DOMINION OF CANADA

DEPARTMENT OF AGRICULTURE

DOMINION EXPERIMENTAL FARMS

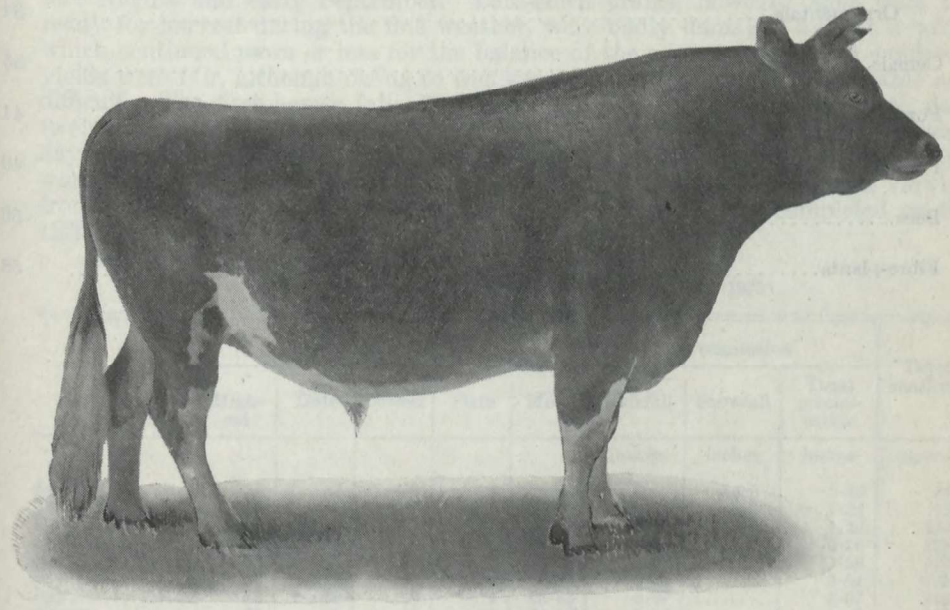
EXPERIMENTAL STATION

LENNOXVILLE, QUE.

REPORT OF THE SUPERINTENDENT

J. A. McCLARY

FOR THE YEAR 1925



ROWER'S GOLDEN MAID'S PRINCE=11841=
The Jersey herd sire at the Dominion Experimental Station, Lennoxville.

Printed by authority of the Hon. W. R. Motherwell, Minister of Agriculture, Ottawa, 1926

TABLE OF CONTENTS

DOMINION EXPERIMENTAL STATION, LENNOXVILLE, QUE.

REPORT OF THE SUPERINTENDENT, J. A. McCLARY

THE SEASON

The weather throughout January was extremely cold, with heavy falls of snow. February and March were mild and wagons were in use March 11. April was mild and favourable for early spring work. Harrowing and disking were well under way by the middle of the month and the first grain was sown on the 22nd. The weather during May was cool with little sunshine and frequent showers. Where it had been found impossible, or thought too early, to sow during April or the first few days in May, it proved almost impossible to secure a satisfactory seed-bed and as a result a great deal of grain was sown too late. Cloudy, wet weather continued throughout June, July, and early August, and although hay proved an excellent crop, much was damaged and the work of haying was slow and difficult. Grain made good progress throughout the season, and where planted early, was harvested under ideal weather conditions during late August and early September. Late-sown grains, however, that were not ready for harvest during the fine weather, were badly damaged by wet weather which continued more or less for the balance of the season. Corn and sunflower yields were fair, although owing to wet weather harvesting was disagreeable and difficult. The first heavy fall of snow occurred on October 10, on which date twelve inches fell. This was followed by freezing weather continuing for several days, which further added to the difficulties of harvesting crops and general fall work. Weather conditions were very changeable throughout November, varying from summer temperature to below zero. Fall ploughing was completed on the 18th.

METEOROLOGICAL RECORDS AT LENNOXVILLE, QUE., 1925*

Month	Temperature °F.					Precipitation			Total sunshine
	Highest	Date	Lowest	Date	Mean	Rainfall	Snowfall	Total precipitation	
						inches	inches	inches	hours
January	35	22	−48	28	6·27	.....	38·0	3·80	84·6
February	53	11	−10	2–5	23·35	0·34	9·0	1·24	77·0
March	69	27	− 7	3	32·72	0·59	10·0	1·59	126·5
April	75	25	18	5–21	41·25	0·96	.....	0·96	178·8
May	75	20	28	22	55·68	1·58	.....	1·58	179·4
June	87	6	33	24	62·09	2·84	.....	2·84	179·3
July	85	20	40	9	63·82	5·07	.....	5·07	210·8
August	87	18	36	28	64·47	5·13	.....	5·13	245·8
September	82	19	16	25	55·19	7·40	.....	7·40	138·2
October	63	2–4	13	31	38·73	4·60	15·06	6·10	81·6
November	55	4–22	−16	30	31·98	2·93	9·50	3·88	88·7
December	50	6	−26	30	19·20	0·87	17·25	2·595	47·8
Total	.....	.....	.....	.....	.....	32·31	98·81	42·185	1,638·5

*Temperature and precipitation records for the years 1915–24 will be found in the report of this Station for the year, 1924.

HOURS SUNSHINE AT LENNOXVILLE, QUE., 1915-1925

Month	1915	1916	1917	1918	1919	1920	1921	1922	1923	1924	1925	Average 11 years
January	81·3	61·5	69·5	70·7	38·5	84·6	106·6	139·4	77·9	79·5	84·6	81·3
February	70·5	83·0	105·5	75·6	101·7	85·6	90·6	104·2	125·9	126·0	77·0	95·0
March	146·4	197·3	153·4	153·7	122·6	150·5	141·2	155·9	117·6	120·0	126·5	144·1
April	171·4	174·8	106·7	195·5	103·9	136·7	195·9	166·3	154·0	147·3	178·8	157·4
May	201·5	155·0	136·0	200·5	213·8	241·9	250·3	251·3	232·7	185·1	179·4	204·3
June	249·5	180·1	174·3	193·3	248·7	220·1	247·7	156·0	208·5	245·3	179·3	209·3
July	215·0	250·5	216·1	208·5	239·6	222·9	226·5	279·0	225·9	243·9	210·8	230·8
August	176·5	227·3	204·8	230·5	196·8	229·7	242·1	220·9	237·1	202·9	245·8	219·5
September	179·4	133·2	188·1	103·2	138·2	152·5	197·6	208·1	171·6	156·8	138·2	160·6
October	113·9	149·5	81·1	107·4	103·0	149·6	141·1	108·3	139·8	194·3	81·6	124·5
November	94·8	74·8	95·6	58·9	52·6	41·3	55·2	68·3	92·2	68·2	88·7	71·9
December	22·0	72·4	68·1	34·6	98·3	28·8	52·3	57·6	48·2	57·1	47·8	53·4
Totals	1,722·2	1,759·4	1,599·2	1,632·4	1,657·7	1,744·2	1,947·1	1,915·3	1,831·4	1,808·4	1,638·5	1,752·1

ANIMAL HUSBANDRY

BEEF CATTLE

WINTER FATTENING OF STEERS

It has been customary, since the Experimental Station was started, to purchase stockers in the autumn for two purposes, namely, to conduct different experiments, such as a comparison between feeding elevator screenings and meal mixture, different periods of grain feeding, etc., and to have an opportunity of marketing hay and other roughages raised on the farm by feeding them at home and using the manure to keep up the fertility of the soil.

The ninety-three stockers which were purchased in the fall of 1924 were not up to the usual standard as to weight and quality. They had too much dairy blood to make profitable feeder steers.

These steers when tied into the barn November 11, 1924, averaged 890 pounds and when sold May 23, 1925, 1,109 pounds, making a gain of 219 pounds each. They cost 4¾ cents per pound when purchased and were sold May 23 for the following prices: eighty-three steers for 8 cents per pound and ten steers for 7 cents per pound.

Where hay, silage and roots can be grown to advantage, and where good pasture land is available in districts not near a railroad, and there is a scarcity of suitable labour for dairying, there is still an opportunity to make a profit in steer-feeding.

STANDARD ELEVATOR SCREENINGS VS. MEAL MIXTURE

Object of Experiment.—To ascertain the value of clear ground elevator screenings as a feed for fattening steers, taking into account the gain, feed-cost per pound and finish, as compared with a meal mixture.

Plan of Experiment.—Two lots of eight steers each were used. They were tied in the barn November 11, 1924, and sold May 23, 1925, making 193 days on test. They were fed 10 pounds of hay and 30 pounds of corn and sunflower ensilage each per day during the experiment, and each lot was fed the same number of pounds of meal for the period. Lot 1 was fed screenings and lot 2 a meal mixture consisting of screenings, 4 parts; corn, 2 parts; oats, 1 part; barley, 1 part; bran, 1 part; and oil-meal, 1 part after March 1. Commencing December 1, they were fed at the rate of two pounds per day per steer and this was increased the first of each month until at the end of the feeding period they were receiving 7 pounds per day. The following table gives the results for 1925, as well as the average for four years:—

ELEVATOR-SCREENINGS VS. MEAL MIXTURE

	1925		Average for four years	
	Lot 2 Meal Mixture	Lot 1 Screenings	Lot 2 Meal Mixture	Lot 1 Screenings
Number of steers in each lot....No.	8	8	8	8
Total initial weight.... lb.	7,408	6,747	8,043·6	7,774·4
Average initial weight.... "	926	843·4	1,005·4	971·8
Total finished weight.... "	9,158	8,560	9,797·6	9,515·2
Average finished weight.... "	1,144·75	1,070·0	1,224·7	1,189·4
Number of days on test....days	193	193	185	185
Total gain per lot.... lb.	1,750·0	1,813·0	1,754·0	1,740·8
Average gain per steer.... "	218·7	226·6	219·2	217·6
Average daily gain.... "	1·13	1·17	1·18	1·17
Amount of meal eaten per pound gain.... "	3·96	3·82	3·77	3·67
Amount of hay eaten per pound gain.... "	8·82	8·52	8·72	8·70
Amount of silage eaten per pound gain.... "	26·47	25·54	23·34	23·01
Cost of feed per pound gain....cts.	14·43	12·98	13·86	12·50

Deductions.—Lot 1, fed screenings, made better and cheaper gains, and the average for four years shows that cheaper gains were made with screenings.

A few years ago screenings were sold at a very reasonable price, but at present they are one of the feeds in good demand and sought after by American farmers, and as the price of this product is advancing it cannot now be fed as profitably as formerly.

WINTER FATTENING OF STEERS IN PENS VS. TIED

Object of Experiment.—To determine the relative merits of the two methods of housing steers for winter feeding, namely, loose in a large pen versus tied in stable.

Plan of Experiment.—Two uniform lots of ten steers each were compared. Lot 1 was wintered in a large pen adjoining the stable and lot 2 was tied in the main stable. Commencing November 11, all steers were fed 10 pounds of hay and 30 pounds of corn and sunflower ensilage per day for the period. Beginning December 1, both lots received 2 pounds of meal per day, which was increased the first of each month until at the end of the feeding period they were receiving 7 pounds per day, and consumed during the period of 193 days, 867 pounds each. The meal mixture consisted of standard elevator-screenings, 4 parts; corn, 2 parts; oats, 1 part; barley, 1 part; bran, 1 part; and oil-meal, 1 part, was added after March 1.

WINTER FEEDING OF STEERS LOOSE VS. TIED

	1925		Average for seven years	
	Loose	Tied	Loose	Tied
Number of steers in each lot....No.	10	10	10	10
Total initial weight.... lb.	8,440	9,260·5	8,525·7	9,608
Average initial weight.... "	844	926·0	852·5	960·8
Total finished weight.... "	10,510	11,447·5	10,943·0	11,904·0
Average finished weight.... "	1,051	1,144·7	1,094·3	1,190·4
Number of days on test....days	193	193	184	184
Total gain per lot.... lb.	2,070	2,187·0	2,417·3	2,296·0
Average gain per steer.... "	207	218·7	241·7	229·6
Average daily gain.... "	1·07	1·13	1·32	1·26
Amount of meal eaten per pound gain.... "	4·19	3·96	3·20	3·39
Amount of hay eaten per pound gain.... "	9·32	8·82	7·93	8·37
Amount of silage eaten per pound gain.... "	27·97	26·47	21·82	22·80
Cost of feed per pound gain....cts.	15·16	14·44	12·58	13·45

Deductions.—The results obtained in this test show that steers wintered loose in 1925, made a little less gain and cost more per pound than those tied in the stable, for the first time in seven years. The only reason that can be given is that the steers in the pen were not quite as good and did not respond to feed as readily as the other lot. However, the average for seven years shows that better and cheaper gains can be obtained by feeding steers loose in a pen. When labour and equipment are taken into consideration, there is much to be said in favour of feeding steers loose in pens.

The results shown in the table demonstrate clearly that to have results of value an experiment should be carried on a number of years, as there are many factors that may change the results of an experiment from year to year.

Valuation of Feeds.—The meal mixture was valued at $35 per ton; screenings, $30 per ton; hay, $8 per ton, and ensilage, $3 per ton.

THE VALUE OF HOME-GROWN ROUGHAGE MARKETED THROUGH STEERS

Object of Experiment.—To determine the value of home-grown roughage marketed by feeding to steers.

Plan of Experiment.—In order to ascertain the value of hay and ensilage fed to steers records were kept on a lot of 46 steers at the Station during the winter of 1924-25. These steers were of as good Shorthorn breeding as it was possible to procure in the district. They were purchased in the autumn of 1924, tied in the barn November 1, and sold May 30, 1925. Each steer was fed 10 pounds of hay and 30 pounds of corn and sunflower ensilage per day. Beginning December 1, they were fed at the rate of 2 pounds of grain each per day and increased the first of each month until at the end of the feeding period they were receiving 7 pounds per day. The grain mixture consisted of screenings, 4 parts; corn, 2 parts; oats, I part; barley, 1 part; bran, 1 part, and oil-meal, 1 part, after March 1. The following is a statement of the feed cost, gains made and amount realized, after paying other expenses, on the hay and ensilage by marketing it through steers:—

CALCULATED VALUE OF HOME-GROWN ROUGHAGE MARKETED THROUGH STEERS

Number of steers fed	No.	46
Number of day fed in stable	days	179
Cost November 1, 1924, 42,596 pounds at 4·75 cents	$	2,023·31
Value May 30, 1925, 51,900·42 pounds at 8 cents	$	4,152·03
Gain in value in 179 days	$	2,128·72
Gain in weight in 179 days	lbs.	9,304·24
Initial weight, average	"	926·00
Finished weight, average	"	1,128·27
Average gain per steer	"	202·27
Average daily gain per steer	"	1·13
Total hay consumed by lot	"	82,340·00
Amount of hay eaten per pound gain	"	8·84
Total ensilage consumed by lot	"	247,020·00
Amount of ensilage eaten per pound gain	"	26·54
Total meal consumed by lot	"	37,682·17
Amount of meal eaten per pound gain	"	4·05
Cost of meal fed	$	659·41
Interest on cost of steers ($2,023.31) for 6 months at 6 per cent	$	60·70
Total expenses (not including cost of hay and ensilage)	$	720·11
Increase in value of 46 steers	$	2,128·72
Total cost (not including cost of hay and ensilage)	$	720·11
Calculated value of hay and ensilage marketed through steers	$	1,408·61

Deductions.—It will be noted in the table that the steers cost $4.75 per hundred in the fall and sold in the spring for $8 per hundred, making a spread of $3.25, which is above the average spread realized in steer-feeding. After deducting initial cost, interest, and cost of meal from the selling price there was

a profit of $1,408.61 on the lot for the hay and ensilage consumed, and working this out according to "Henry's Feeds and Feeding," mixed hay contains 924 pounds of digestible nutrients per ton and good corn silage, according to the same authority, contains 360 pounds of digestible nutrients per ton. As the silage fed was of immature corn and some sunflowers it is estimated that 300 pounds of digestible nutrients per ton would be correct. Working it out on this basis the 82,340 pounds of hay eaten marketed by feeding to steers was worth $713.23, or $17.32 per ton. The 247,020 pounds of ensilage, on the same basis, was worth $695.35, or $5.63 per ton. The average results for the past three years of steer feeding, figured the same, is as follows:—

Value of hay marketed by feeding it to steers, three-year average, $13.90; ensilage, three-year average, $4.56. It has cost, on an average, for the last three years to produce hay $7.93 per ton and ensilage $3.12 per ton, therefore, three was a profit on hay, over cost of production, of $5.97 per ton and on ensilage $1.44 per ton.

DUAL-PURPOSE SHORTHORNS

This herd consists of ten cows, eleven heifers, one aged stock bull and ten young bulls. The herd was originally started with females of Scotch beef breeding, with the intention of using a bull with as much milk-production behind him as possible, to see what improvement might be made in the milking qualities of the progeny. The bull procured for this purpose was "Weldwood Lassie's Lad" —135100— purchased from the Weldwood herd at London, Ont. This bull's dam and granddam have an average official record of 13,677·5 pounds of milk, and 551 pounds of butter fat. The heifers from this mating are not old enough to report on at present.

The junior herd-bull, "Kentville Major 2nd" —172627— born January 5, 1925, was acquired from the noted dual-purpose Shorthorn herd of the Kentville Experimental Station, Kentville, N.S., on May 6, 1925. The heifers from Weldwood Lassie's Lad are being bred to this junior sire from which some good milkers should be developed to improve the milking qualities in this herd.

FEED COST OF MAINTAINING AN AGED SHORTHORN HERD BULL FOR ONE YEAR

The following table gives the amount of feed consumed by a Shorthorn bull in one year, also the cost of the feed:—

FEED COST OF MAINTAINING AN AGED SHORTHORN HERD BULL FOR ONE YEAR

1,640 pounds meal at $1.50 per cwt	$ 24·60
7,094 pounds ensilage at $3 per ton	10 64
3,440 pounds hay at $8 per ton	13 76
500 pounds green feed at $3 per ton	0 75
Total cost of feed	$ 49·75
Average cost of feed for four years	49·77

FEED COST OF RAISING SHORTHORN HEIFERS FROM BIRTH TO TWO YEARS

The cost of raising a heifer from birth to two years was reckoned from the average cost of raising three heifers. The following table gives the average amount of the different feeds consumed during the period, prices charged, as well as the total cost of one heifer for the period.

FEED COST OF RAISING A SHORTHORN HEIFER FROM BIRTH TO TWO YEARS

—	Amount of feed	Cost of feed
	lb.	$ cts.
Whole milk at $1.50 per cwt.	707	10 60
Skim-milk at $0.25 per cwt.	2,987	7 47
Meal at $1.50 per cwt.	1,016	15 24
Ensillage at $3 per ton.	6,248	9 37
Hay at $8 per ton.	2,512	10 05
Pasture at $1 per month. mos.	8	8 00
Total cost of feed.		60 73

DAIRY CATTLE

The Ayrshire and Jersey herds, which are the only two strictly dairy breeds at the Station, are kept for breeding, to collect data on cost of maintenance, production and experimental work. The increase in these herds has not been as marked as might have been anticipated on account of the small percentage of heifer calves. The herds are in a healthy condition and have been fully accredited since December 8, 1922. All the young bulls reared are disposed of to farmers for breeding purposes. At the close of the year 1925 there were fifty-six head of pure-bred dairy cattle on hand as follows: Ayreshires, 18 cows, 15 heifers, 8 bulls; Jerseys, 8 cows, 6 heifers, 1 bull.

AYRSHIRES

The bull which has been used as a herd-sire the past three years is " Ottawa Masterpiece " —77928— an Advanced Registry Class A bull. This bull was sired by " Burnside Ypres Masterpiece " —46637— and his dam was " Belle of Oban " —46711—. The heifers and young bulls from this sire are showing much promise. Two of the young bulls were sold to Messrs. R. R. Ness & Son, Howick, Que., last spring and were taken by them on the western fair circuit, where they won many first prizes and junior championships in their classes.

Fifteen calves were raised during the year, eight females and seven males, and five young bulls were sold during the year for breeding purposes.

There are some promising young heifers coming on which will be bred to the Advanced Registry Class A bull, " Ottawa Supreme 5th " —90774—, which was bred at the Central Experimental Farm, Ottawa. His sire was the imported " Shewalton Mains Supreme " —83930— whose daughters made such a creditable showing at the " Royal " this year, winning in their classes.

FEED COST OF MILK-PRODUCTION OF THE AYRSHIRE HERD

The following table gives the average milk-production, pounds of butter-fat, feed cost to produce one pound of butter-fat, and cost of feed of twelve cows which finished a lactation period in 1925, as well as the average for nine years:—

FEED COST OF MILK-PRODUCTION OF THE AYRSHIRE HERD

—	1925	Average for 9 years
Number of cows finishing lactation period. No.	12	11
Average number of days in lactation period. days	293	295
Average pounds of milk per cow. lb.	7,254	7,400·8
Average per cent butter-fat. %	4·1	4·1
Average pounds butter-fat per cow. lb.	297·41	303·43
Average pounds of butter per cow. "	351·9	356·98
Average value of butter per cow. $	140 79	142 79
Average value of skim-milk per cow. $	17 25	17 61
Total value of butter and skim-milk per cow. $	158 04	160 40
Average cost of feed. $	61 60	66 96
Cost of feed to produce one pound butter-fat. cts.	20·71	22·10
Average profit per cow over feed cost. $	96·44	93·44

The cost of feed was calculated as follows: Hay, $8 per ton; ensilage, $3 per ton; pasture, $1.50 per month; meal, $1.50 per hundred. Butter was valued at 40 cents per pound and skim-milk at 25 cents per hundred. For more details in regard to feed refer to individual milk-record table.

FEED-COST OF MAINTAINING AN AYRSHIRE HERD BULL FOR ONE YEAR

A bull ranging in age from one to six years is used for this project. A small building 12 by 16 feet, without a floor, separate from the main stable, is used for this purpose. This building is well ventilated and has a good-sized window at each end, high enough so that the bull cannot break them. These windows are kept open practically all the time. An overhead cable with a loose running ring and chain to hitch to the bull's ring is used to give the animal exercise. The following table gives the amount and cost of feed for 1925, and the average cost for eight years:—

COST OF MAINTAINING AN AYRSHIRE HERD-BULL FOR ONE YEAR

1,338 pounds meal at $1.50 per cwt	$ 20 07
7,145 pounds ensilage at $3 per ton	10 72
3,238 pounds hay at $8 per ton	12 95
500 pounds green feed at $3 per ton	0 75
Total cost of feed	44 49
Average cost of feed for eight years	44 77

FEED COST OF RAISING A MALE CALF FROM BIRTH TO ONE YEAR

The cost of raising a calf from birth to one year was computed from the average cost of raising four male calves. These calves received whole milk the first four weeks, when skim-milk was gradually added to take the place of whole milk, so that at the age of six weeks they were receiving all skim-milk. At this time they begin to eat some dry meal which consists of oats, corn, bran and oil cake. Some good clover hay is kept before them when they are weaned and it is surprising how early they will begin to nibble at it. When they are four or five months old they are given a little ensilage. The following table gives the amount of feed used to raise a bull calf to one year of age as well as the cost.

FEED COST OF RAISING A MALE CALF FROM BIRTH TO ONE YEAR

—	Amount of feed	Cost of feed
	lb.	$ cts.
Whole milk at $1.50 per cwt	426	6 39
Skim-milk at $0.25 per cwt	2,762	6 90
Meal at $1.50 per cwt	830	12 45
Hay at $8 per ton	1,003	4 01
Ensilage at $3 per ton	1,734	2 60
Total cost of feed		32 35

CALF-FEEDING EXPERIMENT

Object of Experiment.—To ascertain the value of home-mixed meal mixture compared with Royal Purple calf-meal for feeding calves as substitutes for whole milk.

Plan of Experiment.—Three lots of three calves each were used for this experiment. Lot 1, comprising three heifer calves, was fed a home-mixed meal mixture of corn, 2 parts; oats, 2 parts; and flaxseed, 1 part (fed as a porridge

in the milk, in connection with other feed), as a substitute for whole milk. Lot 2 was fed Royal Purple calf-meal as a milk-substitute, and lot 3, comprising three bull calves, was fed the same as lot 1. All the calves in the experiment were Ayrshires, just past one month of age, and they were weaned from whole milk. The milk-substitutes in calf-feeding should be added to the skim-milk as the whole milk is discontinued.

Valuation of Feeds.—The following prices were charged for feeds: Dry meal mixture, per cwt., $1.50; milk-substitute mixture, per cwt., $2.40; Royal Purple calf-meal, per cwt., $4.65; hay, per ton, $8; ensilage, per ton, $3; skim-milk, per cwt., 25 cents.

Deductions.—From the table it will be noted that lot 1, in 92 days, made an average gain of 160·3 pounds at a feed cost of 5·67 cents per pound gain. Lot 2 gained 139·6 pounds at a feed cost of 7·96 cents per pound, and lot 3 gained 192·3 pounds costing 4·73 cents per pound gain.

CALF-FEEDING EXPERIMENT

——		Lot 1	Lot 2	Lot 3
		Corn, 2 parts; oats, 2 parts; flaxseed, 1 part	Royal Purple calf-meal	Corn, 2 parts; oats, 2 parts; flaxseed, 1 part
Number of calves in experiment	No.	3	3	3
Length of feeding period	dys.	92	92	92
Gross initial weight	lb.	496	508	553
Average initial weight	"	165·3	169·3	184·3
Gross finished weight	"	977·0	927·0	1,130·0
Average finished weight	"	325·6	309·0	376·6
Total gain per group for period	"	481·0	419·0	577·0
Average gain per calf for period	"	160·3	139·6	192·3
Average daily gain per calf	"	1·74	1·52	2·09
Amount of skim-milk fed per group	"	4,414	4,414	4,414
Amount of skim-milk fed per calf	"	1,471·3	1,471·3	1,471·3
Amount of dry meal fed per group	"	314·8	314·8	314·8
Amount of dry meal fed per calf	"	104·9	104·9	104·9
Amount of milk-substitute in milk per group	"	270	270	270
Amount of milk-substitute in milk per calf	"	90	90	90
Amount of hay fed per group	"	955·1	955·1	955·1
Amount of hay fed per calf	"	318·3	318·3	318·3
Amount of ensilage fed per group	"	832	832	832
Amount of ensilage fed per calf	"	277·3	277·3	277·3
Cost of feed per group, milk-substitute neglected	$	20·82	20·82	20·82
Cost of milk-substitute per group	$	6·48	12·56	6·48
Total cost of feed per group	$	27·30	33·38	27·30
Cost of feed, milk-substitute neglected, per pound gain	cts.	4·32	4·96	3·60
Cost of milk substitute per pound gain	"	1·34	2·99	1·12
Cost of feed per pound gain	"	5·67	7·96	4·73

JERSEYS

The Jersey herd is still headed by the well-bred Jersey bull, "Rowers Golden Maid's Prince" —11841—. This bull was bred by Mr. John Pringle, London, Ont., sired by the noted imported "Champion Rower" —10270—, and his dam was "Brampton Golden Maid's Princess" —2485—. He was sold when two years old by Mr. Pringle to head the Jersey herd at the Central Experimental Farm, Ottawa, and was transferred to Lennoxville, February 2, 1924. The females number eight cows and six heifers. Three promising young bull calves were sold during the year to farmers in the district.

FEED COST OF MILK-PRODUCTION OF THE JERSEY HERD

The following table gives the average milk-production, pounds of butter-fat, cost of feed to produce one pound of butter-fat, and cost of feed for five cows that finished a lactation period during the year 1925.

FEED COST OF MILK-PRODUCTION OF THE JERSEY HERD

Number of cows finishing lactation period during year	No.	5
Average number of days in lactation period	dys.	321
Average pounds of milk per cow	lb.	5,787·3
Average per cent butter-fat	%	6·1
Average pounds of butter-fat per cow	lb.	353·02
Average pounds butter per cow	"	415·32
Average value of butter per cow	$	166·12
Average value of skim-milk per cow	$	13·43
Total value of butter and skim-milk per cow	$	179·56
Average cost of feed	$	62·31
Cost of feed to produce one pound butter-fat	cts.	17·65
Average profit per cow over cost of feed	$	117·25

FEED COST OF RAISING JERSEY HEIFERS FROM BIRTH TO ONE YEAR

The amount of feed consumed by two Jersey calves, namely, "Lennoxville Roxanna" —23282— and "Lennoxville Corinne" —25046—from birth to one year is taken for this information.

COST OF RAISING JERSEY HEIFERS FROM BIRTH TO ONE YEAR

—	Whole milk $1.50 per cwt.	Skim-milk at .25 per cwt.	Meal at $1.50 per cwt.	Silage at $3 per ton	Hay at $8 per ton	Pasture at $1.50 per month	Total cost
							$ cts.
Lennoxville Roxanna-23282...	355	3,136	647	1,655	648	.....	27 93
Lennoxville Corinne-25046....	785	2,480	399	1,545	550	3·5	33 73
Average.....	570	2,808	523	1,600	599	3·5	30 83

It will be noted by the table that Lennoxville Corinne had 430 pounds more milk than Lennoxville Roxanna, but she consumed 248 pounds less meal and 656 pounds less skim-milk, also less hay and ensilage. The reason for this was that Lennoxville Corinne was a delicate calf at birth and had to be fed accordingly. The average cost of feed for one year amounted to $30.83.

The following table gives the individual milk-records for the cows and heifers which finished a lactation period during the year 1925:—

Individual Milk Records Completed During the Year

Ayrshires

Name of Cow	Age at beginning of lactation period	Date of dropping calf	Number of days in the lactation period	Total pounds of milk for period	Daily average yield of milk	Average p.c. fat in milk	Pounds of butter produced in period	Value of butter at 40 cts. per pound	Value of skim-milk at 25 cts. per cwt.	Total value of product	Amount of meal eaten at $1.50 per cwt.	Amount of roots, ensilage and green feed at $3.00 per ton	Amount of hay eaten at $8.00 per ton	Months pasture at $1.50 per month	Total cost of feed	Cost to produce 100 lb. milk	Cost to produce 1lb. butter skim-milk neglected	Profit on 1 lb. of butter skim-milk neglected	Profit over cost of feed per cow
	yrs.m's.																		
Lennoxville Bluebell 3rd	5-2	Dec. 25-24	310	12,363[3]	39·88	3·8	552·7	221·08	29·53	250·61	2,327	13,799	2,198	4	70·40	0·57	12·7	27·3	180·21
Duchess of Fairmount	5-3	July 2-24	315	10,594	33·63	4·4	548·3	219·32	25·11	244·43	3,165	14,835	3,298	5·5	91·16	0·86	16·6	23·4	153·27
Lennoxville Bettina	7-9	Aug. 9-24	343	8,213	23·97	3·4	328·6	131·44	19·71	151·15	2,506	12,228	2,498	7	76·42	0·93	23·2	16·8	74·73
Lennoxville Beauty 3rd	3-10	Nov. 30-24	274	8,166	29·80	4·4	422·7	169·08	19·36	188·44	2·059	11,199	2,048	3	60·37	0·74	14·2	25·8	128·07
Lennoxville Pansy	4-1	Oct. 2-24	364	8,016	22·02	4·2	396·0	158·40	19·05	177·45	2,074	11,698	2,038	6	65·81	0·82	16·6	23·4	111·64
Lennoxville Marjorie	6-8	Apr. 6-24	365	7,718	21·14	4·5	403·6	163·44	18·28	181·72	2,501	9,645	2,488	5·5	70·18	0·91	17·1	22·9	111·54
Highland Betsy 2nd	4-8	Feb. 19-25	254	7,049	27·75	4·2	348·3	139·32	16·75	156·07	1,602	12,004	2,176	4	56·74	0·81	16·2	23·8	99·33
Lennoxville Dairymaid 2nd	5-9	Jan. 7-25	265	6,015	22·69	3·8	268·9	107·56	14·37	121·93	1,309	7,884	2,038	5	47·11	0·78	17·5	22·5	74·82
Lennoxville Dairymaid 3rd	4-7	Dec. 12-24	248	5,264	21·26	4·2	260·1	104·04	12·51	116·55	1,359	8,778	2,048	6·5	51·49	0·98	19·7	20·3	65·06
Lennoxville Dairymaid 4th	3-8	Jan. 9-25	221	4,696	21·24	4·1	226·5	90·60	11·17	101·77	1,203	7,543	2,048	3·5	42·79	0·91	18·8	21·2	58·98
Lennoxville Roxie 2nd	5-3	Jan. 13-25	230	4,531	19·70	4·0	213·2	85·28	10·79	96·07	1,589	6,994	2,038	3	46·98	1·03	22·0	18·0	49·09
White Lady of Fairmount	2-7	Aug. 18-24	333	4,423[3]	13·28	4·8	249·8	99·92	10·44	110·36	1,905	9,925	2,018	5·5	59·78	1·35	23·9	16·1	50·58
Average	.....	.....	293·5	7,254	24·72	4·1	351·9	140·79	17·25	158·04	1,967	10,544	2,244	4·8	61·60	0·89	18·2	21·8	96·44

Jerseys

Sophie Magnet's Corinne	4-6	Aug. 30-24	334	8,526[3]	25·52	6·3	631·9	252·76	19·74	272·50	3,680	12,381	2,498	6	92·76	1·08	14·6	25·4	179·74
Brompton Princess Lucy	7-4	Feb. 14-25	290	6,383	22·01	6·0	450·5	180·20	14·83	195·03	1,736	11,209	1,824	4	56·15	0·87	12·4	27·6	138·88
Sultana of Valley View	2-5	Nov. 1-24	271	5,217	19·25	6·4	392·8	157·12	12·06	169·18	1,529	9,732	1,656	4	50·15	0·96	12·7	27·3	119·03
Premier's Pinehurst Lottie	2-0	Oct. 26-24	365	4,671	12·79	6·2	340·7	136·28	10·82	147·10	1,681	11,962	1,824	5	57·95	1·24	17·0	23·0	89·15
Kingsway's Beauty Spot	4-10	Apr. 19-24	346	4,139	11·98	5·5	267·8	107·12	9·68	116·80	1,678	8,568	2,068	5·5	54·54	1·31	20·3	19·7	62·26
Average	.....	.....	321	5,787·3	18·03	6·1	416·7	166·69	13·43	180·12	2,061	10,770	1,974	4·9	62·31	1·09	15·4	24·6	117·31

Shorthorns

Village Ruby	8-9	July 5-24	270	4,810	17·81	3·9	220·7	88·28	11·47	99·75	1,968	9,000	2,149	5·5	59·87	1·24	27·1	12·9	39·88
Lady Hope 9th	8-0	Feb. 21-25	283	4,497	15·88	3·6	190·2	76·08	10·77	86·85	1,106	7,983	1,929	4	42·28	0·94	22·2	17·8	44·57
Gem of Maple Grove	6-5	Mar. 6-25	269	3,944	14·62	4·2	194·8	77·92	9·37	87·29	730	6,025	1,670	4	32·67	0·83	16·7	23·3	54·62
Victoria 2nd	7-4	Jan. 9-25	249	3,659	15·12	4·1	176·5	70·60	8·71	79·31	740	5,301	1,440	4	30·81	0·84	17·4	22·6	48·50
Average	.....	.....	266	4,227·5	15·89	3·93	195·5	78·22	10·08	88·30	1,136	7,077	1,797	4·4	41·41	0·98	20·85	19·15	46·89

HORSES

The horses at the Station include the imported Shire stallion, "Snelston Topper" 1608 (38528), which was presented to the Canadian Government by Mrs. Staunton, Snelston Hall, Ashbourne, England, also one yearling gelding, two foals from the Shire stallion, two brood mares, one driving horse and twelve work-horses.

COST OF HORSE LABOUR

In order to arrive at the cost of horse labour performed by the twelve horses, the following table gives the cost per hour and how this was determined:—

COST OF HORSE LABOUR

Number of work horses	No.	12
Average value of each horse	$	200
Total hours work done during year by 12 horses	hrs.	20,408
Average hour's work during year per horse	"	1,700
Cost of feed for 12 horses—		
47,555 lbs. Oats at $1.60 per cwt	$	760 88
4,220 lbs. Bran at $1.25 per cwt	$	52 75
70,004 lbs. Hay at $8 per ton	$	280 01
Total cost of feed for 12 horses for twelve months	$	1,093 64
Average cost of feed per horse for twelve months	$	91 14
Total cost of feed for 12 horses for 12 months	$	1,093 64
Labour (stable attendance) 2190 hrs. at 30 cents per hour	$	657 00
Interest (6% on $2,400; value of 12 horses)	$	144 00
Shelter, $20 per horse	$	240 00
Harness and repairs	$	71 75
Miscellaneous (including shoeing, veterinary and sundries)	$	167 15
Total cost of 20,408 hours horse labour	$	2,373 54
Average cost per hour of horse labour	cts.	11·63
Average cost per hour of horse labour for the past 5 years	"	12·64

The table shows that horse labour for the year 1925 cost 11.63 cents per hour. On account of the limited amount of team-work in the winter, it costs more per hour for horse labour for the year. The horses which are not required for work in winter are fed a ration of 16 pounds of hay, and 25 pounds of ensilage each per day. They are turned into yards in the day time and kept in large box-stalls at night. The idle horses are tied into the stable the first of April and fed a light grain ration, which is gradually increased, in order to get them ready for spring's work.

SHEEP

Oxford Down is the only breed of sheep kept at the Station with the exception of the Cheviot ram, "Macdonald 782" —1280— purchased from Macdonald College in September for experimental work. The Oxford Down flock consists of the registered ram, "Johnson D7" —20429— which has headed the flock for the past two years, 14 registered ewes, 8 registered lambs, 32 grade ewes and 6 grade ewe lambs. From 43 ewes 64 lambs were raised to market age, making an average of 1.48 lambs per ewe. These lambs were born in April and the first part of May. Their average weight at birth was 10.37 pounds and when marketed, October 22, they averaged 87 pounds. The market lambs were sold to local buyers for 10.5 cents per pound. The shearing was done the first of April. The fleeces averaged 7.57 pounds and were graded and marketed through the Canadian Co-operative Wool Growers Association, which has its Provincial warehouse and grading station for the Province of Quebec at Lennoxville.

A grading experiment was started last fall in crossing a certain number of grade Oxford Down ewes with a Cheviot ram in order to study the result of this cross on the market quality of the lambs and also the effect on the weight of

the fleece and grade of the wool. The market is demanding, at present, an early maturing, not-too-heavy lamb. Reports will be given on this experiment as data accumulate.

COST OF KEEPING A BREEDING FLOCK

Number of ewes	No.	43
Value of ewes at $12 per head	$	516 00
Value of ram	$	40 00
Cost of feed —		
13,416 lb. hay at $8 per ton	$	53 66
7,955 lb. ensilage at $3 per ton	$	11 93
6,235 lb. meal at $30 per ton	$	93 52
6 months pasture at 20 cents per head per month	$	51 60
Total cost of feed for 43 ewes	$	210 71
Interest on investment; 6 per cent of $516 (value of ewes)	$	30 96
Depreciation or replacement charge; 10 per cent of $516	$	51 60
Total charge against ewes	$	293 27
Average charge per ewe	$	6 82
Value of wool per fleece; 7.57 pounds at 31.98 cents per pound	$	2 42
Average cost of keeping ewes (less value of fleece)	$	4 40
Average cost of feed per ewe	$	4 90

COST OF RAM

420 lb. hay at $8 per ton	$	1 68
260 lb. roots at $3 per ton	$	0 39
310 lb. ensilage at $3 per ton	$	0 46
315 lb. meal at $30 per ton	$	4 73
6 months pasture at 20 cents per month	$	1 20
Total cost of feed for ram for one year	$	8 46
Interest on investment; 6 per cent of $40 (value of ram)	$	2 40
Depreciation charge; 25 per cent of $40	$	10 00
Total charge against ram	$	20 86
Value of fleece, 9.25 lbs. at 31.98 cents per pound	$	2 96
Cost of keeping ram (chargeable against lambs)	$	17 90

COST OF RAISING LAMBS TO MARKET AGE

Number of lambs saved from 43 ewes	No.	64
Average number of lambs saved per ewe	"	1·48
Average weight of lambs at birth	lb.	10·37
Average weight of lambs October 22	"	87·00
Average value of lambs at 10.5 cents per pound	$	9 13
Cost of keeping 43 sheep (less value of wool)	$	189 20
Three months pasture for 64 lambs at 20 cents per head per month	$	38 40
Cost of keeping ram (less value of fleece)	$	17 90
Cost of extra labour at lambing time	$	20 00
Medicine	$	5 00
Total cost of raising 64 lambs to market age	$	270 50
Average cost of raising a lamb to market age	$	4 23

Results show that it cost $4.23 to raise a lamb to market age and with a production of 1.48 lambs per ewe, that each ewe made a profit of $7.25.

SWINE

The Yorkshire is the breed of swine kept at the Station. The herd at present consists of one boar, "Ottawa Masterpiece 102" —93241—, two aged sows, and one young sow, "Ottawa Maple Leaf 7" —106615— which was received from the Central Experimental Farm, Ottawa, in May. She farrowed eleven good pigs in August. Two young sows, born in January, were received from Ottawa, in October, and two young sows were kept from the litter of Ottawa Maple Leaf 7, for breeding purposes. There were fifty-seven pigs raised during the year; seven of them were sold for breeding, two kept at breeders, and forty-eight fed for market. In summer the sows are kept in a pasture well supplied

with green feed and fed a small amount of grain. In winter they are kept in yards with colony-houses for shelter, and fed a ration of screenings, 4 parts; bran, 2 parts; oats, 1 part; fed at the rate of 1.5 pounds per hundred pounds live weight. Salt, sulphur and charcoal are added to the meal mixture, and roughage is supplied in the form of roots. They are taken into the breeding-pens a few days before farrowing.

COST OF RAISING PIGS TO WEANING AGE

The following statement is made up from records kept of two brood sows. They were the only sows that were kept over for the full year, as some of the aged sows were replaced by young ones. The total feed the sows consumed as well as the amount the young pigs ate until time of weaning is charged against the sows. The young pigs from three to six weeks of age receive ground oats and sweet skim-milk in addition to the mother's milk.

COST OF RAISING PIGS TO WEANING AGE

Number of sows	No.	2
Number of litters farrowed per sow	"	2
Total number of pigs saved	"	31
Average number of pigs saved per sow	"	15·5
Cost of feed—		
2,480 lb. screenings at $1.45 per cwt	$	35 96
1,121 lb. ground oats at $2 per cwt	$	22 42
1,107 lb. bran at $1.25 per cwt	$	13 83
7,177 lb. skim-milk at $0.25 per cwt	$	17 94
2,500 lb. roots at $0.15 per cwt	$	3 75
Charcoal, salt and sulphur	$	1 00
4 months pasture for 2 sows at $0.50 per sow per month	$	4 00
Total cost of feed for sows and young pigs to weaning age	$	98 90

All costs in connection with the upkeep of the sows are charged against the young pigs, with the exception of labour and housing charges, which are considered to be offset by the value of manure. Each sow is valued at $40 in order to arrive at the interest charge.

Total cost of feed for sows and young pigs to weaning age	$	98 90
Extra labour required at farrowing time	$	10 00
Cost of service at $2	$	8 00
Interest on $80 for 1 year at 6 per cent	$	4 80
Total cost of 31 young pigs to weaning age	$	121 70
Cost per pig at weaning age	$	3 92

SCREENINGS VS. SCHUMACHER VS. MEAL MIXTURE

Object of Experiment.—To compare the value of ground standard elevator-screenings with Schumacher and with a standard meal mixture of screenings, corn, oats, bran, middlings and oil-meal, as to economy of gains produced.

Plan of Experiment.—One lot of eight pigs was fed a ration of clear screenings, tankage and roots; one lot of eight pigs was fed Schumacher, tankage and roots. These two lots were compared with a lot of twenty pigs which were fed a meal mixture consisting of screenings, 7 parts; corn, 5 parts; middlings, 5 parts; oats, 3 parts; bran, 3 parts; and oil-meal, 1 part, with a small amount of skim-milk and tankage.

Valuation of Feeds.—The following prices were charged for feeds: meal mixture, per ton, $35; screenings, per ton, $29; Schumacher, per ton, $40; roots, per ton, $3; tankage, per cwt., $3; and skim-milk, per cwt., 25 cents.

Deductions.—It will be noted that lot 3, fed a meal mixture, made the cheapest gains at a feed cost of 7.07 cents per pound gain. Lot 1, fed screenings, cost 7.50 cents per pound gain and lot 2, fed Schumacher, cost 9.29 cents per pound gain. While the cost of production was greater for Schumacher this was

due to the greater initial cost of this feed rather than to its nutritive value as compared with screenings, since the former lot required only 4.08 pounds of meal to produce a pound of gain while the lot on screenings required 4.37 pounds or over a quarter of a pound more meal.

The third lot was composed of considerably younger pigs when placed on test and cannot directly be compared with the other two lots.

SCREENINGS VS. SCHUMACHER VS. MEAL MIXTURE

—		Lot 1	Lot 2	Lot 3
		Screenings	Schumacher	Meal mixture
Number of pigs in experiment	No.	8	8	20
Initial weight, gross	lb.	808	670	868
Initial weight, average	"	101	83·75	43·4
Number of days on test	days	104	104	121
Finished weight, gross	lb.	1,861	1,650	3,907
Finished weight, average	"	232·62	206·25	195·35
Total gain for period	"	1,053	980	3,039
Average gain per hog	"	131·6	122·5	151·95
Average daily gain per hog	"	1·26	1·17	1·25
Amount of meal eaten for period	"	4,600	4,000	9,850
Amount of roots eaten for period	"	1,400	1,400	.....
Amount of skim-milk eaten for period	"	.....	.....	13,485
Amount of tankage eaten for period	"	342	300	300
Amount of meal eaten per pound gain	"	4·37	4·08	3·24
Amount of roots eaten per pound gain	"	1·33	1·43	.....
Amount of skim-milk eaten per pound gain	"	.....	.....	4·44
Amount of tankage eaten per pound gain	"	0·32	0·31	0·098
Total cost of feed	$	79 06	91 10	215 09
Cost of feed per head	$	9 88	11 39	10 75
Cost of feed per head per day	cts.	9·50	10·95	8·89
Cost of feed per pound gain	"	7·50	9·29	7·07

FIELD HUSBANDRY

COST OF PRODUCING CROPS

COST OF PRODUCING CORN

Twenty acres of ensilage corn were grown at the Station in 1925, under ordinary farm conditions, the yield varying from 18 tons, on some of the rotations which were well drained and had soil of good fertility, to 6 tons on some wet undrained land of less than average fertility. The variety used was Compton's Early, which has given the highest yield per acre for the past seven years.

COST OF PRODUCING AN ACRE OF ENSILAGE CORN IN 1925

Item	Statement	Amount
		$ cts.
Rent of land	Interest and taxes	4 00
Manure	6·4 tons at $2 per ton	12 80
Seed	½ bushel at $2.90 per bushel	1 45
Twine	.....	0 45
Machinery	.....	3 00
Manual labour	21·5 hours at 20 cents per hour	4 30
Teamster labour	24·24 hours at 22 cents per hour	5 33
Tractor and operator labour	4·3 hours at $1.15 per hour	4 95
Horse labour	49·78 hours at 10 cents per hour	4 98
Total cost per acre	.....	41 35
Yield per acre	10·77 tons	
Cost per ton	.....	3 76

From the foregoing table it will be noted that in 1925 corn gave a yield of 10.77 tons per acre at a cost of $3.76 per ton. The average production for three years was 11.52 tons, costing $3.53 per ton.

COST OF PRODUCING OATS

Sixty-eight acres of oats were raised in 1925, which were harvested and threshed the first part of September. The following table gives a detailed statement of the yield, cost per acre, and cost per bushel.

COST OF PRODUCING AN ACRE OF OATS IN 1925

Item	Statement	Amount
		$ cts.
Rent of land	Interest and taxes	4 00
Manure	4·8 tons at $2 per ton	9 60
Seed	3 bushel at 70 cents per bushel	2 10
Twine	3½ pounds at 18 cents per pound	0 63
Machinery		3 00
Manual labour	4·8 hours at 20 cents per hour	0 96
Teamster labour	14·8 hours at 22 cents per hour	3 10
Tractor operator labour	0·7 hours at 90 cents per hour	0 18
Horse labour	38·8 hours at 10 cents per hour	3 88
Tractor labour	0·7 hours at 90 cents per hour	0 63
Threshing charges	53·52 bushels at 9 cents per bushel	4 81
Total cost per acre		32 89
Yield per acre	Grain, 53·52 bushels. Straw, 1·13 tons.	
Cost per bushel		0 61

The oat crop yielded 53.52 bushels per acre, and the cost of production was 61 cents per bushel. The average yield for the past three years has been 47.11 bushels, at a cost of 69 cents per bushel.

COST OF PRODUCING HAY

The following table gives the cost of producing hay on a forty-acre field as well as the yield, worked out on an acre-basis, giving a detailed statement of various items of expense in determining same:—

COST OF PRODUCING AN ACRE OF HAY IN 1925

Item	Statement	Amount
		$ cts.
Rent of land	Interest and taxes	4 00
Manure	2·40 tons at $2 per ton	4 80
Seed	Timothy ..... 10 lbs. cost $1 10	
	Red clover ..... 8 " 3 02	
	Alsike ..... 2 " 0 37	
	$4 49	
	Divided over two years	2 25
Machinery		3 00
Manual labour	11 hours at 20 cents per hour	2 20
Teamster labour	5·67 hours at 22 cents per hour	1 24
Horse labour	10·8 hours at 10 cents per hour	1 08
Total cost per acre		18 57
Yield per acre	2·57 tons.	
Cost per ton		7 23

The table shows that in 1925, the yield of hay was 2.57 tons per acre, costing $7.23 per ton, and for the three-year average the yield was 2.55 tons, at a cost of $6.89. These costs are figured on first- and second-year crops, as a general four-year rotation is followed. Forty per cent of the manure is charged against corn, 30 per cent against grain and 30 per cent against the two hay crops, therefore, 15 per cent is charged against the hay crop for one year.

COMPARISON OF SUCCULENT ROUGHAGE CROPS

This experiment has been conducted for three years in order to determine the relative yields of the succulent roughage crops grown in this district. An acre each of corn, sunflowers, oats—peas—vetch mixture, and swedes is grown side-by-side under uniform soil conditions and handled according to general farm practices. The land is ploughed in the fall and given an application of 16 tons of manure per acre and ploughed again in the spring. Forty per cent of the total cost of the manure is charged against these crops, which are in a four-year rotation. The following is a three-year average of the various items of expense incurred in growing succulent roughage crops, also the yield per acre and cost per ton:—

COMPARISON OF SUCCULENT ROUGHAGE CROPS

Three Years' Average

Item		Corn	Sunflowers	O.P.V.	Swedes
Rent	$	4 00	4 00	4 00	4 00
Manure	$	13 30	13 30	13 30	13 30
Seed	$	1 11	0 94	4 28	1 85
Twine	$	0 55	0 65	.....	.....
Machinery	$	3 00	3 00	3 00	3 00
Manual labour	$	9 93	11 93	7 01	17 45
Horse and tractor labour	$	9 40	10 55	7 73	10 37
Total cost per acre	$	41 32	44 40	39 35	50 00
Yield green weight	tons	10·218	14·693	6·69	19·655
Yield of air-dried weight	"	1·962	3·01	2·328	2·328
Cost per ton green weight	$	4 04	3 02	5 89	2 54
Cost per ton air-dried weight	$	21 06	14 75	16 90	21 47

It will be noted that a ton of swedes, green weight, was produced for $2.54, sunflowers $3.02, corn $4.04 and oats, peas and vetches $5.89, and that sunflowers produced the highest amount of dry matter per acre. Sunflowers are considered a far safer crop in this district than corn, where the soil is heavy and subjected to late spring and early autumn frosts. In order to facilitate the handling of sunflowers with a corn-harvester, it is found advisable to sow a mixture of one pound of sunflower and one peck of corn per acre. The crop which takes the least fertility from the soil is the O.P.V. mixture, as the peas and vetches are leguminous plants which add nitrogen to the soil.

FERTILIZERS

COMPARISON OF MANURE, BASIC SLAG AND OTHER COMMERCIAL FERTILIZERS

Object of Experiment.—To compare the value of manure, basic slag and commercial fertilizers applied to a field in a four-year rotation which includes two years of pasture.

Plan of Experiment.—A field of fifteen acres which is used as a four-year rotation (namely, first year grain; second year, hay; third and fourth year, pasture) was ploughed in the autumn of 1923, divided into four sections and treated as follows:—

Section 1.—Twelve acres received during the winter of 1924, an application of 12 tons of manure, which was valued at $2 per ton, including cost of application. Forty per cent of this cost is charged against the first crop of grain, 30 per cent against the first crop of hay, and 30 per cent against the two years' pasture.

Section 2.—One acre received, early in the spring, an application of 550 pounds of basic slag, costing $5.78 including application. Forty per cent of this cost is charged against the first crop, 30 per cent against the second, and 30 per cent against the two years' pasture.

Section 3.—One acre received an application of 325 pounds of commercial fertilizer made up as follows: acid phosphate, 200 pounds; nitrate of soda, 75 pounds; and muriate of potash, 50 pounds, at a cost of $6.42 applied. Fifty per cent of the cost is charged to the first crop, 30 per cent to the second crop, and 20 per cent against the two years' pasture.

Section 4.—One acre is used as a check without any manure or fertilizer.

COMPARISON OF MANURE, BASIC SLAG AND COMMERCIAL FERTILIZER—TWO YEARS' RESULTS

—	Section 1	Section 2	Section 3	Section 4
	Manure	Basic Slag	Fertilizers	Check
Yield of grain per acre, 1924 ..... bush	33·3	32·5	34·3	28·1
Yield of straw per acre, 1924 ..... tons.	1·85	1·09	1·185	1·28
Yield of hay per acre, 1925 ..... "	2·915	2·17	2·58	1·855
Increase in yield of grain 1924, ... bush.	5·1	4·4	6·2	.....
Increase in yield of straw, 1924 ..... tons	0·57	−0·19	−0·097	.....
Increase in yield of hay, 1925 ..... "	1·06	0·318	0·725	.....
Value of increase	.....	.....	.....	.....
Grain and straw, 1924 ..... $	4 77	2 07	3 43	.....
Hay, 1925 ..... $	10 60	3 18	7 25	.....
Total value of increase ..... $	15 37	5 25	10 68	.....
Cost of increase, 1924 ..... $	9 60	2 31	3 21	.....
Cost of increase, 1925 ..... $	7 20	1 75	1 92	.....
Total cost of increase ..... $	16 80	4 06	5 13	.....
Total profit in two years due to increase ..... $	− 1 43	1 19	5 55	.....

N.B.—Minus sign (−) denotes loss.

The land used for this experiment was of the average fertility. The table gives the results for two years, figured out against the check, section 4.

COMMERCIAL FERTILIZERS VS. BARNYARD MANURE FOR THE RENOVATION OF OLD PASTURES

Object of Experiment.—An experiment was started in 1923, to determine the value of commercial fertilizer as well as barnyard manure in the renovation of old worn-out pastures which have been run-out and overgrown with moss, bracken and hard-hack.

Plan of Experiment.—In the fall of 1922, eleven acres of run-out pasture land was ploughed. This field was divided into three sections as follows:—

Section 1.—Eight acres received an application of 15 tons of manure per acre, which was valued at $2 per ton, including cost of application. Fifty per cent of this cost is charged against the first crop of grain, 30 per cent against the first crop of hay in 1924, and 20 per cent against the second crop of hay in 1925.

Section 2.—Two acres received a dressing of 320 pounds of commercial fertilizer made up as follows: acid phosphate, 8 parts; and nitrate of soda, 3 parts, at a cost of $5.72, including application. This was all charged against the first crop of grain. There was no charge for fertilizer against

the first hay crop on this section. In the early spring of 1925, before the grass started, a second application of commercial fertilizer, of 320 pounds of the same ingredients as in 1923, costing $5.72, was applied, which is all charged against the second year's hay crop.

Section 3.—One acre, which did not receive any manure or fertilizer, was used as a check against sections 1 and 2.

COMPARISON OF MANURE AND COMMERCIAL FERTILIZER—THREE YEARS' RESULTS

—	Section 1 Manured	Section 2 Fertilized	Section 3 Check
Yield of grain per acre, 1923 ..... bush.	45·9	45·8	27·9
Yield of straw per acre, 1923 ..... tons	1·2	1·15	0·6
Yield of hay per acre, 1924 ..... "	1·65	1·60	0·539
Yield of hay per acre, 1925 ..... "	2·006	2·315	1·162
Increase in yield of grain, 1923 ..... bush.	18·00	17·90	.....
Increase in yield of straw, 1923 ..... tons	0·60	0·596	.....
Increase in yield of hay, 1924 ..... "	1·11	1·061	.....
Increase in yield of hay, 1925 ..... "	0·855	1·153	.....
Increase in value	.....	.....	.....
Grain and straw, 1923 ..... $	13 90	13 84	.....
Hay, 1924 ..... $	11 11	10 61	.....
Hay, 1925 ..... $	8 55	11 53	.....
Total value of increase ..... $	33 56	35 98	.....
Cost of increase, 1923 ..... $	15 00	5 72	.....
Cost of increase, 1924 ..... $	9 00	.....	.....
Cost of increase, 1925 ..... $	6 00	5 72	.....
Total cost of increase ..... $	30 00	11 44	.....
Total profit in three years due to increase ..... $	3 56	24 54	.....

Deductions.—It may be noted from the table that on section 2, on which was used commercial fertilizer, there was a profit of $24.54, for the three years' crop, after deducting the cost of the fertilizer. On section 1, which was manured, there was only a profit of $3.56. These results were worked out on a basis of hay valued at $10; straw, $4; and oats, 75 cents per bushel. This experiment shows one way of renovating some of the run-out pasture-land in the Townships. This land had been cropped for years, and when it would not grow anything but weeds was turned into pasture. The question often arises as to how to get this land back to producing a crop, where there is no manure. It was in order to answer this question that this experiment was started, and the results, although of only three years' duration, show a very profitable return from the use of commercial fertilizers.

LIME EXPERIMENT

Object of Experiment.—To ascertain the value of ground limestone to correct the acidity in the soil and by so doing to determine the increase in the different crops that come into the four-year rotation that is followed.

Plan of Experiment.—This experiment is carried on in a field of light soil that is used for field husbandry experimental work. It consists of twenty acres and is divided into one-twentieth-acre plots. Duplicate plots are used for this work in different parts of the field and the results are the average. In this experiment, manure at the rate of 16 tons per acre is applied to the corn. The following year, which is in grain and seeded, ground limestone is applied at the rate of 2 tons per acre at time of seeding. The third year's crop is clover hay and the fourth year's, timothy. Therefore, the land which produced corn in 1925 was in grain in 1922, and had an application of 2 tons of limestone per acre.

VALUE OF LIME

Item	Limestone	Unlimed	Gain in pounds	Gain in value
	lb.	lb.	lb.	$ cts.
Corn—yield per acre	30,570	24,970	5,600	8 40
Oats—yield per acre	1,550	1,380	170	3 40
Oat straw—yield per acre	2,070	1,890	180	0 36
Clover hay—yield per acre	3,110	2,490	620	2 48
Timothy hay—yield per acre	4,200	1,970	2,230	5 92
				23 50
Two tons of limestone at $6 per ton				12 00
Profit per acre due to lime during four years				11 56

It is very noticeable, from the table, that the field on which this experiment was conducted was quite acid and responded quickly to the effect of the lime which corrected acidity and released elements of plant-food for the benefit of the crop. This soil is typical of much of the land in the Eastern Townships. which would be benefited to the same extent, no doubt, by an application of lime.

ROTATION OF CROPS

In order to determine the most suitable rotations for different purposes, a system of five different rotations, ranging from three to six years in duration, was established on a fairly level field, typical of the Eastern Townships farm land. These rotations are handled under normal farm conditions. Following will be found an outline of different rotations and their yields for 1925, together with an average of two years.

ROTATION "A" (FIVE YEARS' DURATION)

First year—Corn.

Second year—Barley (seeded down).

Third year—Clover hay.

Fourth year—Timothy hay.

Fifth year—Oats, apply 20 tons manure to oat stubble for corn.

YIELDS ON ROTATION "A"

Crop		Average yield 2 years	Yield in 1925
Corn	tons	17·288	20·706
Barley	bush.	28·31	33·22
Clover hay	tons	2·666	2·68
Timothy hay	tons	2·153	2·34
Oats	bush.	40·97	32·94

This five-year rotation appears to be a very practical rotation for the average farmer, as it gives him an opportunity of raising more grain than is the usual practice in this district, and by so doing, reducing the feed-bill, and at the same time making it possible to raise corn, sunflowers or other crops for ensilage. Or part can be used for roots, followed by barley, which grain makes an excellent feed, when ground, for hogs and beef cattle, and when mixed with oats and bran it does very well for dairy cows. Barley, at this Station, has given a heavier yield in pounds than oats and it makes one of the best crops

with which to seed down. By sowing ten pounds of clover and ten pounds of timothy per acre a good crop of clover is usually raised the following year for hay. The second year in hay is usually nearly all timothy, which, when cut early, makes excellent hay for horses. Timothy is followed with oats—the best grain for horses—and which when ground fills an important place in the ration for the dairy cow, as well as the growing calves and young pigs. Manure is applied to the oat stubble at the rate of 20 tons per acre and ploughed for corn or other intertilled crops. With this application of manure every five years, the sowing of plenty of clover, careful pasturing, and the best of cultivation, there is no trobue in keeping up the fertility of the soil.

ROTATION "B" (FOUR YEARS' DURATION)

First year—Sorn.
Second year—Oats (seeded down).
Third year—Clover hay.
Fourth year—Timothy hay—16 tons of manure on fall-ploughed sod for corn.

This four-year rotation is followed on the main farm. Sixteen tons of manure are applied to sod during the winter and ploughed under in the spring. This manure is valued at $2 per ton, applied. Forty per cent of the manure is charged against corn, 30 per cent against grain, 20 per cent against clover, and 10 per cent against timothy.

YIELDS ON ROTATION "B"

Crop	Average yield 2 years	Yield in 1925
Corn.....tons	12·645	15·23
Oats.....bush.	56·64	55·68
Clover hay.....tons	2·435	2·24
Timothy hay.....tons	2·32	2·74

This four-year rotation is a very practical one, and where handled properly will gradually increase the production of the average farm.

ROTATION "C" (THREE YEARS' DURATION)

First year—Corn or potatoes.
Second year—Oats (seeded down).
Third year—Clover hay. Twelve tons of manure applied on fall-ploughed sod in spring.

YIELDS ON ROTATION "C"

Crop	Average yield 2 years	Yield in 1925
Corn.....tons	9·765	15·04
Oats.....bush.	53·12	52·54
Clover hay.....tons	2·18	2·01

This rotation provides one-third of the total area in each of the three crops grown. Manure is applied on the clover sod, at the rate of 12 tons per acre. This is a suitable rotation for bringing light or run-out soil into a good state of fertility. It is a rotation usually used in districts where potatoes or other cash-crops are grown.

ROTATION "D" (SIX YEARS' DURATION)

First year—Corn or roots.
Second year—Barley (seeded down).
Third year—Clover hay—Eight tons manure or clover sod in winter for timothy.
Fourth year—Timothy hay.
Fifth year—Timothy hay.
Sixth year—Oats—Sixteen tons manure on stubble in winter for corn.

YIELDS ON ROTATION "D"

Crop		Average yield 2 years	Yield in 1925
Corn	tons	11·11	12·02
Barley	bush.	33·135	37·77
Clover hay	tons	2·825	2·80
Timothy hay	"	2·725	3·15
Timothy hay	"	2·285	2·25
Oats	"	55·925	46·35

This six-year rotation could be used very nicely for supplementary pasture, if required, by using the fifth and sixth year as pasture and applying the manure for corn, during the winter preceding corn, on the pasture-sod.

ROTATION "E" (HAY AND GRAIN ROTATION)

First year—Oats (seeded down).
Second year—Clover hay—Eight tons manure applied to clover stubble.
Third year—Timothy hay.
Fourth year—Timothy hay—Eight tons manure applied to timothy stubble.

YIELDS ON ROTATION "E"

Crop		Average yield 2 years	Yield in 1925
Oats	bush.	48·375	48·35
Clover hay	tons	2·845	2·84
Timothy hay	"	3·26	2·94
Timothy hay	"	2·82	2·88

This is a suitable rotation for use on parts of a farm on which it would not pay to grow corn, such as very rough land, on a field a long distance from the buildings, and also is a rotation that could be followed where there is a shortage of manure, by using commercial fertilizers. This also makes a suitable pasture rotation.

PURPOSE OF ROTATIONS

The purpose of a rotation is to conserve soil fertility, control weeds and to supply the proper balance of succulent roughage, dry roughage and grain for the requirements of live stock. It is not possible, nor practical, to follow the same system of rotation on all farms for the reason that soils vary, and other conditions are not always the same with all farmers. Every farmer should give this question thought and study, and try to adopt and follow a system of rotation best adapted to his particular soil conditions plan of farming.

HORTICULTURE

VEGETABLES

POTATO

Most of the potatoes produced in the Eastern Townships are grown in areas of one or two acres as a cash-crop by farmers whose interests are centered in other lines of agriculture. As a result the crop seldom receives sufficient attention and the yields are often poor. With rare exceptions spraying or dusting for the control of the Colorado potato beetle is general, but little or no attention is paid to the often more serious pest, blight. Frequently also control of blight when attempted is not effective in that spraying or dusting is not thorough, the applications are not made at the right times, or the materials used unsuitable or improperly mixed. During the past season blight was usually prevalent throughout the district and many potatoes rotted, yet at this Station where spraying or dusting is a regular farm operation, no blight was observed and the crop was better than usual.

SPRAYING VS. DUSTING.—In this project the Bordeaux calcium arsenate spray, which has proven the most satisfactory of several sprays tested over a period of five years, is compared with several home-made and commercial dust preparations for the control of the Colorado Potato-Beetle and potato-blights. The first applications are made as soon as the plants are five or six inches high and are repeated at intervals of about two weeks until the vines are killed by frost. Immediately before and twenty-four hours after each application, the number of live beetles and slugs are counted on a portion of each plot, and the percentage of control determined. For the control of blight no definite comparison has been possible as during the three years that the experiment has been conducted the disease has not appeared on any of the sprayed or dusted plots. Following is a three-year average of beetle-control and yield of crop:—

For the seasons 1923 and 1924, Bordeaux calcium arsenate spray gave slightly the better result in beetle-control and yield of crop. This was apparently due to the dusts being easily washed off by showers, while the spray formed a coating which remained on the foliage much longer. In 1925, however, the applications of dust were made immediately after showers or early in the morning while the foliage was still wet with dew. A coating was thus formed that seemed to stick fully as well as the spray and to give better results.

ONION

TEST OF VARIETIES.—Although nineteen varieties were grown in the comparative tests of onions for 1925, the crop, owing to a severe hail storm in August, was unsatisfactory and comparisons impossible. From the average of results for the preceding five years, the best varieties tested are: Red Wethersfield and Giant Prize Taker. For pickling, White Barletta and White Portugal have proven satisfactory.

TRANSPLANTING ONIONS.—Transplanted onions produced a much larger crop in 1925 than those grown entirely in the open. This was apparently due to their being more advanced at the time of the hail-storm, and, although badly bruised, the individual onions recovered and grew to normal size.

Four varieties were included in the test, the seed being sown in the hotbed on April 1. The young plants were pricked off early in May and transplanted to the garden on June 3. Following are the results obtained:—

SPRAYING VS DUSTING—AVERAGE OF RESULTS 1923 TO 1925

Sprays and dusts used	Average per cent of beetles and slugs killed by five applications	Yield per acre			
		Marketable		Unmarketable	
		bush.	lb.	bush.	lb.
Bordeaux 5-12-40, calcium arsenate 1 lb	93·0	377	13	88	46
Hydrated lime 8 lb. calcium arsenate 1 lb	92·3	367	26	57	13
Green potato dust	90·0	418	33	53	10
Bordeaux arsenate, dust	83·0	383	13	62	40
Brown apple dust	79·0	375	40	61	..

TRANSPLANTED ONIONS—TEST OF VARIETIES 1925

Variety	Color	Shape	Yield from one thirty-foot row
			lb.
Large Red Wethersfield	Red	Round	24
Yellow Globe Danvers	Yellow	Oval	20
Prize Taker	Yellow	Oval	20
Ailsa Craig	Yellow	Oval	18

ONION SETS.—Two thirty-foot rows of both red and yellow onion sets were grown in 1925, and although damaged somewhat by hail, a fair crop was obtained, the yellow giving highest yield and best onions. The average yield for the past five years of the two kinds from one thirty-foot row is: yellow, 21 pounds; red, 20 pounds 3 ounces.

GARDEN CARROT

TEST OF VARIETIES.—During the past ten years, twenty-two varieties of carrots have been tested, but so far the best results have been obtained with Chantenay and Nantes Half Long. Both varieties are of medium size, well shaped, smooth and uniform. For early bunching, Nantes Half Long is slightly superior, while Chantenay, which is a little larger and heavier yielding, is the best for marketing loose and for winter storage.

During the past few years, when it has been grown, the Ottawa Selection of Chantenay has proven superior to the same variety secured from other sources.

DIFFERENT DATES OF SEEDING.—Seed of the Chantenay variety has been sown on several different dates for the past three years. The first seeding is made as early in the season as possible and the remainder at intervals of approximately two weeks up to the first week in July. Following is the average of results:—

GARDEN CARROTS, DIFFERENT DATES OF SEEDING
Average of Results, 1923 to 1925

Seeding	Number of days until ready for use	Yield from two thirty-foot rows	
		Number of bunches	Weight of crop
			lb.
Late April	97	28	33
Early May	93	37	35
Late May	91	31	32
Early June	101	22	16
Late June	103	21	14
Early July	.....	.....	.....

From the foregoing table it may be noted that the early seedings produced the best crop, but that carrots of bunching size were obtained from seed planted in late June. The seeding in early July has given negative results.

GARDEN BEET

TEST OF VARIETIES.—The comparative test with garden beets for 1925 included twelve varieties, all of which were tested in 1924. The results were also similar to those obtained the previous season in that the most satisfactory varieties proved to be the Ottawa selection of Detroit Dark Red and Crosby Egyptian. Detroit Dark Red is a heavy yielding variety suitable for both bunching or storing for sale during winter. Crosby Egyptian is a fine-quality beet ideal for early bunching.

DIFFERENT DATES OF SEEDING.—For the past three seasons seed of the Detroit Dark Red variety has been sown at intervals of about two weeks from as early in the season as possible, until early July. So far it has been found that beets of bunching size may be obtained from seedings up to the later part of June, although earlier seedings produce larger beets and heavier yields.

PARSNIP

TEST OF VARIETIES.—Five varieties of parsnip were tested in 1925 and of these Hollow Crown, which has been grown for several years, produced the highest yield. Dobbie Exhibition, a variety tested for the first time in 1925, gave a good yield of smooth, uniform parsnips.

DIFFERENT DATES OF SEEDING.—For the past two seasons, seed of the Hollow Crown variety has been sown at different dates beginning in late April and continuing at intervals of about two weeks until early in July. In each season the best crops have been obtained from the earlier seedings, although parsnips of marketable size have been secured from all seeding up to the middle of June.

PARSLEY

TEST OF VARIETIES.—Three varieties, Moss Curled, Tripple Curled and XXX have been grown for the past three years. Of these Moss Curled produces the largest heads and XXX the best quality of leaf.

ASPARAGUS

With suitable management, asparagus will produce very profitable crops in the Eastern Townships. Under average conditions the roots winter well and the growing season is usually quite favourable. The plantation of the Washington variety set in 1922 with three-year-old plants produced a light yield in 1923, and a crop of 2,150 bunches per acre in 1924. Owing to a rearrangement

of the experimental areas, it was found necessary to plough up this plantation in the fall of 1924. A new plantation, of the same variety, set with two-year-old plants in the spring of 1924, made good progress in 1925 and should yield well in 1926.

GARDEN PEA

TEST OF VARIETIES.—Variety tests of garden peas have been conducted at this Station each year since 1915, and a total of fifty-one varieties and strains have been grown. These have included the most promising varieties readily obtainable commercially and a number of varieties and selections resulting from breeding work at the Central Experimental Farm, and the Dominion Experimental Station at Invermere, B.C. A number of selections made at Lennoxville have also been tested during the past season. Among the ordinary commercial varieties tested, the most satisfactory are: first early—American Wonder; second early—Gradus; mid-season—Sutton Champion; late—Telephone and Stratagem. Over a period of eight years Telephone has given the highest yield, but owing to its height it must be brushed in order to secure the best results. Of the others, Sutton Excelsior and American Wonder are dwarf and Gradus and Stratagem intermediate, usually not exceeding three feet six inches in height.

Excellent results have been obtained with several of the newer selections and varieties. Of these a selection of Gradus made at this Station in 1922 seems the most promising. Two seedlings from Invermere and a hybrid variety from the Central Experimental Farm, Ottawa, have also given good yields.

DISTANCE APART OF PLANTING SEED IN THE ROW.—Where sufficient moisture and plant food is available, such as is found under average garden conditions in this district, seed of garden peas may be planted quite close in the row. In general seed is spaced too far apart. Following is a three-year average of results of planting seed at different distances apart in the row with three common varieties:—

PEAS—DISTANCE APART OF PLANTING SEED IN THE ROW

Average of Results 1923 to 1925

Distance apart of planting seed in row	Yield from one thirty-foot row					
	English Wonder		Thomas Laxton		Stratagem	
	lb.	oz.	lb.	oz.	lb.	oz.
½ inch	14	4	14	5	20	6
1 inch	13	..	10	15	13	3
2 inches	10	..	9	13	11	8
3 inches	7	14	7	11	6	11

PUMPKIN

TEST OF VARIETIES.—Of the five varieties tested the most suitable were those recommended in previous reports, namely: large—Connecticut Field; small—Quaker Pie. Both varieties will produce a good yield under average conditions and the pumpkins keep well in storage.

CUCUMBERS

TEST OF VARIETIES.—Since 1915 twenty-nine varieties of cucumbers have been grown for comparative test, and so far the most satisfactory varieties tested are: Early, Early Russian. Main crop, Davis Perfect. Pickling, West Indian Gherkin. For growing in the hotbed or coldframe, Rollins Telegraph has proven very satisfactory.

TRANSPLANTING VS. SEEDING IN THE OPEN.—The transplanting of cucumber-plants raised from seed and planted in the hotbed in April, has been more successful than the similar project conducted with squash. The cucumber plants are not as difficult to transplant and frequently continue to grow without apparent check after setting out, thus producing an earlier crop than from seed planted in the open.

For the past two seasons, seed of all varieties tested has been planted in hotbed in strawberry-boxes of soil, five or six seed to the box, and when danger of frost is past, each box of plants is transplanted to a hill in the garden. For comparison seed has also been sown in the garden during the last of May. Following are the results obtained with the three recommended varieties: —

CUCUMBERS—TRANSPLANTING VS. SEEDING IN THE OPEN

Average of Results 1924 and 1925

Variety	Transplanted				Seeded in the open			
	Ready for use		Average yield from three hills		Ready for use		Average yield from three hills	
	1924	1925	lb.	oz.	1924	1925	lb.	oz.
Early Russian	July 30	July 20	32	8	Aug. 10	Aug. 10	33	12
Davis Perfect	Aug. 3	July 31	43	8	" 12	" 15	36	4
West Indian Gherkin	" 4	July 30	20	..	" 12	" 14	7	..
Average			32	..			25·6	..

SQUASH

TEST OF VARIETIES.—Although twelve varieties of squash were tested in 1925, the most satisfactory were the Golden and Green Hubbards. A selection of Green Hubbard, known as Warty Hubbard, produced squash of good quality that, in practically all respects, resembled Green Hubbard.

Of the crook-neck sorts, Giant Summer Crookneck produced the best crop, and of the vegetable marrows, Large White Bush was very satisfactory.

TRANSPLANTING VS. SEEDING IN THE OPEN.—For the past two years seed of each variety has been started in strawberry boxes, placed in a hotbed, about the middle of April. Later in the season, when danger of frost was past, the plants have been transplanted to the open. As a check on this method seed of the same varieties has been sown in the open ground late in May, so that the young plants would not appear until after the usual early June frost. So far it has been found that squash-plants, being difficult to transplant, do not recover quickly, when transplanted to the open, and unless exceptional care is exercised, make little progress for the first two weeks after setting out. The plants from seed planted in the open, however, make quicker and stronger growth, and for the past two years have produced the heaviest yield of crop. It would seem, therefore, that there is nothing to be gained from transplanting squash-plants other than the securing of a few earlier squash.

CITRON

Of the two varieties Red Seeded and Green Seeded, tested in 1925, the former produced the largest crop, although from a standpoint of quality there was little to choose between the two varieties.

MUSKMELON

Although readily saleable at good prices few muskmelons are grown in this district, the majority of those consumed being imported.

During the past eleven years good crops of melons have been raised each season at this Station and if the correct method is carefully followed, such experience could be easily duplicated by growers throughout the district. In general it has been found that, in average seasons, good melons can not be produced in the open garden. Even if the plants are started early in the hotbed or greenhouse and transplanted when partially grown, the cool nights and heavy storms usually experienced during early summer, check growth and retard development so that a late crop of small melons result.

The practice adopted at this Station has proven very satisfactory. The seed is sown in the hotbed about the middle of April and the young plants transplanted to manured cold-frames during late May. The lights are kept on the frames at night and during cool days until well into July at which time the vines have made a good growth and a number of melons have set. During the warm weather of July and August the crop makes good progress and ripe melons are usually available the first week in August.

TEST OF VARIETIES.—Of eighteen varieties of musk melons that have been tested since 1915, Milwaukee Market has produced the largest melons of good quality. Montreal Market yields better but is inferior as regards quality. Of the smaller sorts, Emerald Gem and Paul Rose can be recommended.

CABBAGE

TEST OF VARIETIES.—Following is a three-year average of results from the principal varieties tested:—

CABBAGE—TEST OF VARIETIES

Average of Results 1923 to 1925

Variety	Date when ready for use			Average weight per single cabbage		Yield from two thirty-foot rows	
	1923	1924	1925	lb.	oz.	lb.	oz.
Copenhagen Market	July 14	July 16	July 12	9	11	332	8
Early Paris Market	" 16	" 19	" 17	7	5	194	11
Early Winnigstadt	" 19	" 21	" 20	8	2	255	..
Succession	Aug. 2	" 31	" 30	10	1	322	8
Fottler Imp. Brunswick	" 14	Aug. 10	Aug. 13	8	13	278	..
Ex. Amager Danish Ballhead (Ott. Sel.)	Sept. 1	" 30	Sept. 1	6	..	192	4
Marblehead Mammoth	" 2	" 31	" 3	11	7	363	12
Enkhuizen Glory	" 3	Sept. 1	" 4	9	14	317	8
Summer Ballhead	Aug. 16	Aug. 24	Aug. 21	5	13	188	..
Danish Ballhead (Intermediate stem)	Sept. 2	Sept. 6	Sept. 7	6	6	203	3
Danish Ballhead (Short stem)	" 2	" 6	" 7	6	1	196	7

As an early cabbage, Copenhagen Market cannot be too highly recommended. The heads are of good size, firm and attractive in appearance. They do not split badly when fully grown, and the crop may be held, when ready for market, longer than other early varieties which have been tested.

Of the mid-season varieties, Succession may be depended upon to produce a good crop of firm well-shaped heads.

For a late crop and winter storage, either of the strains of Danish Ballhead are the most satisfactory. Enkhuizen Glory and Marblehead Mammoth, although high-yielding, are not entirely satisfactory as the former produces a loose flat head, and with the latter, the heads split badly in a moist season. Golden Acre, a variety which has been tested for two years only, produces heads that are well shaped, firm and of excellent quality.

DIFFERENT DATES OF SEEDING.—For the past three seasons seed of Copenhagen Market and Danish Ballhead has been sown early in May and from then on, at intervals of two weeks, until the third week in July. So far, it has been found that marketable heads of Copenhagen Market will develop from all seedings until the middle of July, but that with Danish Ballhead, seedings later than the middle of June are not likely to produce a crop.

CAULIFLOWER

TEST OF VARIETIES.—Early Snowball has so far proved to be the most satisfactory variety of those tested. Large Late Algiers, which was grown for the first time in 1925, produced a large strong head which, however, was frequently loose and open. Early Dwarf Erfurt, which has been grown for a number of years, seems to bolt easily and produces a high percentage of small unmarketable heads.

DATES OF SEEDING.—For the past four years seed of Early Snowball has been sown at different dates each year. The first seeding has been made in the hotbed early in April and the next in the first coldframe usually about May 5 or 6. From then on the seedings are made in the open at intervals of about two weeks until the middle of July. With the seeding in the hotbed, it has been found difficult to prevent the plants from bolting after transplanting and forming very small heads. With the seedings in the coldframe, and those in the open, up until the middle of June, good crops have usually been obtained.

SWEET CORN

TEST OF VARIETIES.—Owing chiefly to the cool weather and frequent precipitation during the growing season, only the earliest varieties of sweet corn are likely to produce a crop at this Station or in the surrounding districts. During the past eleven years a total of forty-one different lots, representing practically all of the better varieties and strains have been tried, but with the exception of three unusually favourable seasons, only the very earliest have proven dependable. Of these Early Malcolm and Golden Bantam have been tested each year since 1915 and have proven very satisfactory. Of several early varieties which have been tested for shorter periods Early June and Alpha produced marketable ears the first week in September. Both are available commercially. Pickaninny, a variety originated at the Central Experimental Farm, Ottawa, has proven the earliest variety tested, being ten days to two weeks earlier than Golden Bantam. The cobs are small with a dark-coloured kernel of good quality and excellent flavour. In competition with Golden Bantam it would not find ready sale, but since it is much earlier, may be used to advantage for early sale or home use.

TOMATO

Owing to a severe hail-storm early in August which practically defoliated tomato-plants, no results of experimental value were obtained from the variety test of tomatoes in 1925. As a rule tomatoes are not a satisfactory crop at Lennoxvile as only early varieties may be depended upon to ripen fruit in a normal season. From the results of the variety tests conducted since 1915, the outstanding variety is Alacrity. It is an early selection from Earliana, made at the Central Experimental Farm, Ottawa, and in a normal season begins to fruit about the middle of August. The fruit is medium in size, reasonably smooth and bright red in colour. It produces a strong vigorous vine and yields well. Among the ordinary commercial varieties John Baer, and Bonny Best are the most satisfactory.

RADISH

Although a number of other varieties of radish have been tried the most satisfactory are French Breakfast, Scarlet Turnip White Tip and XXX Scarlet Oval.

LETTUCE

As usual excellent lettuce was produced by practically all of the twenty-one varieties tested in 1925. Grand Rapids, however, still seems to be the best loose-leaf variety for the district with Black Seeded Simpson as a second choice. Of the cabbage-head varieties, Iceberg and Salamander are recommended.

CELERY

The cool moist season of the Eastern Townships is usualy very favourable for celery and, at this Station at least, a poor crop of celery is rare. Of the nineteen varieties tested in 1925, all devloped normally and provided a good opportunity for comparisons. The finest quality of celery was found in the crop of White Plume which, although possibly too small for a market celery, cannot be too highly recommended for home use. As an early-market variety, Golden Self Blanching is quite satisfactory. A somewhat similar but larger variety, Easy Blanching, made a strong quick growth but the celery proved corky and of inferior quality. For late sale and winter storage Evans Triumph has in the past proven superior to all others, although during the past season, the best late celery was produced by New Emperor, a variety tried for the first time.

BEANS

Owing to unfavourable weather during July and a severe hail storm in August, none of the twenty varieties of beans included in the test for 1925, produced a normal crop. From the results of former seasons, the most satisfactory varieties for the district are: Yellow Podded, Hodson Long Pod, Green Podded, Refugee 1000-1.

TREE FRUITS

APPLES

VARIETY ORCHARD.—Previous to the winter of 1924-25 the lowest temperature recorded at this Station, since the variety orchard was set out, was 45 degrees below zero. At such a temperature a few standard commercial varieties and many of the best Ottawa seedlings were found perfectly hardy. However, with the thermometer registering 48 degrees below zero, as it did on January 28, 1925, many varieties hitherto regarded as sufficiently hardy for the district proved too tender, and approximately thirty-five per cent of the trees in the entire orchard were partially or wholly winter-killed.

Of previously recommended varieties, Melba and Pedro proved unequal to the test, three out of eight trees of each being killed outright and practically all of the young growth on the remainder killed back. Either variety may still be recommended for good situations in practically any part of the Township, but, on exposed sites, where the soil is heavy or poorly drained, they are not likely to prove hardy in exceptionally severe winters.

Fortunately among the varieties which have consistently proven hardy, there are a number of excellent kinds, the most noticeable of which is the well-known Lobo. The three six-year-old trees, which represent the original planting of this excellent variety, have survived each winter without apparent injury and produced fruit in 1924 and 1925. From the information at present available, this variety may be recommended for any part of the district where suitable soil is available for planting. Following is a brief description of other Ottawa varieties of good quality, which have proven hardy, but are not as well known as the Lobo:—

Galetta.—A seedling from Wealthy ripening at Lennoxville in the latter part of August. The fruit is medium size, pale-yellow in colour partly over-

laid with red. The flesh is firm, mildly subacid, and of fair dessert quality. The trees are strong and vigorous, bear heavily, and, at Lennoxville, produced the first fruit the fourth year after setting out.

Joyce.—A McIntosh seedling which ripened about the middle of September. The fruit is of medium size, round to oblate in shape and of a yellow colour largely overlaid with crimson. The flesh is tender, melting and juicy, with a pleasant subacid flavour and of excellent dessert quality. The trees are not as vigorous as those of Galetta, but the wood ripens early in the season, and so far has not suffered winter injury. At this Station the first fruit was produced the fifth year after planting, and, since then, each tree has given a light crop each year.

Winton.—A McIntosh seedling about two weeks later than Joyce, the fruit ripening about October 1. The apple is medium in size and quite similar to its parent in flavour and quality, but somewhat like Fameuse in general appearance. It is not as good an apple as the McIntosh, but on account of its hardiness should prove valuable for situations where standard commercial varieties are not suitable.

Donald.—A Northern Spy seedling of good quality, the fruit being large and very similar to Northern Spy in shape and quality although better coloured. At Lennoxville the fruit has usually ripened the third week in October. The flesh is firm and under average storage conditions the fruit will keep until late winter. The trees are strong, quick-growing and fruited the fifth year after setting out.

Scions of the foregoing and other varieties, unobtainable commercially, are available for distribution in limited quantities.

PLUMS

Although few trees were killed outright, the entire plum orchard showed the effect of the severe winter of 1924-25 to a marked degree. New wood was killed back and growth throughout the season was small. With the majority of the trees this new growth ripened well, and on the whole, the orchard entered the winter of 1925-26 in fair condition. The previously recommended varieties, Wanota, Kahinta and Hawkeye, were only slightly injured and bore average crops of fruit in 1925. Scions of these varieties are available for distribution.

SMALL FRUITS

STRAWBERRIES

TEST OF VARIETIES.—The absence of extreme heat, and the abundant rainfall, which usually characterizes the Eastern Townships growing season, make this district a favoured one for growing strawberries. Under average conditions of soil-fertility, and where proper cultural methods are followed, a poor crop is a rare exception, although, in many instances, the use of better varieties would materially increase the returns.

Of the various varieties which have been tested at this Station since 1915. those listed in the following table have given the best results.

STRAWBERRIES, TEST OF VARIETIES

Average of Six Years

Variety	Average Season	Quarts per acre
Buster (imp.)	July 3 to July 30	7,206⅔
Pocomoke (per.)	July 1 to July 17	6,865
Stevens Late Champion (per.)	July 1 to July 21	6,306⅔
Howard No. 41 (imp.)	July 1 to July 20	6,659
Mariana (per.)	June 27 to July 18	6,308⅓
Ruby (per.)	July 1 to July 21	6,144
Parson Beauty (per.)	June 30 to July 31	6,033⅓
Portia (imp.)	July 1 to July 31	5,478⅓
Senator Dunlap (per.)	June 27 to July 17	5,683⅓
Valeria (per.)	June 30 to July 20	5,306⅔

From the foregoing table it may be noted that the varieties Buster and Pocomoke have given the highest yield of crop. Their quality is good and both are excellent for home use. The fruit of Buster, however, is not as firm as could be desired, and for this reason it cannot be recommended for commercial plantations. The same also applies to Pocomoke to a lesser extent, and commercial plantings of it, in this district at least, should be limited to a small portion of the total area.

For the main planting, Senator Dunlap and Parson Beauty are more satisfactory as they produce attractive-appearing, firm fruit of excellent quality that ships well and is easily disposed of. Portia is also an excellent commercial variety as the fruit is exceptionally firm yet of splendid quality and exceptionally attractive appearance. It is at present regarded as the best canning variety.

Of varieties which have been tested for shorter periods than six years, three have given excellent results.

Cassandra (imp.) a seedling of the variety Bubach, originated at Ottawa, has produced an average crop for the past three years of 7,200 quarts per acre. The berries are large, firm and of good quality and appearance. The plants are vigorous, fairly productive of runners and apparently not readily susceptible to rust. For the home garden or commercial plantations it should prove an excellent variety.

Cordelia (per.). Another seedling, originated at Ottawa, has given an average yield for the past five years of 7,214 quarts per acre. The berries are small to medium in size but of excellent flavour and attractive appearance. They are not sufficiently firm for commercial purposes, but for home use should prove ideal. The plants are strong, vigorous and very productive of runners.

Marvel (per.). A variety obtainable commercially which has been tested only two years, but during that period has given a yield of 13,000 quarts per acre in 1925, from plants set in 1924, and 12,850 quarts per acre, in the same year, from plants set in 1923. The berries are large, plants are vigorous, very productive of runners and fairly resistant to rust.

BREEDING WORK.—The seedlings from Wm. Belt and Valeria mentioned in the report from this Station for 1924, were set out for comparison in the variety-test plantation in 1925. Two seedlings, of everbearing origin, were multiplied to secure sufficient plants for test, and seed from several artificial crosses was obtained and planted.

RASPBERRIES

TEST OF VARIETIES.—During recent years another factor, of a detrimental nature to the culture of raspberries in the Eastern Townships, has presented itself, namely, the disease Mosaic. At present the known remedies for its

control are the planting of disease-free stock with subsequent roguing out of infected plants, or, the use of varieties possessing inherent resistance to the disease. For the past three years Mosaic has been present in the raspberry plantation at this Station, and has practically killed some varieties while other varieties, immediately adjacent, show resistance in degree varying from apparent total immunity down to severe infection with nearly total loss of crop.

Of the apparent wholly resistant varieties, Latham is the most promising. The berries are large, bright-coloured, of good flavour and fairly firm. The canes are vigorous growing and the yield of fruit fairly good. The variety Count, introduced by the Central Experimental Farm in 1907, has also shown itself resistant to Mosaic and produced excellent crops of large berries.

Of the varieties which may be easily obtained from nurserymen, the best results have been obtained from Newman 23 and Herbert. Of these, Newman 23 is apparently the most satisfactory variety for commercial plantings, although it is apparently a little more susceptible to Mosaic than Herbert. For the present, at least, this Station is recommending both for commercial purposes. The variety King has also shown decided resistance to Mosaic, and, although the fruit is small, it is one of the earliest varieties and can be used to advantage for either home consumption or sale.

CURRANTS AND GOOSEBERRIES

Crops of both currants and gooseberries were exceptionally small in 1925, and the results obtained of little or no comparative value. From the results of previous seasons the following varieties are recommended:—

Black Currant: Saunders, Kerry and Climax.
Red Currant: Red Grape and Victoria.
White Currant: White Cherry.
Gooseberries: Houghton, Carrie and Downing.

ORNAMENTAL GARDENING

PERENNIALS

Possibly the most attractive and interesting portion of the Station, from the standpoint of the general public is that given over to the growing of the various hardy perennials.

The season at Lennoxville is apparently ideal for perennials, and throughout the entire season from early spring until late fall, the various plantings of these brilliant flowering plants display a continuous succession of bloom. Of the large number of species and varieties that have proven suitable the following are very satisfactory:—

Various varieties of pansy, polyanthus, garden pink and sweet william, oriental poppy, Gaillardia and Lupines; many varieties of Paeony and Iris; *Lychnis chalcedonica, Delphinium hybridum, Delphinium chinense*, also many of the varieties of Helianthus and Phlox.

ANNUALS

The season generally was not entirely favourable for annuals, for the cool, wet weather delayed bloom, and all tender varieties and species were killed by early September frosts. Hardy species and those started in the hotbed were more satisfactory, and the beds of these made a fairly good display.

Canna.—Although injured by hail in early August, the various varieties of Canna made a quick recovery and produced large quantities of excellent bloom. The most satisfactory variety was King Humbert.

Gladioli.—Practically all of the fifty-seven varieties of Gladioli, which were tested in 1925, produced satisfactory bloom. In fact the large bed of these plants presented a brilliant and continuous display from mid-August until late September. A few of the outstanding varieties are: Crimson Glory, Emperor, Jack London, Purple Glory, Rose Glory, Mary Pickford, Peace, War, Glory of Holland and E. J. Shayler.

SWEET PEA.—Of the twenty varieties of sweet pea, which were tested during the past season, the following varieties proved very satisfactory: Constance Hinton, Hawlmark Pink, Barbara, Mrs. Townsend, Picture, Royal Purple, Prince George, Florence Nightingale and Loyalty.

ASTERS.—The test of asters for the past season was made up of two collections. One from Sutton & Sons and the other from Vicks. In all twenty-two varieties were tested, and, of these, the most outstanding were: Shell Pink, Perfection White, King Violet, Heart of France, American Beauty, Snow Queen, Buff Beauty and Dark Violet.

MISCELLANEOUS ANNUALS.—In addition to the foregoing, good results were obtained with the following: Stocks, Cosmos, Zinnia, Ageratum and Petunia, from seed started in the hotbed; California Poppy, Godetia, Clarkia, Mignonette, Candytuft, Sweet Sultan, Annual Larkspur, *Gypsophila elegans*, Portulaca and Sweet Alysum, from seed sown in the open.

CEREALS

Although the purchase of feed concentrates is generally regarded by Eastern Townships farmers as a more profitable procedure than the growing of grain, the results obtained thus far, at this Station, indicate that profitable yields of grain are quite possible with practically all kinds of cereals. In general, the average season is not ideal for the growing of grain and, in this respect, the season of 1925 was no exception. Late spring rains delayed seeding on undrained or low-lying land; several heavy storms during late summer caused lodging and early autumn was characterized by frequent showers and cloudy weather. Where grain was sown early, or early-maturing varieties were used, the crop was harvested before wet weather set in, but, with late-maturing varieties, sown late in the season, considerable loss occurred in damaged grain and loss of crop. By using early-maturing varieties where early seeding is impossible, and the later, and usually heavier-yielding kinds on earlier land, such seasonal difficulties frequently may be avoided.

VARIETY TESTS WITH CEREALS

With the large number of varieties and selections of the various kinds of cereals at present available, it has been found impossible to make sufficient trials with ordinary plots in the usual manner. Accordingly, during the past two seasons variety tests have been conducted in two stages. In the first or preliminary stage, a large number of varieties and strains are tested in quadruplicate plots composed of three rows, one rod long. The centre row of each plot is sown by hand with a carefully calculated amount of seed, and the two outer rows with a small drill-seeder. At harvest the centre row is harvested by hand and the crop carefully threshed and weighed. By testing in this manner it is possible to compare a large number of varieties at a comparatively small expense, and from results obtained, choose only those apparently most suitable to the district for further testing in the final stage. In this stage the varieties are sown under uniform conditions in duplicate, triplicate or quadruplicate plots one hundred and twentieth or one-hundredth acre in area. At harvest the crop is cradled and bound by hand, handled in harvest sheets to avoid loss and threshed in a specially built thresher, unless otherwise indicated. The results of the experiments included in the following report are those obtained from the larger plots.

OATS

Since 1922 a total of forty-seven varieties and strains have been tested, and of these twenty-one have been tested in the large plots. Of the latter, eleven, included in the following table, have been under test for three consecutive years.

OATS—AVERAGE RESULTS, 1923 to 1925

Variety	Number of days maturing	Height	Strength of straw on scale of 10 points	Yield per acre	
		inches		bush.	lb.
Banner, Lennoxville	103·3	55·0	6·3	86	12
Longfellow, Ottawa 478	102·0	51·3	8·8	82	23
Legacy, Ottawa 678	99·3	46·6	9·1	76	04
Daubeny, Ottawa 47	93·3	45·0	7·3	74	16
Banner 44, Macdonald College	101·6	52·3	7·5	74	11
Banner, Ottawa 49	104·0	54·6	7·6	73	11
Victory	104·3	47·6	7·3	71	03
Gold Rain	102·3	54·3	6·5	69	17
O.A.C. 72	105·0	55·6	9·5	66	03
Alaska 712, Macdonald College	91·3	49·6	8·6	55	31
Liberty, Ottawa 480 (Hulless)	102·6	45·6	8·4	47	27
Average				70	24

The foregoing results, although but a three-year average, show clearly that there is a wide variation in the adaptability of commonly used varieties. It is quite significant that Daubeny, a variety seldom found on Eastern Townships farms, outyields our common early oat, Alaska, by more than twenty-one bushels per acre. Also that Victory and Gold Rain, which stand high in yield at certain other experimental farms and agricultural colleges in the province, have been low-yielding at Lennoxville.

The Lennoxville selection of Banner as mentioned in previous reports, was obtained by selecting outstanding heads from a field of ordinary registered Banner. It is somewhat stronger-growing than other strains of the variety which have been tested along with it and has given a greater yield of grain. Otherwise it is quite similar to the parent stock. It is being propagated for possible future distribution.

Both Longfellow, Ottawa 478, and Legacy, Ottawa 678 seem to be well suited to this district. Longfellow is a comparatively thin-hulled side oat with a stiff and fairly short straw. Legacy also produces short, stiff straw, but is not a side oat. Both varieties should prove satisfactory throughout the district, especially for situations where it has been found that the taller and weaker-strawed sorts lodge easily.

BARLEY

Although but little barley is grown in the Eastern Townships, it has consistently given heavier yields of grain at Lennoxville than oats and, as is well known, is a more valuable feed. Furthermore, it is early maturing, and when sown reasonably early in the spring can be harvested before the usual early fall rains begin, thus lessenings the work at harvest and the risk of loss. Opposed to these desirable characters barley is not suitable for wet, extremely heavy, infertile or poorly worked soils. On average land, and following a manured hoed crop, it is practically certain that more highly concentrated feed will be obtained through a crop of one of the recommended varieties of barley than with any other kind of cereal grown in the district. Following are the average results of the best varieties that have been tested for the past three years.

BARLEY—AVERAGE OF RESULTS, 1923 to 1925

Variety	Number of days maturing	Height	Strength of straw on scale of 10 points	Yield pre acre	
		inches		bush.	lb.
Charlottetown 80	95·0	41·3	9·0	72	33
Chinese, Ottawa 60	91·6	47·6	8·9	72	12
Mensury, Macdonald College 3207	91·6	43·0	8·6	71	43
O.A.C. 21	91·0	39·3	7·8	70	10
Duckbill, Ottawa 57	98·3	43·3	9·3	60	35
Himalayan, Ottawa 59 (Hulless)	85·6	28·6	7·6	60	18
Average				68	01

Charlottetown 80 is a comparatively short-strawed two-rowed barley and is but little later than the six-rowed varieties. In two of the past three seasons most of its awns have dropped off while the grain was standing or was in stook. During the season of 1925, however, this character was not so pronounced, for at threshing it was still almost fully awned. In all probability this very desirable character is largely influenced by the nature of the season and, in this district at least, cannot be regarded as constant. It is, however, a very satisfactory variety and seems well suited to Eastern Townships conditions.

Chinese, Ottawa 60, Mensury, 3207 M.C., and O.A.C. 21 are all early six-rowed varieties and very similar in all respects.

Himalayan, Ottawa 59, as may be noted, is a very early hulless variety which, when its hulless character is taken into consideration, has produced splendid yields.

Of varieties which have been under test for shorter periods than those listed in the foregoing table, Bearer, Ottawa 475, is the most promising. It is a strong-growing six-rowed barley, a little later than Chinese, Ottawa 60, and, in the 1925 tests, produced approximately the same yield of grain.

SPRING WHEAT

Of the six varieties listed in the table, Huron, Ottawa 3, has given the best average yield for the past three years. It is a splendid variety for the district, as it combines good yield with fair milling quality under a wide range of soil and climate. Growers of Huron wheat through the district are well satisfied with it, and it is largely due to its introduction that the acreage of spring wheat in the district around Lennoxville is increasing.

SPRING WHEAT—AVERAGE OF RESULTS, 1923 TO 1925

Variety	Number of days maturing	Height	Strength of straw on scale of 10 points	Yield per acre	
		inches		bush.	lb.
Huron, Ottawa 3	113·3	47·0	9·0	35	44
Whiteheads, Charlottetown 123	112·3	46·6	9·5	33	58
Early Red Fife, Ottawa 16	112·0	44·5	10·0	32	12
Pringle's Champlain, Macdonald College 307	113·3	45·0	9·3	31	57
Ruby, Ottawa 623	107·8	44·3	10·0	28	28
Marquis, Ottawa 15	111·3	42·2	10·0	25	27
Average				31	18

Other varieties of wheat that have been tested for less than the three-year period, include Garnet, Ottawa 625, Pringle's Champlain, 307 M.C., Red Fife from several sources, and White Russian. Of these, Pringle's Champlain 307 M.C. has given the best results but so far has proved inferior to Huron, Ottawa 3.

FALL WHEAT

Six varieties of fall wheat have been tested for the past two years and although definite recommendations cannot be made, until the results of several additional seasons are available, the results thus far are distinctly encouraging.

The land used for the experiment in 1924 and 1925 was a poor sandy loam, underlaid with gravel, that had been seeded down to grass and clover in 1922. Immediately after the hay crop was removed in 1924, it was ploughed and worked up with the disk and drag harrows. An application of about ten tons per acre of well-rotted manure was made during early August, and the soil well worked at intervals of two weeks until September 10, on which date the varieties were sown. Germination was good and conditions throughout the fall very favourable. As a result, all varieties entered the winter with a dense stand from six to eight inches high. Although the winter of 1924-25 was unusually severe, a good covering of snow was maintained on this particular site and all varieties came through the winter in good condition. Following is an average of the results obtained during the past two years.

FALL WHEAT—AVERAGE RESULTS, 1924–1925

Variety	Date of ripening	Height	Strength of straw	Per cent stand	Yield per acre	
		inches			bush.	lb.
Kharkov, 1312 (Macdonald College)	August 3	41·5	10·0	82	33	57
Kanred	August 1	37·5	9·0	81	33	53
Kharkov, 2212 (Macdonald College)	August 3	37·5	10·0	80	30	31
Kharkov, 112 (Macdonald College)	August 1	40·0	10·0	83	30	14
Dawson's Golden Chaff	August 1	44·0	10·0	79	29	05
O.A.C. 104	August 2	49·0	9·5	72	24	16
Average					30	19

FALL RYE

Two varieties of fall rye, namely, Dakold and Common, have been grown under the same conditions and seeded at the same time, as fall wheat for the past two seasons. Both varieties survived the winter with a full stand and produced good crops of grain. Their average yield is: Common 2,062 pounds and Dakold 2,001 pounds of grain per acre.

As has been stated in a previous report, fall rye could be more generally grown throughout the district. It seems sufficiently hardy for ordinary conditions and produces good yields of highly concentrated feed. Furthermore, it is ready for harvest at a time of the year when, in this district, good harvest weather is most likely to be experienced.

FIELD BEANS

Although very large yields of field beans were obtained in 1923 and 1924, the past season proved unfavourable to this crop and yields were below the average. Apparently this was due to the increased prevalence of Anthracnose or leaf-spot, which flourished and spread rapidly during the wet, cloudy season. Contrary to previous experience, no particular variety seemed especially resistant to the disease, and at harvest, practically all varieties were thoroughly and uniformly diseased. Following is a three-year average of the highest-yielding varieties that have been tested for that period.

FIELD BEANS—AVERAGE OF RESULTS, 1923 TO 1925

Variety	Number of days maturing	Height of plant	Yield per acre	
		inches	bush.	lb.
Navy, Ottawa 711	102·0	16·0	40	12
Yellow Six Weeks	105·3	16·0	34	32
Selected White (Lennoxville)	109·0	16·6	27	17
Soldier	107·0	17·6	23	04
Large White, Ottawa 713	104·3	16·0	22	36
Norwegian, Ottawa 710	105·0	15·3	19	40
Average			27	53

FIELD PEAS

As a grain crop, field peas have proven difficult to handle at Lennoxville. All varieties tested thus far, make a strong growth, produce an abundance of well-filled pods, and little or no trouble has been experienced with disease or insect pests. Owing to their lateness, however, it has usually been found impossible to get the crop sufficiently dry for threshing, or putting under cover, before the usual early autumn wet weather begins. The result is that a damaged, although heavy, crop is finally threshed. Accordingly, the yield given in the following table should not be considered as representing first quality peas.

FIELD PEAS—AVERAGE OF RESULTS, 1924 AND 1925

Variety	Number of days maturing	Strength of vine	Yield per acre	
		inches	bush.	lb.
Cartier, Ottawa 14	100·0	60·0	33	55
Arthur, Ottawa 18	102·5	52·0	31	8
McKay, Ottawa 25	111·5	62·0	29	55
Champlain, Ottawa 32	104·0	60·0	29	2
Chancellor, Ottawa 25	102·5	63·5	28	40
Average			30	32

MIXED GRAIN

The practice of sowing two or more species of grain together is quite common throughout the district. As a general rule a two-rowed barley is mixed with a late oat or a six-rowed barley with an early oat. Occasionally wheat, barley and oats form the mixture. Such mixtures when composed of varieties that make a good combination will produce more and better grain per acre than oats alone.

The experiment with mixed grain was begun in 1924, and the results obtained during the past two seasons, although interesting, should not be considered as conclusive until verified by results from several additional seasons.

GRAIN MIXTURES—AVERAGE OF RESULTS, 1924 AND 1925

Variety and rate per acre			Number of days maturing	Height	Strength of straw on scale of 10	Yield per acre	Remarks
		lb.		inches		lb.	
Duckbill, Ottawa 57	Barley	48	.....	48	.....	.....	.....
Banner	Oats	68	105·5	59	7	3,265	Ripe together.
Charlottetown 80	Barley	48	.....	38	.....	.....	Barley two days
Banner	Oats	68	105	46	6	3,195	ahead of oat.
Chinese, Ottawa 60	Barley	48	.....	46	.....	.....	Barley eight days
Banner	Oats	68	104	46·5	9	3,000	ahead of oat.
Colorado Bearded	Wheat	30	.....	44·5	.....	.....	.....
Duckbill, Ottawa 57	Barley	36	.....	40·5	.....	.....	
Banner	Oats	51	105	46·5	7	2,810	Ripe together.
Charlottetown 80	Barley	48	.....	42	.....	.....	Barley two days
O.A.C. 72	Oats	68	105	50·5	7	2,745	ahead of oat.
Colorado Bearded	Wheat	30	.....	44·5	.....	.....	Barley two days
Charlottetown 80	Barley	36	.....	39·5	.....	.....	ahead of wheat
Banner	Oats	51	104	46·5	7	2,735	and oat.
Ruby, Ottawa 623	Wheat	30	.....	45	.....	.....	Oat two days later
Charlottetown 80	Barley	36	.....	38·5	.....	.....	than wheat and
Banner	Oats	51	104	47	8	2,705	barley.
Duckbill, Ottawa 57	Barley	48	.....	44	.....	.....	
O.A.C. 72	Oats	68	105	50·5	7	2,695	Ripe together.
O.A.C. 21	Barley	48	.....	44·5	.....	.....	
Alaska	Oats	68	94·5	46	8	2,405	Ripe together.
Chinese, Ottawa 60	Barley	48	.....	46	.....	.....	
Alaska	Oats	68	94·5	46	6·5	2,285	Ripe together.
Average			.....	.....	.....	2,784	

As may be noted the highest-yielding mixture was composed of forty-eight pounds of Duckbill, Ottawa 57, barley, and sixty-eight pounds of Banner oats per acre. This mixture is not entirely satisfactory as the barley is much shorter than the oats and the crop is hard to bind. Also the barley-heads, since they are part way down in the sheaf do not dry well, and unless harvest weather is ideal, a crop of this mixture may prove difficult to save in good condition. Among the mixtures tried for the first time in 1925, the substitution of the Legacy oat in place of Banner, with a two-rowed barley, produced a crop that matured evenly and was of uniform height. The yield of this mixture, for the single season, was approximately the same as where Banner was used.

It should also be noted that the mixing of wheat with barley and oats has decreased the yield in comparison with the same varieties of barley and oats grown without wheat. The grain, however, is of higher feeding value.

AVERAGE YIELDS OF GRAIN, 1925

—	Number of varieties tested	Average yield per acre
		lb.
Barley	13	3,319
Mixed grain	17	2,585
Oats	20	2,251
Spring wheat	11	2,146
Fall rye	2	2,071
Fall wheat	6	1,527
Beans	10	1,526
Peas	7	1,401

With the exception of fall wheat and rye, all cereals were grown in the same field under practically uniform conditions. With the fall wheat and rye, the soil was similar in that it was a sandy loam but varied in that it was lower in fertility. The results are similar to those obtained during former seasons, in that the average yields of the varieties of barley and the various grain mixtures are superior to other grains.

FORAGE CROPS

Fully eighty per cent of the arable land on the average Eastern Townships farm is used for the production of forage crops. Of this area, grasses and clover occupy the largest portion and are the main crops grown. Succulent roughages are next in importance and the kinds grown vary according to climatic suitability. In the western portion of the district ensilage corn is a dependable crop and is grown generally. Along the St. Francis river valley and in the counties of Stanstead and Compton the climate is not always suitable for corn and the cold-resistant crops such as swede turnips, sunflowers and the oats, peas and vetch mixture are commonly grown. In the eastern portion silos are more rare and little corn is grown, the main succulent roughage being swede turnips. Accordingly experimental work with forage crops at the Station, which is in the middle climatic zone of the district, cannot, in so far as ensilage corn is concerned, produce results entirely applicable to conditions in the western counties.

The experimental work with forage crops, at present, comprises nineteen projects. These include variety tests of the principal forage crops, comparisons of mixtures of grasses and clovers for hay and pasture, tests of various varieties of grain and vetch for ensilage mixtures, and breeding for improvement with a variety each of swede turnips and mangels.

ENSILAGE CORN

Owing to a general infestation of wire-worms on the area on which the variety test of ensilage corn was conducted during the past season, the crop made little progress and was not uniform. Accordingly, no comparisons were possible and little or no information was obtained. Results obtained from work conducted during preceding seasons have shown that, of those tested, the most satisfactory variety for the eastern portion of the Townships is Compton's Early. For the western portion, the later-maturing dent varieties such as Leaming and Golden Glow are very satisfactory.

In addition to the usual variety test of ensilage corn, a few pounds of first generation hybrid seed was tested under field conditions along with the general farm crop. The seed was grown at the Dominion Experimental Station, Harrow, Ont., and was the result of crossing Twichell's Pride, an early-maturing flint variety, with the well-known Wisconsin No. 7, a later, tall-growing dent variety. The seed was sown with the corn-planter in alternate rows with Compton's Early corn, and a mixture of Compton's Early and Mammoth Russian sunflowers. Little difference was noticeable between the two kinds of corn, as both grew to a height of approximately eight feet and reached the early dough stage of maturity. Following are the yields obtained:—

TEST OF FIRST GENERATION HYBRID CORN, 1925

Variety or mixture	Yield per acre	
	tons	lb.
Compton's Early corn and Mammoth Russian sunflower	18	1,439
Compton's Early corn	17	1,430
Twichell's Pride by Wisconsin No. 7 corn	17	1,220

These results are not in accordance with those of similar experiments conducted elsewhere, for as a rule first generation hybrid corn produces larger crops than either of its parents or similar varieties. The experiment will be continued for several years.

SUNFLOWERS

During the seasons of 1923 and 1924 the sunflower crop, at the Station, and at a few scattered points throughout the district, was badly damaged by the larva of the Peacock Fly. In 1925, however, the insect appeared in substantially reduced numbers and its attack resulted in but little injury to the crop. Sunflowers are now grown generally throughout the district, and although many growers are not entirely satisfied with them as a crop, there is a gradual increase in the area grown each season. The apparently increasing uncertainty of securing a full crop of ensilage corn has necessitated a substitute, and in this respect, sunflowers have a distinct advantage in that they will produce a crop under a greater variation of soil and climate. Under similar conditions at the Station, sunflowers have produced larger yields, and the seed is cheaper than corn. Also good sunflower ensilage, although inferior as a feed to well-matured corn ensilage, is equal or superior to that made from corn in the milk stage. In general, therefore, where corn is a dependable crop there is little to be gained by growing sunflowers, but, where corn is uncertain they are more dependable.

At the Station the practice followed with the general farm ensilage crop, of sowing a mixture of one pound of sunflower seed to a peck of corn has proved very satisfactory. Should the season prove favourable for corn, it will make a satisfactory growth in conjunction with sunflowers, the presence of which in the ensilage will not seriously lower its quality. On the other hand, should it be a poor corn-year, the sunflowers will usually fill in the spaces and produce a crop where corn alone would have resulted in a loss. Following is the average of results obtained during the past three years with several varieties and regional strains of sunflowers:—

SUNFLOWERS—AVERAGE OF RESULTS 1923 TO 1925

Variety	Source	Height	Maturity 1925	Yield per acre	
				Green	Air-dry
		ft. in.		tons lb.	tons lb.
Mammoth Russian	Kenneth McDonald	7 5	Full bloom	27 1,105	4 902
Russian Giant	Dakota Imp. Seed Co.	7 8	50% bloom	21 1,388	3 1,577
Mammoth Russian	From Local Seedsman	7 8	50% bloom	21 905	3 613
Manceta	C.P.R.	6 1	Beginning to ripen	18 166	2 1,190
Mammoth	C.P.R.	5 6	25% ripe	17 1,192	2 675
Ottawa 76	Experimental Farm Ott.	5 8	30% ripe	14 1,239	2 254
Black Seeded	C.P.R.	5 10	10% ripe	15 1,556	2 428
Mixed Strains	C.P.R.	5 11	25% ripe	14 1,017	2 379
Manchurian	A. E. McKenzie	5 0	60% ripe	13 288	1 1,904
Average				18 539	2 1,547

SWEDE TURNIPS

In order to provide material for observation in connection with the classification of field-roots conducted by the Dominion Agrostologist, a total of one hundred and sixty-two varieties of swede turnips have been tested at Lennoxville during the past two years. Although the number of varieties were grown primarily with the object of classification, the results of which will be published by the Dominion Agrostologist (see Reports of the Forage Crop Division), a great deal of information was obtained as to the suitability of the various

varieties for this district. In general no variety was discovered better than those previously tested, although a large number proved inferior. Accordingly, it has been found possible to include in the following three-year average, practically all of the best varieties tested, since these were also the leading ones in the larger tests, conducted during the past two years.

Of the varieties mentioned in the table it may be noted that there is frequently a wide difference in the yield of the same variety obtained from different sources. In some instances this is apparently due to impure seed and in others a mistake in naming. The leading variety "Ditmars" seems to be very satisfactory in all respects. The root is medium in size, uniformly smooth and apparently not readily susceptible to the attack of club-root. It has also a splendid flavour and cooking quality for human consumption. Another excellent variety which has been tested for only two years was obtained from Mr. George Halliday, Sawyerville, Que. This variety produces very large roots, but the percentage of dry material is not as high as in many other varieties, although in dry material per acre it has, owing to the heavy yield of green crop, produced a yield nearly equal to Ditmars for the same period.

SWEDE TURNIPS—AVERAGE OF RESULTS 1923 TO 1925

Variety	Source	General Type and Colour	Yield per Acre			
			Green		Air-dry	
			tons	lb.	tons	lb.
Ditmars	McNutt	Bronze Top, Globe	31	100	3	1,042
Magnum Bonum	Ewing	Purple Top, Globe	27	18	3	858
White Swede	Bruce	Green Top, Globe	27	800	3	420
Canadian Gem	Bruce	Purple Top, Globe	26	700	3	75
Garton's Superlative	Ewing	Purple Top, Globe	30	643	3	22
Hall's Westbury	Ewing	Purple Top, Globe	29	860	2	1,758
Hartley's Bronze Top	Bruce	Bronze Top, Globe	22	1,773	2	1,696
Bruce's Giant Purple Top	Bruce	Purple Top, Globe	25	98	2	1,684
Halewood's Bronze Top	Ewing	Bronze Top, Globe	25	223	2	1,632
Magnum Bonum	Bruce	Purple Top, Globe	27	1,074	2	1,565
Elephant	Bruce	Purple Top, Oval	24	1,356	2	1,436
Bangholm	Ewing	Purple Top, Globe	23	133	2	1,336
Derby Green Top	Bruce	Green Top, Globe	24	784	2	1,150
Mammoth Clyde	Ewing	Purple Top, Globe	25	868	2	990
Universal	Ewing	Purple Top, Globe	26	224	2	954
Sutton's Champion	Ewing	Purple Top, Globe	19	1,616	2	749
Kangaroo	Ewing	Bronze Top, Oval	24	300	2	726
Invicta	Ewing	Purple Top, Globe	25	1,254	2	696
Average			25	717	2	1,044

MANGELS

Although not as generally grown as swede turnips, mangels are a fairly common crop in the Eastern Townships, and under similar conditions, at Lennoxville, have produced similar yields. Following is a three-year average of the results from several of the most popular varieties, some of which were obtained from several sources.

MANGELS—AVERAGE OF RESULTS 1923 TO 1925

Variety	Source	General Type and Colour	Yield per Acre			
			Green		Air-dry	
			tons	lb.	tons	lb.
Yellow Intermediate	Exp. Farm, Ottawa	Orange Intermediate	29	506	3	1,354
Danish Sludstrup	McDonald	Yellow Intermediate	33	573	3	925
Selected Rose Intermediate	Ewing	Rose pink Intermediate	25	566	3	921
Giant White Feeding	Bruce	White Intermediate	30	173	3	512
Gate Post	Bruce	Red long	26	1,916	3	18
Mammoth Red Intermediate	Bruce	Red Oval	34	1,583	3	5
Danish Sludstrup	Ewing	Orange Intermediate	25	516	2	1,808
Red Globe	Bruce	Red Globe	24	1,294	2	1,411
Red Globe	Ewing	Red Globe	25	850	2	1,294
Giant Rose Sugar	Bruce	Rose Pink Intermediate	25	16	2	1,254
Large Yellow Globe	Bruce	Yellow Globe	28	1,466	2	1,196
Golden Tankard	Bruce	Orange Oval	21	300	2	1,021
Long Red Mammoth	Ewing	Red Long	21	1,900	2	877
Golden Fleshed Tankard	Steele-Briggs	Deep Orange Oval	15	1,316	2	496
Giant Yellow Globe	Ewing	Yellow Globe	23	200	2	338
Golden Tankard	Ewing	Deep Orange Oval	19	500	2	183
Giant Yellow Intermediate	Ewing	Orange Intermediate	22	316	1	1,889
Average			25	823	2	912

As may be noted from the table, the highest-yielding varieties are Yellow Intermediate, Central Experimental Farm strain, and Danish Sludstrup. Both varieties have produced uniformly smooth clean roots that are easy to handle and keep well in storage. In general this is characteristic of the yellow and orange intermediate types, although with some varieties of these types a large number of impurities have been found, most of which are of an inferior type and lower the value of the variety.

FIELD CARROTS

Usually the intermediate carrots are more satisfactory than the long types which break easily and are often difficult to pull. Both Mammoth Intermediate and the Improved Intermediate are very satisfactory varieties.

FIELD CARROTS—AVERAGE OF RESULTS 1923 TO 1925

Variety	Source	General Type and Colour	Yield per Acre			
			Green		Air-dry	
			tons	lb.	tons	lb.
Mammoth Intermediate	Bruce	White, Intermediate	25	1,083	2	1,149
Improved Intermediate	Ewing	White, Intermediate	24	1,150	2	1,142
White Belgian	Bruce	White, Long	22	416	2	897
Danish Champion	Exp. Farm, Ottawa	Yellow, Intermediate	21	1,142	2	558
Yellow Belgian	Ewing	Yellow, Intermediate	19	1,500	2	532
White Belgian	Ewing	White, Long	20	100	2	328
New Yellow Intermediate	Ewing	Yellow, Intermediate	21	16	2	276
White Belgian	Dupuy & Ferguson	White, Long	19	1,316	2	242
Long Orange Belgian	Bruce	Orange, Long	17	1,933	2	109
Long Orange	Bruce	Orange, Long	16	566	2	53
Average			21	622	2	506

FACTORY SUGAR BEETS

Factory sugar beets have produced heavy yields at Lennoxville, and as may be noted from the table, contain a high percentage of sugar.

FACTORY SUGAR BEETS—AVERAGE OF RESULTS 1924 AND 1925

Variety or Source of Seed	Yield per Acre	Sugar in Juice	Co-efficient of purity
	tons lb.	p.c.	p.c.
Schreiber & Sons	18 600	17·17	90·32
Home grown (Kitchener Ontario)	16 900	17·55	89·41
Horning	15 1,600	17·58	90·01
Vilmorin's Improved	15 1,250	17·33	89·66
Dr. Burgman	15 500	17·83	90·42
Dippe	14 1,450	17·26	88·99

FALL TURNIPS

During the past two seasons twenty-eight varieties of fall turnips have been tested in quadruplicate plots with largely negative results. Each season a high percentage of the roots, of most of the varieties, have rotted before harvest and the crop of sound roots was light throughout. Although far from satisfactory, the best varieties tested were Pomeranian White Globe, obtained from Steele-Briggs, and White Globe, supplied by Wm. Ewing.

ALFALFA

Alfalfa is a crop requiring conditions rarely found on Eastern Townships farms. In this climate it will not grow on sour, wet, extremely heavy or infertile land. Also where none of these conditions are met with, it is not likely to succeed when sown with a nurse-crop under average field conditions. If, however, it is sown alone under ideal conditions, fairly early in the spring, a good stand may be established. A good stand of any of the hardy variegated varieties has always wintered well at Lennoxville and two or three heavy cuttings per season have been obtained.

Two plots of variegated alfalfa, the seed for which was grown in the vicinity of Brampton, Ont., survived the winter of 1923-24 and 1924-25 without perceptible injury. They were on a high site with a northwestern exposure, where snow did not lie long and the ground frequently thawed and froze during early spring. Their average total yield for the past two seasons was 18 tons 323 pounds of green crop, or 4 tons 1,948 pounds of air-dry material per acre. On the basis of dry weight this is the heaviest yield of any crop tested thus far at the Station. Opposed to this result a half-acre of well-drained fertile land, with a northeastern exposure, was sown in 1924 with seed from the same source along with a nurse-crop of oats, and resulted in a thin weak stand which was almost entirely killed the following winter. Furthermore, similar attempts in previous years to establish a stand with a nurse-crop have resulted in total or partial failures. When sown alone early in the season, on well-drained fertile soil, free from acidity, good stands of alfalfa have always been obtained. These have wintered well, proven persistent, and produced large crops.

SWEET CLOVER

Like alfalfa, sweet clover has not proven readily adaptable to average field conditions in this part of the Eastern Townships. As a weed it is found in many situations, but, to thrive as a farm crop, it apparently requires ideal conditions under which other forage crops would give a more profitable return.

Duplicate plots of both the white and yellow kinds have been grown for the past three seasons. The seed has been sown alone and fair stands have been obtained which wintered satisfactorily. The second season the crop has grown to a good height and given the appearance of a very heavy yield of hay. When cut and dried, however, results have been disappointing for the crop dries slowly,

is frequently badly weathered, and when apparently well cured, has a high moisture content. The average results for the past three years are as follows:—

SWEET CLOVER—AVERAGE OF RESULTS 1923 TO 1925

Variety	Per cent hardy	Height	Yield per acre	
			Green	Air-dry
			tons lb.	tons lb.
White	81·0	48·6	8 373	2 799
Yellow	70·3	39·0	9 1,523	2 717

When reduced to a constant air-dry weight, ordinary mixed clover hay, if well cured, shrinks about ten per cent. Sweet clover hay, however, shrinks at least sixteen per cent. Furthermore the crop was grown without a nurse-crop, thus giving no return from the land the first season, and, as sweet clover is a biennial, it dies at the end of the second season. Under similar conditions mixed clover and grasses or alfalfa will normally give much better returns.

In addition to these tests a half-acre of excellent land in a high state of fertility was seeded to white sweet clover along with a nurse-crop of oats early in the spring of 1924. The oats produced a splendid crop which was cut green, but, although the remainder of the season was favourable, the sweet clover made little growth and entered the winter with a weak stand. A good covering of snow remained on the land until spring, and, as the exposure was towards the northeast, there was a minimum of thawing and freezing during early April. Yet even under such conditions, the crop failed to survive the winter and only a few scattered plants appeared in 1925.

HUBAM

Hubam, which is a vigorous-growing annual sweet clover, has been tested under varying conditions for the past four seasons. So far the results obtained have not been encouraging, for aside from the season of 1923, when a fair crop was obtained, it has made little growth and produced light yields.

RED CLOVER

The winter of 1924 and 1925, although unusually severe during December and January, was apparently favourable for red clover, as little or no winter-killing occurred throughout the district. With the extreme cold in winter and the changeable weather during early spring usually experienced in this section of the Eastern Townships, hardiness is very essential in a biennial or perennial crop. Unfortunately, a large portion of the red clover sown throughout this district is lacking in hardiness and as a result a high percentage is winter-killed each year, the loss frequently being attributed to soil acidity. In general soil acidity retards the growth of red clover, but it is quite significant that even on acid soils at this Station good crops have been obtained where seed of hardy strains has been sown. Accordingly, it would seem that although the importance of correcting soil acidity should not be overlooked, good crops of red clover are unlikely unless seed of hardy varieties or strains is sown.

During the past three seasons nineteen lots of red clover seed have been tested in duplicate. Of these, several lots of known southern origin and others of unknown origin obtained from seedsmen have proven lacking in hardiness. As a rule, however, it has been found that seed grown in Canada or northern Europe will produce plants sufficiently hardy for this district. Following is a three-year average of the results from the nine hardiest lots tested.

RED CLOVER—TEST OF VARIETIES AND STRAINS

Average of Results 1923-1925

Variety or Strain	Number of Cuttings			Average per cent Hardy	Average total yield per per acre	
	1923	1924	1925		Green	Air-dry
					tons lb.	tons lb.
Medium Late Swedish	1	1	2	89·1	12 1,747	3 477
Seed grown in Ottawa district	2	2	2	83·8	11 243	2 1,425
Seed from Daulphine, Italy	1	1	2	80·0	11 47	2 1,290
Seed grown at St. Clet, Que	1	2	2	76·1	10 580	2 1,228
Seed grown at St. Casimir, Que	2	2	2	84·5	9 1,100	2 436
Alta Swede	1	1	1	83·1	8 497	2 274
Late Red Swedish	1	1	1	58·0	6 1,320	1 1,521
Early Red Swedish	1	1	1	77·7	6 1,500	1 1,366
Seed from Northern Ontario	1	1	2	70·3	7 1,187	1 1,093
Average					9 691	2 568

ALSIKE AS A SUBSTITUTE FOR RED CLOVER

Results from three seedings have been obtained in this experiment, and in no case has the substitution of alsike for red clover given an increase in yield. Both species have practically disappeared after the first cropping year and subsequent crops were practically pure timothy. Following is a three-year average of results of the first cropping year of the three seedings.

COMPARISON OF ALSIKE AND RED CLOVER

Average of Results 1923 to 1925

Quantity of Seed per Acre	Percentage composition of hay				Yield per Acre	
	Timothy	Red Clover	Alsike	Foreign	Green	Air-dry
lb. lb.					tons lb.	tons lb.
Timothy 8, Red Clover 10	31·2	58	....	10·8	13 1,110	3 1,608
Timothy 8, Red Clover 8, Alsike 2	34·0	42	12·0	12·0	13 921	3 840
Timothy 8, Red Clover 6, Alsike 3	32·0	31	22·1	14·9	12 4	2 1,903
Timothy 8, Red Clover 4, Alsike 4	32·6	23	27·1	17·3	11 1,900	2 1,791

GRASSES WITH MIXED CLOVERS AS A BASE

The object of this project is the comparison of the value of various agricultural grasses when mixed with clovers to form a hay or pasture-mixture. In 1921 and 1922 seedings were made in half-acre blocks with a nurse-crop of oats under normal field conditions and the percentage composition of the hay determined. Beginning with 1922, the seedings have been made in duplicate sixtieth-acre plots in the forage crop experimental area and both percentage compositions and yields were determined. Seed of each grass is used as a substitution for five pounds of timothy in a mixture composed of ten pounds of timothy, eight pounds of red clover, two pounds of alsike and one pound of white Dutch clover per acre. Following are the average results for the past three seasons:—

COMPARISON OF AGRICULTURAL GRASSES

Average of Results 1923 to 1925

Amount of grass seed substituted for 5 pounds of Timothy in the standard mixture	Percent of species in crop		Average yearly yield of hay per acre	
	1st year	2nd year	tons	lb.
Timothy, 5 pounds	22	27	3	1,826
Red Top, 4 pounds	17	24	3	1,744
Tall Oat Grass, 8 pounds	12	9	3	1,105
Orchard Grass, 10 pounds	27	18	3	101
Meadow Fescue, 10 pounds	22	6	2	1,240
Average			3	803

Apparently, with the possible exception of red top, timothy is the most suitable agricultural grass tested. Both of these grasses are persistent in the stand and increase their percentage in the crop as the clover dies out. Tall oat grass, meadow fescue and orchard grass have not proven as persistent, and their percentage stand in the crop has decreased the second year.

TIMOTHY

Of the nine regional strains and varieties sown in 1922, only five were obtainable for seeding in 1923. Both seedings have been cropped two years, and the following table shows the average first and second year's crop and the total two years' crop of both seedings.

TIMOTHY—AVERAGE OF RESULTS, 1922 AND 1923 SEEDINGS

Variety or strain	Height	Yield per acre 1st year		Yield per acre 2nd year		Average total yield per acre	
		Green	Air-dry	Green	Air-dry	Green	Air-dry
	inch.	tons lb.	tons lb.	tons lb.	tons lb.	tons lb.	tons lb.
Boon	44·0	8 1,245	4 213	9 1,300	4 110	18 545	8 323
Ottawa (Commercial)	39·5	7 1,820	3 1,036	8 620	3 314	16 440	6 1,350
Ohio (Commercial)	41·5	7 1,645	3 532	8 755	3 254	16 400	6 786
Lennoxville (Commercial)	40·0	6 1,245	2 1,951	7 415	3 542	13 1,660	6 493
Ohio 3937	39·0	7 1,204	3 1,187	7 775	2 1,270	14 1,979	6 457
Average						15 1,805	6 1,482

The variety Boon, which is a bulk selection made from plants of superior type at the Central Experimental Farm, has given decidedly better yields than the three commercial lots and the Ohio selection. It is a tall, strong-growing timothy that does not lodge easily and, although a little coarse, makes excellent hay. It is apparently a splendid variety for western Quebec and when seed is available commercially should be sown generally.

TEFF GRASS

Teff grass, which is an annual dense-growing grass, has been tested at the Station for three years, and has given an average yield of 6 tons 1,428 pounds of green crop, or 1 ton 1,720 pounds of air-dry material. Such a yield, in comparison with other forage crops, is decidedly light for as may be noted from the following experiment, which was conducted on the same area and under similar conditions of soil fertility and cultivation, good forage yields from annual crops are quite possible.

VARIETIES OF GRAIN IN COMBINATION FOR ENSILAGE

During the last few years, the practice of growing oats, peas and vetches in combination for an ensilage crop has become quite common in the Eastern Townships. In general it has been found that such a mixture gives a fairly sure crop of high feeding value which can be handled with little labour and at small cost.

With a view towards obtaining information as to the ability of the various species and varieties to combine in forming such a forage mixture, a project was begun last season. Following is a statement of the results obtained:—

ENSILAGE MIXTURES, 1925

Mixture and Seed per acre	Stage when cut	Average yield per acre of Two Plots			
		Green		Dry	
		tons	lb.	tons	lb.
Gold Rain.....Oat..... 2 bush.....	Oat in dough stage.....				
Chancellor.....Pea.....30 lb.....	Pea hardening.....				
Vetch.....15 lb.....	Vetch in dough stage.....	12	600	4	1,445
Laurel.....Oat.....1½ bush.....	Oat beginning to ripen.....				
Chancellor.....Pea.....30 lb.....	Pea beginning to harden...				
Vetch.....15 lb.....	Vetch in dough stage.....	11	200	4	805
Victory.....Oat..... 2 bush.....	Oat in dough stage.....				
Chancellor.....Pea.....30 lb.....	Pea hardening.....				
Vetch.....15 lb.....	Vetch in dough stage.....	12	420	4	380
Banner.....Oat..... 2 bush.....					
Golden Vine.....Pea..... 1 bush.....	Both in dough stage.....	10	390	4	124
Banner.....Oat..... ½ bush.....	Oat in dough stage.				
Spring Rye..... ½ bush.....	Rye nearly ripe.....				
Chancellor.....Pea.....30 lb.....	Pea hardening.....				
Vetch.....15 lb.....	Vetch in dough stage.....	10	640	3	1,572
Banner.....Oat..... 2 bush.....	Oat in dough stage.....				
Chancellor.....Pea.....30 lb.....	Pea hardening.....				
Vetch.....15 lb.....	Vetch in dough stage.....	11	350	3	1,396
Banner.....Oat..... 2 bush.....	Oat in dough stage.....				
McKay.....Pea..... 1 bush.....	Pea advanced dough.....	10	1,885	3	1,344
Banner.....Oat..... 2 bush.....					
Arthur.....Pea..... 1 bush.....	Both in dough stage.....	9	1,590	3	1,247
Banner.....Oat..... 2 bush.....	Oat in dough stage.....				
Golden Vine.....Pea.....40 lb.....	Pea hardening.....				
Vetch.....15 lb.....	Vetch in dough stage.....	10	520	3	1,240
Spring Rye.....1½ bush.....	Rye nearly ripe.....				
Chancellor.....Pea.....30 lb.....	Pea hardening.....				
Vetch.....15 lb.....	Vetch in dough stage.....	8	710	3	1,179
Banner.....Oat..... 2 bush.....	Oat in dough stage.....				
Chancellor.....Pea.....40 lb.....	Beginning to harden.....	9	1,050	3	559
Spring Rye.....1½ bush.....	Rye nearly ripe.....				
Chancellor.....Pea.....40 lb.....	Pea hardening.....	9	1,350	2	1,490
Longfellow.....Oat..... 2 bush.....	Oat in dough stage.....				
Golden Vine.....Pea..... 1 bush.....	Pea hardening.....	9	600	2	1,470
Average.....	.....	10	23	3	28

POULTRY

The spring and summer of 1925 were very favourable for hatching and rearing young stock until the month of September, when a great deal of rain and cold weather was experienced, causing slower development. From the range which had been ploughed and seeded to mixed oats, peas and vetches, a very heavy yield was cut in September for silage purposes. This range was also seeded to clover, made a splendid start, and should be in good shape for rearing the young stock in 1926.

STOCK AND MATINGS

At the beginning of 1925, the Barred Plymouth Rocks numbered 71 pullets, 195 breeding hens, 2 old males and 14 young males. Owing to fewer pullets being on hand, more breeding hens were kept and used in the special pens.

Seven young males of exceptionally fine type and strength were selected from a 234-egg hen, which had produced large-sized eggs, and also had a number of ancestors with the same valuable qualities. These males were used in all the special pens in the hope of improving egg size in the entire flock.

RESULTS OF DIFFERENT SPECIAL MATINGS—PEN A

Hen No.	Egg-Record	Hen No.	Egg-Record
C.E. 167	237	H 445	212
C.E. 152	226	C.E. 154	210
C.E. 161	225	C.E. 163	209
G 142	223	C.D. 178	209
G.F. 25	218	C.D. 161	207
D 120	217	E 38	207
H 352	216	C.D. 175	205
H 440	216	C.E. 164	204

These females which had an average egg-record of 215 eggs each, were mated to a large young male, I 107, a son of a 234-egg hen, and sired by a male out of a 277-egg hen. From this mating 385 eggs were set, of which 84·93 per cent were fertile, and 63·91 per cent of the fertile eggs hatched.

PEN B

Hen No.	Egg-Record	Hen No.	Egg-Record
H 353	275	H 332	249
H 309	263	H 400	249
H 341	259	H 342	246
H 419	254	H 376	244
H 423	253	H 275	242
H 435	252	H 287	242
H 449	251	H 308	241
H 413	251	H 379	241

These females which had an average record of 251 eggs each, were mated to an exceptionally splendid young male, I 115, a full brother to the male in Pen A. From this mating 434 eggs were set, of which 92·85 per cent were fertile, and 69·97 per cent of the fertile eggs hatched.

PEN C

Hen No.	Egg-Record	Hen No.	Egg-Record
E 48	290	E 22	252
G 18	286	E 25	245
G 190	284	F 181	245
G 34	268	E 40	242
G 103	264	F 102	239
E 8	264	F 117	239
F 126	259	F 21	232
F 116	258	F 1	230

These females which had an average record of 256 eggs each, were mated to I 109, a full brother to the male in pens A and B. From this mating 300 eggs were set, of which 65 per cent were fertile, and 53·33 per cent of the fertile eggs hatched.

PEN D

Hen No.	Egg-Record	Hen No.	Egg-Record
H 345	240	E 15	225
H 313	239	H 351	223
H 307	236	H 319	222
H 408	230	H 335	222
G 10	229	H 368	222
H 425	228	H 432	221
H 296	227	F 141	221
H 337	226	H 343	220

These females which had an average record of 227 eggs each, were mated to I 104, another full brother to the males in pens A, B and C. From this mating 423 eggs were set, of which 91.96 per cent were fertile, and 68.89 per cent of the fertile eggs hatched.

PEN 4

Hen No.	Egg-Record	Hen No.	Egg-Record
E 1	222	H 254	210
F 144	222	F 7	209
G 20	221	F 135	209
H 316	218	F 196	209
G 56	217	H 407	208
H 404	217	G 160	207
G 25	216	D 13	207
G 28	216	H 366	207
G 27	215	H 323	207
G 139	215	H 270	207
G 65	215	H 389	206
F 11	214	H 349	206
E 165	214	F 115	205
H 336	213	H 310	205
G 100	211	G 33	204
G 39	210	H 369	204
G 161	210	F 143	203
H 438	210	H 281	203
H 322	210	G 84	202

These females with an average record of 210 eggs per bird, were pen-mated with three full brothers of the males used in the four special matings. From this pen 673 eggs were set, of which 85.58 per cent were fertile, and 56.25 per cent of the fertile eggs hatched.

INCUBATION AND BROODING

The incubators were started on March 16, and were kept operating until May 22. Most of the incubation is done with the Mammoth Buckeye Incubator of 2440-egg capacity, but a smaller Buckeye of 100-egg capacity is demonstrated as being very suitable for the average farmer or poultry-breeder who is starting in poultry on a smaller scale. A limited number of day-old chicks have been sold each year instead of eggs for hatching. These chicks are sold in lots of fifty or less, so that as many people as possible may benefit from this distribution of stock. Two thousand two hundred and fifty-three chicks were hatched during the spring of 1925, 890 being kept for the Station, and the remainder sold as day-old chicks. All chicks kept for the Station were pedigree-banded.

AVERAGE FERTILITY AND HATCHABILITY

The fertility of the eggs used for hatching during the spring of 1925 averaged 86·3 per cent, and 59·1 per cent of the fertile eggs hatched. This was considerably better than during the spring of 1924, when 47·5 per cent of the fertile eggs hatched.

HATCHING RESULTS DURING THREE DIFFERENT MONTHS

The total number of eggs set during the month of March gave an average of 86·1 per cent fertile; and 39·8 per cent of the fertile eggs hatched. The total number of eggs set during the month of April gave an average of 86·3 per cent fertile; and 66·3 per cent of the fertile eggs hatched. The total eggs set during the month of May gave an average of 86·7 per cent fertile, and 75·7 per cent of the fertile eggs hatched.

FERTILITY—HENS VS. PULLETS

Of the total eggs set from hens, 86·9 per cent were fertile as compared with 72·1 per cent fertility of all eggs set from pullets.

RESULTS FROM REGISTERED HENS

A total of 168 eggs from six registered hens were set with 86.3 per cent being fertile and 62.7 per cent of the fertile eggs hatched.

BEST DATE TO HATCH FOR WINTER PRODUCTION

According to actual tests and observations which have been carried on at the Station as to the best hatching date for pullets that are intended to be used for the production of eggs during the winter months when the price of eggs is high, the general result has been that birds of any of the general purpose breeds must be hatched during April, or very early in May, if best production is expected during the time of high-priced eggs.

BROODING

Coal-burning brooder-stoves are used in colony-houses measuring 10 feet by 12 feet for brooding purposes. These colony-houses are moved on to clean soil each year where no fowls have been allowed to roam the year previous, and which has been ploughed and sown to grass and clover. In this way much healthier young stock is grown, less mortality and disease are experienced and much better results in general. The yards leading to the road were used in 1925 for the growing stock and it is the intention to rear all young stock on the yards to the south of the Administration Building in 1926, while the other yards are being cultivated and cleaned for the next year. The results in brooding during 1925 were very encouraging; 95.3 per cent of the chicks put in the brooders were alive when wing banded at five weeks of age.

TEST OF STARTING-FEED FOR CHICKS

During the spring of 1924, a commercial starting-feed for chicks, in which is used a percentage of cod-liver oil, was tried out on two lots of chicks. This feed is supposed to be fed dry in open troughs or feeders as an exclusive starting-feed for the first two weeks of a chick's life. The two lots of chicks on test were fed according to directions, and the results were so satisfactory that it was decided to give it a still stronger trial in 1925. Almost all the chicks reared during the spring of 1925 were started on this commercial starter-meal, and the results were outstanding in the health of the chicks. There was not a case of leg-weakness or rickets in any of the lots, and neither was there any toe-picking habit developed. Fresh water was kept available in fountains, and sour milk was gradually introduced in wooden or earthen vessels after the fourth or fifth

day. About the eighth or tenth day, alternate feeds of a good chick scratch-feed was scattered in a litter to give more exercise. This practice was continued until the chicks were about six weeks of age, when they are gradually accustomed to coarser grains, until later when on free range, self-feeding hoppers are used almost entirely in preference to hand-feeding. A home-mixed ration of equal parts of wheat and cracked corn, in one compartment of the hopper, and a dry mash of bran, middlings, corn meal and a percentage of beef-meal in another compartment, has given excellent results in rearing, at this Station. A few essentials of importance in the rearing of young chicks are:—

1. Do not feed until at least 48 hours of age.
2. Have sufficient brooder-heat to prevent crowding.
3. Feed every three hours, but not too much at a time.
4. Musty or mouldy food or litter must not be used.
5. Supply plenty fresh water in clean fountains.
6. Make all changes in feeding gradually.

COST OF FEEDING LAYING PULLETS

The average number of pullets housed in the laying-pens from November 1, 1924, to October 31, 1925, was sixty-three. Some of these pullets were late-hatched and were not fully matured when housed on November 1, thus rather affecting the general average of production. The total production from those pullets during the twelve months was 10,851 eggs, or 904¼ dozens, which at the average market price of 48 cents per dozen, amounted in value to $425.89. The average percentage production per day through the year was 47.2. The total cost of feed consumed by the pullets for the twelve months amounted to $158.74, or an average of $2.51 per pullet. During the year, twenty-one of these birds made records of over 200 eggs each, some of the best records were as follows: 277, 262, 256, 253, 252, 242, 232, 231, 228, 226, 221, 217, 216, 214.

METHOD OF FEEDING LAYING PULLETS

The pullets are fed on a home-mixed scratch-grain consisting of one part cracked corn, one part of wheat and one-half part of good plump oats. The scratch-grain is scattered in a deep litter of straw during the morning and again in the afternoon, a heavier feed being given in the afternoon than in the morning. A dry mash consisting of 100 pounds bran, 100 pounds middlings, 100 pounds corn meal with 12 to 15 pounds of beef meal and 1 pound of ground charcoal to every 100 pounds of the meal mixture, is fed in an open hopper, where the birds may help themselves. If it is desired to have the birds forced rather more for egg-production and provided that they are not already too fat, a small quantity of the same mixture is moistened with warm water, or sour milk, if available, and fed at noon every second day. During the fall and winter months, a small quantity of freshly cut green beef-bone is fed occasionally to stimulate greater production. Green feed is supplied either by mangels, sugar beets or clover leaves. Grit, oyster-shell and water are available at all times.

COST OF FEEDING BREEDING HENS

While the older birds are kept chiefly for their value as reproducers of a good quality of stock, and are fed on a lighter ration so as not to harm their vitality as breeders, yet an account is kept of the cost of feeding them, in order to be able to know whether they are paying their way even as layers. They are fed a scratch-grain consisting of one-half part cracked corn, one part wheat and one part good plump oats. The dry mash is also of a lighter nature than that fed to the pullets, and consists of two parts bran, one part middlings, one part corn meal, and a small percentage of beef meal. Great care must be taken to see that the birds get plenty of exercise by scratching for their scratch-grain in

a good deep litter. The average number of breeding hens kept during the twelve months, November 1, 1924, to October 31, 1925, was 137, and the total cost of their feed amounted to $353.05 or an average of $2.52 per bird. These hens produced during the twelve months, 16,139 eggs or an average of 128 eggs per hen. A great number of the eggs laid by these hens were used for hatching purposes, but should they have been valued only at the market price, which averaged 48 cents per dozen during the twelve months, they would have given a profit of $1.62 per hen over the cost of their feed. The average production from the hens was just 50 eggs per bird less than was the average of the laying pullets.

COST OF EGG-PRODUCTION IN WINTER MONTHS

The average cost of feed to produce one dozen eggs from pullets during the four winter months, November 1, 1924, to February 28, 1925, was 19.8 cents per dozen, while the average cost of feed to produce one dozen eggs from hens during the same months was 73.4 cents per dozen. The average production per day during the winter months was 47.2 per cent from the pullets as compared with 13.3 per cent from the hens. As a comparison, the results of the previous year during the same months was 35 per cent from the pullets and 6.2 per cent from the hens.

COST OF EGG-PRODUCTION DURING TWELVE MONTHS

The average cost of feed to produce one dozen eggs from pullets during twelve months, November 1, 1924, to October 31, 1925, was 18.6 cents per dozen, while the average cost for feed to produce one dozen eggs from hens during the same time was 38.4 cents per dozen. The average production per day during the twelve months was 47.27 per cent from the pullets, as compared with 34.72 per cent from the hens.

VALUE OF BREEDING AND RECORD WORK

As a result of careful trap-nesting at this Station, since 1920, over 210 birds have been found to have produced over 200 eggs in their pullet year, and five of these birds have produced over 200 eggs in their second year. One outstanding record might be mentioned in the production of No. G 18 which laid 286 eggs in her pullet year, 210 eggs in her second year, and 169 eggs in her third year. This makes an average of almost 222 eggs per year for three consecutive years. As an example of long distance production, D 13 produced in six years 816 eggs, an average of 137 per year, and E 15 has produced in five years 785 eggs, which is an average of 157 eggs per year. Another interesting branch of record work is the hatching results, D 13 and D 120 made themselves noted for the very high percentage of fertile eggs when set for incubation, and also for the large percentage that hatched. C.D. 175 and C.D 178, two birds which were registered in the 1923 Contest, have, during two years hatching results, each given 100 per cent fertility and a high percentage of hatchability.

Progeny-testing records are also of great value in poultry work, for instance we will take the progeny of four male birds used in some of the pens in the spring of 1924. H 332 was the sire of pullets which averaged 168 eggs each in their pullet year. H 233 was the sire of pullets which averaged 210 eggs each, G 7 sired pullets which averaged 216 eggs each, and G 8 sired pullets which only averaged 136 eggs each in their pullet year.

SALE OF BREEDING STOCK

The demand for breeding stock has never been heavier than during 1925. Besides the number of day-old chicks sold, there were 140 surplus pullets sold in small lots to farmers who wished to get into pure-bred stock of a laying strain. Over 150 cockerels were sold during the fall of 1925 to farmers residing in different counties of the province, as well as a number of birds being sent to

some of the other Experimental Farms. The importance of securing good breeding stock is being more fully realized each year.

QUEBEC WESTERN EGG-LAYING CONTEST

The 30th day of October 1925, brought to a close the 52 weeks of the third egg-laying contest to be conducted at this Station. It is encouraging to be able to report an increase in production over that of the two previous contests. The total production during the third contest was 35,015 eggs as compared with 29,769 in the second contest and 29,143 in the first contest. This Station entered a pen of Barred Plymouth Rocks in the third contest, which produced during the 52 weeks, 2,285 eggs, an average of 228½ eggs per bird, and their individual records were 196, 209, 249, 216, 243, 236, 229, 224, 223, 256 eggs.

The following will show the standing of the ten highest pens with the names of their respective owners:—

Pen 17 B.R.	Experimental Station, Lennoxville, Que	2,285 eggs
Pen 2 W.L.	Wm. A. Carr, Ste. Agathe des Monts, Que	1,993 "
Pen 20 B.R.	H. R. Drew, North Hatley, Que	1,991 "
Pen 1 W.L.	Laurel Poultry Farm, Rougemont, Que	1,955 "
Pen 11 W.W.	Miss R. G. Knight, Beebe, Que	1,955 "
Pen 18 B.R.	Laurel Poultry Farm, Rougemont, Que	1,940 "
Pen 8 W.L.	R. E. Wilkins, Adamsville, Que	1,906 "
Pen 19 B.R.	Wm. C. Strong, West Brome, Que	1,901 "
Pen 6 W.L.	L. B. Pierce, Beebe, Que	1,850 "
Pen 3 W.L.	H. S. Beane, Beebe, Que	1,845 "

A large number of the birds made individual records of over 200 eggs in the 52 weeks, but many of them could not be registered owing to the production of eggs which were not large enough to pass the requirements of registration. The following are the owners of the birds which were registered in the Canadian National Poultry Record Association, in the order of their standing according to record of production:—

No. 173 B.R.	Experimental Station, Lennoxville, Que	249 eggs
No. 15 W.L.	Laurel Poultry Farm, Rougemont, Que	248 "
No. 175 B.R.	Experimental Station, Lennoxville, Que	243 "
No. 113 W.W.	Miss R. G. Knight, Beebe, Que	230 "
No. 51 W.L.	Dr. J. L. Todd, Senneville, Que	226 "
No. 179 B.R.	Experimental Station, Lennoxville, Que	223 "
No. 31 W.L.	H. S. Beane, Beebe, Que	207 "
No. 165 W.W.	R. A. Robertson, Brigham, Que	204 "
No. 148 W.W.	Bond Little, North Hatley, Que	202 "
No. 72 W.L.	C. D. Calder, Cowansville, Que	201 "
No. 76 W.L.	C. D. Calder, Cowansville, Que	200 "
No. 204 B.R.	H. R. Drew, North Hatley, Que., R.R. 3	200 "

It will also be interesting to know that No. 31 W.L., owned by H. S. Beane, Beebe, Que., and No. 113 W.W., owned by Miss R. G. Knight, Beebe, Que., are both second-generation registered birds.

The total cost of the feed consumed by the 200 birds in the contest for 52 weeks amounted to $443.42, or almost an average of $2.22 per bird. The total eggs produced when valued at the prevailing market prices, during the time at which they were produced, amounted in value to $1,303.96. Deducting the total cost of feed from the value of eggs produced gave $860.54, or an average of $4.30 per bird gain over the cost of their feed.

The average production per bird according to the breeds was: Barred Plymouth Rocks, 202¾ eggs per bird, White Leghorns, 179¼ eggs per bird, and White Wyandottes, 163½ eggs per bird. The average gain over cost of feed per bird, according to the breeds was $5.25 from the Barred Plymouth Rocks, $4.74 from the White Wyandottes, and $4.24 from the White Leghorns. The pen making the largest gain over cost of feed was the pen of Barred Plymouth Rocks entered by this Station, these ten birds gave $65.45, or an average of $6.54 per bird over the cost of their feed. The pen giving the next highest gain over cost was the White Wyandottes owned by Miss R. G. Knight, Beebe, Que.,

which gave $50.20, or an average of $5.02 per bird over the cost of their feed. As a comparison the pen might be taken giving the lowest gain over cost of feed, $14.76, or an average of $1.47 per bird.

The 200 birds in the contest consumed during the 52 weeks 7,740 pounds of scratch grain, 8,380 pounds of meal mixture, 370 pounds of beef-meal and green bone supplied extra over the quantity in the meal mixture, 105 pounds of grit, 915 pounds of oyster-shell and 7,280 pounds of green feed. The average consumed per bird was 38·7 pounds of grain, 41·9 pounds of meal mixture, 1·8 pounds of grit, 4·5 pounds of oyster shell, and 36·4 pounds of green feed.

The fourth contest was started on November 1, 1925, with eight pens of Barred Plymouth Rocks, seven pens of White Leghorns, three pens of White Wyandottes, one pen of Rhode Island Reds, and one pen of Chanticlers. Five of the pens entered consist entirely of second-generation birds and two other pens have two birds each that are " second generation " among their number.

INSPECTION AND REGISTRATION

The Poultryman has, during the year, visited each breeder of registered birds in this district three times, to inspect the breeding pen and band the male birds to be used, to inspect the hatching records and see that all chicks are properly wing banded, and to inspect the pullets for entry to contests. Eight breeders in this district had 25 registered hens in the breeding work, from which 394 chicks were pedigreed, 88 of these being later banded with the Canadian National Poultry Record wing label, and 38 of them are entered in the fourth egg-laying contest. For most of the owners this was entirely new work, but in spite of that, practically all went whole-heartedly into the work of trap-nesting, pedigree-banding and keeping records according to instructions.

BEES

Although the weather was favourable for the removal of bees from the cellar earlier than usual, the spring proved cool and cloudy and bees were unable to take full advantage of early bloom. Willow bloomed earlier than in the previous season, but owing to the unfavourable weather the bees derived but little benefit from it. Dandelion produced a profusion of bloom, and although the weather was not entirely favourable, colonies built up to good strength and even made fair gains in weight. Clover began yielding by the middle of June, but, owing to cool, cloudy weather and frequent precipitation, no substantial gains were recorded until the beginning of July. The first half of this month was fine and clear with the result that excellent gains were made. In the last half of the month gains were small. August and early September were favourable and small gains were observed at intervals up to September 17.

HONEY-FLOW

In order to obtain information with regard to the honey-flow, one average colony in a 10-frame Langstroth hive was kept on scales and the weight recorded at 6 a.m. (standard time) each day from May 1 to October 1. Following is a condensed statement of the gains and loss for 1925, together with average of the past two years:—

HONEY-FLOW, 1925, AND AVERAGE FOR 1924 AND 1925

—	May	June	July	August	Sept.	Total
	lb.	lb.	lb.	lb.	lb.	lb.
Gain in 1925	6·25	47·5	108·0	12·25	8·25	182·25
Loss in 1925	5·25	11·75	12·0	7·75	6·75	43·5
Net gain in 1925	1·0	35·75	96·0	4·50	1·50	133·75
Average gain in 1924 and 1925	3·75	42·62	115·75	13·75	9·50	185·12
Average loss in 1924 and 1925	3·87	6·75	8·62	9·25	10·62	39·12
Average net gain in 1924 and 1925	.....	35·87	107·125	4·50	.....	147·5
Average net loss in 1924 and 1925	0·125	.....	.....	.....	1·12	1·25

SOURCE OF NECTAR

During the past season a record was kept of the duration of the chief sources of nectar. A summary of this record, together with the average mean temperature and hours of sunshine, is shown in the following table.

SOURCE AND DURATION OF NECTAR-FLOW

—	Begun	Ended	Duration	Means of extreme temperature		Total hours of sunshine
				Max.	Min.	
			days			
Willow	April 21	May 17	25	61·0	37·16	157·5
Dandelion	May 28	June 6	9	74·22	46·87	48·6
Fruit bloom	May 11	June 10	30	67·06	43·16	194·1
Clovers	June 18	Aug. 3	44	76·25	52·95	275·2
Raspberry	June 15	July 1	15	72·46	50·33	76·3
Basswood	July 17	July 30	13	76·0	54·68	70·5
Golden-rod	Aug. 2	Sept. 9	39	74·30	40·10	301·7

WINTERING

For the winter of 1924-25 thirteen colonies were placed in the cellar and four others in a wintering-case, of the type and dimensions recommended by the Dominion Apiarist.

The temperature of the cellar ranged from 38 to 42 degrees above zero, which, although somewhat lower than is recommended, was apparently satisfactory as at no time were the bees uneasy and no colonies were lost.

For outside wintering conditions were not entirely satisfactory. December and January were characterized by extreme cold and the bees did not get a cleansing flight between November 26 and March 7. Wintering, however, was satisfactory; although at the first spring examination one colony was found to be queenless, this circumstance could not be attributed to wintering. Following is a statement of the average condition, on April 29, of ten-frame hives wintered in the cellar and outside:—

COMPARISON OF CELLAR VS. OUTSIDE WINTERING

Kind of hive	Kind of wintering	Number of hives in experiment	Number of combs well covered with bees	Number of combs covered with brood
10 Frame Langstroth	Cellar	10	5·53	3·38
10 Frame Langstroth	Outside	3	5·50	3·75

FALL FEEDING

In general bees did not require unusual feeding to bring the colonies up to the required weight for winter, although, on account of cold stormy weather, feeding was slow. Such weather is usually experienced in this district during early October, and, as a rule, it would seem advisable to begin feeding in late September. Before feeding sugar all colonies were fed approximately six pounds of honey. The sugar syrup was made up of two parts of sugar to one part of water, and fed in five-pound honey-pails containing about 65 small holes in the cover. The pails were filled with syrup and inverted on the top bars of the frames in the hives. The total feeding for 20 colonies amounted to 140 pounds of honey and 160 pounds of sugar.

YIELD AND INCREASE

From fourteen colonies, spring count, the yield of honey was 1,025 pounds. Four swarms were hived and four nuclei were made from strong colonies. Of the eight new colonies thus formed one was found to be possessed of a drone-laying queen, and another did not build up well. These two were united with other colonies thus making the net increase for the season six colonies. In addition, approximately thirty-two pounds of foundation were drawn.

FIBRE PLANTS

HEMP

In each of the three years that hemp has been grown at Lennoxville, excellent yields of good fibre have been obtained. Apparently the comparatively cool weather with frequent precipitation that has characterized the past three seasons, is decidedly favourable for the crop, for on well-worked soil of fair fertility, thick stands frequently attained a height of ten to twelve feet.

Thus far the retting season has not proved favourable, and considerable difficulty has been experienced in getting the crop ready for scutching. Under average conditions, hemp is ready to cut sometime during the first half of September, at which time there is little rain and the days are usually bright but cool and the nights decidedly cool. When the hemp stalks are spread, and exposed to such weather, the retting process is slow and very unsatisfactory. In fact during the past two years, a large portion of the crop has laid out until late October without retting sufficiently to produce an even grade for fibre. In the opinion of Mr. R. J. Hutchinson, Chief Officer of the Division of Economic Fibre Production, Dominion Experimental Farms, this experience is decidedly unusual and is not likely to recur, except as rare exceptions, in future years.

Test of Varieties.—Two varieties have been grown in duplicate plots for the past two seasons. Following is a statement of the average results obtained:—

Hemp, Variety Test—Average Results, 1924–1925

Variety	Height		Stage when	Yield per acre		Quality of fibre	
				Fibre	Tow	1924	1925
	ft.	in.		lb.	lb.		
Chington	10	4	Full bloom	1,110	735	Medium	Fine
Minnesota No. 8	11	6	Full bloom	975	1,050	Coarse	Medium

Different Dates of Seeding.—During the past two years, seed of Minnesota No. 8, has been sown at different dates, the first as early in the season as

the soil can be made ready, and following with two more seedings at intervals of two or three weeks. Following is a statement of the average results:—

HEMP, DIFFERENT DATES OF SEEDING—AVERAGE OF RESULTS, 1924 AND 1925

Time of seeding	Height		Stage when cut	Yield per acre		Quality of fibre	
				Fibre	Tow	1924	1925
	ft.	in.		lb.	lb.		
Late April	12	2	Bloom falling	1,085	840	Coarse	Medium
Middle of May	10	11	Bloom	1,050	585	Coarse	Medium
Early June	10	3	Beginning to bloom	1,170	600	Fine	Fine

Although taller plants, and a more advanced stage of maturity, have been obtained with early seedings of hemp, the later-sown seeds germinates better and produces a thick stand of crop. So far, such stands have given a larger yield of better fibre. In more favourable seasons, or on ideal sites, it is quite probable that this experience would be reversed.

A good crop of Chington hemp.

CUTTING AT DIFFERENT STAGES.—During the past season six plots of the Minnesota No. 8 variety were sown under uniform conditions on May 2. Two of these were cut on August 28, at which time the flower buds were well formed but no bloom was showing. Two more were cut on September 6, when in full bloom, and, the remaining two on September 28, when all bloom had fallen. All cuttings were uniformly spread and scutched on the same day. It was found that although the crop from the early cutting retted more evenly and quickly than the later cuttings, the fibre was weak and the yield comparatively light. The second cutting produced the best yield of fibre which was of fair

quality, while the fibre from the last cutting was decidedly coarse and inclined to cut away into tow when scutched.

RATE OF SEEDING.—For the past season only, seed of Minnesota No. 8 has been sown at 40, 50 and 60 pounds per acre in duplicate plots each. The results were as follows:—

Seeding at 40 pounds per acre, the crop was thin and the straw long and coarse. It proved slow to ret and hard to break and scutch. The yield was 900 pounds of fibre and 1,080 pounds of tow per acre.

Seeding at 50 pounds per acre the stand was fairly thick and the stalks slim and tall. The crop retted quickly and proved easy to process, the yield being 980 pounds of fibre and 1,050 pounds of tow per acre.

Seeding at 60 pounds per acre gave the most satisfactory crop. The stalks were quite slim, comparatively short, retted quickly and evenly, and were not difficult to handle in processing. The yield was, fibre 1,200 pounds and tow 1,080 pounds per acre.

DRILLING VS. SOWING BROADCAST.—Sowing seed at the rate of 50 pounds per acre, in drills 6 inches apart, gave a much better stand and a more uniform crop than sowing the same quantity of seed broadcast. Following are the average results from duplicate plots, for the past two years, with the variety Minnesota No. 8:—

HEMP, DRILLING VS. SOWING BROADCAST—AVERAGE OF RESULTS, 1924 and 1925

—	Height		Yield per acre		Quality of fibre
			Fibre	Tow	
	ft.	in.	lb.	lb.	
Drills	11	4	1,260	950	Fine and strong
Broadcast	11	2	1,040	1,020	Not uniform

COST OF PRODUCTION.—In order to determine the cost of production and returns that may be expected from the growing of hemp, a half-acre was grown in 1925, and an account kept of the various items of cost and returns. The land used was a sandy loam underlaid with gravel and badly infested with couch grass. It was fall-ploughed, manured at the rate of 18 tons of barnyard manure per acre, and disked. In the early spring it was again ploughed and harrowed. The seed was sown, at the rate of 50 pounds per acre, on May 4, with an ordinary grain-drill, after which a few very light poor spots were given an application of commercial fertilizer, analyzing approximately, nitrogen 6 per cent, phosphoric acid 8 per cent, and potash 3 per cent. The area was then harrowed and cross-harrowed with the ordinary smoothing-harrow. The seed germinated well and the crop made a splendid growth, attaining a height of approximately ten feet, and apparently smothering, or at least suppressing, the couch grass. Following is a statement of the costs and returns on an acre basis:—

HEMP, COST AND RETURNS PER ACRE, 1925

Cost

Rent of land at $4 per acre	$ 4 00
Ploughing, fall and spring, 16 hours at 50 cents per hour	8 00
18 tons manure at $1 per ton (one-half value)	9 00
Applying manure, 12 hours at 50 cents per hour (one-half value)	3 00
Discing, 6 hours at 50 cents per hour	3 00
Harrowing, 2 hours at 50 cents per hour	1 00
Seed, 50 pounds at 12 cents per pound	6 00
Seeding, 1½ hours at 50 cents per hour	0 75
Commercial fertilizer for poor places, 200 pounds	3 20
Applying commercial fertilizer, 1 hour at 30 cents	0 30
Harrowing, 2 hours at 50 cents per hour	1 00

Cutting with mowing machine 8 hours at 50 cents per hour	4 00
Hauling one-half of crop to spreading field, team and extra man, 4 hours at 80 cents per hour	3 20
Spreading, 82 hours at 30 cents per hour	24 60
Turning, 6 hours at 30 cents per hour	1 80
Lifting and binding, 30 hours at 30 cents per hour	9 00
Hauling and storing, team and two extra men, 4 hours at $1.10 per hour	4 40
Breaking, 181 hours at 30 cents per hour	54 30
Scutching, 110 hours at 30 cents per hour	33 00
Targing tow, 47 hours at 30 cents per hour	14 10
Grading and baling, 4 hours at 30 cents per hour	1 20
Gasoline for engine, 42 gals. at 28 cents per gallon	11 76
Oil for engine, 4 gals. at 95 cents per gallon	3 80
Use of machinery	2 00
Total	$ 206 41

Returns

Retted straw, 12,558 pounds	
Scutched fibre 1,270 pounds at 15 cents per pound	$ 190 50
Targed tow, 750 pounds at 9 cents per pound	67 50
Total	258 00
Profit	51 59

Owing to the lack of suitable machinery for handling the crop the costs were high. From the results obtained, at Forest, Ont., by the Division of Economic Fibre Production, the use of the hemp-harvester, which cuts and spreads the crop in one operation, will reduce the cost of these two operations to $1.25 per acre. Deducting this figure from the combined cost of $28.60, as indicated in the foregoing table, the possible addition to the profit would be $26.85. Another machine, which is also used generally in hemp-growing sections, is the lifter and binder, with which, under ordinary conditions, the cost of this operation may be reduced to a maximum of $1.50 per acre. Such machinery is, however, expensive, and its purchase, together with the erection of a plant for processing the crop into fibre and tow, will entail a heavy expenditure. This outlay will also necessitate the growing of a large acreage of hemp in order that machinery and plant may be run on an economical basis. In general, therefore, it would seem that with rare exceptions, farmers of the Eastern Townships would not find the independent growing of hemp a profitable procedure. If, however, processing plants were established at central points by individuals or companies who would provide and operate modern machinery for harvesting, spreading and lifting the crop, hemp could be profitably grown under contract by farmers.

FLAX

TEST OF VARIETIES.—The varieties included in the test in 1925 were Saginaw, Pure Line No. 5, Longstem and Riga Blue. Of these, Longstem produced the largest yield of fibre and tow, although that from Pure Line No. 5 was of better quality.

DIFFERENT DATES OF SEEDING.—Seed of the Riga Blue was sown in triplicate plots, at a uniform rate, at three different dates throughout the season. Following are the results obtained:—

FLAX, DIFFERENT DATES OF SEEDING

Time of seeding	Average yield per acre	
	Fibre	Tow
	lb.	lb.
April 30	511	347
May 11	479	440
May 25	267	312

DEW RETTING VS. WATER RETTING.—Approximately one-third of the total flax crop representing one replication of all experiments was water-retted in a small brook running through the Station. The other two-thirds of the crop was spread on sod land and allowed to ret by the action of the weather. Following is a statement of the results obtained:—

COMPARISON OF WATER RETTING AND DEW RETTING

Method	Dry straw not deseeded	Retted straw	Fibre	Tow	Per cent fibre and tow	
					Dry green crop	Retted straw
	lb.	lb.	lb.	lb.	p.c.	p.c.
Water retted	332	203	26·62	20·93	14·32	23·44
Dew retted	680	372	38·12	37·75	11·15	20·39

It may be noted from the foregoing statement that a higher percentage of both fibre and tow was obtained by water-retting. The quality was also much better.

GENERAL NOTES

SHORT COURSE.—The Experimental Station, in co-operation with the Provincial Department of Agriculture, Canadian Co-operative Wool-Growers Limited, Sherbrooke Agricultural Society, Lennoxville Farmer's Club, Sherbrooke Sheep Breeders' Association and Womens' Institutes, put on a three days' short course in January. This course consisted of judging competitions for boys in all classes of live stock and cereals, as well as lectures on these subjects. Fifty-three boys took part in these competitions. There were classes in sewing and cooking conducted by the Domestic Science Branch of Macdonal College, in which twenty girls took part. These courses have done much good in stimulating more interest in live stock and agriculture generally, as well as in the farm home.

MEETINGS AND EXCURSIONS.—A Bee-Day was organized at the Station on June 8, at which were present, Mr. Gooderham, Dominion Apiarist, and other prominent bee-men. There was a good attendance of enthusiastic beekeepers of the district, who received many valuable suggestions and help in solving their various problems.

On June 25, the Quebec Jersey Breeders' Club held their fifth annual June Jersey Jubilee at the Station. This annual event consists of a picnic and a sale of Jersey heifer calves, which this year numbered fifteen, donated by different Jersey breeders in order to raise funds to carry on propaganda work for the breed in this province. Four hundred people were present from Quebec and northern Vermont.

The eleventh annual Farmers' Field Day was held on August 19, with the large attendance usually present at these gatherings. Much interest was shown in the different lines of work being conducted at the Station.

A judging course was held at the Station on August 13 and 14, for the benefit of the provincial Agronomes of this part of the province who act as judges at various county, school, sheep and swine fairs, as well as at the calf-feeding and breeding clubs. This course was handled by men from the Live Stock Branch, Ottawa, the Live Stock Branch at Quebec, and the Experimental Station. The object of the course was to endeavour to establish in the minds of these men uniformity as to type of different lines of live stock, in order to show to the breeders the type that the market demands.

EXHIBITIONS.—The permanent central exhibition booth in the main building at the Sherbrooke exhibition was utilized for a general exhibit representative of the various divisions of experimental work at this Station. This exhibition, which was held from August 24 to 31, is the largest in the province and always has a splendid attendance. The Station exhibit was fully up to the standard of previous years and many inquiries were received and answered by the members of the staff in attendance.

An exhibit was also staged at the Cookshire fair from September 15 to 17, and the Station poultry exhibit was used at a number of the winter poultry shows in the district.

Members of the staff acted as judges at fall fairs and exhibitions at Fredericton, N.B., Sherbrooke, Richmond, Danville, L'Avenir, Knowlton, Waterloo, Brome, Ayer's Cliff, Cookshire and Marbleton.

OTTAWA: Printed by F. A. ACLAND, Printer to the King's Most Excellent Majesty, 1926.