DOMINION OF CANADA

DEPARTMENT OF AGRICULTURE

DOMINION EXPERIMENTAL FARMS

EXPERIMENTAL STATION

LENNOXVILLE, QUE.

REPORT OF THE SUPERINTENDENT

J. A. McCLARY

FOR THE YEAR 1926

Implement shed, dairy barn, sheep barn and piggery at the Lennoxville Station.

Printed by authority of the Hon. W. R. Motherwell, Minister of Agriculture, Ottawa, 1927

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DOMINION EXPERIMENTAL STATION, LENNOXVILLE, QUE.

REPORT OF THE SUPERINTENDENT, J. A. McCLARY

THE SEASON

The weather during the month of January was mild. February, March and April were unusually cold, with a good covering of snow on the ground. The ice went out of the St. Francis river on April 23, eleven days later than any previous year since the Station was established. The month of May was cold and backward. Seeding was commenced on May 15. June was very cool, the average mean temperature being 57·81, compared with an average of 59·85 for the past twelve years. Corn was planted June 4. All crops were two weeks later than usual at the end of the month. The weather during July was generally fair, warm and dry. Haying was commenced on July 13, with an average crop. The first half of August was warm, but from the 18th to the end of the month the weather was quite cool. The mild weather, with sufficient rainfall through the month of September, was very beneficial for pastures and the root crops. Grain was harvested in good condition. Owing to the cold, late spring, corn made slow growth and the yield was about 70 per cent of an average crop. October was favourable for all farm work. Ploughing was well finished by the end of the month. November was unusually mild, the average mean temperature being 34·39 compared with an average of 31·82 for twelve years. The temperature during December was below the average for twelve years; the St. Francis river froze over December 5, nine days earlier than in 1925.

METEOROLOGICAL RECORDS AT LENNOXVILLE, P.Q., 1926

Month	Temperature °F.						Precipitation				Sunshine	
	Mean		Maximum		Minimum		Rain	Snow	Total precipitation			
	1926	Average 12 years	Highest	Mean Maximum	Lowest	Mean Minimum			1926	Average 12 years	1926	Average 12 years
							inches	inches	inches	inches	hours	hours
January	13·86	10·69	39·0	24·94	−20·00	2·79	2·20	22·50	4·45	2·89	53·8	79·0
February	11·52	12·36	38·0	23·03	−29·00	0·02	.....	22·50	2·25	1·81	109·4	96·2
March	17·89	24·83	45·0	31·03	−28·00	4·75	0·33	25·00	2·83	2·55	158·6	145·3
April	32·98	39·66	65·0	41·13	3·00	24·83	2·16	7·60	2·92	2·58	146·6	156·5
May	47·97	50·84	79·0	60·68	24·00	35·26	2·35	0·50	2·40	2·18	189·0	203·0
June	57·81	59·85	81·0	69·83	30·00	45·80	2·95	.....	2·95	3·93	194·1	208·0
July	64·00	65·75	87·0	77·61	35·00	50·39	2·24	.....	2·24	4·06	271·5	234·2
August	63·66	63·48	84·0	75·35	36·00	51·97	4·01	.....	4·01	4·09	202·5	218·1
September	54·66	55·28	77·0	66·33	30·00	43·00	2·51	.....	2·51	4·16	148·9	159·6
October	44·36	44·67	83·0	54·06	20·00	34·67	5·16	2·00	5·36	4·18	98·5	122·3
November	34·39	31·82	70·0	43·46	2·00	25·33	2·74	6·00	3·34	2·80	55·8	65·9
December	13·19	17·28	39·0	22·03	−17·00	4·35	0·25	25·50	2·80	2·37	55·7	53·6
Total or average	38·02	39·71	87·0	49·12	−29·00	26·93	26·90	111·60	38·06	37·60	1,684·4	1,741·7

ANIMAL HUSBANDRY

BEEF CATTLE

WINTER FEEDING OF BEEF STEERS

It has been the custom, since the Experimental Station was established in 1914, to purchase steers in the fall of each year for winter feeding, with three objects in view. This was done, first, to create a market at home for the hay and ensilage produced on the farm by feeding it to steers and thereby have

the manure to keep up the fertility of the soil. Second, to carry on a certain number of feeding experiments with beef steers. Third, to try and retain some interest in beef raising in the Eastern Townships.

Ninety-three stockers were purchased in the fall of 1925 for this line of work. They were tied in the barn November 1, 1925, at which time they averaged 992 pounds each, and were marketed May 21, 1926, when they averaged 1,239 pounds. A gain of 247 pounds was therefore made in 201 days, an average of 1·23 pounds per day.

The meal mixture used in the different experiments consisted of corn, 2 parts; oats, 2 parts; screenings, 1 part; bran, 1 part; and oil-meal, 1 part, was added March 1.

The following table gives the price at which feeds were charged in all beef cattle experiments:—

Meal mixture	$ 37 20	per ton
Screenings	31 00	"
Corn	39 00	"
Oats	38 00	"
Bran	31 00	"
Oil-meal	53 00	"
Hay	8 00	"
Ensilage	3 00	"

COMPARISON OF TWO DIFFERENT METHODS OF STEER-FEEDING

Object of Experiment.—To ascertain which of the two methods of feeding meal to beef steers is the most practical and profitable.

Plan of Experiment.—Two lots of six steers each were used for the experiment. They were fed 10 pounds of hay and 30 pounds of corn and sunflower ensilage per day per steer. Lot 1 was fed 5 pounds of the meal mixture per day per steer from January 1 to May 21. Lot 2 was fed 3 pounds of the meal mixture per day per steer commencing January 1, and the quantity was increased one pound the first of each month until they were marketed May 21, when they were getting 7 pounds per day.

COMPARISON OF TWO DIFFERENT METHODS OF STEER-FEEDING

—		Meal mixture, 5 pounds per day from January 1 to May 21	Meal mixture, 3 pounds per day January 1, and inceased 1 pound the 1st of each month to May 21
Number of steers in each lot	No.	6	6
Total initial weight	lb.	5,580	6,080
Average initial weight	"	930	1,013·3
Total finished weight	"	7,242	7,674
Average finished weight	"	1,207	1,279
Number of days on test	days	201	201
Total gain per lot	lb.	1,662	1,594
Average gain per steer	"	277	266
Average daily gain per steer	"	1·38	1·32
Total amount of meal eaten per lot	"	4,200	4,080
Total amount of hay eaten per lot	"	12,060	12,060
Total amount of ensilage eater per lot	"	36,180	36,180
Amount of meal eaten per pound gain	"	2·53	2·56
Amount of hay eaten per pound gain	"	7·26	7·56
Amount of ensilage eaten per pound gain	"	21·77	22·69
Total cost of feed per lot	$	180·63	178·40
Cost of feed per steer	$	30·11	29·73
Cost of feed per pound gain	cts.	10·87	11·19

Deductions.—Lot 1, fed 5 pounds of meal mixture per day per steer from January 1 to May 21, made a slightly better and cheaper gain than lot 2, but it will be noted that lot 1 consisted of the lighter, therefore leaner and possibly younger steers in which greater and more economical gains are usually made; however, as this is the first year this experiment has been tried it is impossible to give conclusive results. The experiment will be continued.

STANDARD ELEVATOR SCREENINGS VS. MEAL MIXTURE

Object of Experiment.—To ascertain the value of standard recleaned elevator screenings compared with a meal mixture as a feed for fattenings steers, taking into account the gain, cost of feed per pound gain and quality of finish.

Plan of Experiment.—Two lots of eight steers each were used. 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 clear ground elevator screenings and lot 2 a meal mixture. Commencing January 1, they were fed at the rate of three pounds each per day and this was increased one pound the first of each month until at the end of the feeding period, May 21, they were eating seven pounds per day. The following table gives the results for 1926, as well as the average for five years:—

STANDARD ELEVATOR SCREENINGS VS. MEAL MIXTURE

		1926		Average for five years	
		Lot 1 Screenings	Lot 2 Meal mixture	Lot 1 Screenings	Lot 2 mixture
Number of steers in each lot	No.	8	8	8	8
Total initial weight	lb.	8,280	8,106·4	7,875·5	8,056·2
Average initial weight	"	1,035	1,013·3	984·4	1,007·0
Total finished weight	"	10,424	10,232·0	9,696·9	9,884·5
Average finished weight	"	1,303	1,279·0	1,212·0	1,235·5
Number of days on test	days	201	201	188	188
Total gain per lot	lb.	2,144	2,125·6	1,821·4	1,828·3
Average gain per steer	"	268	265·7	227·7	228·56
Average daily gain	"	1·33	1·32	1·21	1·21
Total amount of meal eaten per lot	"	5,440	5,440	6,266	6,454
Total amount of hay eaten per lot	"	16,080	16,080	15,409	15,522
Total amount of silage eaten per lot	"	48,240	48,240	41,728	42,435
Amount of meal eaten per pound gain	"	2·54	2·56	3·44	3·53
Amount of hay eaten per pound gain	"	7·51	7·56	8·46	8·49
Amount of ensilage eaten per pound gain	"	22·50	22·69	22·91	23·21
Total cost of feed per lot	$	221·00	237·86	219·66	243·71
Cost of feed per pound gain	cts.	10·31	11·19	12·06	13·33

Deductions.—Lot 1, fed ground screenings, made a slightly better gain at a cost of 10.31 cents per pound gain than lot 2 fed a meal mixture which cost 11.19 cents per pound gain. The results of a five-year average show that steers fed screenings cost 12.06 cents per pound gain compared with a cost of 13.33 for those fed a meal mixture, but with the price of screenings advancing as it is year by year, there will not be the advantage in feeding it, instead of other feeds as in former years. The difference in cost of producing beef with screenings has been on account of the lower price of this feed, not in the pounds of gain made during the period. The best results have been obtained with screenings by purchasing the best grade unground and having it ground locally.

WINTER FEEDING 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 or tied in the stable.

Plan of Experiment.—Two uniform lots of ten steers each were compared in this experiment. Lot 1 was wintered in large pen adjoining the stable. Water was available for them at all times. Lot 2 was tied in the main stable. Commencing November 1, both lots were fed 10 pounds of hay and 30 pounds of corn and sunflower ensilage per day during the period. Beginning January 1, both lots received 3 pounds of meal mixture per steer per day, which was increased 1 pound per day the first of each month until at the end of the feeding period, May 21, they were eating 7 pounds each per day.

WINTER FEEDING OF STEERS LOOSE VS. TIED

—		1926		Average for eight years	
		Loose	Tied	Loose	Tied
Number of steers in each lot	No.	10	10	10	10
Total initial weight	lb.	9,110	10,133	8,598·7	9,673·7
Average initial weight	"	911	1,013·3	859·8	967·37
Total finished weight	"	12,080	12,790	11,085·1	12,014·7
Average finished weight	"	1,208	1,279	1,108·5	1,201·4
Number of days on test	days	201	201	186	186
Total gain per lot	lb.	2,970	2,657	2,486·4	2,342·0
Average gain per steer	"	297	266	248·6	234·2
Average daily gain per steer	"	1·47	1·32	1·34	1·27
Total amount of meal eaten per lot	"	6,800	6,800	7,683	7,705
Total amount of hay eaten per lot	"	20,100	20,100	19,344	19,368
Total amount of ensilage eaten per lot	"	60,300	60,300	53,780	53,374
Amount of meal eaten per pound gain	"	2·29	2·56	3·09	3·29
Amount of hay eaten per pound gain	"	6·76	7·56	7·78	8·27
Amount of ensilage eaten per pound gain	"	20·30	22·69	21·63	22·79
Total cost of feed per lot	$	297·33	297·33	304·83	308·44
Cost of feed per pound gain	cts.	10·01	11·19	12·26	13·17

Deductions.—The results obtained in this test, which has been conducted for eight years, show quite conclusively that larger gains can be obtained at a cheaper cost by feeding steers loose in pens, and when the cost of equipment and labour is taken into consideration there is a marked advantage in feeding steers in pens.

EARLY VS. LATE GRAIN-FEEDING OF STEERS

Object of Experiment.—To ascertain the most satisfactory period of grain-feeding for beef steers taking into consideration the cost per pound gain and the quality of finish.

Plan of Experiment.—Three lots of six steers each were compared. The steers were fed 10 pounds of hay and 30 pounds of corn and sunflower ensilage each per day throughout the experiment. Commencing December 1, lot 1 was fed the meal mixture at the rate of 2 pounds per day per steer and this was increased 1 pound the first of each month until at the end of the feeding period they were eating 7 pounds each per day. Lot 2 was started on the meal mixture January 1, with 2 pounds, which was increased 1 pound the first of each month until at the finish of the feeding period they were getting 6 pounds per day. Lot 3 was fed 2 pounds commencing February 1, and this was increased 1 pound the first of each month until at the end of the period each steer was eating 5 pounds per day.

		1926			Average for four years		
		Lot 1	Lot 2	Lot 3	Lot 1	Lot 2	Lot 3
Number of steers in each lot	No.	6	6	6	6	6	6
Total initial weight	lb.	6,575	6,000	6,615	6,062	5,752	6,040·5
Average initial weight	"	1,096	1,000	1,102·5	1,010·3	958·6	1,006·7
Total finished weight	"	8,235	7,562	8,270·0	7,568·0	7,073·0	7,363·0
Average finished weight	"	1,372·5	1,260·3	1,378·3	1,261·3	1,178·7	1,227·1
Number of days in experiment	days	201	201	201	189	189	189
Number of days grain was fed	"	171	140	109	171	125	83
Total gain per lot	lb.	1,660	1,562	1,655	1,506	1,321	1,322·5
Average gain per steer	"	276·6	260·3	275·8	251	220·2	220·4
Average daily gain per steer	"	1·37	1·29	1·37	1·33	1·17	1·17
Total amount of meal eaten per lot	"	4,448	3,233	2,217	5,542	4,108	2,830
Total amount of hay eaten per lot	"	12,060	12,060	12,060	11,641	11,611	11,347
Total amount of ensilage eaten per lot	"	36,180	36,180	36,180	31,355	30,911	30,867
Amount of meal eaten per pound gain	"	2·68	2·07	1·34	3·68	3·11	2·14
Amount of hay eaten per pound gain	"	7·26	7·72	7·28	7·73	8·79	8·58
Amount of ensilage eaten per pound gain	"	21·79	23·16	21·86	20·82	23·40	23·34
Total cost of feed per lot	$	185·26	162·76	143·65	190·81	173·58	149·04
Cost of feed per pound gain	cts.	11·16	10·42	8·68	12·67	13·14	11·27

Deductions.—The table shows that lot 1 consumed 2.68 pounds of meal per pound gain, at a cost of 11.16 cents per pound gain. Lot 2 consumed 2.07 pounds of meal per pound gain which cost 10.42 cents per pound gain and lot 3 consumed 1.34 pounds of meal per pound gain at a cost of 8.68 cents per pound gain. Although lot 3 made cheaper gains, the finish did not equal that of lot 1, and would not bring within one-half cent per pound as much as lot 1. The steers in lot 1 were fed 742 pounds of meal each, and those in lot 3, 369 pounds each. It would appear from these results that it requires about 700 pounds of meal to properly finish an average steer for market, under normal conditions.

DUAL-PURPOSE SHORTHORNS

The Shorthorn herd numbered twenty-seven head of registered cattle, December 31, 1926, made up of one young herd bull "Kentville Major 2nd" —172627— ten cows, ten heifers and six bulls. Breeding work has been conducted with the object in view of improving the milking qualities of the herd. All the heifers in the herd are from the Shorthorn bull "Weldwood Lassie's Lad" —135100— whose dam has an R.O.P. record of 13,820 pounds of milk and 563 pounds of fat, and granddam a record of 13,535 pounds of milk and 540 pounds of fat. These heifers are being bred to the young bull "Kentville Major 2nd" —172627— who has good records behind him. The young bulls are disposed of to farmers at reasonable prices.

The average milk production of the Shorthorn herd, pounds of butter-fat, feed cost to produce one hundred pounds milk and one pound of butter, and cost of feed for eight cows which finished a lactation period during the year, will be found in the individual milk-record table at the end of the dairy cattle section of the animal husbandry report.

FEED COST OF MAINTAINING A YEARLING SHORTHORN BULL FOR ONE YEAR

The following table gives the amount of feed consumed by the yearling Shorthorn herd bull "Kentville Major 2nd" —172627— in one year, also the cost of feed:—

FEED COST OF MAINTAINING A YEARLING SHORTHORN BULL FOR ONE YEAR

1,465 pounds meal at $1.50 per cwt.	$ 21 97
5,840 pounds ensilage at $3 per ton	8 76
1,100 pounds roots at $3 per ton	1 65
2,930 pounds hay at $8 per ton	11 72
Total cost of feed	$ 44 10

DAIRY CATTLE

The breeding of dairy cattle forms one of the main features of the live stock work at the Lennoxville Station. Ayrshires and Jerseys are the two breeds kept. The Experimental work carried on with these herds consists of cost of production of milk and butter-fat, cost of raising calves and heifers to breeding age, testing different calf meals and methods of feeding and experimental breeding work. The herds have been fully accredited since 1922. There has not been the increase in the herds that might be wished for, as 73 per cent of the calves born in 1926 were males. All good promising male calves are reared and sold to farmers in the district at reasonable prices.

All normal cows and heifers are entered in the Canadian Record of Performance for pure-bred dairy cattle and a number of creditable records have been made. The object in mind is to develop a herd with a high general average rather than to make a few sensational records.

The Advanced Registry of pure-bred dairy sires, which was a logical outcome of Record of Performance work with pure-bred dairy cattle, has been followed up since its inception, all herd sires that were eligible being entered. In addition all eligible young bulls that were not sold before reaching eight months of age were entered, thus increasing their value to the prospective purchaser.

In estimating the cost of feeds, the following values were used in the dairy section of the cattle report, except the calf-feeding experiment. Butter was valued at 40 cents per pound.

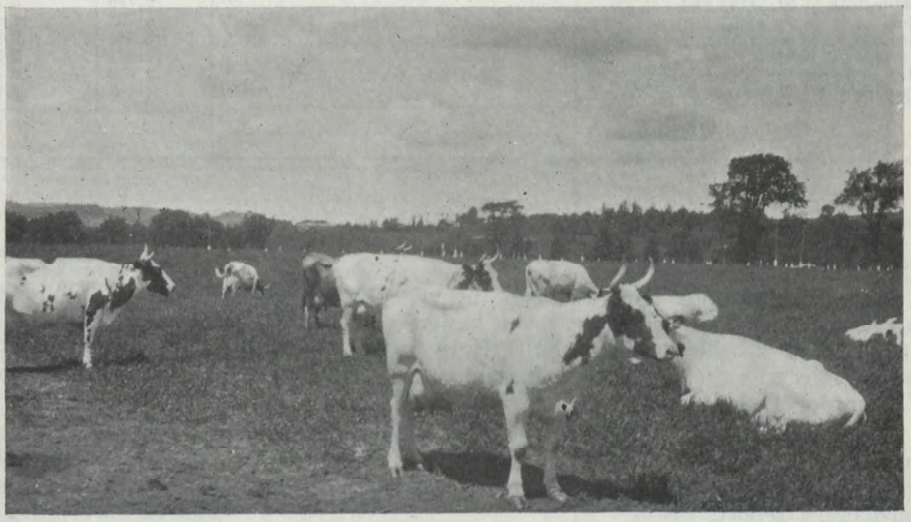
Meal mixture	$ 1 50 per cwt.
Skim-milk	0 25 "
Hay	8 00 per ton
Ensilage	3 00 "
Roots	3 00 "
Pasture	1 50 per month.

AYRSHIRES

The Ayrshire herd numbered forty-two head, December 31, 1926, as follows: Seventeen cows, sixteen heifers, one herd bull and eight young bulls. The herd bull "Ottawa Supreme 10th" —91809— Advanced Registry No. 21, Class AA, was bred at the Central Experimental Farm, Ottawa. This bull was sired by the imported bull "Shewalton Mains Supreme" (imp.) —83930— (22659) Advanced Registry No. 16, Class AA, and his dam was "Auchenbay Mina 5th" (imp.) —62785— she being the grand champion female at the Royal Winter Fair, Toronto, in 1923. She has a record of 16,243 pounds of milk and 677 pounds of fat in 365 days, testing 4.17 per cent, at four years of age.

The sixteen heifers on hand are from the old herd bull "Ottawa Masterpiece" —77928— Advanced Registry No. 22, Class A, also bred at the Central Experimental Farm, Ottawa, and that left so many good calves at Lennoxville. "Beauty's Master" —92439— Advanced Registry No. 148, Class A, junior champion Ayrshire bull at twelve leading shows, including the National Dairy Show in 1926, was also from the same sire, and bred at this Station.

The average milk-production of the Ayshire herd, pounds of butter-fat, feed cost to produce 100 pounds of milk and one pound of butter and cost of feed of fifteen cows which finished a lactation period in 1926, are to be found in the individual milk-record table at the end of the dairy cattle section of the animal husbandry report.



Group of cows on Record of Performance test in 1926.

FEED COST OF RAISING AYRSHIRE CALVES FROM BIRTH TO ONE YEAR

The cost of raising calves was computed from the average cost of raising eight calves. The calves receive whole milk for eight weeks, when skim-milk is gradually added to replace whole milk and this is fed for six months.. A small amount of dry meal is given as soon as they will commence to eat it, as well as some good clover hay. The following table gives the amount of each kind of feed fed during the year and the cost of the feed:—

Feed Cost of Raising Aysrhire Calves from Birth to One Year

——	Amount of feed	Cost of feed
	lb.	$ cts.
Whole milk at $1.50 per cwt	600	9 00
Skim-milk at $0.25 per cwt	2,520	6 30
Meal at $1.50 per cwt	668	10 02
Hay at $8 per ton	975	3 90
Ensilage at $3 per ton	1,710	2 56
Total cost of feed	.....	31 78

FEED COST OF RAISING DAIRY HEIFERS FROM BIRTH TO TWENTY-SIX MONTHS OF AGE

The cost of raising dairy heifers from birth to twenty-six months of age was figured from the average amount and cost of feed for three Ayrshire heifers during that period.

FEED COST OF RAISING DAIRY HEIFERS FROM BIRTH TO TWENTY-SIX MONTHS OF AGE

—	Amount of feed	Cost of feed
		$ cts.
Whole milk at $1.50 per cwt.... lb.	618	9 27
Skim-milk at $0.25 per cwt.... "	2,716	6 79
Meal at $1.50 per cwt.... "	762	11 43
Ensilage at $3 per ton.... "	6,661	9 99
Roots at $3 per ton.... "	1,481	2 22
Hay at $8 per ton.... "	2,603	10 41
Pasture at $1.50 per month.... month	8	12 00
Total cost of feed....	....	62 11

JERSEYS

The Jersey herd, at the end of the year 1926, totalled twenty head, made up of one herd bull, ten cows, seven heifers and two young bulls. The herd is still headed by the well-bred bull "Rower's Golden Maid's Prince" —11841— whose sire was the imported "Champion Rower" —10270— and his dam was "Brampton Golden Maid's Princess" —2485—.

The average milk-production of the Jersey herd, as well as the feed cost to produce 100 pounds of milk and 1 pound of butter will be found in the individual milk-record table at the end of the dairy cattle section of the animal husbandry report.

FEED COST OF MAINTAINING A JERSEY HERD BULL FOR ONE YEAR

The Jersey bull is kept in a box-stall. He is exercised by having an overhead wire cable with a loose running ring and chain to fasten to the bull's ring. This cable is sixty feet long and this gives the bull a chance to travel back and forth. Another very essential point in the care of a herd bull is that his feet should always be kept well trimmed. The following table gives the amount and cost of feed for a Jersey bull for one year.

FEED COST OF MAINTAINING A JERSEY BULL FOR ONE YEAR

1,456 pounds of meal at $1.50 per cwt....	$ 21 84
6,942 pounds ensilage at $3 per ton....	10 41
920 pounds roots at $3 per ton....	1 38
2,920 pounds hay at $8 per ton....	11 68
Total cost of feed....	$ 45 31

CALF-FEEDING EXPERIMENT

Object of Experiment.—To ascertain the value of different calf meals fed as a porridge, with skim-milk, as a substitute for whole milk, after the calves are weaned from whole milk.

Plan of Experiment.—Three lots of four calves each were used for this experiment. Lot 1 was fed a meal mixture consisting of ground oats, 3 parts; ground corn, 2 parts; and ground flaxseed, 1 part. Lot 2 was fed Royal Purple calf meal and lot 3 finely ground oil cake. This experiment was conducted 120 days. The following table gives the kinds of meal, quantity fed as a porridge in the skim-milk, and the cost of feed per pound gain with the different substitutes.

CALF-FEEDING EXPERIMENT

—		Lot 1 Oats, 3 parts; corn, 2 parts; gr. flaxseed 1 part	Lot 2 Royal Purple calf meal	Lot 3 Oil meal
Number of calves in experiment	No.	4	4	4
Length of feeding period	days	120	120	120
Total initial weight	lb.	692	644	676
Average initial weight	"	173	161	169
Total finished weight	"	1,720	1,600	1,630
Average finished weight	"	430	400	407·5
Total gain per group	"	1,028	956	954
Average gain per calf	"	257	239	238·5
Average daily gain per calf	"	2·14	1·99	1·99
Amount of skim-milk fed per group	"	6,720	6,720	6,720
Amount of skim-milk fed per calf	"	1,680	1,680	1,680
Amount of meal in milk fed per group	"	120	120	120
Amount of meal in milk fed per calf	"	30	30	30
Amount of dry meal fed per group	"	720	720	720
Amount of dry meal fed per calf	"	180	180	180
Amount of hay fed per group	"	1,440	1,440	1,400
Amount of hay fed per calf	"	360	360	360
Amount of ensilage fed per group	"	1,920	1,920	1,920
Amount of ensilage fed per calf	"	480	480	480
Cost of feed per group, milk-substitute neglected	$	36·24	36·24	36·24
Cost of milk-substitute per group	$	3·00	5·40	3·18
Total cost of feed per group	$	39·24	41·64	39·42
Cost of feed per calf	$	9·81	10·41	9·85
Cost of feed, milk-substitute neglected, per pound gain	cts.	3·52	3·79	3·80
Cost of milk-substitute per pound gain	"	0·29	0·56	0·33
Cost of feed per pound gain	"	3·82	4·35	4·13

VALUATION OF FEEDS

Skim-milk	$ 0 25	per cwt.
Dry meal mixture	1 50	"
Meal mixture in milk	2 50	"
Royal Purple calf meal	4 50	"
Oilcake	2 65	"

Deductions.—The results from the table show that the best and most economical gains were made with the home mixture of ground oats, corn and flaxseed, at a cost of 3·82 cents per pound gain. In amount of gains made lot 2, on Royal Purple calf meal, and lot 3 on oilcake meal were practically equal, but the oilcake meal ration was the most economical.

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 fat produced in period	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 1 lb. 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.	6-4	Jan. 17-26	317	11,219·0	35·39	3·82	429·01	504·72	201·89	26·79	228·68	2,452	12,311	2,528	4	71·35	0·64	14·1	25·9	157·33
Lennoxville Roxie	7-11	Feb. 10-25	313	9,683·3	30·94	4·53	439·28	516·80	206·72	22·92	229·64	2,084	14,908	2,857	4	71·01	0·73	13·7	26·3	158·60
Lennoxville Marjorie 3rd.	2-9	Jan. 11-25	364	9,051·8	24·87	4·19	380·16	447·25	178·90	21·51	200·41	2,949	15,724	3·116	4	86·28	0·95	19·3	20·7	114·13
Lennoxville Duchess	2-7	Mar. 28-25	369	8,987·9	24·36	4·24	381·23	448·51	179·40	21·35	200·75	2,665	12,722	2,579	4	75·36	0·84	16·8	23·2	125·39
Lennoxville Mary 3rd	4-10	Mar. 31-25	334	8,952·2	26·80	4·41	395·14	464·87	185·95	21·22	207·17	2,20.	14,617	2,659	4	71·61	0·80	15·4	24·6	135·56
Lennoxville Bettina 2nd	2-7	Jan. 18-25	379	8,908·9	23·51	3·86	344·29	405·05	162·02	21·26	183·28	2,453	16,574	3,367	4	81·11	0·91	20·0	20·0	102·17
Lennoxville Roxie 3rd	3-2	Dec. 3-25	330	8,286·0	25·11	4·06	336·79	396·22	158·49	19·72	178·21	2,202	12,590	2,438	4	67·66	0·82	17·1	22·9	110·55
Lennoxville Beauty 3rd	5-0	Jan. 9-26	233	7,976·5	34·23	3·69	294·41	346·36	138·54	19·08	157·62	1,825	8,030	2,100	3	52·31	0·66	15·1	24·9	105·31
Lennoxville Roxie 2nd	6-3	Dec. 20-25	254	7,962·8	31·35	3·99	318·27	374·44	149·78	18·97	168·75	2,128	9,520	2,310	4	61·44	0·77	16·4	23·6	107·31
Highland Betsy 2nd	5-8	Jan. 30-26	258	7,956·4	30·83	3·48	276·84	325·69	130·28	19·08	149·36	1,964	9,395	2,164	4	58·21	0·73	17·9	22·1	91·15
Lennoxville Bettina	9-0	Oct. 8-25	351	7,406·5	21·10	3·71	275·39	323·99	129·60	17·71	147·31	1,778	12,221	2,310	6	63·24	0·85	19·5	20·5	84·07
Lennoxville Dairymaid 2nd	6-10	Dec. 21-25	296	7,322·0	24·74	3·54	259·70	305·53	122·21	17·54	139·75	1,992	11,411	2,438	4	62·74	0·86	20·5	19·5	77·01
Lennoxville Susie	6-2	May 31-25	286	7,290·1	25·49	4·09	298·84	351·58	140·63	17·35	157·98	1,644	12,275	2,125	4	57·57	0·79	16·4	23·6	100·41
Lennoxville Dairymaid 4th	4-7	Nov. 15-25	248	6,278·8	25·32	3·65	229·09	269·52	107·81	15·02	122·83	1,792	10,375	2,310	3	56·18	0·89	20·8	19·2	66·65
Lennoxville Dairymaid 3rd	5-7	Nov. 23-25	240	5,588·0	23·28	3·75	209·99	247·05	98·82	13·35	112·17	1,701	9,055	2,310	2	51·33	0·92	20·8	19·2	60·84
Total for herd (15 cows)	.....	.....	4,572	122,870·2	.....	.....	4,868·43	5,727·58	2,291·04	292·87	2,583·91	31,833	181,728	37,611	58	987·43	12·16	263·8	336·2	1,596·48
Aver. for herd (15 cows)	.....	.....	305	8,191·3	27·15	3·93	324·56	381·84	152·73	19·52	172·26	2,122	12,115	2,507	3·9	65·83	0·81	17·6	22·4	106·43

Jerseys

Maplehurst Fox's Rosanna	5-2	Feb. 20-25	348	9,651·7	27·74	5·34	516·01	607·10	242·84	22·62	265·46	2,842	13,844	2,296	4	78·58	0·81	12·9	27·1	186·88
Sophie Magnet's Corinne	5-8	Oct. 11-25	293	9,413·0	32·13	5·75	541·93	637·56	255·02	21·94	276·96	2,32.	11,116	1,848	2	61·92	0·66	09·7	30·3	215·04
Kingsway's Beauty Spot	6-1	June 10-25	381	8,025·4	21·06	5·81	466·77	549·14	219·66	18·69	238·35	2,143	14,528	2,296	5	70·61	0·88	12·9	27·1	167·74
Premier's Pinehurst Lottie	3-2	Dec. 6-25	23.	6,376·6	26·79	5·60	357·32	420·38	168·15	14·89	183·04	1,953	9,186	1,680	2	52·79	0·83	12·5	27·5	130·25
Mascot Mary Belle	2-2	Nov. 27-25	267	5,246·4	19·65	5·88	308·48	362·92	145·16	12·21	157·37	1,896	10,650	1,716	5	58·77	1·12	16·2	23·8	98·60
Lennoxville Princess	2-5	Oct. 7-25	420	4,432·2	10·55	5·56	246·39	289·87	115·95	10·35	126·30	1,534	15,005	2,185	4	61·01	1·38	21·0	19·0	65·29
Total for herd (6 cows)	.....	.....	1,947	43,148·3	.....	.....	2,436·93	2,866·97	1,146·78	100·70	1,247·48	12,742	74,329	12,021	22	383·68	5·68	8·52	1,548	863·80
Aver. for herd (6 cows)	.....	.....	324	7,191·4	22·98	5·65	406·15	477·83	191·13	16·78	207·91	2,124	12,388	2,003	3·7	63·95	0·95	14·2	25·8	143·97

Shorthorns

Jubilee 18th	7–9	Sept. 30–25	396	12,036·8	30·40	4·22	508·35	598·06	239·22	28·60	267·82	2,733	13,880	2,438	7	82·06	0·68	13·7	26·3	185·76
Village Ruby	8–11	Aug. 18–25	357	9,419·2	26·38	4·52	426·21	501·42	200·57	22·29	222·86	2,315	12,355	2,310	6·5	72·24	0·77	14·4	25·6	150·62
Lennoxville Ruby	3–0	Nov. 7–25	355	6,827·6	19·23	4·13	282·19	331·99	132·79	16·24	149·03	2,069	13,046	2,438	6	69·35	1·02	20·9	19·1	79·68
Lady Hope 10th	6–2	Oct. 19–25	282	5,488·5	19·46	4·04	221·96	261·13	104·45	13·07	117·52	1,827	10,474	2,310	3·5	57·60	1·05	22·0	18·0	59·92
Victoria 2nd	8–3	Dec. 27–25	319	5,362·6	15·36	4·40	236·18	277·87	111·15	12·71	123·86	1,835	14·750	3,028	4	67·71	1·26	24·4	15·6	56·15
Autumn Rose 5th	4–4	Jan. 12–26	287	4,979·8	17·35	4·03	201·05	236·53	94·61	11·86	105·47	1,518	7,496	1,463	4	45·86	0·92	19·4	20·6	60·61
Gem of Lennoxville 2nd	3–0	Var. 12–26	29	4,153·8	14·13	4·29	178·53	210·01	84·02	9·86	93·88	1,245	8,437	1,483	4	43·26	1·04	20·6	19·4	50·62
Gem of Lennoxville	3–7	Nov. 5–25	282	3,978·4	14·11	4·03	160·62	188·97	75·58	9·47	85·05	1,469	9,618	2,310	3·5	50·95	1·28	27·0	13·0	34·10
Total for herd (8 cows)	.....	.....	2,602	52,246·7	.....	.....	2,215·09	2,606·01	1,042·39	124·10	1,166·4	5,008	90,056	17,780	38·5	429·03	8·02	162.4	157.6	677·46
Aver. for herd (8 cows)	.....	.....	325	6,530·8	20·09	4·21	276,88	325·75	130·30	15·51	145·81	1,876	11,257	2,222	4·8	61·13	1·00	20·3	19·7	84·68

HORSES

The horses at the Station, December 31, consist of two foals, two yearlings and one two-year-old colt, two brood mares, twelve work horses and one driving horse. The five colts are from the Shire Stallion "Snelston Topper"—1608—(38528) which was at the Station for three years and was transferred to Lacombe in April 1926.

COST OF HORSE LABOUR

In order to arrive at the cost of horse labour performed at the Station, the following table gives the cost per hour of horse labour and how it 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.	24,741
Cost of feed for 12 horses—		
37,445 pounds oats at $1.80 per cwt	$	674 01
15,467 pounds ground oats at $1.90 per cwt	$	293 87
2,965 pounds bran at $1.55 per cwt	$	45 96
70,069 pounds hay at $8 per ton	$	280 27
Total cost of feed for 12 horses for 12 months	$	1,294 11
Average cost of feed per horse for 12 months	$	107 84
Total cost of feed for 12 horses for 12 months	$	1,294 11
Labour (stable attendance) 2,190 hours at 30 cents per hour	$	657 00
Interest (6% on $2,400; value of 12 horses)	$	144 00
Shelter, $20 per horse	$	240 00
Harnesses, (repairs and oiling)	$	106 60
Miscellaneous (including shoeing, veterinary, hrushes, brooms, etc	$	136 95
Total cost of 24,741 hours horse labour	$	2,578 66
Average cost per hour horse labour	cts.	10 42
Average cost per hour horse labour for the past 6 years	"	12 27

These figures show that there was 24,741 hours of horse labour performed by the twelve work horses at a cost of 10·42 cents per hour.

SHEEP

The flock on December 31, consisted of seventeen registered Oxford Down breeding ewes, four registered ewe lambs, one registered Oxford Down shearling ram "Wright H26"—29626—twenty-nine high-grade Oxford Down breeding ewes, three grade ewe lambs, five cross-bred Cheviot ewe lambs and one registered Cheviot ram, "Macdonald 782"—1280—.

The Cheviot ram was used on sixteen grade Oxford Down ewes to compare this cross with Oxford Down as a market lamb proposition, and to ascertain the quality and quantity of the wool clip from this cross. Five ewe lambs from this cross have been retained in the flock for this purpose. From records kept and observations made, the lambs from this cross mature a little earlier and have a better finish. This experiment is being continued, and there was also added a third lot of Oxford Down grade ewes which were bred to a registered Shropshire ram. Full details will be available another year as to the grade alive and dressed and the shrinkage of market lambs from these different crosses.

The shearing was done April 15 before the sheep had lambs. The fleeces averaged 7·58 pounds, which was graded and marketed through the Canadian Co-operative Wool Growers Association Limited, which has its provincial warehouse and grading station for the province of Quebec at Lennoxville.

The sheep and lambs were dipped on May 15, before they went to pasture.

COST OF KEEPING A BREEDING FLOCK

Number of ewes January 1, 1926	No.	46
Number of ewes December 31, 1926	"	42
Value of ewes January 1, 1926	$	552 00
Value of ram	$	40 00
Cost of feed—		
16,544 pounds hay at $8 per ton	$	66 16
2,150 pounds ensilage at $3 per ton	$	3 21
8,273 pounds meal at $30 per ton	$	124 08
6 months pasture at 20 cents per head per month	$	50 40
Total cost of feed	$	243 85
Interest on investment 6 per cent of $552	$	33 12
Depreciation and replacement; 16% of $552	$	88 32
Total charge against ewes	$	365 29
Average charge per ewe (46 ewes)	$	7 94
Value of wool per fleece 7·58 lb. at 25 cents	$	1 89
Average cost of keeping ewe (less value of fleece)	$	6 05
Average cost of feed per ewe	$	5 30

It will be noted from these figures that the flock of ewes numbered 46 the first of January and there were 42 ewes on December 31, leaving a loss of 4 during the year, which is covered by the 16 per cent charge for depreciation and replacement.

COST OF KEEPING A RAM FOR ONE YEAR

420 pounds hay at $8 per ton	$	1 68
250 pounds roots at $3 per ton	$	0 37
300 pounds ensilage at $3 per ton	$	0 45
325 pounds meal at $30 per ton	$	4 87
6 months pasture at 20 cents per month	$	1 20
Total cost of feed per ram per year	$	8 57
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 97
Value of fleece, 8·8 pounds at 25 cents per pound	$	2 20
Cost of keeping ram (chargeable against lambs)	$	18 77

NOTE.—The depreciation charge on ram is figured at 25 per cent as a ram's usefulness is abour four years' duration.

COST OF RAISING LAMBS TO MARKET AGE

Number of lambs saved for market from 46 ewes	No.	66
Average number of lambs per wew	"	1 43
Average weight of lambs at birth	lb.	9 90
Average weight of lambs at weaning (Aug. 23)	"	70 15
Average weight of lambs when marketed (Oct. 11)	"	93 53
Average value of lambs at 10·5 cents per pound	$	9 82
Cost of keeping 46 sheep (less value of wool)	$	278 35
Three months pasture for 66 lambs at 20 cents per head per month	$	39 60
Cost of keeping ram (less value of fleece)	$	18 77
Cost of extra labour at lambing time	$	20 00
Medicine	$	5 00
Total cost of raising 66 lambs to market age	$	361 72
Average cost of raising a lamb to market age	$	5 48

The results show that it cost $5.48 to raise a lamb to market age. With a production of 1·43 lambs per ewe, and each lamb worth $9.82, the profit per ewe was $6.20.

SWINE

The Yorkshire is the only breed kept at the Station. The herd consists of one stock boar "Ottawa Masterpiece 102"—93241—which has proven such a good sire by producing so many pigs which have graded selects. There were also five registered sows, and forty-five feeders on hand December 31, 1926. Eighty-four pigs were raised during the year. The brood sows are kept on abundant pasture during the summer, and only a small grain ration is necessary. In winter they are kept in yards with movable colony houses for shelter. These

colony houses are always faced to the south and placed in the opposite side of the yard from the troughs, so that the sows have to travel across the yard to get their food. The feed in winter consists of screenings, 4 parts; bran, 2 parts; oats, 1 part, some mangels or turnips, and clover hay are kept where they can get at it at any time. The brood sows are taken into the breeding-pens a few days before farrowing. The following table gives the prices at which the different feeds were charged in all swine experiments:—

Screenings	$	1 55 per cwt.
Ground oats		1 90 "
Bran		1 55 "
Middlings		1 75 "
Oilcake		2 65 "
Tankage 60% protein		3 00 "
Skim-milk		0 25 "
Roots		3 00 per ton

COST OF RAISING PIGS TO WEANING AGE

The following statement is made up from records kept of five brood sows. The total amount of feed the sows consumed during the year as well as what the young pigs ate until they were weaned is charged against the sows:—

Cost of Raising Pigs to Weaning Age

Number of sows	No.	5
Number of litters farrowed per sow	"	2
Total number of pigs saved from 5 sows	"	84
Average number of pigs saved per sow	"	16·8
Cost of feed—		
3,998 pounds screenings at $1.55 per cwt	$	61 97
1,448 pounds bran at $1.55 per cwt	$	22 44
1,669 pounds ground oats at $1.90 per cwt	$	31 71
450 pounds middlings at $1.75 per cwt	$	7 87
23,193 pounds skim-milk at $0.25 per cwt	$	57 98
1,134 pounds roots at $0.15 per cwt	$	1 70
6 months pasture for 5 sows at $0.50 per sow per month	$	15 00
Total cost of feed for sows and pigs to weaning age	$	198 67

Note.—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 the 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	$	198 67
Extra labour required at farrowing time	$	25 00
Cost of service of boar at $2 per litter	$	20 00
Interest on investment $40 per sow at 6 per cent	$	12 00
Cost to raise 84 pigs to weaning age	$	255 67
Cost to raise 1 pig to weaning age	$	3 04
Average cost to raise pigs to weaning age for the past six years	$	3 00

STANDARD RECLEANED ELEVATOR SCREENINGS VS. MEAL MIXTURE FOR HOG-FEEDING

Object of Experiment.—To ascertain the value of clear screenings as a hog feed compared with a meal mixture.

Plan of Experiment.—Lot 1, in the following table of eleven hogs, is the average of two lots fed clear screenings in conjunction with skim-milk, tankage and roots. Lot 2, comprising seventeen hogs, is the average of two lots fed a meal mixture in conjunction with skim-milk, tankage and roots. The following table gives the cost per pound gain of the lot fed screenings and also the lot fed the meal mixture, which consisted of corn meal, 30 per cent; ground oats, 20 per cent; middlings, 20 per cent; bran, 20 per cent and oil cake 10 per cent.

The table shows that screenings can be used to advantage in hog-feeding, as lot 1, fed screenings, cost 7.38 cents per pound gain and lot 2, fed a meal mixture, cost 8.09 cents per pound gain. With the advance in the price of screenings from year to year, there will not be the advantage, as formerly, in feeding this by-product from the grain-elevators.

STANDARD RECLEANED ELEVATOR SCREENINGS VS. MEAL MIXTURE FOR HOG FEEDING

—		Lot 1 Screenings	Lot 2 Meal mixture
Number of hogs in experiment	No.	11	17
Initial weight, average	lb.	90·1	80·8
Finished weight, average	"	215·8	210·1
Number of days in experiment	days	96	103
Total gain for period	lb.	1,383	2,197
Average gain per hog	"	125·7	129·3
Average daily gain per hog	"	1·31	1·26
Total amount of meal fed per group	"	4,925	7,420
Total amount of skim-milk, fed per group	"	7,420	9,225
Total amount of tankage fed per group	"	127	308·5
Total amount of roots fed per group	"	2,172	3,512
Cost of meal per pound gain	cts.	5·54	6·40
Cost of skim-milk per pound gain	"	1·34	1·05
Cost of tankage per pound gain	"	0·27	0·42
Cost of roots per pound gain	"	0·23	0·16
Total cost of feed	$	101·97	177·82
Cost of feed per head	$	9·27	10·46
Cost of feed per pound gain	cts.	7·38	8·09

SKIM-MILK VS. TANKAGE FOR MARKET HOGS

Object of Experiment.—To ascertain the value of tankage as a substitute for skim-milk in feeding hogs for market.

Plan of Experiment.—Several experiments were conducted in 1926, in which skim-milk was compared with tankage. These experiments consisted of skim-milk and tankage with meal mixture, skim-milk and tankage with standard elevator screenings, skim-milk and tankage with ground oats and skim-milk and tankage with middlings. There were twenty-five pigs in four lots that had skim-milk and twenty-one pigs in four lots that were fed tankage.

It will be noted that the lots which had skim-milk cost on an average 7.90 cents to make a pound gain, and the lots that had tankage cost 7.95 cents per pound gain. The table indicates that tankage may be used to advantage as a milk-substitute in hog-feeding, as the results show only 0.05 of a cent difference in the cost of feed per pound gain.

SKIM-MILK VS. TANKAGE FOR MARKET HOGS

—		Lot 1 Skim-milk	Lot 2 Tankage
Number of hogs in experiment	No.	25	21
Initial weight, average	lb.	89·2	87·9
Finished weight, average	"	216·7	198·9
Number of days in experiment	days	100	92
Total gain for period	lb.	3,187	2,331
Average gain per hog	"	127·5	111·0
Average daily gain per hog	"	1·27	1·21
Total amount of tankage fed per group	"	.....	662·5
Total amount of skim-milk fed per group	"	24,971	.....
Total amount of meal mixture fed per group	"	3,700	3,750
Total amount of screenings fed per group	"	3,225	1,700
Total amount of ground oats fed per group	"	2,050	2,150
Total amount of middlings fed per group	"	1,450	1,350
Total amount of roots fed per group	"	3,194	2,308
Cost of tankage per pound gain	cts.	.....	0·86
Cost of skim-milk per pound gain	"	1·96	.....
Cost of meal mixture per pound gain	"	2·19	3·04
Cost of screeings per pound gain	"	1·56	1·13
Cost of ground oats per pound gain	"	1·22	1·32
Cost of middlings per pound gain	"	0·80	1·01
Cost of roots per pound gain	"	0·15	0·15
Total cost of feed	$	251·74	185·31
Cost of feed per head	$	10·07	8·82
Cost of feed per pound gain	cts.	7·90	7·95

TANKAGE AS A SUBSTITUTE FOR SKIM-MILK FOR DIFFERENT PERIODS OF HOG-FEEDING

Object of Experiment.—To ascertain the value of tankage as a substitute for skim-milk in feeding hogs for different periods.

Plan of Experiment.—Five lots of pigs were taken for this experiment. Lot 1 was fed meal and 10 pounds of skim-milk per day from weaning to finish. Lot 2 was fed meal and 7 per cent tankage from weaning to finish. Lot 3, meal and skim-milk to three months of age, then tankage to finish. Lot 4 meal and skim-milk to four months of age, then tankage to finish. Lot 5 meal and skim-milk to five months of age, then tankage to finish. The meal mixture used in the five lots consisted of oats, 20 per cent; middlings, 20 per cent; bran, 20 per cent, oilcake, 10 per cent; and corn meal 30 per cent.

TANKAGE AS A SUBSTITUTE FOR SKIM-MILK FOR DIFFERENT PERIODS OF HOG-FEEDING

—		Lot 1	Lot 2	Lot 3	Lot 4	Lot 5
		Meal and skim-milk weaning to finish	Meal and tankage weaning to finish	Meal and skim-milk to 3 months old then tankage	Meal and skim-milk to 4 months old then tankage	Meal and skim-milk to 5 months old then tankage
Number of hogs in experiment	No.	9	8	8	7	4
Initial weight, gross	lb.	226	201	238	225	85·6
Initial weight, average	"	25·1	25·1	29·7	32·1	21·4
Number of days on test	days	163	163	149	149	171
Finished weight, gross	lb.	1,962	1,609	1,619	1,432	799
Fishised weight, average	"	218	201	202·4	204·6	199·7
Total gain for period	"	1,736	1,408	1,381	1,207	713
Average gain per hog	"	193	176	172·6	172·4	178·2
Average daily gain	"	1·18	1·08	1·16	1·16	1·04
Amount of meal eaten for period	"	4,700	4,670	4,325	4,100	1,979
Amount of tankage eaten for period.	"	.....	333	287·5	211·75	87
Amount of skim-milk eaten for period	"	13,657	.....	1,866	3,619	3,280
Amount of meal eaten per pound gain	"	2·7	3·34	3·13	3·39	2·77
Amount of tankage eaten per pound gain	"	.....	0·24	0·21	0·18	0·12
Amount of skim-milk eaten per pound gain	"	7·9	.....	1·35	3·00	4·60
Total cost of feed	$	122·55	97·87	94·62	92·56	48·09
Total cost of feed per head	$	13·62	12·23	11·83	13·22	12·02
Cost of feed per head per day	cts.	8·36	7·50	7·94	8·87	7·03
Cost of feed per pound gain	"	7·06	6·95	6·84	7·67	6·74

From the table the results obtained by adding tankage as a milk substitute at different dates of the feeding period may be noted. The tankage used was a good grade of 60 per cent protein tankage and 7 pounds of this was mixed with every 100 pounds of meal in all experiments where the product was used.

Deductions.—A comparison of lots 1 and 2 shows that 4,700 pounds of meal and 13,657 pounds of skim-milk were equal in feeding value to 5,758.2 pounds of meal and 411 pounds of tankage. With meal worth $1.93 per hundred pounds and skim-milk 25 cents, tankage in this test had a relative value of $3.34 per hundred.

A comparison of lots 1 and 3 shows that 4,700 pounds of meal and 13,657 pounds of skim-milk were equal in feeding value to 4,815 pounds of meal, 7,980 pounds of skim-milk and 212 pounds of tankage. In this case the feeding value of tankage was $5.64 per hundred.

By comparing lots 1 and 4 it is found that 4,700 pounds of meal and 13,657 pounds of milk were equal in feeding value to 5,896 pounds of meal, 5,204 pounds of skim-milk and 304.5 pounds of tankage. Here the tankage failed to show any value; it, in fact, had a minus value of 64 cents per hundred.

In a comparison of lots 1 and 5 it is found that 4,700 pounds of meal and 13,657 pounds of skim-milk had an equal feeding value to 5,436.5 pounds of meal, 2,345.5 pounds of skim-milk and 361.4 pounds of tankage. Here tankage had a feeding value of $3.89 per hundred pounds.

From this test it would appear that tankage can be used most successfully from the time the pig reaches three months of age until finishing, previous to that age skim-milk being supplied.

SWINE-FEEDING EXPERIMENT—SOFT PORK INVESTIGATION

Object of Experiment.—To ascertain the effect of the different meals fed in conjunction with skim-milk and tankage in the finishing of bacon hogs as to cost per pound gain, live grade, dressed grade and also firmness of flesh, which is a very important point in bacon for export.

Plan of Experiment.—Six lots of pigs, three months old, were used for this experiment. Lot 1 was fed screenings and 10 pounds of skim-milk per day. Lot 2, screenings with 7 per cent tankage. Lot 3, ground oats and skim-milk. Lot 4, ground oats and tankage. Lot 5, middlings and skim-milk. Lot 6, middlings and tankage. All the pigs had 2 pounds of roots per day during the feeding period.

SWINE FEEDING EXPERIMENT—SOFT PORK INVESTIGATION

—	Lot 1	Lot 2	Lot 3	Lot 4	Lot 5	Lot 6
	Screenings skim-milk 10 lb. roots 2 lb.	Screenings tankage 7% roots 2 lb.	Gr. oats skim-milk 10 lb. roots 2 lb.	Gr. oats tankage 7% roots 2 lb.	Middlings skim-milk 10 lb. roots 2 lb.	Middlings tankage 7% roots 2 lb.
Number of hogs in experiment..... No.	7	4	5	5	4	4
Initial weight, gross... lb.	626	365	461	482	378	390
Initial weight, average "	89·43	91·25	92·2	96·4	94·5	97·5
Number of days on test days	106	86	95	86	95	95
Finished weight, gross. lb.	1,575	799	1,048	1,021	832	748
Finished weight, average..... "	225	199·75	209·6	204·2	208	187
Total gain for the period..... "	949	434	587	539	454	358
Average gain per hog.. "	135·6	108·5	117·4	107·8	113·5	89·5
Average daily gain per hog..... "	1·28	1·26	1·23	1·25	1·19	0·94
Amount of meal eaten per lot..... "	3,225	1,700	2,050	2,150	1,450	1,350
Amount of tankage eaten per lot..... "	.....	119	.....	150·5	.....	94·5
Amount of skim-milk eaten per lot..... "	7,420	.....	4,750	.....	3,800	.....
Amount of roots eaten per lot..... "	1,484	688	950	860	760	760
Amount of meal eaten per pound gain..... "	3·40	3·92	3·49	3·99	3·19	3·77
Amount of tankage eaten per pound gain. "	.....	0·27	.....	0·28	.....	0·26
Amount of skim-milk eaten per pound gain. "	7·82	.....	8·09	.....	8·37	.....
Amount of roots eaten per pound gain..... "	1·56	1·59	1·62	1·59	1·67	2·12
Total cost of feed..... $	71·07	30·95	52·24	46·65	36·01	27·59
Cost of feed per head.. $	10·15	7·74	10·45	9·33	9·00	6·90
Cost of feed per head per day..... cts.	9·58	8·88	11·00	10·84	9·46	7·26
Cost of feed per pound gain..... "	7·49	7·13	8·90	8·65	7·93	7·70

GOVERNMENT STOCK YARD AND ABATTOIR HOG-GRADING STATEMENT

Lot No.	No. of pigs	Feed mixture	Average weight at Exp. Station	Average weight at Montreal	Per cent shrinkage live weight Lennoxville to Montreal	Live grading	Per cent live grading	Average weight dressed	Per cent shrinkage live weight Lennoxville to dressed weight Montreal	Dressed grade	After pickling firmness	Per cent after pickling firmness
			lb.	lb.				lb.				
1	7	Screenings	225	220·4	2·04	4 Select	57·1	164·0	27·11	3 Prime	5 Firm	71·4
		Skim-milk				2 Heavy	28·6			3 Lean	2 Barely firm	28·6
		Roots				1 Th. sm.	14·3			1 Leanest		
2	4	Screenings	199·7	193	3·36	3 Select	75·0	141	29·39	2 Lean	2 Firm	50·0
		Tankage				1 Th. sm.	25·0			2 Leanest	2 Barely firm	50·0
		Roots										
3	5	Ground oats	209·6	205	2·19	5 Select	100·0	150·4	28·24	3 Lean	2 Firm	40·0
		Skim-milk								2 Leanest	3 Barely firm	60·0
		Roots										
4	5	Ground oats	204	197	3·43	4 Select	80·0	141·4	30·69	5 Leanest	4 Soft	80·0
		Tankage				1 Th. sm.	20·0				1 Sl. soft	20·0
		Roots										
5	4	Middlings	208	197	5·29	4 Select	100·0	145	30·29	1 Prime	3 Firm	75·0
		Skim-milk								2 Lean	1 B. firm	25·0
		Roots								1 Leanest		
6	4	Middlings	187	174	6·95	2 Selects	50·0	128·5	31·28	2 Leanest	1 B. firm	25·0
		Tankage				1 Th. sm.	25·0			1 Thin	3 soft	75·0
		Roots				1 Small	25·0			1 Poor		

The twenty-nine hogs were weighed at the Experimental Station and shipped direct to the William Davies Company, Limited, Montreal, Que. They were weighed at the abattoir and graded by a qualified grader and then slaughtered. The table gives the detailed results of each individual hog as to live grade, dressed grade and firmness of meat.

Deductions.—From the preceding tables and also from information derived from similar work along this line, it would appear that the underlying reason for soft sides is a lack of finish in the hog when slaughtered. The bacon sides which graded leanest and those which were unfinished produced soft sides while those grading as lean or prime did not give a soft side.

In addition to the information relative to soft pork in this test, comprisons may be drawn between tankage and skim-milk and also between the basic meals, screenings, oats and middlings. A comparison of lots 1, 3 and 5 which were given skim-milk with lots 2, 4 and 6 which received tankage as supplements to the meal and roots indicates that with meal valued at $1.75 per 100 pounds and other feeds as quoted, the tankage had a value in this test of $65.14 per ton.

A further interesting comparison is obtained by comparing the basic meals, screenings, oats, and middlings which were fed to lots 1 and 2, 3 and 4, 5 and 6 respectively. By taking oats as the standard and valuing it at $1.90 per hundred pounds, the screenings fed in this test had a comparative value of $1.95 per hundred and the middlings a value of $2.03 per hundred. All other feeds were valued at prices as originally stated in a previous section of the report on swine.

FIELD HUSBANDRY

CROP ROTATIONS

Although the question of crop rotation has been under observation longer than many other lines of agricultural investigation, a large number of farmers still do not appreciate the necessity of growing crops in proper sequence nor realize that increased returns follow the practice. A study of crop rotation is carried on to ascertain as far as possible, the best crops to grow on various soils, the sequence in which to grow crops in order to keep up soil fertility, and so produce the highest yields with the least possible cost. Rotations must also be followed that are in keeping with the particular type of farming practised, whether it be live stock farming or farming for the production, chiefly, of cash-crops, or the type most common in eastern Canada, mixed farming. With these several points in view, a number of crop rotations were started at Lennoxville in 1922, and while the project has not been in operation a sufficient number of years to provide definite information on the question, a study of the results is interesting.

Due to climatic conditions in 1926, especially the cold, damp weather in the spring and early summer, the corn crop on all the rotations was practically a total failure. Consequently, in the rotations where corn makes up a large percentage of the crop area, the returns are smaller. The hay crop was very good in 1926, and the grain crop fair, on these rotations.

ROTATION "A" (FIVE YEARS' DURATION)

First year—corn.—Manure is applied to the corn crop at the rate of 20 tons per acre. Forty per cent of the cost of manure is charged against the crop.

Second year—barley.—With the barley is seeded hay, at the rate of: Clover 8 pounds, alsike 2 pounds, timothy 10 pounds. Twenty-five per cent of the manure cost is charged against this crop.

Third year—clover.—One-half the cost of hay seed, and 20 per cent of the manure is charged against this crop.

Fourth year—timothy.—One-half the cost of hay seed, and 10 per cent of the manure cost is charged against the timothy. This land is ploughed as soon as the hay crop is removed, and top-worked until late fall, when it is reploughed. In this way, weeds, especially couch grass, can be checked fairly satisfactorily.

Fifth year—oats.—This crop is charged with 5 per cent of the manure cost. The manure is applied on the oat stubble and ploughed under in the spring for corn.

This rotation is a splendid one for weed eradication, and is particularly suited to dairy farming, where considerable grain and roughage is fed.

The following table shows the yield, value of crop, cost of production and gain or loss in 1926, and also the average for the period under test:—

ROTATION "A"—FIVE YEAR'S DURATION

Crop	1926				Average			
	Yield	Value	Cost	Profit or loss	Yield	Value	Cost	Profit or loss
		$ cts.	$ cts.	$ cts.		$ cts.	$ cts. (5 years)	$ cts.
Corn	1·39 tons	3 71	41 70	−37 99	11·90 tons	43 69	39 15 (4 years)	4 54
Barley—Grain	34 60 bush.	30 67	29 18	1 49	30·10 bush.	32 82	31 54	1 28
Straw	1·18 tons	.....	.....	.....	1·19 tons	.....	.....	.....
Clover	2·57 tons	25 70	21 61	4 09	2·63 tons	26 34	20 70 (3 years)	5 64
Timothy	2·20 tons	22 00	17 61	4 39	2·07 tons	21 97	17 12 (4 years)	4 85
Oats—Grain	34·80 bush.	27 55	20 59	6 96	38·90 bush.	29 89	24 31 (3 years)	5 58
Straw	1·32 tons	.....	.....	.....	1·15 tons	.....	.....	.....
Total from rotation	.....	109·63	130·69	−21 06	.....	154 71	132 82	21 89
Average per acre	.....	21 93	26 14	−4 21	.....	30 94	26 56	4 38

N.B.—Minus sign (−) denotes loss.

ROTATION "B" (FOUR YEARS' DURATION)

First year—corn.—Sixteen tons of manure per acre is applied to the corn crop, 40 per cent of the cost being charged against the crop.

Second year—oats.—Hay seed at the rate of: 8 pounds of clover, 2 pounds of alsike and 10 pounds of timothy is seeded with the oat crop. Thirty per cent of the manure is charged against the oats.

Third year—clover.—One-half the cost of hay seed, and 20 per cent of the cost of manure is charged against clover.

Fourth year—timothy.—One-half the cost of hay seed, and 10 per cent of the manure cost is charged against the timothy. As soon as the hay is taken off, the land is ploughed and top-worked. Manure is applied in the spring and ploughed in.

Less grain and more hay and corn is produced in this type of rotation. This rotation would be suitable for a stock farm, especially were considerable stock is carried over winter on a maintenance ration, where a large amount of roughage is used.

The following table shows the yield and profits from such a rotation:—

ROTATION "B"—FOUR YEAR'S DURATION

Crop	1926				Average			
	Yield	Value	Cost	Profit or loss	Yield	Value	Cost	Profit or loss
		$ cts.	$ cts.	$ cts.		$ cts.	$ cts. (5 years)	$ cts.
Corn	0·99 tons	2 64	38 50	−35 86	9·50 tons	33 19	39 26	−6 07
Oats.....Grain	46·70 bush.	34 05	28 78	5 27	53·40 bush.	40 27	(3 years) 31 82	8 45
Straw	1·04 tons	.....	.....	.....	1·31 tons	.....	.....	.....
Clover	1·95 tons	19 50	20 02	−0·52	2·27 tons	22 73	(3 years) 17 04	5 69
Timothy	2·35 tons	23 50	16 82	6 68	2·31 tons	23 38	(4 years) 16 77	6 61
Total from rotation	.....	79 69	104 12	−24 43	.....	119 57	104 89	14 68
Average per acre	.....	19 92	26 03	−6 11	.....	29 89	26 22	3 67

N.B.—Minus sign (−) denotes loss.

ROTATION "C" (THREE YEARS' DURATION)

First year—corn.—Twelve tons of manure per acre is applied to the corn crop. Fifty per cent of the manure cost is charged against the crop.

Second year—oats.—Thirty per cent of the manure cost is charged against oats.

Third year—clover.—Twenty per cent of the cost of the manure is charged against the clover. As soon as the hay is harvested the land is ploughed for corn. In the spring manure is applied and ploughed in.

Another rotation suitable for a dairy farm, but not particularly profitable from a cash standpoint. It is one, however, which affords a splendid opportunity for building up soil fertility and eradicating weeds. Hoed crop every three years should make it possible to keep the land fairly clean. Manure every three years and a leguminous crop every three-year cycle, together with the cultivation provided for in such a rotation, should build up a comparatively fertile soil. The results in the following table do not show as high cash return per acre as the other rotations.

ROTATION "C"—THREE YEAR'S DURATION

Crop	1926				Average			
	Yield	Value	Cost	Profit or loss	Yield	Value	Cost	Profit or loss
		$ cts.	$ cts.	$ cts.		$ cts.	$ cts. (5 years)	$ cts.
Corn	1·85 tons	4 94	36 88	−31 94	9·64 tons	31 48	38 30	−6 82
Oats.....Grain	40·30 bush.	29 87	26 06	3 81	48·80 bush.	36 83	(3 years) 29 01	7 82
Straw	1·02 tons	.....	.....	.....	1·21 tons	.....	.....	.....
Clover	1·83 tons	18 30	20 43	−2 13	2·06 tons	20 63	(3 years) 20 09	0 54
Total from rotation	.....	53 11	83 37	−30 26	.....	88 94	87 40	1 54
Average per acre	.....	17 70	27 79	−10 09	.....	29 65	29 13	0 51

N.B.—Minus sign (−) denotes loss.

ROTATION "D" (SIX YEARS' DURATION)

In this rotation, manure is applied twice during the six-year cycle, once to the corn crop at the rate of 16 tons per acre, and once to fourth-year timothy at the rate of 8 tons per acre.

First year—corn.—Forty per cent of the 16 ton application of manure, and 10 per cent of the 8 ton application is charged against corn.

Second year—barley.—Twenty-five per cent of the 16 tons of manure, and 5 per cent of the 8 ton application is charged against barley. Hay is seeded with the barley at the rate of 8 pounds of clover, 2 pounds of alsike and 10 pounds of timothy per acre.

Third year—clover.—Twenty per cent of the 16 tons of manure and one-third of the cost of hay seed, is charged against clover.

Fourth year—timothy.—Ten per cent of the 16 tons application of manure and 40 per cent of the 8 ton application, also one-third of the cost of hay seed, is charged against timothy.

Fifth year—timothy.—Five per cent of the 16 tons of manure and 25 per cent of the 8 ton application, together with one-third of the cost of hay seed, is charged against fifth year timothy.

Sixth year—oats.—Twenty per cent of the 8 tons of manure is charged against oats. The oat stubble is manured and ploughed for corn.

A rotation which could be used on any stock farm, providing plenty of grain and sufficient hay and grass land for roughage and pasture.

ROTATION "D"—SIX YEARS' DURATION

Crop	1926				Average			
	Yield	Value	Cost	Profit or loss	Yield	Value	Cost	Profit or loss
		$ cts.	$ cts.	$ cts.		$ cts.	$ cts. (5 years)	$ cts.
Corn	1·35 tons	3 60	40 10	−36 50	8·38 tons	28 92	40 20	−11 28
Barley—Grain	23·50 bush.	21 50	27 52	−6 02	29·70 bush.	34 77	(4 years) 29 16	5 61
Straw	0·97 tons				1·15 tons			
Clover	3·11 tons	31 10	19 45	11 65	2·92 tons	29 20	(3 years) 18 73	10 47
Timothy	3·16 tons	31 60	22 65	8 95	2·75 tons	27 82	(4 years) 20 55	7 27
Timothy	2·98 tons	29 80	18 65	11 15	2·45 tons	24 78	(4 years) 17 75	7 03
Oats—Grain	49·00 bush.	35 92	22 50	13 42	53·60 bush.	40 13	(3 years) 24 43	15 70
Straw	1·14 tons				1·40 tons			
Total from rotation		153 52	150 87	2 65		185 62	150 82	34 80
Average per acre		25 59	25 14	0 44		30 94	25 14	5 80

N.B.—Minus sign (−) denotes loss.

ROTATION "E" (FOUR YEARS' DURATION)

Manure is applied twice in this rotation, 8 tons to the oat crop and 8 tons top-dressed for timothy.

First year—oats.—This crop is charged with 40 per cent of the 8 tons of manure applied directly to the oat crop, and 20 per cent of the 8 tons of manure top-dressed. Hay is seeded with the oats at the rate of 8 pounds of clover, 2 pounds alsike and 10 pounds timothy per acre.

Second year—clover.—Thirty per cent of the 8 tons of manure applied to the oat crop and 10 per cent of the 8 tons of manure, top-dressed on timothy, is charged against clover. One-third of the cost of hay seed is also charged to this crop.

Third year—timothy.—Twenty per cent of the 8 ton application of manure on oats and 40 per cent of the 8 tons of manure applied to timothy is charged against third year timothy, together with one-third of the cost of hay seed.

Fourth year—timothy.—Ten per cent of the 8 tons of manure applied to the oat crop and 30 per cent of the 8 ton application of manure on timothy is charged against fourth-year timothy. The crop is also charged with one-third of the cost of hay seed. The sod land is ploughed and manured for oats.

A suitable rotation for a part of the farm some distance from the buildings. With a rotation such as this, with no hoed crop, considerable labour is saved. A good deal of the rotation might be used as pasture, again cutting down the labour costs.

A very good rotation also from a cash-crop standpoint as the following table shows.

ROTATION "E"—FOUR YEARS' DURATION

Crop	1926				Average			
	Yield	Value	Cost	Profit or loss	Yield	Value	Cost	Profit or loss
		$ cts.	$ cts.	$ cts.		$ cts.	$ cts.	$ cts.
Oats.....Grain	47·40 bush.	36 42	28 82	7 60	48·00 bush.	36 67	31 32 (3 years)	5 35
Straw	1·52 tons	.....	.....	.....	1·32 tons	.....	.....	.....
Clover.....	2·88 tons	28 80	19 45	9 35	2·86 tons	28 57	18 74 (3 years)	9 83
Timothy.....	2·93 tons	29 30	22 65	6 65	2·66 tons	26 77	20 97 (4 years)	5 80
Timothy.....	1·73 tons	17 30	19 45	−2 15	2·14 tons	21 57	18 55 (4 years)	3 02
Total from rotation.....	.....	111 82	90 37	21 45	.....	113 58	89 58	24 00
Average per acre.....	.....	27 95	22 59	5 36	.....	28 39	22 39	6 00

N.B.—Minus sign (−) denotes loss.

DEPTH OF PLOUGHING

Results from four years' experimental work with shallow and deep ploughing, appear to show that there is nothing to choose between the two methods, from an increase in yield standpoint. In 1923 an experiment was started at the Station comparing the yields of crops grown on land ploughed four or five inches deep, and land ploughed seven inches deep. The crops were grown in a rotation consisting of corn, oats, clover and timothy. The timothy sod was ploughed for corn and the corn stubble for oats. The soil was a light loam. The following table gives the average of four years' yields of corn and oats grown on the areas so treated. These four year averages are calculated from the average yield of duplicate plots.

DEPTH OF PLOUGHING—RESULTS 1923 TO 1926

Treatment	Corn	Oats
	tons	bush.
Ploughing four to five inches deep.....	11·06	47·8
Ploughing seven inches deep.....	11·06	47·3

DRAINAGE EXPERIMENT

In an experiment started in 1922 to determine the value of tile drainage, the results to date would seem to show that crops grown for a five-year period on drained land, have not given a very marked increase in yield over the same crops grown on undrained land. In fact, the five years' average yield of both clover and timothy hay is higher on the area which was not drained. The two fields used for this experiment are as nearly uniform in every way as is possible. Both have a uniform western slope providing a fair amount of natural drainage, both fields have a clay loam soil, and both receive the same treatment in every way, except that a thorough drainage system has been installed in the one. A four-year rotation of corn, oats, clover, timothy is being followed, there being five acres of each crop in each of the fields.

The averages of five years' yields are shown in the following table:—

FIVE YEAR AVERAGE YIELDS ON DRAINED AND UNDRAINED LAND

Treatment	Corn	Oats	Clover	Timothy
	tons	bush.	tons	bush.
Drained	9·30	41·1	1·41	1·61
Undrained	6·85	34·8	1·55	1·70
*Increase or decrease in yield on drained field	2·45	6·3	−0·14	−0·09

*N.B.—Minus sign (−) denotes decrease.

The average value of the crops for the five-year period is also very interesting:—

AVERAGE RETURN VALUE OF CROPS ON DRAINED AND UNDRAINED LAND

Treatment	Corn	Oats	Clover	Timothy
	$ cts.	$ cts.	$ cts.	$ cts.
Drained	31 26	29 92	15 79	17 87
Undrained	23 37	25 31	17 20	18 85
*Increase or decrease in value on drained field	7 89	4 61	−1 41	−0 98

*N.B.—Minus sign (−) denotes decrease.

This table shows a return of $7.89 per acre more from corn on the drained land and $4.61 more from oats, while clover on the undrained land gave a five-year average return of $1.41 per acre more, and timothy also gave an average return of $0.98 more on the undrained field.

The cost of draining was $57.64 per acre.

FERTILIZING POTATOES

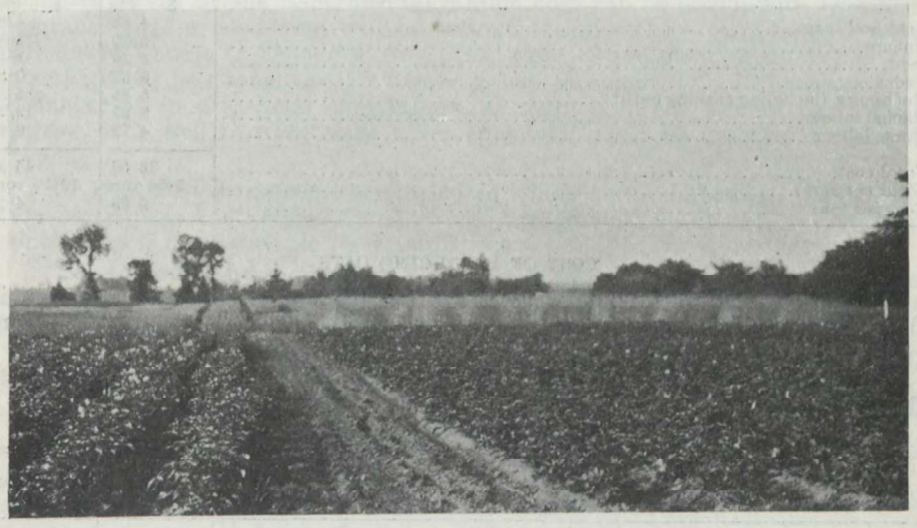
Four years' results from an experiment to ascertain the most economical method of fertilizing potatoes, would seem to indicate that commercial fertilizers, in fairly large quantities, may be used to advantage in the production of potatoes. The experiment was started in 1923 in which potatoes have been grown in a four-year rotation of potatoes, oats, clover, timothy. Fertilizers and manure have been applied in varying quantities to the potato crop. Highest yields have been obtained from the area which received the heaviest application of fertilizers as the following table shows:—

RESULTS FROM FERTILIZING POTATOES, 1923 TO 1926

Treatment	Four-year average yield
	bush.
Light application, 100 lb. nitrate, 300 lb. superphosphate, 50 lb. muriate	164·9
Medium application, 200 lb. nitrate, 600 lb. superphosphate, 100 lb. muriate	210·4
Heavy application, 400 lb. nitrate, 1,200 lb. superphosphate, 200 lb. muriate	253·7
Manured 16 tons per acre	206·3
Ten tons manure, 100 lb. nitrate, 300 lb. superphosphate, 50 lb. nitrate	232·6
No manure, no fertilizer	121·3

A study of the cost of fertilizing material used in the different treatments, and the return value for the crop, indicates that the higher return values obtained from plots receiving the heavier applications, show an appreciable

margin of profit, after deducting the extra cost of the fertilizer. The next table shows only the cost of fertilizer material, and does not take into consideration the cost of applying. This cost of applying is considerably higher in the case of manure than with the commercial fertilizer. On the other hand, only part of the cost of the manure is charged against the potato crop as part of its value is felt by the succeeding crops.



Fertilizing potatoes: heavy application of commercial fertilizer on left, barnyard manure on right.

The following table shows the total return value, the cost of fertilizer or manure and the return value after deducting the fertilizer or manure cost:—

RETURN VALUE FOR POTATOES

—	1926			Average four years		
	Total return	Cost of fertilizer	Value after deducting fertilizer cost	Total return	Cost of fertilizer	Value after deducting fertilizer cost
	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.
Light application	160 90	7 59	153 31	171 16	7 28	163 88
Medium application	180 90	15 18	165 72	220 30	14 56	205 74
Heavy application	219 15	30 36	188 79	261 28	29 12	232 16
Manured 16 tons per acre	188 01	6 40	181 61	207 44	6 40	201 04
Manured and fertilized	191 25	11 59	179 66	240 03	11 33	228 70
No manure, no fertilizer	87 93	.....	87 93	129 03	.....	129 03

COST OF PRODUCING CROPS

COST OF PRODUCING CORN

About 18 acres of corn were grown on the farm in 1926. The yield was very low and on some areas the crop was practically a total failure. The cost of production is figured on the areas where it is felt the results will give the best comparison.

The following table gives an itemized account of the cost of producing corn in 1926 and also the last five-year average cost:—

Cost of Producing Corn

Item	1926	Five-Year average
	$ cts.	$ cts.
Rent and taxes	4 86	4 86
Manure	12 80	12 80
Seed	1 30	1 11
Twine	0 67	0 54
Machinery (including ensiling outfit)	5 85	5 85
Manual labour	8 29	12 27
Horse labour	4 73	6 68
Total cost	38 50	44 11
Yield per acre	5·54 tons	10·56 tons
Cost per ton	6 95	4 18

COST OF PRODUCING OATS

Eighty-five acres of oats were grown in 1926. The cost of production is figured on a 65-acre field which yielded 38.8 bushels per acre. The oats were grown after corn in a four-year rotation of corn, oats, clover and timothy.

Following we have the 1926 costs and also the average cost for the last five years:—

Cost of Producing Oats

Item	1926	Five-Year average
	$ cts.	$ cts.
Rent and taxes	4 86	4 86
Manure	9 60	9 60
Seed	3 00	2 40
Twine	0 58	0 56
Machinery	2 85	2 85
Manual labour	3 23	4 42
Horse labour	3 00	*3 93
Threshing	1 94	*3 66
Total cost	29 06	32 28
Yield per acre	38·8 bush.	45·2 bush.
Cost per bushel (Considering value of straw)	67·6 cts.	63·5 cts.

*Four-year average.

COST OF PRODUCING HAY

Approximately 140 acres of hay were grown on the farm in 1926. The yield averaged 2.18 tons per acre which is slightly lower than the average yield of 2.43 tons for the five years, 1922 to 1926.

The cost of production in 1926 and for the five-year period is shown in the following table:—

Cost of Producing Hay

Item	1926	Five-Year average
	$ cts.	$ cts.
Rent and taxes	4 86	4 86
Manure	4 80	4 80
Seed	2 01	2 01
Machinery	2 85	2 85
Manual labour	2 42	3 15
Horse labour	0 76	1 07
Total cost	17 70	18 74
Yield per acre	2·18 tons	2·43 tons
Cost per ton	8 12	771

COMPARISON OF SUCCULENT ROUGHAGES

The question of succulent roughages is an important one in the Eastern Townships. It has been demonstrated, both on the Experimental Station and also on farms throughout the district, that although, in most cases the corn crop gives fairly profitable yields, it is not a crop upon which we can depend absolutely when grown under our varying conditions of soil and climate. In some localities served by the Experimental Station corn can be grown with reasonable assurance that a good crop will be secured. Under these conditions it would perhaps be unwise to change to any other form of succulent roughage, as corn is perhaps our best roughage if it can be grown economically. If, however, there is danger of an occasional crop failure, as there is in the eastern part of this district, it is well to have some other crop which can be used as a succulent roughage.

In 1923 an experiment was started in which corn, sunflowers, O.P.V. mixture (oats, peas and vetches), and swedes are grown side by side to determine which crop is most suitable for this district.

The following table shows the yield and cost of production in 1926, and also the average yield for the four years which the crops have been under observation:—

COMPARISON OF SUCCULENT ROUGHAGES

Item	Corn		Sunflowers		O.P.V.		Swedes	
	1926	Four-year average	1926	Four-year average	1926	Four-year average	1926	Four-year average
	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.
Rent	4 86	4 86	4 86	4 86	4 86	4 86	4 86	4 86
Manure	12 80	12 80	12 80	12 80	12 80	12 80	12 80	12 80
Seed	1 30	1 16	0 90	0 92	6 30	4 78	2 10	1 91
Twine	0 67	0 58	0 67	0 65	.....	.....	.....	.....
Machinery (including ensiling outfit)	5 85	5 85	5 85	5 85	5 85	5 85	2 85	2 85
Manual labour	7 01	9 20	10 96	11 69	6 32	6 84	29 42	22 70
Horse labour	4 97	8 29	5 57	9 30	3 16	6 59	6 61	9 43
Total cost per acre	37 46	42 74	41 61	46 07	39 29	41 72	58 64	54 55
Yield per acre, green weight.....tons	5·36	9·00	14·31	14·60	5·99	6·76	24·09	20·74
Cost per ton, green weight	6 99	4 75	2 91	3 16	6 56	6 17	2 43	2 63
Yield per acre, dry matter tons	0·67	*1·21	1·99	*2·10	1·76	*1·67	2·05	*1 63
Cost per ton, dry matter	55 91	*31 79	20 91	*19 19	23 32	*25 10	28 60	*30 68

*Two year average.

Only two years' results based on the yield and cost of dry matter are available. In the last two years sunflowers have given the highest yield of dry matter with the lowest cost of production. O.P.V. and swedes have produced almost the same amount of dry matter, but the cost of production is considerably higher in the case of swedes. The corn has been the lowest-yielding crop with a very high cost per ton. Corn was a very poor crop in 1926, yielding only 0.67 of a ton of dry matter per acre.

While sunflowers have given the best yields, it is a crop which is very difficult to handle if the stocks are allowed to grow too rank. This difficulty may be overcome by seeding, in a mixture of corn and sunflowers, or by leaving the plants growing fairly thickly in the row. Oats, peas and vetches and swedes have given excellent results. The experiment will be continued in order to obtain more definite information on the question.

HORTICULTURE

VEGETABLES

POTATO

SPRAYING VS. DUSTING.—Both the Colorado potato beetle and potato blights are quite prevalent throughout the Eastern Townships, and are annually the cause of considerable injury to potato vines, with a consequent reduction in yield of potatoes. Such injury may be readily avoided by thorough and timely spraying, or dusting, with suitable materials.

An experiment which was conducted at this Station from 1918 to 1922 showed that, of several spray mixtures tried, the most satisfactory control of blight and beetle was obtained by four or five thorough sprayings with Bordeaux mixture and calcium arsenate. Since 1922 this spray mixture has been compared with several dust preparations. Following is an average of the results obtained during the past four years:—

SPRAYING VS. DUSTING—AVERAGE OF RESULTS, 1923 TO 1926

Spray and dust used	Average per cent of beetles and slugs killed by five applications	Yield of potatoes per acre			
		Marketable		Unmarketable	
		bush.	lb.	bush.	lb.
Green potato, dust	90·7	455	22	58	5
Hydrated lime 8 lb. calcium arsenate 1 lb. (dust)	93·1	426	22	59	19
Bordeaux arsenate, dust	82·6	419	37	92	0
Bordeaux 5–12–40, calcium arsenate 1 lb. (spray)	93·2	394	43	83	3
Brown apple, dust	81·9	388	9	65	21

The value of a preparation as a control for potato beetles and blights is governed largely by its ability to stick to the foliage. During the first two years the spraying and dusting experiment was conducted, rain fell at frequent intervals and the various dusts, which apparently were easily washed from the foliage, did not give as good results as the Bordeaux-calcium-arsenate spray. During the past two years, however, the weather immediately following the dust applications was more favourable, and all preparations were visible on the foliage for several days after each application. They also proved quite effective and, with the exception of brown apple dust, have, on a four-years' average, given better results than the spray.

SPROUTING SEED POTATOES.—In order to obtain potatoes of marketable size early in the season, and thereby secure higher prices than for the later crop, many market gardeners follow the practice of sprouting seed potatoes before planting. A project to determine the comparative value of dormant and sprouted seed potatoes, as regards yield and earliness, was started in 1923 and continued in 1924. Owing to lack of suitable seed potatoes it was discontinued in 1925 but was conducted again in 1926. In each of the three years the experiment has consisted of a comparison of dormant and sprouted, small whole and large whole potatoes and ordinary cut set of the Green Mountain and Irish Cobbler varieties. The potatoes and cut set for sprouting are placed in shallow

trays and exposed to subdued light, in a fairly warm cellar, about April 1. As the sprouts develop, more light is admitted, until, for the last week, they are kept in an open shed. Similar lots are kept as dormant as possible until planting time. Both the dormant and sprouted lots are planted on the same date, which is usually as early as the season will permit. With the sprouted lots, the potatoes and sets are planted in shallow trenches or furrows which are only partly filled. Later when the young plants are beginning to make their appearance, the trench or furrow is filled to cover the plants and protect them from late spring frosts. With the dormant potatoes such precautions are unnecessary.

POTATO—SPROUTING EXPERIMENT—AVERAGE OF RESULTS, 1923, 1924 AND 1926

Variety and method	Average number of days earlier due to sprouting	Date ready for use 1926	Yield per acre			
			Marketable		Unmarketable	
			bush.	lb.	bush.	lb.
Green Mountains—						
Small whole, dormant	.....	Aug. 16.....	272	13	55	33
Small whole, sprouted	11·3	Aug. 6	300	0	61	7
Large whole, dormant	.....	Aug. 18.....	374	33	65	33
Large whole, sprouted	11·7	Aug. 6.....	331	7	54	27
Cut set, dormant	.....	Aug. 16.....	303	20	64	27
Cut set, sprouted	7·3	Aug. 8.....	311	7	91	7
Irish Cobblers—						
Small whole, dormant	.....	Aug. 6.....	320	0	73	20
Small whole, sprouted	16·0	July 19.....	310	0	93	53
Large whole, dormant	.....	Aug. 7.....	293	27	101	33
Large whole, sprouted	13·0	July 21.....	250	0	103	20
Cut set, dormant	.....	Aug. 6.....	265	33	86	40
Cut set, sprouted	17·0	July 16.....	321	7	62	13

AVERAGE YIELD PER ACRE

—	Average number of days earlier due to sprouting	Dormant				Sprouted			
		Marketable		Unmarketable		Marketable		Unmarketable	
		bush.	lb.	bush.	lb.	bush.	lb.	bush.	lb.
Green mountain	10·1	316	42	61	51	314	5	68	54
Irish cobbler	15·3	293	0	87	11	293	42	86	29

With both varieties the yield of marketable potatoes has been practically the same with dormant and sprouted seed stock. With sprouted seed, however, the crop is ready for sale or use ten to fifteen days earlier than with dormant. Sprouting seed potatoes, therefore, is advisable only when the difference in the price of new potatoes between July, or early August, and two weeks later, is sufficient to compensate the grower for the additional labour and expense involved in the practice.

GARDEN PEA

TEST OF VARIETIES.—Although many varieties of peas representing new varieties and novelties and specialties, offered for sale by seedsmen, have been tested during the past four years, of those obtainable commercially, the best

results have been obtained with old standard varieties. Following is a statement showing the average of results over a nine-year period with six well-known varieties:—

GARDEN PEA—AVERAGE OF NINE YEARS

Variety	Season	Average height		Yield of unshelled peas from one thirty-foot row	
		ft.	inches	lb.	oz.
Telephone	Late	6	1	18	7
Thomas Laxton	Early	3	8	17	9
Gradus	Early	3	7	17	5
Sutton Excelsior	Mid-season	1	6	15	12
Stratagem	Late	3	0	13	12
American Wonder	Early	1	4	12	15

In addition to varieties and strains available from seedsmen, a number of new selections and varieties have been tested. Of these a hybrid variety, Gregory Surprise X English Wonder Ott. 6471-3, and a selection of Quite Content, made at this Station, have given excellent results. Two selections of Gradus made at this Station, have also proven heavier yielding than the ordinary commercial variety.

DISTANCE APART OF PLANTING IN THE ROW.—For the past four years seed of three varieties of peas have been planted at different distances apart in the row. The following table shows the average results obtained:—

PEAS, DISTANCE APART OF PLANTING IN THE ROW—AVERAGE OF RESULTS, 1923 TO 1926

Distance apart of planting seed in row	Yield from one thirty-foot row					
	English Wonder		Thomas Laxton		Stratagem	
	lb.	oz.	lb.	oz.	lb.	oz.
One-half inch	14	3	16	8	19	12
One inch	12	6	8	5	15	6
Two inches	9	8	7	9	13	0
Three inches	7	10	6	14	8	2

Owing to ample rainfall and the absence of extreme heat, the season at Lennoxville will permit quite close planting of garden peas, providing there is sufficient plant food available in the soil, to provide for the thick stand of plants. The usual distance at which peas are spaced in the row when planting at the Station, is one-half inch and, as indicated by the foregoing table, this distance has given the best results.

BEANS

TEST OF VARIETIES.—The value of a variety of beans for this district is not governed as much by its yield and quality as by its ability to resist or avoid attacks of pod-spot or anthracnose. The comparatively cool moist season of the Eastern Townships is very favourable for this disease and many varieties of beans that do well elsewhere have been found unsuitable owing to their susceptibility to anthracnose.

Of the twenty-one varieties tested in 1926 the greatest resistance to anthracnose was found in Hodson Long Pod, a yellow-podded variety of fair quality. Almost equal resistance was shown by various strains of Stringless Green Pod which is of excellent quality and as a rule produces a heavy crop. The pods of this variety are yellow in colour, fairly long, and very tender.

Among the green podded varieties the most satisfactory was Refugee 1,000 to 1.

DISTANCE OF PLANTING SEED IN THE ROW.—For the past three seasons seed of two varieties has been planted at two, four and six inches apart in the row. Following is a statement of the average results obtained:—

BEANS—DISTANCE APART OF PLANTING IN THE ROW—AVERAGE OF RESULTS, 1923 TO 1926

Distance apart of beans in the row	Yield from one thirty-foot row			
	Round Pod Kindey Wax		Stringless Green Pod	
	lb.	oz.	lb.	oz.
2 inches	19	8	18	4
4 inches	16	4	16	9
6 inches	14	3	12	9

Although heavier yields have been obtained from close plantings, the damage by anthracnose was also greater. Accordingly, the practice cannot be recommended for this district with the varieties at present available.

RHUBARB

FORCING IN CELLAR.—For the past two years a small quantity of rhubarb has been grown in the cellar below the office building, during winter, each year. Mature plants, four or five years old, are dug up late in October and left outside until frozen solid. They are then planted in ordinary garden soil in the cellar and watered occasionally. Usually the first stalks of rhubarb are ready for use by the middle of January, or about six weeks after planting in the cellar, and the plants continue to produce for five or six weeks. The yield from six plants in 1925 was 37 pounds, total crop, and in 1926, 38 pounds.

TOMATO

TEST OF VARIETIES.—Although the season of 1926 was late and cool throughout, the crop of ripe tomatoes was the largest produced at the Station since 1921. Of the twenty-five varieties tested all bore ripe fruit, yet only the earliest produced a satisfactory crop. Of these the earliest and largest crop was obtained from the Lennoxville selection of Bonny Best, ten plants of which produced 42 pounds of ripe fruit from August 20 to September 19, when the plants were killed by frost. An equal number of plants of Alacrity, Ottawa 6559, produced a crop of 25 pounds in the same period.

A new variety, Abbotsford Argo, originated by Mr. Arthur H. Horn of Abbotsford, B.C., also proved very satisfactory. The seed of this variety, owing to delay in delivery, was planted eleven days later than the other varieties in the test, and the young plants were set in the open garden five days after all other varieties were transplanted. Even with this handicap, however, ripe fruit was available on August 20, and the total yield of ripe fruit from ten plants amounted to 31 pounds. The plants of this variety are semi-dwarf in height with a leaf resembling that of the potato. The fruit is of medium size, very smooth, bright red in colour and borne in close compact trusses.

CABBAGE

TEST OF VARIETIES.—Although good yields of cabbage are usually obtained at the Station, the 1926 crop was somewhat below the average. Of twenty-nine varieties tested the eleven listed in the following table have given the best results for the past four years:

CABBAGE—TEST OF VARIETIES—AVERAGE OF RESULTS, 1923 TO 1926

Variety	Ready for use	Average weight per single cabbage		Yield from two thirty-foot rows	
		lb.	oz.	lb.	oz.
Copenhagen Market	Second week in July	8	8	299	6
Early Paris Market	Third week in July	6	8	186	0
Early Winnigstadt	Third week in July	7	1	231	4
Succession	End of July to first of August.	8	14	293	14
Fottlers Imp. Brunswick	Second week in August	7	6	238	8
Ex. Amager Danish Ballhead (Ott. Sel.)	End of August to first of Sept.	5	8	184	3
Marblehead Mammoth	End of Aug. to first of Sept.	11	1	443	11
Enkhuizen Glory	First week in September	8	11	290	2
Summer Ballhead	Third week in August	5	2	171	0
Danish Ballhead (Intermediate stem)	First week in September.	4	12	182	6
Danish Ballhead (Short stem)	First week in September	5	7	183	5

As an early cabbage, Copenhagen Market is very satisfactory, although a comparatively new variety known as Golden Acre has proven slightly superior for the past two years.

Of the mid-season varieties, Succession has produced heads less inclined to split than Fottlers Imp. Brunswick and firmer than Early Winnigstadt.

Of the late varieties tested, Ex. Amager Danish Ballhead (Ottawa Sel.) produces very firm heads that keep well and are of excellent quality. Heads of Marblehead Mammoth usually split before reaching full development. As a second choice to Danish Ballhead, Enkhuizen Glory is fairly satisfactory.

DIFFERENT DATES OF SEEDING.—In this project seed of Copenhagen Market and Danish Ballhead is sown at different dates, beginning early in May and continuing at intervals of about two weeks, until the third week in July. During the four years that the experiment has been conducted, good marketable heads have been obtained from all seedings of Copenhagen Market up to the middle of July. Danish Ballhead being a slower maturing variety has not produced well-developed heads from seedings later than the middle of June.

CAULIFLOWER

TEST OF VARIETIES.—Of six varieties of cauliflower tested in 1926 the largest and most compact heads were produced by a variety known as Danish Giant or Dry Weather. This is a late strong-growing variety, unsuitable for very early or late planting, but apparently ideal as a main crop sort.

Large Late Algiers, another late variety, produced a very heavy crop, but the heads were of inferior quality, many being loose and open.

Early Snowball has so far proven the most satisfactory as an early variety.

DIFFERENT DATES OF SEEDING.—During the four years that this project has been conducted, good marketable heads of Early Snowball have been obtained from all seedings up to the middle of June. The climate at Lennoxville is quite suitable for cauliflower and little difficulty is experienced with early seedings, the plants seldom bolting, and owing to the absence of extremely hot or dry weather, forming good firm heads even in mid-summer.

ONION

TEST OF VARIETIES.—Although the weather during late summer and early fall, at Lennoxville, is usually unsatisfactory for the ripening of onions, conditions otherwise are generally favourable, and heavy yields are quite common. All of the eighteen varieties tested in 1926 made a rank, strong growth and, although ripening was slow, the crop as an average was exceptionally heavy. The following table shows the average yields for the past six years of five of the most satisfactory varieties:—

ONION—TEST OF VARIETIES—AVERAGE OF RESULTS, 1922 TO 1926

Variety	Colour	Shape	Yield from two thirty-foot rows	
			lb.	oz.
Extra Early Flat Red	Red	Flat	27	12
Giant Prize Taker	Yellow	Oval	26	10
Red Wethersfield	Red	Slightly flat	24	10
Ailsa Craig	Yellow	Oval	24	2
Yellow Globe Danvers	Yellow	Oval	23	2

For pickling, White Barletta and White Portugal have proven equally satisfactory.

TRANSPLANTING ONIONS.—As a rule transplanted onions produce a much larger and better matured crop than those raised from seed planted in the open. In 1926 seed of Giant Prize Taker and Red Wethersfield was sown in the hod-bed early in August. The young plants were pricked-off into flats on May 1, and transplanted to the garden during the last week in May. The crop from both varieties matured perfectly and was harvested on August 14. The yields from one thirty-foot row of each variety were: Giant Prize Taker 39 pounds 8 ounces, and Red Wethersfield 33 pounds.

GARDEN BEET

TEST OF VARIETIES.—Of the varieties of garden beets tested in 1926 Detroit Dark Red and Crosby Egyptian were decidedly superior. The Ottawa selection of Detroit Dark Red also proved somewhat more satisfactory than the ordinary strains of the variety obtained from seedsmen. Detroit Dark Red is a quick-growing large-sized beet of fair quality, suitable for early bunching or winter storage. Crosby Egyptian is slightly smaller, but of better quality and deeper colour.

DIFFERENT DATES OF SEEDING.—The object of this project is to determine how late beet seed may be sown and a crop of marketable size obtained. During the past four years seed of Detroit Dark Red has been sown as early as the season will permit, and at intervals of about two weeks until the middle of July. Beets of good bunching size have so far been obtained from all seedings up to the latter part of June.

PARSNIP

TEST OF VARIETIES.—Although nine varieties and strains of parsnips have been tested during the past eleven years, the most satisfactory variety up to 1925 was Hollow Crown. However, a newer variety, Dobbie Exhibition, which has been grown for the past two years only, seems slightly superior, the roots being more uniform and smooth while the yield has been practically the same.

DIFFERENT DATES OF SEEDING.—For the three years that this project has been conducted, the best parsnips have been obtained from seedings made during May. Roots of marketable size have, however, been obtained from all seedings up to the middle of June.

GARDEN CARROT

TEST OF VARIETIES.—Of the twenty-three varieties of garden carrots which have been tested during the past eleven years, the most suitable for this district are: Chantenay and Nantes Half Long. Of these, Nantes Half Long is the best for bunching and Chantenay, being a little larger, is the most satisfactory for selling loose or for winter storage.

DIFFERENT DATES OF SEEDING.—Following is a four year's average of results of seeding Chantenay carrot at different dates from late April until July:—

GARDEN CARROTS—DIFFERENT DATES OF SEEDING—AVERAGE OF RESULTS, 1923 TO 1926

Seeding	Number of days until ready for use	Number of bunches of marketable size
Late April	97	30·0
Early May	93	35·7
Late May	91	31·2
Early June	101	24·0
Late June	103	22·7
Early July	No crop	.....

LETTUCE

TEST OF VARIETIES.—Although a number of new varieties and strains were included in the variety test for 1926, the best results were obtained from those previously recommended. These are: Loose Leaf, Grand Rapids and Black Seeded Simpson, Cabbage Head, Iceberg and Salamander.

RADISH

TEST OF VARIETIES.—Of the nineteen varieties tested during the past season the most satisfactory were French Breakfast XXX, Scarlet Oval, Scarlet Turnip White Tip. Either of these are of excellent quality, fair size and attractive appearance.

A variety known as Early Scarlet Round, grown at this Station for the first time in 1926, produced radish of good marketable size three days earlier than the others included in the test. The quality, however, was slightly inferior to either of the three varieties already mentioned.

PUMPKIN

TEST OF VARIETIES.—Eight varieties of pumpkins were tested in 1926 and although germination was slow resulting in a thin stand of plants, a fair crop was obtained from each.

For a large pumpkin Connecticut Field is outstanding. The pumpkins are oval in shape, and a rich golden yellow in colour. Although large, mature specimens usually weigh about thirty pounds, the quality of the flesh is quite good and suitable for pie-making.

Of the small varieties excellent results have been obtained with an Ottawa selection of Sweet or Sugar. As a second choice for this variety, the well known Quaker Pie has been found quite satisfactory.

SQUASH

TEST OF VARIETIES.—The cool backward weather experienced during May and early June proved more unfavourable for the germination of squash seed than for pumpkin as, with the exception of the Green and Golden Hubbard varieties, most of the seed sown failed to germinate. Accordingly, little or no data of experimental value was obtained. Results obtained during former seasons have shown that, of those tested, the most satisfactory varieties are: Green Hubbard and Golden Hubbard; Crookneck varieties, Giant Summer Crookneck; Vegetable Marrows, Large White Bush.

MUSKMELON

As a general rule muskmelons of good quality and suitable size, are readily saleable at excellent prices in this district. Few, however, are grown locally, the greater part of those consumed being imported. So far little difficulty has been experienced at the Station in raising good crops of suitable varieties, and it would seem that market gardeners in the district might well give this valuable crop more attention.

From the experience gained at the Station dependable crops cannot be obtained from seedings made in the open, or from plants raised in the hotbed or green house and transplanted to the open garden. On the other hand, good results had been obtained by starting the plants in the hotbed early in April, and transplanting in late May to manured cold frames. The lights should be kept on these frames during cool or cloudy weather and at night until well into July. Usually by this time the vines fill the frames and a number of melons have set. If so, the frames may be removed, and, as the weather is usually quite warm at that time of the year, the crop developes quickly and ripe melons are, as a rule, available early in August.

TEST OF VARIETIES.—Of the nine varieties tesed in 1926 the most satisfactory crop was obtained from Milwaukee Market. In comparison with the well known Montreal Market it is a little smaller in size, but of superior quality and flavour. Of the small varieties Paul Rose and Emerald Gem have proven very satisfactory.

SWEET CORN

TEST OF VARIETIES.—During the twelve years that variety tests of sweet corn have been conducted at the Station, only the earliest varieties have consistently produced well-developed ears. In exceptionally favourable seasons such varieties as Buttercup, Early Fordhook and Burbank have produced marketable ears, but normally frost kills the plants at about the time the kernels are forming. Of the early varieties Golden Bantam and Early Malcolm have proven very satisfactory.

Pickaninny, a variety originated at the Central Experimental Farm, has produced ears ready for use from eight to ten days earlier than Early Malcolm. It is a small variety producing small to medium-sized ears with dark coloured kernels. Its quality and flavour are excellent.

Banting, another variety originated at the Central Experimental Farm, would seem to be a decided improvement over Pickaninny as it is of equal earliness and quality, but the kernel is of a bright yellow colour. For early market or home use it should prove ideal.

FALL SEEDING OF VEGETABLES

For the past three years seed of one variety each of beet, radish, turnip, cabbage, carrot, lettuce and onion has been sown late in the fall just before the ground freezes. So far an excellent germination has been obtained with beet, radish, carrot, lettuce and onion, and a crop slightly better than that from spring seeding of the same varieties was obtained. With turnip and cabbage the seed has been almost completely winter-killed.

TREE FRUITS

APPLES

VARIETY ORCHARD.—Although the winter of 1925-26 was characterized by the absence of extremely low temperatures, the extreme minimum being 29 degrees below zero, the amount of winter-killing in the variety orchard was somewhat more than usual. This was, no doubt, due largely to the continued wet weather during the latter part of the season of 1925, which kept the soil saturated with moisture and thus delayed ripening of wood. With the trees of most varieties in the orchard, the new growth was quite green and sappy at the time cold weather set in, and consequently, in a state readily susceptible to winter injury. Even with such a handicap, however, previously recommended varieties came through the winter without serious injury and bore fruit in 1926. These varieties are as follows:—

Variety	Season
Galetta	August and early September.
Melba	September.
Joyce	September and October.
Lobo	September and October.
Winton	November to December.
Donald	November to January.

A variety known as Honora, fruited for the first time at Lennoxville in 1926. It is a McIntosh seedling, originated at the Central Experimental Farm, Ottawa, somewhat similar in appearance and season to its parent, but of a decidedly sweet flavour. The trees have proven quite hardy at the Station, and the variety should prove very useful for home plantings, in regions where the climate is too severe for the ordinary commercial varieties.

A limited number of scions of Honora and other recommended varieties are available each season for distribution.

PLUMS

The effect of the fall of 1925 and the winter of 1925-26 on plum trees at the Station was similar to that on apple trees. However, previously recommended varieties, namely, Waneta, Kahinta and Hawkeye, were only slightly damaged and produced good crops of fruit in 1926.

CO-OPERATIVE EXPERIMENTS IN COMMERCIAL ORCHARDS

In addition to the experimental work in horticulture conducted at Lennoxville, the Station is responsible, under the direction of the Dominion Horticulturist, for the supervision of a series of co-operative experiments conducted in three commercial apple orchards in the Montreal district. In each orchard approximately five acres of bearing orchard is utilized. In the orchard of Mr.

A. W. Buzzell, at Abbotsford, Que., the experiments consist of the comparison of various commercial fertilizers used in conjunction with grass and sod mulch. At Rougemont, Que., in Mr. Emile Gadbois' orchard, different commercial fertilizers are used in conjunction with various cover crops and clean cultivation. In Mr. S. R. Jack's orchard, in Chateauguay, the experiments consist of a comparison of nitrate of soda and sulphate of ammonia used with leguminous and non-leguminous cover crops, and clean cultivation.

So far encouraging results have been obtained from the early spring application of nitrogeneous fertilizers and grass mulch. The various experiments, however, have not been in operation for a sufficiently long period to warrant the making of definite recommendation to fruit growers. The work is being continued and will be reported on in future publications.

SMALL FRUITS

STRAWBERRIES

TEST OF VARIETIES.—As usual an excellent crop of strawberries was obtained in 1926, the average yield of the twenty-two varieties tested being 6,741 quarts per acre. Of these, the eight shown in the following table have been included in the variety test for the past six years:—

STRAWBERRIES—TEST OF VARIETIES—AVERAGE OF RESULTS, 1921 TO 1926

Variety	Average Season	Quarts of fruit per acre
Buster (imp.)	July 6 to July 22	7,127
Pocomoke (per.)	July 2 to July 19	6,650
Howard No. 41 (imp.)	July 3 to July 22	6,648
Senator Dunlap (per.)	June 29 to July 19	6,328
Parson Beauty (per.)	July 2 to July 31	6,046
Stevens Late Champion (per.)	July 3 to July 23	6,031
Valeria (per.)	July 2 to July 22	5,867
Portia (imp.)	July 3 to July 31	5,679

Of the varieties mentioned in the foregoing table, Senator Dunlap and Parson Beauty are probably the best for commercial plantings, the heavier-yielding varieties being a little too soft for commercial purpose but very satisfactory for home use. As a rule Senator Dunlap will give bettter results on medium or heavy soils, while Parson Beauty is better suited to light soil in a good state of fertility.

Of varieties that have been under test for a shorter period, a seeding of Wm. Belt, developed at this Station, has given excellent results. In 1926 its yield was at the rate of 11,830 quarts per acre, while that of Buster was 5,005. This exceptional yield was apparently due to the thick stand of plants, as the seedling is very productive of runners, and the rows were filled with a thick stand of strong plants. The fruit is of medium size, conical in shape, and of a bright red colour. In flavour it is very characteristic of Wm. Belt, being sweet and decidedly pleasant. The firmness of the berry is not quite as good as Senator Dunlap and, for this reason it is doubtful if the seedling is suitable for purely commercial purposes, although for local sale or home consumption, it should prove very satisfactory.

RASPBERRIES

TEST OF VARIETIES.—Owing to its increasing prevalence, resistance to Mosaic has become one of the deciding factors in determining the value of a variety of raspberries. Also the information at present available on the resistance of varieties to this disease is of a conflicting nature, as certain varieties have proven resistant in some localities, while in others they are readily susceptible. Accordingly, the degree of resistance of a variety at Lennoxville, while probably applicable to the immediate locality, may not be the same in other districts. During the past four years the disease has become well established in the raspberry plantation at the Station, and the varieties, Cuthbert, Golden Queen and Louboro have been so badly infected that they have become practically non-productive. Rows of other varieties such as Herbert, Latham and Count, closely adjoining these, have shown apparent total immunity. The following table shows the average results obtained during the past three years with the ten highest producing varieties included in the test:—

RASPBERRIES—TEST OF VARIETIES—AVERAGE OF RESULTS, 1924 TO 1926

Variety	Apparent resistance to Mosaic	Average season	Quarts of fruit per acre
Count	Apparently immune	July 22 to Aug. 18	3,780
Latham	Apparently immune	July 25 to Aug. 28	3,597
Brighton	Slightly infected	July 22 to Aug. 13	3,298
Sir John	Slightly infected	July 22 to Aug. 11	3,012
Newman No. 23	Heavily infected	July 25 to Aug. 18	2,724
Newman No. 24	Heavily infected	July 26 to Aug. 16	1,393
King	Slightly infected	July 18 to Aug. 16	1,391
Herbert	Apparently immune	July 24 to Aug. 14	1,229
Shinn	Heavily infected	July 23 to Aug. 13	1,107
Eaton	Heavily infected	July 24 to Aug. 11	307

Although the variety Count has given the highest yield of fruit, the berries are a little soft and do not hold up in size after the first three or four pickings. With Latham, however, the berries are slightly firmer, maintain their size throughout the duration of the cropping period and are of good flavour.

For commercial plantings, Newman No. 23 is probably the most satisfactory although it has shown certain drawbacks for this district, being quite readily susceptible to Mosaic and low-yielding on light soils. However, on account of the exceptional firmness of the berry, it is a splendid shipper and can usually be offered for sale at distant points in much better condition than other varieties at present available.

Herbert, a well known variety, has shown exceptional resistance to Mosaic at the Station, but on the present site of the raspberry plantation, it is not entirely hardy. Throughout the district it has proven quite hardy and productive, especially on light soils.

King, as may be noted, is the earliest of the varieties listed in the foregoing table. During the past four years it has been only slightly infected with Mosaic, and has produced a fair crop of medium-sized berries. These are reasonably firm and of good flavour. As an early variety it is the most satisfactory available.

CURRANTS AND GOOSEBERRIES

During the past three years the bushes of gooseberries and currants, at the Station, have been practically defoliated during August by severe infections of European Currant Rust, a stage of the very destructive White Pine Blister Rust.

Although it is a common supposition that this disease is not particularly harmful to bush fruits, it is very evident that with black currants, considerable injury may result in severe cases, as a normal crop of this fruit has not been obtained since the disease became prevalent. Red and White currants and gooseberries have so far not been damaged to any appreciable extent, and produced average crops in 1926. Following are the varieties of currants and gooseberries that have been found most satisfactory at this Station:—

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

ORNAMENTAL GARDENING

PERENNIALS

Excellent results were obtained in 1926 with practically all of the numerous species and varieties of herbaceous perennials, included in the various planting throughout the ornamental grounds, at the Station.

The most brilliant display was made by perennial phlox, of which twenty-eight varieties flowered. The plantings of this splendid hardy specie include three rows 400 feet long, running through the shrubbery borders and numerous clumps, of the better varieties, spaced through the perennial borders and beds. With this generous planting an excellent distribution of brilliant bloom was maintained, over the entire ornamental section, from early July until mid-October. A few of the most satisfactory varieties are as follows:—

PERENNIAL PHLOX

Variety	Season	Colour
Miss Lingard	July and August	White.
Tapis Blanc (Dwarf)	August and September	White.
Jeanne d'Arc	Late August to October	White.
Selma	August to September	Soft pink.
Elizabeth Campbell	August and September	Soft pink.
Bridsmaid	August and September	Salmon pink.
General Van Heutz	Late August and October	Salmon pink.
Rynstrom	Late August to October	Rose pink.
Antonin Mercié	August and September	Mauve.
B. Comte	Late August to October	Purple.
Von Hochberg	September and October	Maroon.

Other very satisfactory perennials were Peonies (many varieties), Iris (many varieties), Delphinium hybridum, Delphinium chinense, Gaillardia, Lychnis chalcedonica, Lychnis haageana, Helinanthus, Polyanthus and Pinks.

ANNUALS

GLADIOLI.—A total of sixty varieties of Gladioli were tested in 1926, and, although a few of these proved inferior, the majority produced splendid blooms. A few of the very satisfactory varieties were: Perfection, Crimson Glory, Emperor, Hinton, Tiplady, Rose Glory, Dr. Norton, Picture, Mary Stevenson, Royal Purple, Prince George and Marshal Foch.

DAHLIA.—With the co-operation of Dr. J. A. Cochrane of Lachine, Que., an ardent admirer of dahlias, a large colection of rare and exceptionally fine varieties of this species was grown in the ornamental section, at the Station, in 1926.

Without exception these varieties produced bloom of exceptional size, colour and quality and the collection as a whole was one of the chief sources of interest to visitors at the Station during August and early September.

Outstanding varieties were:—

Decorative: Jersey Beauty and El Dorado.

Peony flowering: Gorgeous.

Cactus: F. W. Fellows and Gladys Bates.

CANNA.—Particularly pleasing results were obtained with Cannas during the past season. Four varieties were grown in two large beds and were equally satisfactory. These were: Olympic, Fiery Cross, Rosea Gigantea and Yellow King Humbert.

MISCELLANEOUS ANNUALS.—Excellent results were also obtained with many kinds of annuals. Of these the most satisfactory were as follows:—

From seed started in the hotbed: Stocks, Cosmos, Zinnia, Ageratum, Petunia and many varieties of Asters.

From seed sown in the open: Several species and varieties of Poppy, Godetia, Mignonette, Candytuft, Annual Larkspur, Portulaca and Sweet Allysum.

CEREALS

Although the spring of 1926 was late and seeding nearly two weeks later than usual, the season on the whole provided quite favourable for cereal crops. Rainfall was ample but not excessive with the result that, with practically all varieties the straw, although comparatively short, was quite strong and but little lodging occured. In general the various varieties matured in a period eight to ten days less than the average for the previous three years, yet the yield of spring sown grain was fully up to th average. Harvest weather at Lennoxville, and in the vicinity, was quite satisfactory and the crops were saved in good condition.

VARIETY TESTS OF CEREALS

The variety tests of cereals comprise comparative tests of the principal species of cereals, suitable for the district, and various combination of species and varieties grown together for mixed grain. With mixed grain, peas and beans the tests are conducted in duplicate one hundred and twentieth acre plots. With wheat, oats, barley, fall wheat and fall rye, comparative trials include three stages. In the first stage a comparatively large number of varieties are grown in small plots, consisting of three or five rows six inches apart and one rod long. In the second stage the most promising varieties are grown in duplicate one hundred and twentieth acre plots. As a final stage, and for the purpose of observing their behaviour under a variety of conditions, the apparently most suitable varieties are grown in rod-row plots on a number of farms throughout the district. The yields given in the following report are computed from one hundred and twentieth acre plot tests.

OATS

The variety tests of oats for the season of 1926 were somewhat more extensive than in former years. In all thirty-one varieties and strains were tested in quadruplicate rod-row plots and twenty-one in duplicate one hundred and twentieth acre plots. Of those tested in one hundred and twentieth acre plots eleven have been included in a similar test for the past four years. Following is a statement of the results obtained:—

OATS—AVERAGE OF RESULTS 1923 TO 1926

Variety	Number of days maturing	Height	Strength of straw on scale of 10 points	Yield per acre	
		inches		bush.	lb.
Banner, Lennoxville	130·1	54·0	6·7	88	8
Longfellow, Ottawa 478	101·5	50·7	8·1	84	17
Legacy, Ottawa 678	97·5	45·9	9·4	83	26
Banner, Ottawa 49	103·7	53·7	8·0	80	19
Banner 44, Macdonald College	101·4	52·0	7·7	80	5
Victory	103·7	48·9	8·0	78	23
Gold Rain	101·2	52·3	7·5	76	4
Daubeny, Ottawa 47	92·0	43·4	8·0	74	13
O.A.C. 72	105·0	54·9	9·6	72	2
Alaska 712, Macdonald College	90·5	48·3	8·9	63	32
Liberty, Ottawa 480 (Hulless)	101·2	46·6	8·7	49	28
Average				75	22

Although the Lennoxville selection of Banner has given a very high yield over the four-year period, its strength of straw is not sufficient for low-lying or extremely fertile soils. On such sites practically all of the strains of Banner that have been tested at this Station, would very likely prove unsatisfactory as, in the normal Eastern Townships season, tall-growing, late oats lodge easily if conditions are at all unfavourable. In this respect the variety Legacy, Ottawa 678 is apparently quite satisfactory, as the straw is quite stiff and lodges only under exceptionally adverse conditions. It is a few days earlier than Banner and heavier-yielding than Alaska and Daubeny.

Longfellow, Ottawa 478 is a fairly stiff-strawed side oat with a somewhat thinner hull than the commonly used Mammoth Cluster or Storm King.

As the hull of the oat is of little value for feed, the nutrients being contained in the kernel, yields of grain alone may frequently prove misleading in determining the value of a variety. High-yielding varieties may have thick heavy hulls and a small percentage of kernel, while apparently lower-yielding sorts may have thin hulls and give a greater yield of nutrients, due to the increased percentage of kernel. The following table shows the yields of grain and kernel of varieties tested in duplicate one hundred and twentieth acre plots in 1926.

OATS—YIELD OF GRAIN AND KERNEL, 1926

Variety	Number of days maturing	Strength of straw on scale of 10 points	Length of straw	Total yield of grain per acre	Percentage hull	Yield of kernel per acre
			inch.	lb.		lb.
Legacy, Ottawa 618	92	10·0	44·0	3,630	26·50	2,668
Gold Rain	98	9·7	48·5	3,600	30·00	2,520
0 1512, Macdonald College	105	10·0	53·0	3,180	24·00	2,416
Alaska	88	9·7	42·5	3,060	22·00	2,387
Victory	102	9·5	53·0	3,450	31·50	2,363
Banner, Dixon	104	6·0	52·0	2,880	26·00	2,356
Banner, Ottawa 49	103	9·2	51·0	3,480	32·50	2,347
O.A.C. No. 3	88	10·0	40·5	3,090	25·00	2,317
Banner, Langille	102	3·5	56·5	3,450	33·50	2,294
Banner, Lennoxville	103	8·0	45·5	3,360	33·50	2,234
O.A.C. 72	105	10·0	53·0	3,060	30·00	2,142
Banner 44, Macdonald College	103	8·5	51·0	3,300	35·50	2,128
Banner, Griffin	102	7·0	43·5	2,880	27·50	2,088
Longfellow, Ottawa 478	97	6·2	49·0	3,060	33·25	2,042
Banner C.R. 31	104	9·2	50·2	2,940	35·50	1,996
O.A.C. 144	104	10·0	57·5	2,790	31·00	1,925
Daubeny	88	10·0	38·5	2,520	25·00	1,890
Liberty, Ottawa 480	98	10·0	19·5	1,860	Hulless	1,860
Laurel, Ottawa 478	102	10·0	44·0	1,680	Hulless	1,680
Danish Island Swedish	101	10·0	49·0	2,520	33·50	1,675
Average				2,989		2,166

BARLEY

At this Station heavier yields of grain have been obtained from barley than from any other kind of grain. Also from the results of cereal tests, conducted co-operatively with several farmers throughout the district, a similar experience has been gained. Barley as a crop is well suited to the climate of the Eastern Townships and, although satisfactory yields cannot be expected on extremely heavy, wet or poorly worked soils, good yields of grain are almost certain under favourable soil condition. Following is a statement of the results obtained during the past four years, with the best yielding varieties tested during that period.

BARLEY—AVERAGE OF RESULTS, 1923 TO 1926

Variety	Kind	Number of days maturing	Height	Strength of straw on scale of 10 points	Yield per acre	
			inch.		bush.	lb.
Mensury, Macdonald College 3207	6-rowed	91·2	42·7	8·6	76	20
Chinese, Ottawa 60	6-rowed	91·2	46·7	7·9	74	44
O.A.C. 21	6-rowed	90·2	39·7	7·9	72	1
Charlottetown 80	2-rowed	95·0	38·7	8·3	69	44
Himalayan, Ottawa 59	Hulless	85·4	29·9	8·2	58	42
Duckbill, Ottawa 57	2-rowed	97·7	42·2	9·4	56	21
Average					68	5

Among the varieties which have been tested for a period of less than four years, Bearer (Ottawa 475), and Star are the most promising. Bearer (Ottawa 475), is a tall, strong-growing six-rowed barley, four or five days later than Mensury, 3,207 Macdonald College, or Chinese, Ottawa 60. Star is a short-strawed six-rowed variety slightly earlier than most other six-rowed varieties. Both have produced yields slightly inferior to Chinese, Ottawa 60.

SPRING WHEAT

Although variety tests of spring wheat have been conducted annually at Lennoxville for the past four years, the experiment was enlarged in 1925 by the addition of several varieties which had given excellent results in the rod-row tests in 1924. Accordingly, in order that a comparison including some of these varieties may be shown, the following table is made up of a two-year average of results from the outstanding varieties tested during that period.

WHEAT—AVERAGE OF RESULTS, 1923 TO 1926

Variety	Number of days maturing	Height	Strength of straw on scale of 10 points	Yield per acre	
		inch.		bush.	lb.
Huron, Ottawa 3	108·5	46·0	9·0	37	35
Pringle's Champlain, Macdonald College 307	113·5	45·0	9·5	36	33
Huron, Cap Rouge 7	108·5	46·5	9·0	36	11
Whiteheads, Charlottetown 123	112·0	43·7	9·0	36	5
Garnet, Ottawa 625	104·0	39·7	10·0	34	48
Marquis, Ottawa 15	109·5	43·5	10·0	33	24
Red Fife	112·0	48·5	9·0	33	13
Early Red Fife, Ottawa 16	111·0	46·0	10·0	31	17
Ruby, Ottawa 623	104·0	41·5	10·0	30	44
Average				34	26

Huron wheat is apparently the most satisfactory variety for this district and is being more generally grown each year. Red Fife, a variety quite popular throughout the Eastern Townships, is, as may be noted from the foregoing table, somewhat later and lower-yielding. It has also been found more susceptible to rust. In regard to milling quality, it may be slightly superior although millers in this district are rather inclined to favour Huron as the grain is usually more plump and, owing to its earliness, harvested in better condition.

Pringle's Champlain, Macdonald College 307, although high-yielding, is a little late for the immediate district and the more eastern counties. In most of the districts west of the St. Francis river, it should prove quite satisfactory.

FALL WHEAT

Tests of varieties of fall wheat have been conducted, as an experimental project, at Lennoxville, in each of the three past seasons. During that period six varieties have been tested in duplicate one hundred and twentieth acre plots, and fourteen in quadruplicate rod-row plots. So far very encouraging results have been obtained. If sown sufficiently early in the fall, so that a growth of five or six inches is obtained, most of the varieties winter well and, on land of average fertility, produce good crops of grain. It should, however, be mentioned that the experiments with this crop have been conducted on a comparatively sandy, well-drained soil. On extremely heavy, or poorly-drained land it is doubtful if the crop would winter satisfactorily in this district. Following is a three-year average of results obtained from the varieties tested in one hundred and twentieth acre plots:

FALL WHEAT—AVERAGE RESULTS, 1924 TO 1926

Variety	Date of ripening	Height	Strength of straw	Per cent stand	Yield per acre	
		inch.			bush.	lb.
Kharkov, 1312 (Macdonald College)	Aug. 8	40	10·0	80·6	37	15
Kanred	Aug. 5	35	9·7	81·6	32	10
Dawson's Golden Chaff	Aug. 6	42	10·0	77·0	27	27
Kharkov, 2212 (Macdonald College)	Aug. 6	37	10·0	81·7	24	46
O.A.C. 104	Aug. 6	46	9·9	78·0	24	34
Kharkov, 112 (Macdonald College)	Aug. 5	39	10·0	79·0	21	58
Average					28	2

Of the fourteen varieties grown in quadruplicate rod-row plots, Red Rock has proven quite hardy and has given the heaviest yield of grain.

FIELD PEAS

The average season at Lennoxville is not favourable for field peas in that they seldom ripen earlier than the first or second week in September, at which time the weather is usually unsatisfactory for the drying of the pulled crop. In three out of the past four seasons, practically all of the varieties of peas tested have made excellent growth and produced large yields of grain. Owing, however, to continued wet weather, immediately after the crop was pulled, the grain when finally threshed was badly damaged and of inferior quality. The season of 1926, however, proved an exception as the crop matured earlier than usual, dried quickly after pulling and was in good condition when threshed.

FIELD PEAS—AVERAGE OF RESULTS, 1925 AND 1926

Variety	Number of days maturing	Length of vine	Yield per acre	
		inch.	bush.	lb.
O.A.C. 181	101·5	62·0	35	55
Arthur, Ottawa 18	103·5	52·5	29	45
Cartier, Ottawa 19	108·0	57·0	28	33
McKay, Ottawa 25	113·5	65·0	26	45
Chancellor, Ottawa 26	100·5	61·5	24	37
Prussian Blue	114·0	62	22	52
Average	.....	.....	28	5

O.A.C. 181 has so far proved very satisfactory and seems well suited to climatic pecularities of the district. The peas are of medium size and the vine strong and vigorous. Owing to its earliness it can be pulled during August, at which time good drying weather usually prevails, and, in an average season, can be harvested in good condition.

FIELD BEANS

Of the ten varieties of field beans which have been included in the variety tests during the past four years, Navy, Ottawa 711, has proven decidedly superior in all respects. It is a vigorous, strong-growing variety which is seldom badly damaged by Anthracnose or leaf spot, and, is sufficiently early for the district, usually ripening during the first week in September, when sown during the later part of May. The bean is well-shaped, of medium size and white in colour. Its average yield for the past four years is 41 bushels 25 pounds.

As a second choice the well known variety, Yellow Eye, seems most suitable. It is four or five days later than Navy, Ottawa 711, but, during the past four years, has matured satisfactorily. Its average yield during the past four years is 32 bushels and 16 pounds.

Other varieties included in the test were Robust, Large White, Ottawa 713, Soldier, Norwegian, Ottawa 710, Yellow Six Weeks, Red Kidney, Beauty, Ottawa 7, and a selection from Soldier.

MIXED GRAIN

As a general rule when suitable species and varieties are combined in a mixture, good yields of grain, high in feeding value, will be obtained. During the past three years the various mixtures of grain, tested at this Station, have annually exceeded the yield of all other kinds of grain excepting barley. In comparison with oats, the most suitable mixtures of oats and barley usually produce a heavier yield of crop which, owing to the presence of barley, is of higher feeding value. If a suitable variety of wheat is included with barley and oats the yield is lowered but the feeding quality of the crop is increased. Mixtures of barley, oats, wheat and peas are usually still lower-yielding but correspondingly higher in feeding value. Following is a statement of results of the highest-yielding mixtures that have been tested for three years.

GRAIN MIXTURES—AVERAGE OF RESULTS, 1924–1926

Variety and rate per acre			Number of days maturing	Height	Strength of straw on scale of 10	Yield per acre	Remarks
		lb.		inches		lb.	
Charlottetown 80	Barley	48	.....	37	.....	.....	Barley two days earlier than oat.
Banner	Oats	68	105	46	8	3,170	
Duckbill, Ottawa 57	Barley	48	.....	40	.....	.....	
Banner	Oats	68	105	47	8·5	3,167	Ripe together.
Colorado Bearded	Wheat	30	.....	44	.....	.....	Wheat and oat ripen together. Barley two to three days earlier.
Charlottetown 80	Barley	36	.....	39	.....	.....	
Banner	Oats	51	105	46	8	2,940	
Chinese, Ottawa 60	Barley	48	.....	46	.....	.....	Barley eight to ten days earlier than oat.
Banner	Oats	68	103·5	47	9·5	2,900	
Colorado Bearded	Wheat	30	.....	44	.....	.....	
Duckbill, Ottawa 57	Barley	36	.....	43	.....	.....	
Banner	Oats	51	103	46	8	2,863	Ripe together.
Ruby, Ottawa 623	Wheat	30	.....	43·5	.....	.....	
Charlottetown 80	Barley	36	.....	38	.....	.....	Oat two to three days later than barley and wheat.
Banner	Oats	51	103	47	8·5	2,783	
O.A.C. 21	Barley	48	.....	44	.....	.....	
Alaska	Oats	68	94	44	8·5	2,610	Ripe together.
Duckbill, Ottawa 57	Barley	48	.....	43	.....	.....	
O.A.C. 72	Oats	68	105	50·5	8	2,557	Ripe together.
Chinese, Ottawa 60	Barley	48	.....	43·5	.....	.....	
Alaska	Oats	68	94	43·5	7·5	2,370	Ripe together.

Although the mixture composed of Banner oats and Charlottetown 80 barley is the highest-yielding, it is not entirely satisfactory for the usual Eastern Townships climate. As may be noted from the table, the barley is much shorter than the oat and, when the crop is cut, the barley heads are close to the band and consequently held tightly. The result is, that they do not dry readily after showers, and the seed may sprout easily during wet harvest weather. In this respect the mixture of Banner oat and Duckbill, Ottawa 57, barley is somewhat better, although it may also prove hard to save in good condition during poor harvest weather.

Where an early maturing mixture is necessary the combination of O.A.C. 21 barley and Alaska oats is recommended.

Of the mixtures that have been tested for only two years, one composed of 30 pounds of Huron wheat, 35 pounds of Duckbill, Ottawa 57, barley, 42 pounds of Banner oats and 30 pounds of Arthur peas produced an average crop for the two years of 2,990 pounds of grain per acre. Another mixture of 48 pounds of Charlottetown 80 barley and 68 pounds of Legacy, Ottawa 678, oats gave an average yield of 2,835 pounds per acre.

FORAGE CROPS

ENSILAGE CORN

Although ensilage corn is not always a dependable crop in many portions of the Eastern Townships, fairly large areas are planted annually. Crop failures are common each year but, even in the most unfavourable seasons, large yields are also common. On fairly light, well-drained soil, properly worked and in a high state of fertility, good yields of corn have been consistently obtained at this Station, when suitable varieties have been grown. Where conditions are not as favourable, heavy yields are rarely obtained.

The variety test of ensilage corn, conducted in 1926, included nineteen varieties which were grown in quadruplicate plots consisting of three rows each. At harvest the outer rows were discarded and the yields computed from the centre row, thus avoiding the influence, detrimental or otherwise, that might be exerted by adjoining varieties in the test.

ENSILAGE CORN—TEST OF VARIETIES, 1926

Variety	Source	Height of plant		Stage of maturity	Yield per acre			
					Green weight		Dry matter	
		ft.	inch.		tons	lb.	tons	lb.
Yellow Dent	Wimple	8	0	Milk	22	200	3	1,844
North Western Dent	Macdonald College	8	6	Milk	24	..	3	1,800
Twichell's Pride	Exp. sta., Fredericton	7	7	Early dough	22	400	3	1,650
Amber Flint	Wimple	6	6	Early dough	19	1,000	3	1,556
Twichell's Pride X Wisconsin No. 7	Exp. Farm, Harrow	7	3	Late milk	24	..	3	1,138
White Cap Yellow Dent	Steele-Briggs	8	0	Early milk	21	800	3	1,006
Wisconsin No. 7	J. O. Duke	10	0	Silked	25	1,600	3	996
Compton's Early	J. O. Duke	8	0	Early milk	28	400	3	836
Red Cob Ensilage	Steele-Briggs	10	6	Tasselled	30	1,650	3	632
Burr Leaming	Geo. S. Carter	9	6	Silked	25	200	3	616
Quebec No. 28	Macdonald College	7	2	Glazed	21	340	3	604
Golden Glow	J. O. Duke	8	6	Kernel formed	24	1,400	3	482
North Dakota	Steele-Briggs	8	0	Early milk	24	1,400	3	480
Longfellow	J. O. Duke	8	0	Early milk	26	1,600	3	394
Minnesota No. 13	A. E. McKenzie	8	2	Kernel formed	21	1,650	3	118
Gehu	Dakota Imp. Seed Co.	6	0	Glazed	14	1,940	2	1,500
Hybrid	Wimple	8	0	Kernel formed	17	1,800	2	1,458
North Western Dent	Exp. Farm, Brandon	7	0	Late milk	14	400	2	1,288
Leaming	Parks	9	6	Tasselled	23	200	2	850
Average					22	1,525	3	592

Of the varieties listed in the foregoing table a number have been tested for several years, although dry matter determinations have been made with the crop only since 1923. Accordingly, since the absolute dry weight is the most reliable basis for comparison, the following average of results is made up from the results obtained in the seasons in which dry matter determinations were made:—

ENSILAGE CORN—AVERAGE OF RESULTS 1923, 1924 AND 1926

Variety	Source	Height		Yield per acre			
				Green weight		Dry matter	
		ft.	in.	tons	lb.	tons	lb.
Compton's Early	J. O. Duke	7	9	24	383	3	1,582
North Western Dent	Macdonald College	8	4	19	1,400	3	1,507
Twitchell's Pride	Experimental Station, Fredericton	6	2	17	1,850	3	1,411
Golden Glow	J. O. Duke	8	6	22	387	3	1,198
Wisconsin No. 7	Parks	9	4	24	366	3	1,167
Leaming	Parks	8	9	21	1,250	3	1,149
Longfellow	J. O. Duke	8	2	22	566	3	771
North Dakota	Steele-Briggs	7	7	19	1,177	3	453
Quebec No. 28	Macdonald College	6	7	17	1,047	3	328
White Cap Yellow Dent	Steele-Briggs	7	10	18	943	3	323
Average				20	1,536	3	989

Under normal seasonal conditions at Lennoxville, Compton's Early will usually reach the early dough stage before early fall frosts are recorded. Over a period of nine years it has been the highest-yielding variety tested on a basis of green crop, and for three years on a dry matter basis. The Macdonald College selection of North Western Dent has also proven very satisfactory.

For the western counties of the district served by this Station, where the normal climatic conditions are more favourable for ensilage corn, the taller-growing dent varieties such as Leaming, Golden Glow and Wisconsin No. 7 are more suitable.

SUNFLOWERS

Although stockmen as a rule prefer good corn ensilage to that made from sunflowers, the area planted to sunflowers in the Eastern Townships is annually increasing. In a large portion of this district corn is, at the best, uncertain while, under normal conditions, sunflowers are practically a sure crop. On fairly heavy fertile land at the Station corn varies, according to the suitability of the season, from practical failure to about a half crop. Sunflowers, on the other hand, have, under similar conditions, produced fair crops. On light, well-drained soils in a high state of fertility, corn has proven more dependable and for the past five years has produced yields that compare favourably with sunflowers.

For the past four years the sunflower crop has been more or less damaged by the attack of the larva of the Peacock Fly. This damage was first noticed in 1923, and in 1924 was quite severe at the Station, and in a few scattered points throughout the district. In 1925 the insect was much less prevalent and in the past season still less so. Accordingly, it would seem that, in general, the Peacock Fly is not likely to become a very serious pest, and, as sunflowers are otherwise a very suitable crop for much of the district, they should be grown more generally as an ensilage crop. Following is a statement of the average results obtained, from the test of regional strains and varieties, during the past four years.

SUNFLOWERS, AVERAGE OF RESULTS, 1923 TO 1926

Variety	Source	Height		Yield per acre			
				Green weight		Dry matter	
		ft.	in.	tons	lb.	tons	lb.
Mammoth Russian	Kenneth McDonald	7	10	28	1,476	4	1,621
Giant Russian	Dakota Imp. Seed Co	8	0	21	1,841	3	1,658
Mammoth Russian	A. E. Fish	8	0	24	829	3	1,650
Ottawa 76	Exp. Farm, Ottawa	6	7	12	854	2	530
Manchurian	A. E. McKenzie	6	6	14	1,141	1	1,783
Average				20	828	3	648

Mammoth Russian has so far proven the most suitable. It is a vigorous, tall-growing variety that in most seasons will reach full bloom the first week in September. When grown alone on fertile soil it often grows so large that the crop is difficult to harvest with a corn binder. For the past five years this difficulty has been avoided, at the Station, by sowing one pound of sunflower seed mixed with one peck of corn. In combination with the corn, sunflowers do not make as strong a growth and are more easily handled. The presence of corn also adds somewhat to the palatability and quality of the ensilage. Seed of this variety is offered for sale by practically all seed houses in Eastern Canada.

SWEDE TURNIPS

Swede turnips are probably the most generally grown succulent roughage in the Eastern Townships. As a crop they are well suited to the soil and climate of the district, and crop failures are extremely rare. In 1926 sixty-five varie-

ties were included in the comparative trials, each variety being grown in quadruplicate plots. The results obtained are shown in the following table:—

SWEDE TURNIPS, 1926 YIELDS

Variety	Source	General type and colour	Yield per acre			
			Green weight		Dry matter	
			tons	lb.	tons	lb.
White Swede	Bruce	Green Top, Globe	32	1,680	3	896
Imperial	Webb	Purple Top, Globe	30	1,880	3	498
Universal	Ewing	Purple Top, Globe	33	1,840	3	360
Elephant	Sutton	Purple Top, Globe	34	1,920	3	292
Canadian Gem	Steele-Briggs	Bronze Top, Globe	30	280	3	178
Invicta Bronze Top	Ewing	Bronze Top, Globe	32	600	3	54
Magnificient	Garton	Purple Top, Globe	31	20	3	46
Shepherds	Trifolium	Bronze Top, Globe	34	1,520	2	1,992
Ditmars	McNutt	Bronze Top, Globe	36	160	2	1,954
New Empire	Webb	Bronze Top, Globe	37	240	2	1,888
Bangholm	General Swedish	Purple Top, Globe	31	820	2	1,886
Improved Yellow	General Swedish	Bronze Top, Globe	31	1,820	2	1,858
Bangholm	Kentville	Purple Top, Globe	25	100	2	1,762
Monarch	McKenzie	Purple Top, Globe	31	680	2	1,754
Ne Plus Ultra	Dupuy & Ferguson	Bronze Top, Globe	31	1,280	2	1,696
Magnum Bonum	Bruce	Purple Top, Globe	33	0	2	1,690
Hall's Westbury	McDonald	Purple Top, Globe	35	1,520	2	1,628
Giant King	Bruce	Purple Top, Globe	34	480	2	1,602
Hartley's	Bruce	Bronze Top, Globe	28	1,860	2	1,600
Improved Lord Derby	Sutton	Bronze Top, Globe	30	280	2	1,574
New Universal Purple Top	Dupuy & Ferguson	Purple Top, Globe	32	1,040	2	1,528
Bangholm, Herving VI	Webolt	Bronze Top, Globe	28	1,180	2	1,500
Magnum Bonum	McDonald	Purple Top, Globe	29	100	2	1,478
Elephant or Monarch	Bruce	Purple Top, Globe	33	320	2	1,472
Favorite	Dupuy & Ferguson	Purple Top, Globe	29	1,280	2	1,442
Halewood's Bronze Top	Steele-Briggs	Bronze Top, Globe	28	1,260	2	1,440
Danish Queen	McDonald	Purple Top, Globe	31	1,520	2	1,438
Giant King	Webb	Purple Top, Globe	30	1,780	2	1,288
North Western	McKenzie	Purple Top, Globe	29	280	2	1,280
Bangholm	Charlottetown	Purple Top, Globe	24	1,060	2	1,274
Model	Garton	Bronze Top, Globe	34	40	2	1,274
Sutton's Champion Purple Top	Ewing	Purple Top, Globe	26	1,280	2	1,258
Mammoth Clyde Purple Top	Dupuy & Ferguson	Purple Top, Globe	28	1,640	2	1,256
Keep Well	Garton	Bronze Top, Globe	29	780	2	1,254
Resistant Bangholm	Kent	Purple Top, Globe	26	80	2	1,192
Kangaroo	Steele-Briggs	Bronze Top, Tankard	26	1,020	2	1,172
Magnum Bonum	Ewing	Purple Top, Globe	30	640	2	1,154
New Swede Balmoral	Webb	Purple Top, Globe	29	1,780	2	1,154
Good Luck	Steele-Briggs	Purple Top, Globe	29	1,740	2	1,150
Hazard's Improved	Steele-Briggs	Bronze-Top, Tankard	28	340	2	1,138
Champion	Sutton	Purple Top, Globe	30	240	2	1,120
Kangaroo	Dupuy & Ferguson	Bronze Top, Tankard	30	1,040	2	1,110
Garton's Superlative	Ewing	Purple Top, Globe	32	1,060	2	1,096
Bangholm, 8312	Macdonald College	Purple Top, Globe	30	1,740	2	1,092
Canadian Gem	Bruce	Purple Top, Globe	27	1,640	2	1,074
Perfection	Dupuy & Ferguson	Bronze Top, Globe	31	1,380	2	1,026
Danish Bangholm Sludsgaard 4108	Webolt	Purple Top, Tankard	24	460	2	1,026
Bangholm, 8112	Macdonald College	Purple Top, Globe	32	780	2	1,020
Improved Lord Derby	Sutton	Bronze Top, Globe	26	1,680	2	998
Aquisition Swede	Sutton	Purple Top, Globe	30	480	2	990
Bangholm, Sludsgaard 5018	Trifolium	Purple Top, Globe	24	860	2	974
Viking King	Garton	Bronze Top, Globe	29	900	2	966
Derby	Bruce	Bronze Top, Tankard	28	640	2	882
Hall's Westbury	Ewing	Purple Top, Globe	30	1,920	2	836
Kangaroo	Ewing	Bronze Top, Oval	32	1,460	2	786
Mammoth Clyde Purple Top	Ewing	Purple Top, Globe	29	880	2	782
New Masterpiece	Webb	Purple Top, Oval	29	1,020	2	722
Superlative	Garton	Purple Top, Globe	27	1,760	2	700
Breadstone Green Top	McKenzie	Light Bronze Top, Globe	24	300	2	646
Bangholm	Nappan	Purple Top, Globe	24	1,260	2	586
Superlative	McKenzie	Purple Top, Globe	31	700	2	546
Magnum Bonum	Cap Rouge	Purple Top, Globe	26	1,500	2	414
New Buffalo	Webb	Purple Top, Globe	27	1,620	2	344
Laing's Improved	Dupuy & Ferguson	Bronze Top, Globe	22	480	2	142
Laing's Improved Purple Top	Ewing	Bronze Top, Globe	21	1,100	1	1,500
Average			29	1,801	2	1,304

Of the varieties included in the foregoing table, the fourteen shown in the following statement have been tested for the past four years:—

SWEDE TURNIPS—AVERAGE OF RESULTS, 1923 TO 1926

Variety	Source	General Type and Colour	Yield per acre			
			Green weight		Dry matter	
			tons	lb.	tons	lb.
Ditmars	McNutt	Bronze Top, Globe	32	615	3	770
White Swede	Bruce	Green Top, Globe	28	1,587	3	539
Magnum Bonum	Ewing	Purple Top, Globe	27	1,673	3	432
Canadian Gem	Bruce	Purple Top, Globe	26	1,435	2	1,825
Garton's Superlative	Ewing	Purple Top, Globe	29	1,422	2	1,691
Hartley's Bronze Top	Bruce	Bronze Top, Globe	24	795	2	1,672
Magnum Bonum	Bruce	Purple Top, Globe	28	1,805	2	1,596
Elephant	Bruce	Purple Top, Globe	26	1,597	2	1,445
Hall's Westbury	Ewing	Purple Top, Globe	29	525	2	1,441
Universal	Ewing	Purple Top, Globe	28	128	2	1,305
Invicta	Ewing	Bronze Top, Globe	27	590	2	1,035
Mammoth Clyde	Ewing	Purple Top, Globe	26	871	2	938
Sutton's Champion	Ewing	Purple Top, Globe	21	1,032	2	876
Kangaroo	Ewing	Bronze Top, Oval	26	590	2	741
Average			27	905	2	1,593

As may be noted the variety Ditmars has proven the most satisfactory. The roots of this variety are of medium size, smooth and uniform. They are also of excellent flavour and quality as a table turnip. Magnum Bonum and Canadian Gem have also produced high yields. As a second choice to Ditmars either should prove satisfactory.

MANGELS

The variety test of mangels in 1926 included practically all of the principal varieties, the seed of which is obtainable from Canadian seedsmen, as well as a number obtained from foreign sources.

MANGELS, 1926 YIELDS

Variety	Source	General type and colour	Yield per acre			
			Green weight		Dry matter	
			tons	lb.	tons	lb.
Yellow Intermediate	Ottawa	Orange, Intermediate	41	340	4	900
Roxted Barres	Hartman	Orange, Intermediate	42	1,680	4	242
Selected Giant Rose intermediate	Ewing	Rose Pink, Intermediate	33	680	4	2
Long Red Mammoth	Ewing	Red, Long	33	1,540	3	1,768
Giant White Feeding	Bruce	White, Intermediate	38	680	3	1,476
Barres Half Long	General Swedish	Yellow, Intermediate	35	1,980	3	1,328
Danish Sludstrup	Ewing	Orange, Intermediate	32	1,100	3	1,160
Gate Post	Bruce	Red, Long	36	400	3	1,008
Yellow Vaurice	Vilmorin	Orange, Intermediate	36	20	3	842
Half Sugar Rose Top	Hartman	Rose Pink, Intermediate	32	1,540	3	836
Eckendorffer Red	Hartman	Red, Tankard	47	920	3	644
Stryno Barres	Hartman	Yellow, Intermediate	41	60	3	564
Sludstrup	Penticton	Yellow, Intermediate	38	900	3	536
Barres Oval	General Swedish	Yellow, Intermediate	35	80	3	482
Eclipse	McKenzie	Yellow, Tankard	36	1,440	3	374
Giant Rose Feeding	Bruce	Rose, Intermediate	33	400	3	348
Giant Yellow Intermediate	Ewing	Orange, Intermediate	32	160	3	310
Half Sugar Green Top	Hartman	White, Intermediate	37	680	3	296
Mammoth Long Red	Sutton	Red, Long	31	580	3	258
Danish Sludstrup	McDonald	Orange, Intermediate	39	780	3	200
Red Eckendorffer	General Swedish	Red, Tankard	34	1,760	3	146
Giant White Sugar	Moore	White, Intermediate	36	680	3	40
Red Globe	Bruce	Red, Globe	34	360	3	22
Sludstrup Barres	Hartman	Yellow, Intermediate	36	1,700	2	1,896
Giant Half White Sugar	Ewing	White, Intermediate	35	1,220	2	1,816
Red Globe	Ewing	Red, Globe	30	1,760	2	1,786
Fjerritslev Barres	Hartman	Yellow, Intermediate	40	560	2	1,784
Yellow Globe	Bruce	Yellow, Globe	39	1,620	2	1,772
Eckendorffer Yellow	Hartman	Orange, Tankard	40	180	2	1,752
Yellow Eckendorffer	General Swedish	Orange, Tankard	33	1,760	2	1,590
Golden Tankard	Bruce	Orange, Tankard	30	1,420	2	1,528
Elvetham Mammoth	Hartman	Long, Red	35	780	2	1,528
Giant Yellow Globe	Ewing	Yellow, Globe	36	580	2	1,444
Yellow Globe	Sutton	Yellow, Globe	34	780	2	1,330
Mammoth Red Intermediate	Bruce	Red, Intermediate	32	1,560	2	1,284
Golden Tankard	Ewing	Orange, Tankard	30	120	2	1,182
Svalof Origonal Alpha	General Swedish	White, Intermediate	34	240	2	1,030
Red Globe	Ewing	Red, Globe	28	680	2	426
Average			35	1,572	3	314

From a total of sixty-four lots of mangels, representing distinct varieties, and similar varieties obtained from different sources, tested during the past four years, those listed in the following table have given the best results:—

MANGELS—AVERAGE OF RESULTS, 1923 TO 1926

Variety	Source	General Type and Colour	Yield per acre			
			Green weight		Dry matter	
			tons	lb.	tons	lb.
Yellow Intermediate	Ottawa	Orange, Intermediate	32	466	3	1,740
Selected Rose Intermediate	Ewing	Rose Pink, Intermediate	27	594	3	1,191
Giant White Feeding	Bruce	White, Intermediate	32	300	3	753
Danish Sludstrup	Macdonald	Yellow, Intermediate	34	1,625	3	744
Gate Post	Bruce	Red, Long	29	537	3	265
Danish Sludstrup	Ewing	Orange, Intermediate	27	162	3	146
Mammoth Red Intermediate	Bruce	Red, Oval	34	577	2	1,825
Long Red Mammoth	Ewing	Red, Long	24	1,810	2	1,600
Red Globe	Bruce	Red, Globe	27	60	2	1,564
Yellow Globe	Bruce	Yellow, Globe	31	1,004	2	1,340
Golden Tankard	Bruce	Orange, Oval	23	1,080	2	1,148
Red Globe	Ewing	Red, Globe	26	307	2	1,077
Giant Yellow Globe	Ewing	Yellow, Globe	26	795	2	614
Giant Yellow Intermediate	Ewing	Orange, Intermediate	24	1,277	2	494
Golden Tankard	Ewing	Deep Orange, Oval	21	1,905	2	433
Average			28	433	2	1,796

The Yellow Intermediate variety obtained from Ottawa has, as may be noted, produced the highest yield. It was developed by the Division of Forage Plants at the Central Experimental Farm, Ottawa, by selection from the ordinary Yellow Intermediate obtained from seedsmen. The roots of this variety are medium in size, typically intermediate in shape, smooth and fairly uniform.

FIELD CARROTS

During the past five years a total of eighteen varieties of field carrots have been grown for comparison. Of these, ten varieties, listed in the following table, have been included in the test four consecutive years.

FIELD CARROTS—AVERAGE OF RESULTS, 1923 TO 1926

Variety	Source	General Type and Colour	Yield per acre			
			Green weight		Dry matter	
			tons	lb.	tons	lb.
Improved Intermediate	Ewing	White, Intermediate	24	886	2	1,003
Mammoth Intermediate	Bruce	White, Intermediate	24	172	2	786
White Belgian	Bruce	White, Long	20	1,312	2	527
Yellow Belgian	Ewing	Yellow, Intermediate	20	275	2	430
Danish Champion	Exp. Farm, Ottawa.	Yellow, Intermediate	19	1,016	2	92
New Yellow Intermediate	Ewing	Yellow, Intermediate	20	1,622	2	28
White Belgian	Ewing	White, Long	18	1,735	1	1,987
White Belgian	Dupuy & Ferguson	White, Long	19	1,262	1	1,975
Long Orange Belgian	Bruce	Orange, Long	17	1,650	1	1,908
Long Orange	Bruce	Orange, Long	15	59	1	1,656
Average			20	199	2	139

So far, varieties of the white intermediate group have given the best yields. Both the Improved Intermediate and the Mammoth Intermediate, which have produced the best crops, as shown in the preceding table, belong to this group.

FACTORY SUGAR BEETS

Since 1915 tests have been conducted annually with several varieties and regional strains of factory sugar beets. Each year samples of the crop have been forwarded to the Dominion Chemist for analysis who has invariably reported that the beets were of good quality and fairly high in sugar content. This, combined with the high yields obtained which, with the better varieties is usually between fifteen and twenty tons per acre, may be considered as a very favourable result, indicating that the soil and climate, at Lennoxville, is suitable for the production of factory sugar beets. Following is a statement of the results obtained in 1926:—

FACTORY SUGAR BEETS—TEST OF VARIETIES, 1926

Variety or source of seed	Yield per acre	Sugar in juice	Co-efficient of purity
	tons	p.c.	p.c.
Fredericksen	17·07	17·30	82·75
Rabbethge & Giescke	17·05	19·33	85·55
Schreiber Bros.	15·60	18·04	86·34
Kalinki	15·40	18·34	83·75
Horning	15·22	15·94	80·09
Dippe	15·17	17·48	82·00

As may be noted the yields obtained were very satisfactory and, as reported by the Dominion Chemist, all varieties, with the exception of Horning, have produced beets sufficiently rich and pure for profitable sugar extraction.

ALFALFA

The experimental work with alfalfa in 1926 consisted of a further trial of a variegated variety, the seed of which was raised in the vicinity of Brampton, Ontario. Two small plots seeded in 1925 on clay loam soil, in a high state of fertility, gave an average yield, in two cuttings, of 4 tons 318 pounds of cured hay, 85 per cent dry matter, per acre. One-third of an acre seeded with a nurse-crop of oats in 1925 on similar soil, closely adjoining the small plots, failed to winter satisfactorily and produced a very light crop of hay.

These results are similar to those obtained in former seasons and indicate that in this district alfalfa cannot be recommended, except for exceptionally favourable sites where the soil is readily permeable, in a high state of fertility and alkaline in reaction. Even under such conditions it would seem advisable to use a very hardy variety and sow without a nurse-crop. Apparently, if a good vigorous stand is obtained, it will winter satisfactorily and produce heavy crops of hay, high in feeding value. However, under average Eastern Townships conditions and general farm practice, very meagre results may be expected with the varieties at present available commercially.

Another experiment was started in 1926 in which Variegated alfalfa is seeded with a nurse-crop of barley on land receiving different applications of ground limestone in conjunction with commercial fertilizer and barn-yard manure. A satisfactory stand was obtained on the areas receiving applications of fertilizer or manure with ground limestone. The stand with a nurse-crop was in general weaker than that without, while on the checks, where neither manure, limestone or fertilizer was applied, the stand was very weak and thin.

SWEET CLOVER

As stated in previous reports trials of sweet clover have not been productive of encouraging results at the Station. Each year since 1922, duplicate plots have been seeded with each of the white and yellow varieties and, although good stands have been obtained occasionally, the results as a whole have been unsatisfactory. In general the crop has not proven hardy as some winter-killing has been observed each year. In the winter of 1925-26 good stands of both varieties were practically wiped out. When wintering has been fairly satisfactory, light yields of coarse hay have been obtained. This has proven difficult to cure, and, even when apparently dry, contained more moisture than clover or mixed clover hay. Seedings made in 1924 and 1925 with a nurse-crop of oats, on excellent clay loam soil, failed to winter, although a small check plot of red clover, seeded on the same field under similar conditions in 1925, showed only three per cent winter-killing in the spring of 1926.

Such results, although possibly not entirely conclusive, indicate strongly that both white and yellow sweet clover are unsuitable as forage crops in this district, and better results will be obtained with red clover.

ALSIKE AS A SUBSTITUTE FOR RED CLOVER

On account of its supposed tolerance to mild soil acidity, alsike clover is frequently sown on slightly acid, heavy soils in this district in preference to red clover. In very few instances, however, have good crops of hay, containing a high percentage of alsike, been observed, as in general the hay crops of the district are largely timothy with very little clover of any kind. Where heavy seedings of alsike have been used in combination with timothy, the clover forms a fair percentage of the crop the first year after seeding, but is not conspicuous in the second- and third-year crop.

In order to obtain definite information on the value of alsike as a substitute for red clover, a project was begun in 1926 in which varying amounts of alsike and red clovers are used in combination with a standard amount of timothy. The land used for the experiment is characteristic of large areas of the Eastern Townships being a fairly heavy clay, in fair fertility and mildly acid in its reaction to litmus. With each of the three seedings from 1922 to 1924, all clover practically disappeared after the first cropping year, the following year the crop being about all timothy. Accordingly, since the object of the experiment is primarily a comparison of the two species of clover, the following average of results has been made up from the crops obtained the first year after seeding.

COMPARISON OF ALSIKE AND RED CLOVER—AVERAGE OF RESULTS, 1923 TO 1926

Quantity of Seed per Acre	Percentage composition of hay				Yield per acre	
	Timothy	Red clover	Alsike	Foreign	Green weight	Dry matter
					tons lb.	tons lb.
Timothy, 8 lb., red clover, 10 lb.	34·3	56·2	.....	9·5	14 106	3 1,703
Timothy, 8 lb., red clover, 8 lb. alsike, 2 lb.	33·9	44·7	11·6	9·8	13 1,280	3 906
Timothy, 8 lb., red clover, 6 lb. alsike, 3 lb.	33·0	30·7	23·3	13·0	11 1,690	2 1,707
Timothy, 8 lb., red clover, 4 lb. alsike, 4 lb.	32·7	22·8	29·0	15·5	11 1,601	2 1,697

As shown in the foregoing table, the substitution of alsike for red clover has, in each case, been accompanied by a decrease in yield. Where four pounds of alsike was sown, the decrease in yield as compared with the mixture without alsike, amounted to a little more than one ton of dry matter per acre, yet the percentage of timothy in the hay was substantially the same. Furthermore the percentage of foreign material, which was composed largely of sheep sorel and native grasses, increased in about the same proportion as the alsike clover in the mixtures, the yield showing a corresponding decrease. For the conditions under which this experiment was conducted, red clover has so far proven decidedly superior to alsike for sowing in combination with timothy for a hay crop. On very acid or wet land, ordinary farm practice has shown that alsike is more suitable, but, for average land reasonably well-drained and only mildly acid, red clover will probably give better results.

GRASSES WITH MIXED CLOVER AS A BASE

In this project several agricultural grasses are tested in combination with mixed clovers to form hay or pasture mixtures. Seed of each grass is used to substitute five pounds of timothy in a standard 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. In 1921 and 1922 the several mixtures were sown with a nurse-crop of oats on half acre blocks. The percentage composition of the hay was determined from green material, and the yield obtained on a cured hay basis. Beginning with the seeding made in 1922, the tests were conducted in duplicate sixtieth acre plots, and records kept of percentage composition, green crop weight and absolute dry weight. With all seedings, excepting that made in 1925, the plots have been kept for two years and results

obtained from the first and second years after seeding. The following statement shows the average yields obtained during the past four years, and the average percentage of each grass present in the green crop for the past five years. With the mixture containing 5 pounds of timothy, the percentage listed represents one-half of the timothy actually present in the crop, the 5 pounds of seed being one-half of the timothy seed in the mixture.

COMPARISON OF AGRICULTURAL GRASSES

Amount of grass seed substituted for 5 pounds of timothy in the standard mixture	Average percentage of species in crop 1922 to 1926		Average yearly yield 1923 to 1926			
	1st year	2nd year	Green weight		Dry matter	
			tons	lb.	tons	lb.
Timothy, 5 pounds	22·9	30·1	11	721	3	1,421
Red top, 4 pounds	17·0	28·6	11	640	3	1,406
Tall oat grass, 8 pounds	14·6	8·3	9	1,926	2	1,884
Orchard grass, 10 pounds	28·3	18·0	10	419	2	1,747
Meadow fescue	23·4	7·1	9	835	2	306
Average	.....	.....	10	908	3	153

From the foregoing table, it will be noted that timothy and red top are the only grasses which have increased their stand, and in a measure replaced the red and alsike clover which dies out after the first year. With mixtures containing tall oat grass, meadow fescue and orchard grass, such vacancies were largely filled by weeds with the result that the second year's crop was light and of poor quality. In this district where, under usual farm practice, land is left in hay for at least two years, neither tall oat, meadow fescue or orchard grass are likely to prove satisfactory. Both timothy and red top are better suited to Eastern Townships requirements and, although red top has produced good crops, it is much later than timothy and for average conditions less satisfactory.

GRAIN MIXTURES FOR ENSILAGE

The mixture of oats, peas and vetches (or O.P.V.) is now quite commonly grown throughout the Eastern Townships as an ensilage crop. In a number of trials conducted during the past four years at the Station, it has proven to be a fairly sure crop, adaptable to the climatic peculiarities of the district, and suitable for practically all types of productive soil.

Although comparatively low-yielding, on a green crop basis, mixtures of grain cut while in the dough stage are relatively high in dry matter and will, as a result, make an ensilage of high feeding value. For the season of 1926 the average dry-matter content of seventeen grain mixtures grown for ensilage at this Station was 31.87 per cent. In the same season the average dry-matter content of nineteen varieties of corn was 14.16 per cent, and of five varieties of sunflowers 17.86 per cent. It is obvious, therefore, that apparently poor crops of grain mixtures may in reality be entirely the reverse. Further reference to this point may be found in the section of this report dealing with field husbandry, under the heading " Comparison of Succulent Roughages ". Following is a statement of the average results obtained with thirteen mixtures of species and varieties that have been tested in duplicate plots for the past two years:—

GRAIN MIXTURES FOR ENSILAGE—AVERAGE OF RESULTS, 1925 AND 1926

No.	Mixture and Seed per acre			Stage when cut	Yield per acre			
					Green weight		Dry matter	
					tons	lb.	tons	lb.
1	Gold Rain	Oat	2 bush	Oat in dough stage				
	Chancellor	Pea	½ bush	Pea hardening				
	Vetch		15 lb	Vetch in dough stage	11	1,700	4	232
2	Laurel	Oat	1½ bush	Oat nearly ripe				
	Chancellor	Pea	½ bush	Pea hardening				
	Vetch		15 lb	Vetch in dough stage	10	495	3	1,764
3	Victory	Oat	2 bush	Oat in dough stage				
	Chancellor	Pea	½ bush	Pea hardening				
	Vetch		15 lb	Vetch in dough stage	11	725	3	1,711
4	Banner	Oat	1½ bush	Oat in dough stage				
	Spring Rye		½ bush	Rye nearly ripe				
	Chancellor	Pea	½ bush	Pea in dough stage				
	Vetch		15 lb	Vetch in dough stage	9	1,980	3	1,562
5	Banner	Oat	2 bush	Oat in dough stage				
	Golden Vine	Pea	40 lb	Pea hardening				
	Vetch		15 lb	Vetch in dough stage	10	880	3	1,090
6	Banner	Oat	2 bush					
	Golden Vine	Pea	½ bush	Both in dough stage	9	1,120	3	830
7	Spring Rye		1½ bush	Rye nearly ripe				
	Chancellor	Pea	½ bush	Pea hardening				
	Vetch		15 lb	Vetch in dough stage	8	635	3	118
8	Banner	Oat	2 bush	Oat in dough stage				
	Chancellor	Pea	½ bush	Pea hardening				
	Vetch		15 lb	Vetch in dough stage	9	1,070	3	120
9	Banner	Oat	2 bush	Oat in dough stage				
	McKay	Pea	1 bush	Pea in late dough stage	9	1,147	3	107
10	Banner	Oat	2 bush					
	Arthur	Pea	1 bush	Both in dough stage	9	495	3	103
11	Banner	Oat	2 bush	Oat in dough stage				
	Chancellor	Pea	1 bush	Pea hardening	9	1,050	3	45
12	Longfellow	Oat	2 bush	Oat ripening				
	Golden Vine	Pea	1 bush	Pea in dough stage	8	1,325	2	1,751
13	Spring Rye		1½ bush	Rye nearly ripe				
	Chancellor	Pea	40 lb	Pea hardening	8	1,100	2	1,520
	Average				9	1,517	2	688

Although definite conclusion cannot be drawn from the average of two years' results, it is quite apparent that certain varieties are more suitable for forage mixtures than others. For instance, as shown in mixtures Nos. 1 and 8, the substitution of two bushels of Gold Rain oats for a like quantity of Banner, increased the total yield of dry matter by one ton one hundred and twenty-five pounds per acre. Also in mixtures Nos. 4 and 8, the substitution of one-half a bushel of Banner oats by a similar quantity of spring rye produced an increase in yield of nearly three-quarters of a ton of dry matter per acre. On the other hand when all of the oats were replaced by spring rye, as in mixture No. 7, a very small increase was obtained.

In general it has been observed that although mixtures may make the best ensilage when the majority of the crop is in the dough stage, the time to cut the crop is governed largely by its ability to remain standing. If it lodges badly while green, the pea and vetch vines rot quickly, and if much of the crop is in this condition it will not make the best quality of ensilage. Accordingly, it is sometimes necessary, on account of lodging, to cut the crop when quite immature. Mixtures containing Gold Rain oat or spring rye have so far reached the dough stage without lodging. Of the other mixtures listed in the foregoing table all have lodged more or less while quite immature.

POULTRY

An exceptionally late spring, with snow on the ground for a month later than the previous year, made conditions very hard for the breeding stock to produce eggs which would hatch a fair percentage of strong chicks. As a result, farmers did not hatch many early chicks, and a great scarcity of pullets, suitable for egg-production, was experienced in the autumn. While the hatching at the Station was started at the same time as previous years, yet a lower percentage of hatch caused a lesser number of chicks being produced than during the year of 1925. All the young stock was reared during the summer on the range south of the Administration Building, which had been ploughed and seeded to clover the previous year.

The Station flock consists entirely of Barred Plymouth Rocks, there being on hand at the beginning of 1926, 182 pullets, 102 breeding hens, 6 old males and 12 young males. Pedigree breeding is of first importance and all hens are trap-nested, accurate records being kept of each individual. The selection of males, which were from hens having produced large-sized eggs, for the special pens, was continued this year, and has already shown an improvement in the average egg size of the entire flock.

RECORDS OF DIFFERENT SPECIAL MATINGS

Pen A

Hen No.	Egg-Record	Hen No.	Egg-Record
C.F. 173	249	G 18	286
C.F. 175	243	G 34	268
C.F. 179	223	G 91	221
C.E. 152	223	G 161	210
C.E. 155	200	F 1	230
C.E. 163	209	F 21	232
C.D. 175	205	F 25	218
C.D. 178	209	F 102	239

These 16 females which had an average egg record during their pullet year of 229 eggs each, and an average egg size of 25 ounces per dozen, were mated to a yearling male I 115, a son of a 234-egg hen. This male had been used the previous year in a special pen, which gave the highest per cent of fertile eggs, and the highest per cent of hatchability of any of the pens during the season.

Pen B

Hen No.	Egg-Record	Hen No.	Egg-Record
H 270	207	H 408	230
H 275	242	H 413	251
H 296	227	H 425	228
H 308	241	H 438	210
H 319	222	H 445	212
H 322	213	I 508	242
H 337	226	I 510	277
H 352	216	I 535	228
H 353	275	I 562	262

These 18 females had an average egg record during their pullet year of 233 eggs each, and were selected also for the average 25.5 ounces per dozen eggs that they produced. This pen was headed by a yearling male I 110, a full brother to the male in Pen A, and very good results were obtained from this mating.

Pen C

Hen No.	Egg-Record	Hen No.	Egg-Record
H 287	242	H 435	242
H 309	263	H 440	216
H 310	205	I 511	253
H 332	249	I 529	214
H 335	222	I 551	207
H 389	206	I 553	226
H 400	249	I 571	231
H 419	254	I 579	232

The average egg-record of the 16 females in this pen was 232 eggs each. They were mated to a young male J 1, son of a 251-egg hen, and a son of the yearling male I 115 which was used in Pen A for the season of 1926.

Pen D

Hen No.	Egg-Record	Hen No.	Egg-Record
H 307	236	H 404	207
H 313	239	H 493	220
H 336	213	I 501	217
H 342	246	I 531	211
H 345	240	I 545	216
H 349	206	I 570	198
H 351	223	I 576	212
H 376	244	I 586	200

The 16 females in this pen had an average record during their pullet year of 220 eggs each, and were mated to a young male J 2, a son of a 230-egg hen.

INCUBATION

The incubators were started early in March, and were continued until May 24, the 2,440-egg Buckeye and a 100-egg Buckeye being the only two machines used. The average fertility of the eggs for the season was 81.55 per cent; of the total eggs set 39.79 per cent hatched, while of the fertile eggs there was a 48.78 per cent hatch. Of the chicks hatched for this Station, 95 per cent were alive when wing-banded. In comparing hatching results for eggs set in different months, the months of March, April and May are being considered. The per cent fertility during March was 77.13 as compared with 82.29 per cent during April, and 86.58 per cent in May. Of the total eggs set during March, 26.49 per cent hatched, as compared with 41.35 per cent in April, and 57.72 per cent in May. Of the fertile eggs set during March, 34.35 per cent hatched as compared with 50.25 per cent in April and 66.66 per cent in May.

HATCHING RESULTS OF HENS VS. PULLETS

A comparison was also made in hatching results from hens and pullets during the hatching season. The hen eggs showed a fertility of 79.98 per cent; the fertility of the pullet eggs being 83.57 per cent. Of the total hen eggs set, 48.18 per cent hatched, whereas of the total pullet eggs set only 29.01 per cent hatched. Of the fertile hen eggs 60.24 per cent hatched as compared with 34.70 per cent in the case of pullets. It was also noted that heavier mortality was experienced among the chicks hatched from pullets than there was with those hatched from hens.

SALE OF DAY-OLD CHICKS

At this Station no hatching eggs have been sold, but instead a limited number of day-old chicks have been sold each year. As usual the demand was greatly in excess of the available supply and over 850 chicks were sold in small lots of 50 or less, to persons who were anxious to get some bred-to-lay stock to build up a flock of better producers.

COD-LIVER OIL FOR GROWING CHICKS

For the past two seasons, a commercial starting feed for chicks containing a percentage of cod-liver oil has been used for the first few weeks of the life of the chick, and has given good results. There was no evidence of weakness or rickets in any of the lots despite the fact that 1926 was an exceptionally hard spring on small chicks. After the chicks were five or six weeks old, they were gradually changed from the starting-feed, to a home-mixed ration with a small percentage of crude cod-liver oil added to it. It was noted that the addition of the small quantity of cod-liver oil had the effect of keeping them in good growing condition throughout the summer.

COST OF FEEDING GROWING CHICKENS

An accurate account was kept of all the feed required to grow chickens to six months of age, this being considered about the average time required to mature a pullet of the heavy breeds. The cost for feed alone amounted to an average of about 76 cents per bird. As a rule, the sale of the males will pay for the total cost of rearing the flock, thus allowing the pullets as a profit over cost for the summer.

COST OF FEEDING LAYING PULLETS

An average of 143 pullets were housed in the laying pens from November 1, 1925, to October 31, 1926. These pullets averaged during the 12 months, 166 eggs per bird. The average price of eggs for the year was 50 cents per dozen, and the average cost of feed per bird was $2.43, thus allowing an average profit over cost of feeding of $4.27 per bird. During the year 33 pullets made records of over 200 eggs each.

COST OF PRODUCING EGGS

The average per cent production from pullets during the four winter months (November 1, 1925, to February 28, 1926) was 42.07, with the average cost of 20.9 cents per dozen eggs. From hens, the average per cent production during the same period was only 11.53, with the average cost of 57.3 cents per dozen eggs.

The average per cent production from pullets during the 12 months (November 1, 1925, to October 31, 1926) was 45.23, with the average cost of 18.3 cents per dozen eggs. From hens during the same period, the average per cent production was 31.09, with the average cost of 34.2 cents per dozen eggs.

COMMERCIAL VS. HOME-MIXED FEEDS

In order to test whether a commercial ration would give better returns than a home-mixed ration, two pens of Barred Rock pullets were used as a comparison during four months (November 1, 1925, to February 28, 1926).

COMMERCIAL VS. HOME-MIXED FEEDS

—		Commercial	Home-Mixed
Total cost of feed for four months	$	41 77	32.35
Eggs laid during test	No.	2,157	2,281
Value of eggs produced	$	112 34	118.80
Profit over cost of feed	$	70 57	86.45
Average profit per bird	$	1 72	2.05

The pullets were of equal breeding, maturity and size, and received identical care, excepting that one pen was fed a commercial scratch grain and a commercial laying mash, while the other pen received a home-mixed scratch grain and a home-mixed laying mash.

WET AND DRY VS. DRY MASH

Two other pens of Barred Rocks of equal maturity were used for this test during the four months (November 1, 1925, to February 28, 1926). Both pens received the same kind of feed, but Pen 3 was also given a moist mash of the same meal mixture at noon each day.

WET AND DRY VS. DRY MASH

—		Wet and dry mash	Dry mash
Total cost of feed for four months	$	36 75	34 17
Eggs laid during test	No.	2,357	2,418
Value of eggs produced	$	122 76	125 94
Profit over cost of feed	$	86 01	91 77
Average profit per bird	$	1 75	1 83

It has generally been believed that a moist mash would increase the production, but such was not the case in this test.

USE OF ARTIFICIAL LIGHTS

It was found that by the use of artificial lights to make the hours of light equal those of darkness, that the egg-production was increased almost 20 per cent over those pens not receiving artificial light. This was especially noticeable during the early winter months when eggs were scarce and prices high. By using artificial lights in the morning, better results were noticed than when they were used in the evening. The birds being more interested in the search for food in the morning, would exercise more by artificial light, than was the case when they were expected to work later in the evening.

SALE OF BREEDING STOCK

In addition to the number of day-old chicks already mentioned as having been sold to farmers in the province, a large number of surplus hens were sold in small lots to farmers who desired the foundation of a pure-bred flock. Over 75 cockerels were also sold at reasonable prices to farmers and poultrymen of the province. A great improvement is being noted in the uniformity of type and increased production of the farm flocks throughout the districts where this bred-to-lay stock has been distributed during the past six years. Many of the farmers have pure-bred birds replacing the mixed breeds, and also a great deal more attention is being given to feeding, housing and more efficient care of the flock. The actual results of tests are bringing the farmers to realize more fully each year, the importance of securing good breeding stock.

TESTS IN CULLING

In order to know about how much information could be learned from observation of external appearances, such as handling qualities, pigmentation, fading out, etc., in the laying stock, a number of tests were made, afterwards checking up with the trap-nest records. This proved that these observations could be used to great advantage by those not in a position to trap-nest their flock, and who are anxious to be able to cull fairly accurately, the non-producers from the general flock. By the loss of pigmentation, colouring in the eye, beak, skin and legs alone, it was possible to pick out all birds that had produced the best during the winter months, and the same results were found to be true later in the year also. Several demonstrations of selection and culling were given during the year to farmers visiting the Station.

EGG-LAYING CONTEST

The fourth Quebec Western Contest which was commenced on November 1, 1925, was continued for 52 weeks and was completed on October 30, 1926. The contest contained 20 pens of 10 pullets in each, and the breeds entered were as follows:—

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. The total number of eggs produced during the contest was 32,221, with a total of 31,203 points.

The following will show the standing of the ten highest pens according to number of points, and the names of the owners of the pens:—

Pen 4—W.L.	W. M. Parsons, Barnston, P.Q.	2,080·3	points
Pen 15—B.R.	Mrs. Alex MacKay, Tomifobia, P.Q.	1,987·7	"
Pen 2—W.L.	Laurel Poultry Farm, Rougemont, P.Q.	1,934·2	"
Pen 1—W.L.	Circle Bar Farm, Calumet, P.Q.	1,872·3	"
Pen 10—W.W.	Bond Little, North Hatley, P.Q.	1,837·4	"
Pen 11—B.R.	Exp. Station, Lennoxville, P.Q.	1,835·4	"
Pen 5—W.L.	C. D. Calder, Cowansville, P.Q.	1,797·3	"
Pen 12—B.R.	Exp. Station, Lennoxville, P.Q.	1,723·7	"
Pen 8—W.W.	R. A. Robertson, Brigham, P.Q.	1,686·9	"
Pen 9—W.W.	Miss R. G. Knight, Beebe, P.Q.	1,642·1	"

Altogether 45 birds made individual records of over 200 eggs during the 52 weeks of the contest, but on account of the production of eggs that were not up to the requirements of Registration, a number could not be registered in the Canadian National Poultry Record Association. The following are a list of the owners of the birds that were registered, and are given according to their number of points scored during the contest:—

No. 152—B.R.	Mrs. Alex MacKay, Tomifobia, P.Q.	278·2	points
No. 22—W.L.	Laurel Poultry Farm, Rougemont, P.Q.	255·4	"
No. 160—B.R.	Mrs. Alex MacKay, Tomifobia, P.Q.	253·5	"
No. 58—W.L.	C. D. Calder, Cowansville, P.Q.	248·5	"
No. 131—B.R.	Exp. Station, Lennoxville, P.Q.	246·7	"
No. 102—W.W.	Bond Little, North Hatley, P.Q.	244·5	"
No. 13—W.L.	Circle Bar Farm, Calumet, P.Q.	243·7	"
No. 43—W.L.	W. M. Parsons, Barnston, P.Q.	237·3	"
No. 104—W.W.	Bond Little, North Hatley, P.Q.	237·0	"
No. 87—W.W.	R. A. Robertson, Brigham, P.Q.	235·4	"
No. 116—B.R.	Exp. Station, Lennoxville, P.Q.	235·0	"
No. 113—B.R.	Exp. Station, Lennoxville, P.Q.	231·1	"
No. 17—W.L.	Circle Bar Farm, Calumet, P.Q.	226·2	"
No. 135—B.R.	E. K. Laflamme, Ste. Germaine, P.Q.	226·1	"
No. 127—B.R.	Exp. Station, Lennoxville, P.Q.	215·2	"
No. 44—W.L.	W. M. Parsons, Barnston, P.Q.	213·4	"
No. 11—W.L.	Circle Bar Farm, Calumet, P.Q.	212·3	"
No. 157—B.R.	Mrs. Alex MacKay, Tomifobia, P.Q.	204·2	"

Of the registered birds three are second-generation birds.

COST OF FEEDING

The birds of the fourth Quebec Western Contest consumed during the 52 weeks, 8,492 pounds of scratch-grain, 8,665 pounds of meal mixture, 401 pounds of beef-meal and ground bone supplied in addition to the quantity in the meal mixture, 248 pounds of grit, 980 pounds of oyster-shell and 7,154 pounds of green feed. The average feed consumed per bird was 42.5 pounds of scratch-grain, 43.3 pounds of meal mixture, 2 pounds extra beef-meal or green bone, 1.2 pounds of grit, 4.9 pounds of oyster-shell, and 35.7 pounds of green feed. The total cost of this amounted to $468.01, or an average cost of $2.34 per bird for 52 weeks. The total eggs produced, when valued at the prevailing market prices, during the time at which they were produced, amounted in value to $1,266. Deducting the total cost of feed from the value of the eggs produced gave $797.99 or an average of $3.99 per bird gain over the cost of their feed. The pen making the most gain over cost of feed was the pen of White Leghorns owned by W. M. Parsons, Barnston, P.Q. These ten birds gave $58.78, or an average of $5.87 per bird gain over the cost of their feed. The following will give a summary of various data for the past four contests:—

COMPARISON OF FOUR ANNUAL CONTESTS

—		1st Contest	2nd Contest	3rd Contest	4th Contest
Total eggs produced	No.	29,143	29,769	35,015	32,221
Highest pen production	"	1,921	1,927	2,285	2,059
Breed of highest pen		White Wyandottes	White Leghorns	B.P. Rocks	White Leghorns
Highest individual production	No.	253	253	262	255
Breed of highest individual		White Wyandottes	White Leghorns	B.P. Rocks	B.P. Rocks
Average profit over cost of feed	$	3 03	2 85	4 30	3 99
Best pen profit per bird	$	5 12	4 53	6 54	5 87

The fifth Quebec Western Contest has been started on November 1, 1926, with ten pens of White Leghorns, five pens of White Wyandottes, three pens of Barred Plymouth Rocks, one pen of Rhode Island Reds, and one pen of Chanticlers.

INSPECTION AND REGISTRATION

During the year, each breeder of registered birds in this district, has been visited three times by the Poultryman, according to the Rules of Registration. Twelve breeders had 43 registered hens in the breeding work, from which 423 chicks were pedigreed, 115 of these being pullets that qualified to be banded with the Canadian National Poultry Record wing-label, and 76 of them are entered in egg-laying contests. The work of the owners was very encouraging, despite the rather adverse climatic conditions of the hatching season.

BEES

HONEY FLOW

The season of 1926 was as a whole somewhat unfavourable for bees. Owing to the very late spring, colonies could not be removed from the cellar until April 24, after which, owing to subsequent cool weather, spring-dwindling was unusually bad. Practically all of the colonies, excepting that on scales, had

to be fed during May in order to promote brood-rearing and get them into shape for the honey crop. By the end of June small gains were recorded and for the month of July the honey flow was about average. During August and September only a few small gains were recorded, and in each month the hive on scales showed a net loss. Following is a summary of the records taken in 1926, and an average for the past three years, from the colony kept on scales.

HONEY FLOW 1926, AND AVERAGE 1924 TO 1926

——	May	June	July	Aug.	Sept.	Total
	lb.	lb.	lb.	lb.	lb.	lb.
Total gain in 1926	0·50	11·00	100·25	5·75	3·25	120·75
Total loss in 1926	12·25	5·75	1·25	15·00	15·25	49·50
Net gain in 1926						71·25
Average total gain 1924 to 1926	2·67	32·08	110·58	11·08	7·41	163·82
Average total loss 1924 to 1926	9·46	6·42	6·17	11·50	12·16	45·71
Average net gain 1924 to 1926						118·11

In keeping records of the honey flow, it has been noted that only when conditions are favourable will bees work freely, and that even during the best seasons, there are many days in which no gains are made. Also, that under favourable conditions high gains are often recorded for a single day. Following is a statement showing the highest daily gain recorded at the Station in the months of May, June, July, August, and September, for the past three years, together with the number of days in which no gains were made for the same period.

The apiary in August. Note the strong productive colony with Jumbo brood-chamber at left of picture.

HIGHEST DAILY GAINS AND DAYS IN WHICH NO GAINS WERE MADE 1924 TO 1926

—	May	June	July	Aug.	Sept.
	lb.	lb.	lb.	lb.	lb.
Highest gain recorded in one day 1924	0·50	7·25	15·25	3·00	0·50
Highest gain recorded on one day 1925	1·25	8·00	12·00	2·25	0·50
Highest gain recorded in one day 1926	0·50	2·50	9·00	2·00	0·50
No. of days in which gain was made 1924	4	20	23	12	5
No. of days in which no gain was made 1924	27	10	8	19	25
No. of days in which gain was made 1925	9	16	22	14	9
No. of days in which no gain was made 1925	22	14	9	17	21
No. of days in which gain was made 1926	2	12	25	5	4
No. of days in which no gain was made 1926	29	18	6	26	26

SOURCES OF NECTAR.

Although clovers are the chief sources of nectar from which an actual surplus of honey is obtained, there are other sources which are of great importance in building up and maintaining colony strength. Following is a record of the duration of each source of nectar, toegther with a summary of meteorological records during each period:—

SOURCE AND DURATION OF HONEY FLOWS, 1926

Source	Begun	Ended	Duration	Means of extreme temperature		Total hours of sunshine	Precipitation
				Max.	Min.		
			days				
Willows	April 26	June 3	37	59·89	35·72	210·1	3·47
Dandelion	May 27	June 8	11	66·90	41·72	51·18	0·28
Fruit bloom	May 25	June 18	23	69·04	45·00	104·7	1·79
Clovers	June 23	Aug. 4	41	77·34	48·41	355·9	3·84
Raspberry	June 28	July 8	9	72·22	47·77	83·5	0·26
Basswood	Aug. 6	Aug. 14	7	79·42	55·85	32·5	1·80
Golden-rod	Aug. 9	Sept. 10	31	72·0	47·64	182·6	3·50

TYPES OF HIVES

During the season of 1925, good strong colonies with young Italian queens were established in two hives each of eight, ten, and twelve-frame Langstroth and ten-frame Jumbo hives. Late in the season of 1925 one of the colonies in a ten-frame Jumbo hive became queenless and was united with a comparatively weak colony in a ten-frame Langstroth. All of the other colonies in the experiment were placed in the cellar in good condition but, owing to the unfavourable winter one colony in an eight-frame hive died, and another in a twelve-frame hive was weak in the spring and was united with another colony. The remainder were up to average strength when placed outside in the spring of 1926.

Early in the season it was found that one eight-frame hive body was inadequate as a brood-chamber for a strong colony, and during most of the season two hive bodies were used as a brood-chamber for the eight-frame colony.

With this double brood-chamber, the colony did not evidence an inclination to swarm. The ten and twelve-frame colonies were Demmared to prevent swarming during June, and queen cells were destroyed in the Jumbo hive on three occasions. Following is a statement showing the results of the experiment:—

COMPARISON OF TYPES OF HIVES

Type of Hive	Number	Average number of frames covered by bees May 7	Average stimulative feeding of sugar in spring	Average net production of honey
			lb.	lb.
8 frame Langstroth	1	3	15·5	145·25
10 frame Langstroth	2	10	16·5	101·25
12 frame Langstroth	1	8·5	2·5	184·25
10 frame Jumbo	1	7	2·5	153·75

Although the results shown in the foregoing statement cannot be considered as conclusive, they indicate that in order to secure a full crop of honey, a large brood-chamber is a necessity. As may be noted the eight-frame colony began the season in a weak condition, yet by heavy stimulative feeding, and, as previously mentioned, the addition of an extra brood-chamber, it built up to good strength and gathered a good crop of honey. Colonies in the ten-frame Langstroth, although exceptionally strong early in the spring, gathered a comparatively light crop of honey. This was apparently due to the crowding of the brood-nest, early in the season, until actual preparations for swarming were detected. Such crowding interrupted egg-laying and delayed the building up of the colony, so that at the beginning of the clover honey flow, it was not at peak strength and could not gather as much nectar as the other colonies. With the larger brood-chambers of the twelve-frame Langstroth and ten-frame Jumbo hives, there was no early crowding and the colonies were exceptionally strong at the beginning of the clover honey flow.

WINTERING

Although comparatively mild, in that minimum temperatures were somewhat higher than are usually experienced during winter at this Station, the winter of 1925-26 was unfavourable for bees. The last cleansing flight occurred on November 22, and colonies were removed from the cellar on April 24. Difficulty was also experienced in maintaining a satisfactory temperature in the cellar, with the result that the consumption of stores was high and two colonies contracted dysentery. One of these was saved by a cleansing flight early in April, but the other succumbed to the disease. Out of eight colonies, in ten-framed hives placed in the cellar in good condition, with ample stores, in the fall of 1925, two were lost and two which were very weak had to be united.

Of four colonies which were wintered outside in a quadruple wintering case, constructed according to the specifications recommended by the Dominion Apiarist, three were quite strong at the first spring examination and one weak. The following statement shows the results obtained with the colonies in ten-frame Langstroth hives wintered in the cellar and in quadruple wintering case:—

COMPARISON OF OUTSIDE AND CELLAR WINTERING

Kind of wintering	Kind of hive	Food Chamber	Number of colonies	Average number of frames covered with bees on September 13	Average number of combs well covered with brood	Average number of combs well covered with bees at spring examination	Average number of combs well covered with brood at spring examination	Number of colonies that died during winter	Number of colonies that queenless at first examination	Number of colonies that had to be united	Average net honey produced	Natural swarm	Artificial swarm or nuclei
	Langs.												
Cellar	10 frs.	.....	8	11·5	6·125	4	1·75	2	1	1	14·75	.....	5
Outside	10 frs.	.....	2	12·5	6·0	4	2·5	.....	.....	.....	37·75	1	.....
Outside	10 frs.	*S S	2	14·0	6·5	8·5	2·0	.....	.....	.....	52·37	.....	1

*S S signifies shallow super used as food-chamber.

FALL FEEDING

Owing to the early cessation of honey flow in 1926, the colonies were light in the fall, and required heavy feeding to bring them up to the required weight for safe wintering. As usual sugar syrup, made up of two parts of sugar to one of water, was fed in honey-pails, with about 65 small holes punched in the cover. These were placed in an inverted position on the top-bars of the frames. In this manner an average of 19.75 pounds of sugar was fed to twenty colonies. The accompanying table shows the amount of sugar fed to colonies in four kinds of hives, their strength and the net gain due to feeding.

FALL FEEDING, 1926

Kind of hives	Number of colonies	Average number of frames covered by ball of bees at 32° F	Average weight of hive without cover before feeding	Amount fed	Average weight of hive without cover after feeding	Average gain during feeding
			lb.	lb.	lb.	lb.
8 fr. Langstroth	2	8·0	40·37	20·00	58·87	18·50
10 fr. Langstroth	6	8·5	44·20	18·70	62·12	17·92
10 fr. Jumbo	2	8·0	51·50	17·75	75·12	23·62
12 fr. Langstroth	2	9·0	44·50	26·12	68·12	23·62
10 fr. Langstroth *	4	8·0	46·00	24·81	70·06	24·06
10 fr. Langstroth * with shallow super	4	9·75	74·62	13·87	86·56	11·94

*For outside wintering.

YIELD AND INCREASE

From the thirteen colonies, spring count, that is after all weak and queenless colonies had been united, the net yield of extracted honey amounted to 732.75 pounds, or an average of 56.32 pounds per colony. The apiary was also increased to twenty colonies. These were all strong and in average condition at the last examination.

FIBRE PLANTS

HEMP

Experiments with hemp have been conducted at this Station for four consecutive seasons with very encouraging results. In general, the soil and climate at Lennoxville are apparently very suitable for the crop, as exceptionally large yields of good fibre have been obtained each year. From 1923 to 1925 considerable difficulty was experienced in retting the crop, as, in the cool weather during

September, retting was very slow, with the result that, when it was retted, much of the crop had to be handled under very disagreeable conditions in late October. During 1926, however, early fall weather was more favourable, and, where hemp was spread early in September, a satisfactory ret was obtained in about three weeks. It should be mentioned, however, that most of the hemp grown in 1926 had been sown thickly, and produced comparatively short slender stems, which, experience has shown, ret more easily and are generally more satisfactory to handle. Previous crops contained a high percentage of coarse heavy stems, which may partially account for the length of time required to secure a complete ret.

TEST OF VARIETIES.—In the years 1924 and 1925 two varieties of hemp were tested, Chington and Minnesota No. 8. Of these, Chington proved slightly superior. As seed of these varieties was not available in 1926, the experiment was conducted with three varieties which have not been tried previously in this district. Following is a statement of the results obtained:—

HEMP—TEST OF VARIETIES, 1926

Variety	Length of straw	Stage when cut	Yield per acre			Fibre and tow in retted straw	Quantity of fibre
			Retted straw	Fibre	Tow		
	ft. in.		tons lb.	lb.	lb.	p.c.	
Kentucky	6 0	In bud	3 1,440	1,440	485	25·9	Medium, strong
French	5 1	Dough	2 680	645	120	16·3	Medium, weak
Russian	3 4	Dough	.. 1,620	120	75	12·0	Medium, weak

The Russsian variety was very short and about one week earlier than French, which was about two weeks earlier than Kentucky. The crop, however, of the two early varieties was of inferior quality and contained a low percentage of fibre. Kentucky, on the other hand, was of splendid quality and the straw contained a high percentage of fibre and tow.

DIFFERENT DATES OF SEEDING.—In this project, seed of a suitable variety is sown at a standard rate per acre on three different dates; the first as early as the soil can be made ready and the other two at intervals of about two weeks.

HEMP, DIFFERENT DATES OF SEEDING—AVERAGE OF RESULTS, 1924 TO 1926

Time of seeding	Height	Stage when cut	Yield per acre		Fibre and tow in retted straw	Average quality of fibre
			Fibre	Tow		
	ft. in.		lb.	lb.	p.c.	
Late April or early May	10 ..	Bloom falling	1,262	872	17·1	Coarse to medium
Middle of May	8 7	Full bloom	1,012	617	18·5	Medium to fine
Late May or early June	8 4	In bud	1,072	680	16·9	Fine.

In 1924 and 1925 early seedings germinated poorly, with the result that the stand was thin and composed of very tall coarse stems. The late seeding germinated much better and made a very thick stand of fine stems, which contained a high percentage of fibre and tow, and consequently a heavier yield. In 1926, however, the rate of seeding was increased, and, although germination was poor with the early seeding, sufficient plants appeared to make a fair stand. The crop from this seeding reached the most desirable stage for fibre production and produced a much heavier yield than later seedings.

So far it would seem that the best quality and yield of fibre will be obtained from early seedings, providing additional seed is sown to counterbalance possible poor germination. Further reference to thick stands will be mentioned in the following project.

DIFFERENT RATES OF SEEDING.—For the past two seasons seed has been sown the same day each year on uniform soil, at the rate of forty, fifty, and sixty pounds per acre. Following are the average results obtained:—

HEMP, DIFFERENT RATES OF SEEDING—AVERAGE OF RESULTS, 1925 AND 1926

Rate of seeding per acre	Height		Yield per acre			Fibre and tow in retted straw	Average quality of fibre
			Retted straw	Fibre	Tow		
	ft.	in.	tons lb.	lb.	lb.	p.c.	
40 pounds	11	3	5 1,430	1,290	795	18·2	Coarse.
50 pounds	10	3	4 1,320	1,403	784	23·5	Medium to fine.
60 pounds	8	1	4 1,678	1,353	810	23·4	Fine.

In the season of 1925 the best results were obtained with a seeding of 60 pounds per acre, while in 1926 the heaviest yield of fibre and tow was secured from the 50-pound seeding. Accordingly, the results, as indicated in the foregoing table, show little difference between the two heavier seedings except that the height of the crop with a 60-pound seeding is much less. This is a decided advantage as the shorter straw is easier to handle and process. With the 40-pound seeding the crop grew very tall and coarse, producing straw which proved difficult to handle, retted slowly and contained a comparatively low percentage of fibre and tow.

CUTTING AT DIFFERENT STAGES.—For the past two years duplicate plots of hemp, sown on the same date, have been cut at three different stages; the first when the flower buds were formed but no bloom showing; the second when in full bloom, and the last when all bloom had fallen. So far it has been found that cutting when bloom has fallen is not practical in this district as the better varieties do not reach this stage until the latter part of September. At this time the weather is too cool for quick retting, and, for the past two years, the straw has been covered by snow in November, without retting sufficiently to produce an even grade of fibre. Cutting while the crop is in bud has also proven unsatisfactory for, although it may be spread early in the season when the weather for retting is quite satisfactory, the fibre is weak and the yield light. Cutting while in full bloom has given excellent results. At this stage the fibre is apparently at its best and, under normal conditions, the crop may be spread for retting sufficiently early in the season to secure a quick and uniform ret.

DRILLING VS. SOWING BROADCAST.—In this project conflicting results have been obtained. In the years 1924 and 1925 drilling gave decidedly the best results while in 1926 the heaviest yield and best fibre was obtained from sowing broadcast. This may be due largely to the excellent weather for germination in 1926, as the stand was quite thick on both drilled and broadcast plots. In 1924 and 1925, the seed sown broadcast did not germinate well, the stand being thin and uneven. Under average conditions, therefore, it would seem that drilling will give the best results.

SOIL SUITABILITY.—During the past two years hemp has been tried on all types of soil available at the Station. These have included sandy loam, muck, drained and undrained clay, and heavy river-valley soil of an alluvial nature. All types of soil received similar applications of commercial fertilizers, but the

sites being scattered over a fairly wide area, and the soil fertility probably varying to a considerable extent, little can be gained from an actual comparison of yields. It is quite significant, however, that good crops were obtained on all types of soil, and that apparently hemp can be grown satisfactorily, in this district at least, on practically any soil in a good state of fertility.

Cost of Production.—For the past two seasons a half acre of hemp has been grown, and a record kept of the cost of production and the returns obtained. The land used for this project in 1926 was a fairly heavy clay, of an alluvial nature, that had been in hay for five years. It was ploughed early in the fall of 1925, and given an application of twelve tons of barnyard manure per acre, which was worked into the soil with the disk harrow. As soon as the land could be worked in the spring of 1926, it was disk- and drag-harrowed, and 320 pounds per acre of commercial fertilizer, analyzing approximately 6 per cent nitrogen, 8 per cent phosphoric acid and 3 per cent potash, was applied. The seed was sown with an ordinary grain drill at the rate of 70 pounds per acre on May 21. Conditions for germination were favourable and a thick uniform stand was obtained. The crop grew to a height of approximately eight feet and was cut, while in full bloom, on September 17, with a mowing machine. Owing to the heavy crop, only half of the straw could be spread on the field where it was grown, the remainder being handed to another field for spreading. The weather for retting was quite favourable and a satisfactory ret was obtained by October 14, at which date the crop was lifted and housed. Following is a statement of the costs and returns on an acre basis.

Hemp, Cost and Returns per Acre, 1926

Cost

Rent of land	$ 4 83
Ploughing, fall, 8 hours at 50 cents per hour	4 00
12 tons manure at $1 per ton (one-half value)	6 00
Hauling and spreading manure, 10 hours at 50 cents per hour (one-half cost)	2 50
Commercial fertilizer, 320 pounds	6 08
Applying commercial fertilizer, one man, one hour at 30 cents per hour	0 30
Disking, 5 hours at 50 cents per hour	2 50
Harrowing, 2 hours at 50 cents per hour	1 00
Seed, 70 pounds at 12 cents per pound	8 40
Seeding, 1½ hours at 50 cents per hour	0 75
Harrowing, 2 hours at 50 cents per hour	1 00
Cutting with mowing machine, 4 hours at 50 cents per hour	2 00
Hauling one-half of crop to spreading field, team and extra man, 3 hours at 80 cents per hour	2 40
Spreading, 41 hours at 30 cents per hour	12 30
Turning, 7 hours at 30 cents per hour	2 10
Lifting and binding, 22 hours at 30 cents per hour	6 60
Hauling and storing, team and 2 extra men, 3 hours at $1.10 per hour	3 30
Breaking, 154 hours at 30 cents per hour	46 20
Scutching, 154 hours at 30 cents per hour	46 20
Breaking tow, 8 hours at 30 cents per hour	2 40
Targing tow, 14 hours at 30 cents per hour	4 20
Gasoline, 48 gallons at 30 cents per gallon	14 40
Oil, 1½ gallons at $1.25 per gallon	1 88
Use of machinery	4 00
Total	$ 185 34

Returns

Retted straw, 7,320 pounds	
Scutched fibre, 1,449 pounds at 12 cents per pound	$ 173 88
Targed tow, 492 pounds at 8 cents per pound	39 36
Total	213 24
Profit	27 90

Per cent fibre to retted straw, 19·79

Per cent fibre and tow to retted straw 23·15

Both the 1925 and 1926 crop of hemp was handled without suitable machinery which has added materially to the cost of production. In 1925, however, the fairly high price obtained for the fibre and two partially offset the disadvantage and a profit of $51.59 per acre was obtained. Prices obtained in 1926 were somewhat lower, but, even with this disadvantage, a small profit was realized.

FLAX

Conflicting results have been obtained from experiments with flax at this Station, and about the only information gained is that the crop is uncertain for the immediate district. In 1922 and 1923 the crop as a whole was fair, but in 1924 it was practically a failure. With the 1925 crop the yields were high but the quality of fibre poor, and in 1926 the yield was light and the quality very poor.

GENERAL NOTES

SHORT COURSE.—The Experimental Station co-operated with the Provincial Department of Agriculture, the Canadian Co-operative Wool Growers, Limited, Sherbrooke Agricultural Society, Lennoxville Farmers' Club, Sherbrooke Sheep Breeders' Association and Women's Institutes in putting on a three-day Short Course, the first week in January, for girls and boys. In the girls' classes there were twenty-seven who took part in the sewing, cooking, and judging competitions in charge of Miss H. McCain and Miss Adams, of Macdonald College. There were fifty-nine in the boys' classes, which were handled by Mr. E. S. Archibald and Mr. Ritchie, of the Experimental Farm, Ottawa; Dean Barton, Prof. R. Summerby, and Prof. L. G. Heimpel, Macdonald College; Mr. A. E. MacLaurin and Mr. R. M. Elliott, of the Live Stock Branch. Mr. E. L. Ingalls, State Club Leader, Burlington, Vt., and Dr. Lattimer gave very interesting lectures at the evening meetings. This course is creating a good deal of interest and doing much good in the district.

MEETINGS AND EXCURSIONS.—The sixth annual June Jersey Jubilee, which took the form of a basket-picnic, was held at the Station on June 17, at which were present Mr. E. S. Archibald, Director, Experimental Farm, Ottawa; Mr. Elmo Ashton, Jersey fieldman; Mr. Roy, of the Provincial Department of Agriculture; and also many Jersey enthusiasts.

On July 6, a very representative gathering of Ayrshire breeders and others interested in this breed of cattle assembled at the Station. The gathering was in the form of a picnic and for the purpose of organizing an Ayrshire Club for the district, which was done, with Mr. MacDougall and Mr. Belzile as joint secretaries.

The twelfth annual Farmers' Field Day was held on August 12, at which were present Dr. Grisdale, Deputy Minister of Agriculture; Mr. E. S. Archibald, Director, Experimental Farms, Ottawa; Mr. C. B. Howard, M.P.; Mr. L. C. Roy, and Mr. MacDougall, representing the Provincial Department, who addressed the assembly of 1,500 people.

On August 12, fifteen representatives of the Quebec Seed Board visited the Station to inspect the work being carried on at the Station for this Board, in testing out different varieties of oats, wheat, barley, peas, beans, corn, swedes and mangels, comprising 248 plots.

Mr. L. C. Roy, District Inspector of the agronomes of the Eastern Townships, assembled all the men of his district at the Lennoxville Experimental Station, on August 13 and 14, where they were given judging classes in the various lines of live stock, as preparatory work, as these men do much of the judging at the various county fairs throughout the district.

A meeting of fruit growers was held on September 8, at the orchard of Mr. Arthur Buzzell, Abbotsford, Que., under the auspices of the Experimental Station. The purpose of this gathering was to discuss, among other things, the experimental work in orchard fertilization which is being conducted by the experimental farms in co-operation with the fruit growers in that district. The meeting was addressed by Mr. W. T. Macoun and Mr. M. B. Davis, Horticultural Division, Ottawa; Prof. R. G. Bunting and Mr. W. E. Tawes, of Macdonald College; Mr. C. E. Petch, Entomological Branch; Mr. T. Wallace, Mr. L. Ashton, Experimental Station of Bristol University, England; and Mr. F. S. Browne, of this Station. The meeting was attended by about sixty fruit-growers and others.

Mr. MacWilliams, County Agent, St. Albans, Vermont, visited the Station with a party of thirty Vermont farmers on September 15. The visit of Mr. MacWilliam's party brings to our attention the value which is placed on the work of the Experimental Farms by agriculturists from the United States. Each year more interest is being taken in the work by visitors from the United States.

The Station was represented at the various live stock meetings as well as the Provincial Seed Board, Pomological meetings, and ploughmen's associations throughout the year.

EXHIBITIONS.—The poultry exhibit, in charge of Mr. Lang, was taken to the Sherbrooke Poultry Show, January 12, 13 and 14.

Exhibits representing the experimental farms were sent to several exhibitions and fairs during the months of August and September. The first fall fair attended was at Cookshire, August 17, 18 and 19. The Station exhibit was given a prominent space in the main building. The attendance at the fair was about 8,000. A good deal of interest was shown by the visiting farmers, many questions were asked, and considerable literature was distributed.

The same exhibit was sent to Ayer's Cliff the following week, August 24, 25 and 26, and was visited by even more people than at Cookshire. The attendance at the Ayer's Cliff fair was estimated at 13,000.

Sherbrooke exhibition, which is the largest in the province, was held August 28 to September 4. The Station exhibit occupied the space in the centre of the main building, where a permanent structure has been erected especially for this exhibit. Materials featuring several divisions of the farm work were displayed, as well as a display of flowers in the floriculture building. The attendants in charge distributed much information and answered many questions. This year's attendance was 67,500.

The Station exhibit was sent to Brome fair for three days, September 6, 7 and 8. This fair is the largest of the county fairs in the Townships. Being in the centre of an exceptionally good farming district, the exhibits were of a high standard and many farmers visited the fair. The total attendance was approximately 25,000.

Richmond fair was held September 16 to 18. Unfavourable weather during the three days of the fair lowered the attendance considerably. The Station exhibit proved a centre of attraction and a good deal of interest was shown.

An exhibit of dahlias was sent to the Lachine Dahlia Show on August 26.

The staff acted as judges in the different divisions, such as live stock, cereals, fruit, vegetables, flowers, and poultry, at various fall fairs throughout the district which the Station serves.