DOMINION OF CANADA

DEPARTMENT OF AGRICULTURE

DOMINION EXPERIMENTAL FARMS

EXPERIMENTAL STATION

KENTVILLE, N.S.

REPORT OF THE SUPERINTENDENT

W. SAXBY BLAIR

FOR THE YEAR 1927

Some of the farm buildings on the Kentville station.

Printed by authority of Hon. W. R. Motherwell, Minister of Agriculture,
Ottawa, 1928

TABLE OF CONTENTS

DOMINION EXPERIMENTAL STATION, KENTVILLE, N.S.

REPORT OF THE SUPERINTENDENT, W. SAXBY BLAIR

THE SEASON

The winter of 1926-27 started with an eight-inch snowfall on December 3. The total snowfall for the month was 27·5 inches. Sleighing was good throughout December. January was above normal in temperature, with light snowfall and poor sleighing. The month closed with bare fields and with but little frost in the ground. February was a normal month, the coldest day of the winter falling on the 6th with a reading of –9 degrees F. A total of 33·2 inches of snow made suitable conditions for lumbering. March was also a normal month. The winter began breaking up on the 7th and by the end of the month the snow had practically disappeared. An early withdrawal of the frost from the ground permitted of cultivation of the soil and planting of garden seeds at the close of April. Dormant sprays were applied to plums and cherries April 25. The precipitation for May was somewhat above the average, but the month was otherwise normal and generally favourable for all phases of farm work. Orchard fertilization and cultivation were general by the 4th. The fruit buds were advanced enough for the first spray by the 11th. Sweet cherries and plums were in full bloom from the 23rd to the close of the month.

June was dry, with a rainfall of only 1·27 inches, as compared with 3·20 inches, the average June precipitation for the previous thirteen years. Apples were in bloom throughout the entire Valley from June 5 to 13. The weather was very favourable during this period for pollination and fertilization, and a very heavy set of fruit was expected. Spraying and dusting for fungus diseases and insect pests were probably never so extensively and thoroughly done as during this season. Nevertheless, at the close of the month the set of fruit was generally disappointing, due in some districts to frosts injury, and in others to insect pests. A very heavy June drop indicated that the fruit set was not so good as anticipated.

The early part of July was dry, and this, following a dry June, seriously reduced the yield and quality of the strawberry crop. The latter part of July was wet and dull. The total precipitation for this month was 5·58 inches, of which 4·61 inches fell from the 11th to the 21st. The average July precipitation for the previous thirteen years was 2·85 inches. This rainfall greatly aided crops, although favouring the development of fungus diseases.

August was characterized by a precipitation of 9·39 inches, over three times the normal, the average for the previous thirteen years being 3·08 inches. Three rains, on the 1st and 2nd of 1·90 inches; the 15th, 2·50 inches; and the 24th and 25th, 4·06 inches, accounted for most of the rainfall. These heavy rains caused much loss from the lodging of grain. The gale on the 24th, accompanied by rain, resulted in serious losses to the fruit growers from broken trees and loss of fruit, the latter estimated at from 15 to 25 per cent, according to the exposure of the orchard.

September was a warm, sunny month. Fruit developed, coloured, and matured rapidly. October had a high mean temperature, excessive rainfall, and lack of sunshine. Only two frosts, of one degree each, were recorded, these occurring on the 12th and 31st. November was a mild, open month, the mean temperature (42·08) being 5·53 degrees warmer than the average for the preceding thirteen years. December was also warmer, the mean temperature being 5·17 degrees higher than the previous thirteen-years' average. Eight inches of snow fell on the 5th, and the freeze-up came on the 7th. There was sleighing throughout the month.

METEOROLOGICAL RECORDS AT THE DOMINION EXPERIMENTAL STATION, KENTVILLE, N.S., FOR THE YEAR 1927

1927	Temperature (Fahrenheit)						Precipitation				Sunshine	
	Mean		Maximum		Minimum		Rainfall	Snowfall	Total precipitation, 1927	Average previous 13 years	1927	Average previous 13 years
	1927	Average previous 13 years	Highest	Mean maximum	Lowest	Mean minimum						
							inches	inches	inches	inches	hours	hours
January	27·21	19·17	48	32·81	−4	21·61	3·54	8·8	4·42	3·62	61·95	80·64
February	17·66	19·44	37	24·21	−9	11·11	0·14	33·2	3·46	3·17	76·30	100·83
March	29·30	28·73	50	37·51	2	21·09	1·04	14·2	2·46	2·90	147·45	132·29
April	39·01	38·68	74	48·33	18	29·70	2·37	10·0	3·37	2·86	194·30	146·01
May	49·10	49·36	75	58·74	24	39·45	3·73	.....	3·73	2·04	193·90	200·60
June	56·43	59·00	81	66·80	32	46·06	1·27	.....	1·27	3·20	236·55	210·96
July	68·46	65·39	87	77·83	39	59·09	5·58	.....	5·58	2·85	191·00	220·56
August	63·50	64·22	80	73·68	43	53·32	9·39	.....	9·39	3·08	214·65	211·41
September	58·09	56·90	79	67·43	31	48·76	2·07	.....	2·07	2·90	183·65	180·05
October	51·06	47·80	76	57·77	31	44·35	5·23	.....	5·23	4·25	95·30	149·49
November	42·08	36·55	70	49·10	20	35·06	2·10	2·7	2·37	3·96	85·10	85·28
December	29·82	24·65	64	34·38	8	25·26	2·37	20·2	4·39	3·70	47·15	58·05
Totals or averages	44·31	42·49	.....	52·38	.....	36·24	38·83	89·1	47·74	38·53	1,727·30	1,776·17

ANIMAL HUSBANDRY

CATTLE

Since 1913, this Station has been building up a dual-purpose Shorthorn herd with the object of developing cows that will produce a medium quantity of milk as dairy cattle, and will sell at a good price for beef animals when fattened. An account of the history and development of this herd and of its progress in 1927 will be published separately as a bulletin of the Dominion Department of Agriculture.

SWINE

The swine on hand at the beginning of the year were four sows, one herd boar, two young boars and twenty feeders. During the year seventy-five pigs were born, two sows producing two litters each, and two sows one litter each. From these litters thirty-two pigs were lost when very young, one sow being very unfortunate with both litters. Another young pig was lost from bowel trouble, making the heavy casuality during the year of thirty-three young pigs. One young boar was received from Ottawa for a herd sire. Thirty pigs of various ages were sold for breeding purposes. Nine were sold for pork production, and one for pork. Twelve were sold for bacon. There were on hand at the close of the year two herd boars, four breeding sows, four young boars and seven young sows.

The meal mixture used for the breeding hogs was made up of 100 pounds each of ground oats and wheat bran, 200 pounds of middlings, and 50 pounds of linseed oil meal, and cost on the average $2.22 per cwt. Mangels were fed during the months from November to June, in amounts varying from 10 to 15 pounds to each mature animal. Skim-milk was fed to the sows only while they were nursing their pigs. The sows were on pasture during the summer months, the pasture consisting of oats, peas and vetches, with an after-growth of clover. This was very readily eaten and served as excellent pasture. It was charged to the pigs at cost, making a total of $27 for the four sows for the summer.

The following table gives the feed consumed by the mature breeding swine during the year.

FEED CONSUMED BY MATURE BREEDING SWINE DURING THE YEAR 1927

—		Ottawa Augustus	Kentville Beauty	Kentville Bonnie	Kentville Charlotte	Kentville Rose
Sex		Boar	Sow	Sow	Sow	Sow
Age	year	3	3	2·5	3	3
Number of days fed	days	365	365	365	365	365
Total meal eaten in period (at $2.22 per cwt.)	lb.	1,694	1,820	2,072	1,736	1,694
Average meal eaten per day	lb.	4·64	4·98	5·68	4·75	4·64
Total mangels eaten in period (at $3.75 per ton)	lb.	2,750	2,685	2,615	2,615	2,615
Total skim-milk eaten in period (at 20 cents per cwt.)	lb.	.....	838	738	270	215
Months on pasture (at $1.50 per month)		.....	4	4	5	5
Total cost of feed	$	42 77	53 11	58 38	51 48	50 44
Average cost per day	cts.	11·7	14·6	16·0	14·1	13·8

Swine Feeding Experiment, 1926-27

The objects of this experiment were to obtain data as to (1) the value of skim-milk in the feeding of pigs; (2) the comparative value of mangels and apples in the feeding of pigs; and (3) to determine the value of minerals in the prevention of crippling.

Twenty Yorkshire pigs were divided into five lots of four pigs each. All lots were fed the same amount and kind of meal. Lots 1, 2, and 4 received mangels; and Lots 3 and 5, apples, in equal quantities. Skim-milk was fed to Lot 1 in addition to the other feeds.

The mineral mixture was made up of one part of limestone, one part of bone meal, one part of charcoal, and one-half part of salt. This was given to Lots 1, 2, and 3 in boxes where they could help themselves. It cost $2.35 per cwt. While there was no appreciable difference in the growth of the pigs receiving the mineral mixture as compared with the others, it was found that they remained healthy, while two pigs from each lot not receiving the mineral mixture went crippled at the close of the test.

The meal fed during the experiment was made up of 100 pounds each of middlings and ground oats, and 10 pounds of oil meal, and cost $2.25 per cwt. The mangels and apples were charged at $3.75 per ton. Skim-milk was charged at 20 cents per cwt. All lots received water to drink as required.

Swine Feeding Experiment, 1926-27

—		Lot 1	Lot 2	Lot 3	Lot 4	Lot 5
		Skim-milk, meal, mangels, mineral	Meal, mangels, mineral	Meal, apples, mineral	Meal, mangels,	Meal, apples
Number in lot		4	4	4	4	4
Meal eaten	lb.	708	708	708	708	708
Mangels eaten	"	378	378	.....	378	.....
Apples eaten	"	.....	.....	378	.....	378
Skim-milk eaten	"	2,072	.....	.....	.....	.....
Mineral mixture used	"	35	35	35	.....	.....
Cost of feed for period	$	21 60	17 46	17 46	16 64	16 64
Total weight at beginning of period	lb.	167	167	179	128	131
Total weight at end of period	"	489	379	385	335	346
Gain in 90 days	"	322	212	206	207	215
Average gain per pig	"	80·5	53	51·5	51·7	53·7
Average daily gain per pig	"	0·89	0·59	0·57	0·57	0·60
Cost of one pound of gain	cts.	6·7	8·2	8·5	8·0	7·7

The deductions from this test are (1) that the cost of raising pork can be materially lessened by feeding limited quantities of skim-milk. In this experiment an average of 5·75 pounds of skim-milk was fed per pig daily, and this cheapened the cost per pound of gain by 1·5 cents. (2) That there is no appreciable difference in the feeding value of mangels and apples for pork production. (3) That, in maintaining the health of pigs being fed for a longer period than two months, a mineral mixture is important.

Cost of Pork Production

Twenty Yorkshire pigs nine weeks old were fed for an average of 155 days. These were all fed in an experiment covering a period of ninety days, and fed for a further period with the object of finishing them for bacon. Twelve were

sold for bacon, eight grading select. Seven were sold for breeders, five of which would have graded as select bacon pigs. One was sold for further feeding. The following data were obtained:—

Value of 20 pigs at beginning of test at $4 each	$	80 00
7,485 pounds skim-milk at 20 cents per cwt		14 97
7,943 pounds meal at $2.25 per cwt		178 72
4,393 pounds mangels at $3.75 per ton		8 24
882 pounds apples at $3.75 per ton		1 65
Total cost of 20 pigs to time of sale		283 58
Value of 12 pigs sold for bacon		221 57
Value of 1 pig sold for feeder		12 00
Value of 7 pigs sold for breeders		104 08
Total sale value of the 20 pigs		337 65
Profit over feed and cost of pigs		54 07
Total weight of pigs at beginning of test (9 weeks old)	lb.	772
Average weight of pigs at beginning of test (9 weeks old)	lb.	38·6
Total weight of pigs at end of 155 days	lb.	3,496
Average weight of pigs at end of 155 days	lb.	174·8
Total gain in 155 days	lb.	2,724
Average gain per pig in 155 days	lb.	136·2
Average daily gain per pig	lb.	0·88
Average cost per pound of gain	ct.	7·5
Average profit per pig	$	2 70

In view of the fact that these pigs were fed for ninety days in an experiment in which four became more or less crippled the results are fairly satisfactory. Favourable conditions throughout the whole period would have given greater profit. After paying the first cost of the pigs and the feed consumed, the sum of $54.07 is realized for labour.

FIELD HUSBANDRY

FODDER CROPS

Work on the land was possible April 22. Some wheat was sown April 23. Turnip stecklings for the production of seed were planted April 25. About three acres of mangels and carrots were seeded April 26 and 27. A heavy rainfall of 1½ inches April 28 held up operations on the land until May 4; from that date until the completion of seeding the weather was fine. All seeding was finished by June 10. The conditions were very favourable for germination, but early June was exceptionally dry. From July 13 there was an abundant rainfall. Most of the corn failed to germinate, and it was necessary to reseed several large areas with sunflower.

The corn ensiled amounted to 57·53 tons; sunflowers, 60·5 tons; O.P.V., 10·81 tons; and millet, 3·1 tons—a total of 131·94 tons of ensilage.

Mangels and carrots gave an excellent stand of plants, but the weather seemed too wet for the best results, as these roots developed very little after September 20. Turnips seeded June 6 on damp soil came on well, and yielded a fair crop. The root crops harvested were as follows: turnips, 2,317·5 bushels; mangels, 1,924 bushels; sugar beets, 141 bushels; and carrots, 426 bushels—a total of 4,808·5 bushels.

HAY

There was sufficient snow to prevent alternate thawing and freezing of the ground and the consequent throwing out of young grass and clover plants, and the hay crop started early and made good growth at this Station. The upland produced 60·95 tons; Farm dyke, 25·99 tons; Tully dyke, 21·13 tons; alfalfa, 14·9 tons; and second cutting of clover, 8·37 tons—a total of 131·34 tons.

GRAIN CROPS

The grain crops harvested were: oats, 475·6 bushels; wheat, 33 bushels; barley, 15 bushels; and peas, 23 bushels—a total, exclusive of small areas used for testing varieties, of 546·6 bushels.

A COMPARISON OF DIFFERENT FODDER CROPS

This work, consisting of the growing of corn, sunflowers, O.P.V., turnips, and mangels on plots of equal size, all treated in the same way as to cultural and fertilizing methods, was begun in 1922 and has been continued each year since that time. The object is to determine the total fodder available from these crops, and the cost of production of each crop.

The land used for this work in 1927 was in corn in 1926. It was manured in the spring of 1927 at the rate of 16 tons per acre, and ploughed and thoroughly disked with the tractor. A fertilizer made up of 100 pounds of sulphate of ammonia, 300 pounds of superphosphate, and 50 pounds of muriate of potash was then applied broadcast at the rate of 500 pounds per acre, and cultivated in with a wheel cultivator. Rows were run with a horse hoe for mangels and turnips, and these were seeded May 11. The O.P.V., corn and sunflowers were seeded May 18 with the grain drill, the corn and sunflowers being sown in rows 3 feet apart. The varieties used were Giant Half White mangel, Bangholm turnips, Longfellow corn, and Mammoth Russian sunflowers. The O.P.V. was mixed as follows: oats, 2½ bushels; peas, ½ bushel; vetches, ⅓ bushel, and was seeded at the rate of 3½ bushels per acre. The O.P.V. was harvested August 10; sunflowers, September 19; mangels, October 12; and corn, September 28.

The following tables give the costs for 1927 and also the average for the six years, 1922 to 1927:—

COST PER ACRE OF PRODUCING CORN

Item	1927	Average, 1922–1927
	$ cts.	$ cts.
Rent	3 00	3 00
Manure and fertilizer	20 81	19 97
Seed	1 50	1 31
Machinery	2 85	2 55
Twine	0 45	0 53
Manual labour	16 96	20 69
Horse or tractor labour	5 65	6 06
Kerosene and oil	1 30	1 00
Total cost per acre	52 51	55 11
Yield per acre, tons	15·56	17·29
Cost per ton, $	3 37	3 18

COST PER ACRE OF PRODUCING SUNFLOWERS

Item	1927	Average, 1922–1927
	$ cts.	$ cts.
Rent	3 00	3 00
Manure and fertilizer	20 81	19 97
Seed	1 08	1 48
Machinery	2 85	2 55
Twine	.....	0 53
Manual labour	29 51	29 13
Horse or tractor labour	5 35	6 49
Kerosene and oil	1 30	1 19
Total cost per acre	63 80	64 34
Yield per acre, tons	20·98	20·77
Cost per ton, $	3 04	3 09

COST PER ACRE OF PRODUCING TURNIPS

Item	1927	Average, 1922–1927
	$ cts.	$ cts.
Rent	3 00	3 00
Manure and fertilizer	20 81	19 97
Seed	1 05	1 04
Machinery	2 85	2 55
Manual labour	35 55	35 93
Horse or tractor labour	5 50	6 32
Total cost per acre	68 76	68 81
Yield per acre bush.	498·4	668·6
Cost per bushel cts.	13·8	10·3
Yield per acre tons	12·46	16·71
Cost per ton $	5 52	4 12

COST PER ACRE OF PRODUCING MANGELS

Item	1927	Average, 1922–1927
	$ cts.	$ cts.
Rent	3 00	3 00
Manure and fertilizer	20 81	19 97
Seed	3 15	2 93
Machinery	2 85	2 55
Manual labour	29 40	35 29
Horse or tractor labour	4 55	6 39
Total cost per acre	63 76	70 12
Yield per acre bush.	739	780·1
Cost per bushel cts.	8·6	8·7
Yield per acre tons	18·47	19·50
Cost per ton $	3 45	3 59

COST PER ACRE OF PRODUCING O.P.V.

—	1927	Average, 1922–1927
	$ cts.	$ cts.
Rent	3 00	3 00
Manure and fertilizer	20 81	19 97
Seed	4 50	4 75
Machinery	2 85	2 23
Manual labour	6 65	6 52
Horse or tractor labour	4 80	3 72
Kerosene and oil	0 60	0 54
Total cost per acre	43 21	40 73
Yield per acre tons	10·7	7·77
Cost per ton $	4 04	5 24

Summary—Comparison of Different Fodder Crops

Yield per Acre

Year	Corn	Sunflowers	Turnips	Mangels	O.P.V.
	tons	tons	tons	tons	tons
1922	19·92	20·80	21·28	17·59	5·01
1923	14·90	19·80	19·14	16·47	8·26
1924	13·31	18·13	13·41	19·62	4·95
1925	23·18	27·50	17·37	25·56	10·30
1926	16·86	17·44	16·63	19·30	7·40
1927	15·56	20·98	12·46	18·47	10·70
Average yield per acre	17·29	20·77	16·71	19·50	7·77

Cost per Acre

	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.
1922	60 78	63 73	69 34	69 89	47 37
1923	45 32	53 91	58 25	69 60	30 44
1924	56 57	69 70	69 34	72 08	41 46
1925	60 55	73 59	80 84	77 52	43 48
1926	54 93	61 25	66 35	67 90	38 43
1927	52 51	63 90	68 76	63 76	43 21
Average cost per acre	55 11	64 34	68 81	70 12	40 73
Average cost per ton	3 18	3 09	4 12	3 59	5 24

Cost per Acre of Producing Oats

Item	1927	Average, 1922–1927
	$ cts.	$ cts.
Rent	3 00	3 00
Manure and fertilizer	9 00	11 20
Seed	2 40	3 05
Machinery	2 85	2 22
Twine	0 45	0 55
Manual labour	6 08	7 58
Horse or tractor labour	3 40	3 73
Total cost per acre	27 18	31 33
Yield per acre: grain ... bush.	64·4	63·3
straw ... tons	1·3	1·31
Cost per bushel after deducting value of straw, at $6 per ton ... cts.	30·1	37·1

Cost per Acre of Producing Clover Hay

Item	1927	Average, 1922–1927
	$ cts.	$ cts.
Rent	3 00	3 00
Manure	6 00	6 17
Seed	1 81	3 71
Machinery	2 85	2 85
Manual labour	8 08	8 01
Horse labour	1 58	1 54
Total cost per acre	23 32	25 28
Yield per acre ... tons	3·1	2·76
Cost per ton ... $	7 52	9 16

GRAIN AND HAY YIELDS FOLLOWING DIFFERENT FODDER CROPS

In order to determine the crop yields following different fodder crops a record of the grain and hay yields from the respective areas in fodder crops in 1925 has been kept. The results are as follows:—

1925		1926			1927	
Crop	Yield per acre	Crop	Yield per acre		Crop	Yield per acre
			Grain	Straw		
			bush.	tons		tons
Corn	23·18 tons	Alaska oats	40·7	1·02	Clover hay	2·08
Sunflowers	27·5 "	Alaska oats	34·1	0·79	Clover hay	1·54
Turnips	694·8 bush.	Alaska oats	38·8	0·91	Clover hay	1·22
Mangels	1,022·5 bush.	Alaska oats	35·3	0·84	Clover hay	1·34
O.P.V.	10·3 tons	Alaska oats	49·4	1·12	Clover hay	1·84

CROP ROTATIONS

Rotations covering two to five years are being tested. Results as to yield, cost, and value per acre are being tabulated each year and will be published as soon as sufficient data of value are available.

HORTICULTURE

SMALL FRUITS

STRAWBERRIES

The strawberries planted in the spring of 1926 grew well and made an excellent plantation by autumn. However, they received considerable winter injury while the ground was bare in January and again in April. The very limited amount of rainfall at the time when the fruit was developing during June and July resulted in a very light crop of inferior berries.

TEST OF VARIETIES.—This test was conducted upon a light sandy loam of average fertility which had been previously planted to vegetables. Stable manure at the rate of 15 tons per acre were applied and ploughed under the previous autumn. This was supplemented by a 450 pounds per acre application of a commercial fertilizer made up of 150 pounds of nitrate of soda and 300 pounds of superphosphate, applied in the spring and worked into the soil just previous to planting.

Each variety was tested in duplicate plots. Eleven vigorous plants were set eighteen inches apart in the row, with the rows five feet apart.

The following table gives the results from this test over a period of five years. Under "Season", the letters E, M, and L indicate early, medium, and late, respectively. Under "Size", S, M, and L indicate small, medium and large, respectively; and under "Quality", P, F, G, and VG indicate poor, fair, good, and very good, respectively.

TEST OF VARIETIES, YIELDS PER ACRE

Variety	Season	Size	Quality	Crop, 1923	Crop, 1924	Crop, 1925	Crop, 1926	Crop, 1927	Average yield (5 years)
				qt.	qt.	qt.	qt.	qt.	qt.
Senator Dunlap	E	L	G	14,400	16,020	4,500	13,926	5,544	10,878
Early Jersey Giant	E	L	G	12,300	13,200	2,160	8,078	13,322	9,812
Rewastico	M	L	F	9,720	13,680	4,800	7,851	9,900	9,190
Desdemona	E	L	VG	12,540	9,900	1,140	7,128	11,682	8,478
Pocomoke	M	ML	G	11,520	9,120	1,620	8,448	9,372	8,016
Gold Mine	M	L	G	11,760	11,880	2,580	4,398	7,392	7,602
Kellogg Premier	E	L	G	14,340	12,240	2,820	8,025	6,800	8,845
Arnout	M	L	G	9,960	6,912	1,320	9,646	9,108	7,389
Ford	M	L	F	12,540	8,640	2,760	5,216	.....	*7,289
Dr. Burrill	E	M-L	G	7,920	7,980	3,120	6,204	10,824	7,209
Sample	L	M-L	P	7,800	9,840	2,400	5,871	9,504	7,083
McAlpine	M	L	G	11,100	8,160	2,340	4,989	7,524	6,823
Steven Late	L	L	P	8,940	9,360	3,960	5,475	5,280	6,603
Cordelia	M	M	F	12,420	7,800	1,320	5,744	5,346	6,526
Cassandra	M	L	G	11,100	9,900	900	4,820	5,676	6,479
New Globe	M	VL	P	12,120	8,640	480	4,514	6,393	6,429
Parson Beauty	M	M	F	10,620	6,120	3,780	3,828	7,260	6,322
Greenville	M	VL	P	11,400	6,600	1,140	5,216	6,336	6,138
Glen Mary	L	M	F	8,580	7,920	2,520	6,272	5,214	6,101
Magic Gem	M	M-S	F	8,460	8,040	1,320	5,772	5,874	5,893
Orem	M	M-S	P	9,840	7,080	1,560	6,336	4,422	5,847
Dornan	M	L	VG	8,460	4,020	540	9,491	5,757	5,654
Portia	L	M-L	G	11,160	8,040	480	3,960	4,158	5,559
Lavinia	M	L	VG	8,760	5,280	540	5,280	6,138	5,199
Prize	L	L	G	9,600	7,800	1,800	2,967	2,576	4,949
Maggie	E	S	F	10,560	5,400	240	3,632	4,857	4,938
Ophelia	M	L	G	6,480	4,440	600	6,135	6,996	4,930
Brandywine	M	L	G	7,040	4,980	1,020	3,168	4,884	4,218
Jessie	L	VL	G	3,180	6,600	660	4,224	5,214	3,976
Amanda	L	L	G	7,500	4,620	240	1,320	2,904	3,317

*Four-year average.

NITRATE OF SODA AS A TOP-DRESSING IN SPRING.—The test to determine the value of spring applications of nitrate of soda to strawberries during their fruiting year was continued in 1927. The variety used in this test has been Senator Dunlap. A uniform area in the plantation is selected and divided into three equal parts which are treated as outlined below. The results when averaged over a period of five years would indicate that an application of 100 pounds of nitrate of soda per acre applied broadcast over the plantation after the strawberry plants have started growth in the spring, will materially increase the yield of fruit. Applications heavier than this have not increased the yield sufficiently to pay for the extra nitrate used. The results are as follows:—

NITRATE OF SODA AS A TOP-DRESSING TO STRAWBERRIES IN SPRING OF FRUITING YEAR

Nitrate of soda, per acre	Crop, 1923	Crop, 1924	Crop, 1925	Crop, 1926	Crop, 1927	Average yield (5 years)
lb.	qt.	qt.	qt.	qt.	qt.	qt.
200	11,880	8,820	4,260	5,082	4,620	6,932
100	8,280	10,440	4,620	4,686	4,356	6,476
None	3,660	7,380	2,160	2,838	4,224	4,052

NITRATE OF SODA AS A TOP-DRESSING IN AUTUMN.—To determine the value of an application of nitrate of soda to strawberries late in August or early in September to insure greater productiveness in the following crop five uniform plots in duplicate were chosen. The plots were each divided into two parts, one half receiving nitrate of soda at the rate of 100 pounds per acre, the other half receiving nothing. The nitrate was applied on August 26. The following is a list of the varieties used with the comparative yields.

NITRATE OF SODA AS AN AUTUMN TOP-DRESSING FOR STRAWBERRIES

Varieties	Average yield per acre	
	Nitrate top-dressing	Without nitrate top-dressing
	qt.	qt.
Brandywine	5,016	4,530
Parson Beauty	7,656	6,864
Arnout	9,240	8,976
Desdemona	13,073	10,423
Kellogg Premier	7,128	5,681
Average	8,423	7,295
Increased yield where nitrate was used	1,128	

NITRATE OF SODA VS. CYANAMID AS AN AUTUMN TOP-DRESSING FOR STRAWBERRIES.—To compare the fertilizing value of Cyanamid with nitrate of soda as an autumn fertilizer to stimulate fruit bud formation in strawberries a test was started in the autumn of 1926. A uniform area of Senator Dunlap was divided into three equal parts. Nitrate of soda at the rate of 163·3 pounds per acre was applied to one area, Cyanamid at the rate of 114·3 pounds per acre was applied to another area, and the third area was left unfertilized. The fertilizer was applied August 26. As nitrate of soda contains 15 per cent of nitrogen and Cyanamid 21·4 per cent, the above amounts provided the same quantity of nitrogen per acre. The following yields were recorded: nitrate of soda plot, 14,916 quarts per acre; Cyanamid plot, 14,190 quarts per acre; plot not fertilized, 13,992 quarts per acre.

RASPBERRIES

Newman No. 23 is an early, hardy, productive variety, with an attractive crimson-red berry of large size and good quality. Newman No. 20 is later in season, a larger berry of more attractive colour and slightly better quality, is firmer, and hence a better shipper than No. 23, but is not so productive. These two varieties have yielded better than Cuthbert or Eaton.

When a new plantation is contemplated the greatest care should be taken to obtain disease-free canes, and after the plantation becomes established care should be taken to eliminate any diseased plants that may appear.

The following table gives the yields per acre recorded during the last five seasons.

RASPBERRIES, TEST OF VARIETIES

—	Crop, 1923	Crop, 1924	Crop, 1925	Crop, 1926	Crop, 1927	Average
	qt.	qt.	qt.	qt.	qt.	qt.
Eaton	.....	.....	544·5	1,845·3	2,268·7	1,552·8
Newman No. 23	539·4	1,512·5	3,919·0	4,877·8	4,204·7	3,010·7
Newman No. 20	506·7	899·9	2,510·0	3,244·3	3,193·8	2,070·9
Herbert	704·0	745·2	2,398·0	3,008·3	2,981·0	1,967·3

NITROGENOUS FERTILIZATION OF RASPBERRIES, AUTUMN VS. SPRING APPLICATION.—A test to determine the comparative value of Cyanamid and nitrate of soda applied in the autumn of the previous year, or in the spring of the fruiting year, was begun in the autumn of 1926. Duplicate plots of Herbert raspberries containing six rows each were used. (The entire area was given a

blanket application of 200 pounds of superphosphate and 50 pounds of muriate of potash per acre.) Similar fertilizers were applied during the spring of 1927. The results recorded were as follows:—

RESULTS WITH FERTILIZERS ON RASPBERRIES

Row	How fertilized, pounds per acre	When applied	Average yield per acre
			qt.
2	Nitrate of soda, 227	August, 1926	2,997
3	Cyanamid, 159	August, 1926	3,607
4	Nitrate of soda, 227	May, 1927	3,342
5	Cyanamid, 159	May, 1927	3,131
1, 6	No nitrogenous fertilizer		3,158

BLACK CURRANTS

Of the three varieties of black currants under test at this Station, Black Victoria has proven the most productive. It is commonly stated by growers that seven years is the average length of profitable existence of this crop, and as the profitable life cannot be expected to commence before the third year it is highly important that really remunerative crops should be produced during the short existence of the bushes. Such crops have not been produced at this Station. The low yields may be attributed partly to yearly attacks of White Pine Blister Rust, which causes a considerable defoliation of the bushes in August. This disease has been partially controlled by sulphur dust applications at regular intervals from mid-May to mid-July. The low yields may also possibly be attributed to defective fertilization of the blossoms, as the fruit develops normally for a period and then commences to drop until only a berry or two is left on the raceme. The following are the results recorded, per acre.

BLACK CURRANTS, TEST OF VARIETIES

Variety	Crop, 1922	Crop, 1923	Crop, 1924	Crop, 1925	Crop, 1926	Crop, 1927	Total yield	Average yield
	qt.	qt.	qt.	qt.	qt.	qt.	qt.	qt.
Black Victoria	1,360·8	1,776·8	2,305·8	18·8	1,436·4	1,776·6	8,675·2	1,445·9
Boskoop Giant	378·0	644·6	1,171·8	132·3	2,532·6	415·8	5,275·1	879·2
Saunders 3 yr	113·4	1,058·4	1,209·6	.....	2,041·2	1,058·4	5,481·0	913·5
Saunders 1 yr	226·8	75·6	1,360·8	56·7	1,251·8	1,512·0	4,483·7	747·3

RED CURRANTS

Two varieties, Fay Prolific and Perfection, are grown at this Station. The low yields have been caused partly by attacks of currant leaf spot and also by faulty fertilization of the blossoms. The following yields have been recorded per acre:—

RED CURRANTS, TEST OF VARIETIES

Varieties	Crop, 1922	Crop, 1923	Crop, 1924	Crop, 1925	Crop, 1926	Crop, 1927	Average yield
	qt.	qt.	qt.	qt.	qt.	qt.	qt.
Fay Prolific	793·8	2,457·0	1,701·0	604·8	2,116·0	4,536·0	2,034·8
Perfection	302·8	1,625·4	1,247·4	917·2	2,419·2	5,292·0	1,967·3

GOOSEBERRIES

Two American gooseberries, Downing and Josselyn (Red Jacket), are the varieties grown. They were set in the spring of 1921 in rows five feet by five feet. They have become well established, and the heavy yields may be attributed to thorough annual pruning, freedom from disease and almost perfect fertilization of the flowers. The demand for this fruit upon our local markets has been limited. With the establishment of jam factories in this district this fruit should prove a profitable industry. The following table shows the yields recorded per acre.

GOOSEBERRIES, TEST OF VARIETIES

Varieties	Crop, 1922	Crop, 1923	Crop, 1924	Crop, 1925	Crop, 1926	Crop, 1927	Average yield
	qt.	qt.	qt.	qt.	qt.	qt.	qt.
Downing	1,450·0	7,514·1	10,164·0	3,158·0	7,949·7	15,282·3	7,586·3
Josselyn (Red Jacket)	1,341·1	4,846·0	3,630·0	3,920·4	7,005·9	9,029·8	4,962·5

TREE FRUITS

ORCHARD TREATMENT FOR STONE FRUITS.—The sod belt method is used in the stone fruit orchard, with a cultivated area between the rows. This orchard received in 1927 a light dressing of manure around the trees, which on the cultivated area was harrowed under in the early spring. A supplementary application of 500 pounds per acre of a fertilizer composed of 150 pounds of nitrate of soda, 300 pounds of superphosphate, and 50 pounds of muriate of potash was also given. Cultivation started May 4, and continued at regular intervals until June 25. The grass on the sod belt was cut June 8 and August 13, and mulched about the trees.

General orchard scene.

CONTROL OF INSECTS AND DISEASES IN STONE FRUIT ORCHARD.—Both plums and cherries were given a dormant spray April 25 with 1 to 10 lime-sulphur, for the control of plum pocket brown rot and other fungus diseases. These trees were sprayed June 8 and 20 with wetable sulphur-arsenate for the control of the cherry leaf-spot and the brown rot fungi, and canker worm and other insects. The plums were on August 2 given an additional application of dusting sulphur for the control of brown rot. Any black knot that appears is removed in the early autumn, and a thorough Bordeaux or lime-sulphur spray in the early spring aids in keeping this disease under control. This treatment resulted in a good crop of practically clean fruit.

CHERRIES

Cherries were only a fair crop in 1927. The sour variety, Montmorency, which is largely grown throughout this district for domestic purposes, was almost a failure. Sweet varieties produced a good crop, although the size was affected by continued drought during the growing season.

The sour cherries are the most satisfactory and profitable. They are more productive, hardier, and less susceptible to disease, effects of weather and depredations of birds than are the sweet varieties. Montmorency is the outstanding cherry of its class. It is larger, more productive, hardier and much better in quality than Early Richmond or Dyehouse, and practically as early. Of the Morello group Vladimir, Suda Hardy, and English Morello are the most productive varieties. The Morello cherries are characterized by the very dwarf habit of the trees and by the lateness of their fruit, which is practically immune to injury from birds. The fruit is a very dark red, with a rich blood-red flesh and juice, which makes it a favourite among many for canning purposes. Of the sour cherries tested at Kentville, Montmorency and Suda Hardy are recommended for planting.

Among the soft-fleshed sweet cherries Rockport, Coe Transparent, Governor Wood, Black Tartarian, Elton, Ida and Downers are the best varieties. It is doubtful if any of these would prove profitable in a commercial plantation, because of their destruction by birds, their susceptibility to rot during unfavourable weather conditions, and the variable colour, size, and attractiveness of the fruit, which does not stand up under handling. Of the varieties named, Black Tartarian, Coe Transparent and Ida are considered best for home orchards. Governor Wood has been found to be a good pollenizer among many varieties of sweet cherries that are self sterile. It is early and attractive to birds. Of the Bigarreau or firm-fleshed group of sweet cherries Napoleon, Mercer, Bing and Windsor can be successfully grown and find a ready demand in our local markets.

The Duke cherries are hybrids of the sweet and the sour cherries. Among these are found some of our most delicious cherries. May Duke, Empress Eugenie, Nouvelle Royale, Olivet and Royal Duke are the best in quality and the most productive. They have a long period of ripening, making necessary several pickings, a factor suiting them for the home garden, in which one or more of these varieties should be found.

The following table gives the dates of harvesting of the different varieties, and the yields to date. Further data as to colour, size, use, etc., are given in our 1926 report, page 22.

CHERRIES, TEST OF VARIETIES

Variety	Date of harvesting	Total yield single tree, 1918 to 1927, inclusive
		qt.
Montmorency Monarch	July 20—Aug. 4	417
Napoleon	July 15—Aug. 2	386·5
Early Richmond	July 10—July 28	356
Montmorency	July 19—Aug. 3	333
Governor Wood	July 7—July 21	318
Montmorency King	July 19—Aug. 4	303·5
Dowers Late Red	July 14—Aug. 3	301
Vladimir	July 13—July 30	299
Florence	July 3—July 23	283·5
Ida	July 7—July 23	278
Suda Hardy	July 26—Aug. 17	276
Mercer	July 20—Aug. 5	274
Baldwin	July 10—July 26	270
Black Tartarian	July 25—July 31	249
Royal Ann	July 15—Aug. 7	237
Timme	July 15—Aug. 2	230·5
Rockport	July 3—July 21	226
Paul	July 21—Aug. 6	224
Elton	July 6—July 23	222·5
English Morello	July 12—Aug. 15	201
Dyehouse	July 7—July 29	197
Windsor	July 21—Aug. 6	*
Elkhorn	July 13—Aug. 6	192
White Caroon	July 1—July 27	188
Belle Magnifique	Aug. 9—Sept. 13	182
Coe Transparent	July 5—July 19	176
Terry	July 6—July 31	164
Nouvelle Royale	July 14—July 29	159
Late Duke	Aug. 12—Sept. 23	152
Dikeman	July 16—July 26	127·5
Ostheim	July 12—Aug. 13	120
May Duke	June 30—July 26	112
Wragg	Aug. 4—Sept. 13	111
Louis Phillippe	July 13—July 26	110·5
Empress Eugenie	July 12—Aug. 10	109·5
Arch Duke	July 13—July 26	105
Waterloo	July 12—July 28	94
Kirtland	July 4—July 23	86
Olivet	July 18—Aug. 9	80·5
Marguerite	Aug. 11—Sept. 4	73
Royal Duke	July 14—July 26	72·5
Yellow Spanish	July 4—July 26	62
Early Purple Guigne	June 25—July 12	36
Lyons	July 14—July 27	24

*184 quarts to 1926.

PLUMS

TEST OF VARIETIES.—A good crop of plums was harvested at this Station in 1927. The fruit was of good average size, and well coloured. Weather conditions were favourable during late July and August for the outbreak of the brown rot fungus, but the preventative measures adopted resulted in a very satisfactory control of this disease. The crop of plums generally throughout the valley was light, resulting in a comparatively strong local demand. The establishment of a local jam factory at Cambridge Station aided the small growers materially in disposing of their plum crop at good prices. The factory demand was largely for Burbanks, Magnum Bonum, and Reine Claude varieties. On our local markets red and blue varieties, of good size, well coloured

and graded, are in demand. The varieties that are recommended for planting to supply the local trade are Burbank, Quackenboss, Freeman, Drap d'Or, Bradshaw, Miller Superb, Monarch, and Italian Prune.

The following table gives the dates of harvesting and the yields. Other particulars, as to colour, size, quality, etc., are given in our 1926 report, page 24.

PLUMS, TEST OF VARIETIES

Variety	Date of harvesting	Total yield single tree, 1919 to 1927, inclusive
		qt.
Burbank	Aug. 28—Sept. 18	865
Sheldrake	Sept. 2—Sept. 22	606
Arctic (Moore's)	Aug. 26—Sept. 15	605
Shiro	Aug. 13—Aug. 30	541
Hudson	Sept. 5—Oct. 2	467
Miller Superb	Sept. 5—Sept. 25	441
Quackenboss	Sept. 5—Oct. 4	425
Voronesh	Sept. 2—Sept. 18	362·5
Newark	Aug. 20—Sept. 9	352
Lombard	Sept. 21—Oct. 2	351
Freeman	Sept. 2—Oct. 3	348·5
Paul Early	Aug. 17—Sept. 4	345
Drap d'Or	Sept. 9—Sept. 27	325
Earliest of All	Aug. 1—Aug. 21	323
America	Aug. 30—Sept. 11	296
Reine Claude	Sept. 27—Oct. 4	290
Gueii	Aug. 28—Sept. 18	288
Yellow Japan	Sept. 21—Oct. 1	285
Diamond	Sept. 15—Sept. 27	271·5
Agen	Sept. 4—Oct. 3	271
Freestone Damson	Sept. 6—Oct. 4	261·5
Italian Prune (York State Prune)	Sept. 21—Oct. 3	235
Early Rivers	Aug. 22—Aug. 31	229
Empire	Sept. 9—Oct. 3	229
Transparent	Sept. 5—Sept. 25	225
Yellow Egg	Sept. 6—Oct. 8	221
California	Sept. 2—Oct. 24	220
Cling Stem	Sept. 5—Sept. 24	218
Imperial Epineuse	Sept. 6—Oct. 2	204
Red June	Aug. 10—Sept. 3	201
Belle de Louvain	Aug. 30—Sept. 4	200
Hector	Sept. 9—Sept. 27	194
Curlew	Aug. 28—Sept. 7	192
Tennant	Sept. 5—Sept. 18	189·5
Oullins	Aug. 28—Sept. 7	189
Palatine	Sept. 21—Oct. 2	188
Peters	Sept. 2—Sept. 24	183
Tatge	Sept. 19—Sept. 30	182
Monarch	Sept. 22—Oct. 5	181·5
Middleburg	Oct. 2—Oct. 24	178
Frost Gage	Sept. 5—Sept. 27	171
Green Gage	Sept. 9—Oct. 3	170
Monroe	Sept. 5—Sept. 29	155
Bradshaw	Sept. 9—Sept. 19	151
Shipper	Sept. 2—Sept. 24	149
Duane	Sept. 5—Sept. 25	147
Grand Duke	Sept. 25—Oct. 3	137
Abundance	Aug. 16—Aug. 31	136
Imperial Gage	Sept. 5—Sept. 19	132
Pond Seedling	Oct. 1—Oct. 24	119·5
Shropshire Damson	Sept. 5—Oct. 4	118
Chabot	Sept. 5—Sept. 21	117
Spaulding	Sept. 5—Sept. 18	111·5
Hale	Aug. 28—Sept. 6	111
Golden Drop	Sept. 16—Oct. 6	107
Washington	Sept. 10—Sept. 19	105
Jefferson	Sept. 1—Sept. 24	104
Czar	Aug. 15—Aug. 30	100
Climax	Aug. 15—Aug. 28	97
French Damson	Sept. 24—Oct. 4	92
October	Sept. 11—Sept. 21	88
Furst	Sept. 5—Sept. 24	85·5

PLUMS, TEST OF VARIETIES—*Concluded*

Variety	Date of harvesting	Total yield single tree, 1919 to1927, inclusive
		qt.
Tragedy	Aug. 28—Sept.18	76·5
Willard	Aug.16—Sept.12	74
Belgian Purple	Sept. 5—Sept.22	73
St. Catherine	Sept.30—Oct. 4	73
Pearl	Sept. 5—Sept.17	67·5
Georgeson	Aug. 2—Sept.11	66
Giant	Sept.20—Oct. 5	66
Wyant	Sept.20—Oct. 4	61·5
Arch Duke	Sept. 5—Sept.23	55
Guthrie Late	Sept.17—Oct. 4	47·5
Stella	Sept. 7—Sept.19	8
Gold	Sept.18—	3

DIFFERENT GRADES OF NURSERY STOCK.—To determine the relative value of different grades or sizes of plum trees as received from nurseries an experiment was started in the spring of 1913. Five trees of each four grades, $^{11}/_{16}$-inch, $\frac{5}{8}$-inch, and $\frac{1}{2}$-inch caliper, and 1-year-old stock, of both Burbank and Giant Prune, were planted as fillers in an apple orchard. The apple trees were set 40 feet by 40 feet, the plum fillers being set midway between the apple trees in one direction, leaving the orchard planted 40 feet by 20 feet.

The results obtained would suggest there is no material difference between the different grades. It was noticed, however, that the lower grade trees failed to make as satisfactory a start as did the more vigorous ones.

DIFFERENT GRADES OF NURSERY STOCK, AVERAGE RESULTS

Grade	Condition of tree	Size of tree	Diameter of tree	Total yield since planting	Per cent reaching bearing age
			in.	qt.	
Burbank—					
1 year	Good	Medium	6·25	330·2	80
½-inch	Good	Medium	6·13	252·0	80
5/8-inch	Good	Large	8·36	352·7	80
11/16-inch	Good	Large	6·01	373·6	100
Giant Prune—					
1 year	Medium	Small	4·30	152·4	80
½-inch	Fair	Small	4·48	143·2	60
5/8-inch	Poor	Small	3·61	111·8	60
11/16-inch	Poor	Large	5·82	106·2	60

APPLES

ORCHARD CULTIVATION.—All the orchards at this station with the exception of one small area were under some method of cultivation during 1927. The young orchards, with the trees set 40 feet by 20 feet, in 1912-1915, are low-headed, and do not permit of clean cultivation after the trees reach a certain

stage of development. Consequently during the last five years a sod strip ten to twelve feet wide, half on each side of the row, has been adopted. Outside of this sod strip an area 10 feet wide on each side of the row is cultivated frequently until early in July.

Sod Mulch Culture.—The opinion is growing generally throughout the Annapolis valley that a system of sod mulch culture could be advantageously adapted in our orchards. To determine the value of this practice an area of 3¼ acres of 30-year-old orchard was given a thorough, clean cultivation in 1926, limed at the rate of two tons of ground limestone per acre, thoroughly cultivated, fertilized with commercial fertilizer at the rate of 700 pounds per acre (200 pounds of nitrate of soda, 200 pounds of sulphate of ammonia, 200 pounds of superphosphate, and 100 pounds of muriate of potash), divided into four equal areas, and seeded down June 8 as follows (pounds per acre):—

Rates of Seeding for Sod Mulch Culture

Area 1	Area 2	Area 3	Area 4
Alfalfa, 5.	Kentucky Blue grass, 8.	Red top, 8.	Timothy, 8.
Red clover, 5.	Timothy, 5.	Timothy, 5.	Red clover, 5.
Timothy, 8.	Red clover, 5.	Red clover, 5.	Alsike, 5.
White Dutch clover, 2.	White Dutch clover, 2.	White Dutch clover, 2.	White Dutch clover, 2.

Orchard Fertilization.—Applications are made annually to the Station orchards. The fertilizers were applied in 1927 between May 4 and 10. The soil at this time was dried out sufficiently to permit of the first cultivation, and the buds were bursting. The mixture used was made up of 200 pounds of nitrate of soda, 200 pounds of sulphate of ammonia, 200 pounds of acid phosphate, and 100 pounds of muriate of potash. Trees 15 years old, set 40 feet by 20 feet or 54 trees per acre, received 378 pounds per acre. Those set 20 feet by 20 feet, 108 trees per acre, received 756 pounds per acre, while mature orchards 33 feet by 33 feet, 40 trees per acre, received 600 pounds per acre. The fertilizer was broadcast by hand to an area of soil about the tree extending three feet beyond the spread of its branches. In the mature orchard the fertilizer was sown with a distributor.

COMPARATIVE TIME OF BLOOM AND YIELDS OF STANDARD COMMERCIAL VARIETIES OF APPLES PLANTED 1912

The apple crop aggregated about 3,750 barrels at this Station in 1927. Gravenstein, McIntosh, King, Baldwin, Ribston and Wagener gave the best yields. The following table gives the yield of each variety with its date of full bloom as compared with Crimson Beauty, our earliest blooming variety.

COMPARATIVE TIME OF BLOOM AND YIELDS OF STANDARD COMMERCIAL VARIETIES OF APPLES, PLANTED 1912

Variety	Number of trees fruiting	Average number of days after full bloom of Crimson Beauty to full bloom of variety	Total yield lowest-yielding tree since planting	Total yield highest-yielding tree since planting	Total yield per acre, 54 trees, since planting	Total yield per tree since planting	
			pk.	pk.	bbl.	pk.	bbl.
Baldwin	41	5	10·50	104·75	264·79	53·94	4·90
Baxter	5	3	36·00	51·75	214·03	43·60	3·96
Ben Davis	19	5	81·25	136·00	554·08	112·87	10·26
Bishop Pippin	19	8	22·00	77·00	219·14	44·64	4·06
Blenheim	38	3	14·50	122·00	280·45	57·13	5·19
Cox Orange	11	4	32·50	106·50	357·83	72·89	6·63
Crimson Beauty	16	*	37·25	104·00	345·06	70·29	6·39
Duchess	15	*	57·00	116·00	401·61	81·81	7·44
Dudley (North Star)	2	2	91·50	143·50	576·80	117·50	10·68
Astrachan	6	*	51·00	79·00	317·03	64·58	5·87
Fallawater	21	5	30·50	123·50	346·09	70·50	6·41
Fameuse	20	3	59·50	199·00	720·80	146·83	13·35
Gano	16	7	66·75	190·00	616·09	125·50	11·41
Golden Russet	16	4	19·00	67·00	221·74	45·17	4·11
Gravenstein	19	1	25·50	207·00	462·78	94·27	8·57
Gravenstein, Banks	17	1	25·75	133·50	402·79	82·05	7·46
Greening (R.I.)	40	5	36·00	145·50	366·27	74·61	6·78
Hubbardson	8	4	55·50	139·75	412·02	83·93	7·63
King of Tompkins	29	4	3·00	80·25	201·71	41·09	3·74
McIntosh	20	2	32·75	185·75	487·22	99·25	9·02
McMahan	4	5	62·00	158·50	509·61	103·81	9·44
Milwaukee	20	*	90·00	214·50	728·11	148·32	13·48
Roxbury Russet (Nonpareil)	15	3	24·00	71·50	236·37	48·15	4·38
Northern Spy	38	8	1·50	149·25	269·80	54·96	5·00
Ontario	18	6	35·50	162·75	452·96	92·27	8·39
Ribston	35	4	32·50	140·66	455·47	92·78	8·43
Rome Beauty	17	8	81·00	202·75	583·93	118·94	10·81
Stark	17	3	49·00	170·50	599·69	122·16	11·11
Tolman Sweet	24	7	50·00	127·00	431·07	87·81	7·98
Wagener	37	2	15·00	132·50	421·30	85·82	7·80
Wealthy	46	4	52·00	154·00	540·09	110·02	10·00
Wellington	20	4	60·50	144·50	503·28	102·52	9·32
Wolf River	11	6	16·25	133·75	417·27	85·00	7·73
Yellow Transparent	17	*	54·25	114·75	417·32	85·01	7·73

*June 5, as for Crimson Beauty.

VEGETABLES

BEANS—BUSH VARIETIES

TEST OF VARIETIES.—Anthracnose reduces the yield of green beans very considerably after the first few pickings. Masterpiece, a green-podded early; Hodson Long Pod, a yellow-podded late; and Refugee or 1,000 to 1, a green-podded late, are the most resistant varieties. Davis White Wax, a yellow-podded early, is fairly resistant. Princess Artois, a green-podded, dwarf, early variety, tested for two years, has been resistant. This variety should be of value for small gardens, permitting of planting in rows 1½ feet apart. Twenty-nine varieties and strains were tested this year. These were planted in rows 2 feet 9 inches apart.

CULTURAL TESTS.—(1) Successional sowing. Two varieties were sown at intervals from May 25 to June 22, in rows 2 feet 9 inches apart, the seeds sown by hand 2 inches apart in the row. The sowing made the first week in June gave the highest yields, as will be noted below, where the yields are from single rows 16½ feet long.

SUCCESSIONAL SOWING OF BUSH BEANS

Variety and source of seed	When sown	First ready for use	Total yield of green pods	Yield of seed	Pods infected with Anthracnose Aug. 16	Seed infected with Anthracnose
			lb. oz.	lb. oz.	per cent	per cent
Stringless Green Pod (O. 5405)	May 26	July 28	16 4	0 14	90	24
"	June 2	" 28	18 8	1 2	60	20
"	" 12	Aug. 1	19 2	0 6	80	24
"	" 22	" 6	13 10	0 4	40	12
Round Pod Kidney Wax (C.E.F.)	May 26	July 29	9 10	0 6	100	46
"	June 2	" 30	10 12	0 4	100	50
"	" 12	Aug. 5	10 8	0 2	100	48
"	" 22	" 10	2 14	0 8	90	60

(2) Thinning to different distances between plants. Two varieties were sown May 25 with the sower, and the plants later thinned by hand to 2, 4, and 6 inches apart. Single rows, 16½ feet long, were used, the rows being 2 feet 9 inches apart. From the yields obtained (given below) it would appear that 6 inches is too far between plants.

BUSH BEANS THINNED TO DIFFERENT DISTANCES BETWEEN PLANTS

Variety and source of seed	Distance between plants	First ready for use	Total yield of green pods	Yield of seed	Pods infected with Anthracnose Aug. 16	Seed infected with Anthracnose
	inches		lb. oz.	lb. oz.	per cent	per cent
Stringless Green Pod (Graham)	2	July 30	6 14	0 8	100	24
"	4	Aug. 3	6 7	0 8	100	30
"	6	" 3	4 12	0 10	90	30
Round Pod Kidney Wax (McD.)	2	July 30	8 12	0 4	75	44
"	4	" 30	9 4	0 8	90	44
"	6	" 30	8 8	0 4	90	54

POLE VARIETIES

Eight varieties and strains of pole beans were grown in rows 5½ feet apart, 15 poles of each variety, this quantity making a row 8¼ feet long. One such row was used to obtain the weight of green pods, and a similar row to obtain the weight of seeds produced. The following data were obtained:—

POLE BEANS

Variety and source of seed	Height	First ready for use	Total yield of green pods	Yield of seed	Pods infected with Anthracnose	Seed infected with Anthracnose
	ft.		lb. oz.	lb. oz.	per cent	per cent
Golden Cluster (D. and F.)	12	Aug. 30	21 0	1 8	0	70
Golden Cluster (Dreer)	12	" 30	17 4	1 2	0	56
Kentucky Wonder Wax (Dreer)	12	" 10	16 2	0 14	0	*
Kentucky Wonder Wax (Wills)	12	" 10	15 12	0 14	0	*
Lima Pole Bean (Wolfville)	12	" 8	14 12	2 6	0	0
Exhibition Pole Bean (Kentville)	12	" 10	12 1	1 0	0	16
Garden King Pole (Webb)	9	" 12	10 2	1 10	10	24
No. 1 White Pole (O. 5964)	10	" 12	9 12	3 0	0	2

*Difficult to determine anthracnose present at time of threshing.

BEETS

TEST OF VARIETIES AND STRAINS, FIRST SOWING.—Sixteen varieties and strains of beets were sown May 9 in rows 2 feet apart, 8¼ feet long, and the plants thinned to 4 inches apart in the row. The variety Detroit Dark Red is easily the best variety we are testing.

SUCCESSIONAL SOWING.—Five successional sowings of beets, beginning May 9, were made. For winter use a sowing made June 14 or later in June is best. Even these roots are likely to be too large if left to grow as late as possible.

Variety and source of seed	Date sown	Ready for use	Number of marketable roots	Weight of marketable roots	Number of roots not marketable
				lb. oz.	
Detroit Dark Red (McD.)	May 9	July 30	28	8 8	4
" "	" 18	Aug. 5	26	6 0	6
" "	" 31	" 12	28	6 0	3
" "	June 8	" 19	25	6 0	5
" "	" 14	" 24	23	10 0	3

FALL VS. SPRING SOWING.—A sowing of Detroit Dark Red was made in the fall (November 9, 1926), and compared with one made the following spring (May 4). The spring sowing gave far better results. Nearly half of the plants from the fall sowing were going to seed early in July.

CABBAGE

SUCCESSIONAL SOWINGS.—Two varieties, Copenhagen Market (early) and Extra Amager Danish Ballhead (late), were used. The last two sowings, June 8 and 14, were too late for the Danish Ballhead, the heads not forming before frost. The following records were obtained:—

Variety and source of seed	Date of sowing	Date of transplanting	Ready for use	Weight of three average heads
				lb. oz.
Copenhagen Market (Graham)	May 9	June 22	Aug. 18	Aug. 31 9 8
" "	" 18	" 25	" 20	10 0
" "	" 31	" 25	" 31	7 4
				Oct. 13
" "	June 8	July 3	Sept. 24	7 10
" "	" 14	" 12	Oct. 7	7 0
Extra Amager Danish Ballhead (O. 8619)	May 9	June 22	" 6	12 0
" "	" 18	" 25	" 6	10 8
" "	" 31	" 25	" 13	6 0

FALL VS. SPRING SOWING.—A sowing was made in the fall of 1926 to compare with a sowing to be made the following spring, but the fall-sown seeds failed to germinate.

SAVOY AND RED CABBAGES.—A few varieties of each of these were grown. Best of all seems a good Savoy, and Danish Delicatesse and Red Danish Stonehead good red varieties.

CAULIFLOWER

The season was not favourable for cauliflowers, most of the plants being stunted, with very small heads, and the late varieties heading prematurely. A

sowing made inside April 1 and the plants set out May 10 gave a fair crop, but results were poor from the outside sowing, made May 9. Danish Dryweather, Danish Perfection, and Early Snowball gave the best yields.

CARROTS

A first sowing, made May 9, was badly injured by the carrot rust fly. The second sowing, made June 15, gave good roots for winter use. Judging from these records and from the records of the successional sowings made between these dates, June 8 to 15 seems the best time to sow to escape the rust fly. Records of the second sowing, taken October 12 and obtained from one row 16½ feet long of each variety, are given below.

FALL VS. SPRING SOWINGS.—The variety Chantenay, sown November 9, 1926, gave plants that were ready for use earlier, and seemed to withstand the rust fly better than did a comparable sowing made the following spring.

CELERY

METHODS OF BLANCHING.—Several methods of blanching, boards, roofing paper, earth, and growing the plants 6 inches apart each way in a solid bed 6 feet square, were tried. A double row 9 inches wide blanched with boards gave the best results. The rows blanched with earth gave a better crispness, but were somewhat discoloured.

STORAGE TEST.—The celery crop, with the roots removed, was stored November 10 in sand, in a cool cellar with an average temperature of about 34 degrees F. No heart rot developed, but the outer stalks rotted badly. Records of the varieties that kept best are given below.

RESULTS OF STORAGE TEST WITH CELERY

Variety and source of seed	Average weight	
	Single head, Nov. 10	Three heads, Dec. 23
	lb. oz.	lb. oz.
Rose Ribbed Self Blanching (Vaughan)	1 12	1 1
Evans Triumph (D. and F.)	3 8	4 0
Golden Self Blanching (James)	2 4	1 6
Golden Self Blanching (McD.)	1 6	1 8
Golden Self Blanching (O. 3410)	1 7	1 10
Golden Self Blanching (Rice)	2 0	1 12
Golden Wonder (Morse)	2 12	1 0
Golden Plume (Rice)	2 6	1 8
Golden Plume (Graham)	2 4	0 14
White Plume (Graham)	2 9	1 6
Winter King (Graham)	2 14	2 0
Golden Self Blanching (McD.)—Boards, double row	2 2	1 8
Golden Self Blanching (McD.)—Boards, single row	2 9	1 10
Golden Self-Blanching (McD.)—Roofing	1 12	1 10
Golden Self Blanching (McD.)—Earth	2 8	2 8

CORN

TEST OF VARIETIES AND STRAINS.—Twenty-seven varieties and strains were sown May 30 in rows 3½ feet apart, and the plants later thinned to about 7 inches apart in the row. Both ear and stalk borers were noticed during the season, the ear borer being found on seven per cent of the crop.

SUCKERING TEST.—Early Malcolm and Golden Bantam were grown in hills 3 feet apart, 5 plants to a hill. Removing the suckers increased the crop of Golden Bantam and decreased that of Early Malcolm. The ears on the plants from which the suckers were removed were not larger than those on the other plants.

SOWING INSIDE.—Three varieties were sown May 14 in the greenhouse and planted in the field June 7. The plants did not do very well but gave a fair crop of good ears two weeks earlier than the same varieties sown in the field.

CUCUMBERS

Ten varieties and strains were sown May 31 in rows 16½ feet long, 12 plants to a row, and the rows 10 feet apart. The yields of the best five are given below.

Two varieties of gherkins and two of pickling cucumbers were also grown, and are recorded below.

VARIETY TEST OF CUCUMBERS AND GHERKINS

Variety and source of seed	Yield to Sept. 16		Total yield of marketable fruit	
	lb.	oz.	lb.	oz.
Improved Long Green (Rice)	17	8	159	7
Early Fortune (Rice)	16	14	143	6
Improved Long Green (McD.)	21	12	138	8
Extra Early White Spine (Burpee)	19	8	136	0
Davis Perfect (Graham)	10	12	121	6
Gherkin (Ferry)	.....		13	6
Gherkin (Burpee)	.....		8	14
Jersey Pickling (Ferry) 33-ft. row	7	8	57	7
Snows Pickling (Rennie) 33-ft. row	8	6	51	10

LETTUCE

TEST OF VARIETIES AND STRAINS.—Successional sowings were made from March 19 to July 7, and records taken by weighing six average heads when ready for use. All plants were spaced about 9 inches apart in the row. The sowing made March 19 took 13 to 14 weeks to come to maturity; that made April 1 took 12 to 13 weeks; the one made April 25 took 11 to 12 weeks; that made May 9 (the first sowing outside), took 9 to 11 weeks; that made May 31, 8 to 9 weeks; that of June 15, 8 to 9 weeks; and that of July 7, the last sowing, 7½ to 9 weeks. Some plants of each variety in the field sowings were transplanted, thus retarding the date of maturity from 10 to 14 days. By successional sowings it is possible to have lettuce from the end of June to the end of September.

Of the twenty varieties and strains tested, one variety only, Denver Market, seems unsuited to this locality. All Heart has been a consistenly good variety. New York, Crisp as Ice and Iceberg are also good sorts. Grand Rapids is one of the best open-headed varieties. The Cos type is excellent and of distinctive flavour.

FALL VS. SPRING SOWING.—A sowing was made in the fall of 1926, but the germination was very poor, so that no comparison could be made with a spring sowing.

ONIONS

TEST OF VARIETIES AND STRAINS.—Field sowings at this Station do not allow the onion bulbs to ripen properly for winter storage, so that the main test of varieties is made from a sowing inside about the 20th of March. Thirty varieties and strains were tested this year. These were sown March 19, and planted to the field May 11, in rows one foot apart, the plants 3 inches apart in the row. Cranston Excelsior is the earliest variety. For storage purposes Yellow Globe Danvers is the best yellow, and Southport Red Globe and Red Weathersfield the best reds. Yields of the best eighteen varieties, from single rows 16½ feet long, are given below.

RESULTS OF VARIETY TEST OF ONIONS

Variety and source of seed	Number of marketable bulbs	Weight of marketable bulbs	Number of unmarketable bulbs
		lb. oz.	
Cranston Excelsior (Wilson strain) (D. & F.)	61	30 0	1
Cranston Excelsior (Ewing)	54	26 0	3
Select Globe Danvers (Rice)	61	25 8	
Yellow Globe Danvers (D. & F.)	64	25 0	1
Southport Select Yellow Globe (Rice)	56	24 8	
Large Red Wethersfield (Graham)	72	24 8	
Early Flat Red Wethersfield (Graham)	68	24 0	1
Large Red Wethersfield (O. 8615)	70	24 0	
B. C. Globe C (McMeans)	56	23 0	
B. C. Globe B (McMeans)	57	23 0	3
Extra Select Large Red Wethersfield (D. & F.)	71	23 0	
Giant Prizetaker (Graham)	46	22 8	6
Danvers Yellow Globe (Steele, Briggs)	52	22 0	
Yellow Globe Danvers (Graham)	59	22 0	
B. C. Globe A (McMeans)	52	22 0	1
Danvers Yellow Globe (James)	59	22 0	
Red Globe Prizetaker (Graham)	65	22 0	
Southport Red Globe (D. & F.)	61	22 0	

MULTIPLIER OR POTATO ONION.—This is a very satisfactory onion for the home garden, as the bulbs are very firm, mature early, and keep without loss throughout the year. It is grown from a small bulb or set, which does not develop into one large bulb but into several small bulbs. The largest bulbs give the best yields. Bulbs planted the latter part of April or early May will mature in August. A 33-foot row, with the bulbs 3 inches apart in the row, will yield from 15 to 18 pounds of bulbs.

ONION SETS.—Onion sets are grown for early bunch onions. Both red and yellow sets were planted April 23 in rows 1 foot apart, the sets 3 inches apart in the row. The best yields (marketable bulbs) were obtained from the small- and medium-sized sets, as many of the larger sets (1 inch in diameter) went to seed.

STORAGE TEST.—Twenty-five bulbs of each variety were stored September 15 in flats in a cellar with a temperature of 38 to 40 degrees, till March 19. Records of eight of the best keepers are given below:—

RESULTS OF STORAGE TEST WITH ONIONS

Variety and source of seed	Date when sown	Storage record, March 19			
		Number of bulbs sound	Number of bulbs partly sound	Number of bulbs rotted	Number of bulbs growing
Cranston Excelsior (D. & F.)	Mar. 19	23	2	.....	
Large Red Wethersfield (D. & F.)	Mar. 19	23	.....	2	1
Cranston Excelsior (D. & F.)	Feb. 12	22	1	2	
Large Red Wethersfield (D. & F.)	Feb. 20	21	.....	4	2
Danvers Yellow Globe (James)	Mar. 19	21	.....	4	1
Southport Yellow Globe (Rice)	Feb. 28	20	.....	5	1
Mammoth Prizetaker (D. & F.)	Feb. 20	19	3	3	
Denia (18 bulbs stored) (D. & F.)	Feb. 12	18	.....	.....	1

PARSNIPS

TEST OF VARIETIES AND STRAINS.—Five varieties and strains were sown May 9 in rows 2 feet apart, and the plants thinned to 4 inches apart in the row. The season seems to have suited this vegetable, as may be seen from the table.

RESULTS OF VARIETY TEST OF PARSNIPS

Variety and source of seed	Number of marketable roots	Weight of marketable roots	Number of unmarketable roots
		lb. oz.	
Elcombe Improved Hollow Crown (Graham)	47	29 4	3
Hollow Crown (Graham)	33	22 8	6
Hollow Crown (O. 8695)	35	21 12	4
Cooper Champion (D. & F.)	46	19 4	7
Dobbie Select (Ewing)	41	17 0	6

SUCCESSIONAL SOWING.—Five sowings were made of the variety Hollow Crown in single rows 16½ feet long. It would seem from the yields that from early May to the middle of the month is the best time to sow this vegetable.

RESULTS FROM SUCCESSIVE SOWINGS OF PARSNIPS

Variety and source of seed	Date of sowing	Number of marketable roots	Weight of marketable roots	Number of unmarketable roots
			lb. oz.	
Hollow Crown (Graham)	May 9	37	16 12	8
" "	May 18	25	11 8	10
" "	May 31	41	12 4	13
" "	June 8	47	14 0	16
" "	June 14	38	9 8	18

FALL VS. SPRING SOWING.—A sowing was made in the fall (November 9), but the seeds did not germinate.

PEAS

TEST OF VARIETIES AND STRAINS.—Twenty varieties and strains were sown April 22, in rows 3 feet apart. The plants were thinned to 1 inch apart, and yields taken from single rows 33 feet long of each variety. Duplicate rows were left unpicked, from which the yields of seed were obtained.

The best varieties to grow not requiring staking are Thomas Laxton, Pioneer, Laxtonian, Laxton Superb, Lincoln, Blue Bantam, English Wonder, and McLean Advancer. Good tall-growing varieties that do better if staked are Gradus, Telephone, Stratagem, Market Gardener, and Seedling No. 3. The edible pod pea made a rank growth, but was not considered to be equal to the ordinary pea in quality.

THINNING TO DIFFERENT DISTANCES.—Three varieties, Thomas Laxton, English Wonder, and Stratagem, were sown thickly, and the plants thinned to 1, 2, and 3 inches apart, respectively, in the rows. In all cases the plants thinned to 1 inch apart gave the largest yield, and the pods on those thinned to 3 inches apart were very fine.

PUMPKIN, SQUASH, AND VEGETABLE MARROW

Four varieties and strains of pumpkin, fourteen of squash, and five of vegetable marrow were sown May 31 in hills 10 feet apart, three plants to a hill. Hubbard and Golden Hubbard are excellent squashes; Acorn is a small-fruited variety of good flavour. Long White Bush is one of the best vegetable marrows, and Sweet Sugar and Connecticut Field two of the best pumpkins.

SPINACH

Fifteen varieties and strains were tested. Of these, Bloomsdale is one of the best, giving large, deep green leaves. Big Crop, tested for the first time, is also a good cropper. King of Denmark, while not so bulky as these, is a good variety, because it does not go to seed so readiy as the others.

TOMATOES

TEST OF VARIETIES AND STRAINS.—Forty-one varieties and strains were sown inside March 30, and transplanted to the field May 28, in rows five feet apart, the plants 4 feet apart in the row, six plants of each variety forming a test plot. The following six varieties gave the best yields of ripe fruit to August 30: A.B.B. No. 2 (0·11390), 22 pounds, 4 ounces; Bolgiano (Bolgiano), 19 pounds, 4 ounces; Alacrity x Earlibell (0·9729), 18 pounds, 4 ounces; Alacrity x Hipper (0·9725), 16 pounds, 12 ounces; Prosperity (Bolgiano), 14 pounds; The Burbank (Buckbee), 13 pounds, 6 ounces.

TRAINING TO SINGLE STEMS AND STAKING.—Two varieties were planted in rows 2 feet apart, the plants one foot apart in the row and tied to stakes, all laterals being kept removed. Certain plants were topped above the second, third and fourth trusses of fruit respectively, and others were allowed to grow to full length, twenty-five plants of each, and these are compared in the table with six bush plants, which occupied approximately the same space as twenty-five plants trained to single stems. It will be noticed that the greatest yields of ripe fruit from both varieties were from the single-stem plants with four trusses, but as the pruning and staking take considerable time this practice is probably of value only in the home garden. It was noted that there were more cracked fruits on the pruned plants than on the bush plants.

RESULTS FROM DIFFERENT METHODS OF TRAINING TOMATOES

Variety and how trained	First ripe fruit	Yield of ripe fruit to Aug. 30	Total yield of fruit		
			Marketable		Not marketable
			Ripe	Green	
Alacrity (C.E.F.)		lb. oz.	lb. oz.	lb. oz.	lb. oz.
Single stem, two trusses	Aug. 10	31 6	59 12	.....	14 12
Single stem, three trusses	Aug. 12	30 0	90 0	7 8	14 0
Single stem, four trusses	Aug. 12	40 8	115 12	8 8	13 0
Single stem, full grown	Aug. 15	32 10	102 10	16 0	15 2
Bush plants	Aug. 23	11 4	75 0	7 6	22 12
Bonny Best (Stokes)					
Single stem, two trusses	Aug. 16	42 14	76 14	.....	4 4
Single stem, three trusses	Aug. 18	37 10	103 14	5 0	5 8
Single stem, four trusses	Aug. 18	34 4	121 0	9 0	5 10
Single stem, full grown	Aug. 18	28 2	87 4	17 12	5 2
Bush plants	Aug. 24	5 6	58 10	30 12	9 8

CEREALS

The spring of 1927 was fairly early. Some wheat was seeded April 23. The larger cereal plots were seeded May 9. Temperature during May was normal, precipitation above normal, and sunshine slightly below. Temperature in June was slightly below normal, and the rainfall amounted to only 1·27 inches, while the average for the month is 3·20 inches. Sunshine during the month was considerably above normal. July was a very wet month, the rainfall being 5·58 inches, which is 2·73 inches above the average. The rainfall in August amounted to 9·39 inches, being 6·31 inches above the average. September was practically normal as to temperature, rainfall, and sunshine. The dry weather during June had a depressing effect on the grain crops, and a heavy storm of wind and rain August 24 caused much lodging of grains and consequent loss.

The table below shows the mean temperature, precipitation and sunshine, April to September, inclusive, for 1927, and also for the previous thirteen years.

SOME WEATHER RECORDS DURING GROWING PERIOD, KENTVILLE

Month	Mean temperature		Precipitation		Sunshine	
	1927	Average, previous 13 years	1927	Average, previous 13 years	1927	Average, previous 13 years
	°F	°F	in.	in.	hr.	hr.
April	39·01	38·68	3·37	2·86	194·30	146·01
May	49·10	49·36	3·73	2·01	193·90	200·60
June	56·43	59·00	1·27	3·20	236·55	210·96
July	68·46	65·39	5·58	2·85	191·00	220·56
August	63·50	64·22	9·39	3·08	214·65	211·41
September	58·09	56·90	2·07	2·90	183·65	180·05

TEST OF VARIETIES

The land used for this test was in corn in 1926, and had been manured for that crop at the rate of 16 tons per acre. It was ploughed in the fall of 1926, and ground limestone at the rate of two tons per acre was applied in the spring of 1927, no fertilizer being used. The seed bed was prepared by disking with a tractor harrow, cultivating with a wheel spring-tooth cultivator, and smoothing with a smoothing harrow to break up lumps and provide a level surface for the grain drill in order that seed could be sown at an even depth. Grass seed (8 pounds of red clover, 8 pounds of timothy, and 2 pounds of alsike clover, per acre) was sown with the grain, and the Breed weeder drawn over the land to ensure better covering of the grass seed.

Four varieties of barley, two of wheat, and four of oats, including one hulless variety, were tested. The seed of the Victory, Banner and Alaska oats was given the dry formalin treatment for smut; the Liberty was dusted with Bayer's dust at the rate of two ounces to a bushel of seed. The wheat and barley received no smut prevention treatment, and very little smut was apparent in the crop. Banner, Victory, and Alaska oats were seeded at the rate of 3 bushels per acre, Liberty, 2½ bushels; wheat, 2 bushels; and barley, with the exception of Duckbill, at 2 bushels per acre. Duckbill has a large kernel, and was seeded at the rate of 2¼ bushels per acre. Liberty and Alaska oats and the barley varieties were cut August 18, and Huron wheat and Banner and Victory oats, August 22. The tables below give the yields per acre, 1927, and the relative yields of oats, barley, and wheat, 1914-1927.

CEREALS, TEST OF VARIETIES

Variety and source of seed	When ripe	Number of days to maturity	Height	Per cent stand	Yield per acre	
			in.		lb.	bush.
Oats—						
Victory	Aug. 23	106	40	98	2,008	59·1
Banner (Kentville)	Aug. 22	105	39	99	1,848	54·3
Alaska (10307)	Aug. 12	95	34	100	1,232	36·2
Liberty (O. 480)	Aug. 14	97	36	100	744	21·9
Barley—						
Chinese (O. 60)	Aug. 13	96	35	99	1,072	22·3
Gold Swedish	Aug. 18	101	32	99	808	16·8
Charlottetown No. 80	Aug. 16	99	36	97	784	16·3
Duckbill (O. 57)	Aug. 17	100	35	96	696	14·5
Wheat—						
Huron—reg'd	Aug. 22	105	39	98	1,128	18·8
Marquis (O. 15)	Aug. 19	102	18	73	432	7·2

RELATIVE YIELDS OF VARIETIES OF OATS, 1914-1927

Year	Yield of Banner, per acre	Percentage of yield of Banner			
		Victory	Daubeney	Liberty O. 480	Alaska
	lb.				
1914	1,981	.....	90·6	.....	.....
1915	1,872	108·8	63·5	.....	.....
1916	1,474	120·2	98·3	59·7	.....
1917	1,487	95·8	87·4	57·3	.....
1918	2,595	95·6	89·0	58·9	.....
1919	2,423	117·2	.....	47·5	.....
1920	2,539	102·1	.....	61·9	.....
1921	1,776	118·0	.....	108·5	.....
1922	2,052	108·2	.....	72·1	.....
1923	1,788	123·3	.....	66·1	.....
1924	2,594	105·1	.....	68·6	.....
1925	2,065	99·4	.....	69·4	70·8
1926	1,528	121·4	.....	105·2	90·1
1927	1,848	108·6	.....	40·2	66·6

RELATIVE YIELDS OF VARIETIES OF BARLEY, 1914-1927

Year	Yield of Charlottetown No. 80 (two-row) per acre	Percentage of yield of Charlottetown No. 80				
		Duckbill Ottawa 57 (two-row)	Gold Swedish (two-row)	Manchurian (six-row)	Canadian Thorpe (six-row)	Chinese Ottawa 60 (six-row)
	lb.					
1914	.....	.....	.....	(1,160 lb.)	(1,064 lb.)	.....
1915	.....	.....	.....	(1,074 lb.)	(844 lb.)	
1916	1,408	.....	.....	72·7	66·6	.....
1917	1,060	.....	.....	70·5	81·1	.....
1918	1,623	.....	.....	88·7	73·6	.....
1919	1,873	93·9	.....	84·8	.....	.....
1920	1,797	69·4	.....	62·3	.....	.....
1921	1,912	61·7	.....	.....	.....	.....
1922	2,171	68·2	.....	.....	.....	52·5
1923	1,122	62·8	.....	.....	.....	87·1
1924	1,789	100·7	.....	.....	.....	103·8
1925	1,575	61·1	.....	.....	.....	90·6
1926	1,936	73·1	52·8	.....	.....	68·1
1927	784	88·7	103·1	.....	.....	136·7

RELATIVE YIELDS OF VARIETIES OF WHEAT, 1914-1927

Year	Yield of Marquis per acre	Percentage of yield of Marquis		
		Huron (Ottawa 3)	Red Fife (Ottawa 17)	Charlottetown No. 123
	lb.			
1914	1,575	.....	87·9	.....
1915	994	.....	102·4	.....
1916	1,107	.....	95·3	.....
1917	899	.....	96·6	.....
1918	1,273	130·4	115·3	.....
1919	1,489	97·3	107·4	.....
1920	1,245	99·9	111·8	.....
1921	1,294	110·6	105·2	.....
1922	947	99·2	84·2	.....
1923	606	95·0	82·1	.....
1924	1,780	60·4	82·1	81·9
1925	1,199	90·6	94·1	90·0
1926	748	176·4	144·3	.....
1927	432	261·1	.....	.....

CEREALS IN ROD ROWS

Twenty-nine varieties of oats, eighteen of barley, and twenty-two of wheat were tested in rod rows in 1927. The yield of grain is low due to damage by wind and rain on August 24. The highest-yielding five varieties of oats were Victory, 29·2 bush.; Alaska, 26·8 bush.; Banner (Waugh), 25·3 bush.; Banner (Ottawa 49), 24·7 bush.; and Gold Rain, 23·5 bush. The highest-yielding five varieties of barley were Chinese (Ottawa 60), 25·4 bush.; Early Chevalier (Ottawa 51), 24·1 bush.; Charlottetown No. 80, 23·1 bush.; Feeder, 21·1 bush.; and Manchurian (Ottawa 50), 20·9 bush. The highest-yielding five varieties of wheat were Master (Ottawa 50), 11·8 bush.; Garnet (Ottawa 652), 10.8 bush.; White Russian (Sel.), 10·6 bush.; Prelude (Ottawa 135), 10·9 bush., and Whiteheads (C. 123), 10·1 bush.

FORAGE PLANTS

MANGELS, TEST OF VARIETIES AND STRAINS

The land on which these were grown was in flax in 1926. It was manured in the spring of 1927 at the rate of 15 tons per acre, ploughed by tractor and disked. A fertilizer made up of 75 pounds of nitrate of soda, 75 pounds of sulphate of ammonia, 350 pounds of superphosphate, and 100 pounds of muriate of potash was applied at the rate of 600 pounds per acre. The ground was then cultivated with a high-wheel cultivator, smoothed, and rows run with a horse-hoe. Seed was sown with a garden drill April 25 and 26. All varieties made fairly good growth until about the middle of September, but very little gain was made from that time until the roots were pulled. Harvesting was completed October 31. The yields per acre are given in the table below.

MANGELS, TEST OF VARIETIES AND STRAINS

Variety and source of seed	Average yield per acre			Dry matter per acre	
Seeded April 26	tons	lb.	bush.	tons	lb.
Giant Half Rose (D. & F.)	18	400	728·0	2	1,220
Yellow Leviathan (Bruce)	18	1,800	756·0	2	1,120
Mammoth Red Intermediate (Bruce)	25	400	1,008·0	2	1,080
Jumbo (Rennie)	24	300	966·0	2	940
Gate Post (Bruce)	17	1,800	716·0	2	860
Long Red Mammoth (Graham)	19	800	776·0	2	800
Eclipse (McKenzie)	23	1,400	848·0	2	740
Improved Tankard Cream (Rennie)	20	1,400	828·0	2	640
Giant White Feeding Sugar (Steele, Briggs)	20	800	816·0	2	620
Yellow Intermediate (Sutton)	20	1,000	820·0	2	600
Mammoth Long Red (D. & F.)	19	200	764·0	2	580
Danish Sludstrup (D. & F.)	20	600	812·0	2	240
Giant Yellow Intermediate (Bruce)	21	1,560	871·2	2	220
Giant Yellow Globe (Rennie)	20	1,000	820·0	1	1,700
Golden Tankard (D. & F.)	19	540	770·8	1	1,480
Golden Giant Intermediate (D. & F.)	24	40	960·8	1	1,260
Red Tankard (McDonald)	15	1,400	628·0	1	900
Danish Sludstrup (Ewing)	26	1,800	1,076·0		
Eclipse (McKenzie)	25	1,000	1,020·0		
Mammoth Long Red (Sutton)	19	–	760·0		
Giant Sugar (Rennie)	14	1,200	584·0		

CARROTS, TEST OF VARIETIES AND STRAINS

The treatment of the land for carrots was similar to that given the land where mangels were grown and the previous crop was the same. Seeding was done April 27, and was followed by heavy rain on the 28th, which made conditions favourable for germination, so that the plants showed above ground very quickly. Carrots this year were remarkably free from injury by insects, and were harvested in good condition October 31. The yields per acre are given below.

CARROTS, TEST OF VARIETIES AND STRAINS

Variety and source of seed	Average yield per acre			Dry matter per acre	
	tons	lb.	bush.	tons	lb.
Mammoth White Intermediate (Rennie)	17	400	688·0	1	1,500
Improved Short White (McDonald)	17	1,800	716·0	1	1,300
Improved Short White (Steele, Briggs)	17	1,200	704·0	1	400
Large White Belgian (Steele, Briggs)	13	800	536·0	1	980
Improved White Vosges (McDonald)	15	1,800	636·0	1	860
White Belgian (D. & F.)	15	800	616·0	1	840
Improved Half Long White (McKenzie)	13	1,800	556·0	1	720
Giant Green Top White (D. & F.)	13	120	522·4	1	600
Improved Intermediate White (Ewing)	15	–	600·0	1	420
Long Orange Belgian (Rennie)	10	1,120	422·4	1	400
Orange Giant (Carter)	11	1,600	472·0	1	280
New Yellow Intermediate (Ewing)	13	400	528·0	1	240
Long Orange Belgian (McKenzie)	8	1,400	348·0	0	1,920
White Half Long (MacFadyen)	8	120	322·4	0	1,520
Large White Vosges (Graham)	9	40	360·8	0	1,360
Long Red Surrey (Steele, Briggs)	6	1,980	279·6	0	1,320
Ontario Champion (Graham)	6	400	248·0	0	1,200

SUGAR BEETS

Tha treatment of the land for this crop, the dates of seeding and harvesting, and the previous crop on the land, were the same as for mangels. The yields per acre are given in the following table.

SUGAR BEETS, TEST OF VARIETIES AND STRAINS

Variety and source of seed	Average yield per acre					Per cent sugar in juice
	Green weight			Dry matter		
	tons	lb.	bush.	tons	lb.	
Shreiber & Son (Chemistry Division)	20	1,960	839·2	4	1,400	18·23
Horning (Chemistry Division)	17	40	680·8	4	200	18·52
Dieppe (Chemistry Division)	17	40	680·8	4	200	19·23
Home Grown (Chemistry Division)	15	1,140	622·8	3	1,500	18·66
Bielotzerkov I (Amtorg Corp.)	15	600	612·0	3	1,260	18·42
Ivanovka V (Amtorg Corp.)	15	200	604·0	3	1,040	19·14
Vierchniatchka (Amtorg Corp.)	13	1,440	548·8	3	800	19·25
Uladovka III (Amtorg Corp.)	13	1,440	548·8	3	720	19·11
Ivanovka IV (Amtorg Corp.)	13	120	522·4	3	160	18·97

TURNIPS, TEST OF VARIETIES AND STRAINS

The land on which these were grown was used in 1926 for experiments with hemp. After the hemp was harvested the land was ploughed, and during the late fall and early winter received a dressing of 20 tons per acre of manure. The land was disked and ploughed in the spring of 1927, and the seed bed prepared by disking, cultivating with a spring-tooth cultivator, and smoothing. Rows were run with a horse-hoe 30 inches apart, and the seed sown with a garden drill June 6. No commercial fertilizer was used on this crop. These roots were harvested October 28 and 31.

TURNIPS, TEST OF VARIETIES AND STRAINS

Variety and source of seed	Average yield per acre				
	Green weight			Dry matter	
	tons	lb.	bush.	tons	lb.
Ditmars (McNutt)	29	1,800	1,196	3	160
Wilhelmsburger (D. L. F.)	27	800	1,096	2	1,800
Jumbo Crimson Top (H. S. Co.)	22	800	896	2	1,460
Bangholm, Olsgaard (Hartman)	26	400	1,048	2	1,440
Bangholm Studsgaard (Hartman)	21	1,400	868	2	1,380
Selected Halls Westbury (Rennie)	25	1,200	1,024	2	1,280
Bangholm (G. S. S. Co.)	21	760	855	2	1,240
Shepherd's Golden Globe (Hartman)	22	1,140	903	2	1,200
Selected Magnum Bonum (Rennie)	23	800	906	2	1,040
Corning (Yarmouth Fruit Producers)	25	1,600	1,032	2	900
Bangholm (Christensen's Selected)	21	1,200	864	2	860
Hartley's Bronze Top (McDonald)	21	1,400	868	2	860
Durham (Steele, Briggs)	22	1,600	916	2	540
Bangholm (Rennie)	18	1,400	748	2	540
New Century (Rennie)	22	1,000	900	2	500
Invicta (Carter)	22	0	880	2	480
Derby (Rennie)	27	400	848	2	460
Halls Westbury (Bruce)	21	200	844	2	460
Best of All (Graham)	20	1,400	828	2	440
Invicta Bronze Top (Ewing)	22	1,800	916	2	400
Selected Westbury (Steele, Briggs)	20	600	812	2	380
Ne Plus Ultra (Dupuy & Ferguson)	21	1,200	864	2	380
Canadian Gem (Rennie)	19	200	764	2	340
Giant King (Bruce)	23	200	924	2	280
Bangholm (Kentville)	17	1,900	718	2	280
D. & F. Favourite (D. & F.)	22	600	892	2	160
Bangholm (D. & F.)	19	400	768	2	120
Good Luck (Steele, Briggs)	21	400	848	2	40
Crimson King (Suttons)	18	1,200	744	2	20
New Universal Purple Top (D. & F.)	18	800	736	1	1,980
Kangaroo (Rennie)	19	800	776	1	1,900
Canadian Gem (Steele, Briggs)	19	800	776	1	1,800
Champion Purple Top (Graham)	17	1,000	700	1	1,700
Kangaroo (Steele, Briggs)	18	420	728	1	1,700
Improved Jumbo or Elephant (Rennie)	16	1,400	668	1	1,480
Best of All (Rennie)	13	800	536	1	600

CORN FOR ENSILAGE, TEST OF VARIETIES AND STRAINS

Eighteen varieties and strains of corn for ensilage were grown. The land received the same preparation as that on which the turnips were grown, and the previous crop was the same. Seeding was done with the grain drill June 2. All varieties were harvested September 29. The extremely low yield of some varieties is due to faulty germination.

CORN FOR ENSILAGE, TEST OF VARIETIES AND STRAINS

Variety and source of seed	Average height	Source of maturity	Average yield per acre			
			Green weight		Dry matter	
	feet		tons	lb.	tons	lb.
Hybrid (Whimple)	6¼	Late milk	18	480	2	200
Burr Leaming (Carter)	8¼	Silk	17	1,400	1	1,700
Pride Yellow Dent (Disco)	7½	Early dough	18	1,800	1	1,440
Twitchell's Pride (Fredericton)	6¾	Late dough	11	400	1	1,340
Amber Flint (Whimple)	6¼	Late dough	12	880	1	1,200
Yellow Dent (Whimple)	7¾	Late milk	13	780	1	1,160
Northwestern Dent, N.D. Grown (McKenzie)	8	Late milk	13	1,800	1	1,040
Wisconsin No. 7 (Duke)	8	Silk	12	120	1	980
Ninety Day White Dent (Disco)	6	Late milk	11	1,200	1	740
North Dakota (Steele, Briggs)	6¼	Late milk	10	1,660	1	560
Longfellow (Duke)	7¼	Early milk	12	120	1	480
Northwestern Dent (Brandon)	7½	Late dough	8	140	1	440
Longfellow (Disco)	7	Early dough	10	520	1	320
Comptons Early (Duke)	5¾	Late milk	9	620	1	260
Golden Glow (Duke)	6½	Early dough	7	1,960	1	180
Leaming (Duke)	6¾	Late milk	7	800	0	1,740
Bailey (Duke)	5	Late silk	4	920	1	1,080

SUNFLOWERS, TEST OF VARIETIES AND STRAINS

The land on which these were grown was in O.P.V. in 1926. It was ploughed in the fall, manured the following spring at the rate of 16 tons per acre, disked, and again ploughed. After disking, a fertilizer made up of 100 pounds of sulphate of ammonia, 300 pounds of superphosphate, and 50 pounds of muriate of potash was applied at the rate of 500 pounds per acre, and well cultivated in. Seed was sown with a grain drill June 4. All varieties were harvested September 15.

SUNFLOWERS FOR ENSILAGE, TEST OF VARIETIES AND STRAINS

Variety and source of seed	Height at harvest	Stage of maturity	Average yield per acre			
			Green weight		Dry matter	
	feet		tons	lb.	tons	lb.
Mammoth Russian (McDonald)	8	35 per cent in bloom	29	80	3	1,280
Ottawa 76 (C.E.F.)	7	Seed early milk	19	720	2	860
Mammoth Russian (U. F. Cos.)	8	Mixed as to maturity	17	980	2	200
Giant Russian (Disco)	8	Mixed as to maturity	21	900	1	1,960
Mennonite (Rosthern)	6	Seed ripe	13	180	1	1,680

FLESHY AND OTHER PASTURE PLANTS

In order to test the value of rape and kale as supplementary pasture plants plots of each were grown in 1927 on land which had been in pasture for some years. Ploughing was completed June 20, and after disking manure was applied at the rate of 15 tons per acre. This was worked into the soil with a heavy tractor disk harrow and a spring-tooth cultivator. No commercial fertilizers were applied. The seed of rape and kale, as well as of Japanese millet, was sown on the level with a garden drill June 24. Germination was rapid and a good stand of plants was secured. Plots from each lot were cut September 15, with yields as given below.

FLESHY ANNUAL PASTURE CROPS

Variety of seed	Average yield per acre		
	Green weight		Dry weight
	tons	lb.	lb.
Rape, Broad Leaf Essex	6	1,120	1,580
Rape, Dwarf Essex	4	1,920	1,220
Kale, Thousand-headed	5	400	1,240

OTHER ANNUAL PASTURE CROPS

Variety of seed	Average yield per acre			
	Green weight		Dry weight	
	tons	lb.	tons	lb.
Millet, Japanese	9	1,040	1	1,500
O. P. V.	5	400	1	200

ALFALFA

Records were obtained from alfalfa seeded in 1921, 1922 and 1926. That seeded in 1926 came through the winter in good condition. During the summer considerable couch grass was in evidence, and it is apparent that this will shortly affect the stand adversely on this area. The first cutting was made July 4, at which time 20 per cent of the plants were in bloom. There was very little leaf spot, which so often causes a severe foliage drop before harvesting. The second cutting was made August 18, when about 7 per cent of the plants were in bloom, with little leaf spot in evidence. The crop was harvested with very little loss of foliage. The total alfalfa harvested was 14·95 tons. The following table gives the total yield from the two cuttings:—

RESULTS WITH ALFALFA

When sown	Green alfalfa	Cured hay	Dry matter
	tons	tons	tons
1921	9·60	3·20	2·16
1922	11·42	3·87	2·56
1926	11·80	3·92	2·65

RED CLOVER

Ten strains of red clover were grown in uniform plots which were seeded in the spring of 1926 without a nurse crop. The seed was sown in rows 12 inches apart with the hand seeder, and the treatment was similar on all plots. It will be noticed that the red clover from Southeast France, which usually is not hardy and invariably winter-kills badly, passed the favourable winter in excellent condition and gave the largest yield of any of the strains tested. The yields were as given in the table below.

RESULTS WITH RED CLOVER

Strain and source of seed	Yields per acre			Total cured hay
	Green weight			
	First cutting	Second cutting	Total	
	tons	tons	tons	tons
Welsh (Sutton)	3·44	3·44	6·88	2·33
Red (C. E. F.)	4·80	4·37	9·17	2·96
English (Sutton)	3·97	2·96	6·93	2·36
Chateauguay	3·60	3·36	6·96	2·42
Medium Late Swedish	6·48	2·96	9·44	3·02
Dauphine (Southeast France)	6·48	6·00	12·48	3·62
Late Red Swedish	4·96	1·68	6·64	2·11
Alta Swede	6·05	2·99	9·04	2·89
St. Clet (Quebec)	3·52	1·96	5·48	1·96
Plantagenet	4·08	1·92	6·00	2·07

WHITE CLOVERS

Four varieties of white clover were under test on plots given similar treatment. These were seeded in the spring of 1926. The following yield of green matter was obtained from these plots per acre:—

Strain and source of seed	Yield per acre, green weight		
	First cutting	Second cutting	Total
	tons	tons	tons
Stryno	7·20	5·40	12·60
Ladino (Idaho)	5·26	8·32	13·58
Mammoth (Sutton)	5·20	7·12	12·32
Wild White (English)	6·32	4·08	10·40

TIMOTHY

Four strains of timothy were tested, and gave yields as follows:—

Strains and source of seed	Yield per acre	
	Green weight	Cured weight
	tons	tons
Ohio 3937	5·68	2·82
Primus (Sweden)	6·08	2·96
Boon (C.E.F.)	4·72	2·01
Commercial	5·52	2·20

YIELDS OF HAY FROM DIFFERENT GRASS AND CLOVER MIXTURES

These areas were seeded with the different mixtures given below. Both plots were harvested on the same date. It will be noticed that the mixture usually used, containing 8 pounds of red clover and 2 pounds of alsike, gave slightly better returns than the one containing equal parts of red and alsike clovers. The yields were as follows:—

YIELDS OF HAY MIXTURES

Mixture used	Green weight per acre	Per cent dry matter	Dry matter per acre
	tons		tons
Timothy, 8 lb.; red clover, 8 lb.; alsike, 2 lb.	7·52	26·56	2·00
Timothy, 8 lb.; red clover, 5 lb.; alsike, 5 lb.	7·04	25·00	1·76

TURNIP SEED PRODUCTION

Stecklings grown in 1926 for seed production were stored in a pit during the winter of 1926-27. Some frost evidently entered the pit during the cold weather, and the roots were not in good condition upon removal for planting in the spring, there being a large percentage of dead crowns.

The land used for production of turnip seed was in flax in 1926, and was manured on the sod at the rate of 15 tons per acre and ploughed. The ground was well harrowed and cultivated, and a 4-9-9 fertilizer at the rate of 600 pounds per acre was applied and cultivated in. Rows were run with the plough and the roots set April 25. The weather after planting was cold and the roots remained dormant for a long time, very little growth being noticed until May 20. Very few of the central shoots developed as the growth started principally from the lower part of the neck of the root. The stand generally was poor. Cultivation sufficient to keep down weeds was maintained throughout the season, and the crop was harvested August 16. The total yield was 102 pounds, or at the rate of 408 pounds per acre.

EXPERIMENTS WITH FERTILIZERS

CALCITIC VS. MAGNESIAN LIMESTONE

This experiment was undertaken to ascertain whether magnesian limestone is as valuable in crop production as calcitic limestone. These materials were also compared with gypsum and hydrated lime. The test covered a four-year rotation: turnips, grain, clover hay, and timothy hay. The land was manured at the start with 16 tons of stable manure per acre, which was ploughed under and the land disked. The limestone was then applied and worked into the plots. Nitrate of soda at the rate of 150 pounds, and superphosphate at the rate of 300 pounds per acre were then applied to all the plots, including the check plots, and lightly harrowed in.

Turnips were seeded in 1924, and in 1925 grain, with clover and timothy. In 1926 two cuttings of clover were made, and the cured weight is calculated on the basis of a loss of 76 per cent from drying, which was the average loss according to the cured weights obtained. The hay crop in 1927 was largely timothy, which lost on the average 50 per cent of the green weight when cured for hay. The yields as given are calculated from the average of four plots located at different places in the field.

CALCITIC VS. MAGNESIAN LIMESTONE

Plot	How treated, 1924, tons per acre	Average yields per acre						
		Turnips, 1924	Oats, 1925		Clover, 1926, two cuttings		Timothy, 1927	
			Grain	Straw	Green weight	Cured weight	Green weight	Cured weight
		bush.	bush.	tons	tons	tons	tons	tons
1	Magnesian limestone, 2	500·4	58·8	1·90	13·90	3·33	3·52	1·76
2	Magnesian limestone, 4	554·8	64·9	1·88	14·09	3·37	3·84	1·92
3	Magnesian limestone, 6	567·6	63·0	2·09	14·99	3·59	3·84	1·92
4	Magnesian limestone, 8	528·0	62·1	1·94	13·90	3·33	3·68	1·84
5	Check, not treated	551·6	52·7	1·64	14·76	3·54	3·44	1·72
6	Calcitic limestone, 2	602·9	61·4	1·90	13·28	3·18	2·91	1·45
7	Calcitic limestone, 4	582·4	59·2	1·75	14·17	3·40	3·15	1·57
8	Calcitic limestone, 6	568·6	61·6	1·86	13·76	3·30	3·39	1·69
9	Calcitic limestone, 8	595·2	66·8	2·04	13·44	3·22	2·96	1·48
10	Check, not treated	570·8	64·3	1·82	15·04	3·61	2·75	1·37
11	Gypsum, 2	567·6	57·6	1·72	11·74	2·82	2·24	1·12
12	Gypsum, 4	572·8	58·3	1·63	10·30	2·47	1·92	0·96
13	Check, not treated	532·4	61·2	1·72	11·61	2·78	2·64	1·32
14	Hydrated lime, 1	529·2	63·0	1·74	11·53	2·76	2·80	1·40
15	Hydrated lime, 2	542·0	67·5	2·22	14·49	3·47	3·68	1·84
16	Hydrated lime, 3	532·5	64·9	2·20	15·41	3·70	3·76	1·88
17	Hydrated lime, 4	503·6	62·1	2·20	13·96	3·35	3·28	1·64
18	Check, not treated	497·2	61·4	1·78	12·64	3·03	2·56	1·28

MALAGASH SALT EXPERIMENT (1) (1924)

This experiment was started in 1924 on land in a fair state of fertility. Manure was applied that spring at the rate of 16 tons per acre, this being ploughed under and the ground disked and levelled. The salt and fertilizers stated in the table below were scattered broadcast and harrowed in before seeding to mangels and turnips in 1924. Since that time no additional treatment has been given. All plots were seeded alike in 1925, to oats, with clover and timothy. The yields per acre of turnips, mangels, oats, and clover and timothy hay as stated in the table below were calculated from the average yield of four plots in different parts of the field. The yield of clover hay in 1926 includes both a first and a second cutting. The cured weight was determined by allowing a loss of 72 per cent from drying. In 1927 the growth was principally timothy, and a loss of 50 per cent resulted from drying. One cutting only was made. These losses were arrived at from the averages of the cured weights secured.

MALAGASH SALT EXPERIMENT (1) (1924)

Turnips and mangels, 1924; oats, 1925; clover hay, 1926, and timothy hay, 1927

Plot	How treated, 1924, pounds per acre	Average yield per acre, 1924		Average yield oats per acre, 1925		Average yield of cured hay per acre	
		Turnips	Mangels	Grain	Straw	Clover, 1926, two cuttings	Timothy, 1927
		bush.	bush.	bush.	tons	tons	tons
1	Malagash salt, 200	592·0	736·0	59·9	1·52	4·78	2·40
2	Malagash salt, 400	678·4	672·0	70·5	1·65	4·97	2·48
3	Malagash salt, 600	710·4	780·8	70·5	1·70	4·94	2·48
4	Check, not fertilized	521·6	627·2	74·5	1·78	4·51	2·36
5	Common salt, 200	496·0	684·8	65·4	1·57	4·99	2·27
6	Common salt, 400	624·0	716·8	64·2	1·76	4·88	2·25
7	Common salt, 600	649·6	732·8	74·8	1·87	4·60	2·16
8	Check, not fertilized	518·4	681·6	60·0	1·69	4·19	2·24
9	Muriate of potash, 200	524·8	675·2	57·6	1·64	4·31	2·27
10	Muriate of potash, 400	617·6	745·6	71·7	1·68	4·80	2·36
11	Check, not fertilized	521·6	678·4	73·2	1·94	4·43	2·40
12	Malagash salt, 200; nitrate of soda, 200	528·0	710·4	70·5	1·88	4·32	2·27
13	Malagash salt, 400; nitrate of soda, 200	729·6	790·4	70·5	1·84	4·64	2·56
14	Malagash salt, 600; nitrate of soda, 200	742·4	828·1	71·2	1·77	4·40	2·20
15	Check, not fertilized	496·0	665·6	65·1	1·80	4·58	2·44
16	Malagash salt, 200; nitrate of soda, 200; superphosphate, 500	780·8	808·9	67·7	1·80	4·74	2·48
17	Malagash salt, 400; nitrate of soda, 200; superphosphate, 500	770·5	747·7	75·5	1·86	4·81	2·56
18	Malagash salt, 600; nitrate of soda, 200; superphosphate, 500	783·3	761·6	73·6	1·89	4·60	2·32

MALAGASH SALT EXPERIMENT (1) (1925)

This test was started in the spring of 1925 on land that had been in oats in 1924. The object of the experiment was to find out whether an application of Malagash salt is of value when seeding down to clover and timothy. This salt was also compared with the coarse salt usually found on the market. The yields of oats in 1925, clover hay in 1926, and timothy hay in 1927, as given below, have been calculated from the average production of four plots. The

yield of hay in 1926 is the sum of the first and second cuttings of clover. The 1927 yield was largely timothy, and one cutting only was made. The total green weight when cut is given, also the cured weight. The latter was determined by allowing a loss from drying of 72 per cent in 1926 for the clover crop, and of 50 per cent in 1927 for the timothy crop, these being the average losses according to the cured weights secured.

MALAGASH SALT EXPERIMENT (1) (1925)

Oats, 1925; clover hay, 1926; timothy hay, 1927

Plot	How treated, 1925, pounds per acre	Average yield of oats per acre, 1925		Average yield of clover hay per acre, 1926		Average yield of timothy hay per acre, 1927	
		Grain	Straw	Green weight, two cuttings	Cured weight	Green weight	Cured weight
		bush.	tons	tons	tons	tons	tons
1	Malagash salt, 200	52·9	1·56	11·53	3·23	3·76	1·88
2	Malagash salt, 400	56·2	1·59	10·80	3·02	3·07	1·53
3	Common salt, 200	46·8	1·39	11·04	3·09	3·28	1·64
4	Common salt, 400	51·5	1·58	13·72	3·84	3·63	1·81
5	Check, not fertilized	51·5	1·50	10·60	2·97	3·92	1·96
6	Malagash salt, 200; nitrate of soda, 100	65·1	1·97	12·76	3·57	4·03	2·01
7	Malagash salt, 400; nitrate of soda, 100	71·0	1·95	13·12	3·67	3·76	1·88
8	Check, not fertilized	52·7	1·68	14·28	3·99	3·44	1·72
9	Malagash salt, 200; nitrate of soda, 100; superphosphate, 300	71·7	1·98	13·12	3·67	4·67	2·33
10	Malagash salt, 400, nitrate of soda, 100; superphosphate, 300	64·2	2·00	11·10	3·11	4·75	2·37
11	Malagash salt, 200; nitrate of soda, 100; superphosphate, 300; muriate of potash, 50	53·4	1·57	16·21	4·54	4·80	2·40
12	Malagash salt, 400; nitrate of soda, 100; superphosphate, 300; muriate of potash, 50	64·2	1·88	17·37	4·86	4·96	2·48
13	Nitrate of soda, 100; superphosphate, 300; muriate of potash, 50	60·2	1·92	16·84	4·71	5·36	2·68
14	Check, not fertilized	49·8	1·40	14·90	4·17	5·52	2·76

MALAGASH SALT EXPERIMENT (2) (1925)

The land on which this test has been carried on was low in fertility and had been in grain previous to the start of the experiment in 1925. No fertilizers were used other than those mentioned in the table. These, with the salt, were applied to the soil and worked in before seeding to mangels and turnips in 1925. In 1926 these areas were seeded to oats, together with clover and timothy. The clover made a poor growth and the 1927 crop was very light. The total green weight of grass harvested is given, and also the cured weight. The latter is calculated on the basis of a loss of 70 per cent from drying. The yields per acre are calculated from the average of four plots.

MALAGASH SALT EXPERIMENT (2) (1925)

Turnips and mangels, 1925; oats, 1926; clover hay (cut July 16), 1927

Plot	How treated, 1925, pounds per acre	Average yield per acre, 1925		Average yield oats per acre, 1926		Average yield of clover per acre, 1927	
		Mangels	Turnips	Grain	Straw	Green weight	Cured weight
		bush.	bush.	bush.	tons	tons	tons
1	Malagash salt, 200	188·8	315·5	38·2	1·50	2·56	0·77
2	Malagash salt, 400	204·8	323·8	31·2	1·22	1·79	0·54
3	Malagash salt, 600	188·8	358·4	30·6	1·12	2·64	0·79
4	Check, not fertilized	163·2	362·2	35·3	1·38	2·16	0·65
5	Common salt, 200	172·8	381·4	36·5	1·48	3·20	0·96
6	Common salt, 400	214·4	343·0	35·3	1·26	2·75	0·82
7	Common salt, 600	211·2	349·4	31·8	1·22	1·60	0·48
8	Check, not fertilized	118·4	371·2	36·5	1·40	1·47	0·44
9	Muriate of potash, 200	153·6	266·2	31·8	1·16	2·16	0·65
10	Muriate of potash, 400	153·6	320·0	32·9	1·28	1·28	0·38
11	Check, not fertilized	121·6	321·9	36·5	1·30	1·44	0·43
12	Malagash salt, 200; nitrate of soda, 200	201·6	400·6	36·5	1·30	1·63	0·49
13	Malagash salt, 400; nitrate of soda, 200	240·0	352·0	37·1	1·42	1·52	0·46
14	Malagash salt, 600; nitrate of soda, 200	166·4	353·9	32·3	1·18	1·39	0·42
15	Check, not fertilized	182·4	307·2	35·3	1·30	1·95	0·58
16	Malagash salt, 200; nitrate of soda, 200; superphosphate, 500	256·0	443·5	32·9	1·18	1·92	0·58
17	Malagash salt, 400; nitrate of soda, 200; superphosphate, 500	323·2	437·1	35·3	1·30	2·72	0·82
18	Malagash salt, 600; nitrate of soda, 200; superphosphate, 500	332·8	400·6	34·7	1·26	2·27	0·68

GYPSUM AND SULPHUR EXPERIMENT

This test was undertaken in 1924, when the materials as stated below were applied. The test covered a four-year rotation: potatoes, grain, clover, and timothy hay. The object of the experiment was (1) to ascertain the effect of gypsum and sulphur on crop yields; and (2) to ascertain the effect of gypsum, sulphur, and superphosphate on the suppression of potato scab. There are approximately 100 pounds of sulphur in 550 pounds of gypsum, and the same amount in 890 pounds of superphosphate. Sulphur has been advised for use on soils infested with scab, and as this land had been limed twice at the rate of two tons per acre when seeding down in two three-year rotations, and had been in potatoes in 1923 with a slight scab infection noticeable in the crop, it was thought suitable for the experiment. Sulphur was applied to plots 5, 6 and 7 at the rate of 100, 200 and 400 pounds per acre. The gypsum applied to plots 1, 2, and 3 furnished approximately 100, 200 and 400 pounds of sulphur per acre, respectively, while the superphosphate applied to plots 8 and 9 supplied approximately 100 and 200 pounds of sulphur per acre, respectively. The land was in good fertility at the start of the experiment, and no plant food was supplied except to plots 8, 9, and 11. Plots 8 and 9 received 150 and 300 pounds of phosphoric acid, respectively, in the form of superphosphate. Plot 11 received 150 pounds of phosphoric acid as ground rock phosphate. Plots 15 and 16 each received 10 tons of manure per acre.

The land was well worked and the materials applied broadcast over the plots and worked in before planting, so that they were well mixed with the soil. The data covering potato scab are conflicting and from them no conclusions can be arrived at. The intention is to repeat this experiment with potatoes in 1929, making a small blanket application of a complete fertilizer over all the plots.

The crop yields as tabulated are calculated from the average yield of four plots treated alike but located at different points in the field. The cured weight of clover hay in 1926 was determined by allowing a loss of 76 per cent due to drying, which was the approximate loss as determined by the cured weights secured. The 1927 hay crop was practically all timothy, and the loss from drying was 50 per cent, as determined by the cured weights secured.

GYPSUM AND SULPHUR EXPERIMENT

Plot	How treated, 1924 pounds per acre	Potatoes, 1924		Average yield per acre					
		Average per cent of scab	Average yield per acre	Oats, 1925		Clover hay, 1926		Timothy hay, 1927	
				Grain	Straw	Green weight	Cured weight	Green weight	Cured weight
		p.c.	bush.	bush.	tons	tons	tons	tons	tons
1	Gypsum, 550	6·2	153·8	50·0	1·38	11·39	2·73	2·24	1·12
2	Gypsum, 1,100	6·7	144·6	50·3	1·39	11·21	2·69	1·92	0·96
3	Gypsum, 2,200	9·2	179·9	54·1	1·45	11·20	2·69	1·92	0·96
4	Check, not treated	7·0	130·6	50·3	1·21	9·69	2·23	1·44	0·72
5	Sulphur, 100	16·7	159·8	50·1	1·44	11·98	2·87	2·24	1·12
6	Sulphur, 200	9·7	171·9	56·0	1·45	11·36	2·73	2·24	1·12
7	Sulphur, 400	10·5	164·5	48·9	1·44	10·09	2·42	2·08	1·04
8	Superphosphate, 890	3·2	171·9	50·3	1·55	10·94	2·63	1·92	0·96
9	Superphosphate, 1,780	12·2	169·2	58·8	1·66	13·37	3·20	2·40	1·20
10	Check, not treated	3·7	144·5	54·8	1·48	12·73	3·06	2·24	1·12
11	Ground natural rock phosphate, 500	7·5	183·2	60·2	1·63	12·59	3·02	2·56	1·28
12	Ground limestone, 4,000	9·5	152·6	59·3	1·63	13·53	3·25	2·64	1·32
13	Sulphur, 200; ground limestone, 4,000	6·7	147·2	48·9	1·01	11·21	2·69	1·92	0·96
14	Check, not treated	12·7	163·9	53·1	1·52	12·27	2·94	1·95	0·97
15	Gypsum, 500; manure (10 tons)	9·5	198·5	55·3	1·69	12·76	3·06	2·16	1·08
16	Manure (10 tons)	6·5	176·4	54·1	1·65	12·70	3·05	2·00	1·00
17	Check, not treated	3·2	149·2	49·8	1·45	12·01	2·88	1·79	0·89

EPHOS BASIC PHOSPHATE EXPERIMENT

In 1925 an experiment, covering a three-year rotation of roots, grain and clover, was undertaken to determine the value of Ephos, an Egyptian rock phosphate, as compared with Bessemer imported slag and superphosphate. The land on which this test was conducted was of low fertility, and no fertilizers other than those stated in the table below were used. These were applied at the beginning of the rotation after the land had been worked, and were well worked into the soil before seeding to roots in 1925. In the spring of 1926 the area covered by this test was seeded to oats, with clover and timothy.

It will be seen from the table below that the yields have been low, and that the mangels were not so good as the turnips. Under poor soil conditions the turnip plant will make much better growth than the mangel, and is able to make better use of a phosphate not readily soluble than is the mangel. Ephos contains 27½ per cent of phosphoric acid which is not readily available to plants. The phosphatic materials supplied to each plot were the equivalent of 80 pounds of phosphoric acid per acre.

The green weight of clover hay is that obtained when freshly cut, and the cured weight is calculated by allowing a loss of 70 per cent due to drying, this being the average of the cured weights taken. The yields during the rotation are given in the table below, and are calculated from the average of four

plots treated alike at different places in the range used for this test. There were two series of check plots, making eight checks altogether, and the figures given for the check are the average of these eight plots.

EPHOS BASIC PHOSPHATE EXPERIMENT

Mangels and turnips, 1925; oats, 1926; clover hay, 1927

Plot	How treated, 1925, pounds per acre	Average yield per acre, 1925		Average yield oats per acre, 1926		Average yield of clover hay, per acre, 1927	
		Mangels	Turnips	Grain	Straw	Green weight	Cured weight
		tons	tons	bush.	tons	tons	tons
1	Ephos, 292	1·68	7·72	32·9	1·38	2·16	0·65
2	Superphosphate, 500	4·12	7·68	34·7	1·50	1·71	0·51
3	Bessemer slag, 500	4·56	7·04	34·1	1·48	2·43	0·73
4	Ephos, 292; nitrate of soda, 150; muriate of potash, 100	2·76	8·16	31·2	1·36	2·00	0·60
5	Superphosphate, 500; nitrate of soda, 150; muriate of potash, 100	6·35	9·48	33·5	1·46	2·80	0·84
6	Bessemer slag, 500; nitrate of soda 150; muriate of potash, 100	6·96	9·72	34·1	1·52	2·64	0·79
7	Nitrate of soda, 150; muriate of potash, 100	3·08	7·84	32·3	1·36	2·64	0·79
8	Check, not fertilized	2·00	6·34	32·0	1·43	2·12	0·64

AMMO-PHOS EXPERIMENT

An experiment covering a three-year rotation of turnips, grain and clover was started in 1926 to test the value of Ammo-phos, a fertilizer containing nitrogen and phosphoric acid in combination, as compared with nitrate of soda and sulphate of ammonia used with superphosphate or slag, and with or without muriate of potash. One grade of Ammo-phos contains 13 per cent of ammonia (10·7 per cent nitrogen) and 48 per cent of phosphoric acid, and another 20 per cent of ammonia (16·45 per cent nitrogen) and 20 per cent of phosphoric acid. The Sydney slag used contained 14 per cent of phosphoric acid. The fertilizer treatments, it will be noticed, are based on the plant food supplied in a stated quantity of the Ammo-phos products. Plots 1, 2, 8, 9 and 10 contain the equivalent in plant food of one ton of 2·7-12-0 (2·7 per cent of nitrogen and 12 per cent of phosphoric acid) mixed fertilizer; plots 3 and 4 the equivalent in plant food of one ton of 2·7-12-3 (2·7 per cent of nitrogen, 12 per cent of phosphoric acid and 3 per cent of potash) mixed fertilizer; plot 5 the equivalent of one-half ton of 2·7-12-0 mixed fertilizer; plots 6 and 7 the equivalent of one-half ton of 2·7-12-6 mixed fertilizer; plots 11, 12, 15, 16 and 17 the equivalent of one ton of 4·1-5-0 mixed fertilizer; plots 13 and 14 the equivalent of one ton of 4·1-5-3 mixed fertilizer, and plots 18 and 19 the equivalent of one-half ton of 4·6-10-6 mixed fertilizer per acre.

The land on which the test was conducted was uniform, but in a low state of fertility. The land was well prepared, after which the fertilizer was applied broadcast and worked into the various plots before seeding to turnips in 1926. In 1927 oats, with clover and timothy, were seeded. The yields as given in the table are calculated from the average of four plots located at different places in the area devoted to this experiment. Fourteen individual plots were left without treatment in different parts of the field to serve as check plots, and the figures given for the check are the average of these fourteen plots.

AMMO-PHOS EXPERIMENT

Plot	How treated, 1925, pounds per acre	Food plant supplied, pounds per acre			Average yield per acre		
		Nitrogen	Phosphoric acid	Potash	Turnips, 1926	Oats, 1927	
						Grain	Straw
					bush.	bush.	tons
1	Ammo-phos (13-48), 500	53·5	240	.....	561·6	30·6	0·94
2	Sulphate of ammonia, 255; superphosphate, 1,500	53·5	240	.....	697·6	37·1	0·77
3	Ammo-phos (13-48), 500; muriate of potash, 120	53·5	240	60	582·4	33·5	0·80
4	Sulphate of ammonia, 255; superphosphate, 1,500; muriate of potash, 120	53·5	240	60	596·8	34·7	0·81
5	Ammo-phos (13-48), 250	26·75	120	.....	556·8	34·7	0·73
6	Ammo-phos (13-48), 250; muriate of potash, 120	26·75	120	60	545·6	34·7	0·69
7	Sulphate of ammonia, 128; superphosphate, 750; muriate of potash, 120	26·75	120	60	545·6	36·7	0·80
8	Nitrate of soda, 356; superphosphate, 1,500	53·5	240	.....	654·4	39·4	1·05
9	Sulphate of ammonia, 255; Sydney slag, 1,714	53·5	240	.....	587·2	30·6	0·80
10	Nitrate of soda, 356; Sydney slag, 1,714	53·5	240	.....	556·8	30·0	0·75
11	Ammo-phos (20-20), 500	82·2	100	.....	614·4	32·3	0·73
12	Sulphate of ammonia, 391; superphosphate, 625	82·2	100	.....	681·6	34·7	0·95
13	Ammo-phos (20-20), 500; muriate of potash, 120	82·2	100	60	654·4	31·1	0·77
14	Sulphate of ammonia, 391; superphosphate, 625; muriate of potash, 120	82·2	100	60	728·0	33·9	0·77
15	Nitrate of soda, 548; superphosphate, 625	82·2	100	.....	673·6	32·0	0·94
16	Sulphate of ammonia, 391; Sydney slag, 7 4	82·2	100	.....	510·4	27·3	0·65
17	Nitrate of soda, 548; Sydney slag, 7.4	82·2	100	.....	553·6	34·7	0·75
18	Ammo-phos (13-48), 125; Ammo-phos (20-20), 200; muriate of potash, 120	46·0	100	60	534·4	33·0	0·81
19	Sulphate of ammonia, 219; superphosphate, 625; muriate of potash, 120	46·0	100	60	507·2	33·0	0·65
20	Checks, C 1 to C 14, not fertilized	.....	.....	.....	294·8	28·3	0·77

UREA (FLORANID) AND CYANAMIDE EXPERIMENT

Urea, sold under the trade name "Floranid," is a concentrated nitrogenous fertilizer manufactured in Germany by the fixation of atmospheric nitrogen, and contains approximately 45 per cent of nitrogen. Cyanamide contains approximately 20½ per cent of nitrogen, and is manufactured by the American Cyanamide Company at Niagara Falls by fixation of atmospheric nitrogen.

The object of the experiment is to determine the yields from the above materials as compared with nitrate of soda and sulphate of ammonia, when used in conjunction with superphosphate and muriate of potash. It will be seen from the table that plots 1, 2, 3 and 4 were treated at double the rate per acre of plots 6, 7, 8 and 9, respectively.

The land on which this experiment was conducted was low in fertility but uniform throughout. The land was worked thoroughly, and the fertilizer scattered broadcast and worked into plots. Planting was done ten days after the application of Cyanamide. Potatoes were planted in 1926, at which time the fertilizers as stated in the table below were applied. In 1927 oats, with clover and timothy, were seeded to the different plots. The yields per acre are calculated from the average of four plots, except in the case of the check plots, where six plots were used.

UREA AND CYANAMIDE EXPERIMENT

Plot	How treated, 1926, pounds per acre	Plant food supplied per acre			Average yield per acre				
					Potatoes, 1926			Oats, 1927	
		Nitrogen	Phosphoric acid	Potash	Marketable	Not marketable	Total	Grain	Straw
					bush.	bush.	bush.	bush.	tons
1	Nitrate of soda, 520; superphosphate, 1,000; muriate of potash, 240	78	160	120	210·9	13·3	224·2	26·3	0·68
2	Sulphate of ammonia, 380; superphosphate, 1,000; muriate of potash, 240	78	160	120	247·3	13·0	260·3	24·1	0·69
3	Cyanamide, 380; superphosphate, 1,000; muriate of potash, 240	78	160	120	226·6	18·1	244·7	28·8	0·79
4	Urea, 174; superphosphate, 1,000; muriate of potash, 240	78	160	120	233·3	15·6	248·9	30·1	0·77
5	Superphosphate, 1,000; muriate of potash, 240	.....	160	120	198·6	12·0	210·6	23·5	0·70
6	Nitrate of soda, 260; superphosphate, 500; muriate of potash, 120	39	80	60	172·8	11·6	184·4	24·5	0·67
7	Sulphate of ammonia, 190; superphosphate, 500; muriate of potash, 120	39	80	60	162·6	9·0	171·6	22·6	0·52
8	Cyanamide, 190; superphosphate, 500; muriate of potash, 120	39	80	60	181·6	13·3	194·9	24·3	0·67
9	Urea, 87; superphosphate, 500; muriate of potash, 120	39	80	60	172·0	11·6	183·6	21·2	0·63
10	Superphosphate, 500; muriate of potash, 120	.....	80	60	181·2	10·3	191·5	27·3	0·76
11	Urea, 174	78	.....	.....	148·0	9·6	157·6	28·2	0·77
12	Sulphate of ammonia, 380	78	.....	.....	151·4	8·0	159·4	26·4	0·67
	Checks (six), not fertilized	.....	.....	.....	109·8	7·4	117·2	17·9	0·51

NITROGENOUS FERTILIZERS ON GRAIN (1927)

An experiment covering a three-year rotation of grain, clover hay, and timothy hay was started in 1927 with the object of determining the relative value of the nitrogenous fertilizers offered to the trade and indicated in the table below. It was considered advisable to try these out with the principal phosphatic fertilizers sold, and to apply muriate of potash at the rate of 100 pounds per acre to all areas, including the check plots. The rates of application of the fertilizers used were such as to supply each plot with the same amount of nitrogen, phosphoric acid, and potash. The grain yields were calculated from the average production of three plots situated at different points in the field devoted to this test.

NITROGENOUS FERTILIZERS ON GRAIN

Crop, Alaska oats, 1927

Plot	Nitrogenous fertilizers used, pounds per acre	Average yield of oats per acre							
		Range A		Range B		Range C		Range D	
		Belgian slag, 500 lb. per acre		Sydney slag, 570 lb. per acre		Superphosphate, 500 lb. per acre		Ground limestone, 2 tons per acre	
		Grain	Straw	Grain	Straw	Grain	Straw	Grain	Straw
		bush.	tons	bush.	tons	bush.	tons	bush.	tons
1	Nitrate of soda, 150	18·8	0·64	22·6	0·60	14·1	0·65	20·7	0·60
2	Sulphate of ammonia, 110	18·8	0·77	21·6	0·62	19·6	0·59	20·8	0·60
3	Cyanamide, 110	25·4	0·66	19·6	0·66	21·2	0·79	22·6	0·60
4	Urea, 50	21·2	0·65	21·2	0·63	19·6	0·67	22·7	0·65
5	Nitrate of lime, 150	21·6	0·70	16·9	0·40	18·1	0·57	19·6	0·59
C	Check. (No nitrogenous fertilizers)	14·8	0·46	11·8	0·44	9·4	0·32	9·4	0·43

NITROGENOUS FERTILIZERS AS A TOP-DRESSING ON TIMOTHY HAY LANDS

On May 16 surface applications of nitrate of soda and sulphate of ammonia were broadcast on similar areas at two different rates per acre. At each rate of application these two materials were used in amounts to furnish the same amount of nitrogen. The stand was even. The grass was harvested July 26, when the timothy was just past full bloom. This land was in oats in 1925, clover in 1926, and timothy hay in 1927. Usually the sulphate of ammonia, which contains 5 per cent more nitrogen than the nitrate of soda, costs somewhat more per ton. In 1927 the price was $60 per ton for the nitrate of soda and $64 per ton for the sulphate of ammonia. The hay was valued at $10 per ton. It will be noted that the increased yield over the plots not fertilized was sufficient to pay for the fertilizer used and give a profit besides, the hay yield having been increased slightly over three-quarters of a ton per acre. The yields as given below are the average of triplicate plots.

NITROGENOUS FERTILIZERS AS A TOP-DRESSING ON TIMOTHY HAY LANDS

Fertilizers applied, pounds per acre	Average yield cured hay per acre	Gain over check plot	Value of gain	Cost of fertilizer	Profit above cost of fertilizer
	tons	tons	$	$	$
Check, no surface dressing	0·99				
Sulphate of ammonia, 115	1·94	0·95	9·50	3·68	5·82
Sulphate of ammonia, 75	1·74	0·75	7·50	2·40	5·10
Nitrate of soda, 150	1·68	0·69	6·90	4·50	2·40
Nitrate of soda, 100	1·72	0·73	7·30	3·00	4·30

YIELDS OF CROPS FOLLOWING HEMP FERTILIZED IN DIFFERENT WAYS

In order to obtain information as to the influence of hemp in depleting soil fertility records of crop yields have been obtained from an area on which hemp was grown in 1924. The table below shows how the plots were fertilized, the crop of hemp produced, and the subsequent yields of grain and hay. The results as tabulated are calculated from the average yield of four plots located at different parts of the area devoted to the test.

YIELDS OF CROPS FOLLOWING HEMP FERTILIZED IN DIFFERENT WAYS

Plot	How treated, 1924, pounds per acre	Average yield per acre				Cured hay, 1926 and 1927 crops
		Hemp, 1924		Oats, 1925		
		Tow	Fibre	Grain	Straw	
		lb.	lb.	bush.	tons	tons
1	Nitrate of soda, 200	640·0	583·2	50·9	1·40	3·29
2	Superphosphate, 500	715·2	522·0	51·2	1·35	4·05
3	Muriate of potash, 100	589·6	408·0	46·2	1·32	3·90
4	Check, not fertilized	689·6	319·2	48·8	1·33	3·35
5	Nitrate of soda, 200; superphosphate, 500	789·6	791·2	55·3	1·48	3·82
6	Nitrate of soda, 200; superphosphate, 500; muriate of potash, 100	875·2	684·0	53·5	1·43	3·92
7	Check, not fertilized	620·0	372·8	50·6	1·38	3·30
8	Nitrate of soda, 100	709·6	445·6	51·2	1·32	3·20
9	Nitrate of soda, 300	664·0	696·0	50·0	1·37	3·26
10	Nitrate of soda, 400	689·6	608·0	57·4	1·56	3·50

POULTRY

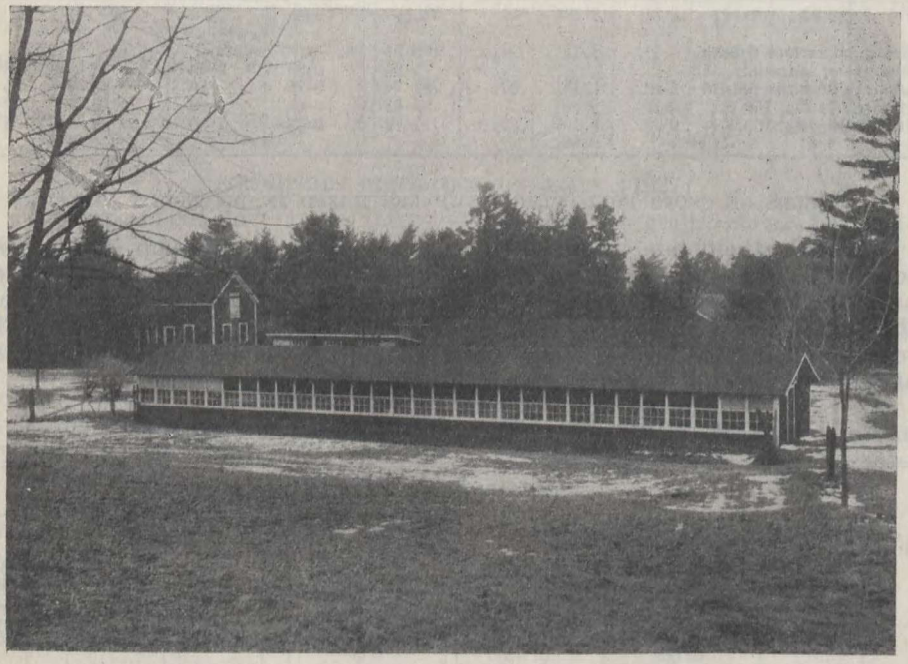
BREEDING STOCK

Thirty-one yearling Barred Plymouth Rock hens, twenty-five Rock pullets, and twenty-seven White Leghorn yearling hens made up the breeding pens for 1927. These birds were divided into pens according to egg production. Three special pens were made up of hens with egg production of 200 eggs and over, and the best cockerels raised from these high-producing hens have been retained as breeders for the spring of 1928.

The hatching results for 1927 were fairly good and were as follows:—

HATCHING RESULTS IN 1927

Eggs set	Number fertile	Per cent fertile	Number of chicks	Per cent total eggs to hatch	Per cent of fertile eggs to hatch	Number of chicks alive at three weeks	Per cent of mortality to three weeks of age
2,348	2,008	85·5	1,009	42·9	50·2	981	2·8



Poultry breeding and laying houses and the administration building.

The chickens when hatched were strong and vigorous, as may be seen by the low mortality to three weeks of age. These chickens were hatched in a 2400-egg Buckeye incubator and reared under three Buckeye coal-burning brooder stoves, one stove in a Simplex brooder house and the other two in a shed-roof laying house, 16 feet by 32 feet, divided into two equal parts, 16 feet by 16 feet. The chicks after hatching were placed in the Simplex brooder

house where the temperature was kept at 90° F. for the first few days, and gradually reduced to 75°. The chicks were then transferred to the larger house where the temperature ranged between 50° and 60° in the room. No difficulty was encountered with the cool room as the chicks had learned to go to the stove for warmth. It was found from rearing the chicks in this house that they were more hardy and withstood the cold, backward spring much better than they would have done had they been reared in a warmer house. Both houses had fine gravel for litter, and there was no sign of the chicks eating too much sand when reared inside until eight weeks of age.

FEED COST OF REARING CHICKENS, 1927

Chickens were hatched during the months of March, April, and May. The pullets were put into winter quarters September 1, one hundred cockerels to be sold as breeders being left on range till November 1.

Number of chicks hatched	1,009	
Number of broilers sold	356	
Number of cockerels saved for breeders	100	
Number of pullets banded	452	
Chicks died or lost during rearing	101	(10%)
Total cost of feed	$ 532 98	
Value of broilers	$ 264 04	
Cost of raising 552 chickens	$ 268 94	
Cost of feed to rear one chick to maturity	0 49	

FEED CONSUMPTION AND COST

Scratch grain, 8,000 lb	cost	$253 60
Dry mash, 9,500 lb	"	270 75
Oyster shell, 220 lb	"	2 75
Epsom salts, 20 lb	"	0 78
Skim-milk, 1,200 lb	"	2 40
Cod liver oil, 3 gal	"	2 70
		532 98

FEEDING EXPERIMENTS

During the hatching season of 1927 an experiment was conducted to determine the effects upon fertility, hatchability and viability when supplementary feeds, such as cod liver oil, raw liver, bone meal, etc., are added to the regular ration given to breeding stock. The experiment was divided into two parts, as there were not a sufficient number of birds of the same breed and age to carry out the whole experiment. The first part deals with the feeding of the supplementary feeds singly, for which Barred Rock hens were used, and the second part deals with the feeds fed in combinations, for which White Leghorn hens were used.

The following dry mash was fed: 100 pounds each of cornmeal, oatmeal, bran and middlings, and 50 pounds of beef meal, with one-half pound of salt added to every 100 pounds of mixture.

Procedure.—Group of birds used for breeding purposes housed, handled and fed alike, except for the special feeds added to the regular ration (when fed singly, cod liver oil, 1 teaspoonful to four birds daily; raw liver, ½ ounce per bird daily, and bone meal, 5 per cent by weight of dry mash; when fed in combination, only half of these quantities).

The experiment was divided into two periods with a week elapsing between them and with separate records kept for each: (*a*) regular mating period with male birds kept in their respective pens; (*b*) male birds alternated daily for at least two weeks.

It will be noted that all of the three pens receiving cod liver oil were outstanding pens in respect to percentage of hatchability of eggs laid.

EFFECT OF SUPPLEMENTARY FEEDS ON FERTILITY, HATCHABILITY AND VIABILITY

Pen	Number of birds	Special feed	Period	Eggs set	Fertile	Blood rings	Dead germs	Dead in shell	Hatched	Per cent fertile	Per cent fertile hatched	Per cent total hatched	Dead in 3 weeks	Per cent mortality in 3 weeks
3	7	Cod liver oil....	Regular mating.....	194	176	15	31	42	88	90·7	50·0	45·3	1	1·1
			Males alternated.....	30	29	.....	3	8	18	96·6	62·0	60·0		
			Total.....	224	205	15	34	50	106	91·5	51·7	47·3	1	0·9
5	6	Raw liver.....	Regular mating.....	147	132	16	27	41	48	89·8	36·3	32·6		
			Males alternated.....	14	12	.....	2	1	9	85·7	75·0	64·3		
			Total.....	161	144	16	29	42	57	89·4	39·3	35·4		
7	11	Bone meal.....	Regular mating.....	231	223	15	54	63	91	96·5	40·8	39·4	2	2·2
			Males alternated.....	25	20	.....	10	2	8	80·0	40·0	32·0		
			Total.....	256	243	15	64	65	99	94·9	40·7	38·6	2	2·0
9	8	Regular mash..	Regular mating.....	103	96	9	28	25	34	93·2	35·4	33·0		
			Males alternated.....	18	15	.....	4	6	5	83·3	33·3	27·7		
			Total.....	121	111	9	32	31	39	91·7	35·1	32·2		
	Barred Rock Pens. Birds given feeds singly.													
4	9	Cod liver oil and raw liver.	Regular mating.....	260	251	11	28	40	172	96·5	68·5	66·1	2	1·2
			Males alternated.....	30	30	.....	3	14	13	100·0	43·3	43·3		
			Total.....	290	281	11	31	54	185	96·9	65·8	63·8	2	1·1
6	8	Cod liver oil and bone meal.	Regular mating.....	173	171	2	32	20	117	98·8	68·4	67·6	9	7·7
			Males alternated.....	30	30	.....	13	2	15	100·0	50·0	50·0	1	6·6
			Total.....	203	201	2	45	22	132	99·0	65·6	65·0	10	7·6
8	5	Raw liver and bone meal.	Regular mating.....	89	85	3	19	22	41	95·5	48·2	46·1	2	4·9
			Males alternated.....	9	7	.....	5	.....	2	77·7	28·6	22·2		
			Total.....	98	92	3	24	22	43	93·8	46·7	43·8	2	4·6
10	6	Regular mash..	Regular mating.....	109	107	17	31	22	37	98·1	34·5	34·0	3	8·1
			Males alternated.....	20	15	.....	2	6	7	75·0	46·6	35·0		
			Total.....	129	122	17	33	28	44	94·6	36·0	34·1	3	6·8

White Leghorn Pens. Birds given feeds in combination.

SPROUTED OATS VS. ROOTS VS. CLOVER VS. EPSOM SALTS AS GREEN FEED

The purpose of this experiment was to find out the value of the different forms of green feed and also the value of Epsom salts as a substitute for green feed. The birds were fed alike with the exception of the green feed. White Leghorn pullets were used with twenty birds in each pen. The value of the feeds consumed in the period, six months, are given below. It will be seen from these figures that clover gave the best results for this year with a profit over cost of feed of $36.92.

RESULTS WITH DIFFERENT GREEN FEEDS AND WITH EPSOM SALTS

—	Pen fed sprouted oats	Pen fed roots	Pen fed clover	Pen fed Epsom salts
	$	$	$	$
Scratch grain	9·85	9·85	9·85	10·74
Mash	12·10	11·82	14·41	12·07
Sprouted oats	0·80	.....	.....	.....
Roots	.....	0·79	.....	.....
Clover	.....	.....	0·20	.....
Epsom salts	.....	.....	.....	0·90
Grit	0·24	0·28	0·32	0·30
Oyster shell	1·35	1·35	1·42	1·39
Value of eggs	57·90	56·13	63·12	53·36
Cost of feed	24·34	24·09	26·20	25·40
Profit over feed	33·56	32·04	36·92	27·96

NOVA SCOTIA SOUTHERN EGG-LAYING CONTEST

The third egg-laying contest to be held at this Station commenced November 1, 1926, and closed October 30, 1927. Owing to the backward spring of 1926 it was difficult to secure enough pens from this province, and ten pens were brought in from other provinces. The contest was made up of nine pens of Barred Plymouth Rocks, nine pens of Single Comb White Leghorns, and two pens of White Wyandottes.

The total number of eggs laid during the year was 32,874, an average of 164·4 eggs per bird. The number of registered birds this year was 18. A large number of birds went over the 200-egg mark, but were unable to register owing to the size of their eggs.

The winning pen this year was a pen of Barred Rocks owned by Mrs. W. S. Eagles, Gaspereau, N.S., with totals of 1813·9 points, 2,043 eggs. The White Wyandottes of Mr. W. H. Fisher, Ayton, Ont., were second with 1,722·5 points, 1,883 eggs, and the White Leghorns of Mr. A. D. Clark, Canning, N.S., were third with 1,721·6 points, 1,870 eggs.

COST OF FEED FOR THE YEAR 1926-27, N. S. SOUTHERN EGG LAYING CONTEST

Grain, 9,924 pounds at $63.40 per ton	$ 314 59
Mash, 9,240 pounds at $64 per ton	297 52
Fish meal, 140 pounds at 5 cents per pound	7 00
Epsom salts, 676 ounces at 4 cents per pound	1 69
Cod liver oil, 19½ gallons at 90 cents per gallon	17 55
Green feed 10,120 pounds at 20 cents per cwt	20 24
Milk, 4,216 pounds at 35 cents per cwt	14 76
Grit, 282 pounds at $1.25 per cwt	3 52
Shell, 792 pounds at $1.25 per cwt	9 90
Charcoal, 91 pounds at $2.75 per cwt	2 50
	$ 689 27

Total revenue (sale of eggs), $1,286.40.
Profit over cost of feed. $597.13.

BEES

The winter of 1926-27 was most favourable for the satisfactory wintering of bees. The open weather in the fall permitted careful preparation of the colonies as to feeding and packing them away. Brood-rearing continued late

into the fall, and consequently the colonies were strong in young bees. It would seem that the successful wintering of the fifty-two colonies prepared for winter was due to: (1) strong colonies of young bees; (2) wholesome stores (consisting principally of sugar syrup); (3) protection from the cold; and (4) a cleansing flight early in March.

The spring of 1927 opened earlier than usual, and in consequence brood-rearing started earlier. On examining the colonies May 10 it was found that the consumption of stores during the period of winter confinement had been light and that the average number of combs covered was 5·7. Owing to the dull and rainy weather during May the bees were confined to their hives, preventing their working the early bloom. The month of June was very dry, followed by a very wet July. The total precipitation for this month was 5·58 inches, rain falling on 19 days and confining the bees to their hives during the greater part of the time that clover was in bloom, so that a very light honey yield was obtained from this source. While there were not as many dull and rainy days in August as in July the rainfall for the month was 9·39 inches. The weather conditions for the month were not favourable to active bee work. Conditions from September on proved normal, with a fair flow from aster and goldenrod, making it possible for brood-rearing to continue until a fairly late date.

LOSS OF BEES FROM ARSENICAL DUST USED FOR THE CONTROL OF INSECT PESTS ON ORCHARD TREES

To avoid their being poisoned thirty-five colonies were moved about two miles from the orchards before the trees came into bloom, and were left there until the bloom was over. Of the four colonies left in the apiary three showed signs of poisoning from June 7 to 27. A colony of bees in a ten-frame Langstroth hive covered fifteen combs on June 4, and on June 27 covered six and one-half combs only, a loss of eight and one-half combs. During the same period a colony of bees in a Modified Dadant hive decreased from eleven to five and one-half combs.

Six colonies of average strength were placed in the orchard during the bloom period. These were diminished to nuclei through poisoning, and became non-producing colonies.

Seven packages of bees placed in the orchard were not poisoned as badly as the over-wintered colonies, probably because of a fewer number of bees going out to gather nectar.

The following table clearly shows the effect of the poisoning on nine representative colonies, as compared with nine colonies not poisoned.

EFFECTS OF POISONING BY ARSENICAL DUSTS

Affected by poison dust				Not affected by poison dust			
Colony number	Number of combs covered May 10	Number of combs covered June 27	Total honey produced	Colony number	Number of combs covered May 10	Number of combs covered June 24	Total honey produced
			lb.				lb.
80	4·5	2·0	10	7	7·0	21·0	67·0
81	4·0	1·5	.....	8	6·0	22·0	47·0
61	5·5	1·5	.....	4	4·5	14·0	47·0
62	3·0	1·5	.....	15	4·0	9·0	10·0
69	5·0	2·5	.....	16	4·5	14·0	41·0
84	5·5	2·5	.....	75	5·0	17·0	27·5
49	8·0	6·5	21·0	87	7·0	12·0	15·0
59	10·0	5·5	10·0	78	5·0	15·0	13·0
21	4·5	2·0	20·0	1	6·5	16·0	27·0
	50·0	25·5	61·0		49·5	140·0	294·5
Average.....	5·6	2·8	6·8		5·5	15·6	32·7

PRODUCTION

The production for 1927 was below the average, due to unfavourable weather during the period the clovers were in bloom. The following table gives the yield from twenty-seven colonies only, as the other ten colonies, not being moved from the orchards, were so weakened by the effects of poison that their production was negligible. The average yield from 1919 to 1926 is given below, as well as the yield for 1927.

YIELD OF HONEY

Year	Number of colonies in spring	Number of colonies in fall	Honey produced	Honey produced per colony spring count
			lb.	lb.
1919–1926	36·4	55·1	1,740·6	47·8
1927	27 (37)	39·0	984·0	36·4

PACKAGE BEES AS A MEANS OF ESTABLISHING AN APIARY

For this project seven packages were imported from Alabama. These arrived in good condition May 14, and were immediately put on drawn combs in ten-frame hives. Three of these packages superseded their queens shortly after they arrived. These colonies suffered considerably from poisoning, and consequently were not strong enough to gather a surplus of honey until late in the fall. A total surplus of fifty-three pounds was produced by the four colonies that did not supersede their queens. The seven packages built up to fairly strong colonies by fall. The average number of combs covered on October 8 was 8·8.

INCREASE

On July 14 increase was made from two colonies by taking two frames of emerging brood with adhering bees and one comb of honey from a colony of average strength, and placing the whole in a new hive. To each nucleus a young queen was introduced.

On July 28 four nuclei were made up in a like manner from three colonies. These colonies were as strong in bees by fall as those made up at an earlier date.

OUT-APIARIES

As sufficient data had been gathered from the two apiaries established in 1923 at Brooklyn and Bridgetown these colonies were brought into the main apiary in the fall of 1926. In the spring of 1927 an apiary of eight colonies was established at Canaan. This locality does not seem to be a favourable one for an apiary. The average production of honey was 23·18 pounds.

COMPARISON OF DIFFERENT TYPES OF HIVE

Of the fifty-eight colonies at Kentville forty-two are in ten-frame Langstroth, eleven in ten-frame Jumbo, and five in Modified Dadant hives. Of these the ten-frame Jumbo not only gave the greatest production of honey from a single colony, but also the greatest average yield. The table below gives a comparison of the strength of the colonies in the spring and the yields per colony.

RESULTS FROM DIFFERENT TYPES OF HIVE

Type of hive	Number of combs covered in spring	Weight of honey produced
		lb.
Eleven-frame Modified Dadant	7	57
Ten-frame Jumbo	9	81
Ten-frame Langstroth	7½	51

In comparing the number of combs covered in the various hives it must be remembered that the combs in the Modified Dadant and Jumbo hives are two inches deeper than those in the Langstroth hives.

PRODUCTION FROM COLONIES DIVIDED OR ALLOWED TO SWARM AS COMPARED WITH THOSE WHERE SWARMING WAS CONTROLLED

This project was continued in 1927, with results as given below.

Number of colonies used	Number of increase	Average honey produced	Average value of honey and increase
		lb.	$
5	6	31·0	13·05
5	.....	60·6	9·09

CARNIOLAN BEES

One colony of bees was headed by a Carniolan queen during the winter of 1926-27. Early in the spring this queen was superseded.

Many of the Carniolan queens that have been received in the past were hybrids and inferior queens. The one or two pure Carniolan queens we have had in this apiary were superseded shortly after being introduced.

The cross between Carniolans and Italians is much harder to handle than the cross between Italians and Black bees.

QUEEN REARING

The experimental work in queen rearing was continued at this Station. Two Italian queens of outstanding qualities as to prolificacy, gentleness, good colour, etc., were chosen as breeders. From these over sixty queens were raised to maturity. The majority of these were used in the home apiary, a few were sent out to branch farms, and the remainder to private beekeepers.

The method used to get the queen cells started and finished involves a minimum amount of preparation in comparison with other methods, and at the same time controls swarming in the colony used for starting and finishing the cells.

Seven or eight frames of sealed brood and a frame or two of unsealed honey with adhering bees, without the queen, were raised from the brood chamber to a super above a queen excluder, leaving sufficient room for two cell carriers. The combs taken from the brood chamber were supplemented with drawn combs. The colony was then given five pounds of sugar syrup in a slow feeder. This operation was done about 10 a.m. By 4 p.m. two carriers of grafted cells were put in the super containing the scaled and emerging brood. In ten days the cells were ripe and ready to distribute to the mating boxes.

ALUMINUM COMBS

A colony of bees were transferred to aluminum combs that had previously been drawn out. Neither bees nor queen accepted these combs as readily as the wax combs were accepted. As in 1926 brood-rearing practically ceased after the bees had been left in over a period of three weeks. The result was that the colony dwindled to such a degree that it was necessary to transfer it back to wax combs in order to have brood-rearing go on normally.

CONDITION OF COLONIES IN THE AUTUMN

Although the summer was not favourable for the gathering of a large surplus of honey sufficient nectar was gathered to stimulate brood-rearing through the summer and fall. Consequently all colonies were up to strength when fall feeding commenced.

The average number of combs covered on October 10 was 9·35.

EXHIBITIONS

Honey exhibits were put up at the exhibitions held at Bridgewater, Lawrencetown and Amherst.

WINTERING, 1927-28

Fifty-eight colonies were prepared for the winter of 1927-8. Of these fifty-six are wintering in quadruple cases and two in Kootenay cases. The colonies were weighed on October 10 and packed. Although feeding was not started until October 18, weather conditions made it possible to finish feeding by October 22.

To overcome the losses experienced in the past by wintering bees on fall honey an average of 3·7 ten-pound tins of sugar syrup was fed each colony.

FIBRE PLANTS

ONE ACRE OF HEMP GROWN FOR FIBRE

The land on which this was grown was in potatoes in 1926. It was ploughed in the fall of 1926, and in the spring manured at the rate of 15 tons per acre, disked, cultivated, smoothed, and the seed sown June 7. All plants were showing above ground June 15, and made good growth throughout the season. The crop was cut September 13, and spread on the field to ret. It was left until October 6, when it was stored in good condition. The yield and the cost of production are given below.

Cost of One Acre of Hemp Grown for Fibre

Rental of land		$ 3 00
Share of manure, 50 per cent of 15 tons at $2		15 00
Ploughing with tractor, 2 hours at $1		2 00
Preparing seed bed		1 48
Seeding, 1 hour at 50 cents per hour		0 50
Seed, 55 pounds at 18 cents per pound		9 90
Cutting with binder 2 men and team, 3 hours at 80 cents		2 40
Spreading, 8 hours at 30 cents per hour		2 40
Lifting and tying, 10 hours at 30 cents per hour		3 00
Hauling and storing, 1½ hours at 80 cents per hour		1 20
Breaking, 36½ hours at 30 cents per hour		10 95
Cleaning, 62 hours at 30 cents per hour		18 60
Use of machinery		2 85
Gasolene and oil		3 60
		$ 76 88
Product from one acre:—		
Weight when retted	3,877 pounds	
Weight when broken	1,197 pounds	
Weight of tow	220 pounds	
Weight of fibre	437 pounds	

Ottawa: Printed by F. A. Acland, Printer to the King's Most Excellent Majesty, 1928.