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Canada

DOMINION OF CANADA
DEPARTMENT OF AGRICULTURE
DOMINION EXPERIMENTAL FARMS

EXPERIMENTAL STATION

STE. ANNE DE LA POCATIERE, QUEBEC

REPORT OF THE SUPERINTENDENT

J. A. STE. MARIE, B.S.A.

FOR THE YEAR 1926

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

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DOMINION EXPERIMENTAL STATION,
STE. ANNE DE LA POCATIÈRE

REPORT OF THE SUPERINTENDENT, J. A. STE. MARIE

THE SEASON

The early winter of 1926 was comparable to that of the average, but the temperature in March and April was five and nine degrees lower than the average of fourteen years and this cool weather was accompanied with heavier than average precipitation of snow and rain. This resulted in a late spring. The first grain was sown on May 14. From that date, the weather remained good for a short period enabling the farmers having fall-ploughed land to do most of their seeding. June was quite dry and July was wet. The temperature improved slightly in the latter part of August and early September, but then became wet and cold again. On the whole, it was a poor year for hoed crops such as roots, potatoes, and corn. The hay crop was good but was harvested with difficulty. The grain crop was greatly affected by rust, and was harvested in poor condition.

1926—METEOROLOGICAL RECORDS

Months	Temperature (F.)								Precipitation (Inches)				Sunshine (hours)	
	Mean		Maximum 1926			Minimum 1926			Rain	Snow	Total Precipitation			
	1926	Average 14 years	Highest	Date	Mean maximum	Lowest	Date	Mean minimum	1926	1926	1926	Average 14 years	1926	Average 8 years
													hrs. m.	
January	11·56	10·30	38	8	19·06	−15	29	4·06	.....	18·0	1·80	2·31	86 15	96·87
February	10·03	11·88	34	25	18·71	−14	20	1·36	.....	19·25	1·92	2·67	95 50	115·59
March	18·59	23·36	41	22	28·06	−14	13	9·12	0·53	31·0	3·63	2·61	175 50	134·26
April	30·53	39·0	52	24	38·06	10	12–19	23·0	1·43	16·0	3·03	2·80	125 35	168·11
May	45·60	49·04	72	15–30	53·83	29	4	37·38	3·94	.....	3·94	3·10	156 15	216·79
June	59·29	58·71	80	25	49·73	38	4	68·83	1·93	.....	1·93	2·96	218 20	221·92
July	64·20	64·55	87	30	76·03	41	6	52·38	4·38	.....	4·38	3·12	248 25	245·06
August	62·02	61·39	86	1–3	73·12	37	18	51·13	2·11	.....	2·11	2·41	189 20	225·72
September	53·01	53·85	74	19	63·16	26	30	42·86	3·27	.....	3·27	3·31	91 25	166·10
October	43·44	44·45	80	5	52·63	26	1-19-30	34·25	1·91	.....	1·91	3·41	104 45	118·03
November	31·25	30·46	68	16	40·00	7	27	22·5	2·61	12·0	3·81	2·14	46 25	72·74
December	13·57	15·96	34	12	20·58	−10	4	6·77	.....	28·0	2·80	1·83	83 05	68·83
	36·93	38·57	87	.....	44·41	−15	.....	29·47	22·11	124·25	34·53	32·61	1621 30	1840·12

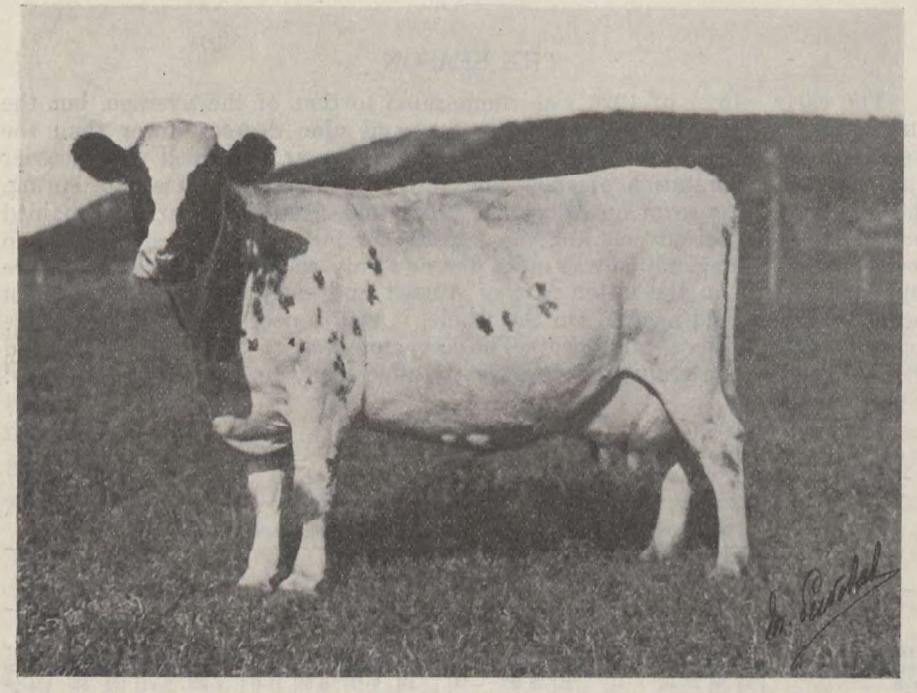
ANIMAL HUSBANDRY

DAIRY CATTLE

On December 31, 1926, the Ayrshire herd at this Station included two bulls, twenty-six cows, twenty-one two-year-old heifers, five yearling heifers, and fifteen male and female calves.

Of the twenty-six cows in the herd which have finished one or more lactation periods, twenty-two have officially qualified. Six heifers which dropped their first calves in the fall of 1925 and early in 1926 have qualified in the Record of Performance. "Ste. Anne Finette"-83980- led the latter group with 10,739 pounds of milk and 444 pounds of butter-fat.

The outstanding record completed in the herd during the year was that of "Briery Lass" -85707-. This record was completed on March 20, 1926, with 22,035 pounds of milk and 979 pounds of butter-fat. This was the world's record for butter-fat at that time but has since been surpassed. Her period of greatest production was from May 5 to June 5 when she produced 3,042 pounds of 4.2 per cent milk. The largest production for a single day was 110 pounds of milk. It is believed that this has not been equalled by any other cow in the Ayrshire breed in any one day.



Briery Lass 85707. Milk production, 22,035 pounds; butter fat production, 979 pounds.

"Briery Lass"—85707—Official Production Record for 1926

Month	Pounds milk	Pounds fat	Month	Pounds milk	Pounds fat
(1925)			September	1,812·1	87·52
			October	1,638·4	86·84
March	582·5	19·22	November	1,432·4	75·45
April	2,443·9	80·65	December	1,463·2	62·92
May	3,028·2	126·93	(1926)		
June	2,494·0	109·75	January	1,239·4	54·73
July	2,243·8	103·43	February	927·0	43·57
August	2,114·0	99·36	March	616·4	28·97

Production required for registration, 10,000 pounds milk, 380 fat.
Total production, 22,035 pounds milk, 979 fat.
Average percentage of fat, 4·44. Number of days in milk, 365.

The average yield of all mature cows that officially qualified during the year was 13,670 pounds of milk and 632 pounds of butter-fat, while that of the two-year-old heifers was 8,529 pounds of milk and 364 pounds of fat.

The two herd sires are Ottawa Supreme 2nd -89288- A.R. 11, Class A., while the other bull is "Ste. Anne Lord Kyle 12th" -97949- A.R. 165. The former bull is a son of Shewaltons Mains Supreme (imp) A.R. 16 Class A.A. and out of Auchlochan Emerald (imp) -70083-, a cow with two consecutive official records. Ste. Anne Lord Kyle 12th-97949- is out of Briery Lass and sired by Ottawa Lord Kyle -77049- A.R. 52 Class A., a Royal Winter Fair winner in 1922, and in turn sired by Overton Lord Kyle -70090- (Imp 18830) Class A, a grand Champion at the Canadian National Exhibition, Toronto.

A nice group of heifers was raised and a considerable number of bulls were sold for breeding purposes during the year.

EXTENDED PEDIGREE OF THE AYRSHIRE COW BRIERY LASS—85707

Date of Birth—May 10th, 1916.

Owned and developed by Director, Experimental Farms, Ste. Anne de la Pocatiere, Que. Bred by D. C. McIntyre, Newington, Ont.

IMPERIAL BEAUTY OF SPRINGBANK 41071—
Bred by A. S. Turner & Son, Ryckman's Corner, Ont. Owned by W. J. Steele, Newington, Ont.
Imperial Beauty has three tested daughters with five records; one at 2 years, two at 3 years, and two at mature age, averaging 12170 lbs. milk. 510 lbs. fat in 333 days at the average age of 4½ years.

MAPLEHURST LASS 23261
Born May 3rd, 1905.
Bred by Wm. McIntyre, Newington, Ont. Twenty years old in May, 1925, this grand old cow is still living and going strong, having dropped a healthy calf in September last. Neither she nor any of her other daughters have Records in the R. O. P., not for lack of ability so much as for lack of opportunity, for, as will be noted, there is excellent old time breeding back of this wonderful old cow.

NETHERTON KING THEODORE (IMP.) 35757
Imported by R. R. Ness, Howick, Que. Owned by A. S. Turner & Son, Ryckman's Corner, Ont.
An outstanding sire of producers as he has 21 R. O. P. daughters and 9 proven sons, 5 of these sons being fully qualified R. O. P. sires. His 21 R. O. P. daughters have a total of 28 records averaging 9782 lbs. milk, 397 lbs. fat in 333 days at 3 years. His 9 proven sons have 46 R. O. P. daughters with 55 records averaging 9267 lbs. milk and 395 lbs. fat in 326 days at an average age of under 3 years.

BRIERY 2ND OF SPRINGBANK 32137
Bred by A. S. Turner & Son, Ryckman's Corner, Ont.
R. O. P. Record at 2 years.
14131 lbs. milk, 520 lbs. fat in 365 days.
Formerly Canadian champion two year old heifer.

SIR GEORGE OF MAPLEGROVE 16391
Bred by David Leitch, Cornwall, Ont.

DAISY OF NEWINGTON 13978
Bred by W. D. McLeod, Kirkhill, Ont.

NETHERTON KING ARTHUR 7431
By the famous bull Bargenoch Durward Lely 5559.

WYLLIELAND TINA 4TH (APP. VOL. 31)
By a Burnhead bull. Burnhead breeding is prominent in early Ayrshire history in Scotland.

ST. PETER 23366
Two R. O. P. daughters, traces to such noted foundation animals as Sensation of Glenora, Royal Peter of Ste Annes, Dairy 1st of Auchenbrain, Craigs of Kyle of Drumjoan, etc.

BRIERY OF SPRINGBANK 29616
R. O. P. 10173 lbs. milk, 377 lbs. fat at 3 years in 325 days.
1 R. O. P. son.
3 R. O. P. daughters with 8 records averaging 9840 lbs. milk, 377 lbs. fat in 338 days at 3·75 years. Her sire, Hamilton Chief has 6 R. O. P. daughters with 7 records averaging 9396 lbs. milk, 377 lbs. fat in 306 days at 3 years.

ROSSLAND OF STE. ANNES 8901
1 R. O. P. daughter.
1 proven son.
Traces to Silver King (imp.)—5809—and Glencairn 3rd—6955—both noted breeding bulls in Canada.

LADY NELSON 8589
By Traveller of Parkhill. A Drummond bred bull.

SIR ANDREW 12151

KIRKHILL QUEEN 6391
By Duke of Parkhill—4666. A Drummond bred bull.

DAIRY HERD RECORDS

The accompanying table gives records of all cows and heifers which have finished their lactation period during the year 1926.

The feeds have been charged as follows:—

Pasture per month, per cow	$ 2 00
Meal mixture, per ton	40·00
Hay, per ton	7 72
Roots (cost figures)	2 74
Silage (cost figures)	3 12
Green feed (O.P.V. hay)	10 20

TABLE SHOWING THE AVERAGE HERD PRODUCTION SINCE 1921

Year	Number of cows	Average production of milk	Average production of butter
		lb.	lb.
1921	17	5,452	250·22
1922	9	5,251	238·00
1923	12	5,870	272·10
1924	19	7,868	344·56
1925	13	9,764	494·39
1926	20	10,072	527·00

47329—2½

Name of cow and number	Date of calving	Number of days in lactation period	Total pounds of milk for period	Daily average yield of milk	Average per cent fat in milk	Pounds of butter produced in period	Value of butter at 30 cents per pound	Value of skim-milk at 20 cents per 100 pounds	Total value of products	Amount of meal at $2 per 100 pounds	Amount of roots and silage at $3 per ton	Amount of green feed at $2.25 per ton	Amount of beet pulp at $38.80 per ton	Amount of hay at $7.72 per ton	Amount of oat hay at $10.20 per ton	Months of pasture at $2 per month	Total cost of feed for period	Cost to produce 100 pounds of milk	Cost to produce 1 pound of butter, skim-milk neglected	Profit on cow during period, labour and calf neglected
							$ cts.	$ cts.	$ cts.	lb.	lb.	lb.	lb.	lb.	lb.		$ cts.	c.	c.	$ cts.
Briery Lass—85707	Mar. 20, 1925	374	22,153	59·20	4·55	1,185·9	355 76	39 87	395 63	6,117	16,115	1,200	.....	2,660	120	4	166 92	75·3	14	228 70
Floss of Elmbrook—72578	eb. 22, 1925	365	12,938	35·17	4·95	754·5	226 35	23 21	249 56	3,449	10,008	600	.....	1,930	580	4	103 16	79·7	13·6	146 39
Lady Jane—63284	Mar. 26, 1925	326	14,042	43·07	·38	724·2	217 25	25 27	242 52	4,072	10,945	1,200	.....	1,770	580	4	117 18	83·4	14·8	125 34
Milkmaid—60341	Mar. 23, 1925	352	12,904	33·81	4·72	716·8	214 82	23 23	238 05	3,807	10,008	630	.....	1,840	700	4	110 62	85·7	15·4	127 33
Springburn Lovely Actress—63640	April 22, 1925	307	13,005	42·36	4·46	682·5	204 75	23 41	228 16	3,580	10,480	1,230	.....	1,810	650	4	107 19	82·4	15·6	120 97
Ravensdale Queen Bess—67093	Sept. 15, 1925	304	11,502	37·83	4·75	649·1	194 73	20 70	215 43	2,998	10,342	450	52	2,233	695	4	97 19	84·5	14·9	118 24
Beaver Meadow Beauty Six—74584	eb. 9, 1926	204	12,460	61·07	4·11	602·4	180 72	22 43	203 15	2,625	5,745	1,150	165	1,570	.....	3	77 85	62·4	12·9	125 30
Ste. Anne Finette—83980	Sept. 12, 1925	318	10,946	31·27	4·10	528	158 42	19 70	178 12	2,752	9,062	300	30	1,985	685	4	88 73	81·0	16·8	89 39
Fadette—73858	Nov. 5, 1925	286	9,555	33·40	4·41	496·6	149 74	17 20	166 94	2,374	8,247	410	35	1,902	450	4½	80 02	83·7	16·1	86 92
Lennoxville Mary 2—67720	Nov. 15, 1925	289	9,355	32·37	4·24	466·8	140 04	16 84	156 88	2,417	7,722	200	35	2,182	570	3	78 18	83·5	16·7	78 70
Springburn Lovely Star—75964	eb. 11, 1926	321	9,607	29·92	4·14	464·8	139 15	17 29	156 44	2,258	5,773	1,000	67	1,730	640	4	74 34	77·3	16	82 10
Mathilda de Ste. Anne 3—78891	July 20, 1925	284	6,495	22·86	5·56	425·2	127 56	11 69	139 25	1,576	6,580	600	.....	1,705	770	3	58 66	90·3	13·8	80 59
Ste. Anne Mignonne 4—83979	Nov. 12, 1925	293	7,955	27·15	4·44	417·8	125 34	14 31	139 65	1,948	6,580	630	.....	1,725	385	4	66 24	83·2	15·8	73 41
Ste. Anne Fadette 2—87702	Jan. 27, 1926	330	8,051	24·39	4·31	409	122 70	14 47	137 17	1,936	4,635	880	37	1,475	615	4	64 35	78·6	15·7	72 82
Alisette du Lac—48622	eb. 18, 1926	193	8,004	41·57	4·07	384·3	115 30	14 41	129 71	1,933	3,600	850	95	1,520	50	4	61 10	76·3	15·9	68 61
Palida de Ste. Anne—77863	Oct. 2, 1925	301	7,014	23·30	4·49	370·9	111 27	12 62	123 89	2,012	8,774	200	.....	1,956	770	4	73 13	$1·04	19·7	50 76
Ravanette du Lac—73342	Oct. 21, 1925	323	6,944	21·49	4·51	369·2	110 77	12 50	123 27	1,647	7,395	350	.....	1,840	650	4	62 89	90·5	17	60 38
Ste. Anne Lovely Star—86195	Jan. 24, 1926	299	7,370	24·64	4·17	362·2	108 67	13 27	121 94	1,880	3,985	980	30	1,415	655	4	62 21	84·4	17·1	59 73
Oakland de Ste. Anne 2—80550	Jan. 26, 1926	242	6,068	25·07	4·19	299·2	89 76	10 92	100 68	1,538	4,834	500	5	1,400	800	4½	57 56	94·8	19·2	43 02
Lawnsdale Daisy—83184	Jan. 24, 1926	249	5,074	20·37	4·03	241·1	72 32	9 13	81 45	1,219	4,190	675	.....	1,390	750	4½	50 03	98·6	20·7	31 42
Total	.....	5,960	201,442	.....	.....	10,550	3,165·42	362 47	3,527·89	52,138	155,020	14,035	552	36,038	11,115	79	1,655 59	.....	.....	1,872·30
Average for herd	.....	298	10,072	33·8	4·44	527·7	158 27	18 12	176 39	2,607	7,751	701	28	1,802	555	4	82 77	82·2	15·7	93·61
Average for the 5 best cows	.....	345	15,008	43·5	4·60	813	243 90	27 00	270 78	4,205	11,511	972	.....	2,002	526	4	121 01	80·6	14·8	149·77

Name and number of cows	Age at commencement of test	Number of days milking	Pounds of milk produced	Pounds of fat produced	Average per cent fat
Briery Lass—85707	8	365	22,035	979	4·44
Floss of Elmbrook—72578	4	365	12,938	604	4·67
Milkmaid—60341	8	352	12,904	602	4·67
Lady Jane—63284 (H.R.)	7	305	13,770	595	4·32
Springburn Lovely Actress—63540 (H.R.)	6	305	12,987	590	4·54
Ravensdale Queen Bess—67093 (H.R.)	6	305	11,502	560	4·87
Ste. Anne Finette—83980 (H.R.)	2	305	10,739	444	4·13
Fadette—73858 (H.R.)	5	286	9,555	432	4·52
Ste. Anne Mignonne—83979 (H.R.)	2	293	7,955	357	4·49
Ste. Anne Fadette 2nd—87702	2	330	8,051	348	4·32
Ste. Anne Lovely Star 2nd—86195 (H.R.)	2	299	7,370	309	4·19
Total	.....	3,510	129,806	5,820	.....
Average for 11 cows	.....	319·1	11,800	529	4·48
Average for mature cows	.....	.....	13,670	623	4·55
Average for two year old cows	.....	.....	8,529	364	4·27

As the reader will note, very good records were obtained from the mature and young cows. A record of Performance Certificate is one of the guarantees that most prospective purchasers of pure-bred animals are looking for and the breeders of pure-bred dairy cattle should seize every opportunity to officially qualify both their bulls and cows.

The records made at this Station were obtained under conditions that prevail on a great many of the farms in the province where pure-bred cattle are kept. At this Station, the pastures are a fair distance from the stable and are not very good. Owing also to the limited area of land, very little clover or alfalfa has to date been available.

COST OF FEED TO RAISE HEIFERS AND BULLS FROM BIRTH TO ONE YEAR OF AGE, AND HEIFERS FROM BIRTH TO FIRST CALVING

As information is often desired on the cost of raising heifers and bulls to one year of age and on the cost of raising a heifer from birth to the day of her first calf, specific records were kept of the feed consumed and of the gains made. The reader will readily understand that the cost will vary with the feed given and with the prices charged for these feeds. Nevertheless, the information in the following tables should be of interest.

COST OF FEED TO RAISE HEIFERS FROM BIRTH TO ONE YEAR OF AGE

Name of cows and numbers	Amount of whole milk at $1.50 per cwt.	Amount of skim milk at 20 cents per cwt.	Amount of hay at at $10 per ton	Amount of silage at $2.80 per ton	Amount of roots at $2.80 per ton	Amount of meal at 1·7 cents per pound	Amount of pasture at $1.50 per month	Total cost of feed
	lb.	lb.	lb.	lb.	lb.	lb.	lb.	$ cts.
Ste. A. Primerose 2—92071	364	2,665	718	520	.....	794	2⅓	32 11
Ste. A. Daisy 2—92070	228	2,718	788	720	.....	832	2⅓	31 45
Ste. A. Mary 3—86191	430	3,041	369	40	145	562	1⅔	26 18
Ste. A. Malonie 2—89284	507	1,776	889	1,430	1,279	639	.....	30 24
Ste. A. Frivole 2—86194	430	2,790	736	100	145	729	1⅓	30 44
Ste. A. Doreen 3—86192	400	2,430	705	100	145	812	1⅓	30 52
Ste. A. Flavia 3—86193	400	2,570	696	100	145	737	2⅓	30 99
Ste. A. Lovely Star 2—86195	410	2,560	783	100	145	814	2⅓	32 86
Ste. A. Fadette 2—87702	300	2,380	690	100	205	749	2⅓	29 87
Average	385·4	2,547·7	708·2	356·6	245·4	740·9	1·77	30 50

COST OF FEED FOR RAISING HEIFERS FROM BIRTH TO FIRST CALVING

Name of cows and numbers	Age at first calving	Amount of whole milk at $1.50 per cwt.	Amount of skim milk at 20 cents per cwt.	Amount of hay at at $10 per ton	Amount of silage at $2.80 per ton	Amount of roots at $2.80 per ton	Amount of meal at 1·7 cents per pound	Months on pasture at $1.50 per month	Total cost of feed
		lb.	lb.	lb.	lb.	lb.	lb.		$ cts.
Ste. A. Daisy 2—92070	26·5	228	2,718	3,088	5,320	1,195	1,723	7	73 21
Ste. A. Primerose 2—92071	27·0	364	2,665	2,988	5,250	1,140	1,608	7	72 47
Ste. A. Fadette 2—87702	27·0	300	2,380	2,905	5,330	1,644	1,156	6⅔	63 19
Ste. A. Doreen 3—86192	27⅔	400	2,430	2,658	5,520	1,584	1,217	6⅔	65 04
Ste. A. Lovely Star 2—86195	28·0	410	2,560	3,094	6,340	1,443	1,240	6⅔	68 72
Ste. A. Flavia 3—86193	28¼	400	2,570	3,173	5,990	1,549	1,215	6⅔	68 21
Ste. A. Frivole 2—86194	28½	430	2,790	2,985	5,760	1,564	1,134	6⅔	66 53
Ste. A. Malonie 2—89284	30·0	299	1,776	3,025	7,330	1,329	1,123	8	66 36
Ste. A. Mary 3—86191	34⅔	430	3,091	3,570	8,010	1,464	1,108	7⅓	73 21
Average	28·6	362·4	2,533·3	3,054	6,094·4	1,434·7	1,280·4	7	68 57

COST OF FEED TO RAISE CALVES (MALE) FROM BIRTH TO ONE YEAR OF AGE

Name of bulls and numbers	Amount of whole milk at $1.50 per cwt.	Amount of skim milk at 20 cents per cwt.	Amount of hay at $10 per ton	Amount of silage at $2.80 per ton	Amount of roots at $2.80 per ton	Amount of meal at $·017 per pound	Total cost of feed
	lb.	lb.	lb.	lb.	lb.	lb.	$ cts.
Ste. Anne Lord Kyle 12th—97949	610	3,545	919	1,060	.....	1,046	40 09
Ste. Anne Chieftain 2nd—103409	507	2,923	1,402	320	.....	1,019	38 24
Ste. Anne Lord Kyle 17th—102511	380	2,590	1,496	90	330	1,143	38 38
Ste. Anne Lord Kyle 19th—105300	645	2,337	1,480	100	850	1,105	41 85
Average	535·5	2,848·7	1,324·2	392·2	590	1,073·2	39 64

EXPERIMENTAL FEEDING

Since 1923 experimental feeding has been carried on to determine the most desirable succulent or other roughage crop to grow for dairy cows in this district. This year, to corn silage, oat and pea hay, and roots has been added sunflower silage. As the number of cows available at the time the experiment was started, and also the amount of silage on hand was limited, a slight deviation in the method of carrying on the experiment had to be made to which the reader's attention is called.

For the purpose of these experiments, twelve cows were fed during a period of three weeks using one of the mentioned feeds as the basic roughage ration; corn silage was used as check ration, the other feeds all being compared with it. As will be noted, the first, second and fifth period are used for averages for the reasons stated.

Period one: The cows were fed a ration of corn silage, hay, and meal.

Period two: Corn silage was replaced by sunflower silage.

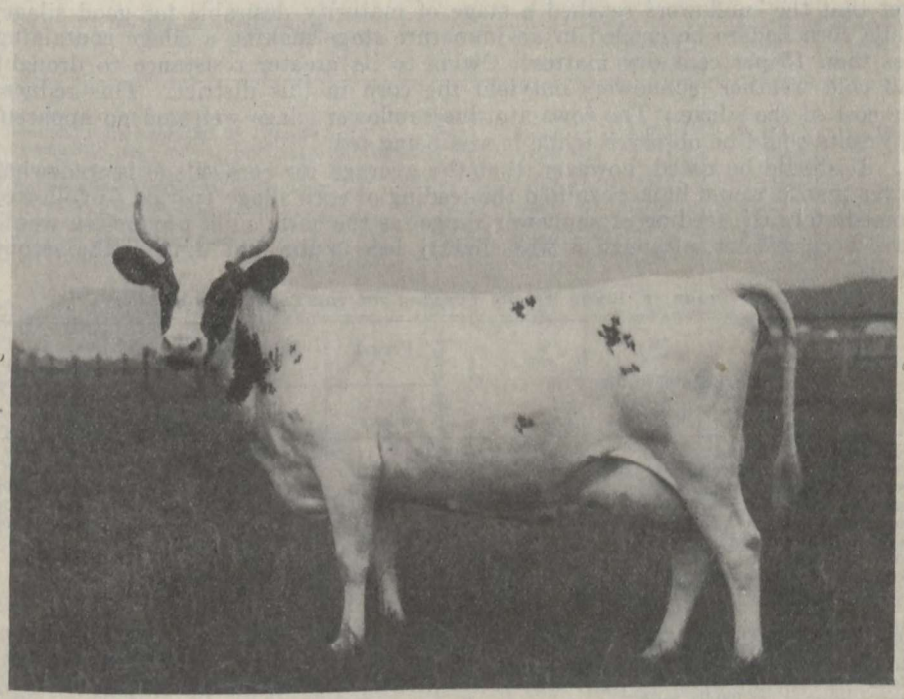
Period three: The silage was replaced by roots, (swede turnips).
Period four: The silage was replaced by oat and pea hay.
Period five: Same as period one.

The meal mixture fed was charged at the market price and was composed of the following parts:—

Bran	200 lb.	at $1.52	per cwt.
Barley meal	200 "	2.15	"
Oat chop	300 "	2.20	"
Corn meal	200 "	2.25	"
Distillers grain	200 "	1.52	"
Oilcake	100 "	2.52	"
Average cost of meal mixture		40.00	per ton

The other feeds fed were charged the cost of production price for that year and are as follows:—

Hay (mixed hay)	$ 7 72	per ton
Oat and pea hay	10 20	"
Corn silage	3 43	"
Sunflower silage	2 81	"
Roots (swede turnips)	2 60	"



No. 78274—Primrose. Pounds of milk produced, 17,406; pounds of butter fat produced, 746.

CORN VS. SUNFLOWER SILAGE

Experimental feedings		Period 1	Period 2	Period 5	Average of periods 1 and 5
		Corn silage	Sunflower silage	Corn silage	
Number of cows in test	No.	11	11	11	11
Pounds of milk produced by 11 cows	lb.	5,632	5,688	4,754	5,198
Average milk per cow per day	"	36·5	36·9	30·9	33·7
Average per cent fat in milk	%	4·24	4·03	4·12	4·18
Total pounds fat produced by 11 cows	%	239·2	229·3	196·9	218·1
Total meal consumed	lb.	1,421	1,399	1,266	1,343
Total hay consumed	"	1,680	1,652	1,512	1,586
Total silage consumed	"	5,190	5,096	3,850	4,520
Findings from experiment:—					
Silage consumed per 100 lb. milk	lb.	92	90	81	86
Silage consumed per 100 lb. fat	"	2,170	2,222	1,955	2,062
Hay consumed per 100 lb. milk	"	30	29	32	31
Hay consumed per 100 lb. fat	"	702	720	798	750
Cost of meal fed at $40 per ton	$	28·42	27·95	25·32	26·87
Value of silage fed at $3.43 and $2.81 per ton	$	8·87	7·13	5·96	7·42
Value of hay fed at $7.72 per ton	$	6·48	6·37	7·71	7·09
Total cost of feed	$	43·77	41·48	38·99	41·38
Feed cost to produce 100 lb. milk	$	0·78	0·74	0·82	0·80
Feed cost to produce 100 lb. fat	$	18·30	18·09	19·80	19·05

From the table, which reports the first experiment at this station with straight sunflower silage, it will be noted that milk and butter-fat were with sunflower silage produced 6 cents and 96 cents cheaper per hundredweight respectively than with corn silage. This may be partly explained through the fact that the sunflowers reached a stage of maturity desirable for good silage, while corn had to be ensiled in an immature stage making a silage containing less than 15 per cent dry matter. Owing to its greater resistance to drought and cold weather, sunflowers outyield the corn in this district. This reduces the cost of the silage. The cows ate this sunflower silage well and no apparent ill results could be observed while it was being fed.

It should be noted, however, that the average for corn silage is somewhat lower than it would have been had the feeding of corn silage (period 5) followed immediately the feeding of sunflower silage, as the cows' milk production would have been greater, although it was slightly less in the first than in the second period.

CORN SILAGE VS. ROOTS (SWEDE TURNIPS) FOR THE PRODUCTION OF MILK

Experimental feeding		Period 1	Period 3	Period 5	Average of periods 1 and 5
		Corn silage	Roots	Corn silage	
Number of cows in test	No.	11	11	11	11
Pounds of milk produced by 11 cows	lb.	5,632	5,448	4,754	5,198
Average milk per cow per day	"	36·5	35·4	30·9	33·7
Average percent fat in milk	%	4·24	4·02	4·12	4·18
Total pounds fat produced by 11 cows	lb.	239·2	219·1	196·9	218·1
Total meal consumed	"	1,421	1,302	1,266	1,343
Total hay consumed	"	1,680	1,624	1,512	1,586
Total silage consumed	"	5,190	.....	3,850	4,520
Total roots (Swede turnips), consumed	"	.....	5,698	.....	.....
Silage consumed per 100 lb. milk	lb.	92	.....	81	86
Silage consumed per 100 lb. fat	"	2,170	.....	1,955	2,062
Roots consumed per 100 lb. milk	"	.....	104	.....	.....
Roots consumed per 100 lb. fat	"	.....	2,600	.....	.....
Hay consumed per 100 lb. milk	"	30	29	32	31
Hay consumed per 100 lb. fat	"	702	741	798	750
Cost of meal fed at $40 per ton	$	28·42	26·04	25·32	26·87
Value of silage fed at $3.45 and $2.81 per ton	$	8·87	.....	5·96	7·42
Value of roots fed at $2,60 per ton	$	.....	7·40	.....	.....
Value of hay fed at $7.72 per ton	$	6·48	6·26	7·71	7·09
Total cost of feed	$	43·77	39·70	38·99	41·38
Total cost to produce 100 lb. milk	$	0·78	0·73	0·82	0·80
Feed cost to produce 100 lb. fat	$	18·30	18·12	19·80	19·05

In the preceding table, the reader will note that the feed cost of milk per hundredweight was 80 cents when produced with silage and 73 cents with roots. It cost $19.05 to produce 100 pounds of butter-fat with silage against $18.12 when roots were fed.

Here again, the reader's attention is called to the fact that the cost of production when roots were fed is compared with the average cost of period one and five. As the cow's lactation period advanced less milk was obtained in the fifth period, but it should also be noted that less meal and other feeds were fed and this does not, if the milk and butter-fat production of the first period is studied, alter very much the ultimate findings.

As mentioned in previous reports, the object of these experiments is to endeavour to find out what succulent crop can be grown and fed with advantage by the farmers of this district and these results obtained in favour of roots can only be explained by the low dry-matter content of the silage, (a condition which practically always prevails in this district), plus a relatively high cost of production for the silage in comparison with roots for the same year.

As reported 2,062 pounds of silage, 750 pounds of hay and 621 pounds of meal were replaced by 2,600 pounds of roots, 741 pounds of hay and 594 pounds of meal for the production of 100 pounds of butter-fat. In other words, milk or butter-fat was produced at a slightly less cost when roots were fed.

CORN SILAGE VS. OAT AND PEA HAY FOR THE PRODUCTION OF MILK

Experimental feeding		Period 1	Period 4	Period 5	Average of periods 1 and 5
		Corn silage	Pea and oat hay	Corn silage	
Number of cows in test	No.	11	11	11	11
Pounds of milk produced by 11 cows	lb.	5,632	4,915	4,754	5,198
Average milk per cow per day	"	36·5	31·9	30·9	33·7
Average percent fat in milk	"	4·24	4·07	4·12	4·18
Total pounds fat produced by 11 cows	"	239·2	200·1	196·9	218·1
Total meal consumed	"	1,421	1,202	1,266	1,343
Total hay consumed	"	1,680	1,756	1,512	1,486
Total corn silage consumed	"	5,190	.....	3,850	5,420
Total O.P.V. consumed	"	.....	1,650	.....	.....
Findings from experiment:—					
Silage consumed per 100 lb. milk	lb.	92	.....	81	86
Silage consumed per 100 lb. fat	"	2,170	.....	1,955	2,062
Hay consumed per 100 lb. milk	"	30	36	32	31
Hay consumed per 100 lb. fat	"	702	877	798	750
O.P.V. consumed per 100 lb. milk	"	.....	33	.....	.....
O.P.V. consumed per 100 lb. fat	"	.....	824	.....	.....
Cost of meal fed at $40 per ton	"	28·42	24·04	25·32	26·87
Value of silage fed at $3.43 and $2.81 per ton	$	8·87	.....	5·96	7·42
Value of O.P.V. at $10.20 per ton	$	.....	8·41	.....	.....
Value of hay fed at $7.72 per ton	$	6·48	6·77	7·71	7·09
Total cost of feed	$	43·77	39·22	38·99	41·38
Feed cost to produce 100 lb. milk	$	0·78	0·80	0·82	0·80
Feed cost to produce 100 lb. fat	$	18·30	19·60	19·80	19·05

In studying the preceding table, it will be noted that when oat and pea hay was fed it cost 80 cents to produce 100 pounds of milk and $19.60 for one hundred pounds of butter-fat, against 80 cents and $19.05 when silage was fed. In the comparative experiment carried with silage and roots, it was stated that the quality of silage generally made in this district is immature and low in dry matter, but in justice to the oat and pea hay, it must be stated that the hay fed in this experiment contained but a low percentage of peas, and owing to rainy weather at cutting time, was not overly palatable.

However, it will be remarked that 2,062 pounds of silage, 750 pounds of hay and 621 pounds of meal were replaced by 824 pounds of oat and pea hay, 877

pounds of mixed timothy and clover hay and 597 pounds of meal. Even if oat and pea hay costs slightly more some years, where there is no silo or root-cellar on the farm, the oat and pea hay is and should be when used with clover and alfalfa hay, one of the means of supplying a palatable and nutritious feed in the rations of dairy cows.

FOUR YEARS' TRIAL IN THE COST OF PRODUCING MILK WITH SILAGE, ROOTS, AND OAT AND PEA HAY

Year	Cost of producing 100 pounds of milk		
	Silage	Roots	Oat and pea hay
	$ cts.	$ cts.	$ cts.
1923	1·35½	1·37	1·27
1924	1·43	1·42	1·35
1925	1·16½	1·14	1·05
1926	0·80	0·73	0·80
Total	4·75	4·66	4·47
Average	1·18¾	1·16½	1·11¾

In studying the summary table the reader should not lay too much emphasis on the cost per hundredweight of milk produced as the cost for the year and period during which these experiments are carried on will vary with the prices set for the feed consumed and the stage of the lactation of the cows used for these trials. The point to keep in mind, as far as this district is concerned, is the relative cost of 100 pounds of milk.

The experiments have been repeated for four years and these would indicate that unless a silage can be produced which contains above 15 per cent of dry matter per ton (which means that it should contain plenty of ears in the milk stage if it is made with corn), roots will give equally as good results, if the cost per ton is not prohibitive. The summary table would also indicate that silage of medium quality or roots could be replaced by oat and pea hay for the production of milk in winter if such hay is of good quality.

SWINE

On December 31, 1926, the herd of Yorkshire swine kept for breeding purpose consisted of thirty-three head and included: one boar, three sows two years old, four sows one year old, and three sows eight months old. In addition there were eighteen young pigs for fattening.

The past year was not as favourable for the swine-breeder as was 1925. The demand for breeding stock was about the same, but the price obtained for dressed pork was lower. The average price of dressed pork sold at this Station in 1925 was 15.5, while it was 13 cents for 1926.

The total number of pigs farrowed by ten sows was 114, of which 86 were raised, or 75.4 per cent of those farrowed.

Of that number, 27 were sold for breeding purpose, 13 for pork production at 6 to 8 weeks old, and 46 were fattened and sold for pork.

COST OF FEED FOR KEEPING 10 BROOD SOWS FOR ONE YEAR

Number of sows		10
Feed consumed:—		
1,890 lb. of bran at $28.80 per ton	$ 27 22	
12,485 lb. of shorts at $30 per ton	187 27	
1,919 lb. of ground oat at $39.20 per ton	37 61	
1,073 lb. of barley meal at $43.20 per ton	23 18	
543 lb. of corn meal at $45 per ton	12 22	
2,385 lb. of middlings at $36.25 per ton	43 23	
300 lb. of screenings at $33 per ton	4 95	
15,385 lb. of skim-milk at 20 per cent	30 77	
3,249 lb. of clover hay at $7.70 per ton	12 51	
6,280 lb. of turnip at $2 per ton	6 28	
Total of feed cost		$ 385 24
Average cost of feed per sow		38 52

FEED COST OF RAISING PIGS TO SIX WEEKS OF AGE

Number of sows	10
Number of pigs born	114
Number of pigs raised	86
Average cost of feed for 10 sows	$ 385 24
12 boar services at $1	12 00
Total feed cost of 86 pigs at six weeks of age	397 24
Average cost of one pig at six weeks of age	4 62

As indicated in the preceding statement, the average cost of keeping a sow for the year 1926 was $38.52 and the cost of raising pigs to six weeks of age $4.62.

This is a fairly high cost, but it should be stated that no good pasture was available, therefore, more grain was fed than if the brood sows had been kept on a good pasture for a few months. The grain fed was much higher in price in 1926 than in previous years, hence the high cost.

FEED COST TO PRODUCE ONE POUND OF PORK

Number of pigs fed		46
Cost of 46 pigs at $4.62 at six weeks of age		$ 212 52
Feed consumed:—		
6,463 lb. corn meal at $45 per ton	$ 145 42	
6,752·8 lb. barley meal at $43.20 per ton	145 86	
5,547·6 lb. shorts at $30 per ton	83 21	
2,681·8 lb. ground oats at $39.20 per ton	52 56	
6,453·8 lb. middlings at $36.25 per ton	116 97	
11,500 lb. milk at 20 per cent	23 00	
Total cost of feed		$ 567 02
Total		779 54
Pounds of dressed pork produced by 46 pigs		8,203·3
Total cost of feed to produce 1 pound of dressed pork		9½ cents

MINERALS VS. IODINE FOR BREEDING SOWS

—		Mineral	Check	Iodine
Number of sows	No.	2	2	2
Number of pigs born	"	23	15	24
Number of pigs raised	"	17	9	22
Average weight of pigs at birth	lb.	2·95	2·73	2·71
Average weight of pigs at weaning time	"	22·7	22·0	22·9
Condition of pigs at birth	"	Good	Weak	Very good

The mineral mixture was composed of 2 parts bone phosphate, 1 part charcoal, 1 part finely ground limestone, and ¼ part of salt. This was fed at the rate of 2½ per cent of the meal ration.

Potassium iodide was mixed in water at the rate of one ounce of the iodide to one gallon of water and fed at the rate of one tablespoonful of this mixture per head per day.

The meal mixture was composed of 1 part ground oat, 1 part barley meal, 2 parts shorts and ¼ part of bran.

As reported in the table, there is a great variation in the number of pigs raised by each group of sows. The two sows that received the mineral mixture in their ration gave birth to 23 pigs, two of these pigs died at birth and four others were crushed to death by the sow. The balance of the pigs did well and were vigorous and fairly uniform.

The two sows used as check were fed the same ration as the others, but did not receive any mineral supplement. They gave birth to fifteen pigs. These two litters were born quite weak. Four of the pigs died within one day after birth and two others after two days. What was left of the litters did fairly well.

The two sows receiving potassium iodine gave girth to 24 pigs of which 22 were raised. Two pigs were small at birth and later died. The others were vigorous and very uniform.

ONE VS. TWO LITTERS A YEAR

The ten breeding sows were used for this experiment. Two litters were farrowed by two of them. The average was taken for the other eight sows for purpose of comparison.

—		One litter	Two litters
Number of sows	No.	8	2
Number of pigs in litters, gross	"	76	38
Number of pigs in litter, average	"	9·5	9·5
Number of pigs raised	"	57	29
Per cent raised	%	75	76·3
Feed consumed:—			
Bran	lb.	1,476	414
Shorts	"	9,979	2,506
Ground oat	"	1,341	578
Barley meal	"	632	441
Corn meal	"	400	143
Middlings	"	1,418	967
Screenings	"	240	60
Skim-milk	"	11,195	4,190
Clover hay	"	2,835	414
Roots (turnips)	"	5,138	1,142
Total cost	$	286 86	97 05
Findings from experiment:—			
Average cost of feed per sow	$	35 86	48 52
Average feed cost of one pig at 6 weeks	$	5 03	3 35
Value at 6 weeks	$	6 00	6 00
Profit over feed	$	0 97	2 65
Profit from litters	$	55 29	76 95

As shown in the table, the profit from sows giving two litters per year is much greater and this practice is certainly good inasmuch as the breeder will give special care to the fall litters and also to the breeding sows, which must be kept in good condition. It should also be noted that the litters born in August or early September can be weaned before the cold weather arrives. It is an important point to keep in mind when producing pork in the winter.

SHEEP

The flock of pure-bred Leicester sheep kept at this Station has done well during the year. Much improvement in type and quality has been obtained since 1924 through the introduction and exchange with the Central Experimental Farm of imported rams of distinct quality.

The first imported ram "Culloden Demonstrator" -19145- (6171) was obtained in the fall of 1923. After having used this ram for two years, he was exchanged in 1925 for the ram "Border Standard" -19146- (6172) which had been used at the Central Experimental Farm at Ottawa for two years. A large percentage of the ewes now in the flock are from these two imported rams.

The flock, on December 31, was composed of 43 head. Of that number 15 ewes were crossed with a Shropshire ram for the production of market lambs.

The remaining 16 ewes were bred to the imported Leicester ram and from these 20 lambs were born of which 18 were raised.

CROSS-BRED VS PURE-BRED LAMBS FOR THE MARKET

For this experiment, the progeny of ten Leicester ewes bred to a Shropshire ram are compared with the progeny of ten Leicester ewes bred to a pure-bred Leicester ram.

The results obtained follows:—

—		Cross-bred	Pure-bred
Number of ewes		10	10
Number of lambs raised		11	12
Average weight at birth	lb.	8·4	8·5
Average weight at six months	"	76·8	77·6
Average gain per lamb	"	68·4	69·1

It will be observed that the number of lambs raised, the average initial weight and the gains of the lambs during their growing period were quite uniform. However, the cross-bred lambs, as would be expected from their breeding, had a low-set blocky appearance which made them more attractive to the drovers.

COST OF FEED FOR THE BREEDING FLOCK

25,686 lb. of hay at $7.70 per ton	$	98 89
3,980 lb. of oats at $1.75 per cwt		69 65
3,980 lb. of bran at $28.80 per ton		57 31
5 months pasture, 42 head at 20 cents per month, per head		42 00
Total cost	$	267 85
Average cost per head		6 38

As it will be noted, the cost of feed per head for the flock kept at this Station is fairly high. This is explained through the very poor and limited pasture that is available for the sheep. More grain was fed than would otherwise have been the case if reasonably good pastures had been available.

HORSES

There were 21 pure-bred Percheron horses and 1 pure-bred French-Canadian horse in the stable on December 31, 1926, these including 10 aged mares, 3 three-year-olds, 1 yearling female, 1 yearling gelding, 1 yearling male, 4 female colts, and one driver.

Cost of Feed to Raise Spring Colts from Birth to One Year Old

Number of colts		3
Average weight at birth	lb.	160
Average weight at six months	"	622
Average weight at one year	"	834
Feed consumed by 3 mares for 128 days—		
1,260 lb. of hay at $8.50 per ton	$	5 35
1,082 lb. of oats at $1.75 per cwt		18 93
168 lb. of bran at $28.80 per ton		2 42
Pasture, 9 months, 15 days, at $2 per month		19 00
Total cost of feed for 3 mares	$	45 70
Feed for 3 colts for the year—		
3,800 lb. of hay at $8.50 per ton	$	16 15
2,240 lb. of oats at $1.75 per cwt		39 20
785 lb. of bran at $28.80 per ton		11 30
Total cost	$	66 65
Total feed cost chargeable to colts	$	112 35
Average cost of feed per colt		37 45
Loss of 128 days of work for the mares (3 hours a day at 10 cents)		38 40
Average cost of colt at one year		75 85

Cost of Feed to Raise a Fall Colt from Birth to One Year Old

Number of colts		1
Weight at birth	lb.	110
Weight at six months	"	600
Weight at one year	"	875
Feed for dam for 159 days—		
2,350 lb. of hay at $8.50 per ton	$	9 99
1,954 lb. of oats at $1.75 per cwt		34 19
316 lb. of bran at $28.80 per ton		4 55
Total cost of feed for dam	$	48 73
Feed for colt—		
6 months pasture at $2 per month		12 00
Total cost chargeable to colt		60 73

In studying these tables with reference to spring versus fall-foaled colts, it should be noted that in estimating the cost of feed in raising these colts the cost of feeding the mares and colts is taken from the day the colts are born, the mares have only a slight amount of feed charged against them as they are on pasture most of the time whereas the fall-foaled colt is nursed in the winter and the nursing mare has practically her whole winter's feed charged against the colt. On the other hand, it should not be forgotten that the mare giving birth to a spring colt has to be fed equally well in the winter. By foaling colts in the fall, the nursing mares on most farms can be exempted from work during the period they are nursing and are then available for spring and summer work on the farm after the foals are weaned. Whereas the mares giving birth and nursing colts in spring and summer can be used only for light or part time work if good results are to be expected. Therefore a certain charge should be made against the colt. Hence as far as cost is concerned, it is very much a matter of local adjustment as there are advantages and disadvantages for both seasons. The main point to keep in mind is that more colts should be raised.

Cost of Horse Labour

Number of horses from 4 to 8 years of age		7
Average weight	lb.	1,712·1
Feed consumed—		
32,200 lb. of hay at $8.50 per ton	$	136 85
33,280 lb. of oats at $1.75 per cwt		582 40
5,040 lb. of bran at $28.80 per ton		72 57
Total cost of feed	$	791 82
Hours of work		13,239
Feed cost of work per hour		0·0598
Average feed cost of work per hour for a period of five years—		
1926	$	0·0598
1925		0·08
1924		0·067
1923		0·055
1922		0·065
Average	$	0·065

In noting the labour, feed, cost per hour of a work horse for 1926, and also the average for a period of five years which amounts to 6½ cents per hour, the reader's attention is called to the fact that these figures were obtained under average farm conditions, that is, while the horses were fed 365 days per year, they work an average of less than 200 days during the year. The number of horses that are not used for farm work and other work in the winter or for breeding purpose should therefore be reduced to the minimum. It should also be noted that the figures given are for horses weighing an average of over 1,500 pounds each.

FIELD HUSBANDRY

The spring of 1926 opened quite late and cold. The first grain was sown on the 14th of May. The seeding proceeded slowly and many farmers did not finish until late in June. As many wet days prevailed in late August and September, much of the grain on many farms did not reach maturity and had to be harvested as fodder. Curious as it may seem, at this Station, the largest seed grain crop ever harvested was secured in 1926, and the crop was of a fairly high quality. The hay crop was satisfactory with a yield somewhat under the average. The intertilled crops were very poor, especially swede turnips and corn. Swede turnips were slow in coming up and were badly damaged in the fall by green aphis.

The crops for which the average cost of production is given in this report have been grown on rotations of three, four and five-year durations. The nature of the land is fairly uniform consisting of a heavy clay soil with blue clay subsoil. Part of it is tile-drained, the other part being drained by ordinary open ditches and surface drains.

COST FACTORS

The following list of the cost factors used in our calculations will facilitate the interpretation of the cost of production figures.

APPLICATION OF MANURE TO ROTATIONS

Rotation	Year crop	Manure per acre	Percentage of value of the manure for each crop
Three-year	1st year	12 tons	50 per cent
	2nd "		30 "
	3rd "		20 "
Four-year	1st "	15 "	40 "
	2nd "		30 "
	3rd "		20 "
	4th "		10 "
Five-year	1st "	20 "	40 "
	2nd "		25 "
	3rd "		20 "
	4th "		10 "
	5th "		5 "

*Mr. Rosaire Proulx, B.A., B.S.A., Assistant in Field and Animal Husbandry, has prepared this section of the report.

FIXED CHARGES IN PRODUCING FARM CROPS

Rent of land (including taxes), $6.25 per acre.
Manure, $2 per ton (including $1 for the cost of applying).
Ensiling, $1.04 per ton (including hauling, machinery, gas, man labour).
Threshing: Oats and barley, 4 cents per bushel.
Wheat and peas, 8 cents per bushel.
Manual, labour and teamster, 26 and 27 cents per hour.
Twine, 14 cents per pound.
Seed—
Oats, $1.25 per bushel.
Wheat, $3 per bushel.
Barley, $2 per bushel.
Peas, $3 per bushel.
Corn, $3 per bushel for Longfellow.
Corn, $2.50 per bushel for Wisconsin.
Sunflowers, 10 cents per pound.
Turnips, 55 cents per pound.
Red Clover, 28½ cents per pound.
Alsike, 25 cents per pound.
Alfalfa, 20 cents per pound.
Timothy, 13½ cents per pound.

COST OF PRODUCING CROPS

COST OF PRODUCING INTERTILLED CROPS PER ACRE

Cost factors	Corn	Sunflowers	Turnips	Sunflowers and corn
	$ cts.	$ cts.	$ cts.	$ cts.
Rent and taxes	6 25	6 25	6 25	6 25
Share and cost of manure	12 40	12 53	12 80	12 80
Seed	1 77	1 00	1 10	1 70
Manual labour	9 91	10 11	20 05	9 31
Horse labour	4 40	4 00	4 80	4 20
Ensiling	8 29	13 56	.....	13 58
Machinery	2 85	2 85	2 85	2 85
Twine	0 35	0 55	.....	0 49
Cost per acre	46 22	51 35	47 85	51 25
	tons lb.	tons lb.	tons lb.	tons lb.
Yield per acre	7 1,840	13 80	10 360	13 120
	$ cts.	$ cts.	$ cts.	$ cts.
Cost per ton	5 80	3 93	4 70	3 92

It may be seen in the preceding table, that corn has been produced at the cost of $5.80 per ton as compared to $3.93 for sunflower and $4.70 for swede turnips. The main factor in fixing the cost per ton is the yield per acre. In the production of corn or sunflower for silage, ensiling is one of the important items in the cost of production, while manual labour is the most important expense in producing swedes. Therefore, besides climatic conditions, the production of corn or sunflowers for silage, as compared with roots, depends greatly upon the organization of the farm and the manual labour available.

COST OF PRODUCING GRAIN

Cost factors	Oats	Wheat	Barley	Peas
	$ cts.	$ cts.	$ cts.	$ cts.
Rent and taxes	6 25	6 25	6 25	6 25
Share of cost of manure	9 60	8 50	9 60	4 80
Seed	3 12	4 50	4 00	9 00
Manual labour	4 68	4 30	4 30	6 79
Horse labour	3 80	2 80	2 80	2 98
Twine	0 49	0 50	0 50	
Threshing	4 21	2 36	1 35	3 23
Machinery	2 85	2 85	2 85	2 85
Cost per acre	35 00	32 06	31 65	35 90
	bush. lb.	bush. lb.	bush. lb.	bush. lb.
Yield per acre	85 13	29 30	33 8	40 24
Cost per bushel	36 cts.	$1.03	90 cts.	88 cts.

The grains were produced on a rather heavy clay soil following the hoed crop which had been manured at the rate of four tons per acre per year of the rotation. During the year the weather was more favourable to the production of oats and wheat, than it was for the production of barley and peas.

The preceding table illustrates the importance of producing various kinds of grain. If one suffers owing to weather conditions, the others may benefit by this condition. This would assure a regularity of production besides a variety of supply which is indispensable on most farms.

COST OF PRODUCING HAY

Cost factors	Clover	Alfalfa and clover	Timothy	Oats hay
	$ cts.	$ cts.	$ cts.	$ cts.
Rent and taxes	6 25	6 25	6 25	6 25
Share of cost of manure	5 80	6 40	5 07	5 20
Seed	2 56	2 67	2 04	7 32
Manual labour	4 20	4 17	4 87	6 17
Horse labour	0 89	1 32	1 20	3 70
Machinery	2 85	2 85	2 85	2 85
Cost per acre	22 55	23 66	22 28	31 49
	tons lb.	tons lb.	tons lb.	tons lb.
Yield per acre	2 1,075	3 240	2 218	3 150
Cost per ton	$8 91	$7 56	$11 08	$10 40

The most outstanding feature of the table is the low cost of alfalfa mixed with clover as compared with the other crops. Besides giving a large yield per acre, alfalfa is the best hay for dairy cattle on account of its high percentage of protein. It is advisable for the farmers to add, wherever the land is well drained and not too much difficient in lime, about six pounds per acre of Canadian-grown alfalfa seed to the hay mixture.

YIELD PER ACRE AND COST OF DRY MATTER PER 100 POUNDS OF DIFFERENT CROPS

Crops	Yield 1926	Dry matter	Dry matter per acre		Cost per 100 pounds of dry matter	
			1926	Average 3 years	1926	Average 3 years
	tons lb.	%	lb.	lb.	$ cts.	$ cts.
Corn	7 1,940	14·19	2,261	3,637	2 05	1 51
Sunflowers	13 80	15·23	3,972	4,346	1 22	1 32
Swede turnip	10 360	9·92	2,020	3,822	2 37	1 57
Sunflower and corn	13 120	12·34	3,223	3,724	1 18	1 41
Oat hay	3 150	88·0	5,412	5,597	0 59	0 54
Clover	2 1,075	87·1	4,420	5,905	0 51	0 45
Alfalfa and clover	3 240	91·4	5,703	5,685	0 41	0 42
Timothy	2 218	88·4	3,729	4,172	0 59	0 51
	bush. lb.					
Oats	85 13	90·8	2,636	2,362	1 12	1 15
Barley	33 17	90·7	1,444	1,405	2 06	2 33
Peas	40 24	90·8	2,201	3,029	1 63	1 39
Wheat	29 30	88·9	1,589	1,509	1 91	2 07

The dry matter per acre for the forage crops has been calculated according to analysis of samples made by the Dominion Chemist and the Division of Forage Plants, Ottawa, while analyses by Henry & Morrison were used for calculating the dry-matter yield of grains.

ROTATION OF CROPS

Rotations of unequal duration are established at this Station, namely, three-year, four-year and five-year rotations, in order to determine the most suitable ones for the average farm in the district as well as for any special production.

The rate of applying manure on these rotations will be found in the cost factors given on a previous page.

FOUR-YEAR ROTATION
(Undrained land)

1st year:—Turnips, corn and sunflowers.
2nd year:—Wheat.
3rd year:—Clover hay.
4th year:—Timothy hay.

YIELD AND COST OF PRODUCTION

Crop	Yield, 1926	Cost per acre 1926	Cost per ton or bushel, 1926	Average yield for 5 years
		$ cts.	$ cts.	
Turnips	8 tons, 1,211 lb.	47 85	5 55	12 tons, 1,640 lb.
Corn	8 tons, 350 lb.	47 96	5 86	8 tons, 160 lb.
Sunflowers	11 tons, 1,100 lb.	50 65	4 38	14 tons, 1,820 lb.
Wheat	17 bush., 30 lb.	31 92	1 73	25 bush., 12 lb.
Clover hay	2 tons, 1,000 lb.	22 78	9 11	2 tons, 1,080 lb.
Timothy hay	1 ton, 1,900 lb.	20 41	10 46	2 tons, 456 lb.

FOUR-YEAR ROTATION
(Tile-drained land)

YIELD AND COST OF PRODUCTION

Crop	Yield, 1926	Cost per acre, 1926	Cost per ton or bushel, 1926	Average yield for 5 years
		$ cts.	$ cts.	
Turnips	8 tons, 1,195 lb.	47 85	5 57	13 tons, 1,920 lb.
Corn	9 tons, 300 lb.	49 01	5 35	10 tons, 940 lb.
Sunflowers	13 tons, 1,650 lb.	53 94	3 96	12 tons, 1,980 lb.
Wheat	35 bush., 22 lb.	33 45	0 90	31 bush., 10 lb.
Clover hay	2 tons, 750 lb.	22 78	9 59	2 tons, 1,014 lb.
Timothy hay	2 tons, 620 lb.	20 41	8 83	2 tons, 132 lb.

This four-year rotation appears to be practical for dairy farms having a sufficient area in permanent pasture. Half of the area is devoted to hay production, one fourth to grain and one fourth to hoed crop.

It will also be noted, that during a period of five years, with the exception of wheat, no significant increase in yields have been derived from artificial drainage on this type of soil, which is heavy clay. It must also be stated the fields of the undrained rotation are drained with surface drains and open ditches to prevent the flooding of the soil during the spring and fall of the vegetative season.

FOUR-YEAR ROTATION
(Part drained and part undrained)

1st year:—Corn and sunflower mixture.
2nd year:—Oats.
3rd year:—Alfalfa and clover mixture.
4th year:—Hay and pasture.

YIELD AND COST OF PRODUCTION

Crop	Yield per acre, 1926	Cost per acre, 1926	Cost per ton or bushel, 1926
	tons lb.	$ cts.	$ cts.
Corn and sunflower mixture	13 120	51 25	3 92
Oats	85 13	35 00	0 36
Alfalfa and clover	3 246	23 66	7 56
Hay	1 1,260	18 87	11 57

This four-year rotation includes an area of 28 acres, 7 acres for each year. The fourth-year crop has been harvested instead of pastured. However, the second growth has been pastured and the value not counted in the preceding statement.

This rotation is, at this Station, a model of what could be done on many farms on a greater scale.

THREE-YEAR ROTATION
(Tile-drained)

1st year:—Sunflowers and corn.
2nd year:—Wheat.
3rd year:—Clover hay.

Yield and Cost of Production

Crop	Yield per acre, 1926	Cost per acre, 1926	Cost per ton or bushel, 1926	Average yield for 3 years
		$ cts.	$ cts.	
Sunflowers	13 tons, 1,800 lb.	50 51	3 62	15 tons, 1,240 lb.
Corn Wisconsin (1)	8 tons, 800 lb.	45 06	5 36	11 tons, 420 lb.
Corn Longfellow	6 tons, 360 lb.	42 99	6 95	11 tons, 1,800 lb.
Wheat Huron	29 bushels	30 69	1 00	29 bushels.
Clover hay	2 tons, 240 lb.	22 53	10 62	2 tons, 300 lb.

(1) Average of 2 years.

This rotation provides one third of the area in hoed crop, one third in grain and one third in clover hay. It would be convenient in districts where intensive growing of special crops is the object, or the farm is relatively small, or the soil is light.

The outstanding feature in the table, however, is the difference in yield between sunflowers and corn.

FIVE-YEAR ROTATION
(Undrained)

1st year:—Turnips.
2nd year:—Wheat.
3rd year:—Clover.
4th year:—Timothy hay.
5th year:—O.P.V. hay.

Yield and Cost of Production

Crop	Yield per acre, 1926	Cost per acre, 1926	Cost per ton or bushel 1926	Average yield for 3 years
		$ cts.	$ cts.	
Turnips	13 tons, 723 lb.	47 85	3 58	15 tons, 1,800 lb.
Wheat (1)	29 bush., 12 lb.	31 11	1 01	21 bush., 15 lb.
Clover	2 tons, 1,350 lb.	32 04	8 28	2 tons, 260 lb.
Timothy hay	2 tons, 135 lb.	28 70	12 67	2 tons, 260 lb.
O.P.V. hay	3 tons, 50 lb.	31 49	10 40	3 tons, 360 lb.

(1) Average of 2 years.

This rotation should be quite suitable to dairy farms and will supply a considerable quantity of good roughage for wintering cattle. A part of the oats, peas and vetches mixture can be used as a supplement to pasture during the summer months if needed, cured as hay, or allowed to ripen for grain. The second year in hay crop could be pastured if no permanent pasture is available.

Manure has been applied on this rotation at the rate of 20 tons per acre; 12 tons for the swede turnip crop and 8 tons applied on the clover sod in the fall. It should be noted that 40 per cent of the cost of this second manuring has been charged against the timothy hay crop, which explains the high cost per ton of that crop.

DRAINAGE EXPERIMENT

The object of this experiment is to determine the effect of drainage on the production of crops.

The land is ploughed shallow and disked during the last part of the summer, ploughed again in the spring and the seed-bed prepared as soon as the weather and soil conditions allow it.

FOUR-YEAR ROTATION—DRAINED VS. UNDRAINED LAND

Crop	Tile-drained		Undrained	
	Yield, 1926	Average of 5 years	Yield, 1926	Average of 5 years
	tons lb.	tons lb.	tons lb.	tons lb.
Corn	9 300	10 940	8 350	8 100
Sunflower	13 1,660	12 1,980	11 1,100	14 1,920
Turnips	8 1,195	13 1,920	8 1,211	12 1,640
	bush. lb.	bush. lb.	bush. lb.	bush. lb.
Wheat	35 22	31 19	17 30	25 36
	tons lb.	tons lb.	tons lb.	tons lb.
Clover	2 750	2 1,014	2 1,000	2 1,080
Timothy	2 620	2 132	1 1,900	1 1,804

During the five years that observations were made and records of crop yield taken, two very dry summers, one cold spring and one wet fall have occurred. These factors have affected the yield of crops and should be borne in mind in studying the results. Nevertheless, it is felt that if surface drainage is well done and looked after, it will give nearly as good results as underdrainage unless surplus water is present in the sub-soil; but this is seldom the case in clay soil.

COMPARISON OF MANURE, SPENT HOPS AND YEAST, AND COMMERCIAL FERTILIZERS

The object of the experiment is to determine the possibility of growing green crop, grain and hay by total or partial replacement of manure on poor gravelly and sandy soil, also to compare spent hops and yeast with manure and commercial fertilizers.

The experiment is conducted on a four-year rotation but as the experiment was started only in 1924, the timothy hay crop is not reported yet.

Section 1, received an application of 8 tons spent hops and yeast.

Section 2, 8 tons manure were applied to the first year crop which is peas and oats and 8 tons on oat stubble the following year.

Section 3, 100 pounds nitrate of soda, 200 pounds superphosphate and 50 pounds muriate of potash were applied to the first-year crop; 50 pounds nitrate of soda and 150 pounds superphosphate to the second-year crop; 50 pounds of muriate of potash and 150 pounds superphosphate to the third-year crop.

Section 4, 8 tons manure and 150 pounds superphosphate were applied to the first-year crop, no fertilizers on the second year crop; 150 pounds superphosphate and 50 pounds muriate of potash to the third-year crop.

Section 5, is used as a check plot and received no fertilizers or manure.

FERTILIZER EXPERIMENT—YIELD PER ACRE IN 1926

Section	Treatment or rotation	First year pea and oat cured as hay	Second year oats	Third year clover hay
		lb.	bush. lb.	lb.
No. 1	Spent hops and yeast	2,100	.. ..	.....
No. 2	Manure	1,400	17 22	2,350
No. 3	Commercial fertilizers	1,550	28 20	2,125
No. 4	Manure and commercial fertilizers	1,575	25 10	2,850
No. 5	No manure or fertilizers	900	10 20	50

The comparison of yields of the crops indicates that this poor gravelly soil has been very responsive to application of fertilizers of any kind. Clover has made a good growth where it could not be grown before the land was fertilized. Very good results were obtained from the use of spent hops and yeast which were tried this year for the first time. More definite figures will be given after the experiment has been conducted for a longer period of time.

FERTILIZING HAY ON A FIELD SCALE

The object of this experiment is to determine the value of commercial fertilizers and farm manure for fertilizing hay on a field scale.

A five-year rotation is established on a field of approximately 9 acres in area.

Section 1 received 16 tons of manure per acre; 8 tons top-dressed on oat stubble for clover hay and 8 tons applied in the fall for third-year timothy.

Section 2 was fertilized as follows: first and second year, unfertilized; third year, 200 pounds superphosphate, 100 pounds of nitrate of soda, 75 pounds muriate of potash applied in the spring; fourth year, 200 pounds superphosphate, 100 pounds nitrate of soda, 75 pounds muriate of potash applied in the spring; fifth year, 100 pounds nitrate of soda.

Section 2 received no manure or fertilizer and is used as a check.

FERTILIZERS FOR HAY—YIELD PER ACRE

Section	Treatment	First year pea and oat	Second year oats	Third year clover	Fourth year timothy	Fifth year timothy
		tons lb.	bush. lb.	tons lb.	tons lb.	tons lb.
1	Manure	2 1,062	70 ..	2 642	2 255	2 344
2	Fertilizers	2 31	75 5	2 776	2 925	2 76
3	No manure or fertilizers	1 1,781	69 19	2 62	1 1,853	1 1,732

These are results for one year only, and it will take one or two cycles of the rotation before definite results or comparisons can be made, owing to the fact that the soil is of clay nature and was reasonably rich in fertilizing elements at the start of this experiment.

HORTICULTURE

TREE FRUITS

APPLE, VARIETY EXPERIMENT

With the exception of two apple trees of the seedling Swayzie variety which were hurt by the frost, all the trees in the orchard were in good condition in the spring of 1926. The blooming was from eight to ten days later than the average.

The total crop for the year was 304 barrels, and 1,323 barrels for the three last years.

The varieties mentioned in the following table are satisfactory and recommended for the district both for their quality as well as for their length of keeping. The varieties are listed according to their earliness, and the yields given are the average for one apple tree only.

Variety	Date planted	Yield to date
		gal.
Crimson Beauty	1916	58
Yellow Transparent	1913	89½
Duchess	1913	72
Melba	1913	76¾
Joyce	1916	42
Lobo	1914	96½
Wealthy	1914	103½
Fameuse	1914	84
McIntosh	1914	128

APPLE, THINNING EXPERIMENT

Twelve apple trees of six different varieties were used for this experiment. On six trees only one fruit was left per spur, while the other six trees were left to ripen all the fruit set. The results were as follows:

THINNED TREES

Variety	Quality		Colour	Yield
	No. 1	No. 2		
	gal.	gal.		gal.
Yellow Transparent	8	4	Good	12
Fameuse	24	16	"	40
Duchess	4	2	Very good	6
Wealthy	32	2	Good	34
Wolf River	16	8	"	24
Dudley (North Star)	14	2	"	16

UNTHINNED TREES

Variety	Quality		Colour	Yield
	No. 1	No. 2		
	gal.	gal.		gal.
Yellow Transparent	10	12	Medium	22
Fameuse	14	16	"	30
Duchess	6	4	"	10
Wealthy	20	12	Good	32
Wolf River	14	22	Medium	36
Dudley (North Star)	16	6	"	22

APPLE, STORAGE EXPERIMENT

For three years, one bushel box of apples of more than two hundred varieties have been put in the cellar, and as nearly as possible, the temperature of the cellar maintained between 35 and 40 degrees F., the object being to determine the season and the length of time the different varieties of apples will keep. A few good varieties are listed as to season in the table following:

Variety	Season
Crimson Beauty	August 15 to September 20.
Yellow Transparent	" "
Rupert	" "
Charlamoff	" " 30.
Duchess of Oldenburg	September 15 to the end of October.
Melba	" " "
Joyce	" " "
Lobo	November to February.
Wealthy	" "
McIntosh	" "
Bethel	January to the end of winter.
Niobe	" " "
Golden Russet	" " "

CHERRY, VARIETY EXPERIMENT

Sixteen varieties are under test and of forty cherry trees, twenty trees had fruits and yielded 148 gallons of cherries.

The varieties, Cerise de France and Grosse de Montmorency head the list, if we consider both yield of fruit and vigour of tree. The variety Early Richmond is the greatest yielder.

PEAR, VARIETY EXPERIMENT

Three varieties of pears, the Flemish Beauty, Clapp Favourite and Bartlett have been planted in 1919. To date, no trees were lost from winter injury and the trees have made good growth. A few fruits were harvested from the Flemish Beauty for two consecutive years.

PLUM, VARIETY EXPERIMENT

Of the 112 plum trees in the orchard, three were killed by the frost during the last winter, one Lombard tree, one Hudson River and one Climax.

The total crop was 155 gallons in 1926 and 655 gallons for the last three years. Two new varieties were added to the orchard, the Early Mirabelle and Précoce de Tours.

For three consecutive years, the variety John A. has given the highest yield and is satisfactory as a late variety.

The following varieties mature in the order named: Damson, Reine Claude de Montmorency, Bradshaw, Green Gage, Hudson River, Washington and John A.

SMALL FRUITS

BLACK CURRANT, VARIETY TESTS

The crop of black currants was small in 1926. From the three-year test, the preferred varieties are in the order named: Magnus, Saunders and Kerry. The fruits of the Magnus variety is large and of good quality. The bushes are resistant and productive. The other varieties are of mid-season and are also fair commercial varieties.

RED CURRANT, VARIETY TEST

From the year's test, the variety Cumberland has given the highest yield. The fruits are of medium size, and the bushes vigorous. The yield per acre of the two leading varieties is: Cumberland, 7,853 pounds; Red Grape, 6,260 pounds.

GOOSEBERRY, VARIETY EXPERIMENT

The Smith Improved and Industry have given the most satisfaction. The yields per acre are: Smith Improved, 3,810 pounds; Industry, 3,630 pounds.

RASPBERRY, VARIETY EXPERIMENT

Twelve varieties are under observation. The object of the test is to determine the best varieties from the standpoint of earliness, yield, and resistances to disease. Of the varieties under test, Newman 23 and Latham are recommended as commercial varieties for our district.

RASPBERRY—VARIETY EXPERIMENT

Variety	Colour	Date of ripening of first fruit	Size of fruit	Yield per acre
				lb.
Cuthbert	Red	July 25	Big	1,815
Count	"	" 25	Medium	4,620
Brighton	"	" 25	"	4,895
Herbert	"	" 26	Big	1,760
Newman 24	"	" 27	"	6,490
Superlative	"	" 28	"	8,480
Sir John	"	" 28	"	4,400
Newman 23	"	" 30	"	7,480
Louboro	"	" 30	"	1,650
Golden Queen	Yellow	Aug. 7	Medium	4,235
Latham	Red	" 8	Big	9,625
Shinn	Purple	" 8	Small	4,235

STRAWBERRY—VARIETY EXPERIMENT

Only a few varieties are under test, namely: Portia, Cassandra, Hermia, and Lavinia. The varieties Portia and Cassandra have wintered well since 1923 and have also proved more resistant to rust and diseases than the two other varieties. The first fruits were picked on July 10, and the total yield per acre was: Portia, 3,735 pounds; Cassandra, 3,113 pounds. The yield for the year was low and this is attributed to the dry weather.

FLOWERS

ANNUALS, VARIETY TEST

The season of 1926 was not very favourable for flowers, due to the fact that it was cold and dry in June. Most annual flowers require much heat and moisture for maximum growth and bloom.

The following table contains a list of the most satisfactory varieties, including varieties with low, medium, high, and creeping growth.

Variety	Vegetation	Date of first flowers
Eschscholtzia	Low	July 9
Pansies	"	June 24
Iberis	"	July 14
Petunias	"	" 10
Reseda	"	" 18
Phlox	"	" 19
Portulaca	"	" 30
Acroclinium	Medium	" 7
Balsam	"	Aug. 3
Clarkia	"	July 12
Gaillardia	"	Aug. 2
Marigold	"	" 22
Scabiosa	"	" 15
Centaurea	"	July 17
Cosmos	High	" 27
Everlasting Flowers	"	" 25
Larkspur	"	" 30
Salpiglossis	"	Aug. 2
Nicotiana	"	July 25
Sweet Peas	Climbing	" 22
Nasturtium	"	" 19
Convolvulus	"	" 20
Wild cucumber	"	" 20

The following varieties are also satisfactory if started in hotbeds: Asters, Dahlias, Cosmos, Marigold, Petunia, Salvia, and Phlox.

ASTER, VARIETY TEST

The seed of twenty-five varieties or strains of Asters was sown in hotbeds on April 14 and planted in the garden on June 10.

The date of bloom and of full bloom of the most desirable varieties follows:—

Varieties	Date of first bloom	Date of full bloom
Snow Queen	Aug. 2	Aug. 12
Queen of the Market	" 9	" 14
Aster Quilled Violet	" 7	" 14
Dwarf Victoria	" 16	" 23
Salmon Pink	" 16	" 24
American Beauty	" 16	" 24
Anemone Mauve	" 17	" 24
American Comet	" 19	" 28

TULIPS, VARIETY TEST

Owing to the weather condition prevailing in the spring of 1926, the bloom of the early varieties of tulips was not as satisfactory as that of the medium to the late varieties. Of the early varieties, the Darwin tulip is the most satisfactory. The varieties that have given the most satisfaction for a period of five years are:—

Early Tulips.—Chrysolora, Cramoisie Brilliant, Cottage Maid.

Early Double Tulips.—Imperator Rubrorum, Murillo, Boule de Neige.

Cottage Tulips.—Fairy Queen, Gesneriana Lutea, Isabella.

Darwin Tulips.—Baronne de la Tonnaye, Clara Butt, Europe, Madame Krelage.

VEGETABLES

BEET

VARIETY EXPERIMENT—Nineteen varieties were under test. The object is to determine the highest quality and heaviest yielding beet for table use. All varieties were sown on May 29.

Following are the yields of a few good varieties for a 30-foot row:—

Variety	Date usable	Yield
		lb.
Eclipse	Aug. 9	82
Detroit Dark Red	" 7	75
Crosby Egyptian	" 6	68

CARROTS

VARIETY EXPERIMENT.—Nine varieties of carrots were under test. The seed was sown on May 28 and the plants were thinned out 1½ inch apart.

The yield of three good varieties for table use under test for five years was as follows:—

Variety	Date usable	Yield
		lb.
Chantenay	Aug. 4	59
Improved Danvers	" 6	49
Amsterdam	" 2	37

LEEK

VARIETY EXPERIMENT.—The seeds of both varieties under test were sown in hotbeds on April 15. Transplantation in the garden was made on June 4, leaving the plants 2 inches apart.

The crop was stored October 5 and a 30-foot row yielded as follows: Monstrous Carenton, 40 pounds; London Flag, 34 pounds.

ONIONS

AUTUMN VS SPRING SOWING.—The Large Red Wethersfield variety was sown on November 6, 1925, and also the following spring as soon as it was possible to work the land.

The yields for a 30-foot row were as follows:—

Variety	Date of maturing	Yield	
		1926	For 3 years
		lb.	lb.
Large Red Wethersfield, spring-sown	Oct. 5	11	101
Large Red Wethersfield, autumn-sown	Sept. 25	3½	25½

TRANSPLANTING VS SOWING IN THE OPEN.—Three varieties were used for this experiment. Part of the seed was sown in hotbeds on April 15, and part was sown in the open on May 29. In both cases, the plants were left 2 inches apart in the rows.

The following yields are for a 30-foot row.

ONIONS—STARTING IN HOT BEDS VS. SOWING IN THE GARDEN

Variety and treatment	Yields	
	1926	Average of 3 years
(Hotbeds)	lb.	lb. oz.
Yellow Globe Danvers	71	64 12
Prizetaker	77	68 4
Large Red Wethersfield	68	59 10
(Open ground)		
Large Red Wethersfield	55	50 —
Prizetaker	45	43 8
Yellow Globe Danvers	33	35 8

VARIETY EXPERIMENT.—Eighteen varieties of onions were under test. The seed was sown on April 15 in hotbeds and transplanting was made in the open on June 8. The plants were placed 2 inches apart in a 30-foot row for each variety, the rows spaced 15 inches. The best yields follow:—

Variety	Yield per acre	
	1926	Average of 3 years
	lb.	lb.
Giant Yellow Prize Taker	74,536	73,568
Ailsa Craig	67,760	70,986
Southport Yellow Globe	40,656	58,088
Select Wethersfield	65,824	61,306
Southport Red Globe	51,304	55,821
Southport White Globe	61,952	52,272
Silver King	46,464	46,431

PARSNIP

VARIETY EXPERIMENT.—Three plots were sown with the variety Hollow Crown, and another plot with the variety Coopers Champion.

The best parsnips were obtained from seed produced at the Central Experimental Farm, Ottawa, from the variety Hollow Crown. A 30-foot row gave: Hollow Crown, 45 pounds; Coopers Champion, 30 pounds.

PARSLEY

VARIETY EXPERIMENT.—The two varieties under test were: Moss Curled and Triple Curled. The latter is a small curled variety very rustic and of dark green colour. The Moss Curled variety is very productive, its leaves are more curled than the Triple curled but shorted.

Sown on May 31, the parsley was ready for use on July 28. A 30-foot row yielded as follows: Moss Curled, 42 pounds; Triple Curled, 34 pounds.

PEPPER

VARIETY EXPERIMENT.—The seeds of seven varieties of pepper were sown in hotbeds on March 27. The object of this experiment is to determine the most satisfactory varieties for the district. The peppers of the four varieties were partially coloured. The results of 30 feet of row follow:—

Variety	Date of first gathering	Yield
		gal.
Harris Earliest	Sept. 23	5½
Hamilton	" 25	4
Sehells Standard	" 27	1½
Longred Cayenne	" 27	1

RADISH

VARIETY EXPERIMENT.—Thirteen varieties of radishes were sown on May 28. The two varieties to be utilized first were: Round Scarlet Oval XXX and the French Breakfast on June 21. Both are of excellent quality.

Two other varieties recommended are: Scarlet White Tipped, and the Scarlet Globe, which were ready for use on June 23.

SALSIFY

VARIETY EXPERIMENT.—The seeds of the two varieties under test, Long White and Mammoth Sandwich Island, were sown on 30 feet of row and the plants were thinned to 2 inches apart in the row.

The Mammoth Sandwich Island has always produced, during the three last years, bigger plants than the Long White variety. The results were as follows: Mammoth Sandwich Island, ready for use on August 10, yielded 38 pounds. Long White, ready for use on August 7, yielded 33 pounds.

AUTUMN VS. SPRING SOWING OF VEGETABLES

The object of this experiment is to compare the effect of sowing certain vegetables in the fall and in the spring.

The fall sowing was made November 6 and the spring sowing on May 14. The results follow:—

Variety	Autumn		Spring	
	Ready	Yield	Ready	Yield
Beet, Detroit Dark Red	July 15	2 pkts.	June 1	13 pkts.
Radish, White Tipped	June 21	1 "	" 23	3 "
Lettuce, Grand Rapids	" 29	22 "	" 29	26 "
Carrots, Chantenay	July 20	3 "	July 28	11 "
Onions, Large Red Wethersfield	Sept. 25	3½ lb.	Oct. 3	11 lb.

TURNIP

VARIETY EXPERIMENT.—Four varieties were under test. Each variety was grown in a 30-foot row, the rows 30 inches apart, and was thinned to 3 inches in the row. The Red Top variety produced the highest yield. When pulled, the turnips were put in bundles of 4 turnips, the yield for this plot was 16 bundles. The Early Snowball variety produced 15 bundles.

Both varieties were marketable on August 7, and are desirable for table use. These plots were sown on May 28.

KOHL RABI

VARIETY EXPERIMENT.—The seeds of two varieties of Kohl Rabi, Purple Vienna and White Vienna were sown on May 29. On August 6, both varieties were ready for use. The plots were 30 feet long and the plants were thinned to 6 inches apart in the row. The crop harvested in bundles of five Purple Vienna gave 9 bundles; White Vienna gave 8 bundles.

BRUSSELS SPROUTS

VARIETY EXPERIMENT.—Two varieties of Brussels sprouts were sown on May 28 in rows 30 feet long, 18 inches apart in the row. Their cultivation was the same as for cabbage. The crop was taken up October 18 and yielded as follows: Paris Market, 5½ pounds; Improved Dwarf, 6¼ pounds. Both varieties are of equally good quality.

CABBAGE

HOTBEDS VS. SOWN IN THE OPEN.—In order to find if there is an advantage in sowing cabbages in hotbeds instead of in the open, two varieties were sown—some of each in hotbeds on April 15 and the remainder in the open on May 28. The results from two years of test calculated on ten cabbages from each method of sowing are as follows:—

HOTBEDS VS. SOWN IN THE OPEN

(Weights of ten representative cabbages)

Variety	Hotbeds		Open	
	Usable	Yield	Ready	Yield
		lb.		lb.
1925				
Copenhagen	July 12	64	July 26	55
Danish Ballhead	Aug. 20	45½	Aug. 24	36
1926				
Copenhagen	Aug. 24	45	Aug. 29	43
Danish Ballhead	" 30	48	Sept. 2	31½

VARIETY EXPERIMENT.—The seeds were sown in hotbeds on April 15. Thirty varieties were under test and included early, medium, and late varieties. The cabbages were transplanted to the open on June 2; the early ones were put 18 inches apart in the row and the late ones 24 inches apart.

The object of this experiment is to determine the most desirable varieties of cabbage for the different seasons. The varieties are listed in the following table according to their merit.

Variety	Season	Usable	Weight of one cabbage
			lb.
Golden Acre	Early	Aug. 6	3
Copenhagen	"	" 20	4½
Enkhuisen Glory	Middle	Sept. 8	11
All Season	"	" 4	13½
Danish Ballhead	Late	" 20	6½
Marblehead	"	" 18	12

CAULIFLOWER

VARIETY EXPERIMENT.—Eleven varieties of cauliflowers were under test. The seeds were sown in hotbeds on April 15 and the transplantation in the open was made on June 8, leaving 8 inches between the plants. Early Snowball is the most satisfactory for yield and the uniformity of head. The Erfurt variety, comparable to the Early Snowball in manner of growth, does not produce as many marketable heads.

CELERY

VARIETY EXPERIMENT.—Fifteen varieties of celery were sown in hotbeds on March 20. The object of this test is to determine the best varieties for table use. The following varieties were satisfactory and are listed in order of earliness: White Plume, Golden Self Blanching, and Winter Queen. The weight of three plants of the different varieties was as follows: White Plume, 7 pounds; Golden Self Blanching, 8 pounds 12 ounces; Winter Queen, 8 pounds, 4 ounces.

LETTUCE

VARIETY EXPERIMENT.—Twenty varieties of lettuce were sown on May 28, in plots 15 feet long and 18 inches apart. Amongst the head-forming varieties, the earliest as well as those that keep the longest in good condition are: Crisp as Ice, New York, and Wayahead. For the non-head-forming varieties, Grand Rapids is one of the best. The varieties Black seeded Simpson and Improved Hanson are not as big as the Grand Rapids, but their quality is equally good. These lettuces were ready for use on June 29.

SPINACH

VARIETY EXPERIMENT.—The five varieties of spinach under test produced from a 30-foot row, the yields given in the table following. The seed was sown on May 29. The crop was put in 2-pound bunches.

Variety	Date usable	Number of bunches
New Zealand	July 20	33
King of Denmark	June 26	28
Long Standing	" 27	21
Broad Leaf	" 29	13
Victoria	" 23	12

SWISS CHARD

VARIETY EXPERIMENT.—Three varieties of Swiss chard were grown. All of them were ready for use the same date, July 17. The seeds had been sown on May 28 and the plants were thinned out to 6 inches. The three varieties under test are: Silver Leaf, Fordhook, and Lucullus. The last variety is the most highly favoured.

CUCUMBERS

VARIETY EXPERIMENT.—The seeds of twelve varieties of cucumbers were sown in the open on May 28. The yields for four hills were as follows:—

CUCUMBER—VARIETY EXPERIMENT

(Calculated on four hills)

Variety	Date usable	Number of cucumbers
Green Prolific	Aug. 4	53
Jersey Pickling	" 5	42
Early White Spine	" 6	128
Davis Perfect	" 6	65
Boston Pickling	" 6	89
Vaughan	" 7	60
Cumberland	" 7	126
White Spine	" 7	145
Improved Long Green	" 7	80
Early Fortune	" 11	86
Windermoor	" 11	33
Gherkin W.I.	" 22	1½ gal.

EGG PLANT

VARIETY EXPERIMENT—All the egg plants were killed by the frost on September 29. At that date, the variety Black Beauty had produced eight matured fruits, and the Extra Early Dwarf nine fruits. The plants were transplanted to the open on May 27 from a seeding made in hotbeds on March 26.

MUSK MELLON

VARIETY EXPERIMENT—Twelve varieties of musk melon were sown in hotbeds on April 20 and transplanted to the open on June 18. They were protected on the north side and were well exposed to the sun. The twelve varieties ripened fruits.

Of the small melon varieties, the Emerald Gem is the earliest, giving ripe fruits on September 8. The varieties Early Hackensack and the Bender produced the biggest melons of good quality, their fruits being ready for use on September 18.

WATER MELON

VARIETY EXPERIMENT—The seeds of the only variety of water melon under test were sown in the open on May 28 in hills 9 by 9 feet apart and were thinned out to 3 plants per hill. The yield obtained from 3 hills was 19 melons. They were ready for use on September 22. Cole Early was the variety under test. It is early and productive.

PUMPKIN

VARIETY EXPERIMENT—Among the five varieties which were grown at this Station, the Small Sugar variety is preferred. The fruits are small but they keep well. The yield for three hills was 103 pounds. The Connecticut variety gave the biggest pumpkins, the yield for three hills was 177 pounds.

SQUASH

VARIETY EXPERIMENT—The seeds were sown in hills 9 feet apart each way; three hills for each variety.

The Golden Hubbard variety leads the twelve varieties that have been under test for five years. It keeps well and has a better flavour than the other varieties. The Long White Bush is a good early variety.

TOMATO

METHODS OF TRAINING—The object of this experiment is to determine the relative earliness, quality and yield of tomatoes under various methods of training. The two varieties used were sown in hotbeds on March 27 and transplanted to the open on May 27.

The rows were two feet apart and the plants one foot apart in the row.

METHODS OF TRAINING TOMATOES

Methods of training	Variety	Per cent rotted	Date and yield					
			1st gathering	Yield	Maturity	Green		
		%		lb. oz.	lb. oz.	lb. oz.		
Stopped at first truss of fruit	Alacrity	25	August 20	1 ..	23 ..	3 ..		
Stopped at 1st truss of fruit	Bonny Best	20	" 21	1 8	25 8	4 8		
Stopped at 2nd truss of fruit	Alacrity	20	" 20	.. 8	24 8	17 4		
Stopped at 2nd truss of fruit	Bonny Best	15	" 26	1 ..	26 12	18 8		
Stopped at 3rd truss of fruit	Alacrity	17	" 20	1 8	28 8	22 ..		
Stopped at 3rd truss of fruit	Bonny Best	3	" 26	3 ..	26 8	25 8		
Not headed back	Alacrity	3	" 26	4 ..	25 8	30 8		
Not headed back	Bonny Best	2	" 26	1 ..	24 4	35 8		

VARIETY EXPERIMENT—Sixty-seven varieties were sown in hotbeds on March 27. The plants were transplanted once in hotbeds and were then transplanted to the open on May 27.

The cold temperature in the spring delayed the growth considerably. The yield of twenty-three varieties out of sixty-seven planted was 2 pounds per plant. The whole planting was destroyed on September 28.

The best yields from 5 plants were obtained with the following varieties:

TOMATO—VARIETY EXPERIMENT

Variety	1st gathering	Yield at maturity
		lb.
Bonny Best	August 26	29
Pink of Central Farm	" 19	28
Bolgiano	" 17	23
Avon Early	" 26	22
Danish Export	" 17	20
Alacrity	" 17	19½
Chalks Early Jewell	" 12	19

BEANS

DISTANCE OF PLANTING—Two varieties of beans were used for this test. The object is to determine if the yield as well as the quality and the precocity of the beans can be improved according to the distances between the plants, which were in this test 2, 4 and 6 inches. The results for a 30-foot row were as follows:—

Distance apart of planting	Varieties			
	Round Pod		Stringless	
	1st gathering	Total	1st gathering	Total
		galls.		galls.
2 inches	August 1	8	July 30	9½
4 inches	" 2	7½	August 2	6½
6 inches	" 2	7	" 2	5½

VARIETY EXPERIMENT—The twenty-seven varieties of beans under test were sown on May 28. Each variety is sown in a row 30 feet long, the rows 30 inches apart. The beans were spaced 2 inches apart. The following varieties having been under test for over five years are recommended for the district:

BEANS—VARIETY EXPERIMENT

Varieties	Yield
	gals.
Masterpiece	14
Davis White Wax	11½
Round Pod Kidney Wax	11
Curris Rustledd	10
Hodson Long Pod	9½
Refugee	9

PEAS

DISTANCES OF PLANTING—The object of this experiment is to determine the relative earliness, quality and yield of peas as a green table vegetable, when sown 1, 2 and 3 inches apart in the row.

Distance apart	Varieties and yield (30-foot row)		
	Laxton	English Wonder	Stratagem
	gal.	gal.	gal.
1 inch	6½	6	4¾
2 inches	5	5¾	3¼
3 inches	4¾	4½	3

VARIETY EXPERIMENT—Seventeen varieties of garden peas were sown on May 28 one inch apart.

The results obtained on a 30-foot row with the ten best varieties were as follows:—

Variety	Date usable	Yield
		gals.
Lincoln	Aug. 5	7
Bloomfield	July 27	6½
Little Marvel	" 27	6
Alaska	" 18	5¾
Laxtonian	" 31	5½
Pioneer	" 27	5
Gregory X English Wonder	Aug. 4	5
Blue Bantam	July 30	4¾
McLean Advancer	Aug. 4	4½
Daisy	" 5	4
Marchioness	July 17	4

CORN

SUCKERING EXPERIMENT—The object of this experiment is to determine the effect on earliness, and type of ear of removing the suckers as they appear. Two varieties were used for this experiment, the Early Malcolm and Golden Bantam. The rows were 100 feet long. On one row of each variety the suckers were removed as soon as possible, and on the two others they were left on.

Variety	Suckers removed		Suckers left on	
	Marketable	Crop	Marketable	Crop
		Ears		Ears
Early Malcolm	Aug. 30	63	Sept. 8	51
Golden Bantam	Sept. 12	54	" 14	62

VARIETY EXPERIMENT—Twenty-seven varieties of corn for table use were under test. This number includes eight varieties which were under test for the first year.

Among all the varieties which have been tried since 1925, none has surpassed the Early Malcolm, which is early and of superior quality.

The Pickaninny variety which has been created at the Central Experimental Farm Ottawa, is earlier than the Malcolm and of as good quality but the ears are small and generally not as well filled as the Malcolm.

Sown on May 28, the Malcolm was ready on August 20 and the Pickaninny on August 15.

POTATO

DATES OF PLANTING—The object of this experiment is to determine for this district the best date to plant potatoes from the standpoint of yield, quality and vigour.

The plots were 66 feet long and the plants were placed 12 inches apart in the row.

The yield per acre was as follows:

Date of Plantation	Green Mountain					
	Marketable		Unmarketable		Total	
	bush.	lb.	bush.	lb.	bush.	lb.
May 31	303	36	48	24	352	..
June 10	255	12	48	24	303	36
June 21	215	36	44	..	259	36
July 21	206	48	22	..	228	48

SPROUTED VS UNSPROUTED SEED.—The object of this experiment is to determine if the sprouting of potatoes advances earliness and increases yield. A certain quantity of potatoes were exposed for six weeks in subdued light at a temperature varying between 40 and 50 degrees F. before planting. The crop from this seed was compared with the yield from potato seed kept in the dormant state before planting.

The rows were 66 feet long. The potatoes were digged from one plot at different dates and from another one in the fall. (Project H 183.)

The results follow:—

Varieties	Dates of harvesting and yield										Yield per acre	
	Aug. 5		Aug. 7		Aug. 23		Aug. 31		Sept. 20			
	lb.	oz.	lb.	oz.	lb.	oz.	lb.	oz.	lb.	oz.	bush.	lb.
Irish Cobbler, sprouted, marketable	5	12	6	8	5	8	6	4	42	..	273	44
Irish Cobbler, sprouted, unmarketable	..	2	..	4	..	12	1	..	5	12	33	..
Irish Cobbler, unsprouted, marketable	2	8	2	12	3	..	3	4	22	8	148	16
Irish Cobbler, unsprouted, unmarketable	..	8	..	12	..	8	..	12	3	..	25	12
Irish Cobbler, sprouted, marketable	..	..	..	..	..	..	..	..	70	..	308	..
Irish Cobbler, sprouted, unmarketable	..	..	..	..	..	..	..	..	11	..	48	24
Irish Cobbler, unsprouted, marketable	..	..	..	..	..	..	..	..	56	..	246	24
Irish Cobbler, unsprouted, unmarketable	..	..	..	..	..	..	..	..	18	..	79	12

VARIETY EXPERIMENT.—The varieties mentioned in the table following have been grown at this Station since 1914. The seed has been selected every year.

The average results of the five first years (1914 to 1919) are given in comparison with the average results of the two last years (1925 and 1926).

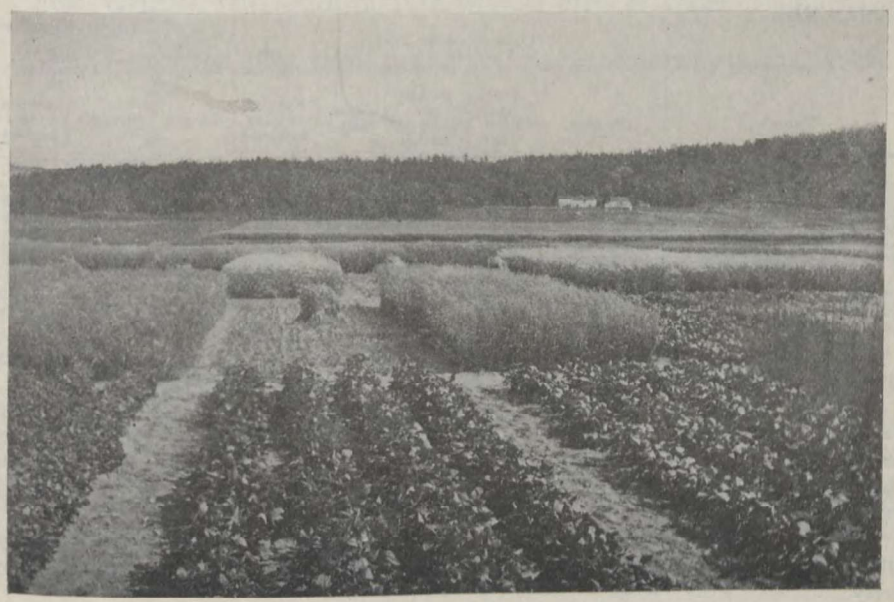
Variety	Average yields			
	1914 to 1919		1925 and 1926	
	bush.	lb.	bush.	lb.
Green Mountain	355	21	527	6
Gold Coin	295	8	484	48
Irish Cobbler	338	40	373	27
Rochester Rose	283	14	245	36

CEREALS

The experimental work carried during the year was about the same as in 1925, with the exception of the rod-row work, which was slightly extended. The work of this division is under the supervision of Mr. E. L. Raynauld, B.S.A., cerealist of this Station, who also supervises the forage crop and flax experimental work.

The spring of 1926 opened more than two weeks later than usual, the first seeding being done on May 19. As the weather from that date remained wet and cold till June, the seeding proceeded slowly, and owing to heavy precipitation, many plots suffered in their growth and uniformity of stand.

The month of June was rather dry as only 1.93 inches of precipitation was recorded. July was very favourable for the growth of plants, but rather cold and rainy weather prevailed in early August which caused much development of rust affecting quite severely the yield of the late maturing varieties of grain. The latter part of August and early September was fairly good and permitted the harvesting of the crop in a fair condition.



Cereal Plots. Experimental Station, Ste. Anne de la Pocatière.

COMMON SPRING WHEAT—TEST OF VARIETIES

Eleven varieties were tested on plots of 1/120 of an acre, replicated five times. The seed was sown on May 19.

The following table gives the yields per acre for 1926, the weight per measured bushel, along with the number of years tested, the average number of days maturing, the average length, the average strength of straw on a scale of ten points and the average yields per acre.

SPRING WHEAT

Name	Source	Yield per acre, 1926	Weight per measured bushel	Year tested	Number of days maturing	Length of plant including head	Strength on scale of 10 points	Average yield per acre
		lb.	lb.	year	days	inches	per cent	lb.
Aurore	Abbe Bois	2,580	60·0	1	104·0	43·0	10·0	2,580·0
Reward	Ottawa	2,501	61·0	2	100·5	36·8	9·7	2,300·5
Pringle's Champlain	Macdonald College	2,204	60·0	2	109·0	42·6	10·0	2,245·0
Marquis, Ott. 15	Ottawa	2,165	60·0	4	108·7	39·6	9·8	2,197·2
Huron, Ott. 3	Ste. Anne	2,047	61·0	4	111·2	40·6	9·6	2,181·7
Garnet	Ottawa	2,348	59·5	2	97·5	35·8	9·7	2,173·0
Early Red Fife, Ott. 16	Ottawa	1,884	59·0	4	111·2	40·7	9·3	2,129·5
Huron, C. R.	Cap Rouge	1,989	61·0	2	106·5	41·1	9·7	2,050·5
Red Fife Manitoba	Neepawa	1,890	58·0	2	112·5	42·0	10·0	2,034·0
Master, Ott. 520	Ottawa	1,925	59·0	2	98·5	35·0	10·0	1,982·5
Preston	Ste. Anne	1,802	60·0	3	109·3	39·8	9·1	1,956·6

The Aurore variety heads the list but no effective comparison is possible from one year's results. Huron Ottawa 3, Early Red Fife, and Marquis compare very favourably in yield. Garnet gave also the same yield for a two years' test. Reward and Pringle's Champlain seem to be good yielders also, but like Aurore, they must be tested longer to have their relative worth established.

OATS—TEST OF VARIETIES

Eight varieties were tested on the same basis as wheat. They were sown on May 21.

OATS—VARIETY TEST

Name	Source	Yield per acre, 1926	Weight per measured bushel	Year tested	Number of days maturing	Length	Strength	Average yield per acre
		lb.	lb.	year	days	inches	per cent	lb.
Victory, Sv	Swedish	2,831	36·0	4	107·0	39·7	9·0	3,343·5
Gold Rain	Swedish	2,269	38·0	4	103·0	43·5	9·7	3,329·3
Banner, Ottawa 49	Ste. Anne	2,862	35·0	4	105·7	41·6	9·5	3,229·5
Banner, M. C. 44	Mac. College	2,758	36·0	2	106·0	41·3	9·5	2,783·2
Banner, C. R. 31	Cap Rouge	2,644	34·0	2	108·0	40·2	9·5	2,619·1
O.A.C. 144	Guelph	2,522	32·5	2	107·0	42·8	9·2	2,530·9
Alaska	Mac. College	1,828	38·0	4	96·2	37·4	9·8	2,482·7
Longfellow	Ottawa	2,389	36·0	2	104·5	41·5	8·5	2,466·1

The three strains of Banner are very similar in type and must be compared longer to determine whether or not there is any difference between them.

Alaska, while not as heavy a yielder as some other late varieties, is certainly a very good one; the percentage of hull is low; the weight per measured bushel high, and it ripens about eight to ten days earlier than all other varieties. This early oat is well suited for sowing with some six-rowed barley for a mixed-grain crop.

Victory headed the list but has rather a weak straw. Gold Rain is second with a good quality of straw, but the gold colour of its grain reduces its popularity.

BARLEY—TEST OF VARIETIES

Eleven varieties were tested on plots of 1/120 of an acre replicated five times. There is one group of six-rowed and a second group of two-rowed varieties. Both were sown on May 31.

The following table gives the number of years tested and all the particulars as for wheat and oats.

BARLEY—VARIETY TEST

Name	Source	Yield per acre, 1926	Weight per measured bushel	Year tested	Number of days maturing	Length	Strength	Average yield per acre
		lb.	lb.	year	days	inches	per cent	lb.
O.A.C. 21	Guelph	2,371	49·0	4	91·0	35·3	9·4	2,973·2
Chinese, Ott. 60	C.E.F.	2,496	48·0	4	91·7	35·3	9·4	2,888·5
Charlottetown 80	Charlottetown	2,352	51·0	3	102·6	34·0	9·0	2,856·0
Gold	C.E.F.	2,806	51·0	1	100·0	27·0	10·0	2,806·0
Duckbill, Ott. 57	C.E.F.	1,783	49·5	4	105·5	35·1	9·4	2,781·7
Bearer, Ott. 475	C.E.F.	2,839	47·2	2	102·0	37·7	9·5	2,715·5
Hannchen	Swedish	2,494	51·0	2	99·0	33·7	9·0	2,339·0
Duckbill, M.C. 207	Mac. Col.	2,178	50·0	2	103·0	38·1	9·4	2,255·4
Star	Mac. Col.	1,923	47·0	2	94·5	28·9	9·8	2,173·5
Measury	Mac. Col.	1,983	48·5	2	92·5	38·2	9·2	2,054·7

The Chinese and O.A.C. 21 varieties are very similar in type, are good yielders, and at the same time are the earliest ripening varieties. Bearer for the first group and Gold for the second group are varieties a little later but seem to be very good yielders. Duckbill 57 and Banner 49 would be well suited to sow for mixed grain.

PEAS—TEST OF VARIETIES

Four varieties were tested in quadruplicate plots of 1/120 of an acre and were sown on May 21.

The average and 1926 yields are tabulated in the accompanying table.

PEAS—VARIETY TEST

Name of variety	Source	Yield per acre, 1926	Weight per measured bushel	Years tested	Number of days maturing	Length of plants	Average yield per acre
		lb.	lb.	years	days	inches	lb.
Mackay Ott. 26	C.E.F.	3,279	62·5	2	120·3	44·3	3,529·5
O.A.C 181	Guelph	2,993	64	2	111	38·5	3,104·5
Prussian Blue	C.E.F.	2,631	63	2	121	44	3,025·5
Chancellor Ott. 26	C.E.F.	2,952	62·5	4	103·3	38	2,617

MacKay and Prussian Blue are very good yielders in grain and also in straw and are very well suited to sowing with oat and vetches for O.P.V. hay. The colour for Prussian Blue and a black spot on the MacKay make these two varieties unpopular for soup purpose. Chancellor and O.A.C. 181, both small and white, are very attractive peas for cooking. O.A.C. 181 is a little the larger.

BEANS—TEST OF VARIETIES

Four varieties were tried on plots of four rows 41 feet long, 28 inches apart, the plants thinned to 4 inches in the row. The yield is taken from the two centre rows only. Results are given in the following table:—

FIELD BEANS—VARIETY TEST

Name of variety	Source	Yield per acre, 1926	Weight per measured bushel	Years tested	Number of days maturing	Length of plants	Average yield per acre
		lb.	lb.	years	days	inches	lb.
Navy Ottawa 711	C.E.F.	1,514	63·0	4	113·7	15	1,863·6
Robust	Mac. College	1,309	65·0	2	119·0	12	1,785·5
Improved Yellow Eye	Mac. College	1,314	62·5	2	118·0	12	1,509·0
Large White Ottawa713	C.E.F.	1,238	64·0	3	117·6	13	1,366·7

FLAX—TEST OF VARIETIES

Four varieties were tested on duplicate plots of $\frac{1}{120}$ of an acre and were sown on June 4.

FLAX VARIETY TEST—FOR SEED

Name of variety	Source	Yield per acre, 1926	Weight per measured bushel	Years tested	Number of days maturing	Length of plants	Average yield per acre
		lb.	lb.	years	days	inches	lb.
Premost	C.E.F.	1,170	58·0	4	108	23·8	1,180·5
Blanc	C.E.F.	840	54·5	4	105	20·8	998·0
Longstem	C.E.F.	860	55·0	4	111	28·2	972·0
Kastroma	C.E.F.	804	55·0	4	110	27·4	793·5

FORAGE CROPS

Ideal weather conditions prevailed during the early part of spring and the preparation of the seed-bed was very well done. The excessive drought that we had for a month just after the seeding caused the germination to be late and retarded the growth, but good average yields were harvested.

CORN—TEST OF VARIETIES

Thirty varieties were tried this year. The seed was sown by hand in hills three feet apart each way. Three rows for each variety were sown and replicated five times. Three plants only were left on each hill. The seed was sown on June 17, and harvested from October 2 to October 5. Owing to the late spring and also to the slow start of the growth no variety reached maturity.

The following table gives the green yield, and also the dry matter per acre:—

CORN—TEST OF VARIETIES

Variety	Source	Height in inches	Green weight per acre	Dry matter per acre	Maturity at harvest
			tons lb.	tons lb.	
Gehu	Dakota Imp. Seed	38	Grown for seed		Late milk.
Quebec 28	Macdonald College	40	"	"	Milk.
Quebec 28	Todd	38	"	"	"
Amber Flint	Wimple	36	"	"	Ears just formed
North West Dent	Brandon	54	"	"	Late milk.
Twitchell's Pride	Fredericton	60	"	"	Milk.
North West Dent	Macdonald College	70	12 800	1 1,417	Early milk.
Compton Early	Duke	70	13 400	1 1,263	"
Longfellow	Johnson	70	12 400	1 1,145	Ears forming.
Minnesota 13	Dakota Imp. Seed	78	12 600	1 1,469	Ears just formed.
Wisconsin No. 7	Duke	78	14 1,200	1 1,644	Ears forming.
Bailey	Boudy	70	11 1,600	1 1,330	Ears just formed.
Red Cob	Steele Briggs	72	15 600	1 1,614	" "
90 Days White Dent	Dakota Imp. Seed	70	15 200	2 92	Ears forming.
North Western Red Dent	North Dakota grown	68	12 1,600	— —	Milk.
Yellow Dent	Wimple	70	13 1,000	2 23	Ears just formed.
North West Dent	Nebraska grown	72	13 400	2 171	" "
Longfellow	Duke	69	15 650	2 147	Milk.
Longfellow	Dakota Imp. Seed	69	13 1,400	2 195	"
Golden Glow	Duke	70	12 200	1 1,451	Ears forming.
Hybrid	Wimple	71	14 1,800	2 550	Early milk.
Leaming	Duke	72	15 800	1 1,958	"
Bailey	Duke	70	13 800	1 1,993	Ears forming.
North Dakota	Steele Briggs	68	13 200	1 1,673	Milk.
White Cap Yellow Dent	"	71	11 1,800	1 1,384	Ears forming.
Burr Leaming	Carter	72	17 1,400	2 591	"
North West Dent	North Dakota grown	62	14 400	2 90	Milk.
Pride Yellow Dent Hybrid	Dakota Imp. Seed	68	12 1,600	1 1,638	"
Wisconsin No. 7	C.E.F	69	12 1,600	2 139	Late milk.
Howes Hybrid Wisconsin No. 7 and Twitchell's Pride	C.E.F	70	14 1,200	1 1,986	Early milk.

As indicated in the table, no yield was recorded for the first six varieties grown for seed, maturity not being enough advanced.

The average green yield for all the varieties is 13 tons and 1,358 pounds and the average yield in dry matter is 1 ton and 1,824 pounds.

The variety Burr Leaming gives the highest green yield, as well as the highest dry matter per acre. It gave a yield of 4 tons and 42 pounds above the average for the green weight and 767 pounds above the average of dry matter.

SUNFLOWERS—TEST OF VARIETIES

Five varieties were tested. The seed was sown on June 17 in rows 3 feet apart and left 6 inches apart in the rows. The crop was harvested when each variety was 75 to 100 per cent in bloom.

The first variety harvested was Mammoth Russian from Rosthern, Sask., on September 4, and the last variety Mammoth Russian from Kenneth McDonald, on September 9.

The average green yield is 19 tons and 1,040 pounds, and the average dry matter is 2 tons and 1,740 pounds.

SUNFLOWERS—VARIETIES

Name	Source	Height	Maturity	Yield per acre				Remarks
				—		Dry matter		
				tons	lb.	tons	lb.	
Mammoth Russian	K. McDonald	100	75 per cent in bloom.	25	8,000	4	1,042	Single.
Manchurian	McKenzie	75	" "	16	600	2	10	"
Mammoth Russian	Ewing	98	90 per cent in bloom.	22	400	4	165	"
Giant Russian	Dakota Imp. Seed	80	75 per cent in bloom.	19	400	2	335	"
Mammoth Russian	Rosthern	60	100 per cent in bloom.	14	1,200	1	1,148	"

MANGELS—TEST OF VARIETIES

Forty-six varieties were sown in rows 30 inches apart and thinned to 8 inches. For each variety there was two rows replicated five times. The seeding was done on June 8 and the crop harvested from October 9 to 12.

Results are given in the following table:—

MANGELS—TEST OF VARIETIES

Name	Source	Yield per acre				General type	Other types and colour
		Green weight		Dry matter			
		tons	lb.	tons	lb.		
Yellow Intermediate	Ottawa	14	1,800	2	320	Intermediate	Uniform colour.
Mammouth Longue Red	Sutton	14	1,000	1	1,900	Long	"
Giant White Sugar	R. Moore	15	400	2	200	"	"
Yellow Vauriac	Vilmorin	16	1,400	2	120	Intermediate	98 per cent yellow, 2 per cent red.
Sludstrup	Penticton	15	800	2	240	"	98 per cent red, 2 per cent yellow.
Yellow Globe	Sutton	16	1,400	1	1,740	Globe	99 per cent yellow, 1 per cent red.
Eclipse	McKenzie	14	1,400	1	1,580	"	Uniform colour.
Stryno Barres	Hartman	20	1,000	2	998	Intermediate	Yellow, 2 per cent rsd.
F. Jerristslen Barres	"	19	1,800	2	1,221	"	Yellow, 2·5 per cent tankard red.
Rosted Barres	"	20	1,600	2	4	"	Red and yellow.
Sludstrup Barres	"	20	..	2	1,436	"	½ per cent half long, red in colour.
Taarojc Barres	"	19	412	2	786	"	Red in colour.
White rsd top half sugar	"	13	1,621	1	1,698	"	2·5 per cent green top.
White, green top half sugar	"	18	1,083	2	1,293	"	2 psr cent red top.
Svalof Alpha white	Gsneral Swedish	16	1,032	2	813	"	Uniform in type and colour.
Svaloi Alpha Rsd	"	19	1,027	2	999	"	" " "
Half Sugar White	Dupuy & Furguson	19	200	2	359	"	2 per cent rsd, uniform type.
Danish Sludstrup	"	19	1,820	2	993	"	Uniform in type and colour.
Danish Improved	"	10	722	.....		"	Sugar beet.
Mammouth Red Intermediate	Bruce	19	800	2	1,079	"	Uniform in type and colour.
Giant Rose Feeding	"	17	1,226	2	1,551	"	" " "
Giant Rose Intermediate	"	18	..	2	471	"	" " "
Giant White Feeding	"	19	1,820	2	1,881	"	" " "
Gate Post	"	13	1,200	2	101	Half-long	" " "
Giant Sugar	Rennie	17	1,100	2	703	Intermediats	" " "
Echsndorffsr Yellow	Hartman	17	800	1	1,751	Tankard	" " "
Echendorffer Red	"	17	800	1	1,671	"	" " "
Improved Tankard Crsam	Rennie	16	..	1	1,914	"	52 per cent half-long, white 2 per cent, halt-long red.
Ideal	"	18	1,125	2	466	"	Uniform in type and colour.
Golden Tankard	"	13	1,820	1	1,238	"	56 per cent half-long.
" "	Dupuy & Furguson	16	1,000	1	1,970	"	Uniform in type and colour.
" "	Bruce	13	..	1	1,138	"	3 per cent half-long.

MANGELS—TEST OF VARIETIES—*Con.*

Name	Source	Yield per acre		General type	Other types and colour
		Green weight	Dry matter		
		tons lb.	tons lb.		
Echendorffer Yellow	General Swedish	17 412	1 1,816	"	Uniform in type and colour.
Echendorffer Red	" "	16 1,608	1 925	"	" " "
Perfection Mammouth Long Red	Rennie	14 1,226	1 1,972	Long	" " "
Elevatham Mammouth	Hartman	14 ..	2 35	"	" " "
Improved Mammouth Long Red	Dupuy & Furguson	14 412	1 1,506	"	" " "
Yellow Leviathan	Bruce	14 1,200	1 1,332	Half-long	50 per cent half-long, 50 per cent tankard.
Long Yellow	Dupuy & Furguson	14 1,416	1 1,997	Long	Uniform in type and colour.
Giant Yellow Globe	Rennie	17 1,800	2 70	Globe	" " "
Red Globe	Bruce	13 1,104	2 266	"	" " "
Yellow Globe	"	17 ..	1 1,628	"	" " "
Giant Yellow Globe	Dupuy & Furguson	20 1,436	2 61	"	" " "
Barres Oval	General Swedish	19 624	2 573	Ovoid	" " "
Barres Half-long	" "	20 1,213	2 958	Half-long	Red, a few roots white.
Half Sugar Danish	Ste. Anne	21 1,114	2 1,187	Intermediate	Red.

Owing to the unfavourable condition of the temperature after seeding, and also to aphis and the relatively short season of growth, the yields obtained are not very high.

Amongst the most satisfactory yielders, in our test, are all the Barres group from Hartman which are of the intermediate type. The Danish Sludstrup and Giant Yellow Globe from Dupuy & Furguson, also of intermediate and globe type, gave fair yields. The variety of Half Sugar Rose Danish, a selection of our Station, gave the highest yield, and Golden Tankard from Bruce the lowest.

The average green yield is 16 tons and 1,993 pounds, and dry matter 2 tons and 184 pounds per acre.

SWEDE TURNIP—TEST OF VARIETIES

Thirty-five varieties were under test in rows 56 feet long, 30 inches apart thinned to 10 inches, and replicated five times. They were sown on June 8 and harvested on October 13. The following table gives the results obtained:—

SWEDE TURNIP—TEST OF VARIETIES

Name	Source	Yield per acre		Remarks
		Green weight	Dry matter	
		tons lb.	tons lb.	
Magnun Bonum	Sutton	18 600	1 1,700	Red top, very fair.
Bangholm 8312	Macdonald College	21 400	2 719	Red top, very fair, globe.
Hall's Westbury	Ewing	19 200	1 1,862	Red top, very fair.
Improved Lord Derby	Sutton	18 1,200	1 1,843	Green top, rather elongated.
Good Luck	Steele Briggs	18 1,400	1 1,803	Very fair, oblong.
Ditmars	R. Ditmars McNutt	23 800	2 413	Globe, green top.
Bangholm	Kentville	16 1,200	1 1,954	Red top, elongated.
Elephant	Sutton	18 600	1 1,759	Oblong, red elongated top.
Perfection	Dupuy & Furguson	20 600	2 211	Red top, good.
Nec Plus Ultra	"	19 1,800	1 1,637	Red top, good shape.
Elephant	"	18 1,600	1 1,922	Oblong, red elongated top.
Sutton Champion Purple Top	"	20 ..	2 500	Purple top, good.
Kangaroo	"	19 1,000	2 52	Green and red top, medium length.
Kangaroo Bronze Green Top	Rennie	18 200	1 1,548	Green, elongated top.
Improved Jumbo	"	18 1,400	1 1,961	Red top, rather good shape.
Canadian Gem	"	20 200	1 1,956	Red top, globe shape.
Magnun Bonum	"	22 400	2 205	Red top, very good shape.
Prize Purple Top	"	20 400	2 7	Red top, a little small.
Invicta	"	22 ..	2 228	Bronze-green top.
Best of All	"	18 1,800	1 1,704	Red top, very fair.
Bangholm	Nappan	19 400	2 251	Bronze-green top, globe shape.

SWEDE TURNIP—TEST OF VARIETIES—*Con.*

Name	Source	Yield per acre		Remarks
		Green weight	Dry matter	
		tons lb.	tons lb.	
Bangholm	General Swedish	20 1,600	2 160	Red, elongated top.
Olsgaard Bangholm	Hartman	22 800	2 184	Red top, very good.
Bangholm	Dupuy & Furguson	18 1,200	1 1,865	Red, elongated top.
Shepherd's	Trifolium	24 1,400	2 594	Bronze-green top, very good.
Shepherd's Golden Globe	Hartman	19 400	1 1,809	Rather green top, elongated shape.
Improved Yellow Swede	General Swedish	23 1,000	2 958	Green top.
Shirwings	Kenneth McDonald	16 600	1 1,706	Red, elongated top.
Bangholm 1116	Trifolium	21 1,800	2 704	Red top, globe.
Bangholm	Charlottetown	16 1,200	1 1,857	Red top, a good shape.
Bangholm Pyberg	Trifolium	21 1,600	2 835	Red top, very fair.
Bangholm Olsgaard 5018	Trifolium	17 1,800	2 138	Good red, elongated top.
Fynch Bartfelder	Dupuy & Furguson	24 1,600	1 1,700	White, long root.
Yellow Tankard	"	24 1,400	2 401	Green top, long root.
Dales Hybrid	"	21 1,600	1 1,575	Globe shape, green top, very fair.
Good Luck	"	23 ..	2 996	Red elongated top, fair.

Owing to weather conditions that prevailed throughout the growing season, the yield of turnips is below the average. However, the stand was good and the yield given is interesting from the variety point of view.

Ditmars (McNutt), Magnun Bonum (Rennies), Improved Yellow Swede (General Swedish), Bangholm (Hartman), Good Luck (Ste. Anne) are very good yielders.

The average green yield for turnips is 20 tons 1,734 pounds and the average dry matter is 2 tons 220 pounds.

CARROTS—TEST OF VARIETIES

Twelve varieties were sown on June 9 and harvested on October 16. The same procedure as for turnip was followed, except they were thinned at 4 inches. The results follow:—

CARROTS—TEST OF VARIETIES

Name	Source	Yield per acre	Remarks
		tons lb.	
Large White Vosges	Dupuy & Furguson	11 1,800	Fair, half-long, and large.
Mammouth Short White	Rennie	14 1,800	Fair, half-long, and large.
White Belgian	Dupuy & Furguson	13 1,000	Long slim, very hard to harvest.
White Belgian 9008	Trifolium	12 1,800	Long, medium-size.
Large White Belgian	Rennie	12 200	Long, slim, very hard to harvest.
White Belgian	Hartman	10 1,000	Long, slim.
Half Long White	General Swedish	12 800	Fair.
Champion	Hartman	11 400	Yellow colour, medium size.
Danish Champion	Ottawa	12 400	Yellow colour.
White Intermediate	Summerland	13 1,600	Fair.
Champion	General Swedish	11 1,000	Yellow colour, medium size.
James	Ottawa	9 1,200	Yellow, medium size, rather long.

The intermediate type seems to be more satisfactory and easier to harvest on a clay soil than the Long type.

LEGUMES AND GRASSES

The experiments with legumes and grasses were continued this year on the same basis as the preceding years. A second block of 2/75 acres was sown in the spring in plots of 1/100 of an acre with grasses and clovers singly and in combination. Barley was sown as a nurse-crop at the rate of two bushels per acre. The yields given in the following tables give the results of blocks sown in 1924 and 1925.

TIMOTHY—TEST OF VARIETIES

Three strains of timothy were sown in duplicate plots of 1/100 of an acre in 1924 and the same strains sown again in the same way in 1925.

The results included in the following table give first, the average yield for 1925 and 1926 of the 1924 seeding; the yield in 1926 of the 1925 seeding and the average yield for the three crops harvested.

For each crop harvested, the yield is given in the form of green material, air-dry material and also in the form of dry matter.

TIMOTHY—TEST OF VARIETIES

Mixtures	Rate per acre	Mixture sown in 1924			Mixture sown in 1925			1926		
		Average yield for for 1925-26 per acre			Average yield per acre for for 1926			Average yield per acre for the three crops harvested		
		Green weight	Air-dry weight	Dry matter	Green weight	Air-dry weight	Dry matter	Green weight	Air-dry weight	Dry matter
	lb.	ton lb.	ton lb.	lb.	ton lb.	ton lb.	lb.	ton lb.	ton lb.	lb.
Boon Timothy...	12	4 1,025	1 1,325	1,114	5 ..	2 ..	1,359	4 1,512	1 1,662	1,237
Com. Timothy..	12	4 1,000	1 1,275	1,079	4 1,575	1,1,495	1,237	4 1,287	1 885	1,158
Timothy 9327....	12	4 1,650	1 1,500	1,164	4 1,390	1 1,265	1,175	4 1,520	1 1,882	1,170

It appears from timothy table, that there is no significant difference between the three strains tested for these two years.

GRASSES—TEST OF VARIETIES

Seven different grasses grown for hay, gave the following results:—

GRASSES—TEST OF VARIETIES

Mixtures	Rate per acre	Mixture sown in 1924			Mixture sown in 1925			1926		
		Average yield for for 1925-26 per acre			Average yield per acre for for 1926			Average yield per acre for the three crops harvested		
		Green weight	Air-dry weight	Dry matter	Green weight	Air-dry weight	Dry matter	Green weight	Air-dry weight	Dry matter
	lb.	ton lb.	ton lb.	lb.	ton lb.	ton lb.	lb.	ton lb.	ton lb.	lb.
Orchard Grass...	30	3 476	1 1,850	574	5 1,155	1 240	742	4 815	1 1,045	658
Meadow fescue..	30	3 525	1 700	918	5 875	1 1,850	1,253	4 700	1 1,275	1,086
Kentucky Blue..	20	4 150	1 1,000	556	.....	.....	.....	4 150	1 100	556
Red Top.....	20	4 1,700	1 1,600	1,343	.....	.....	.....	4 1,700	1 1,600	1,343
Awnless Brome..	14	5 ..	1 1,600	1,177	5 1,580	2 160	1,387	5 790	1 1,880	1,282
Tall Oat Grass..	25	3 1,275	1 600	856	4 370	1 510	853	3 1,822	1 555	854
Western Rye.....	14	5 1,200	2 100	1,453	.....	.....	.....	5 1,200	2 100	1,453

It will be noted that the average yield for 1926 is not the average of three crops for all the varieties tested. In fact, no yield was recorded for Kentucky Blue, Red Top, Awnless Brome and Western Rye in 1925, and again this year no yield was recorded for Kentucky Blue, Red Top and Western Rye for the range sown in 1925.

TEST OF ALFALFA

The growth for the group of plots sown in 1924 was fair, but the stand was too much affected by weeds to allow of weighing the crop harvested.

From the group of plots sown in 1925, we harvested a few, but the crop was too mixed with weeds and clovers to allow of comparisons. The varieties tested were: Grimm, Variegated, Turkestan and Medicago falcalta.

HAY AND PASTURE MIXTURES

From the accompanying table, it must be seen that the best green yield as well as the highest yield in the form of dry matter for the three crops harvested is obtained from a mixture of alfalfa, red clover, alsike, white Dutch, timothy, orchard grass and meadow fescue.

The first year, the mixtures which give the highest yields contained, alfalfa, red clover, alsike, white Dutch, while the second year, better result were obtained when the mixtures contained also orchard grass, meadow fescue, timothy and red top.

MIXTURES OF GRASSES AND CLOVERS

Mixtures	Rate per acre	Mixture sown in 1924 — Average yield per acre for 1925–1926			Mixture sown in 1925 — Average yield per acre in 1926			1926 — Average yield per acre for the three crops harvested		
		Green	Dry	Dry matter	Green	Dry	Dry matter	Green	Dry	Dry matter
		tons lb.	tons lb.	lb.	tons lb.	tons lb.	lb.	tons lb.	tons lb.	lb.
Timothy	6									
Orchard grass	2									
Meadow fescue	2	7 1,925	2 1,350	1,541·22	5 890	1 1,765	1,169·04	6 1,407	2 557	1,355·13
Red clover	8									
Alsike	2									
White Dutch	1									
Timothy	6									
Orchard grass	2									
Meadow fescue	2									
Red clover	8	6 1,250	1 1,138	1,026·94	6 830	2 530	1,543·82	6 1,040	1 1,834	1,285·40
Alsike	2									
Kentucky blue	2									
White Dutch	1									
Red top	2									
Timothy	8									
White sweet clover	10	6 500	1 1,700	1,307·52	4	1 1,400	1,291·32	5 250	1 1,550	1,299·42
White Dutch	1									
Timothy	6									
Orchard grass	4	6 1,100	2 100	1,300·87	5 615	2 480	1,579·20	5 1,857	2 290	1,440·03
White sweet clover	10									
White Dutch	1									
Timothy	6									
Meadow fescue	4	7 250	1 1,950	1,314·9	5 450	1 1,935	1,369·77	6 350	1 1,942	1,342·33
White sweet clover	10									
White Dutch	1									
Timothy	6									
Meadow fescue	2									
Orchard grass	2	7 1,200	2 200	1,365·08	5 1,830	2 1,330	2,050·45	6 1,515	2 765	1,707·76
White sweet clover	2									
White Dutch	1									

MIXTURES OF GRASSES AND CLOVERS—*Continued*

Mixtures	Rate per acre	Mixture sown in 1924 — Average yield per acre for 1925–1926			Mixture sown in 1925 — Average yield per acre in 1926			1926 — Average yield per acre for the three crops harvested		
		Green	Dry	Dry matter	Green	Dry	Dry matter	Green	Dry	Dry matter
		tons lb.	tons lb.	lb.	tons lb.	tons lb.	lb.	tons lb.	tons lb.	lb.
Timothy	8									
Yellow sweet clover	10	6	1 1,200	1,001·28	4 1,620	1 1,750	1,387·87	5 810	1 1,475	1,194·57
White Dutch	1									
Timothy	6									
Orchard grass	4									
Yellow sweet clover	10	5 1,100	1 1,200	1,138·73	5 400	1 1,685	1,383·35	5 750	1 1,442	1,261·04
White Dutch	1									
Timothy	6									
Meadow fescue	4									
Yellow sweet clover	10	7 1,500	2 500	1,319·11	4 495	1 1,300	1,187·34	5 1,997	1 1,900	1,253·22
White Dutch	1									
Timothy	6									
Meadow fescue	2									
Orchard grass	2									
Yellow sweet clover	10	7 1,000	2 450	1,435·44	4 770	1 1,330	1,105·56	5 1,885	1 1,890	1,270·5
White Dutch	1									
Timothy	6									
Meadow fescue	4									
Red clover	8	6 1,900	2 150	1,417·68	5 800	1 1,650	1,188·44	6 350	1 1,900	1,303·06
Alsike	2									
White Dutch	1									
Timothy	6									
Meadow fescue	4									
Red clover	8									
Alsike	2	6 1,250	2	1,342·44	5 1,200	1 1,950	1,295·99	6 225	1 1,975	1,319·21
White Dutch	1									
Kentucky blue	2									
Red top	2									
Timothy	6									
Orchard grass	4									
Red clover	10	6 1,200	1 1,750	1,237·92	5	1 1,760	1,408·86	5 1,600	1 1,755	1,323·39
White Dutch	1									
Timothy	6									
Orchard grass	4									
Red clover	10	7 650	2 950	1,503·80	5 600	1 1,550	1,188·89	6 625	2 250	1,346·34
Kentucky blue	2									
Red top	2									
White Dutch	1									
Timothy	6									
Orchard grass	4									
Red clover	8	6 1,700	2 100	1,274·07	5 600	1 1,300	953·70	6 150	1 1,700	1,113·88
Alsike	2									
White Dutch	1									
Timothy	6									
Orchard grass	4									
Red clover	8									
Alsike	2	6 700	2	1,333·16	7 700	2 700	1,188·63	6 1,700	2 350	1,260·89
Kentucky blue	2									
Red top	2									
White Dutch	1									
Timothy	6									
Orchard grass	2									
Meadow fescue	2	6 1,500	2 650	1,392·44	6 1,500	1 1,900	1,028·04	6 1,500	2 275	1,210·24
Red clover	10									
White Dutch	1									

MIXTURES OF GRASSES AND CLOVERS—*Concluded*

Mixtures	Rate per acre	Mixture sown in 1924			Mixture sown in 1925			1926		
		Average yield per acre for 1925–1926			Average yield per acre in 1926			Average yield per acre for the three crops harvested		
		Green	Dry	Dry matter	Green	Dry	Dry matter	Green	Dry	Dry matter
		tons lb.	tons lb.	lb.	tons lb.	tons lb.	lb.	tons lb.	tons lb.	lb.
Timothy	6									
Orchard grass	2									
Meadow fescue	2									
Red clover	10	7 750	2 800	1,351·93	6 700	2 500	1,432·35	6 1,725	2 650	1,392·14
Kentucky blue	2									
Red top	2									
White Dutch	1									
Alfalfa	3									
Timothy	6									
Red clover	10	7 1,600	2 700	1,337·73	6 515	1 1,800	1,216·76	7 57	2 250	1,277·24
Alsike	2									
White Dutch	1									
Alfalfa	3									
Timothy	6	8 850	2 1,000	1,291·03	6 140	1 180	645·93	7 495	1 1,590	968·48
Red clover	5									
White Dutch	1									
Timothy	8									
Red clover	10	3 1,650	1 600	995·91	4 1,780	1 1,420	1,061·91	4 715	1 1,010	1,028·91
White Dutch	1									
Timothy	8									
Red clover	10									
Kentucky blue	2	3 1,950	1 1,250	1,235·51	4 690	1 1,055	1,012·73	4 320	1 1,152	1,124·12
Red top	2									
White Dutch	1									
Timothy	8									
Red clover	8	4 750	1 1,100	934·36	3 1,575	1 975	1,044·22	4 162	1 1,037	989·79
Alsike	2									
White Dutch	2									
Timothy	8									
Red clover	8									
Alsike	2	4 100	1 800	1,051·13	3 1,500	2 500	1,674	4 1,800	1 1,650	1,362·56
Kentucky blue	2									
Red top	2									
White Dutch	1									
Timothy	8									
Alsike	4	4 1,500	1 1,100	904·60	4 1,240	1 1,925	1,258·75	4 1,370	1 1,512	1,081·67
White Dutch	1									
Timothy	8									
Alsike	4									
Kentucky blue	2	4 800	1 1,050	829·70	4 850	1 1,250	1,050·07	4 825	1 1,150	939·88
Red top	2									
White Dutch	1									
Timothy	6									
Meadow fescue	4	4 1,150	1 1,300	851·04	3 1,450	1 900	1,030·67	4 300	1 1,100	940·85
Red clover	10									
White Dutch	1									
Timothy	6									
Meadow fescue	4									
Red clover	10	4 250	1 1,050	899·96	4 1,275	1 1,830	1,314·46	4 762	1 940	1,107·21
Kentucky blue	2									
Red top	2									
White Dutch	1									

SUGAR BEET—TEST OF VARIETIES

Eight varieties were tested in the same way as for mangels. They were seeded on June 8 and harvested on October 4. An analysis consisting of the sugar content and coefficient of purity was made by the Chemistry Division at Ottawa. Results are given in the accompanying table.

SUGAR BEET—TEST OF VARIETIES

Varieties	Source	Yield per acre	
		tons	lb.
Dieppe	Dominion Sugar Co.	9	1,664
Horning	" "	15	1,507
Schreiber & Sons	" "	10	1,282
Danish Improved	Dupuy & Furguson	10	722
Ivanosk S	Amtorg	10	722
Vladoska Y.S	Trading Corporation	10	1,780
Ivanosk Y	" "	10	1,282
Kalniki S	" "	10	473

SUGAR BEET—CHEMICAL ANALYSIS

Varieties	Laboratory number	Weight per root		Sugar in juice	Coefficient of purity
		lb.	oz.		
Dieppe	86595	1	—	18·64	85·17
Horning	86596	1	2	17·96	83·60
Schreiber & Sons	86597	1	3	17·95	85·76
Danish Improved	86598	1	4	16·00	79·58
Ivanosk S	86601	1	—	18·06	85·63
Vladoska Y.S	86599	1	—	18·49	84·47
Ivanosk Y	86600	—	15	17·07	80·24
Kalniki S	86602	—	14	17·74	82·52

The yield obtained this year considering the short season of growth, is a good average one for our Station.

In the following table are given the results obtained with sugar beet since 1922:—

SUGAR BEETS—1922-1926

Year	Number of varieties	Average yield		Average yield per root		Average sugar in juice	Coefficient of purity
		tons	lb.	lb.	oz.	p.c.	
1926	8	11	179	1	7	17·74	83·37
1925	7	13	94	1	14	18·52	82·82
1924	8	9	748	1	7	19·92	84·79
1922	6	8	427	1	1	17·69	87·38
Average for 4 years	6 to 8	10	961	1	7	18·47	84·59

POULTRY

The breeding and experimental work of this division made another step forward during the year just finished. The birds have very much improved in type, and tables in this report will indicate the improvement made from a production standpoint. The reader will also note the numerous practical experiments which are under way.

Barred Plymouth Rocks only are kept at this Station. The stock on hand on December 31, 1926, consisted of 313 birds; 8 cock birds, 42 cockerels, 103 hens and 160 pullets.

The first chicks hatched March 31 and the last ones June 13. The incubator used is a Candee of 1,200 eggs capacity.

INCREASING PRODUCTION BY PEDIGREE BREEDING

All birds are trap-nested and each bird's production is recorded. The best layers are mated with males from dams and grand dams with high production records.

The following figures show the yearly production of the best 15 birds for each year since this work was started.

Year	Number of birds	Total eggs laid	Average production per bird
1923	15	1,854	123·6
1924	15	2,297	153·1
1925	15	3,036	202·4
1926	15	3,374	224·9

An increase of 29.5 eggs per bird was obtained from 1923 to 1924; 49.3 from 1924 to 1925 and 22.5 from 1925 to 1926.

COST OF EGG PRODUCTION

This experiment is to determine the cost of egg production for different periods of the year. Twelve Barred Plymouth Rock pullets were used. The twelve birds were fed a standard home-mixed grain and dry mash ration, the dry mash ration was composed of equal parts of bran, oat meal, corn meal and 15 to 18 per cent of beef scrap. They had also in hoppers, grit, shell and charcoal, and were fed green feed in the form of mangels or sprouted oats once a day.

Eggs were sold at the average price of 57.6 cents per dozen for the first period, 32.4 for the second period and 33.7 for the third period. Results obtained for various periods are here tabulated:

Period	Number of birds	Cost of feed	Eggs produced	Value	Profit over cost of feed	Profit per bird
		$ cts.		$ cts.	$ cts.	$ cts.
November 1 to February 28	12	9 94	717	30 71	20 77	1 73
March 1 to June 30	12	8 43	1,063	31 22	22 79	1 89
July 1 to October 31	12	7 45	795	24 06	17 41	1 45

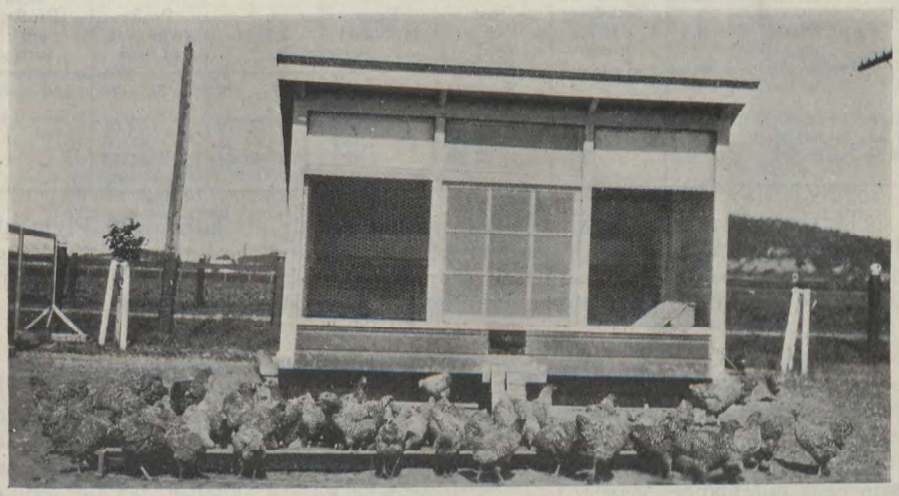
For the first period the average production per bird was 59.7 eggs at an average cost of 16.7 cents per dozen, giving an average profit of $1.73 per bird.

For the second period, the average production per bird was 88.5 eggs at an average cost of 9.5 cents per dozen giving an average profit of $1.89 per bird.

For the third period, the average production was 66.2 at an average cost of 11.2 cents per dozen, giving an average profit per bird of $1.45.

EGG PRODUCTION COSTS

WINTER EGGS.—The following table shows that the period of winter which returned highest profits was the month of December which gave $9 profit over the cost of feed for 12 birds. It should be noted that the cost per dozen is generally higher in the winter months than in any other period of the year, but reasonable profits may be secured during that period on account of the higher selling price of eggs.



A Colony House for Chickens. Experimental Station, Ste. Anne de la Pocatière.

AVERAGE COST OF EGGS FOR THE ENTIRE YEAR.—As it may also be noted in the same table, the total number of eggs laid by the 12 birds during the whole year was 2,575 at an average cost of 12 cents per dozen, which gives an average profit of $4.84 per bird. These birds however were selected from amongst the best layers of the flock.

MONTHLY COST OF EGGS

Month	Number of birds	Cost of feed	Eggs produced	Cost per dozen	Value	Profit over cost of feed
		$ cts.		cts.	$ cts.	$ cts.
November	12	2 43	148	19·7	6 15	3 72
December	12	2 59	221	14·0	11 59	9 00
January	12	2 61	170	18·4	7 05	4 44
February	12	2 31	178	15·5	5 92	3 61
March	12	2 24	265	10·1	7 95	5 71
April	12	2 19	292	9·0	8 75	6 56
May	12	2 03	241	10·1	7 23	5 20
June	12	1 97	265	10·0	7 29	5 32
July	12	1 84	263	8·4	7 24	5 40
August	12	1 87	216	10·3	5 94	4 07
September	12	1 83	192	11·4	5 28	3 45
October	12	1 91	124	18·4	3 60	1 69
Total for the year..	12	25 82	2,575	12·0	83 99	58 17

EGGS REQUIRED TO PAY FOR THE COST OF FEED.—Calculations with the figures given in the preceding table show that the number of eggs required to pay for the winter feed of 12 birds during November, December, January and February was 232 or 19.3 eggs per bird.

The number of eggs required to pay for the year's feed of the same birds was 792 or 66 eggs per bird.

COST PER BREED.—This part of the experiment is to determine what breed of poultry is the most economical to keep. The best pens of different breeds in the laying contest were used for this experiment. The groups were fed a standard ration and given every possible care throughout the year. For a twelve months' period records were kept of the feed cost, eggs produced and their value.

Breed	Number of birds	Cost of feed	Eggs produced	Value	Profit over cost of feed	Profit per bird
		$ cts.		$ cts.	$ cts.	$ cts.
Barred Plymouth Rock....	10	27 95	2,019	80 76	52 81	5 28
Rhode Island Red.....	10	24 98	1,822	72 88	47 90	4 79
White Leghorn.....	10	22 09	1,666	66 64	44 55	4 45

This year's results show an advantage in favour of the Barred Plymouth Rocks which stand first for the number of eggs laid and the total profit although they cost a few dollars more to feed than the other breeds. The Rhode Island Red stand second with a slight advantage over the White Leghorn.

BEST DATE FOR INCUBATION

The object of this experiment is to determine the best date for incubation with regard to fertility, hatchability and livability of chicks.

As may be seen from the following table, the best results were obtained from eggs hatched in May.

BEST DATE FOR INCUBATION

Month	Total eggs set	Number fertile	Per cent fertile	Number of chicks hatched	Per cent total eggs hatched	Per cent fertile eggs hatched	Number of chicks alive when wing banded	Per cent chicks alive when wing banded	Total eggs required for one chick hatched	Total fertile eggs for one chick hatched	Total eggs required for one chick when wing banded
			p.c.		p.c.	p.c.		p.c.			
March.....	640	527	82·35	118	18·43	22·39	94	79·6	5·4	4·47	6·8
April.....	660	534	80·9	147	22·27	27·52	123	83·7	4·8	3·63	5·38
May.....	647	522	80·68	223	34·62	42·62	190	85·2	2·9	2·34	3·4

RATE AND COST OF GROWTH IN REARING

This experiment was carried from May 29 to October 1. The number of chicks in the experiment was twenty-six. All were still alive at the end of the experiment.

The feed consumed consisted of home-mixed grain, dry mash, rolled oats, skim-milk, charcoal, grit, oyster shell, cod-liver oil, green clover and sprouted oats. Home-mixed grains and mash were fed in hoppers.

At birth the chicks weighed an average of 2 ounces. At the end of the first month 9 ounces, at two months 1½ pounds, at three months 2½ pounds, and at the end of the period 3¾ pounds each.

COST OF RAISING CHICKS

Feed	Quantity consumed	Cost	Total cost
	lb.	$ cts.	$ cts.
Grain	275	2 25 per 100 lb.	6 18
Meal	260	2 25 per 100 lb.	5 85
Rolled oats	11	6 00 per 100 lb.	0 66
Clover	10	10 00 per ton	0 05
Sprouted oats	30	2 00 per 100 lb.	0 60
Milk	375	0 40 per 100 lb.	1 50
Grit	4	1 00 per 100 lb.	0 04
Oyster shell	4	1 30 per 100 lb.	0 05
Charcoal	2	5 50 per 100 lb.	0 11

Total weight of 26 chicks at birth	4 pounds
Number of chicks at the end of the experiment	26
Total weight at the end of experiment	97·5 pounds
Average weight at the end of experiment	3·75 "
Total cost of feed	$ 15.04
Average cost of feed per chick	0.57½

FATTENING AND FINISHING ROASTERS

For this experiment, forty-eight Barred Plymouth Rock cockerels were divided into six groups of eight birds each. Five groups were placed in fattening-crates and one in a fattening-pen. The fattening period was of three weeks' duration, from November 18 to December 9.

The cockerels were fed five times daily for the three first days, four times a day for the balance of the first week, three times a day during the second week, and twice a day during the third week.

All birds received in addition to the feed here enumerated, charcoal and oyster-shell.

Group 1.—One part of barley meal, one part of oat meal, one-half part bran, mixed with milk in the following proportions 1½ pounds milk for 1 pound of the mixture.

Group 2.—Mixture: One half part barley meal, one-half part corn meal, one part oat meal, one-half part bran.

Group 3.—Mixture: One part corn meal, one part of oat meal, one part beef scrap, one-half part bran.

Group 4.—Mixture: One part corn meal, one part oat meal, and one-half part bran.

Group 5.—Mixture: One part commercial mash, one part oat meal, one-half part bran, one-half part mashed potatoes.

Group 6.—Mixture: One part corn meal, one part oat meal, one-half part bran. This group was in the fattening pen in comparison with group 4 which was in a fattening-crate.

FATTENING COCKERELS

Group	Number of birds	Weight per group at beginning	Weight at the end	Feed consumed		Cost of feed	Gain in weight	Initial value of bird per group	Final value per bird	Total profit per bird
				Mash	Milk					
		lb.	lb.	lb.	lb.	$ cts.	lb.	cts.	$ cts.	cts.
1	8	38·0	48·3	49·0	73	1 28	10·3	94·0	1·262	32·2
2	8	38·1	50·0	55·5	81	1 52	11·9	94·2	1·314	37·2
3	8	38·8	46·0	43·0	.....	1 29	7·2	94·8	1·173	22·5
4	8	38·6	49·9	51·0	76	1 45	11·3	94·6	1·30	35·4
5	8	37·6	47·0	38·0	68	1 40	9·4	93·6	1·23	29·4
6	8	38·7	47·4	46·5	79	1 30	8·7	94·3	1·224	28·1

CORN VS. BARLEY FOR CHICKS

The object of this experiment is to determine whether barley is a satisfactory substitute for corn in the grain ration.

From hatching date to the age of four months, two equal groups of chicks were housed, handled and fed alike except that cracked corn and corn meal were used in all rations for one group, and barley and barley meal for the other group.

As reported in the following table, barley was found a satisfactory feed to replace corn for the feeding of growing chicks, although the corn-fed group made gains at a fraction of a cent less cost per pound this year than the barley-fed group.

These are results for only one year and should not be taken as definite.

CORN VS. BARLEY FOR CHICKS

—		Corn-fed group	Barley-fed group
Number of birds in each group	No.	26	26
Total weight of group at beginning	lb.	4·0	4·0
Total weight of group at the end	"	97·5	84·5
Average weight per bird at end	"	3¾	3¼
Cost of scratch grain	$	6 19	5 20
Total cost of feed	$	15 04	13 37
Average cost per chick	cts.	57·8	51·4
Cost of one pound gain	"	0·16	0·16·6

CORN VS BARLEY FOR THE LAYERS

This experiment is to determine whether barley is a satisfactory substitute for corn in the grain ration for layers.

Two equal pens of pullets were handled, housed, and fed alike, except that cracked corn in the scratch mixture and corn meal in the mash was fed to one pen and barley and barley meal to the other. This experiment covers a period of six months.

CORN VS. BARLEY FOR LAYERS

—		Corn-fed group	Barley-fed group
Number of birds in group	No.	10	10
Cost of scratch grain per 100 lb	$	2 25	2 05
Cost of mash per 100 lb	$	2 25	2 05
Table cost of feed	$	15 52	13 54
Number of eggs laid	No.	796	758
Value of eggs laid	$	27 93	26 14
Cost per dozen	cts.	23·4	21·4
Profit over the cost of feed	$	12 41	12 60

According to these figures, the group of birds fed corn laid 38 more eggs than the group fed barley, but as the corn cost slightly more than barley, the barley-fed group returned slightly more profit. This experiment would indicate that barley can replace corn for the feeding of laying birds, and especially so when it can be purchased at a lower cost.

HATCHING EGGS FROM HENS AND PULLETS

The object of this experiment is to compare eggs from hens and pullets with regard to fertility, hatchability, and livability of chicks.

The results from three years' experiments are given in the following summary:—

HATCHING EGGS FROM HENS AND PULLETS

—	Year	Total eggs set	Per cent fertile	Number of chicks	Per cent total eggs hatched	Per cent fertile eggs hatched	Per cent chicks alive when wing-banded	Total eggs required for one chick hatched	Total fertile eggs required for one chick hatched
Hens	1924	1,538	85·6	716	46·5	54·3	52·2	2·10	1·8
	1925	1,017	88·7	427	41·8	47·2	82·6	2·14	2·1
	1926	1,338	87·3	426	30·6	35·0	85·7	3·25	2·84
Total	.....	3,893	87·2	1,569	40·3	46·2	69·4	2·4	2·16
Pullets	1924	897	75·2	250	27·8	27·03	32·8	3·5	2·7
	1925	1,826	79·2	648	35·4	47·70	77·6	2·8	2·2
	1926	559	66·18	62	11·0	16·75	67·9	9·17	5·98
Total	.....	3,282	73·5	960	29·2	39·8	65·3	3·4	2·51

Eggs from hens have proven to be more fertile than eggs from pullets. Hens have also given a greater percentage of fertile eggs hatched and produced stronger chicks.

RELATION OF WINTER PRODUCTION TO HATCHING-RESULTS

In this experiment two groups of ten birds of varied winter production, fed and handled alike, were used to determine the extent to which fertility, hatchability and livability of chicks are affected by winter production.

The winter production period extends from November to March.

RELATION OF WINTER PRODUCTION TO HATCHING RESULTS

Group	Number of birds	Average winter production per bird	Total number of eggs set	Per cent fertile	Per cent total hatched	Per cent fertile hatched	Total eggs required for one chick when wing-banded
High winter production	10	30·3	333	80·9	30·3	34·3	3·6
Low winter production	10	5·4	387	91·9	35·1	38·2	3·0

PULLETS VS HENS FOR EGG PRODUCTION

The object of this experiment is to determine and compare the value of hens and pullets for the production of eggs. The results from three years' experiment are tabulated as follows:—

PULLETS VS. HENS FOR EGG PRODUCTION

Group	Year	Number of birds	Cost of feed	Total eggs laid	Value	Profit
Hens	1924	10	21·86	1,108	32·04	10·18
	1925	48	54·97	2,150	82·18	27·21
	1926	12	23·51	1,818	54·50	30·97
	Total	60	100·34	5,076	168·72	68·36
	Average per bird	.....	1·67	84·6	2·81	1·14
Pullets	1924	10	19·05	1,371	39·65	20·60
	1925	48	67·72	4,228	173·37	105·65
	1926	12	25·37	2,558	76·75	51·38
	Total	60	112·14	8,157	289·77	177·63
	Average per bird	.....	1·87	136	4·83	2·96

As indicated by the tables, an average production for three years' trial was 51.4 more eggs obtained from the pullets, at an average greater profit per bird of $1.82. It should also be stated that the birds entered in the hen group were birds with laying records of 125 or more eggs in their pullet year. Therefore, according to the three experiments, the only reason for keeping one year old hens would be for reproduction purposes as pullets will produce more eggs at a lower cost per dozen. (Project P. 60).

SKIM MILK VS BEEF SCRAP VS MEAT

The object of this experiment is to determine the value of these three feeds as sources of animal protein.

Three groups of pullets were housed, handled and fed alike, except that one group received skim milk to drink and mash containing no beef scrap; a second group received beef scrap in a hopper; and a third group received raw meat, (horse flesh). This experiment lasted for a period of six months.

Skim-milk was valued at 4 cents a gallon.
Beef scrap at $4.75 per 100 pounds.
Horse meat at 3 cents per pound.
Eggs were sold at 47·5 cents per dozen for the period.

SOURCES OF ANIMAL PROTEIN

——		Group fed with skim-milk	Group fed with beef scrap	Group fed with horse meat
Number of eggs laid	No.	934	908	717
Cost of animal protein	$	0·83	1·08	1·48
Total cost of feed	$	17·86	15·57	13·40
Value of eggs	$	36·95	35·91	28·35
Cost per dozen	$	0·229	0·205	0·224
Profit over the cost of feed	$	19·09	20·34	14·95

Skim milk gave the best production of eggs. Beef scrap gave the lowest cost per dozen and greater profit.

ROOTS VS CLOVER VS SPROUTED OAT VS EPSOM SALTS

The object of this experiment is to compare three green feeds and ascertain whether Epsom Salts can be used with good results as a substitute for green food.

Four equal groups of pullets were housed, handled and fed alike, except that one group received roots, one group received clover, one group received sprouted oats, and the fourth group Epsom Salts (1¼ ounces per twelve birds) once a day, either mixed in drinking water or in the mash.

Eggs were sold at an average price of 48 cents per dozen for the period of experiment.

The following table shows the results obtained for six months of experiment.

Pen	Green feed	Cost of green feed	Total cost of feed	Eggs laid	Value	Cost per dozen	Profit over cost of feed
		cents	$		$	cents	$
1	Roots	88·6	14 73	911	36 44	19·4	21 71
2	Clover	24·5	14 61	937	37 48	14·9	22 87
3	Sprouted oats	1·18	14 97	719	28 76	22·7	13 79
4	Epsom salts	0·97	14 78	641	25 64	25·8	10 86

Clover gave the best results, and this is in accordance with previous tests. The Epsom salts gave the lowest profit, the reason being that the birds in this pen did not lay many eggs during the winter months.

QUEBEC EAST EGG-LAYING CONTEST

The fourth egg-laying contest to be conducted at Ste. Anne de la Pocatière Station was commenced on November 1, 1925, and completed on October 29, 1926.

The total number of eggs produced during the fifty-two weeks of the contest was 28,998 for 28, 231.1 points.

The twenty pens entered in 1925-26 contest comprized the following breeds: 4 pens S.C. White Leghorns, 6 pens of Barred Plymouth Rock, and 10 pens of Rhode Island Reds. Twenty-seven hens each laid 200 eggs and over; 11 birds were qualified for registration and 16 were disqualified because their eggs averaged under 24 ounces to the dozen.

EGG PRODUCTION SINCE BEGINNING OF CONTESTS

Years	Number of birds	Eggs laid	Average production per bird
1922-23	120	13,506	112·0
1923-24	170	23,473	138·0
1924-25	200	30,927	154·6
1925-26	200	28,998	144·9

APICULTURE

THE SEASON

The season of 1926 was not very favourable to the production of honey. The spring was late and cold, causing slow development of brood. It was only with the coming of June, that the bees started to work actively. The following are the hours of sunshine and inches of precipitation recorded.

	Hours of sunshine	Inches of precipitation
May	155	3·92
June	204	1·93
July	243	4·38
August	189	2·11
September	88	2·27

Throughout the summer, the weather was rather cool and cloudy with much wind.

The honey crop was harvested slowly and it ended on August 3. From that date to the end of September, the bees gathered just enough to maintain themselves.

The bees were taken out in the spring on April 30, making it the longest wintering period experienced for years, namely 171 days. The 68 colonies wintered in the bee-cellar came out all alive, but some of them weak. Of the 23 colonies wintered in outside cases, three were lost. Later, after the weak and orphan colonies were united, 71 were left to start the summer's work. Of this number two were sold in the spring.

The total honey crop of the 69 colonies left in the spring was 3048.5 pounds or an average of 44.3 pounds per colony.* The highest production in 1926 for one colony was 120 pounds.

All the honey crop was collected from the white Dutch and alsike clovers.

The year was ended by placing 92 colonies in winter quarters on November 12. Of this number, 69 colonies were placed in the bee-cellar and 23 in outside-wintering cases.

Besides looking after the Experimental Station apiaries, our beeman is also assisting people keeping bees in the district surrounding the Station.

As in former years, score of visitors have visited the Station apiary for information. The "bee reminders" and other literature were distributed to all names on our mailing list.

CONTROL OF SWARMING BY DE-QUEENING AND RE-QUEENING

At the first appearance of larvae in the royal cells, the queen and all the royal cells are destroyed. Nine days after, the royal cells formed were again destroyed. Of the nine colonies thus treated, a young queen was introduced into two colonies after the royal cells had been destroyed on the second inspection and one royal cell was left in the seven other colonies.

Of these nine colonies treated as described above none swarmed, and they gave an average honey production of 56.5 pounds per colony.

CONTROL OF SWARMING BY SEPARATION OF BROOD AND QUEEN

At the first appearance of larvae, in the queen-cells, all frames containing brood were removed from the brood-chamber and placed in an upper super.

* In connection with this, the reader should note, that many colonies are used for experimental work and this has some effect on the production.

The queen being left below with a certain amount of bees. The removed frames of brood were replaced with empty drawn combs and a queen-excluder was placed on top of the chamber containing the queen.

Two colonies were treated this way with good satisfaction. The average honey production was 62½ pounds.

METHOD OF DETECTING PREPARATIONS FOR SWARMING

For the purpose of this experiment, we have used ten-frames hives, to which half-supers were added in order to allow the queen two chambers for brood-nest. Upon the arrival of the swarming period the hives were examined every nine days. This was done by lifting the upper super at the rear of the hive. If any royal cells containing eggs or larvae were found on the frames, they were destroyed, and the super dropped in its place, but if no royal cells were found on the lower part of the frames of the upper super, the brood-chamber of the hive was then examined.

Of the 10 hives set aside for this experiment, royal cells were found in six, and swarming was successfully controlled. In the other four colonies, no royal cells were found below the half super and the colonies did not swarm.

The Apiary. Experimental Station, Ste. Anne de la Pocatière..

WINTERING IN CELLAR

The cellar where our bees are wintered is located beneath the bee-man's house and has no system of ventilation. The part where the bees are kept has a wooden partition on one side with a door connecting with the main cellar. Once a week the door is opened for a short time when it is dark to freshen the air. Of the 68 hives brought in in the fall of 1925, all were taken out alive in the spring of 1926. Five colonies suffered slightly from dysentery; and an average of 15 pounds of honey was consumed from November 10 to April 30, the date the colonies were taken out.

Two hives were placed on scales and thermometers set in appropriated places to record the temperature.

The following table gives details of wintering.

WINTERING IN A CELLAR

Month	Temperature of the cellar			Honey consumed by the bees in the two hives on scales	
	Maximum	Minimum	Moisture	Hive No. 40	Hive No. 60
				lb.	lb.
November	54	50	40	1¾	2¼
December	50	46	38	2¼	4
January	50	46	38	2	6½
February	51	49	41	2	6½
March	51	48	40	2¾	5½
April	52	50	46	2½	4
Total	.....	.....	.....	14¼	28¾

In studying the table, the reader should make a note that the hive number 40 had eight frames covered with bees in the fall, while hive number 60 had ten frames covered with bees and a half super of honey over its hive when taken in the fall, hence the greater consumption.

WINTERING IN FOUR-COLONY CASES

Eight-colonies were wintered in four-colony cases. The colonies are placed end to end in the cases at the latter part of September and fed as rapidly as possible. Their weight is then taken, after which they are packed. About 5 inches of planer shavings are put beneath the hives and 4 inches on the sides and ends. When the cold weather comes, the tops are covered with 10 inches of shavings and the cover set for the winter. Of the eight colonies wintered in these cases, six wintered well and gave an average production of 71 pounds.

WINTERING IN THREE-COLONY CASES

Nine colonies were wintered in three-colony cases. One case with three colonies in our apiary and the six others in the apiary at the next parish. These colonies had their entry facing the south and were packed also with shavings.

The three colonies wintered in our apiary had 10-frame hives and all wintered well.

Of the six colonies wintered in the out-apiary, four were Jumbo hives and two ten-frame hives. All the Jumbo hives came out in the spring in good condition, but the ten-frame hive colonies in this out-apiary were weak and had to be united.

The four Jumbo colonies were all divided during the summer and gave an average honey production of 54.5 pounds.

WINTERING IN TWO-COLONY CASES

Four colonies were wintered in two-colony cases. The colonies had their entry facing the south and were packed with planer shavings similar to the four-colony cases.

Of the four colonies wintered in these two-colony cases, three wintered well. The fourth was visited by field mice, the queen was dead and the colony weak.

WINTERING BEES IN SINGLE-COLONY CASES

Two colonies were wintered by this method. One hive was packed with shavings and one with dried maple leaves. The colony which was packed with shavings was found very weak in the spring, but the colony packed with maple leaves was very strong and produced 80 pounds of honey.

COMPARISON OF DIFFERENT STORES FOR WINTERING

Four sets of seven colonies each had their winter provision made of different kinds of honey and gave the following results:—

Seven colonies were wintered with clover honey. One colony had dysentery on January 9; the others wintered well.

Seven colonies had sugar syrup made of two parts of granulated sugar and one part of water, and all wintered well.

Seven colonies had honey plus 10 pounds of sugar syrup and wintered well.

Seven colonies had white clover honey and fall-gathered honey. Of this number, four colonies had dysentery, two on January 9 and two on February 13. The others were weak. The fall honey was gathered mostly from golden rod and sunflowers.

The syrup given was composed of two parts of granulated sugar and one part water. The sugar was completely dissolved with hot water, allowed to cool and then given to the bees.

TWO-QUEEN SYSTEM

To save as many queens as possible for spring needs, either for orphan colonies or for replacements of queens producing drones, or for strong colonies to be divided, three hives with two queens each were wintered experimentally. Instead of uniting two weak colonies in the fall, which means destruction of one queen, these are brought into one hive and separated by a division-board.

All the queens wintered by the above system came out in good condition in the spring and suitable for the uses specified.

RETURNS FROM APIARIES

To determine the annual average honey production, the value of honey and bees per colony, eighteen colonies in good average condition were wintered for this purpose. Of this number, fourteen were in good condition in the spring.

Revenue—		
713 pounds honey at $0.16	$ 114 08	
1 colony (increase) at $7	7 00	
3 pounds wax at $0.35	1 05	
Total		$ 122 13
Expenses—		
Interest at 6 per cent on 18 hives valued at $7 each, and supplies	$ 22 50	
110 hours of labour at $0.35	38 50	
300 pounds of sugar at $6.50 per 100 pound	19 50	
Total		$ 80 50
Total profit		41 63

COMPARISON OF DIFFERENT SIZES OF HIVES

To discover the relative value of different hives, and their effects on the production of brood, swarming, wintering and honey production, tests were

made with two hives each of different sizes. The results obtained are as follows:—

SIZE OF HIVES

Number of hives	Size of hives	1926		Average of two years	
		Average production per colony	Average honey consumed in wintering	Average swarming	Average production of honey per colony
		lb.	lb.	%	lb.
2	8 Frame Langstroth	20	14	75	29½
2	9 " "	35	17½	50	50
2	10 " "	63½	15	25	75¾
2	12 " "	62½	9½	0	68¾
2	10 Jumbo	34	18	50	33½

This experiment has been under way for two years only. To date, it would appear that the twelve-frame will give poor wintering results. The ten-frame hives would appear to be more satisfactory, both for wintering bees and for honey production.

VALUE OF STIMULATIVE FEEDING FOR BROOD

To test the value of stimulative feeding on the production of early brood, six colonies of equal strength were set aside for test. The colonies were not given any extra food (they had, however, enough honey to carry them to the coming of the honey crop) and the other colonies were fed at the rate of one-quarter pound of syrup daily, made of half white sugar and half water by weight. For the colonies that received no stimulative feeding, the average honey yield was 41.7 pounds and 48.3 pounds for the fed group.

The little difference obtained this year by feeding is charged to the cold weather that prevailed from the middle of May to June 10, dates between which the bees were fed.

STUDY OF HONEY FLOWS

For the purpose of this experiment, two average colonies were set on an independent scale, and the weight of the colonies was taken every hour from 6 a.m. to 8 p.m. from the beginning to the end of honey flow. The temperature, the direction of wind, and weather condition were also recorded.

From the records taken, it appears that the two days on which the greatest amount of honey was collected, were on the 30th and 31st of July. On the 30th, the wind was North, and West on the 31st. Both days were bright, with a light breeze.

From the observations made, there is practically no increase from the morning until 2 p.m. when the increase begins; it ends at 7 p.m. From 2 to 7 p.m. the increase takes place at a rate of ½ to 1 pound per hour. When the evenings and nights were cool, the increase was the maximum mentioned.

COMPARISON OF FEEDERS

Two types of feeders were tried—the Miller and the perforated five and ten-pound honey-pails. The cover of the honey-pails are perforated with a finishing nail (1½ inches long) at five places and the pail containing the syrup is inverted on a half or ordinary-size super according to the pail used. The inverted honey-pail is preferred to the Miller or other feeders for spring feeding. For fall feeding, more holes should be perforated in the cover of the pails. If a 10-pound pail is used, at least fifteen holes should be made, as the sugar syrup has always a thicker consistency in the fall.

OUT-DOOR VERSUS CELLAR WINTERING

Two groups of four average colonies each were used for this experiment.

Group 1 was wintered in a four-colony case packed with shavings, and group 2 in the bee-cellar.

In the spring, group 1 had two weak colonies, which had to be united. The two other colonies wintered well. In group 2 all colonies wintered well.

When the bees had been taken out in the spring, it was found that group 1 made gains faster owing to the fact that they were not taken out of their wintering cases until the weather had become quite warm and consequently suffered the least under the prevailing cold temperatures of April and early May.

The average honey production per colony was 48½ pounds for group 1 and 36¼ pounds for group 2.

The results for three years are as follows:—

OUT-OF-DOOR AND CELLAR WINTERING
(Three years' results)

—	Group 1	Group 2
Average honey production per colony ..... lb.	71	52
Percentage of loss ..... %	25	8¼
Percentage swarming ..... %	11	45

The colonies of group 1 which have been wintered in outside cases have made faster gains in the spring, therefore producing more honey. This may be partly accounted for by the better protection these colonies had in the fall and late spring from the wintering cases. This group had also less tendency to swarm and it is thought that the fact is due to their greater strength and activity. (Project Ap. 30).

SPRING PROTECTION OF BROOD-CHAMBER

Ten colonies were divided in two groups. The first group had its hives protected with an outside case as soon as taken out of the cellar until the warm weather arrived, and the second group was given no protection.

The average honey production per hive for the first group was 44.3 pounds against 40 pounds for the unprotected group.

The difference in favour of the protected group is much less this year than it was last year.

RELATION TO THE HONEY CROP OF STRENGTH OF COLONY IN BEES AND BROOD

For the purpose of this experiment, six average colonies have been used. The results are embodied in the following table:—

STRENGTH OF COLONY AND HONEY PRODUCTION

Number of hive	May 15		June 1		June 15		Honey crop
	Bee-frames	Brood-frames	Bee-frames	Brood-frames	Bee-frames	Brood-frames	
							lb.
75	6	4	10	5	14	10	1 0
77	6	4	10	6	16	10	120
79	8	4	10	6	16	10	96
76	5	3	6	4	9	5	50
89	5	3	6	5	9	7	55
81	4	2	6	5	9	7	50

As can be expected, the production of honey is very closely related to the number of frames covered with bees and brood in the early part of the summer. If provision has been made to have the maximum number of working bees when the honey flow arrives, the greater will be the quantity of honey gathered and stored in the hives.

METHODS OF INTRODUCING QUEENS

To determine the most advantageous methods of queen introductions, thirty-five queens were introduced with the Benton cage, three with the Canadian cage, and two queens by the smoke method.

With the Benton cage thirty-one queens were introduced in July and were all accepted. Four others were introduced with the same cage in October, but owing to the lateness of the season the colonies could not be inspected later that fall.

Of the four queens introduced with the Canadian cage, three were accepted and the other was killed.

The queens introduced by the smoking method were both accepted.

As it has been mentioned, of the forty-one queens introduced only one was lost and it is felt that the Canadian cage may give as good satisfaction as the others when the queens are raised at the apiary. It should also be remembered that condition of the colony and honey flow largely affects the success obtained in introducing queens.

PROTECTED VERSUS UNPROTECTED HIVES DURING SUMMER

For this experiment, 10 colonies were used. Five colonies were receiving the rays of sunlight until 10 a.m. only, as they were shaded by trees for the rest of the day and they gave an average production of 75½ pounds per colony but they did not swarm.

The five other colonies remained exposed to sunlight all day and gave an average of 51 pounds per colony and three out of five swarmed.

RELATION BETWEEN DIVIDED AND UNDIVIDED COLONIES AND HONEY YIELDS

To find the advantage or disadvantage of dividing hives as far as the production of honey is concerned, a certain number of hives were divided and compared with another group which were not divided.

As will be noted in the following table, the undivided colonies have produced more honey per colony, but as there was an increase of six colonies in the divided group, if colonies are wanted, this system would be advantageous, otherwise provision to prevent swarming should be made if honey only is desired.

RELATION BETWEEN DIVIDED AND UNDIVIDED COLONIES

Divided colonies		Undivided colonies	
Number of colony	Honey production	Number of colony	Honey production
	lb.		lb.
29	40	2	80
24	40	79	96
51	53	17	90
12	60	37	80
58	75	38	75
54	65	75	110
Average production	55½ lb.	Average production	82½ lb.
Value of honey	$53 28	Value of honey	$84 96
Increase of 6 colonies at $7 each	42 00		
Total	$95 28		
Average value per colony	$15 88	Average value per colony	$14 16

FRUIT BLOOM AS SOURCE OF NECTAR

To determine the value of fruit bloom as a source of nectar and if a surplus honey production could be expected, from this source, observations were made and records taken on the honey flow. As the flora of our district is very limited and the number of large orchards few, it was noted that during the period of fruit bloom most of the honey gathered was used in the production of brood which indirectly brought the colonies in good strong working condition to gather later the white clover honey.

WINTERING BEES IN DOUBLE HIVE

To find if strong colonies in the fall could be wintered more advantageously in doubling the brood-chamber by placing on top a half-super, seven colonies were wintered as follows:—

Four colonies were wintered in the bee-cellar and three colonies were wintered outside. Of the three colonies wintered outside, one colony was weak and had to be united. The two others wintered well and produced 45 to 70 pounds of honey respectively.

Of the four colonies wintered in the bee-cellar, one was without a queen and another weak. These two were united. The two others did well. It was noted, however, that these colonies consumed an average of 23 pounds of honey, which is a large quantity. This large consumption may be accounted for by the greater space resulting in a cooler hive.

OUTSIDE APIARY

An apiary was started a year ago at the parish of St. Onésime, which is several hundred feet higher in altitude than Ste. Anne and which has a marked different flora from that of our region. The aim is to determine if that range is more advantageous for honey production than the valley and ultimately also to test different varieties of bees.

Six colonies were wintered at that place in wintering-cases. Of that number, four colonies were very strong in the spring and two were weak and were united.

The following statement will be found of interest:—

Revenue—		
195 lb. of honey at $0.16	$ 31 20	
16 pounds comb honey at $0.25	4 00	
Increase of 4 colonies at $7 each	28 00	
1 pound of wax	0 35	
Total		$ 63 55
Expenses—		
Lost of 2 colonies at $7 each	$ 14 00	
27 lb. of sugar at $0.07 (spring)	1 89	
Bought 2 queens at $0.60	1 20	
100 lb. of sugar (autumn)	6 40	
38 hours of work at $0.35	13 30	
Rent of land, interest of capital $75 at 6%	4 50	
30 lb. of honey at $0.16	4 80	
Total of expenses		$46 09
Net Profit		17 46

FLAX FOR FIBRE

Experimental work with flax continues to receive our best attention as there is a revival of interest in this crop by a great many farmers of our district.

There is no doubt that the installation of a complete scutching unit at this Station to scutch the farmers flax is responsible in part for the awakening of interest in this crop, as the hand-scutchers were quite difficult to obtain, besides being more or less unsatisfactory.

During the past year, 300 farmers have availed themselves of the opportunity of having their flax scutched at the Experimental Station plant. It was also noted, that the flax brought by the majority of the farmers was more properly retted than that of former years and was generally of better quality.

The weather was quite favourable in our district for flax-growing. The crop harvested was slightly above the average and of good quality. The seeding of the experimental plots was made on June 4, in triplicate plots and the flax was pulled from the 19th to 26th of August, giving a period of growth of 76 to 87 days for the varieties under trial.

FLAX—TEST OF VARIETIES

—	Number of days maturing	Straw air dried, per acre	Retted straw per acre	Seed per acre	Fibre per acre	Tow per acre
	days	lb.	lb.	lb.	lb.	lb.
Pure Line No. 6	82	4,440	2,252	732	288	240
J. W. Stewart	83	6,516	2,880	729	360	312
White Dutch Blossom	87	5,196	2,592	816	216	396
829 C	81	4,836	2,280	876	288	180
Riga Blue	70	3,912	1,992	672	216	240

In the interpretation of this table, the reader's attention is called to the fact that owing to a period of moist and wet weather, when the flax was being retted, it remained on the field slightly too long, causing certain varieties to be overretted and thereby affecting the yield slightly. Despite that fact, the quality of hackled fibre for the varieties J. W. Stewart, White Dutch Blossom, and 829 C was very good.

METHOD OF SEEDING FLAX

Two methods were followed in the seeding of flax, namely: Broadcasting by hand and covering with a spike harrow, and sowing in drills with a Planet Junior seeder in rows 6 inches apart. The results follow:—

—	Number of days maturing	Straw air dried per acre	Retted straw per acre	Seed per acre	Fibre per acre	Tow per acre
	days	lb.	lb.	lb.	lb.	lb.
Riga Blue seeded in drills	80	3,996	1,956	840	191·2	276
Riga Blue broadcast	80	4,152	1,956	730	264·0	228

DATE OF SEEDING FLAX

For this experiment the first seeding was done on June 4 and the other seedings at one-week intervals. The results obtained were the following:—

—	Date of seeding	Number of days maturing	Straw air dried per acre	Retted straw per acre	Seed per acre	Fibre per acre	Tow per acre
		days	lb.	lb.	lb.	lb.	lb.
Riga Blue	June 4	77	3,600	1,872	876	168	276
"	" 10	84	3,072	1,392	552	108	180
"	" 18	95	4,596	.....	648	.....	.....
"	" 26	98	5,436	.....	660	.....	.....

It appears from the preceding table that satisfactory yields may be obtained by each seeding providing the weather conditions are favourable. But generally, the last seeding ripens too late to be retted the same fall.

RATE OF SEEDING FLAX

The table following would indicate that the total yield of fibre is increased by sowing more than 84 pounds of seed per acre.

—	Number of days maturing	Straw air dried per acre	Retted straw per acre	Seed per acre	Fibre per acre	Tow per acre
	days	lb.	lb.	lb.	lb.	lb.
Riga Blue, 112 lb. per acre..	78	3,912	1,992	672	228	276
Riga Blue, 98 lb. per acre...	78	3,720	1,800	756	192	312
Riga Blue, 84 lb. per acre...	77	3,672	1,920	876	192	240

FLAX—FERTILIZER EXPERIMENTS

—	Number of days maturing	Straw air dried per acre	Retted straw per acre	Seed per acre	Fibre per acre	Tow per acre
	days	lb.	lb.	lb.	lb.	lb.
Nitrate of soda, 400 lbs. per acre	82	4,632	2,112	864	216	264
Nitrate of soda, 300 lbs. per acre	82	4,356	2,040	792	156	336
Nitrate of soda, 100 lbs. per acre	82	3,960	1,956	756	192	240
Check	81	3,792	1,836	672	192	216
Nitrate of soda, 200 lbs. per acre Phosphoric acid, 500 lbs. per acre Muriate of potash, 100 lbs. per acre	83	4,476	2,232	828	228	240
Nitrate of soda, 200 lbs. per acre Phosphoric acid, 500 lbs. per acre	81	4,392	2,076	840	216	240
Check	80	3,756	1,920	720	204	240
Muriate of potash, 100 lbs. per acre	80	3,672	1,920	780	204	240
Phosphoric acid, 500 lbs. per acre	80	3,840	1,920	696	192	216
Nitrate of soda, 200 lbs. per acre	82	4,116	1,992	840	204	216

This experiment was commenced last year and carried again this year to determine to what extent the application of commercial fertilizers in varying amounts influenced the yield of flax.

To date, the results obtained do not point to any benefit from the application of these fertilizers. This may be partly accounted by the fact that the soil is a heavy clay, well manured the preceding years for root crops.

GENERAL NOTES

ILLUSTRATION STATIONS

The Illustration Station is a connecting link between the farmers and the Experimental farm. In co-operation with the officers at headquarters, twenty-two illustration Stations have been directed and supervised from the Ste. Anne Experimental Station in 1926. The aim of the Illustration Station is to demonstrate to the farmer the latest information secured by experiment and trial on the Experimental Farms.

For detailed information on the work carried and results obtained, the reader is referred to the separate report of the Illustration Stations, which can be obtained free of charge at the Publications Branch, Department of Agriculture, Ottawa, Ont.

EXPERIMENTS WITH FERTILIZERS

An experiment which includes eleven treatments with fertilizers and barnyard manure was commenced in 1924.

These tests are made on a four-year rotation on a drained heavy clay. The application of the fertilizers is made in the early spring for the swede turnip crop which is followed by barley, clover and timothy. Records of each crop harvested are taken to determine the effect of the various fertilizer combinations on each of these crops.

Owing to the variation in the soil of one part of the field, as well as variation of seasonal temperature, it will be necessary to collect data for a period of years before making deductions.

EXTENSION WORK

Six local fairs were attended in 1926 with an educational agricultural exhibit. With the exception of one, these fairs were patronized by very large numbers of farmers. These exhibits are found to be very useful in bringing to the farmers the best information secured by the Dominion Experimental Farms.

Special field-days were held throughout the summer.

Correspondence bearing on agricultural work and problems has largely increased this year.

In addition to the several articles for the press and egg-laying contest reports prepared, the staff have received 5,131 letters and have sent out 6,229 in the year past.

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