1 15

SUGAR BEETS—VARIETY TEST

Eight varieties of sugar beets were sown on May 16. They were thinned to 11.1 inches on June 26, and were pulled on October 17. Two plots of each variety were grown on land which grew a crop of flax the previous year, and two additional plots were grown on land which grew a crop of oats and peas the previous year. The stands were damaged by cutworms, therefore in harvesting all uneven stands were disregarded and the yields from those portions of the four plots of each variety which had a perfect stand were grouped as one plot. The yields are shown in table 49.

TABLE 49 — SUGAR BEETS — VARIETY TEST

Name of variety	Source of seed	Yield per acre	
		Green weight	Dry weight
		ton lb.	ton lb.
Rabbethge & Giese	Dominion Sugar Co., Chatham, Ont.	15 1,678	3 1,042
Shreiber & Sons	Dominion Sugar Co., Chatham, Ont.	16 820	3 935
Horning	Dominion Sugar Co., Chatham, Ont.	15 1,062	3 697
Dieppe	Dominion Sugar Co., Chatham, Ont.	14 104	3 489
Dr. Bergman	Dominion Sugar Co., Chatham, Ont.	13 1,452	3 339
Vilmorin Improved B	Andrieux & Sons	13 1,367	3 7
Heming & Harving	Dominion Sugar Co., Chatham, Ont.	13 1,342	2 1,649
Home Grown	Dominion Sugar Co., Chatham, Ont.	11 1,945	2 1,294

KALE—VARIETY TEST

On May 29 six varieties of kale were sown in quadruplicate plots on land which grew a crop of mangels the previous year. On June 27 they were thinned to 10 inches. They were harvested on September 26. The yields are shown in table 50.

TABLE 50 — KALE — VARIETY TEST

Name of variety	Source of seed	Yield per acre	
		Green weight	Dry weight
		ton lb.	ton lb.
Marrow	Sutton & Sons, England	24 175	2 1,530
1,000 Headed	Sutton & Sons, England	22 70	2 1,509
Improved 1,000 Headed	Sutton & Sons, England	21 320	2 744
Purple Stemmed Marrow	E. Webb & Sons, England	18 1,893	2 471
Green Stemmed Marrow	E. Webb & Sons, England	20 503	2 318
Curled Sheep	Sutton & Sons, England	13 138	1 926

RAPE—VARIETY TEST

Four plots of Dwarf Essex rape were sown on the same date and given the same treatment as the kale. The yield was 18 tons, 1,666 pounds per acre green weight, containing 2 tons, 237 pounds dry weight.

CORN—VARIETY TEST

Twenty-five varieties of corn were sown on quadruplicate plots on the 30th of May. The area of each plot was 288 square feet when the outside hills were removed. The corn was planted in hills three feet each way, and thinned to three plants to each hill. In harvesting, all hills with misses were disregarded. The corn was grown on clay loam which had grown hay the two previous years. In the spring 20 tons per acre of barnyard manure was applied broadcast on the sod. The land was then ploughed, disked, and given a broadcast application of 800 pounds per acre of 4-8-6 home-mixed fertilizer per acre and harrowed with a smoothing harrow. The corn was harvested on September 23. The yields and degree of maturity are shown in table 51.

TABLE 51 — CORN — VARIETY TEST

Name of variety	Source of seed	Degree of maturity	Yield per acre	
			Green weight	Dry weight
			ton lb.	ton lb.
North Dakota	Steele Briggs	Early milk	22 230	2 1,694
Hybrid	Twitchell's Pride x Wisconsin No. 7	Late milk	16 1,837	2 1,370
Wisconsin No. 7	John Parks	Early milk	17 416	2 1,363
Disco Longfellow	Dakota Improved Seed Co	Early milk	19 438	2 1,318
Leaming	John Parks	Very early milk	17 1,726	2 1,084
Compton's Early	J. O. Duke Seed Co	Early milk	19 741	2 741
Hybrid	A. J. Wimple	Early milk	16 1,099	2 733
Wisconsin No. 7	J. O. Duke Seed Co	Early milk	15 1,093	2 710
Northwestern Red or Smoky Dent.	Wm. Rennie Seed Co	Medium milk	16 73	2 674
Twitchell's Pride	G. M. Twitchell	Firm dough to glazing	12 1,661	2 640
Yellow Dent	A. J. Wimple	Early milk	15 1,156	2 563
Longfellow	J. O. Duke Seed Co	Early milk	16 1,036	2 552
Northwestern Dent Nebraska Grown.	A. E. McKenzie	Early milk	16 1,051	2 513
Disco 90 Day White Dent	Dakota Improved Seed Co	Medium milk	15 1,007	2 494
Northwestern Dent	Dakota Improved Seed Co.	Late milk to firm dough.	14 586	2 441
Burr Leaming	Geo. S. Carter	Kernels beginning to form	15 1,751	2 357
Leaming	J. O. Duke Seed Co	Early milk	14 463	2 345
Golden Glow	J. O. Duke Seed Co	Early milk	13 1,923	2 117
White Capped Yellow Dent.	Steel Briggs	Early milk	13 384	1 1,779
Quebec 28	J. L. Todd sub. for MacDonald College.	Firm dough	11 513	1 1,721
Northwestern Dent	Brandon	Denting	9 1,352	1 1,556
Northwestern Dent North Dakota Grown	A. E. McKenzie	Denting	10 1,720	1 1,493
Northwestern Dent	O. Will	Firm dough	9 1889	1 1,302
Amber Flint	A. J. Wimple	Early dough	8 1,406	1 414
Howes Alberta Flint, T No. 64-4331	C. P. R.	Glazing when cut Sept. 15	3 314	- 1,654

SUNFLOWERS—VARIETY TEST

Ten varieties of sunflowers were sown in quadruplicate plots on the 30th of May. The area of each plot was 288 square feet when the outside hills were removed. The sunflowers were planted in hills three feet apart each way, and thinned to three plants to each hill. Each variety was harvested when 50 per cent in bloom. In harvesting, all hills with misses were disregarded. The sunflowers were grown on part of the same field, and the land was given the same preparation and fertilization as the land used in the corn variety tests. The rsults are shown in table 52.

TABLE 52 — SUNFLOWERS — VARIETY TEST

Name of variety	Source of seed	Date cut	Yield per acre	
			Green weight	Dry weight
			ton lb.	ton lb.
Russian Giant	Dakota Improved Seed Co	Sept. 15	23 865	3 1,136
Mammoth Russian	Kenneth McDonald & Son	" 15	24 1,486	3 994
Manteca	C. P. R.	" 1	15 1,813	1 1,664
Mammoth Russian	C. P. R.	Aug. 24	14 1,554	1 1,120
Mixed	C. P. R.	" 24	13 547	1 798
Black	C. P. R.	" 19	13 1,418	1 674
Ottawa 76	C. E. F.	" 24	11 1,119	1 535
Manchurian	C. P. R.	" 19	12 1,973	1 353
Manchurian	A. E. MacKenzie	" 19	10 1,931	1 119
Mennonite	Rosthern	" 12	7 754	- 1,319

GRASSES AND CLOVERS—TEST OF MIXTURES

Twenty-four duplicate plots were sown on June 16, 1923, with grasses alone, and in combination with red clover, or alsike, or with both red clover and alsike. The experiment was a duplication of an experiment begun in 1921 to test mixtures of grasses and clovers under New Brunswick conditions. (The yields from the first series of plots were given in the report for this Station for 1923, pages 52 and 53). The plan of seeding was as follows:—

Plots 1-6 inclusive.—The grasses were sown in combination with 10 pounds of red clover.
Plots 7-12 inclusive.—The grasses were sown in combination with 6 pounds of alsike clover.
Plots 13-18 inclusive.—The grasses were sown in combination with 8 pounds of red clover and 2 pounds of alsike clover.
Plots 19-24 inclusive—The grasses were sown alone.

The land devoted to this experiment grew a crop of corn in 1921. There was so much couch in the land that it was summer-fallowed the next year until June, when it was sown with buckwheat. This buckwheat was ploughed under before it came into bloom, and the land was kept free from weeds by means of a spring-tooth harrow until the plots were sown on June 16, 1923. The plots were sown without a nurse-crop and good stands were secured in all the plots.

In cutting the plots each year, all plots containing orchard grass in the mixture were cut when that grass was in full bloom. All other plots containing meadow fescue alone, or in the mixture, were cut when that grass was in full blobm. The remaining plots, in which timothy was the only grass in the mixture, were cut when the timothy was in bloom. The orchard grass was so much earlier than the clovers and the other grasses that the plots containing it were cut before the clovers and other grasses in these plots were mature. While this decreased the yield, it was felt that as orchard grass depreciates rapidly after maturity, the yield taken at the time the orchard grass was mature was the fairest test of its value in a grass and clover mixture. There was hardly any aftermath on the plots in either 1924 or 1925, therefore, the plots were only cut once each year. The yields are shown in table 53.

The results from this experiment show that if red clover and alsike are cut the first year when in blossom, there will be considerable red clover but practically no alsike in the hay mixture the second year.

TABLE 53 — EXPERIMENT WITH GRASSES AND CLOVER — TEST OF MIXTURES

Plot No.	Mixture Sown per Acre					Date out	Hay per acre 1924	Date cut	Hay per acre 1925	Total hay per acre 1924 & 1925
	Alsike clover	Red clover	Timothy	Meadow fescue	Orchard grass					
	lb.	lb.	lb.	lb.	lb.		ton lb.		ton lb.	ton lb.
14	2	8	–	15	–	July 10	3 1,345	July 2	1 332	4 1,677
4	–	10	6	10	–	" 10	3 851	" 2	1 782	4 1,636
13	2	8	8	–	–	" 21	3 438	" 9	1 1,183	4 1,621
7	6	–	8	–	–	" 21	3 277	" 9	1 894	4 1,171
2	–	10	–	15	–	" 10	3 748	" 2	1 260	4 1,008
1	–	10	8	–	–	" 21	2 1,392	" 9	1 1,420	4 812
8	6	–	–	15	–	" 10	3 569	" 2	– 1,770	4 339
16	2	8	6	10	–	" 10	3 83	" 2	– 1,810	3 1,893
10	6	–	6	10	–	" 10	3 85	" 2	– 1,555	3 1,640
5	–	10	6	–	10	June 28	2 1,420	June 24	– 1,709	3 1,129
19	–	–	12	–	–	July 21	2 1,083	July 9	– 1,945	3 1,028
22	–	–	8	15	–	" 10	2 1,394	" 2	– 1,114	3 508
17	2	8	6	–	10	June 28	2 1,634	June 24	– 841	3 475
20	–	–	–	30	–	July 10	2 1,661	July 2	– 709	3 430
12	6	–	–	10	10	June 28	2 997	June 24	– 941	2 1,938
6	–	10	–	10	10	" 28	2 287	" 24	– 1,387	2 1,674
3	–	10	–	–	15	" 28	2 223	" 24	– 1,396	2 1,619
23	–	–	8	–	15	" 28	2 843	" 24	– 736	2 1,579
9	6	–	–	–	15	" 28	2 497	" 24	– 775	2 1,272
11	6	–	6	–	10	" 28	2 388	" 24	– 825	2 1,213
15	2	8	–	–	15	" 28	2 290	" 24	– 622	2 912
21	–	–	–	–	30	" 28	1 1,988	" 24	– 687	2 675
18	2	8	–	10	10	" 28	1 1,664	" 24	– 704	2 368
24	–	–	–	15	15	" 28	1 544	" 24	– 418	1 962

EXPERIMENTS IN GROWING ALFALFA

Tests of the effect of nurse-crops, rates and methods of seeding, lime, and wood ashes, on alfalfa were continued this year. Most of the alfalfa plots sown June 26, 1922, came through the winter in good condition. (These plots were sown on clean land which was in corn the previous year). They were not cut the first season, but each year since that date, viz., 1923, 1924 and 1925, they have been cut twice.

The plots sown June 20, 1923, were weedy. These plots were sown on land which grew a crop of alfalfa in 1922. This alfalfa winter-killed during the winter of 1922-23. (This was probably due to the alfalfa being cut three times in 1922). The land was spring-ploughed and kept fallow until June 20, when it was reseeded with alfalfa. This treatment did not clean the land sufficiently as there was considerable couch in the plots in 1924, while this year the plots had from five to twenty-five per cent couch. Owing to the difficulty of correctly estimating the percentage of couch, the yields from the 1923 seeding are not given in the report. The yields from the 1922 seeding are shown in table 54.

Results at this Station indicate that alfalfa can be grown successfully in this district. The highest average yields for the past four years have been obtained by sowing the alfalfa seed broadcast at the rate of 20 pounds per acre, without a nurse-crop, on land which had received a broadcast application of either three tons of ground limestone or two tons of wood ashes per acre. In order to obtain a strong, vigorous, persistent growth, however, the land must be free from weeds, and the seed-bed carefully prepared before seeding. The seed in all the alfalfa experiments at this Station has been inoculated.

TABLE 54 — EXPERIMENTS IN GROWING ALFALFA

Plot No.	Method of Seeding	With or ithout nurse-crop	Lime or unlimed	Rate of seedling	Green Wt. per acre 1925	*Hay per acre 1925	Average hay per acre 1924–25 incl.
				lb.	ton lb.	ton lb.	ton lb.
14	12-inch rows	Without	Wood ashes	10	10 1,87	3 650	3 1,418
1	Broadcast	"	Limed	20	10 1,566	3 543	3 1,190
13	Broadcast	"	Wood ashes	20	10 731	3 576	3 1,058
15	24-inch rows	"	Wood ashes	5	9 193	2 1,737	3 770
7	Broadcast	"	Unlimed	20	10 1,623	3 581	3 891
2	12-inch rows	"	Limed	10	10 793	3 136	3 801
8	12-inch rows	"	Unlimed	10	9 176	2 1,829	3 75
3	24-inch rows	"	Limed	5	8 1,924	2 1,371	2 1,831
6	24-inch rows	With	Limed	5	10 728	2 1,942	2 1,637
12	24-inch rows	"	Unlimed	5	8 1,328	2 1,263	2 1,008
5	12-inch rows	"	Limed	10	7 1,448	2 949	2 976
9	24-inch rows	Without	Unlimed	5	7 1,121	2 776	2 780
11	12-inch rows	With	Unlimed	10	6 664	2 262	2 538
4	Broadcast	"	Limed	20	7 1,317	2 329	2 448
10	Broadcast	"	Unlimed	20	6 150	1 1,821	2 352

*Hay yield was obtained by drying a green sample to absolute dry weight and then bringing it to hay containing 15 per cent moisture.

TEST OF RED CLOVER SEED FROM DIFFERENT SOURCES

In order to further test the adaptability of clover seed from different Canadian and European sources, eighteen duplicate 1/100-acre plots were sown on July 11, 1924. They were sown without a nures-crop at the rate of fifteen pounds per acre. Excellent stands were secured. In the spring, however, it was found that all the varieties from Italian sources had been damaged by winter-killing, and that from twenty to thirty per cent of the growth of most

of these plots was alfalfa. All plots were cut when in full bloom. Alta Swede, Late Swedish, and Early Swedish, were not cut until July 14. The other plots were in full bloom on July 1, and were cut as soon as possible after that date. All plots which produced aftermath were cut again on August 14. The results are shown in table 55.

Tests of clover carried on the past three years indicate (1) that Italian clovers cannot withstand the average New Brunswick winter, (2) that while some French clovers are hardy, a large percentage of them cannot withstand winter conditions in New Brunswick, (3) that clovers from Canadian and Swedish sources are hardy and adapted to New Brunswick conditions.

TABLE 55 — TEST OF RED CLOVER SEED FROM DIFFERENT SOURCES

Source of seed	Yield per acre									
	Green Weight				Hay				Total			
	First cutting		Second cutting		First cutting		Second cutting		Green weight		Hay	
	ton	lb.	ton	lb.	ton	lb.	ton	lb.	ton	lb.	ton	lb.
Medium Late Swedish, General Swedish Seed Co.	10	–	4	450	2	388	1	989	14	450	3	1,377
Dauphine, South Eastern France	9	1,450	4	900	2	36	1	885	14	350	3	921
Transylvania, Roumania	9	300	3	1,700	1	1,952	1	543	13	0	3	495
St. Clet, Quebec	7	800	3	450	1	1,424	1	223	10	1,250	2	1,647
Late Swedish, General Swedish Seed Co	11	150	–	–	2	1,481	–	–	11	150	2	1,481
Alfred, Ontario	6	200	3	100	1	1,162	1	34	9	300	2	1,196
Canteaguay (Sam Reddick)	6	1,850	2	1,250	1	1,264	–	1,753	9	1,100	2	1,017
Early Swedish, General Swedish Seed Co	8	1,550	–	–	2	1,014	–	–	8	1,550	2	1,014
Alta Swede, University of Alberta	10	550	–	–	2	771	–	–	10	550	2	771
Ottawa	6	450	2	1,450	1	947	–	1,767	8	1,900	2	714
Sicily, Southern Italy	5	400	2	1,800	1	489	–	1,891	8	200	2	380
Kenora, Kenora District Co-Operative	6	400	2	800	1	770	–	1,455	8	1,200	2	225
Padua, Italy	4	200	1	1,150	1	125	–	1,169	5	1,350	1	1,294
Spadona, Italy	3	800	2	400	–	1,689	–	1,403	5	1,200	1	1,092
Mountain Regions, Central Italy	4	–	–	–	1	235	–	–	4	–	1	235
Emilia, North Central Italy	3	1,850	–	–	–	1,749	–	–	3	1,850	–	1,749
Umbria, North Central Italy	2	1,700	–	–	–	1,475	–	–	2	1,700	–	1,475
Marche, North Central Italy	2	1,250	–	–	–	1,215	–	–	2	1,250	–	1,215

VARIETY TEST OF SWEET CLOVER

Seven varieties of sweet clover were sown without a nurse-crop in duplicate 1/100-acre plots on June 11, 1924. Good stands were secured but the plots were somewhat damaged by winter-killing. The clover was cut on June 23. It was beginning to blossom when cut. Dwarf sweet clover yielded 1 ton, 1,591 pounds of hay per acre. This was the largest yield.

The results obtained with sweet clover to date seem to show it has very little value as a hay crop in this district. Better results are secured with alfalfa, which persists for several years. Also, alfalfa is more easily cured.

PASTURE CLOVER

Duplicate 1/100-acre plots were sown with Wild White Scottish clover, and Danish Stryno, Danish Morso, and Ladino, White Dutch clovers. Ladino made the most vigorous growth, followed by Morso and Stryno. Wild Scottish made a very thick growth but was very short.

ANNUAL HAY CROP

Triplicate 1/100-acre plots of teff grass and of Hubam sweet clover were sown on June 9. These plots were cut on September 15. The teff grass gave an average yield of 2 tons, 307 pounds hay per acre. One of the plots of Hubam did not grow. The remaining two plots gave an average yield of 1 ton, 142 pounds hay per acre.

CORN GROWN IN HILLS VERSUS DRILLS

This experiment was conducted in order to obtain data on the comparative yields of corn grown in drills and in hills. White Capped Yellow Dent was grown in drills three feet apart and one foot between plants, and in hills three feet apart each way with three plants to each hill. The land used in this experiment was a well-drained clay loam. This spring a year-old clover sod was given a broadcast application of barnyard manure at the rate of fifteen tons per acre. The land was then ploughed and harrowed, after which 800 pounds of 4-8-6 home-mixed fertilizer was applied broadcast. The corn was sown on May 27 and cut on September 22. In harvesting the corn all land which did not have a perfect stand was disregarded. The corn grown in drills gave an average yield of 17 tons, 309 pounds forage, containing 2 tons, 1,132 pounds dry-matter per acre. The corn grown in hills gave an average yield of 19 tons, 222 pounds forage, containing 2 tons, 1,947 pounds dry-matter per acre. An increase of 11.4 per cent on a forage basis and of 15.8 per cent on a dry-matter basis over the corn grown in drills.

EXPERIMENTS WITH FERTILIZER

The work carried on during the year in co-operation with the Division of Chemistry included a fertilizer formulae experiment with a three-year rotation of potatoes, grain and hay; experiments to determine the value of basic slag, rock phosphate and superphosphate as a source of phosphoric acid; pasture fertilizer experiments with basic slag, superphosphate, lime, and nitrate of soda; an experiment with fertilizer formulae for a growing orchard, an experiment with lime; and an experiment with nitrate of soda on hay land.

FERTILIZER FORMULAE EXPERIMENTS WITH A THREE-YEAR ROTATION

An experiment in which ten different fertilizer formulae were applied at three different rates of application on a three-year rotation of potatos, grain and hay, was begun in 1922. The potato and grain yields were given in the report of this Station for 1922 and 1923 respectively. Ten pounds timothy, eight pounds red clover, and two pounds alsike clover per acre were sown with the grain. The seed failed to catch, therefore the land was fall-ploughed and seeded in the spring with the same mixture. Good catches of seed were secured and the grass and clover came through the winter in good condition. The hay on the plots was cut on July 16. There was no marked increase in the hay yield which could be attributed to the residual effect of the fertilizer applied in 1922. A duplication of this experiment will be started in 1926.

EXPERIMENT TO COMPARE DIFFERENT TYPES OF BASIC SLAG AS A SOURCE OF PHOSPHORIC ACID IN A COMPLETE FERTILIZER

This experiment was begun in 1923 in order to test the relative values of various types of basic slag (fortified, open-hearth, Bessemer) ground rock phosphate, and superphosphate (with and without ground limestone) as sources of phosphoric acid when used in conjunction with nitrate of soda and muriate of potash.

The land was clay loam of rather low fertility. It was manured with 15 tons per acre barnyard manure in 1919 and with 1,350 pounds per acre 4-8-6 home-mixed fertilizer in 1922. The land was prepared for the experiment by fall-ploughing and spring cultivation.

The experiment was conducted on duplicate plots each 1/30 of an acre. All plots, including the six checks, were given an application of 100 pounds nitrate of soda and 50 pounds muriate of potash per acre. Banner oats at the rate of three bushels per acre were sown on the 7th of June. Ten pounds timothy, eight pounds red clover, and two pounds alsike clover per acre were sown when seeding the oats. The first lot of fertilizer was destroyed by fire, therefore, the fertilizer was not applied until the 15th of June. (Fuller details of the results for 1923 and 1924 are given in the report of this Station for those years). The plots were cut on the 8th of July. There was practically no aftermath. The yields for 1923, 1924, and 1925 are given in table 56.

TABLE 56 — BASIC SLAG EXPERIMENT — YIELD OF OATS, 1923, CLOVER HAY, 1924, MIXED HAY, 1925

Name of fertilizer	Phosphoric acid	Rate of application per acre	Yield per acre, 1923		Increase or decrease per acre comparing with check plot, 1923		Yield of hay per acre, 1924	Increase or decrease in hay yield per acre comparing with check plot, 1924	Yield of hay per acre, 1925	Increase or decrease in hay yield per acre comparing with check plot, 1925
			Straw	Grain	Straw	Grain				
	%	lb.	ton lb.	bush. lb.	ton lb.	bush. lb.	ton lb.	ton lb.	ton lb.	ton lb.
XX Fortified slag	14	1,000	1 1,380	55 25	– 776	2 2	1 1,645	– 1,975	– 1,135	– 1,375
XX Fortified slag	14	500	1 1,347	60 25	– 743	7 2	1 835	– 1,165	1 205	– 445
XXX Fortified slag	17	825	1 1,664	47 12	– 1,060	–6 11	1 1,240	– 1,570	1 730	– 970
XXX Fortified slag	17	412	1 910	53 13	– 306	– –10	1 355	– 685	1 70	– 310
Best of All slag	20	700	1 296	59 3	– –308	5 14	1 775	– 1,105	1 760	– 1,000
Best of All slag	20	350	1 700	63 33	– 96	10 10	1 1,075	– 1,405	1 925	– 1,165
Belgian Slag	16·45	851	1 1,093	53 9	– 489	– –14	1 40	– 370	– 1,965	– 205
Belgian slag	16·45	425	1 1,428	61 13	– 824	7 24	– 1,605	– –65	– 1,515	– –245
Superphosphate	16	875	1 1,230	61 14	– 626	7 25	– 1,890	– 220	– 1,515	– –245
Superphosphate	16	437	1 1,380	60 19	– 776	6 30	– 1,740	– 70	– 1,575	– –185
Superphosphate	16	437	1 1,150	55 5	– 546	1 16	1 730	– 1,060	1 85	– 325
Ground limestone		4,000								
Average 3 checks			1 604	53 23			– 1,670		– 1,760	
Anglo Canadian slag	16	875	– 1,974	55 25	– –1,519	–2 21	– 1,515	– 1,065	– 1,815	– 665
Anglo Canadian slag	16	437	1 1,180	65 10	– –313	6 32	– 1,500	– 1,050	– 1,875	– 725
English slag	16	875	1 1,782	63 26	– 289	5 14	1 640	1 190	– 1,770	– 620
English slag	16	437	1 580	67 17	– –913	9 5	– 975	– 525	– 1,380	– 230
Open-Hearth slag	10-11	1,270	1 1,732	59 16	– 239	1 4	– 1,920	– 1,470	– 1,530	– 380
Open-Hearth slag	10-11	635	1 925	68 13	– 568	10 1	– 1,230	– 780	– 1,485	– 335
Rock Phosphate	28-30	1,000	1 1,255	65 10	– –238	6 32	– 390	– –60	– 1,035	– –115
Rock phosphate	28-30.	500	1 1,191	56 20	– –302	–1 16	– 375	– –75	– 990	– –160
Rock phosphate	28-30	250	1 1,885	71 1	– 392	12 23	– 900	– 450	– 1,620	– 470
Average 3 checks			1 1,493	58 12			– 450		– 1,150	

The results for the three years show that:—

(1) Phosphoric acid supplied in the form of slag increased the yield of clover more than the same amount of phosphoric acid applied in the form of superphosphate.

(2) Ground limestone applied in conjunction with superphosphate increased the quantity and quality of clover.

(3) Generally speaking, phosphoric acid applied to the grain crop in the form of natural rock phosphate gave no increase in the hay yields on this type of land.

EXPERIMENT TO COMPARE THE VALUE OF DIFFERENT SOURCES OF PHOSPHORIC ACID WHEN USED WITHOUT NITROGEN OR POTASH

This experiment was begun in 1923 in order to test the relative value of the various types of slags (fortified, open-hearth and Bessemer), ground rock phosphate and superphosphate (with and without limestone) when used alone in a rotation of grain and hay.

The land was part of the same field and was given the same treatment as to preparation of soil, rate and dates of seeding, date of applying fertilizer, and dates of harvesting, as the land used in the previous experiment. (Basic slag as a source of phosphoric acid in a complete fertilizer). The results are shown in table 57.

The results show that:—

(1) When used without nitrogen or potash, phosphoric acid applied in all forms of slag gave better clover yields than when applied in the form of either superphosphate or natural rock phosphate.

(2) The addition of ground limestone to superphosphate increased both the quality and quantity of the clover crop.

(3) On this type of land natural rock phosphate alone has very little, if any, beneficial effect during the first three years following application.

TABLE 57 — COMPARISON OF DIFFERENT SOURCES OF PHOSPHORIC ACID WHEN USED WITHOUT NITROGEN OR POTASH OATS, 1923; CLOVER HAY, 1924; MIXED HAY, 1925

Plot No.	Name of fertilizer	Phosphoric acid	Rate of application	Yield of grain 1923	Comparative yield 1923 Average =100	Yield of hay 1924	Comparative yield 1924 Average =100	Yield of hay 1925	Comparative yield 1925 Average =100
		%	lb.	bush. lb.		ton lb.		ton lb.	
9C...	XX Fortified slag	14	1,000	52 32	106·4	- 1,920	147·0	1 100	135·8
13C...	XX Fortified slag	14	500	54 24	109·9	- 1,980	151·6	1 130	137·7
10C...	XXX Best of All	20	700	52 2	104·7	- 1,260	96·4	- 1,620	104·7
14C...	XXX Best of All	20	350	59 4	118·8	- 1,440	110·2	1 190	141·6
6C...	Superphosphate	16	875	57 12	115·3	- 690	52·8	- 840	54·3
1C...	Superphosphate	16	437	41 22	83·7	- 510	41·3	- 840	54·3
7C...	Rock phosphate	28-30	1,000	41 16	83·3	- 690	52·8	- 1,020	65·9
2C...	Rock phosphate	28-30	500	44 15	89·3	- 720	55·1	- 990	64·0
5C...	Superphosphate	16	437	44 4	88·7	1 520	192·9	1 190	141·6
	Ground limestone	.....	4,000						

PASTURE FERTILIZER EXPERIMENT

In order to study the effect of fertilizers on pastures, fertilizer tests were begun in 1923 with basic slag, superphosphate, nitrate of soda, ground limestone, and mixtures of ground limestone and superphosphate.

The land was a heavy clay loam, level and fairly uniform. It grew a crop of oats in 1918, and has been in permanent pasture since that date. The fertilizer was applied on May 11, 1923. (For the yields in 1923 and 1924 see the report of this Station for 1924). In 1923 and 1924 the grass was cut four

times with a lawn-mower. This year the grass was cut with a scythe, as it was felt that a lawn mower cut it closer than it would be kept if grazed. The yields are shown in table 58.

The tabulated data show that:—

(1) Pasture lands of this character require both phosphoric acid and lime.

(2) Nitrate of soda applied in 1923 did not increase yields sufficiently to justify its use.

(3) When cost of material is taken into consideration, ground limestone gave the cheapest increase in yield. (Project C 98).

TABLE 58 — PASTURE FERTILIZER EXPERIMENT

Yield of Grass (Green) 1925 and average yield for 1923-25

Fertilizer used	No. of plots	Rate of application per acre	Yield per acre		Average increase in past 3 years over checks
			Green weight 1925	Average green weight 1923-25	
		lb.	ton lb.	ton lb.	ton lb.
Basic slag	2	1,000	4 1,047	2 1,452	1 42
Ground limestone	1	2,000	3 1,994	2 1,257	- 1,867
Ground limestone	1	4,000	3 1,331	2 1,115	- 1,705
Basic slag	2	750	3 1,784	2 979	- 1,569
Superphosphate	2	438	3 1,666	2 907	- 1,497
Superphosphate	.....	438			
Ground limestone	1	2,000	3 1,900	2 777	- 1,367
Superphosphate	.....	438			
Ground limestone	1	1,000	3 1,125	2 731	- 1,321
Basic slag	2	500	3 403	2 248	- 838
Nitrate of soda	2	200	3 172	1 1,937	- 527
Basic slag	2	250	3 62	1 1,913	- 503
Nitrate of soda	2	100	3 113	1 1,818	- 408
Check	2	-	2 1,343	1 1,410	-

Note.—Both basic slag and superphosphate contain 16 per cent phosphoric acid.

STOCK-CARRYING PROPERTIES OF NEW BRUNSWICK PASTURES SLAGGED VERSUS UNTREATED

An experiment comparing the gains which sheep will make on slagged and unslagged pasture has been conducted the past three years. On May 14, 1923, a one and one-half acre plot was given an application of 750 pounds Bessemer slag (16 per cent) per acre. An adjoining plot of the same area was unfertilized. In 1923 sheep were pastured on these plots from May 30 to August 14, inclusive. In 1924 the area of each plot was reduced to one acre and they were used as sheep pastures from May 30 to August 19, inclusive. In 1923 the sheep on the slagged area made slightly larger gain, and in 1924 both lots of sheep made practically the same gain. This year the grass on the plots was cut for hay. The slagged acre yielded 2,500 pounds hay, and the unslagged acre yilded 2,450 pounds. These plots will be pastured with sheep the coming season. (Project C 96).

ORCHARD FERTILIZER EXPERIMENT

The young orchard set out in 1923 to determine which fertilizer formulae and rate of application would best promote growth, received another application of fertilizer. It was intercropped with forage corn this year. The orchard is making good growth. A full report of this experiment will be made at a later date. (Project C 99).

NITRATE OF SODA ON HAY LANDS

An experiment was begun this year to determine which rates and dates of applying nitrate of soda broadcast to the hay crop will give the best results. Triplicate plots each 1/320 of an acre were used. The land was a clay loam which grew a crop of oats in 1923. Ten pounds timothy, 8 pounds red clover, and 2 pounds alsike clover per acre were sown on the land at the time of seeding the oats. The hay crop in 1924 was a mixture of clover and timothy, and was rather a light crop. On May 6, 1925, a portion of the field which had been laid out in triplicate plots each 1/320 of an acre was treated with nitrate of soda. After the growth started it was apparent that a large percentage of the growth on the plots consisted of daisies, therefore on May 18 a duplication of this experiment was started on a portion of the field on which there was a clean growth of mixed timothy and clover.

Space will not permit of publication, but results seem to show that applications of 50 pounds per acre applied when growth starts, followed by an additional 50 pound application two or three weeks later, will give the cheapest increase. Heavier application will give increased yields but the increase will be at a higher cost.

POULTRY

Considerable progress was made in the poultry plant during the year. Fowl typhoid, which had been present in the flock for several years and which caused serious losses in our young chickens, was apparently fairly well eliminated by the blood test made the previous year. A fairly good crop of chickens was reared, and we were able to resume experimental feeding work with a uniform lot of pullets. A number of splendid cockerels were reared and sold in the province to farmers and poultry-breeders. All cockerels disposed of for breeding were blood-tested before being offered to the public.

A new breeding house, begun the previous year, was completed and will accommodate three hundred birds.

The fifth New Brunswick Egg-Laying Contest was completed, and in accordance with the requests of the contestants, yards were provided, during the summer, for all contest pens.

The stock on hand December 31, 1925, consisted of:—

Barred Rocks: 47 males, 116 hens, 244 pullets, 23 capons, 4 fattening chickens.
Toulouse Geese: 3 ganders, 5 geese.
Pekin Ducks: 3 drakes, 10 ducks.

HATCHING RESULTS

Only one incubator was used, a 2,420-egg Buckeye. The hatching results were as follows:—

HATCHING RESULTS

Total eggs set	2,731·0
Number fertile	2,359·0
Per cent fertile	86·3
Number of chicks	1,079·0
Per cent total eggs hatched	39·5
Per cent fertile eggs hatched	45·7
Number of chicks alive when wing-banded	706·0
Per cent chicks hatched alive when wing-banded	65·4
Total eggs required for one chick hatched	2·5
Total fertile eggs for one chick hatched	2·1
Total eggs required for one chick when wing-banded	3·8

BEST DATE FOR INCUBATION

The hatching results from eggs set at different dates in the Buckeye machine are as shown in table 59. (Project P 3).

TABLE 59 — HATCHING RESULTS FROM SETTINGS OF DIFFERENT DATES

—	Setting March 20	Setting April 2	Setting April 9	Setting April 21	Setting May 6
Total eggs set	433	587	451	723	537
Number fertile	351	492	406	648	462
Per cent fertile	81·0	83·8	90·0	89·6	86·0
Number of chicks	115	207	243	251	263
Per cent total eggs hatched	26·5	35·26	53·8	34·7	48·9
Per cent fertile eggs hatched	32·7	42·07	59·8	38·7	56·9
Number of chicks alive when wing-banded	96	155	188	134	133
Per cent chicks hatched alive when wing-banded	83·4	74·8	77·3	53·3	50·5
Total eggs required for one chick hatched	3·7	2·8	1·8	2·8	2·0
Total fertile eggs for one chick hatched	3·0	2·3	1·6	2·5	1·7
Total eggs required for one chick when wing-banded	4·5	3·7	2·4	5·3	4·0

HATCHING RESULTS FROM HENS AND PULLETS

The hatching results from hens and pullets were as shown in table 60 (Project P 111).

TABLE 60 — HATCHING RESULTS FROM HENS AND PULLETS

—	Hens	Pullets
Total eggs set	1,135	1,596
Number fertile	1,006	1,353
Per cent fertile	88·6	84·7
Number of chicks	483	596
Per cent total eggs hatched	42·5	37·3
Per cent fertile eggs hatched	48·0	44·0
Number chicks alive when wing-banded	347	359
Per cent chicks hatched alive when wing-banded	71·8	60·2
Total eggs required for one chick hatched	2·3	2·6
Total fertile eggs for one chick hatched	2·0	2·2
Total eggs required for one chick when wing-banded	3·2	4·4

COST OF EGG PRODUCTION

The food cost of producing eggs as determined from the records of two hundred and thirty hens in the New Brunswick Egg-Laying Contest was as shown in table 61. (Project P 62).

TABLE 61 — COST OF EGG PRODUCTION

Period	Number eggs laid	Per cent production	Food cost per doz.	Price per doz.	Gain per doz. over cost of feed	Gain over cost of feed for 4 week period
			$	$	$	$
Nov. 1 to Nov. 28	1,246	19·34	0·401	0·55	0·149	15·45
Nov. 29 to Dec. 26	1,930	29·96	0·312	0·65	0·338	54·23
Dec. 27 to Jan 23	1·572	24·40	0·366	0·65	0·284	37·07
Jan. 24 to Feb. 20	2,677	41·56	0·263	0·60	0·337	75·07
Feb. 21 to March 20	3·118	48·41	0·213	0·40	0·187	48·55
March 21 to April 17	4·033	62·62	0·199	0·30	0·101	33·62
April 18 to May 15	4·029	62·56	0·15	0·30	0·15	50·28
May 16 to June 12	4,037	62·68	0·161	0·30	0·139	46·46
June 13 to July 10	3,795	58·92	0·174	0·30	0·126	39·61
July 11 to Aug. 7	3·573	55·48	0·159	0·312	0·153	45·36
Aug. 8 to Sept. 4	3·267	50·72	0·164	0·35	0·186	50·36
Sept. 5 to Oct. 2	2·899	45·01	0·192	0·42	0·228	54·99
Oct. 3 to Oct. 30	1,709	26·53	0·26	0·45	0·19	26·94
Year	37,885	45·25	0·208	0·391	0·183	577·99

Records have been kept for five years in the contest of the amount of feed required to keep a hen a year. The amount of feed consumed is fairly constant from year to year. From this data and the market price of feed in different districts, poultry-keepers should be able to estimate pretty closely the cost of feeding a commercial flock. The results are as shown in table 62.

TABLE 62 — COST OF EGG PRODUCTION

Year	No. of birds	Average feed consumed per bird						Average egg production	Average gain per bird over cost of feed
		Grain	Mash	Milk	Grit	Shell	Total grain and mash		
		lb.	lb.	lb.	lb.	lb.	lb.		$
1920-21	210	71·41	38·08	.....	1·41	3·94	109·49	152·13	2·60
1921-22	200	58·36	38·95	44·6	2·92	3·41	97·31	139·43	1·93
1922-23	200	58·68	46·34	53·3	2·92	3·52	105·02	162·25	2·74
1923-24	200	51·73	50·14	85·9	2·47	3·99	101·87	165·	2·57
1924-25	230	56·01	47·51	69·75	1·98	3·64	103·52	164·7	2·51

COST OF REARING CHICKS

The cost of rearing chicks hatched between April 10 and May 27 up until November 1 was as follows. (Project P 31):—

COST OF REARING CHICKS

No. of eggs set	2,731
No. of chicks hatched	1,079
No. of chicks reared	617
Statement of Cost	
2,731 eggs at 50 cents per doz	$ 113 79
70 gallons kerosene at 24 cents per gal	16 80
2,295 pounds hard coal at $17 per ton	19 50
334·5 pounds mash (middlings and corn meal) at $2.31 per cwt	7 72
75·5 pounds rolled oats at $4 per cwt	3 02
400 pounds chick scratch at $4.25 per cwt	17 00
400 pounds chick scratch at $3.45 per cwt	13 80
700 pounds mash (bran, middlings, corn meal, rolled oats) at $2.57 per cwt	17 99
348 pounds grain (crimped oats and wheat) at $3 per cwt	10 44
1,334 pounds grain (crimped oats, wheat and cracked corn) at $2.55 per cwt	34 01
7,298 pounds grain (whole oats, wheat and cracked corn) at $2.39 per cwt	174 42
4,026 pounds mash (equal parts bran, middlings, corn meal and ground oats) at $2.08 per cwt	83·74
275 pounds mash (one part bran, one part middlings, one part ground oats, one part corn meal and one-half part beef scrap) at $2.25 per cwt	6 18
293 pounds mash (equal parts corn meal, middlings and rolled oats) at $2.84 per cwt	8 32
10,110 pounds skim-milk and buttermilk at 20 cents per cwt	20 22
Total cost of chicks, labour neglected	546 95
Average cost per chick to November 1	0 88

EGG-LAYING CONTEST

The fifth New Brunswick Egg-laying Contest was concluded on October 30. Twenty-three pens competed in this contest. The average production was 164.7 eggs as compared with 165 in 1924, 162.25 in 1923, 139.43 in 1922, and 152.13 in 1921. Sixty-one hens laid 200 eggs or over. Twenty-four hens laid 225 eggs or over.

Thirty-two out of the sixty-one hens that laid 200 eggs or over qualified for registration. Thirty-one of these were registered. One hen was not registered as no application was obtained. The balance of the hens were disqualified on account of their eggs not coming up to the standard weight of twenty-four ounces per dozen.

Thirty-three birds died during the year. Forty-seven second-generation birds were entered, including one substitute. Ten of these died. One second-generation bird qualified for registration.

The system of feeding was as follows: dry mash consisting of equal parts wheat bran, middlings, crushed oats and corn meal with from ten to twenty per cent beef scrap and one per cent charcoal, was kept in hoppers before the birds at all times.

Scratch grain consisting of two parts cracked corn, one part wheat, and one part oats, was fed in the litter twice daily.

Grit and oyster-shell were kept in hoppers before the birds. Green feed, water, and buttermilk were supplied daily.

The list of contestants, individual records of the birds, cost of feed, and profit over cost of feed, are shown in table 63. (Project P 61).

TABLE 63 — FIFTH NEW BRUNSWICK EGG-LAYING CONTEST — FREDERICTON, N. B.

Pen No.	Owner and Address	Breed	1	2	3	4	5	6	7	8	9	10	Floor	Total	Cost of feed per year	Profit over cost of feed
															$	$
4	A. T. Reed, Rollingdam	B.R.	244	246	158	248	238*	196*d	202	248	211	212*	18	2,221	31·45	43 14
12	M. McD. Steven, Hoyt	B.R.	156	280	229	230	218	235	281	170	205	159	13	2,176	31·52	40·14
9	W. E. B. Tait, Dorchester	B.R.	216	237	200d	171	220	236	164	185	209	230	14	2,082	32·62	35·93
13	Geo. Manchester, Fredericton	B.R.	229	209	190	245	182	216	198	181	206	165	7	2,028	32·18	31·33
18	R. A. Snowball, Chatham	W.L.	112	218	219	188	232	211	238	167*	215	184	18	2,002	27·87	37·87
20	F. H. Ferguson, Fredericton	B.R.	136	179	218	212	175	220	230	214	181	180	16	1,961	31·14	33·60
11	Mrs. Geo. Danby, N. Devon	B.R.	161	148	164	242	168	244	220	190	165	178	7	1,887	29·23	30·93
19	Patrick Graham, Millville	B.R.	107*	206	240	213	179	144	176	193	191	204	10	1,863	29·23	34·59
5	Harry Patterson, Hoyt	B.R.	72	134d	82	237	172	200*	199	192*	214	171	25	1,698	31·14	27·68
8	George Wood, Carters' Point	B.R.	218	113	129	174	254	150*	105	211	151	141	15	1,661	28·71	26·1.
10	John Woods, Bloomfield Sta	B.R.	17	163	174	225	211	163	118	177	185	208	15	1,656	28·50	26·30
3	C. M. Peart, Lewisville	B.R.	200	172	117*	167	194	195	146	171	84*	165*	14	1,625	26·63	29·53
6	Lloyd Johnston, Nashwaaksis	B.R.	144*	205	178*	215	99	118	108*	216	161	133*	21	1,598	29·89	19·87
16	Norton Valley Poultry Farms, Norton	W.L.	186	192	191	48*	115*	168	220	37	175	188	22	1,542	23·80	24·29
2	Eugene Monahan, Elmsville	B.R.	192*	261*	67*	48d	136*d*	195	185d	190	28	162	13	1,477	24·96	24·11
15	A. Vye Gibson, Moncton	W.L.	182	173	159	157	161	126	115	91	144	152	16	1,476	25·59	19·36
21	N. W. Eveleigh, Sussex	B.R.	188	199	116	69	151	58d	87	90	205	129	27	1,382	29·36	17·53
14	H. G. Harrison, St. John	R.I.R.	164	99	87	114*	180	71	82	204	151	150	6	1,308	27·26	14·12
22	Exptl. Station, Fredericton	B.R.	127	175	140	94	158	171	133	76	98	114	17	1,303	29·72	11·71
17	Helen Parks, St. John	W.L.	173	98	147*	78	133	126	49	15	120	176	24	1,282	25·26	13·88
7	Alfred D. Fownes, Moncton	B.R.	74	173	104	128	26	142	214	129	113	148	24	1,275	28·59	11·90
23	Exptl. Station, Fredericton	B.R.	183	73	66	171	80	118	78*	150	146	132	15	1,212	28·66	9·79
1	A. Vye Gibson, Moncton	B.O.	23	162	76	96	136	85	160	115	128	175	14	1,170	23·93	14·28
	Total													37,885	657·24	577·99

Abbreviations: (*d*) Dead; (*) Substitute.

APIARY

The apiary at this Station now consists of sixty-two colonies. This is an increase of nineteen colonies over the previous year. Twenty of these colonies were kept in an out-apiary at Burton, and are being wintered there in packing cases.

Bees wintered outdoors in 1924-25 came through the winter in good condition. Bees wintered in the cellar came out in fair condition. Forty-three colonies were placed in winter quarters in the fall of 1924 and only one of these died. Bees wintered in the cellar were taken out on April 21. They built up fairly rapidly and were in good condition for the clover flow which began June 21. Showery weather during the period that the clover was in bloom, and early frosts in the fall, resulted in a light honey crop. The forty-two colonies, spring count, produced 1,051 pounds of honey and eight new colonies. This is an average of 25 pounds per colony. The highest production from one colony was 82 pounds. The average production of the colonies not divided was 26.3 pounds.

CONTROL OF SWARMING BY DEQUEENING AND REQUEENING

In order to determine if swarming can be successfully controlled by dequeening and requeening nine days later, an experiment was carried on with nine colonies. The procedure was as follows: when colonies showed preparation for swarming by having larvae in queen-cells, the queen was removed and all cells destroyed. Nine or ten days later the cells were again all destroyed and a young laying queen was introduced. The nine colonies thus treated did not make any further preparation to swarm. In one colony the queen was not accepted and a second queen was successfully introduced ten days later.

On account of the variation in the colonies thus treated we were unable to compare their crop with the crop secured from colonies treated by separation of queen and brood.

One of the difficulties of this system is the procuring of young queens where it is necessary to procure queens outside of the province. A second difficulty is that of destroying queen-cells. In one colony sixty-four cells were destroyed when the queen was introduced; forty-nine were on one frame. This necessitates a very careful examination or a queen-cell may be overlooked, which would result in the destruction of the queen introduced. One of the advantages of this system is that the colony is requeened with a young queen. (Project Ap. 1).

CONTROL OF SWARMING BY SEPARATION OF QUEEN AND BROOD

In order to determine if swarming can be controlled by the separation of the queen and brood, an experiment was carried on with nine colonies. The manipulation was as follows: When colonies showed preparation for swarming by having larvae in queen-cells, all combs containing brood were removed from the brood chamber and replaced by drawn comb or drawn comb and foundation. The queen and the bees shaken from one comb were left in the brood-chamber and the combs containing brood were placed in an empty super above a honey-super, separated from the same by a queen-excluder. Five colonies thus treated made no further preparation for swarming. Four colonies that received five frames of foundation in the brood chamber and five frames of drawn comb, prepared later to swarm. The queen in these colonies filled the drawn comb with brood before the foundation was drawn out and then began further preparations for swarming. This suggests the necessity of filling the brood-chamber with drawn comb.

No figures could be obtained on the honey crop. This system is a little easier for the amateur. If the queen cannot be found all the bees can be shaken

into the brood chamber. It is also quicker than dequeening and requeening on account of the difficulty in this treatment of destroying all queen-cells, and only one manipulation is necessary. (Project Ap. 2).

METHODS OF DETECTING PREPARATION FOR SWARMING

Examination of colonies for preparation for swarming is a slow and expensive process. In order to determine if a system could be worked out whereby the time taken for examination could be reduced, an experiment was carried on with double brood-chambers.

As soon as colonies in ten-frame Langstroth hives showed signs of congestion in the spring, a shallow super with drawn comb was added to the brood-chamber without a queen-excluder. At the time of the regular examination (every nine or ten days) this shallow super was tipped from the rear and notes taken as to whether the queen-cells were observable along the lower edge of the combs in this super. Nineteen colonies were thus treated. Eleven developed larvae in queen-cells which were observable by tipping the super. In one colony eggs were found in queen-cells, but it made no further preparation for swarming. In two other colonies queen-cells were found in the brood-chamber. None of these latter swarmed, but the queen was superseded. (Project Ap. 5).

WINTERING IN CELLAR

Twenty-three colonies were placed in a cellar under a double house November 15, 1924. They were kept in a room partitioned off from the main cellar. The temperature ranged from 37° F. to 50° F. The results were as follows. (Project Ap. 7):—

TABLE 64 — WINTERING BEES IN THE CELLAR

—	10 fr. Langstroth	10 fr. Jumbo
Number of colonies placed in cellar, fall of 1924	18	5
Condition	Good	Good
Strength in fall 1924 fr. bees	7·6	7
Strength in spring 1925 fr. bees	4·39	3·4
Weight fall 1924 lb.	60·89	68·0
Weight spring 1925 lb.	49·27	55·8
Stores consumed lb.	11·61	12·2
Number of colonies died	0	0

WINTERING IN FOUR-COLONY CASES

Twelve colonies were wintered in four-colony packing cases. These were packed November 18, 1924. Five inches of packing was placed on bottom, five inches on sides, and about six inches on top. Planer shavings and buckwheat hulls were used, but each was used separately. The results were as follows: (Project Ap. 8):—

TABLE 65 — WINTERING BEES IN FOUR-COLONY CASE.

—	10 fr. Langstroth	10 fr. Jumbo
Number of colonies wintered in four-colony cases	10	2
Condition	Good	Good
Strength fall 1924 fr bees.	8·8	8·0
Strength spring 1925 fr. bees	5·7	4·0
Weight fall 1924 lb.	69·69	71·5
Weight spring 1925 lb.	46·5	46·0
Stores consumed lb.	23·1	25·5
Number of colonies died	0	0

WINTERING IN TWO-COLONY CASES

Eight colonies were wintered in two-colony packing cases. These were packed November 18, 1924. Two cases had six inches of packing on top, bottom and sides, and two cases had five inches of packing on bottom and sides. Buckwheat hulls and shavings were used. No difference was observable between the results from buckwheat hulls or shavings, or between five and six inches of packing. The results were as follows. (Project Ap. 8) :—

TABLE 66 — WINTERING BEES IN TWO-COLONY CASES

—	10 fr. Langstroth	10 fr. Jumbo
Number of colonies wintered in two-colony cases	6	2
Condition	Good	Good
Strength fall 1924 fr. bees	10·1	7·0
Strength spring 1925 fr. bees.	5·6	5·0
Weight fall 1924 lb.	69·5	76·0
Weight spring 1925 lb.	44·5	50·5
Sotres consumed lb.	25·0	25·5
Number of colonies died	0	1·0

TWO-QUEEN SYSTEM

The object of this experiment is to determine a satisfactory method for carrying a number of surplus queens through the winter. In the latter part of September, 1924, eight weak colonies were selected. Five of the lightest combs were removed and the bees were shaken back into the hive. The remaining five combs were pushed to one side in the hive. The following day, tight division-boards were placed in four colonies and five frames of bees and brood with queens from the remaining four colonies were placed one in one side of each of the divided hives. Two weak colonies with queens were thus brought together in one hive. Separate entrances, one at each corner, were provided, and an oilcloth cover (tacked to the division-board) was placed over the frames. The colonies were then fed in the usual way.

In three of the colonies the two queens wintered satisfactorily. In one colony one queen died. In the spring of the year the three surplus queens were used to save queenless colonies. The division boards were then removed from the double hives and the bees from the two colonies united to form a strong colony. (Project Ap. 12).

PACKAGE BEES AS A MEANS OF STARTING COLONIES

Twelve two-pounds packages of bees were bought in the spring of 1925. These were obtained on three different dates from two different sources, viz. W. D. Achord, Fitzpatrick, Alabama, and F. W. Jones, Bedford, P.Q. One-half of each lot was kept in the apiary at the Station and the balance were placed in the out-apiary at Burton. The results were as shown in tables 67 and 68. (Project Ap. 22). The results indicate that over-wintered colonies will produce the best crop.

TABLE 67 — PACKAGE BEES AS MEANS OF STARTING COLONIES

Date Received	Source	Location of apiary 1925	No. of colonies	Average strength June 20	Condition for honey flow	Average crop	Strength for winter
				fr.		lb.	
May 11.....	W. D. Achord	Fredericton...	2	6	Weak	5·5	Cover 9 frames
" 26.....	"	"	2	4	"	7·5	" 9 "
" 28.....	F. W. Jones..	"	2	4	"	6·5	" 9 "
" 11.....	W. D. Achord	Burton.....	2	6	"	32·5	" 9 "
" 26.....	"	"	2	5	"	17·25	" 10 "
" 28.....	F. W. Jones...	"	2	4	"	1·5	" 8·5 "

TABLE 68 — COMPARABLE RESULTS FROM OVER WINTERED COLONIES

Type of Colony	Location of apiary, 1925	How wintered	No. of colonies	Average strength June 20	Condition for honey flow	Average crop	Average strength for winter
				fr.		lb.	
Langstroth....	Fredericton...	Packing-cases	9	11·77	Good.....	25·5	Cover 9·33 fra.
"	" ..	Cellar.....	7	10·71	Fair.....	18·14	" 8·28 "
"	Burton.....	Packing-cases	5	13·4	Good.....	43·6	" 9·2
"	" ..	Cellar.....	6	13	Good.....	28·0	" 9·5

FIBRE DIVISION

The work in this division included variety tests and cost of production per acre with fibre flax and hemp. During the season a mill was installed at the Station.

FIBRE FLAX AND HEMP VARIETY TESTS

Triplicate plots of flax and hemp, each one-sixtieth of an acre, were sown on May 26. The land was one-year-old clover sod. Among the flaxes Saginaw gave the largest yield of tossed flax, and 829 C gave the largest yield of seed. Among the hemps Minnesota No. 8 gave the largest yield of both fibre and tow.

COST OF PRODUCTION—FLAX AND HEMP

Cost of production tests were carried on with flax and hemp this year. Both these crops showed a loss over cost of production.

EXTENSION WORK

With each succeeding year added interest has been shown in the work of this Station. All field-days held throughout the summer months were well attended, and visitors were a daily occurrence. On Sundays it was not unusual to see fifteen or more motor cars on the grounds. The number of telephone communications, and the letters received, is further evidence that farmers are looking to this Station for information on matters relating to agriculture.

The annual potato field-day was not as well attended as in the preceding year. This was no doubt due to the discouraging condition of the potato market last season. However, those who attended showed a great interest in the programme prepared for them, and were particularly interested in the discussions on markets and marketing problems.

The annual poultry field-day was, as usual, well attended by poultrymen from all sections of the province. Poultry diseases and their control were featured, and the address delivered by Dr. C. H. Weaver on this subject proved of much interest. During the day the New Brunswick Poultry Breeders' Association, organized at the poultry field-day in 1923, held a meeting and took up a number of important matters relating to the poultry industry.

A bank managers' field-day was held, with forty-two managers in attendance; representing practically every section of the province. The forenoon was devoted to an inspection of the live stock, discussion of a number of feeding and breeding live stock experiments, and addresses by representatives of the Dominion Live Stock Branch on the co-operative marketing of poultry and live stock. In the afternoon an inspection of the field work was made, and the results explained by members of the staff. In general, the bankers were given an insight into all the work at this Station, and made acquainted with federal and provincial officials who are working for the advancement of agriculture in New Brunswick. This meeting has proven very beneficial in that the Station has had the fullest possible co-operation from the bank managers of the province, both in supplying the Station with information and in interesting farmers of their respective districts in the work of this Station.

The annual " neighbours' day," for farmers living in close proximity to the Station, was successful from every standpoint. An outstanding feature of this meeting was the organization of the Fredericton District Co-operative Seed Growers' Association. At the " neighbours' day " the year previous a number of those present decided to purchase registered seed grain from this Station, and they have now organized for the purpose of disposing of their grain. This association has installed the latest seed-cleaning and seed-grading machinery, and the prospects are that upwards of four thousand bushels of registered seed oats, wheat, and barley will be sold at prices considerably in excess of the purchase price of feed grain. Apart from the profitable side of this enterprise, it is having a marked effect in the interesting of farmers throughout the province in the use of better seed.

The usual visits were made by agricultural societies. Upwards of four hundred normal school students spent an afternoon at the Station and were given an insight into the activities of the Station by members of the staff. During the session of the provincial Legislature arrangements were made to take members to the Station in order that they might become acquainted with the work being done in the interests of agriculture. A special effort was made to see that all farmer-members took advantage of this visit to the Farm.

Representatives of the British Press who made a tour of Canada during the summer spent some considerable time studying the work of this Station, and British papers have commented favourably upon the experimental work carried on at Fredericton.

Exhibitions of an educational character were displayed at larger exhibitions, including Fredericton, Saint John, Chatham, and St. Stephen. Addresses by members of the staff were delivered at farmers' picnics, farmers' conventions, Rotary clubs, etc. Officers of the staff also acted as judges at a number of the exhibitions.

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