DOMINION OF CANADA
DEPARTMENT OF AGRICULTURE
DOMINION EXPERIMENTAL FARMS

EXPERIMENTAL FARM

NAPPAN, N.S.

REPORT OF THE SUPERINTENDENT

W. W. BAIRD, B.S.A.

FOR THE YEAR 1928

Eight acres of Bangholm club root resistant turnips, yielding 861 bushels per acre.

Printed by authority of the Hon. W. R. Motherwell, Minister of Agriculture, Ottawa, 1929

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THE SEASON

The fall of 1927 was very open. Winter weather put in an appearance during the first week of December. The mean temperature for December for 1926, 1927 and 1928 were 19·26° F., 27·52° F. and 29·81° F., respectively. January of 1928 was a much colder month than that of 1927, a difference of 4·74 degrees on the average. February was 2·14 degrees above the average, while March ran an average temperature. The snowfall was about 18·5 inches less for the winter of 1927-28 than for that of 1926-27. Records show 58·5 inches, against 77 inches, respectively. The grass fields were bare of snow for a greater portion of the winter months, particularly during the latter part. Therefore, the thawing and freezing which took place during February, March, and April was most effective on the newly seeded areas and a very high percentage of the young clover plants were winter-killed. There was very little real good clover cut in this district. The month of April was almost unseasonable, particularly the first part. The maximum temperature was 68° F.; minimum 12°; mean 40·17° F. The mean was 2·5 degrees higher than a twenty-year average. Spring opened early and some work was accomplished the last week of April. May proved a good month for seeding and almost ideal weather continued throughout June and July for germination and growth. The average mean temperature for each of the three months was from 1 to 2 degrees above a twenty-year average for the same period. The precipitation, while slightly less, was nevertheless sufficient for good growth under average soil conditions. The grain crops suffered most during August. The precipitation was only 1·92 inches, against a twenty-one year average of 3·51 inches. Insufficient moisture at this time caused the grain to ripen too quickly, consequently it did not fill so well and the oats ran quite light per measured bushel. Excellent weather was experienced for the harvesting of the early cut grain, but grain that was in stook from September 11 to 18, and from September 24 to 28, suffered considerable damage from wet weather. The precipitation for September was 5·59 inches against a twenty-one year average of 3 inches. While rainfall was recorded on twelve different dates in October and eleven in November, the total precipitation was not heavy and did not militate against the successful harvesting of all potato and root crops. In most instances the various farm crops were stored in good condition. The grain yields were slightly below average, while the hay and root crops were above the past six-year average. The fall of 1928 was very open and ploughing was possible well into the second week of December. The latter month was very mild, the average mean temperature being 29·81° as compared with a twenty-year average of 23·01° F.

Month	Temperature °F.				Precipitation						Sunshine		
					Rainfall		Snowfall						
	Maximum	Minimum	Mean	Average for 20 years	Days	Inches	Days	Inches	Total	Average for 21 years	Days	Hrs.	Average for 17 years
									in.	in.			hours
January	53	−15	19·94	17·16	4	2·08	6	15·0	3·58	2·94	22	78·1	95·0
February	43	−12	17·50	16·19	5	0·62	6	11·5	1·77	2·75	22	100·8	104·8
March	60	−18	27·56	26·15	4	1·42	6	8·0	2·22	2·82	27	143·5	122·0
April	68	12	40·17	37·63	8	2·72	1	1·0	2·82	2·80	26	177·4	137·7
May	76	25	51·97	48·48	10	2·38	.....	.....	2·38	2·29	30	168·3	179·2
June	83	37	57·98	57·45	7	2·08	.....	.....	2·08	2·94	28	207·5	207·8
July	82	40	65·39	64·23	13	2·78	.....	.....	2·78	3·08	29	254·6	216·2
August	89	43	64·81	62·94	10	1·92	.....	.....	1·92	3·51	25	167·4	210·1
September	76	31	54·28	55·56	11	5·59	.....	.....	5·59	3·00	25	171·2	163·8
October	71	21	46·69	46·98	12	2·82	.....	.....	2·82	3·75	27	130·5	125·7
November	60	5	33·85	35·41	11	2·16	1	6·0	2·76	3·32	21	87·7	82·9
December	57	3	29·81	23·01	8	4·40	5	9·5	5·35	3·60	21	95·4	76·3

Total precipitation ..... 36·07
Average precipitation for 21 years ..... 36·81

Days of rainfall 103
Days of snowfall 25
Days of sunshine 303

Inches of rainfall ..... 30·97
Inches of snowfall (equal to 5·1 inches rain) 51
Hours of sunshine ..... 1,782·4
Average hours sunshine 17 years ..... 1,721·6

ANIMAL HUSBANDRY

The work in this division in 1928 was a continuation of that outlined in previous reports. The grade herd of Holsteins was disposed of with the exception of one cow, and three Jersey females were purchased as a nucleus of a herd which is to be established in 1929. Data were collected on cost of maintenance, cost of production, experimental feeding, breeding and marketing.

DAIRY CATTLE

The following cattle were on hand January 1, 1929:—

—	Males	Females
Guernseys	9	39
Jerseys	1	3
Ayrshires	1	—
Grade Holsteins	.....	1
Grade Ayrshires	.....	12
Grade Shorthorn steers	20	—
Total	86	

The following table gives the individual records of all Guernsey cows completing a lactation period, during 1928; also a summary of the production since 1922:—

GUERNSEYS—INDIVIDUAL MILK RECORDS COMPLETED DURING THE YEAR 1928

Name of cow	Date of dropping calf	Age at beginning of period	Number of days in milk	Total pounds milk produced	Daily average yield of milk	Average per cent fat in milk	Pounds butter produced, 85 per cent fat	Value of butter at 42 cents per pound	Value of skim-milk at 20 cents per cwt.	Total value of product	Amount of meal eaten at $2.20 per cwt.	Amount of roots eaten at $7.50 per ton	Amount of hay eaten at $11.40 per ton	Amount of green feed eaten at $4 per ton	Amount of ensilage eaten at $9.50 per ton	Months on pasture at $2 per month	Total cost of feed for period	Cost of feed to produce 100 pounds milk	Cost of feed to produce 1 pound butter, skim-milk neglected	Profit on 1 pound butter, skim-milk neglected	Profit on cow for period, labour and calf neglected
				lb.	lb.	%	lb.	$	$	$	lb.	lb.	lb.	lb.	lb.		$	$	cts.	cts.	$
Cabbage Rose of Hillside—1909	Feb. 21/27	10	334	6,770·5	20·27	4·92	392·14	164 70	12 87	177 57	2,364	4,790	4,138	850	3,220	4 3/15	119 63	1 77	31	11	57 94
Princess Daisy of Hillside—2039	Jan. 25/27	10	355	8,711·7	24·54	4·69	481·09	202 06	16 61	218 67	2,604	5,220	4,390	1,205	3,220	4 3/15	128 66	1 48	27	15	90 01
Queen Sherborn of Nappan—2716	April 6/27	5	311	4,129·7	13·28	5·04	244·88	102 85	7 84	110 69	1,736	4,935	4,474	850	2,625	4 3/15	105 44	2 55	43	−1	5 25
Queen of Sherborn—2121	Jan. 22/27	12	423	8,979·1	21·22	4·63	489·78	205 71	17 13	222 84	2,884	5,650	5,264	850	3,990	4 3/15	144 33	1 61	29	13	78 51
Cabbage Rose of Nappan—2715	June 2/27	6	391	9,865·4	25·23	5·48	635·88	267 07	18 65	285 72	3,403	3,405	5,438	850	4,515	5 11/30	152 51	1 55	24	18	133 21
Stannox of Nappan—3394	Oct. 25/27	4	306	4,007·6	13·10	4·21	198·68	83 45	7 68	91 13	1,942	1,890	3,428	850	2,030	4 1/15	90 56	2 26	46	−4	0 57
Nappan Stannox—3615	April 29/27	3	368	5,695·4	15·48	5·38	360·44	151 38	10 78	162 16	2,431	2,745	4,580	850	3,785	4 3/15	118 63	2 08	33	9	43 53
Nappan Stannox 2nd—3616	Feb. 26/27	3	336	4,039·3	12·02	5·13	243·79	102 39	7 66	110 05	1,876	2,975	3,452	850	2,415	4 3/15	94 34	2 34	39	3	15 71
Nappan Cabbage Rose—4055	Dec. 24/26	2	417	5,169·5	12·40	5·23	318·08	133 59	9 80	143 39	1,959	3,285	4,144	850	3,315	4 3/15	105 55	2 04	33	9	37 84
NappanDaisy—4054	Aug. 25/27	3	281	3,633·5	12·93	4·89	209·09	87 82	6·91	94 73	1,806	1,890	3,396	850	1,990	2 2/30	81 80	2 25	39	3	12 93
Nappan Queen—4058	Sept.25/27	2	335	4,760·0	14·21	4·72	264·54	111 11	9 07	120 18	2,120	1,890	3,428	850	2,030	3 1/15	92 48	1 94	35	7	27 70
Nappan Rose—4057	Sept.19/27	2	315	3,892·7	12·36	5·07	232·25	97 55	7 39	104 94	2,132	1,890	3,428	850	2,030	3 1/15	91 41	2 35	39	3	13 53
Nappan Blanche—4056	Jan. 8/28	2	326	5,943·9	18·23	4·58	320·45	134 59	11 25	145 84	2,283	2,800	3,060	1,610	1,260	4 1/30	96 11	1 62	30	12	49 73
Nappan Princess—4947	Jan. 12/28	2	317	6,541·0	20·63	4·22	324·55	136 31	12 53	148 84	2,269	2,540	2,916	1,610	1,260	4 1/30	94 00	1 44	29	13	54 84
Rose of Nappan—3599	Oct. 10/27	3	405	4,883·3	12·06	5·12	293·89	123 43	9 27	132 70	1,589	2,610	3,976	2,460	2,030	7 7/15	96 24	1 97	33	9	36 46
Princess Stannox of Nappan—2384	Nov.19/27	6	300	5,175·7	17·25	4·44	270·51	113 61	9 89	123 50	2,357	1,890	3,428	1,050	2,030	4 1/30	99 49	1 92	37	5	24 01
Princess Daisy L.K. of H. 2nd—2041	Nov.22/27	7	297	3,748·4	12·62	5·27	232·23	97 55	7 10	104 65	2,015	1,890	3,428	1,050	2,030	4 7/15	91 63	2 44	39	3	13 02
Patricia of Nappan—3086	Feb. 14/28	5	300	4,256·7	14 19	5 52	276·47	116 12	8 04	124 16	2,155	3,150	3,764	1,610	2,030	4 1/30	102 27	2 40	37	5	21 89

Cabbage Rose of Hillside—1909....	April 11/28	11	261	5,949·3	22·79	5·29	370·18	155 48	11 27	166 75	2,005	2,950	3,316	1,610	2.030	4[1]⅛₃₂	95 67	1 61	26	16	71 08
Total for herd—19 lactations.....	.....	98	6,378	106,152·7	16·63	4·93	6,158·92	2,586 77	201 74	2,788 51	41,930	58,395	73,448	21,555	47,835	85⅛	2,000 75	.....	.....	.....	787 76
Average for herd—19 lactations.....	.....	5·2	336	5,587·0	16·63	4·93	324·15	136 14	10 62	146 76	2,207	3,073	3,866	1,134	2,518	4[55]/114	105 30	1 88	32	10	41 46
Total 1922–27—61 lactations.....	.....	4·8	21,518	347.248·8	16·14	5·50	22,463·76	9.241 25	657 28	9,898 53	167,404	345,651	239,508	117,508	66,579	283[7]/10	6,090 82	1 75	27	14	3.807 71
Total, 1922–28—80 lactations.....	.....	.....	27,896	453,401·5	.....	.....	28,622·68	11,828 02	859 02	12.687 04	209.334	404.046	312,956	139,063	114,414	370[13]/16	8,091 57	1 78	28	13	4.595 47
Average, 1922–28—1 lactation.....	.....	4·9	349	5,667·5	16·24	5·37	357·78	147 85	10 74	158 59	2.617	5,051	3,912	1.738	1,430	4·64	101 14	1 78	28	13	57 44

FINANCIAL STATEMENT OF GUERNSEY HERD, 1928, AND TOTAL FOR SEVEN YEARS

To feed cost for nineteen Guernsey cows and progeny:—		
41,930 pounds meal at $44 per ton	$	922 46
58,395 pounds roots at $7.50 per ton		218 98
73,448 pounds hay at $11.40 per ton		418 65
21,555 pounds green feed at $4 per ton		43 11
47,835 pounds ensilage at $9.50 per ton		227 22
85½ months pasture at $2 per month		170 33
Feed cost of 7 heifers to 1 year of age		383 81
" " 3 bulls to 1 year of age		160 98
" " 9 calves to date of sale or to Jan. 1, 1929		292 90
19 bull services at $5		95 00
25 tons straw at $5		125 00
		$3,058 44
By—		
Sale of 6,158·92 pounds butter at 42 cents per pound		$2,586 75
" 100,870 pounds skim milk at 20 cents per cwt		201 74
" 5 bulls for breeders		367 00
" 5 calves for beef		72 87
7 heifer calves on hand		1,050 00
2 bull calves on hand		200 00
175 tons manure at $2		350 00
		$4,828 36
Credit balance from 19 cows		$1,769 92

FINANCIAL STATEMENT FOR SEVEN-YEAR PERIOD

Year	Number of lactations	Debit	Credit	Credit balance
		$	$	$
1922	6	1,042 19	2,118 29	1,076 10
1923	9	1,350 02	2,725 50	1,375 48
1924	9	1,402 14	2,987 34	1,585 20
1925	11	1,734 06	3,040 80	1,306 74
1926	10	1,572 59	2,379 93	807 34
1927	16	2,195 29	3,705 69	1,510 40
1928	19	3,058 44	4,828 36	1,769 92

The above data are computed on the basis of the butter having an 85 per cent fat content, thus making it standard for the seven-year period.

The following table gives the individual records of all grade cows completing a lactation period in 1928

Name of Cow	Date of dropping calf	Number of lactation periods	Number of days in milk	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 cwt.	Total value of products	Amount of meal eaten at 1½ cents per pound	Amount of roots and ensilage eaten at $2 per ton	Amount of hay eaten at $7 per ton	Amount of green feed eaten at $3 per ton	Months on pasture at $1 per month	Total cost of feed for period	Cost of feed to produce 100 pounds of milk	Cost of feed to produce 1 pound butter, skim-milk neglected	Profit on 1 pound butter, skim-milk neglected	Profit on cow for period, labour and calf neglected
				lb.	lb.	%	lb.	$	$	$	lb.	lb.	lb.	lb.		$	cts.	cts.	cts.	$
Ayrshires—																				
Jessie 1A122	April 16/27	5	345	9,573·5	27·75	4·21	474·17	142 25	18 34	160 59	2,484	7,950	4,786	850	4⅝	61 56	64	13	17	99 03
Jessie 1A1221	April 5/27	3	356	9,173·4	25·77	4·32	466·23	139 87	17 55	157 42	2,539	7,100	4,305	850	4⅜	59 71	65	13	17	97 71
Jessie 1A1223	April 11/27	1	338	5,831·5	17·25	4·21	288·83	86 65	11 17	97 82	1,807	4,720	3,108	850	4⅝	43 99	75	15	15	53 83
Jessie 1A12211	Sept. 28/27	1	338	7,065·3	20·90	4·22	350·77	105 23	13 53	118 76	2,303	4,060	3,428	850	4	50 12	71	14	16	68 64
Spot 1A42	April 9/27	6	299	7,241·4	24·22	4·15	341 79	102 54	13 90	116 44	1,818	7,030	3,938	850	4⅝	49 35	68	14	16	67 09
Spot 1A424	Sept. 24/27	1	413	7,422·5	18·02	4·28	373·74	112 12	14 21	126 33	2,726	4,420	3,834	2,480	5 17/20	61 17	82	16	14	65 16
Holsteins—																				
Jessie 1H41	Feb. 25/27	4	457	13,193·5	28·87	3·40	511·61	153 48	25 52	179 00	3,751	9,540	5,778	850	4¾	82 46	63	16	14	96 54
Jessie 1H44	May 14/27	1	329	7,368·8	22·40	3·62	313·82	94 15	14 20	108 35	2,261	4,060	2,997	850	4⅝	48 62	66	15	15	59 73
Spot 1H323	Jan. 20/28	2	311	6,764·5	21·75	3·65	290·48	87 14	13 04	100 18	2,165	3,520	3,380	2,650	4 11/20	50 75	75	17	13	49 43
Vera LH44	Mar. 25/27	2	356	8,990·3	25·00	4·0	423·07	126 92	17 26	144 18	2,636	9,100	5,086	850	4⅝	65 66	73	16	14	78 52

COST OF PRODUCTION OF MILK AND BUTTERFAT FOR GRADE HERD OF HOLSTEINS AND AYRSHIRES, ALSO SEVEN-YEAR AND SIXTEEN-YEAR AVERAGE

Amount of feed per 100 pounds milk	Price of feed	Cost of feed per 100 pounds milk
1928		
Meal—29·64 pounds	$2 20 per cwt.	$0·652
Roots and ensilage—74·4 pounds	8 50 " ton	0·316
Hay—49·2 pounds	11 40 " ton	0·280
Green feed—14·4 pounds	4 00 " ton	0·029
Pasture—1·66 days	2 00 " month	0·111
		$1·388
Seven-year Average		
Meal—34·66 pounds	1 99 per cwt.	$0·690
Roots and ensilage—88·71 pounds	4 42 " ton	0·196
Hay—56·5 pounds	9 83 " ton	0·278
Green feed—23·4 pounds	4 23 " ton	0·049
Pasture—2·05 days	2 00 " month	0·137
		$1·350
Sixteen-year Average		
Meal—35·98 pounds	2 28 per cwt.	$0·820
Roots and ensilage—102·34 pounds	3 62 " ton	0·185
Hay—69·73 pounds	11 05 " ton	0·385
Green feed—29·96 pounds	3 54 " ton	0·053
Pasture—3·3 days	2 00 " month	0·220
		1·663

In 1928 the average butterfat percentage was 3·94, the feed cost per pound of butterfat being 35·2 cents, calculated on ten lactation periods, while the average production of milk was 8262·5 pounds. For the seven-year average, based on one hundred and fifty-two lactations, the average percentage of fat was 4·09, the cost per pound 33 cents and the average production of milk was 6594·1 pounds. The average per cent fat for the sixteen-year period was 4·0, the feed cost per pound 41·6 cents, based on three hundred and ninety-three lactation periods, with an average production of milk of 5492·4 pounds.

COST OF PRODUCTION OF MILK AND BUTTERFAT FOR GUERNSEY HERD—1928 AND SEVEN-YEAR AVERAGE

Amount of feed per 100 pounds milk	Price of feed	Cost of feed per 100 pounds milk
Meal—39·5 pounds	$2 20 per cwt.	$0·869
Roots—55·0 pounds	7 50 " ton	0·206
Hay—69·19 pounds	11 40 " ton	0·394
Ensilage—45·06 pounds	9 50 " ton	0·214
Green feed—20·3 pounds	4 00 " ton	0·041
Pasture—2·4 days	2 00 " month	0·160
		$1·884
Seven-year Average		
Meal—46·2 pounds	$1 99 per cwt.	$0·919
Roots and ensilage—114·3 pounds	4 40 " ton	0·251
Hay—69·02 pounds	9 83 " ton	0·332
Green feed—30·67 pounds	4 23 " ton	0·065
Pasture—2·5 days	2 00 " month	0·167
		$1·734

In 1928 the average butterfat test was 4·93 per cent and the feed cost per pound of butterfat was 38·2 cents, based on nineteen lactation periods. The seven-year average percentage of butterfat was 5·37 per cent, with a feed cost of 33·3 cents per pound, based on eighty lactations, with an average milk production of 5667·7 pounds.

WEEKLY FEED COST OF MILK PRODUCTION

Feeds required for 100 pounds milk

Week ending	Cows	Meal	Roots	Hay	Ensilage	Pasture	Feed cost per 100 pounds milk	
							1928	5 year average
	No.	lb.	lb.	lb.	lb.	days	$	$
Jan. 7	14	39·06	51·28	82·00	153·85	.....	2 26	1 68
" 14	14	42·02	.....	88·50	111·11	.....	1 96	1 48
" 21	14	44·84	.....	94·23	119·05	.....	2 09	1 50
" 28	15	40·00	54·00	87·00	54·00	.....	1 84	1 45
Feb. 4	14	40·32	103·09	82·63	.....	.....	1 75	1 38
" 11	15	38·02	98·04	78·74	.....	.....	1 65	1 35
" 18	16	40·65	51·23	81·97	51·23	.....	1 79	1 36
" 25	16	38·76	.....	80·65	101·01	.....	1 78	1 34
Mar. 3	17	42·55	.....	90·91	113·64	.....	1 98	1 36
" 10	17	40·32	44·64	86·96	64·10	.....	1 85	1 32
" 17	16	39·22	31·65	80·64	69·44	.....	1 76	1 26
" 24	15	38·31	6·64	79·37	92·60	.....	1 75	1 26
" 31	13	36·90	7·16	74·63	86·21	.....	1 66	1 28
April 7	13	38·02	.....	78·13	98·04	.....	1 73	1 29
" 14	11	32·36	.....	58·14	73·00	.....	1 38	1 20
" 21	12	33·67	.....	62·50	78·13	.....	1 46	1 24
" 28	12	30·72	.....	59·52	74·62	.....	1 36	1 22
May 5	12	32·57	.....	58·14	70·92	.....	1 37	1 17
" 12	14	32·57	.....	61·73	77·52	.....	1 41	1 19
" 19	14	29·00	.....	53·48	67·11	.....	1 25	1 16
" 26	17	27·62	.....	55·56	69·44	.....	1 13	1 16
June 2	16	25·45	.....	45·25	56·50	.....	1 08	1 14
" 9	16	13·48	.....	.....	.....	2·57	0 47	1 05
" 16	16	13·48	.....	.....	.....	2·57	0 47	0 98
" 23	16	13·64	.....	.....	.....	2·60	0 47	0 64
" 30	17	15·04	.....	.....	.....	2·84	0 52	0 51
July 7	17	16·37	.....	.....	.....	3·10	0 57	0 51
" 14	11	17·95	.....	.....	.....	3·53	0 63	0 46
" 21	11	18·34	.....	.....	.....	2·78	0 59	0 47
" 28	11	18·87	.....	.....	.....	3·70	0 66	0 56
Aug. 4	11	19·84	.....	.....	.....	3·90	0·70	0 62
" 11	11	20·74	.....	.....	.....	4·07	0 73	0 76
" 18	11	21·60	.....	.....	.....	4·30	0 76	0 81
" 25	11	23·53	.....	.....	.....	4·60	0 83	0 88
Sept. 1	11	21·37	.....	.....	.....	4·52	0 77	0 90
					Green feed			
" 8	10	22·37	.....	.....	42·18	4·22	0 36	1·06
" 15	10	23·47	.....	.....	71·43	4·40	0 95	1 15
" 22	10	26·81	.....	.....	91·74	4·90	1 10	1 28
" 29	10	37·50	.....	.....	106·39	5·30	1 39	1 43
Oct. 6	10	40·32	.....	.....	113·64	5·70	1 49	1 32
" 13	10	41·67	.....	49·50	116·28	5·78	1 75	1 51
" 20	10	38·02	.....	42·19	212·77	2·64	1 63	1 53
" 27	10	34·48	.....	38·31	238·10	.....	1 41	1 48
Nov. 3	11	32·26	78·74	64·51	131·58	.....	1 37	1 44
" 10	11	36·37	212·77	73·53	.....	.....	1 55	1 33
" 17	10	40·65	222·22	86·96	.....	.....	1 73	1 48
" 24	11	45·88	256·41	100·00	.....	.....	1 96	1 61
Dec. 1	10	48·54	238·10	96·15	.....	.....	1 92	1 54
" 8	9	46·08	243·90	99·01	.....	.....	1 94	1 59
" 15	9	47·62	256·41	102·04	.....	.....	2 02	1 65
" 22	10	36·50	270·27	105·26	.....	.....	1 81	1 60
" 29	9	33·56	270·27	105·26	.....	.....	1 75	1 64

The five-year average cost per 100 pounds of milk produced for each month is as follows: January, $1.53; February, $1.36; March, $1.30; April, $1.24; May, $1.17; June, $0.86; July, $0.50; August, $0.77; September, $1.16; October, $1.46; November, $1.47; December, $1.60.

TURNIPS, SUNFLOWER SILAGE, AND OATS, PEAS AND VETCH SILAGE FOR MILK PRODUCTION

Four feeding experiments were conducted during 1927-28, comparing turnips with sunflower silage and with O. P. V. silage as to their value for milch cows. The plan followed was similar to that outlined in previous reports from this farm.

Tables A and B give the results of two tests comparing turnips with sunflower silage. Twelve cows were used in the first test and six in the second. The results in both cases were in favour of turnips as a succulent winter roughage.

Table C shows the six-year average results of comparing turnips with sunflower silage. From these data it is noted that the average cost of milk production is 16 cents less per 100 pounds of milk when turnips were fed than with sunflower silage. Using the average feed charges as given at the foot of the table, 9,590 pounds of turnips prove equal to 302 pounds of meal, 570 pounds of hay and 8,802 pounds of silage, which gives turnips a valuation of $6.11 per ton when the other feeds are valued as follows: Meal $39 per ton; hay, $9.80 per ton; sunflower silage, $4.68 per ton.

Tables D and E show the results of two comparisons between turnips and O. P. V. silage, nine cows being used in the first test and six in the second. The results are again in favour of turnips as a succulent feed.

The results of previous experiments comparing turnips with corn silage may be found in the 1927 report from this farm.

Following are the results of the 1927-28 tests as outlined above;—

TABLE A.—TURNIP VS. SUNFLOWER SILAGE FOR MILK PRODUCTION, WINTER 1927-28

		Period 1	Period 2	Period 3	Average of periods 1 and 3
		Turnips	Sunflower silage	Turnips	Turnips
Number of cows in test	No.	12	12	12	12
Total pounds of milk produced in 7 days	lb.	1,650·5	1,377·2	1,407·7	1,529·1
Average pounds of milk produced per cow per day	"	19·65	16·40	16·76	18·20
Average per cent butterfat	%	3·66	3·94	3·91	3·785
Total pounds fat produced in 7 days	lb.	60·41	54·26	55·04	57·73
Average pounds fat produced per cow per day	"	0·719	0·646	0·655	0·687
Total pounds meal consumed	"	644	644	644	644
Total pounds hay consumed	"	1,344	1,344	1,344	1,344
Total pounds turnips consumed	"	1,680	.....	1,680	1,680
Total pounds sunflower silage consumed	"	.....	1,680	.....	.....
Pounds meal consumed per 100 pounds milk	"	39·02	46·76	45·75	42·12
Pounds turnips consumed per 100 pounds milk	"	101·79	.....	119·34	109·87
Pounds silage consumed per 100 pounds milk	"	.....	121·99	.....	.....
Findings from experiment:—					
Cost of meal at $2.20 per cwt	$	14 17	14 17	14 17	14 17
Cost of hay at $11.40 per ton	$	7 66	7 66	7 66	7 66
Cost of turnips at $7.50 per ton	$	6 30	.....	6 30	6 30
Cost of silage at $9.60 per ton	$	.....	8 06	.....	.....
Total cost of feed	$	28 13	29 89	28 13	28 13
Cost of feed to produce 100 pounds milk	$	1 70	2 17	2 00	1 84
Cost of feed to produce 100 pounds butterfat	$	46 57	55 09	51 11	48 73

TABLE B.—TURNIPS VS. SUNFLOWER SILAGE FOR MILK PRODUCTION (SECOND TEST)—1927-28

Items		Period 1	Period 2	Period 3	Average of periods 1 and 3
		Turnips	Sunflowers	Turnips	Turnips
Number of cows in test	No.	6	6	6	6
Total pounds milk produced in 7 days	lb.	1,002·8	867·6	958·2	980·5
Average pounds milk produced per cow per day	"	23·88	20·66	22·81	23·35
Average per cent butterfat	%	3·5	3·8	3·7	3·6
Total pounds butterfat produced in 7 days	lb.	35·10	32·97	35·45	35·30
Average pounds butterfat produced per cow per day	"	0·836	0·785	0·844	0·840
Total pounds meal consumed	"	350	350	350	350
Total pounds hay consumed	"	672	672	672	672
Total pounds turnips consumed	"	840	.....	840	840
Total pounds sunflower silage consumed	"	.....	840	.....	.....
Pounds meal consumed per 100 pounds milk	"	34·90	40·34	36·53	35·70
Pounds turnips consumed per 100 pounds milk	"	83·77	.....	87·66	85·67
Pounds silage consumed per 100 pounds milk	"	.....	96·82	.....	.....
Findings from experiment:—					
Cost of meal at $2.20 per cwt	$	7 70	7 70	7 70	7 70
Cost of hay at $11.40 per ton	$	3 83	3 83	3 83	3 83
Cost of turnips at $7.50 per ton	$	3 15	.....	3 15	3 15
Cost of silage at $9.60 per ton	$	.....	4 03	.....	.....
Total cost of feed	$	14 68	15 56	14 68	14 68
Cost of feed to produce 100 pounds milk	$	1 46	1 79	1 53	1 50
Cost of feed to produce 100 pounds butterfat	$	41 82	47 19	41 41	41 59

TABLE C.—TURNIPS VS. SUNFLOWER SILAGE FOR MILK PRODUCTION, AVERAGE OF SEVEN FEEDING TRIALS

——		Turnips	Sunflower Silage
Number of cows in test	No.	49	49
Total pounds milk produced in 7 days	lb.	6,531·9	5,895·6
Average pounds milk produced per day	"	19·04	17·19
Total pounds meal consumed	"	2,800	2,800
Total pounds hay consumed	"	5,278	5,278
Total pounds turnips consumed	"	9,590	.....
Total pounds silage consumed	"	.....	7,945
Pounds meal consumed per 100 pounds milk	"	42·87	47·49
Pounds turnips consumed per 100 pounds milk	"	146·82	.....
Pounds silage consumed per 100 pounds milk		.....	134·76
Total cost of feed	$	106 04	104 84
Cost of feed per 100 pounds milk	$	1 62	1 78

FEED PRICES USED PER TON

Year	Meal	Hay	Turnips	Silage
1923	$ 41 00	$ 9 82	$ 3 27	$ 2 63
1924	36 40	9 00	2 95	3 60
1925	36 40	10 75	4 20	4 75
1926	38 00	8 00	3 50	3 50
1927	38 00	9 90	4 97	4 02
1928	44 00	11 40	7 50	9 60

TABLE D.—TURNIPS VS. O. P. V. SILAGE FOR MILK PRODUCTION, WINTER 1927-28

Item		Period 1	Period 2	Period 3	Average of periods 1 and 3
		Turnips	O.P.V.	Turnips	Turnips
Number of cows in test	No.	9	9	9	9
Total pounds milk produced	lb.	1,684·8	1,493·6	1,458·3	1,571·6
Average pounds milk produced per cow per day	lb.	26·74	23·71	23·15	24·95
Average per cent butterfat	%	3·87	3·71	3·70	3·785
Total pounds fat produced in 7 days	lb.	65·20	55·41	53·96	59·49
Average pounds fat produced per cow per day	"	1·035	0·880	0·857	0·944
Total pounds meal consumed	"	546	546	546	546
Total pounds hay consumed	"	1,008	1,008	1,008	1,008
Total pounds turnips consumed	"	1,260	.....	1,260	1,260
Total pounds O.P.V. silage consumed	"	.....	1,260	.....	.....
Pounds meal consumed per 100 pounds milk	"	32·41	36·56	37·44	34·74
Pounds turnips consumed per 100 pounds milk	"	74·79	.....	86·40	80·18
Pounds O.P.V. consumed per 100 pounds milk	"	.....	84·36	.....	.....
Findings from experiment:					
Cost of meal at $2.20 per cwt	$	12 01	12 01	12 01	12 01
Cost of hay at $11.40 per ton	$	5 75	5 75	5 75	5 75
Cost of turnips at $7.50 per ton	$	4 73	.....	4 73	4 73
Cost of O.P.V. at $9.20 per ton	$	.....	5 80	.....	.....
Total cost of feed	$	22 49	23 56	22 49	22 49
Cost of feed to produce 100 pounds milk	$	1 33	1 58	1 54	1 43
Cost of feed to produce 100 pounds butterfat	$	34 49	42 52	41 68	37 80

TABLE E.—TURNIPS VS. O. P. V. SILAGE FOR MILK PRODUCTION—SECOND TEST, 1927-28

Item		Period 1	Period 2	Period 3	Average of periods 1 and 3
		Turnips	O.P.V.	Turnips	Turnips
Number of cows in test	No.	6	6	6	6
Total pounds milk produced in 7 days	lb.	958·2	830·3	840·8	899·5
Average pounds milk produced per cow per day	"	22·81	19·77	20·02	21·42
Average per cent butterfat	%	3·7	3·7	3·7	3·7
Total pounds butterfat produced in 7 days	lb.	35·45	30·72	31·11	33·28
Average pounds butterfat produced per cow per day	"	0·844	0·731	0·741	0·792
Total pounds meal consumed	"	350	350	350	350
Total pounds hay consumed	"	672	672	672	672
Total pounds turnips consumed	"	840	.....	840	840
Total pounds O.P.V. silage consumed	"	.....	840	.....	.....
Pounds meal consumed per 100 pounds milk	"	36·53	42·15	41·63	38·91
Pounds turnips consumed per 100 pounds milk	"	87·66	.....	99·9	93·39
Pounds O.P.V. consumed per 100 pounds milk	"	.....	101·17	.....	.....
Findings from experiment					
Cost of meal at $2.20 per cwt	$	7 70	7 70	7 70	7 70
Cost of hay at $11.40 per ton	$	3 83	3 83	3 83	3 83
Cost of turnips at $7.50 per ton	$	3 15	.....	3 15	3 15
Cost of O.V.P. silage at $9.20 per ton	$	.....	3 86	.....	.....
Total cost of feed	$	14 68	15 39	14 68	14 68
Cost of feed to produce 100 pounds milk	$	1 53	1 85	1 75	1 63
Cost of feed to produce 100 pounds butterfat	$	41 41	50 10	47 19	44 11

COST OF REARING DAIRY CALVES TO ONE YEAR OF AGE

Item	Guernseys			Grades	
	1928 Bulls	1928 Heifers	7-year average, heifers	1928 Heifers	9-year average, heifers
Number of animals	3	7	33	4	81
Pounds whole milk consumed per head	1,075	1,353	1,453	902	889
Pounds skim-milk consumed per head	4,147	3,994	3,346	4,305	3,021
Pounds meal consumed per head	433	392	594	445	686
Pounds roots consumed per head	459	509	782		
Pounds ensilage consumed per head	841	462		1,018	872
Pounds hay consumed per head	1,814	1,593	1,396	1,617	1,414
Pounds green feed consumed per head	.....	.....	161	.....	289
Months pasture per head	.....	.....	.....	.....	1/8
Cost per head	$ 53 65	$ 54 84	$ 53 83	$ 44 04	$ 47 33

Feed Prices, 1928

Whole milk (Guernseys)—$1.88 per cwt.
Whole milk (Grades)—$1.39 per cwt.
Skim-milk—$4.00 per ton
Meal—$42.00 per ton
Roots—$7.50 per ton
Ensilage—$9.50 per ton
Hay—$11.40 per ton

FEED COST OF REARING DAIRY HEIFERS FROM ONE TO TWO YEARS OF AGE

Items		Guernseys		Grades	
		1928	3 year Average	1928	7 year Average
Number of animals	No.	4	13	1	68
Pounds meal consumed per head	lb.	546	748	465	887
Pounds roots consumed per head	"	75	712	.....	2,231
Pounds ensilage consumed per head	"	2,002	1,484	2,745	
Pounds hay consumed per head	"	2,251	2,400	2,302	2,374
Pounds green feed consumed per head	"	615	563	771	29
Months pasture per head	.....	4 32/100	3 4/10	3 1/2	4 1/2
Cost per head	$	45 89	41 28	45 06	40 57

Feed Prices, 1928

Meal	$46 00 per ton
Roots	7 50 "
Ensilage	9 50 "
Hay	11 40 "
Green feed	4 00 "
Pasture	2 00 per month

FEED COST OF MAINTAINING DAIRY BULLS FOR ONE YEAR

Year	Number of bulls	Average feeds consumed per animal					Feed cost
		Meal	Roots	Ensilage	Hay	Greenfeed	
		lb.	lb.	lb.	lb.	lb.	$
1925	4	1,877	2,860	1,995	4,957	1,500	72 70
1926	5	1,721	2,409	1,124	3,551	1,932	62 66
1927	2	1,432	1,350	2,400	5,062	300	61 62
1928	2	1,464	2,740	3,210	5,124	.....	88 40

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FEEDING METHODS

The meal mixtures fed to the dairy cattle vary with the availability of different feeds and the cost of same. The mixture fed during the greater part of 1928 to the milking stock was crushed oats 1 part, bran 2 parts, gluten feed 1 part, oil meal 1 part, middlings 1 part, cottonseed meal 1 part, bonemeal 1 per cent. The dry stock received a mixture made up of crushed oats 2 parts, bran, oil meal and shorts, 1 part each, with 10 pounds each of bone meal and charcoal, and 5 pounds salt per 500 pounds of meal mixture.

The calves receive whole milk until six to eight weeks of age, then a gradual change is made to skim-milk and a small amount of flaxseed jelly is added, this being increased until at four months the calf is receiving about one pound per day. The milk is fed until the calf is from six to ten months of age, depending upon the development of the individual, with a maximum of 20 pounds per day. After this, very little meal is fed until just before freshening, unless the animal is in very poor condition when coming in from pasture. The policy is to develop the calves as rapidly as possible, then carry through as yearlings on roots, silage and hay, with very little grain, thus obtaining good body development without undue fleshing, and thereby keeping the cost as low as possible.

The cost of production figures for 1927 as used in our financial statement in this report were very high, due to low crop yields, which brings the feed cost much higher than the average for the past few years.

BEEF CATTLE

The work in this division consists entirely of experimental feeding tests with steers during the winter months.

In November, 1927, twenty-five steers were purchased and carried through the winter in a continuation of the heavy vs. light meal feeding experiment started in 1926-27.

Pen 1 was fed a maximum of ten pounds of meal per day; pen 2, eight pounds; pen 3, six pounds and pen 4, four pounds. Equal amounts of hay, turnips and silage were fed to all four lots. The results indicate that a maximum of six to eight pounds of meal per day will give the most economical gains.

The following table gives the results of this experiment, together with the average cost of feed per pound gain for the two years:—

STEER-FEEDING EXPERIMENT, 1927-28—HEAVY VS. LIGHT MEAL FEEDING

—		Lot 1	Lot 2	Lot 3	Lot 4
Number of steers	No	6	6	6	7
Gross weight at beginning	lb.	5,840	5,980	5,810	6,770
Average weight at beginning	"	973·3	996·7	968·3	967·1
Gross weight at finish	"	6,730	7,030	6,520	7,760
Average weight at finish	"	1,121·7	1,171·7	1,086·7	1,108·6
Total gain for 125 days	"	890	1,050	710	990
Total daily gain per steer	"	1·19	1·40	0·95	1·13
Hay consumed per pen	"	12,300	12,300	13,806	16,107
Hay consumed per steer per day	"	16·4	16·4	18·4	18·4
Turnips consumed per pen	"	8,670	8,670	8,670	10,850
Silage consumed per pen	"	10,770	10,770	10,770	12,567
Grain consumed per pen	"	5,880	4,650	3,726	2,849
Grain consumed per steer per day	"	7·84	6·20	4·97	3·26
Grain consumed per pound gain	"	6·61	4·43	5·25	2·88
Total cost of feed consumed	$	268 78	244 61	235 03	247 45
Average cost of feed consumed	$	44 80	40 77	39 17	35 35
Cost of feed per pound gain	$	0 302	0 233	0 331	0 250
Average cost of feed per pound gain (2 years)	$	0 173	0 159	0 158	0 180
Prices used					
Hay per ton	$	11 40			
Turnips "		7 25			
Sunflower silage "		9 60			
Meal "		39 30			
Grade of Steers—					
1,200 pounds and up—Good		2	1	1	.....
1,000-1,200 pounds—Good		3	4	3	3
1,000 and up—Common		.....	1	1	4
700 pounds to 1,000 pounds—Good		.....	.....	1	.....
700 pounds and 1,000 pounds—Common		1	.....	.....	.....

DEHORNING STEERS

Thirteen steers were dehorned in October, 1928. These were weighed just previous to the operation and again three weeks later. The average weight on October 31 was 939 pounds, while on November 21 they averaged 996 pounds, or a gain of 57 pounds per steer.

The results of this and previous experiments show that while dehorning may cause a slight loss in some cases, the increased gains later on, together with the increased value of dehorned over horned steers on the market, will more than offset any temporary loss. The steers feed better and are much easier handled and thus dehorning is recommended where cattle are being fed for market purposes.

FINANCIAL STATEMENT

Credit

By 21,200 pounds (19 steers) at 9½ cents live weight	$	2,014 00	
" 6,160 pounds (6 steers) at 9 cents live weight		554 00	
	$	2,568 00	
" 62·5 tons manure at $2 per ton		125 00	
			$2,693 00

Debit

To 5 steers at $63 per steer	$ 315 00		
" 15 steers at $57 per steer	855 00		
" 1 steer at $39.60	39 60		
" 4 steers at $50 per steer	200 00		
" feed cost for 25 steers for 125 days	995 87		
" 2 tons straw at $5	10 00		
" freight and inspection	44 71		
		2,460 18	
" Labour and investment credit balance		232 82	
			$2,693 00

SWINE

The swine herd on January 1, 1929, consisted of sixty-three pure-bred Yorkshires, made up of ten brood sows, one aged boar and fifty-two feeders.

The light demand for breeding stock during 1928 was simply a reflection of the low prices offered for the bacon hog. Therefore, except for two boars sold, all pigs weaned were retained on the plant, in order to procure data which might serve as a basis for formulating a policy of Advanced Registration work for swine, now being considered for Canada.

Of the 111 hogs finished for market during 1928, fifty-four per cent graded selects, thirty-three per cent thick smooths and thirteen per cent shop hogs. Out of 295 hogs finished during the past five years, 139, or forty-seven per cent, graded selects, 94, or twenty-eight per cent, thick smooths and twenty-five per cent shop hogs.

The herd sire "Charlottetown Boy" —114974— is a combination of "Morvin Duke" and "Bourne Bar None" breeding.

In the financial statement which follows, all feeds are charged at market or cost of production prices. These feeds include many products unmarketable except through the bacon hog.

FINANCIAL STATEMENT OF BROOD SOWS

Number of sows	Average meal consumed per day	Cost of feed per sow per year	Number of litters farrowed	Average number pigs per litter	Average number raised to 6 weeks	Average per cent raised	Average cost per pig at 6 weeks	Average value per pig at 6 weeks
	lb.	$					$	$
9	4·3	49 81	14	12·3	8·36	67·97	3 83	6 05

Had all pigs been sold at six weeks of age, the following returns would have been realized:—

Average value per pig at six weeks	$	6 05
Average profit per pig over feed cost	$	2 22
Number of pigs raised per sow in the year	No.	13
Average profit per sow over feed cost	$	28 86
Total profit on nine sows over feed cost	$	259 74

FINANCIAL STATEMENT OF SWINE HERD, 1928

(9 sows, 1 boar and progeny)

Debit

32,866 pounds crushed oats at $42 per ton	$	690 19
8,917 pounds middlings at $42 per ton		187 26
13,371 pounds shorts at $38 per ton		254 05
5,893 pounds bran at $36 per ton		106 07
21,183 pounds barley at $55 per ton		582 53
213 pounds bean meal at $22 per ton		2 34
213 pounds feed flour at $35 per ton		3 73
1,023 pounds oil meal at $54 per ton		27 62
489 pounds wheat at $50 per ton		12 23
400 pounds corn meal at $50 per ton		10 00
400 pounds buckwheat at $40 per ton		8 00
36,337 pounds roots at $4 per ton		72 67
6,225 pounds miscellaneous green feed at $3 per ton		9 34
2,695 pounds fish meal at $65 per ton		87 59
79,443 pounds skim-milk at $4 per ton		158 88
2,037 pounds minerals at $20 per ton		20 37
125 months pasture at 50 cents per month		62 50
10 tons straw at $5 per ton		50 00
	$	2,345 37

Credit

By sale of pork (live weight prices)—		
2,000 pounds at 9½ cents per pound	$ 190 00	
891 pounds at 9 cents per pound	80 19	
1,394 pounds at 8½ cents per pound	118 49	
1,451 pounds at 10½ cents per pound	152 35	
880 pounds at 10 cents per pound	88 00	
186 pounds at 7½ cents per pound	13 95	
2,290 pounds at 12¾ cents per pound	291 97	
2,110 pounds at 12 cents per pound	253 20	
8,010 pounds at 10 cents per pound	801 00	
1,770 pounds at 9¾ cents per pound	172 57	
131 pounds at 13 cents per pound (dressed *weight*)	17 03	
1 registered boar at $10	10 00	
1 unregistered boar at $8	8 00	
Young feeders on hand—52 at $6	312 00	
75 tons manure at $2	150 00	
		$2,658 75
Less deductions from above sales for thick smooth and shop hogs		36 00
		$ 2,622 75
Labour and investment returns		277 38

FINANCIAL STATEMENT FOR SIX-YEAR PERIOD
FROM 1923–1928 INCLUSIVE

Year	Debit	Credit	Credit balance
	$	$	$
1923	1,243 08	2,314 10	1,071 02
1924	2,044 23	2,687 23	643 00
1925	2,607 11	3,702 42	1,095 31
1926	2,136 94	2,758 13	621 19
1927	1,526 37	1,908 75	382 38
1928	2,345 37	2,622 75	277 38
Total	11,903 10	15,993 38	4,090 28
Average (1 year)	1,983 85	2,665 56	681 71

COST OF RAISING PIGS TO SIX WEEKS OF AGE AND COST OF PORK PRODUCTION (LABOUR AND INVESTMENT NEGLECTED)

To feed for 9 sows	$ 448 29	
14 boar services at $1	14 00	
2·5 tons straw at $5	12 50	
		$ 474 79
Less 9 tons manure at $2		18 00
Total cost to raise 117 pigs to 6 weeks of age		$ 456 79
Total cost to raise 1 pig to 6 weeks of age		3 90
To cost of 106 pigs at 6 weeks of age at $3.90		413 40
Feed for 106 pigs to finishing		1,550 71
6 tons straw at $5 per ton		30 00
		$ 1,994 11
By 25 tons manure at $2 per ton		50 00
Total cost to produce 20,616 pounds of pork		$ 1,944 11
Total cost to produce 1 pound of pork		9·43 cents

There was only a very slight improvement in the average price of bacon hogs for 1928 over 1927, the averages being $10 and $10.12 respectively. The 1928 spring prices were around $12.75 per hundred, live weight, while the December prices were around $9.75. From the preceding figures it may be noted that the average feed cost was $9.43 per hundred, live weight, leaving an average profit for the year of 69 cents per hundredweight over feed cost. While the margin is small, it is, nevertheless, on the right side of the ledger

and when one stops to consider the fact that a large quantity of the feeds fed were unmarketable, such as cull apples, potatoes and other vegetables, the returns are much greater than they appear on the surface.

The following is a statement of the cost of raising pigs to six weeks of age, and the cost of pork production for the past six years:—

COST OF RAISING PIGS TO SIX WEEKS OF AGE AND COST OF PORK PRODUCTION

Year	Cost to raise pigs to 6 weeks of age	Cost of pork production per cwt. (live weight)	Average market price of pork (live weight)
1923	$ 2 93	$ 6 87	$ 9 64
1924	3 99	9 10	8 41
1925	3 87	9 71	11 53
1926	4 99	9 20	12 80
1927	3 16	8 64	9 50
1928	3 90	9 43	10 12
Average for 6 years	$ 3 81	$ 8 83	$ 10 33

The feeding methods followed in 1928 were similar to those outlined in the report for 1927.

EXPERIMENTAL FEEDING

A continuation of the skim-milk vs. fish-meal experiment, as outlined in the 1927 report was carried on during the winter of 1927-28.

In the first experiment, thirty-five pigs were used in seven pens of five each. Pen 1 received skim-milk from weaning to finish; pen 2, skim-milk to three months, then fish-meal; pen 3, same as 2, only fish-meal started at four months; pen 4, same as 2, only fish-meal started at five months; pen 5, skim-milk to three months, then grain only; pen 6, skim-milk to four months, then grain only, and pen 7, skim-milk until five months, then grain only.

The second test consisted of two pens of five pigs each, all from one litter. Pen 8 received skim-milk from weaning to finish and pen 9 fish-meal in place of skim-milk.

In all cases the fish-meal was fed at the rate of 8 per cent of the meal mixture.

The results of these experiments to date would indicate that fish-meal makes a very desirable substitute for skim-milk and where the latter is not available, it might well be used to supply the animal protein necessary in the development of the select bacon hog. The grading results show a higher percentage of selects from the fish-meal fed groups, while the group receiving no animal protein for a greater part of the feeding period did not develop as rapidly and consequently show a high percentage of shop hogs. These experiments will be continued.

Following are the results of the experiments for 1928:—

SKIM-MILK VS. FISH-MEAL FOR PORK PRODUCTION—WINTER 1927-28

—		Pen 1	Pen 2	Pen 3	Pen 4	Pen 5	Pen 6	Pen 7
Hogs in test	No.	5	5	5	5	5	5	5
Initial gross weight	lb.	167	166	168	167	163	113	113
Initial average weight	"	33·4	33·2	33·6	33·4	32·6	22·6	22·6
Days on test	No.	173	173	173	173	173	173	173
Finished gross weight	lb.	928	947	956	925	856	725	744
Finished average weight	"	185·6	189·4	191·2	185·0	171·2	145·0	148·8
Total gain for period	"	761	781	788	758	693	612	631
Average gain for period	"	152·2	156·2	157·6	151·6	138·6	122·4	126·2
Average daily gain per hog	"	0·88	0·903	0·911	0·876	0·801	0·708	0·729
Total meal consumed	"	2,600	2,600	2,600	2,600	2,600	2,400	2,400
Total roots consumed	"	1,000	1,000	1,000	1,000	1,000	1,000	1,000
Total skim-milk consumed	"	4,200	400	400	400	400	1,450	2,150
Total fish-meal consumed	"	.....	180	160	130	.....	.....	.....
Total mineral mixture consumed	"	126	126	126	126	126	126	126
Meal consumed per pound gain	"	3·42	3·33	3·30	3·43	3·75	3·92	3·80
Total cost of feed	$	73 09	71 34	70 69	69 71	65 49	62 99	64 39
Average cost of feed per hog	$	14 62	14 27	14 14	13 94	13 10	12 60	12 88
Cost of feed per hog per day	cts.	8·45	8·25	8·17	8·06	7·57	7·28	7·45
Cost of feed per pound gain	"	9·60	9·13	8·97	9·20	9·45	10·29	10·20

Feed prices used

Meal	$ 2 30 per cwt.
Roots	7 25 per ton
Skim-milk	4 00 "
Fish-meal	65 00 "
Mineral	20 00 "

SKIM-MILK VS. FISH-MEAL FOR PORK PRODUCTION—WINTER 1927-28

—		Pen 8 Skim-milk weaning to finish	Pen 9 Fish-meal weaning to finish
Hogs in test	No.	5	5
Initial gross weight	lb.	119	120
Initial average weight	"	23·8	24
Days on test	No.	209	209
Finished gross weight	lb.	968	974
Finished average weight	"	193·6	194·8
Total gain for period	"	849	854
Average gain for period	"	169·8	170·8
Average daily gain per hog	"	0·812	0·817
Total meal consumed	"	3,177	3,177
Total roots consumed	"	1,245	1,245
Total skim-milk consumed	"	5,210	.....
Total fish-meal consumed	"	.....	238
Total mineral mixture consumed	"	115	115
Meal consumed per pound gain	"	3·74	3·72
Total cost of feed	$	89 15	86 47
Average cost of feed per hog	$	17 83	17 29
Cost of feed per hog per day	cts.	8·53	8·27
Cost of feed per pound gain	"	10·50	10·13

Feed Prices used

Meal	$2 30 per cwt.
Roots	7 25 per ton
Skim-milk	4 00 "
Fish-meal	65 00 "
Minerals	20 00 "

GRADING OF HOGS IN FEEDING EXPERIMENTS, 1928

—	Lots								
	1	2	3	4	5	6	7	8	9
Select bacon	3	4	2	2	.....	2	.....	3	4
Thick smooth	.....	.....	2	1	2	.....	.....	1	.....
Shop hogs	2	1	1	2	3	3	5	1	1

AVERAGE OF 1927-28 EXPERIMENTS

Treatment	Grading					
	Select bacon		Thick smooth		Shop hogs	
	No.	%	No.	%	No.	%
Skim-milk from weaning to finish	14	70	3	15	3	15
Skim-milk to 3 months—fish-meal to finish	13	87	.....	.....	2	13
Skim-milk to 3 months—fish-meal after 4 months	9	60	3	20	3	20
Skim-milk to 3 months—fish meal after 5 months	6	40	6	40	3	20
Skim-milk to 3 months—then grain only	5	33	5	33	5	33
Skim-milk to 4 months—then grain only	7	47	2	13	6	40
Skim-milk to 5 months—then grain only	3	30	.....	.....	7	70
Fish-meal from weaning to finish	4	80	.....	.....	1	20

ADVANCED REGISTRATION OF SWINE

During the season of 1928 this Farm, in co-operation with other Experimental Farms and Stations, undertook to collect data on litter tests, as preliminary information which might serve as a basis for the proper working out of a policy for Advanced Registration work in Canada. With this object in view, eight litters were given the same treatment and fed throughout the season or until they were ready for the block.

All records on feeds consumed and costs per pound gain, together with results of grading of each individual in the various litters are being compiled in a separate bulletin on Advanced Registration work.

SHEEP

The flock of pure-bred Shropshires numbered forty-four head on January 1, 1929. These consisted of twenty-three breeding ewes, seven shearling ewes, ten ewe lambs, one shearling ram and three ram lambs. The aged ram, Buttar 332 Imp. was sold and the flock is now headed by Stewart 132 —60513—, a son of Buttar's Papillion, Imp. and out of a daughter of Buttar 443, Imp.

There are at present twenty-one daughters of Buttar 332 in the flock and these will be mated to Stewart 132, following closely the Buttar line of breeding. The daughters of the former ram have to date averaged 155 per cent production. In 1928, 29 ewes dropped fifty-four lambs, raising forty-nine, or 169 per cent. The average per cent raised per ewe during the past nine years is 133 per cent, while a five-year average shows 140 per cent raised. The average wool clip in 1928 was 7·58 pounds for the breeding ewes, 7·6 pounds for the shearling ewes, 7·4 pounds for the shearling rams and 8·5 pounds for the aged ram. The wool was sold through the Co-operative Wool Growers' Association and graded 73 per cent medium staple.

Twelve rams were graded in 1928, ten grading XXX and two XX.

The following data have been collected during the past three years on the birth, weight and gain for the first month for male and female lambs, and for singles, twins and triplets:—

—	Number of lambs	Birth weight	Gain for first month
		lb.	lb.
Females	75	7·14	14·2
Males	65	7·50	16·6
Singles	33	8·45	18·0
Twins	92	7·26	14·8
Triplets	15	5·08	15·0

FINANCIAL STATEMENT OF FLOCK, 1928

Debit

To feed for thirty breeding ewes and ram—		
6,511 pounds meal at $43.60 per ton	$ 141 94	
17,102 pounds roots at $7.50 per ton	64 13	
14,471 pounds hay at $11.40 per ton	82 48	
4,865 days pasture at 2 cents per day	97 30	
		$ 385 85
To feed for 12 yearling ewes—		
480 pounds meal at $43.60 per ton	$ 10 46	
4,440 pounds roots at $7.50 per ton	16 65	
4,138 pounds hay at $11.40 per ton	23 59	
1,670 days pasture at 2 cents per day	33 40	
		$ 84 10
To feed for 4 yearling rams—		
26 pounds meal at $43.60 per ton	$ 0 57	
1,229 pounds roots at $7.50	4 61	
1,240 pounds hay at $11.40 per ton	7 07	
499 days pasture at 2 cents per day	9 98	
		$ 22 23
To feed for 49 lambs—		
532 pounds meal at $43.60 per ton	$ 11 60	
1,712 pounds roots at $7.50 per ton	6 42	
1,464 pounds hay at $11.40 per ton	8 34	
5,064 days pasture at 1 cent per day	50 64	
		$ 77 00
Total feed cost		$ 569 18
To loss of 3 ewes at $20		60 00
		$ 629 18

Credit

By—		
Sale of 288 pounds wool at 33¼ cents	$ 97 20	
Sale of 39 pounds mutton at 12 cents	4 68	
Sale of 99 pounds lamb at 18 cents	17 82	
Sale of 810 pounds lamb at 14 cents (live weight)	113 40	
Sale of 150 pounds lamb at 13 cents (live weight)	19 50	
Sale of 136 pounds lamb at 11 cents (live weight)	14 96	
Sale of 4 hides at $1	4 00	
Sale of 3 shearling rams at $35	105 00	
Sale of 6 ram lambs at $25	150 00	
Sale of 1 ram lamb at $30	30 00	
Sale of 2 ram lambs at $18	36 00	
Sale of 1 ram lamb at $20	20 00	
Sale of 1 aged ram at $15	15 00	
Sale of 1 shearling ewe at $15	15 00	
Sale of 4 ewe lambs at $15	60 00	
Sale of 2 ewe lambs at $10	20 00	
Sale of 5 ewes—675 pounds at 7 cents (live weight)	47 11	
3 XXX ram lambs carried over at $20	60 00	
30 tons manure at $2.00	60 00	
Increased stock, 10 ewe lambs at $15.00	150 00	
		1,039 67

Labour and investment returns		410 49
Cost of maintaining a pure-bred flock—		
Total feed cost for 42 ewes and ram	$ 469 95	
Average feed cost of 1 ewe for 1 year	11 19	
Cost to raise pure-bred lambs—		
To feed cost of 30 ewes and ram	385 85	
To feed cost of 49 lambs	77 00	
		$ 462 85
By 220 pounds wool at 33¾ cents	$ 74 25	
25 tons manure at $2	50 00	
		$ 124 25
Total feed cost for 49 lambs		$ 338 60
Average feed cost for 1 lamb		6 91
Value of wintering pure-bred ram lambs—		
To—		
Value of 4 rams, 1927, at $20	$ 80 00	
Feed cost	22 23	
		$ 102 23
By—		
Sale of 3 yearling rams at $35	$ 105 00	
1 yearling ram in flock at $35	35 00	
Sale of 30 pounds wool at 33¾ cents	10 13	
1 ton manure at $2	2 00	
		$ 152 13
Credit balance		$ 49 90
Average per ram		12 48

This statement shows that greater returns may be obtained by carrying over a number of ram lambs until the following autumn, when a much higher price may be obtained. The average credit balance for the past two years is $7.80, a very fair investment and labour return, besides converting an average of $5.56 worth of home-grown product into cash per lamb.

FEEDING EXPERIMENTS

In November, 1927, 100 head of feeder lambs were purchased at the stock yards and a number of feeding tests carried on. These lambs were dipped and treated for internal parasites previous to starting the feeding tests. It was found, however, that even with the copper sulphate treatment, the lambs were still heavily infested with internal parasites and the low gains are evidence that success cannot be attained in live stock work with stock so infested. The lambs were part of a lot shipped co-operatively to the stock yards and it was necessary to pay more than their actual value as feeders, in order to obtain them. This would seem to show that co-operative shipping will bring returns to the producer above the actual worth of the product if there is a demand created by co-operative efforts upon his part.

The feeding test was a comparison of corn and oats, alone and in combination, with and without turnips. All lots received bran and oil meal. In addition, lot 1 received corn, without turnips; lot 2, corn with turnips; lot 3, oats with turnips; lot 4, oats without turnips; lot 5, oats and corn with turnips, and lot 6, oats and corn without turnips. A number of culls received the same ration as lot 5. One lamb was lost in pen 3 and one in pen 6, due to stoppage of bowels.

The gains were unsatisfactory and the contributing cause was undoubtedly internal parasitism.

The following table gives the results of this test:—

LAMB FEEDING EXPERIMENT, 1927–28

——		Lot 1	Lot 2	Lot 3	Lot 4	Lot 5	Lot 6
Number of lambs	No.	15	15	14	15	15	14
Gross weight at beginning	lb.	929	910	889	909	974	908
Average weight at beginning	"	61·9	60·7	63·5	60·6	64·9	64·9
Gross weight at finish	"	1,020	1,080	1,026	984	1,111	1,048
Average weight at finish	"	68·0	72·0	73·3	65·6	74·1	74·9
Total gain for 95 days	"	91	170	137	75	137	140
Average gain for 95 days	"	6·1	11·3	9·8	5·0	9·1	10·0
Average daily gain per lamb	"	0·064	0·119	0·103	0·053	0·096	0·105
Hay consumed per pen	"	2,494	2,494	2,328	2,494	2,494	2,328
Turnips consumed per pen	"	.....	3,375	3,150	.....	3,375	.....
Grain consumed per pen	"	1,388	1,388	1,378	1,475	1,388	1,295
Grain consumed per lamb per day	"	0·97	0·97	1·04	1·04	0·97	0·97
Grain consumed per pound gain	"	15·3	9·2	10·1	19·7	10·1	9·3
Total cost of feed	$	44 47	56 71	56 80	48 58	57 40	42 15
Average cost of feed per lamb	$	2 96	3 78	4 06	3 24	3 83	3 01
Cost of feed per pound gain	$	0 49	0 33	0 41	0 65	0 42	0 30
Feed Prices used—							
Hay	$	11 40	11 40	11 40	11 40	11 40	11 40
Turnips	$	7 25	7 25	7 25	7 25	7 25	7 25
Grain	$	2 18	2 18	2 33	2 33	2 23	2 23

A financial statement of this project shows the following results:—

To—		
Purchase of 100 lambs—6,660 pounds at 8·4 cents per pound	$ 559 44	
Commission on purchase	5 59	
Loss of 2 lambs at $6	12 00	
Feed cost for 95 days	306 11	
		$ 883 14
By—		
Sale of 98 lambs—6,814 pounds at 11 cents per pound	749 54	
Sale of 2 hides at $1	2 00	
		$ 751 54
Loss		$ 131 60

HORSES

There were fourteen horses in stock on January 1, 1929. Of these, eight are pure-bred Clydesdales, five grade Clydesdales and one a driving mare.

The following data were collected on the cost of maintaining work horses:—

To—		
Feed for one horse during 1928—	Cost	
110 bushels oats at 75 cents	$ 82 50	
536 pounds bran at $36 per ton	9 65	
610 pounds roots at $7.50 per ton	2 29	
6,000 pounds hay at $11.40 per ton	34 20	
		$ 128 64
By—		
1,600 hours work at 10 cents per hour	$ 160 00	
		$ 160 00
Profit over feed cost for labour of 1 horse		31 36

COST OF MAINTENANCE OF DRAFT HORSES

The following shows the cost of maintaining a work horse for a year:—

Feed cost	$ 128 64
Labour	47 70
Interest, $200 at 6 per cent	12 00
Shelter	18 00
Harness and repairs	4 98
Shoeing	9 18
Total yearly cost	$ 220 50
Hours of labour during year	1,600
Cost per hour of labour	$ 0·1378

FIELD HUSBANDRY

CULTURAL EXPERIMENTS

The cultural work which was outlined in the 1927 report, was continued during 1928. The results obtained did not vary to any extent from the five-year average published in last year's report, and as space is limited, they will be omitted from this publication. For the benefit of those who have not seen the outline, the following are the projects under way:—

Preparation of Sod Land for Grain.—Ploughing early in August and disking the remainder of the season has given the most economical results to date.

After Harvest Cultivation of Sunflower Ground for Grain.—Disking the land in the spring with no previous autumn treatment has given the highest yield and is in addition the cheapest way of preparing a seed bed.

Seed Bed Preparation for Grain.—This follows a turnip crop, and disking, seeding and smooth-harrowing has given the best results.

Preparation of Sod Land for Sunflowers.—Manuring and ploughing in August, top-working and reploughing in the spring has given the highest yield, but not high enough above single ploughing to warrant ploughing twice. Late fall and spring ploughing give much lower yields.

Preparation of Sod Land for Roots.—Manuring and ploughing in August, and top-working has given the highest yields in this experiment, while yields on spring-ploughed land have been very small.

Depth of Ploughing Sod Land for Grain.—Ploughing to a depth of 5 inches in autumn has given the highest average yields, showing that under conditions such as exist at Nappan, deep ploughing is of no benefit. The root yields following the deep ploughing are no greater than following the 5-inch depth.

Rates of Seeding Nurse Crop of Oats.—There is little difference in yield following the seeding of oats at 2, 2¾ and 3½ bushel rates per acre. Clover and timothy have given somewhat higher yields following the lighter seeding of the nurse crop.

Quantities of Manure and Place in Rotation.—The results of this experiment are very striking. Manure is applied at different rates in a four-year rotation and upon different crops in the rotation. The series of plots having the manure applied 8 tons per acre before the root crop and 8 tons on the oat stubble before the clover crop has given the highest yields and greatest returns after deducting the cost of the manure. This amounts to $98.80 for the rotation as compared with $79.72 where no manure application is made, or, charging the manure at $2 per ton, the average value of the crop from the manured area is $51.08 greater than that harvested on the area receiving no fertilizing constituents. This difference is rapidly becoming greater as the soil fertility is depleted in the check plots.

Fertilizer Experiment with Hay.—In this experiment, a four-year rotation of grain and hay is followed with applications of nitrate of soda and basic slag applied on the two timothy areas each year. To date, this has shown very poor results. The yields have been greater on the fertilized areas, but not sufficiently high to pay for the fertilizer. The soil lacks humus and, with a rotation of this kind, it is impossible to supply this without the use of manure.

ROTATIONS

Three rotations are under experiment at this Farm, which include hoed crops and one grain and hay rotation. The following are the results to date:—

ROTATION 1—THREE YEARS' DURATION

Summary of Yields, Value and Profit and Loss per acre

Rotation year	Crop	Yield per acre		Value of crop 1928	Cost of production 1928	Profit or Loss per acre	
		1928	Average 3 years			1928	Average 3 years
				$	$	$	$
1	Turnips	20·61 tons	11·17 tons	41 22	57 98	−16 76	−34 98
2	Oats—Grain	51·44 bush.	40·3 bush.				
	Straw	0·985 tons	0·755 tons	42 52	26 92	15 60	1 47
3	Clover	0·98 tons	1·45 tons	10 78	16 68	−5 90	− 2 60
	Totals for rotation			94 52	101 58	− 7 06	−36 11
	Average per acre			31 51	33 86	− 2 35	−12 04

ROTATION 2—FOUR YEARS' DURATION

Summary of Yields, Value and Profit and Loss per acre

Rotation year	Crop	Yield per acre		Value of crop 1928	Cost of production 1928	Profit or Loss per acre	
		1928	Average 3 years			1928	Average 3 years
				$	$	$	$
1	Turnips	22·29 tons	11·952 tons	44 48	62 25	−17 67	−42 62
2	Oats—Grain	42·85 bush.	42·60 bush.				
	Straw	0·752 tons	0·573 tons	35 15	28 30	6 85	0 32
3	Clover	1·415 tons	1·46 tons	15 57	19 51	− 3 94	− 3 67
4	Timothy	1·775 tons	1·552 tons	19 53	17 52	2 01	0 38
	Totals for rotation			114 83	127 58	−12 75	−45 59
	Average per acre			28 71	31 90	− 3 19	−11 40

ROTATION 3—FIVE YEARS' DURATION

Summary of Yields, Value and Profit and Loss per acre

Plot No.	Crop	Yield per acre		Value of crop 1928	Cost of production 1928	Profit or Loss per acre	
		1928	Average 3 years			1928	Average 3 years
				$	$	$	$
1	Turnips	17·01 tons	11·49 tons	34 02	56 19	−22 17	−36 97
2	Oats—seeded—Grain	43·21 bush.	40·03 bush.				
	Straw	0·866 tons	0·797 tons	35 87	26 99	8 88	0 40
3	Clover	1·055 tons	1·825 tons	11 61	19 88	− 8 27	− 1·68
4	Timothy	2·405 tons	1·84 tons	26 46	18 33	8 13	2 78
5	Oats—Grain	48·03 bush.	36·25 bush.				
	Straw	1·044 tons	0·877 tons	40 20	19 66	20 54	6 98
	Totals for rotation			148 16	141 05	7 11	−28 49
				29 63	28 21	1 42	− 5 70

THREE-YEAR ROTATION—MANURE VS. NO MANURE

Plot No.	Crop	Plot treatment	Yield per acre		Cost of manure or fertilizer per acre	Value of crop per acre after deducting cost of manure or fertilizer	
			1928	Average yield, 3 years		Value 1928	Average value, 3 years
			lb.	lb.	$	$	$
1	Oats.....	..... Grain	1,522	1,303	.....		
		Straw	2,398	1,943	.....	38 37	29 90
2	Clover....	No manure.....	4,900	4,547	.....	26 95	24 93
3	Timothy.	.....	4,760	4,127	.....	26 18	22 50
		Total.....	.....	.....	.....	91 50	77 33
4	Oats.....	..... Grain	1,206	1,209			
		Straw	2,774	2,282	7 20	24 95	25 65
5	Clover....	12 tons manure per acre before timothy.....	5,820	5,120	4 80	27 21	22 50
6	Timothy.	.....	5,520	6,013	12 00	18 36	17 27
		Total.....	.....	.....	24 00	70 52	65 42

The rotations as outlined above have been under way for only three years, and the results are in no way conclusive. The five-year rotation has given the best results to date and appears to be a very satisfactory rotation to follow under Maritime conditions.

When given a valuation of $2 per ton the turnip crop shows a heavy loss, but if they were given the value as shown in feeding tests reported in the Animal Husbandry section of this report, namely, $6.11 per ton, they would show profitable returns per acre. The valuation of $2 is based on the dry matter content as compared with silage.

The results from the three-year rotation (manure vs. no manure), are showing up each year more in favour of the manured area as the fertility is depleted in the unmanured section.

COST OF PRODUCTION OF FARM CROPS, 1928

Cost Value

Rent and taxes per acre	$ 4 00
Manure, per ton	2 00
Machinery, per acre	2 85
Seed wheat, per bushel	2 25
Seed oats, per bushel	1 30
Seed barley, per bushel	1 50
Seed sunflowers, per pound	0 12
Seed corn, per pound	0·075
Seed peas, per bushel	3 75
Seed vetches per bushel	3 60
Seed timothy, per pound	0 07
Seed red clover, per pound	0 28
Seed alsike, per pound	0 24
Seed turnips, per pound	0 50
Manual labour, per hour	0 29
Teamster labour, per hour	0 33
Tractor operator, per hour	0 40
Horse labour, per hour	0 10
Tractor, per hour	0 60
Threshing oats, per bushel	0 04
Threshing wheat, per bushel	0 07
Threshing barley, per bushel	0 05
Twine, per pound	0 15

Return Values

Hay, per ton	$ 11 00
Oat and barley straw, per ton	4 00
Wheat straw, per ton	2 00
Turnips, per ton	2 00
Sunflower silage, per ton	3 70
Corn silage, per ton	3 70
O. P. V. silage, per ton	4 50
Oats, per bushel	0 75
Wheat, per bushel	1 60
Barley, per bushel	1 25
Mixed grain, per bushel	1 00

Based on the above figures, the cost of the various farm crops as grown at this Farm, is given below, both for 1928 and the average for seven years.

From these figures it is plain that grain feeds can be produced much cheaper in Eastern Canada than they can be purchased on the average market. By practising a short rotation and using limestone, acid phosphate and a little manure, much of our run-out land could be brought back to a good state of fertility and a large increase made in the production of grain in the Maritime Provinces.

Increased acreage with poor husbandry is of no value, but good husbandry on the areas now under cultivation and a gradual extension of this to greater areas will do much to lighten the feed bills of the Eastern farmer.

Items of expense	Oats	Wheat	Barley	Mixed grain	Corn silage	Sunflower silage	O. P. V.	Turnips	Hay
Rent and taxes	$ 4 00	$ 4 00	$ 4 00	$ 4 00	$ 4 00	$ 4 00	$ 4 00	$ 4 00	$ 4 00
Manure	12 00	12 00	12 00	12 00	16 00	16 00	16 00	22 00	8 00
Seed	3 90	5 06	3 00	4 53	1 50	1 80	6 00	1 00	1 71
Machinery	2 85	2 85	2 85	2 85	2 85	2 85	2 85	2 85	2 85
Twine	0 75	0 45	0 45	0 50	0 38	0 45	.....	.....	.....
Manual labour	3 97	3 80	3 28	4 52	17 06	18 11	9 36	33 78	5 63
Horse labour	1 21	0 94	0 92	1 08	2 50	3 55	1 50	3 78	1 08
Tractor labour	0 90	1 20	1 20	1 20	5 10	5 10	5 10	5 70	.....
Treshing	1 89	1 27	1 27	2 13	.....	.....	.....	.....	.....
Total cost per acre	31 47	31 57	28 97	32 81	49 39	51 86	44 81	73 11	23 27
Yield per acre	47·35 bush.	18·15 bush.	25·4 bush.	42·50 bush.	12·94 tons	12·28 tons	4·27 tons	21·525 tons	2·693 tons
Yield per acre—straw	0·838 tons	0·807 tons	0·719 tons	1·231 tons	.....	.....	.....	861 bush.	.....
Value per acre	$ 35 51	$ 29 04	$ 31 75	$ 42 50	$ 47 88	$ 45 43	$ 19 22	$ 43 05	$ 29 62
Value per acre—straw	3 35	1 61	2 88	4 92	.....	.....	.....	.....	.....
Total value per acre	38 86	30 65	34 63	47 42	$ 47 88	45 43	19 22	$ 43 05	29 62
Profit or loss per acre	7 39	−0 92	5 66	14 61	−1 51	−6 43	−25 59	−30 06	6 35
Cost per bushel or ton, considering value of straw	0·594	1 65	1·027	0·656	3 82	4 22	10 49	3 40 per ton 0·085 per bush.	8 64

Items of expense	Oats	Wheat	Barley	Mixed grain	Corn silage[1]	Sunflower silage	O. P. V. silage[1]	Turnips	Hay
Rent and taxes	$ 4 00	$ 4 00	$ 4 00	$ 4 00	$ 4 00	$ 4 00	$ 4 00	$ 4 00	$ 4 00
Manure	12 00	12 00	12 00	12 00	16 00	16 00	16 00	16 86	8 00
Seed	3 33	4 15	2 93	4 07	1 19	1 65	6 10	0 96	1 80
Machinery	2 85	2 85	2 85	2 85	2 85	2 85	2 85	2 85	2 85
Twine	0 49	0 34	0 39	0 43	0 36	0 60			
Manual labour	5 38	4 96	5 07	6 53	25 63	29 58	13 58	38 46	5 48
Horse labour	1 85	1 50	1 65	1 96	4 61	4 89	2 93	5 79	1 03
Tractor labour	1 72	1 74	1 81	1 88	6 28	7 31	5 44	5 45	
Threshing	2 08	1 34	1 61	2 38					
Total cost per acre	33 70	32 88	32 31	36 10	60 92	66 88	50 90	74 37	23 16
Yield per acre	52·02 bush.	19·08 bush.	32·17 bush.	47·59 bush.	13·83 tons	15·68 tons	6·01 tons	18·03 tons or 721·2 bush.	2·405 tons
Yield per acre—straw	0·985 ton	0·852 ton	0·968 ton	1·08 tons					
Value per acre	$ 32 23	$ 28 88	$ 33 08	$ 39 49	$ 54 68	$ 58 03	$ 27 05	$ 36 06	$ 26 46
Value per acre—straw	3 94	1 70	3 87	4 32					
Total value per acre	36 17	30 58	36 95	43 81	54 68	58 03	27 05	36 06	26 46
Profit or loss per acre	2 47	−2 30	4 64	7 71	−6 24	−8 85	−23 85	−38 31	3 30
Cost per bushel or ton considering value of straw	0·572	1·634	0·884	0·668	4 40	4 26	8 47	4·12 per ton 0·103 per bush.	9 63

[1] 6 year average.

DATES OF SEEDING SUNFLOWERS

This experiment has been under way since 1921. The following results have been obtained to date:—

Range of seedings	Number of years tested	Yield per acre	
		1928	Average
		tons	tons
May 20 to June 20	8	27·15	24·32
May 27 to June 27	8	24·80	22·17
June 3 to July 4	7	14·90	20·47

DISTANCE BETWEEN ROWS OF SUNFLOWERS

This experiment was also started in 1921. The quality of the crop grown in rows 3½ feet apart was found to be coarse and not as palatable as where the distance was less.

The following are the yields obtained:—

Distance between rows	Yield per acre	
	1928	8-year average
	tons	tons
2½ feet	26·11	21·74
3 "	22·16	20·96
3½ "	21·98	20·70

TOP DRESSING HAY LAND WITH BARNYARD MANURE

This project was started in 1921 on a five-acre field. One half was top-dressed with manure at the rate of 20 tons per acre in the spring of that year and again in the fall of 1925, with 16 tons per acre. The other half was left untreated. To date the yield on the treated area has been satisfactory, but the entire field is becoming infested with such weeds as ox-eyed daisy and king devil, which are hard to eradicate without cultivation. The yields to date are as follows:—

BARNYARD MANURE ON HAY LAND

Treatment	Yields hay per acre	
	1928	8-year average
	tons	tons
Manured	1·182	2·217
Unmanured	0·746	1·666

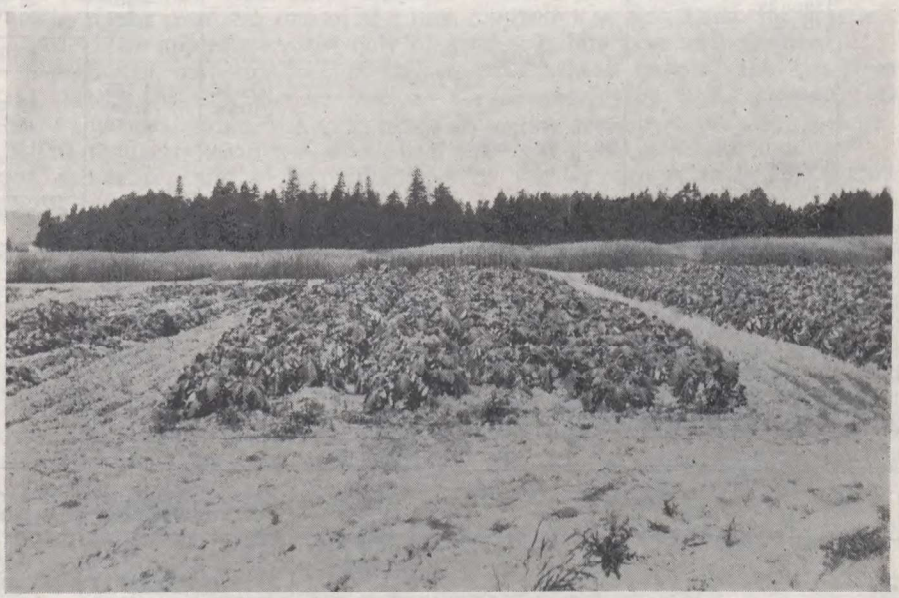
FERTILIZER AND LIMESTONE EXPERIMENTS ON MARSH LAND

Experiments were started in 1922 testing out the value of ground limestone, basic slag and wood ashes for hay production on marsh lands, and also the use of manure versus nitrate of soda and slag on permanent hay lands and on a four-year rotation.

The results of the experiment started in 1922 are as follows:—

Treatment per acre	Oats 1922 yield per acre	Hay 1928 yield per acre	Hay 6-year average yield per acre	Total value per acre after deducting cost of fertilizer or lime
	bush.	tons	tons	$
Check	25·3	1·475	1·765	130 13
1½ tons limestone	29·5	2·192	2·249	153 61
2½ tons limestone	31·7	2·109	2·273	150 24
Check	22·6	1·228	1·663	120 90
½ ton basic slag (18%)	26·8	1·845	2·172	144 30
1,400 pounds wood ashes	25·8	1·435	2·124	146 27

Similar experiments to the above were started in 1924 and 1925 and the results to date vary but little from those of the 1922 experiment.



Cultural work at Nappan. The plot to the extreme left received no manure, the centre plot received 8 tons per acre on the roots and 8 tons on the clover sod, while the plot to the right received 20 tons per acre on the root crop.

Another experiment started in 1925 was a four-year rotation of sunflowers, oats, clover and timothy, the sunflower crop being manured at the rate of 16 tons per acre. This is compared with another rotation of oats, first year and three years in hay, the hay crop receiving a yearly application of 100 pounds nitrate of soda and 150 pounds of 14 per cent basic slag, per acre. Another rotation similar to this receives no fertilizer treatment.

Following are the results of the first rotation in this experiment:—

Rotation	Crop	Treatment	Yield per acre	Value of crop after deducting cost of manure or fertilizer
			tons	$
1	Sunflowers	16 tons manure per acre	12·91	25 93
			lb.	
	Oats	Grain	2,491	39 60
		Straw	2,620	
	Clover		6,594	33 16
	Timothy		5,214	25 48
		Total		124 17
2	Oats	Grain	1,112	
		Straw	2,280	24 18
	Clover	Check	4,296	21 48
	Timothy		4,860	29 16
	Timothy		3,780	20 79
		Total		95 61
3	Oats	Grain	1,285	
		Straw	2,400	27 48
	Clover	100 lb. $NaNO^3$ per acre 150 lb. 14% slag " "	4,676	18 78
	Timothy	" " "	5,000	25 40
	Timothy	" " "	4,606	21 29
		Total		92 95

This experiment is being continued and further results of this and other experimental work will be published after more data are collected.

The cost of renewing marsh lands has been recorded since 1922 and in 1927 the renewal of the entire marsh area except the block of broadleaf was completed. The following is a complete statement of the receipts and expenditures up to the end of 1928:—

Year of renewal	Area	Expenditure to date	Returns to date
	acres	$	$
1922	10·00	1,254 74	1,318 56
1923	13·0	1,441 63	1,855 40
1924	7·73	990 37	1,187 20
1925	11·19	1,447 14	1,193 42
1926	4·70	599 83	415 42
1927	18·00	1,287 61	687 27
Total for area	64·62	7,021 32	6,657 27

The expense items include all costs in ploughing, ditching, seeding, fertilizer, harvesting and rent of land for each year since renewal.

Following are the hay yields recorded each year from the renewed and old marsh areas.

Crop year	Renewed marsh	Unrenewed marsh
	tons	tons
1923	2·16	1·370
1924	1·50	1·345
1925	2·59	1·450
1926	2·20	1·510
1927	2·36	1·420
1928	2·37	

There has been an increase in both the quantity and quality of the hay harvested due to reseeding, proper drainage and the use of soil acidity correctors.

HORTICULTURE

The past season was a very favourable one for horticultural crops. The winter of 1927-28 was reasonably mild, and very free from heavy drifting of snow, which usually does much damage to tree and bush fruits.

The apple crop was one of the best harvested at this Farm for a number of years. The apples were not only of good size, but were well coloured.

Insufficient moisture just at the ripening season reduced the strawberry yield throughout this district and, in consequence, very little over fifty per cent of the usual shipments were made from this section to outside markets.

The raspberry crop was above the five-year average production.

Gooseberries and black currants were slightly below, with red currants running just about an average yield.

All varieties of vegetables made a very satisfactory showing throughout the season and prices for all garden crops remained fairly steady during the entire year, potatoes being the only crop to show a marked decrease in price towards harvest time, the average price for potatoes being around 35 cents per bushel.

The varieties of apples that are recommended for this district are, for early apples, Yellow Transparent, Duchess and Charlamoff; late apples, Pewaukee, Tolman Sweet, Wealthy, McIntosh Red, Arabka, Winter, Golden Russet and Grimes Golden. The Northern Spy made an excellent showing this year; they grew large and were very well coloured, but their keeping qualities were not so good as in previous years, many of them going pithy after being stored for a short time.

The following is the financial statement of the commercial orchard for 1928, area two and a half acres:—

FINANCIAL STATEMENT OF COMMERCIAL ORCHARD—1928

Pruning, 1 man, 20 hours at 29 cents		$ 5 80
Gathering limbs—{1 man, 10 hours at 29 cents, $2.90 / 1 team, 10 hours at 53 cents, $5.30}		8 20
Ploughing and harrowing—tractor, 39 hours at $1.00		39 00
" " team, 7 hours at 53 cents		3 71
Digging couch grass, 1 man, 95 hours at 29 cents		27 55
Removing couch grass, 1 man 10 hours at 29 cents		2 90
Removing couch grass, 1 horse, 10 hours at 10 cents		1 00
Spraying, 1 team 29 hours at 53 cents		15 37
Spraying, 1 man, 29 hours at 29 cents		8 41
Cost spray material, 5 applications at $2.38		11 90
Seeding strips, 1 man, 4 hours at 29 cents		1 16
Cost of seed		2 50
50 per cent 1927 manure, 20 tons at $2 per ton		40 00
Picking, 132 hours at 29 cents		38 28
Empty barrels, 207 at 50 cents		103 50
Total cost		$ 309 28
207 barrels apples at $2.50	$ 519 50	

SMALL FRUITS

STRAWBERRIES

Thirty-nine varieties were on test during the season of 1928. The following are fifteen of the highest yielders for 1928, given in the order of yields: Howard No. 41, 16,819 pounds per acre; Thompson Late, 16,371 pounds per acre; Viola, 16,033 pounds per acre; Kellogg Premier, 14,865 pounds per acre; James Vick, 14,278 pounds per acre; Williams, 14,218 pounds per acre; Francesca, 12,820 pounds per acre; Nick Ohmer, 12,381 pounds per acre; New Globe, 12,049 pounds per acre; Joe, 12,000 pounds; Superb, 11,840 pounds; McAlpine, 11,698; Early Jersey Giant, 11,241 pounds; Equinox, 10,890 pounds; Cordelia, 10,750 pounds. These yields are figured on a corrected yield basis, taking the percentage stand on each plot, together with the yield in order to obtain what the proper yield would be with a perfect stand. Senator Dunlap, one of the best all-round commercial varieties, stood twenty-ninth on the list, with a yield of 7,623 pounds, with a perfect stand. For average conditions it is the variety recommended to growers.

FERTILIZER EXPERIMENT WITH STRAWBERRIES

The following is a series of fertilizer tests started during 1928 with strawberries, in order to ascertain the value of commercial fertilizer on the growing of strawberries.

Series 1.—No fertilizer.
Series 2.—Nitrate applied at the rate of 300 pounds per acre one month after planting.
Series 3.—Nitrate applied at the rate of 300 pounds per acre on August 1.
Series 4.—Nitrate applied at the rate of 300 pounds on September 1.
Series 5.—Nitrate 300 pounds and acid phosphate 200 pounds, applied per acre on July 1.
Series 6.—Nitrate 300 pounds, phosphate 200 pounds per acre, applied on September 1.
Series 7.—Nitrate 300 pounds, phosphate 200 pounds per acre, applied September 1, also 150 pounds phosphate applied early in the spring of the fruiting year.

RASPBERRIES

The following table gives the yield of the nine varieties on test for 1928:—

RASPBERRIES—RESULTS OF VARIETY TEST

Variety	First picking	Last picking	Quality	Mosaic	Yield per acre
				%	lb.
Count	July 19	Aug. 13	Good	40·5	1,944
Newman	" 24	" 18	Very good	35·7	1,209
Herbert	" 24	" 9	Very good	16·6	993·5
King	" 19	" 13	Good	47·6	820
Ruby Red	" 19	" 13	Medium	23·8	561
St. Regis	" 19	" 6	Good	31·0	475
Cuthbert	" 24	" 9	Good	40·4	302
Heebner	" 24	" 9	Medium	59·5	259
Brighton	" 25	" 6	Good	40·4	245

From the preceding table it will be noted that all varieties showed a high percentage of mosaic, which naturally affects the yielding ability of the plant. All diseased plants should be carefully noted each year and cut out.

BLACK CURRANTS

The following table gives the yield per plot, also per acre, for each of the nine varieties on test during 1928:—

YIELD OF BLACK CURRANTS IN 1928

Variety	Yield per plot of 12 bushes	Yield per acre
	lb.	lb.
Eagle	21	4,620
Climax	16·5	3,630
Kerry	16·5	3,630
Topsy	12	2,640
Magnus	12	2,640
Buddenborg	9	1,980
Victoria	9	1,980
Saunders	6	1,320
Boskoop Giant	0	0

RED CURRANTS

Only five varieties were on test and the following table gives the yields obtained for the season of 1928 per plot and also per acre:—

YIELD OF RED CURRANTS IN 1928

Variety	Yield per plot of 12 bushes	Yield per acre
	lb.	lb.
Perfection	66	14,520
London Market	52·5	11,550
Cherry	37·5	8,250
Wilder	36	7,920
Fay Prolific	12	2,640

GOOSEBERRIES

Ten varieties of gooseberries were on test and the following table gives the plot yield, also the acre yield of each variety grown during 1928:—

YIELD OF GOOSEBERRIES IN 1928

Variety	Yield per plot of 12 bushes	Yield per acre
	lb.	lb.
Charles	16·25	3,575
Silvia	13·00	2,860
Barrett	9·75	2,145
Duncan	8·1	1,782
Mabel	6·5	1,430
Red Jacket	3·25	715
Rideau	0·0	0
Deacon	0·0	0
Pearl	0·0	0
Alma	0·0	0

POTATOES

SPROUTING TEST WITH POTATOES

In order to collect data on the relative merits of different methods of handling potatoes before planting, the following experiment was conducted. The test is divided into three divisions: (*a*) Potatoes that are subjected to subdued light at a temperature of from 40 to 50 degrees F. for four weeks; (*b*) potatoes that have been kept dormant all spring; (*c*) potatoes taken from the general bins at the time of planting.

RESULTS OF SPROUTING TESTS WITH POTATOES

Variety	Procedure	Average yield of marketable per acre	Average yield of unmarketable per acre
		bush.	bush.
Irish Cobbler	Subdued	142·2	20·39
"	Dormant	103·9	22·38
"	General bin	124·8	19·89

DIFFERENT DATES OF PLANTING

The following are the data collected on early versus late planting of potatoes:—

Variety	Date planted	Yield per acre marketable	Yield per acre unmarketable
		bush.	bush.
Irish Cobbler	May 31	166·6	24·37
"	June 7	116·9	18·40
"	June 14	128·3	18·90

UNIT STOCK SELECTION

During the past six years careful selections have been made with unit stock of Irish Cobbler seed. While many units have been tried out, a small percentage has been discarded on account of showing signs of disease or poor yielding ability. Each unit is designated by a letter, such as A. B and C. During 1928 fifteen units were on test and the yields ranged from 161·7 bushels to 272·7 bushels per acre of marketable potatoes. Four multiplications were made of seed coming from unit stock of Z, W, G and M, all disease free stock. The yields were 298·5, 263, 255 and 244·3 bushels per acre respectively of marketable stock. A limited quantity of this seed will be available for 1929 planting and should prove valuable seed from which a real start might be made in growing disease free stock.

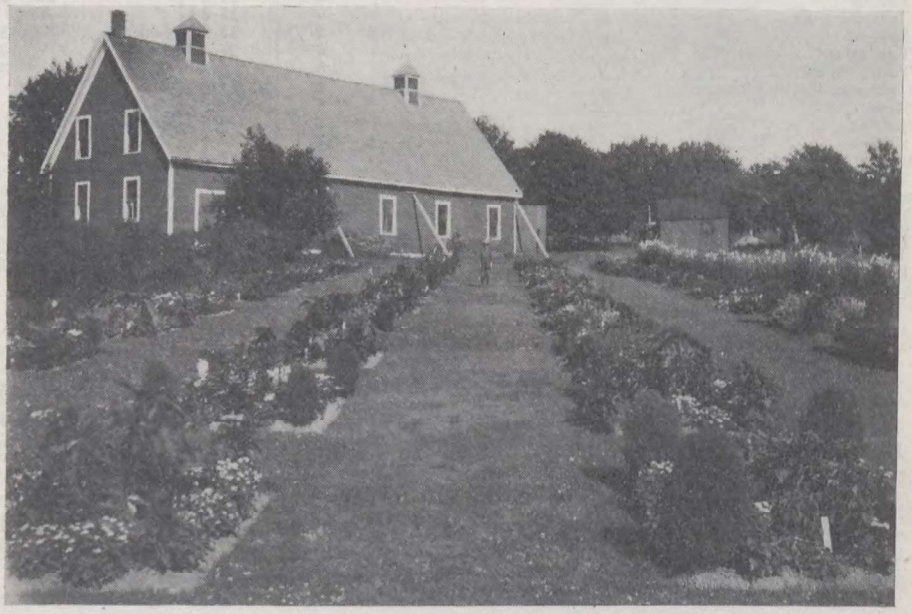
FLORICULTURE

The season was a favourable one for floral work. The spring opened early. Good weather was experienced for early planting and no real destructive winds or rain storms were recorded during the entire season. The fall was open, the first killing frost being recorded on September 30. A splendid showing of bloom was recorded on both annuals and perennials.

ANNUALS

Out of many varieties grown each year, the following is a list of the most hardy varieties thus far tested: antirrhinum; ageratum; amaranthus, balsams; cosmea; clarkia; celosia; chrysanthemum; castor oil plant; calendula; coreopsis; cockscomb; dianthus; gaillardia; godetia; helichrysum jocobea; kochia; lobelia; larkspur; lavatera; marvel of Peru; nemophila; nemesia; nigella; phlox; stocks; petunia; pansy; portulaca; perilla; rhodanthe; salvia; salpiglossis; scabious; tagetes; verbena and zinnia.

The following varieties will, in an average season, make splendid growth and give excellent blooms when sown in the open; therefore, it is not necessary, in an average season, to start them in the hot bed unless you wish extra early blooms: Sweet Alyssum; Candytuft; Mignonette; Nasturtium and Poppies.



A few trees, shrubs and flowers add so much to the farm grounds that a little time spent on them is worth while.

GLADIOLI

The following twelve varieties of Gladioli have been on test for two years and fair growth and bloom were recorded each year: Sheila; Neoga; Nastrodamus; Ramosa; Topaz; Regal; Wraith; White Beauty; Tupelo; Sulphide; Maiden Blush and Reine Victoria.

DAHLIAS

The following is a list of dahlias that have, over a period of ten years, proven to be strong, hardy varieties, yielding an abundance of bloom: Papa Chamit; Premier; Diadem; Snowball; Sou-de-Bernadeau; Countess of Lonsdale; Perriot; Guardian; Empress of India; Longworth; Penelope; Dr. Van Gorkrum; Mons. Ferrard; Prince Galitzine.

ANTIRRHINUM

The following table gives the data collected on the eighteen varieties or strains of antirrhinum grown at this Farm during the past few years:—

ANTIRRHINUM—RESULTS OF VARIETY TESTS

Variety	Number of years grown	Average height	Hardiness	Began to bloom
	years	in.		
Deep Crimson Intermediate	7	16·1	Good	July 26
Fire King "	6	14·8	"	Aug. 1
Yellow "	6	16·3	"	July 25
Carmine pink "	6	15·3	"	Aug. 3
Apricot "	5	15·0	Medium	July 27
Tall mixed "	5	27·4	Good	" 27
Tom Thumb	5	7·4	"	" 30
Crimson Giant Flowered	4	14·5	"	Aug. 1
Rose "	4	17·0	"	" 3
Scarlet "	4	16·5	Medium	" 3
Yellow "	4	13·0	"	" 3
Queen Victoria "	3	18·5	"	" 4
Venue "	3	14·3	"	" 8
Striped "	1	18·0	Good	" 1
White "	1	18·0	"	July 26
White Beauty "	1	20·0	"	Aug. 1
Yellow Queen	1	18·0	"	July 25
Rosy Queen	1	12·0	"	" 20

BULBS

There were thirteen varieties of Darwin tulips, nine varieties of Early tulips and eight varieties of daffodils planted on the fourth day of November, 1927. The weather was sufficiently warm during the first two weeks of April to start growth in all bulbs; consequently the mulch was removed, but too soon, for it became colder towards the latter part of April and the growth was checked, but not seriously. This checking seemed to affect the length of the stem, rather than the bloom, which appeared to be up to the average. The following table gives the data collected on each variety grown during the past season:—

RESULTS OF VARIETY TESTS OF DARWIN TULIPS, EARLY TULIPS AND DAFFODILS

Variety	Colour	Winter killed	Merits	Height
		%		in.
	Darwin Tulips			
Europe	Salmon scarlet	50	Good	10
Prof. Rauwenhoff	Scarlet		Failure	
Edmee	Pink	5	Good	12
Madame Krelage	Pink light edge	60	Poor	10
Isis	Bright scarlet	40	Poor	12
King Harold	Carmine red	15	Very good	12
Rev. Ewbank	Lilac	25	Good	14
Baron de la Tonnaye	Pink, light edge	40	Good	17
La Tulipe Noire	Dark purple	10	Medium	13
Farncombe Sanders	Bright scarlet	35	Medium	10
Bartigon	Bright scarlet	15	Good	13
Clara Butt	Apple Blossom	30	Very good	14
Nora Ware	Lilac	25	Medium	12
	Early Tulips			
Pottebakker	White		Good	10
Lady Boreel	White		Very good	12
Joost Von Vondel	Variegated white and red	10	Good	10
Duchesse de Parma	Terra cotta yellow	20	Very good	12
Artus	Scarlet	60	Poor	6
Vermillion Brilliant	Vermilion		Good	8
Pottebakker	Scarlet	10	Medium	10
Chrysolora	Yellow		Good	10
Cottage Maid	White edged pink		Medium	8
	Daffodils			
Mme. de Graaff	Pale primrose trumpet	30	Medium	7
Princess	Sulphur Yellow		Medium	8
Golden Spur	Deep yellow	20	Good	8
Barri Conspicuus	Parianthe yellow, orange cup		Good	10
Empress	Trmupet yellow, perianthe white		Very good	12
Sir Watkin	Trumpet orange, perainthe yellow		Very good	12
Victoria	Trumpet yellow, perianthe white	60	Poor	10
Leedsi White Lady	Trumpet yellow, perianthe white		Very good	13

PERENNIALS

The most of the perennials came through the winter in excellent shape and, along with the annuals, helped to make a very pleasing flower border throughout the year. Among the more hardy perennials one would name irises, paeonies, delphinium and phlox as excellent; while aquilegia, veronica, dianthus, achillea, lilium, funkia, lupine, campanula, hemerocallis, boltonia, sweet William, white rocket, spirea, thermopsis and hollyhock will all be found hardy and good bloomers.

CEREALS

CHARACTER OF SEASON

The spring of 1928 was ideal for seeding operations. The first plots were seeded on May 11 and with the exception of a few odd lots, seeding was completed by May 22. Germination was rapid and frequent showers throughout the growing season gave ideal conditions for growth. The yield obtained was very satisfactory.

VARIETY TESTS OF GRAIN

The leading varieties of wheat, oats, barley and buckwheat were tested in quadruplicate plots of one one-hundred and twentieth acre each. Guard rows were used in order that field conditions might be approximated as closely as

possible. In addition to these, twenty-two varieties of wheat, thirty-one of oats and twenty-one of barley were tested in rod row plots. Ninety varieties of oats were grown in single rod row plots for classification purposes. The work with head selection and hybrid material was continued. The uniform rust nursery with wheat and oats was carried on again in 1928 in conjunction with the Rust Laboratory at Winnipeg.

SPRING WHEAT

Eight varieties of spring wheat were under test in plots one one-hundred and twentieth of an acre in area. These were sown on May 18. White Russian gave the highest yield in 1928, but Early Red Fife is higher in average yield covering a six-year period.

The following table gives the yields in 1928 and the average yield for the varieties under test:—

WHEAT YIELDS—1928 AND AVERAGE

Variety	1928 yield per acre	Average (6 years) yield
	bush.	bush.
Early Red Fife	30·75	31·54
White Russian	33·00	31·00
Huron	31·50	30·58
Marquis	26·50	28·17
Ruby	28·25	24·46
White Russian F'dton	33·00	27·93*
Garnet	29·50	21·93*
Aurore	31·00	

* 3 years average.

OATS

Seven varieties of oats were tested in 1928 in plots similar to those used for spring wheat. These were seeded on May 17. Victory shows the highest average yield, although Banner exceeded it four out of the six years under test. Gold Rain also exceeded Victory three different years, but is third highest in average yield. Alaska is an early variety, maturing in about ninety days, about ten days earlier than the above mentioned varieties and gives a good average yield. Legacy is a very promising variety and gave a good average yield in 1928. It matures slightly earlier than Banner.

The following table gives the results to date:—

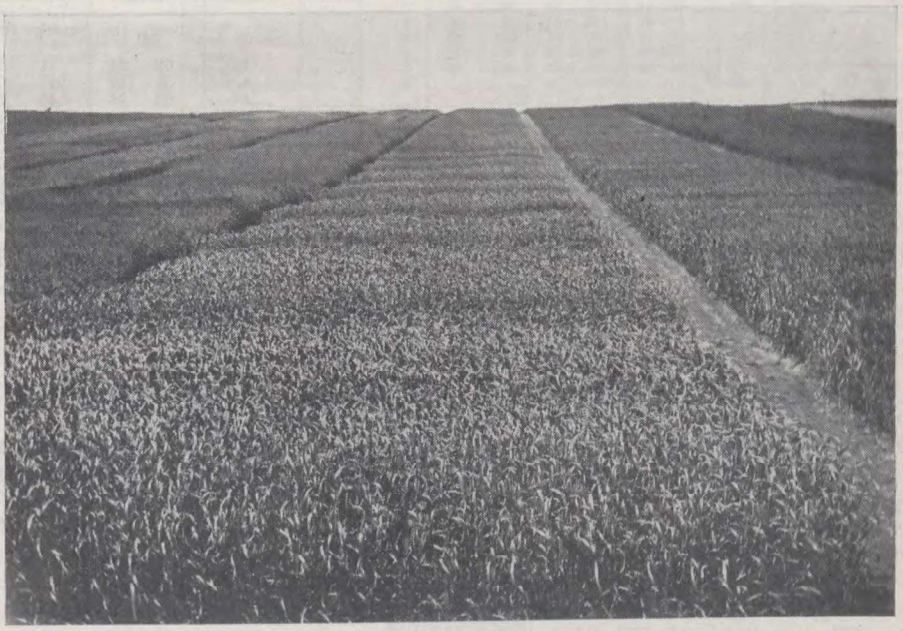
OATS—YIELDS 1928 AND AVERAGE

Variety	1928 yield per acre	Average (6-year) yield
	bush.	bush.
Victory	78·09	72·93
Banner	84·71	70·95
Gold Rain	80·74	69·21
O. A. C. No. 72	78·09	66·52
Alaska	75·44	62·13*
Laurel	58·24	51·89*
Legacy	80·30	.....

* Five-year average.
Laurel figured at 34 pounds per bushel.

BARLEY

Three varieties of two-rowed and five of three-rowed barley were under test in 1928. Seeding was done on May 19. Charlottetown No. 80 gave the highest yield of the two-rowed varieties and is highest of all varieties in average yield for six years. O.A.C. No. 21 is highest in yield of the six-rowed varieties, followed very closely by Chinese and Himalayan, a hulless variety. The latter gives good yields and matures early, but has very short straw and is hard to harvest. Star and Bearer gave excellent yields in 1928 and are very promising sorts. The following table gives the 1928 and average results:—



Rod-row plots of oats, wheat and barley at Nappan—Variety test.

BARLEY YIELDS 1928 AND AVERAGE

Variety	1928 yield per acre	Average (6 year) yield
	bush.	bush.
Two-rowed—		
Charlottetown No. 80	49·06	48·76
Duckbill	33·91	38·49
Gold	40·00	35·53*
Six-Rowed—		
O. A. C. No. 21	49·38	43·31
Chinese	41·25	42·04
Himalayan (hulless)	36·88	43·23
Star	49·69	.....
Bearer	49·69	.....

* Only 3 years average.
Himalayan figured at 48 pounds per bushel.

BUCKWHEAT

Twelve varieties and selections were under test in 1928. They were seeded on June 20. Japanese, Grey and Russian are the leading varieties, but are a little longer in maturing than Tartarian or Rye. The following table gives the 1928 and four-year average results:—

BUCKWHEAT YIELDS IN 1928 AND AVERAGE

Variety	Number of years tested	Yield per acre 1928	Average yield per acre
		bush. lb.	bush. lb.
Japanese J.	4	62 24	51 5
Grey D.	4	56 42	47 17
Russian H.	4	53 36	46 23
Japanese M.	4	52 24	46 5
Grey F.	4	54 18	43 47
Petrograd	4	49 18	43 2
Silverhull J.	4	46 12	42 13
Tartarian D.	4	26 42	40 0
Tartarian G.	4	32 24	39 7
Rye F.	4	25 30	35 36
Rye A.	4	26 12	34 44
Rye H.	4	26 42	34 3

REGISTERED SEED GRAIN

Six acres of Registered Banner oats gave an average yield of 47·35 bushels per acre. Five acres of Extra No. 1 Huron wheat yielded 18·15 bushels per acre and five acres of Registered Charlottetown No. 80 barley yielded 25·4 bushels per acre. There is a good demand for high class seed grain and the major part of the above will be sold during the spring of 1929 for this purpose.

FORAGE CROPS

The work in this Division consists of variety tests of corn and sunflowers for ensilage purposes, of turnips, mangels and carrots and of clover, timothy and annual hays. Different grass mixtures are under test and selection is being carried on with alfalfa for hardy strains suitable for Maritime conditions, and with Bangholm turnips for club-root resistancy.

The season of 1928 was ideal. Spring opened early and the rainfall was just sufficient to maintain excellent growth of all forage crops. Harvesting weather was excellent. The variety test plots of corn, sunflowers and roots were seeded and handled as in 1927.

CROPS FOR ENSILAGE

CORN

Nineteen varieties or strains were tested in 1928. The seed was sown on June 6. Germination was only fair, but growth was excellent, and good yields were obtained. Harvesting was completed September 17. The hybrid varieties are still in the lead in dry matter production, as they reach greater maturity than most of the other sorts.

The following table gives the 1928 and average yields:—

CORN, 1928, AND AVERAGE YIELDS

Variety	Source	Number of years tested	Yield per acre 1928	Yield per acre average	Percentage dry matter		Pounds dry matter per acre	
					1928	Average	1928	Average
			tons lb.	tons lb.			lb.	lb.
North Dakota	Steele Briggs	6	25 1,200	18 878·3	11·605	14·586	5,941·76	5,318·5
90 Day White Dent	Dakota Improved Seed Co.	6	22 760	18 1,420·0	13·535	14·396	6,058·27	5,262·5
Compton's Early	Duke	6	22 1,800	19 89·4	11·895	13·284	5,447·91	5,081·4
Longfellow	Duke	6	25 1,440	19 378·3	11,330	13·260	5,828·15	5,002·2
Leaming	Duke	6	22 1,000	18 304·3	13·105	12·531	5,897·25	4,842·0
Golden Glow	Duke	6	20 1,280	16 287·2	13·335	14·660	5,504·69	4,747·0
Wisconsin No. 7	Duke	6	20 40	16 821·0	14·295	13·862	5,723·72	4,580·7
White Cap Yellow Dent	Steele Briggs	6	19 600	14 923·3	14·020	14·826	5,411·72	4,281·0
Burr Leaming	Carter	5	25 80	22 1,159·8	12·380	14·606	6,199·90	6,583·4
Hybrid	Wimple	5	21 320	20 1,846·6	12·990	14·380	5,497·37	6,007·2
Longfellow	Dakota Improved Seed Co.	5	.....	19 1,799·2	.....	13·563	.....	5,387·5
Yellow Dent	Wimple	5	19 120	18 473·2	13·890	14·606	5,294·87	5,289·9
Quebec 28	McDonald College	5	19 960	14 1,517·0	13·360	14·949	5,205·06	5,227·5
Bailey	Duke	5	18 400	17 1,209·4	12·715	14·509	4,628·26	5,059·6
Northwestern Dent	E.F., Brandon	5	14 440	14 390·6	14·060	15·759	3,998·66	4,538·4
Amber Flint	Wimple	5	15 1,200	15 1,248·0	12·170	13·830	3,797·04	4,390·4
Northwestern Dent—Nebraska grown.	McKenzie	4	19 840	19 1,368·2	13·240	14·820	5,142·42	5,749·5
Northwestern Dent	Dakota Improved Seed Co.	4	.....	18 94·8	.....	15·852	.....	5,680·0
Northwestern Dent—N. Dakota grown.	McKenzie	4	16 1,200	15 649·8	14·240	15·612	4,727·68	4,807·9
Pride Yellow Dent	Dakota Improved Seed Co.	4	.....	14 430·8	.....	16·172	.....	4,703·1
Canada Yellow Flint	Dupuy and Ferguson	3	.....	17 755·7	.....	15·328	.....	5,218·1
Wisconsin No. 7	Parks	3	.....	16 1,416·7	.....	13·797	.....	4,709·2
Quebec 28	Macdonald College	3	.....	12 1,740·0	.....	14·812	.....	3,752·6
Twitchel's Pride x Wisconsin No. 7.	Harrow	2	.....	24 1,383·5	.....	12·688	.....	6,290·8
Leaming Improved	Parks	2	.....	16 1,375·0	.....	15·165	.....	4,948·9
Northwestern Red Dent	Dakota Improved Seed Co.	2	19 840	16 45·0	13·595	13·753	5,280·30	4,396·3
Longfellow	Poppand Lang	1	30 760	30 760·0	12·535	12·535	7,616·27	7,616·2
Northwestern Dent—Crookston.	McKenzie	1	.....	17 1,840·0	.....	17·918	.....	6,421·8
Northwestern Dent—S. Dakota grown.	McKenzie	1	.....	19 460·0	.....	15·595	.....	5,997·8
Leaming	Parks	1	.....	21 —	.....	12·300	.....	5,166·0
Twitchel's Pride	Exp. Farm, Fredericton.	1	.....	13 750·0	.....	15·350	.....	4,106·1
Northwestern Dent	McKenzie	1	.....	11 250·0	.....	13·700	.....	3,048·3

SUNFLOWERS

Six varieties or strains were under test in 1928. These were seeded on June 1 and harvested on September 7. Mammoth Russian (McDonald) and Russian Giant (Disco) have outyielded all other varieties in dry matter per acre. Mammoth Russian varieties from Ewing and Disco are very promising. Following are the 1928 and average yields:—

SUNFLOWERS, 1928, AND AVERAGE YIELDS

Variety	Source	Number of years tested	Yield per acre 1928	Yield per acre Average	Percentage dry matter		Pounds dry matter per acre	
					1928	Average	1928	Average
			tons lb.	tons lb.	%	%	lb.	lb.
Mammoth Russian	McDonald	6	30 80·0	26 207·1	15·665	15·256	9,411·53	7,841·8
Russian Giant	Dakota Improved Seed Co.	5	.....	24 1,434·0	.....	14·458	.....	7,100·3
Ottawa 76	C.E.F., Ottawa	6	23 1,000·9	18 1,714·3	13·615	13·758	6,399·05	5,166·9
Manchurian	McKenzie	5	19 880·0	17 1,542·6	13·730	13·585	5,338·22	4,720·1
Mixed Mennonite	E.F., Rosthern	5	14 1,680·0	12 1,029·2	13·655	14·091	4,052·80	3,516·6
Mantica	Canadian Pacific Rys.	3	.....	22 305·7	.....	12·797	.....	5,828·8
Black	" "	3	.....	21 150·0	.....	13·090	.....	5,505·8
Mixed	" "	3	.....	20 1,694·3	.....	12·577	.....	5,236·1
Manchurian	" "	2	.....	22 166·5	.....	12·685	.....	5,597·6
Russian Giant	" "	2	.....	17 125·0	.....	13·265	.....	4,128·2
Mammoth Russian	" "	1	.....	25 667·0	.....	11·070	.....	5,608·8
Mammoth Russian	Ewing	1	26 1,160·0	26 1,160·0	13·320	13·320	7,080·91	7,080·91
Mammoth Russian	Dakota Improved Seed Co.	1	29 1,840·0	29 1,840·0	14·310	14·310	8,563·10	8,563·10

ROOTS

MANGELS

Thirty-one varieties were tested in 1928. These were seeded on June 1 and harvested October 8 and 9. Germination was good and excellent yields were obtained. In dry matter yield Select Giant Rose Intermediate Sugar (Ewing) is leading over a period of five years. This is a very uniform and smooth sugar mangel. Any of the first seven varieties given in the following table are recommended:—

MANGELS—VARIETY TESTS, 1928, AND AVERAGE YIELDS

Variety	Source	Number of years	Yield per acre on corrected yield basis						Per cent dry matter in crop		Pounds dry matter per acre	
			1928			Average			1928	Average	1928	Average
			tons	lb.	bush.	tons	lb.	bush.	%	%	lb.	lb.
Sel. Giant Rose Inter. Sugar.	Ewing	5	24	776	975·5	21	127	842·5	12·950	14·331	6,316·5	5,971·5
Danish Sludstrup	Ewing	5	27	1,772	1,115·4	22	678	893·6	10·745	13·374	5,992·7	5,866·3
Leviathan	Rennie	5	29	1,854	1,197·1	26	1,235	1,064·7	10·840	10·790	6,488·2	5,767·2
Rosted Barres	H. Hartmann	5	32	990	1,299·8	24	1,578	991·6	9·470	11·879	6,154·6	5,729·4
Yellow Intermediate.	C. E. F	5	33	332	1,326·6	22	1,126	902·5	11·460	12·875	7,601·6	5,627·4
Yellow Eckendorfer.	H. Hartmann	5	38	844	1,536·9	26	1,473	1,069·5	9·945	10·560	7,643·1	5,560·9
Jumbo	Rennie	5	28	1,018	1,140·4	24	1,592	991·8	10·525	11·307	6,001·1	5·527·2
Per. Mammoth Long Red.	Rennie	5	26	1,052	1,061·0	21	1,846	876·9	11·660	12·480	6,185·9	5,424·1
Long Yellow	Ewing	5	25	1,856	1,037·1	20	59	801·2	12·715	13·470	6,593·5	5,315·1
Red Eckendorfer	Gen. Swedish Seed Co.	5	28	1,252	1,145·0	24	1,314	986·3	9·825	10·725	5,625·0	5,310·1
Long Red Mammoth.	Ewing	5	29	964	1,179·3	21	1,165	863·3	11·815	12·612	6,966·6	5,290·8
Fierritsler Barres	H. Hartmann	5	31	1,228	1,264·6	23	1,382	947·6	9·845	11·263	6,224·8	5,267·8
Barres Half Long	Gen. Swedish Seed Co.	5	29	704	1,174·1	22	913	898·3	10·610	11·996	6,228·5	5,225·1
Strymo Barres	H. Hartmann	5	29	1,432	1,188·6	24	618	972·4	9·530	11·004	5,663·9	5,125·6
Yellow Eckendorfer.	Gen. Swedish Seed Co.	5	28	1,148	1,143·0	22	1,190	903·8	9·315	11·437	5,323·3	5,092·9
Barres Oval	Gen. Swedish Seed Co.	5	26	40	1,040·8	22	52	881·0	10·060	11·368	5,235·2	4,940·6
Yellow Leviathan	Rennie	5	29	374	1,167·5	21	1,439	868·8	10·525	11·513	6,143·9	4,885·1
Red Globe	Ewing	5	23	580	931·6	19	852	777·0	11·715	12·627	5,456·8	4,799·2
Golden Tankard.	Rennie	5	21	1,572	871·4	18	1,534	750·7	11·270	12·754	4,910·6	4,797·2
Red Globe	Dupuy-Ferguson	5	25	1,566	1,031·3	20	1,721	834·4	11·270	11·752	5,811·5	4,749·3
Eckendorfer Red.	H. Hartmann	5	28	32	1,120·6	22	842	896·8	10·155	10·648	5,690·0	4,671·3
Golden Tankard.	Ewing	5	22	1,816	916·3	19	1,291	785·8	11·130	12·044	5,099·3	4,621·1
Giant Yellow Globe.	Ewing	5	26	428	1,048·6	23	250	925·0	8·575	9·950	4,495·7	4,544·7
Giant Yellow Globe.	Rennie	5	33	464	1,329·3	22	773	895·5	8·630	9·980	5,735·8	4,314·1

SWEDES

Thirty-seven varieties or strains of swedes were under test in 1928. Seeding was completed on June 2 and harvesting on October 12. The following table gives the yields in green weight and dry matter of all varieties tested for five years:—

SWEDES—VARIETY TESTS, 1928, AND AVERAGE YIELDS

Variety	Source	Number of years tested	Yield per acre on corrected yield basis						Percentage dry matter in crop		Pounds dry matter per acre	
			1928			Average			1928	Average	1928	Average
			tons	lb.	bush.	tons	lb.	bush.	%	%	lb.	lb.
Invicta Bronze Top.	Ewing	5	33	1,376	1,347·5	31	1,109	1,262·2	10·960	9·815	7,384·4	6,141·0
Bangholm	Nappan	5	26	1,508	1,070·2	25	1,726	1,034·5	11·995	11·894	6,418·3	6,074·7
Hall's Westbury	Ewing	5	34	862	1,377·2	32	665	1,293·3	9·630	9·235	6,631·4	5,969·4
Olsgaard Bangholm.	H. Hartmann	5	35	1,328	1,426·6	31	234	1,244·7	10·545	9·610	7,521·5	5,839·7
Best of All	Rennie	5	29	370	1,167·4	29	1,558	1,191·2	10·035	9·775	5,857·4	5,721·2
Improved Yellow Swedish.	General Swedish Seed Co.	5	32	874	1,297·5	29	795	1,175·9	9·920	9·798	6,435·5	5,673·9
Bangholm	Ewing	5	28	1,404	1,148·1	28	393	1,127·9	11·095	9·885	6,369·0	5,495·3
Sutton's Champion Purple top.	Ewing	5	26	1,860	1,077·0	25	802	1,016·0	10·980	10·797	5,913·8	5,462·3
Bangholm	McKenzie	5	27	794	1,095·9	28	235	1,124·7	10·665	9·933	5,843·8	5,442·0
Best of All	Ewing	5	32	1,000	1,300·0	30	876	1,217·5	10·140	9·043	6,591·0	5,437·5
Ditmars	McNutt	5	34	1,626	1,392·5	31	1,025	1,260·5	10·235	8·777	7,126·2	5,421·8
Invicta Bronze Top.	Rennie	5	32	662	1,293·2	31	1,239	1,264·8	9·900	8·731	6,401·5	5,399·2
Shepherd's Golden Globe.	H. Hartmann	4	.....		.....	27	1,490	1,109·8	.....	9·805	.....	5,324·6
Selected Hazard's Improved.	Rennie	5	29	1,460	1,189·2	29	1,764	1,195·3	9·060	9·039	5,387·1	5,308·8
Bangholm	General Swedish Seed Co.	5	29	1,770	1,195·4	27	210	1,084·2	11·175	9·891	6,679·3	5,299·5
Improved Jumbo or Elephant.	Rennie	5	30	1,344	1,226·9	28	353	1,127·1	10·390	9·180	6,373·6	5,091·1
Kangaroo	Ewing	5	29	1,966	1,199·3	27	37	1,080·7	10·660	9·214	6,392·4	4,886·9
Elephant or Monarch Imp'vd	Ewing	5	35	374	1,407·5	27	996	1,099·9	9·495	8·580	6,682·0	4,628·6

CARROTS

Fifteen varieties of carrots were seeded on June 2 and harvested on October 10. The following are the 1928 and average yields:—

CARROTS—VARIETY TESTS, 1928 AND AVERAGE YIELDS

Variety	Source	Number of years tested	Yield per acre on corrected yield basis						Per cent dry matter		Pounds dry matter per acre	
			1928			Average			1928	Average	1928	Average
			tons	lb.	bush.	tons	lb.	bush.	%	%	lb.	lb.
White Belgian	Dupuy & Ferguson.	5	11	978	459·6	14	148	563·0	10·705	10·419	2,459·8	2,960·8
White Belgian	H. Hartmann	5	12	1,682	513·6	13	412	528·2	10·585	11·145	2,718·4	2,957·1
Improved Intermediate White.	Ewing	5	13	1,328	546·6	14	1,346	586·9	9·590	9·818	2,620·8	2,911·4
Danish Champion	C. E. F.	5	9	1,296	385·9	12	1,491	509·8	11·815	10·883	2,279·8	2,790·9
New Yellow Intermediate.	Ewing	5	12	104	482·1	12	1,881	517·6	10·315	10·349	2,486·3	2,695·1
Mammoth Short White.	Rennie	5	12	1,742	514·8	13	880	537·6	9·375	9·873	2,413·3	2,672·0
Large White Belgian.	Rennie	5	11	1,514	470·3	12	1,939	518·8	10·175	10·173	2,392·5	2,626·9
Large White Vosges.	Dupuy & Ferguson.	5	9	1,272	385·4	11	1,502	470·0	10·585	10·840	2,039·9	2,559·9
Mammoth White Intermediate.	Rennie	4	13	1,752	555·0	16	160	643·2	9·650	9·675	2,685·0	3,116·5
Yellow Belgian	Ewing	4	.....	.....	.....	13	300	526·0	.....	11·253	.....	2,971·5
White Belgian	Ewing	4	11	1,352	467·0	12	1,712	514·3	10·080	10·650	2,353·9	2,744·1
Half Long White.	General Swedish Seed Co.	3	.....	.....	.....	12	1,975	519·5	.....	11·097	.....	2,947·8
New Yellow Intermediate.	Halifax Seed Co.	3	8	1,794	355·9	10	1,200	424·0	10·780	12·299	1,918·2	2,631·5
James B. L. 781.	D. L. F.	3	8	1,414	348·3	9	1,190	383·8	13·395	12·817	2,332·6	2,455·8
Champion	H. Hartmann	3	10	—	400·0	10	314	406·3	11·385	11·732	2,277·0	2,411·4
Danish Champion.	H. Hartmann	2	.....	.....	.....	16	286	645·7	.....	11·775	.....	3,807·1
White Belgian	Trifolium	2	11	880	457·6	10	43	400·9	10·760	11·123	2,461·9	2,218·9
White Intermediate.	Exp. Station, Summerland, B.C.	2	12	350	487·0	11	378	447·6	10·390	9·728	2,530·0	2,189·8
White Belgian, No. 1207.	Trifolium	1	.....	.....	.....	13	1,033	540·7	.....	14·070	.....	3,803·5
White Belgian 9008.	Trifolium	1	.....	.....	.....	15	90	601·8	.....	11·210	.....	3,373·1
Champion	General Swedish Seed Co.	1	.....	.....	.....	13	1,435	548·7	.....	9·640	.....	2,644·7
French White Belgian.	Ewing	1	.....	.....	.....	13	1,907	558·1	.....	9·420	.....	2,628·8
Yellow Intermediate.	Halifax Seed Co.	1	.....	.....	.....	8	1,262	345·2	.....	10·820	.....	1,867·7

SUGAR BEETS

Seven varieties of sugar beets were tested in 1928 at this Farm.

In addition, a number of co-operative tests were carried on throughout the district. The results obtained were very satisfactory in both tests, as shown in the following tables, giving the yield, sugar content coefficient of purity and average weight:—

Variety	Corrected yield per acre	Per cent sugar in juice	Co-efficient of purity	Average weight of one root	
	tons	per cent	per cent	lb.	oz.
E. 4	14·22	19·41	91·22	1	4
Dippe	14·06	19·22	87·74	0	15
Fredericksen	13·62	19·14	89·19	1	0
N. 3	13·06	19·13	88·28	1	1
E. 10	12·94	20·25	89·37	0	13
Z. 8	12·32	20·00	90·51	0	14
Buszczynski	11·34	21·01	89·13	0	14

CO-OPERATIVE TEST

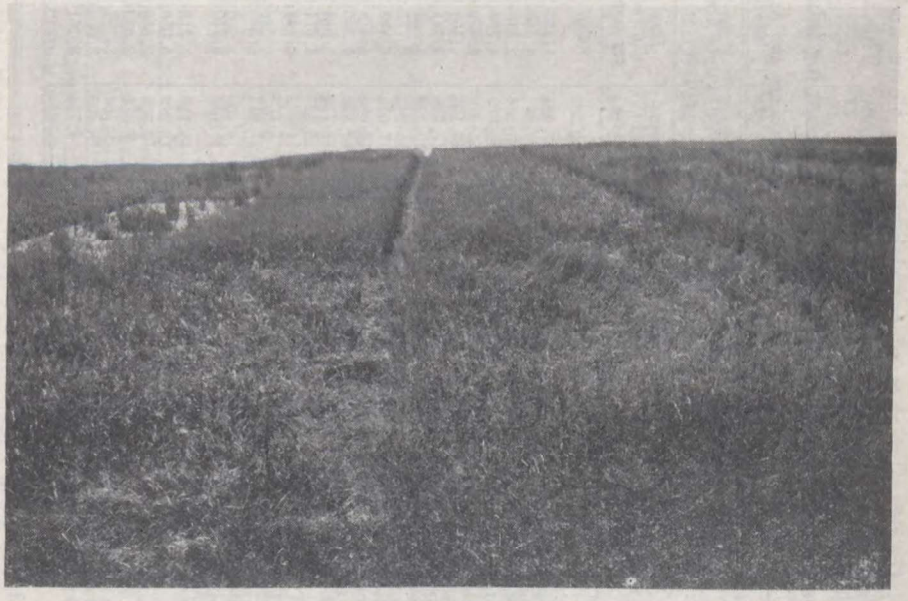
Variety—Dippe.

Name of grower	Yield per acre	Per cent sugar in juice	Coefficient of purity	Average weight of one root	
	tons	per cent	per cent	lb.	oz.
Harry Maxwell, Sackville	24·16	18·79	86·58	2	1
E. N. Smith, Linden	23·12	19·63	89·23	1	15
Edward Milner, Sackville	19·40	19·23	86·88	1	10
Henry Amos, Sackville	12·20	22·39	89·91	1	0
J. W. Oulton, Sackville	11·62	19·60	89·52	1	0
Roy Stevens, Sackville	8·71	20·14	91·85	0	11
Chas. Inch, Sackville	6·27	19·47	90·57	0	8

The sample obtained from Henry Amos was very soft, resulting in a very high percentage of sugar being obtained.

GRASS AND CLOVER MIXTURES

A number of experiments have been under way since 1922 comparing various grass and clover mixtures, also grasses alone for hay, pasture and pasture crops. The results to date, as given in the following tables, show marked differences between various mixtures and grasses in their yield of green weight and dry matter content.



Grass and clover mixtures grown at Nappan in 1928. Note the plot of straight orchard grass practically all killed out.

The plots are one one-hundred and twentieth of an acre in area, in triplicate, with a border of one foot which is removed before harvesting, in order to eliminate any effect which path cultivation might have. Yields are recorded for two years, unless winter-killing takes place, as was the case with the orchard grass in 1927-28, when all plots having this grass alone or in combination with clovers winter-killed completely.

The growth of hay the second year on plots which had had clover and grass mixtures, was much darker in colour and showed more rank growth than did those seeded to grasses alone. This was no doubt due to the nitrogen left in the soil the previous year by the decaying clover roots.

The results of these experiments to date are given in the following tables:—

GRASSES WITH CLOVERS AND ALONE

Seed mixtures	Average of three first cuttings		Average of three second cuttings		Average of three first and three second cuttings		
	Green weight per acre	Dry matter per acre	Green weight per acre	Dry matter per acre	Green weight per acre	Dry matter per acre	Hay on 15% moisture basis
	lb.	lb.	lb.	lb.	lb.	lb.	lb.
10 pounds red clover, 8 pounds timothy	17,961	5,150·70	11,257	4,281·67	14,609	4,716·19	5,548·46
10 pounds red clover, 15 pounds meadow fescue	14,632	4,340·13	10,899	4,253·12	12,766	4,296·63	5,054·86
10 pounds red clover, 15 pounds orchard grass	15,555	3,818·26	11,334*	4,170·20*	13,867†	3,959·04†	4,657·69
10 pounds red clover, 6 pounds timothy, 10 pounds meadow fescue	16,803	4,786·97	10,769	4,187·20	13,786	4,487·09	5,278·93
10 pounds red clover, 6 pounds timothy, 10 pounds orchard grass	15,379	4,339·60	8,334	3,284·54	11,857	3,812·07	4,484·79
10 pounds red clover, 10 pounds meadow fescue, 10 pounds orchard grass	15,106	4,106·93	6,855	2,337·89	10,981	3,222·41	3,791·07
6 pounds alsike, 8 pounds timothy	17,500	5,141·07	9,539	3,946·44	13,520	4,543·76	5,345·60
6 pounds alsike, 15 pounds meadow fescue	16,319	4,889·10	8,869	3,385·13	12,594	4,137·12	4,867·20
6 pounds alsike, 15 pounds orchard grass	14,242	3,775·25	8,589*	3,337·90*	11,981†	3,600·31†	4,235·66
6 pounds alsike, 6 pounds timothy, 10 pounds meadow fescue	17,014	5,343·26	8,534	3,547·17	12,774	4,445·22	5,229·67
6 pounds alsike, 6 pounds timothy, 10 pounds orchard grass	15,060	4,678·06	7,733	3,086·80	11,397	3,882·43	4,567·56
6 pounds alsike, 10 pounds meadow fescue, 10 pounds orchard grass	14,398	4,380·11	6,548	2,529·12	10,473	3,454·62	4,064·26
8 pounds red clover, 2 pounds alsike, 8 pounds timothy	19,778	5,948·72	10,719	3,866·38	15,249	4,907·55	5,773·59
8 pounds red clover, 2 pounds alsike, 15 pounds meadow fescue	15,929	4,911·85	7,407	2,708·98	11,668	3,810·42	4,482·85
8 pounds red clover, 2 pounds alsike, 15 pounds orchard grass	14,362	3,746·44	7,094*	2,318·80	11,455†	3,175·38†	3,735·74
8 pounds red clover, 2 pounds alsike, 6 pounds timothy, 10 pounds meadow fescue	17,011	4,835·48	9,675*	3,813·54*	14,077†	4,426·70†	5,207·88
8 pounds red clover, 2 pounds alsike, 6 pounds timothy, 10 pounds orchard grass	18,518	5,379·31	10,955	4,027·85	14,736	4,703·58	5,533·62
8 pounds red clover, 2 pounds alsike, 10 pounds meadow fescue, 10 pounds orchard grass	18,716	5,113·36	8,534	2,812·29	13,625	3,962·83	4,662·15
12 pounds timothy	12,923	5,050·46	8,547	3,376·15	10,735	4,213·30	4,956·82
30 pounds meadow fescue	9,398	3,646·96	6,460	2,442·32	7,929	3,044·64	3,581·93
30 pounds orchard grass	7,880	2,682·80	6,307*	2,512·20*	7,251†	2,614·56†	3,075·95
8 pounds timothy, 15 pounds meadow fescue	8,764*	3,797·03*	7,588	3,034·46	8,058†	3,339·49	3,928·81
8 pounds timothy, 15 pounds orchard grass	8,495*	3,008·81*	6,312	2,276·22	7,185†	2,569·26†	3,022·66
15 pounds meadow fescue, 15 pounds orchard grass	8,744	3,161·15	5,109	1,760·53	6,926	2,460·84	2,895·11

* Two years only. † Average of five cuttings only.

Seed mixture	Average of three first cuttings		Average of second three cuttings		Average of three first and three second cuttings		
	Green weight per acre	Dry matter per acre	Green weight per acre	Dry matter per acre	Green weight per acre	Dry matter per acre	Hay on 15% moisture basis
	lb.	lb.	lb.	lb.	lb.	lb.	lb.
Experiment 8—Rates of seeding Hay and Pasture Mixtures							
10 pounds red clover, 8 pounds timothy	18,046	5,765·31	9,737	3,971·00	13,891	4,868·16	5,727·29
8 pounds red clover, 8 pounds timothy, 2 pounds alsike	18,108	5,503·85	9,353	3,884·45	13,730	4,694·15	5,522·53
5 pounds red clover, 8 pounds timothy, 5 pounds alsike	19,555	6,617·60	9,987	4,091·42	14,771	5,354·51	6,299·42
8 pounds red clover, 6 pounds timothy, 2 pounds alsike, 2 pounds red top	19,982	6,046·74	9,810	4,011·15	14,896	5,028·94	5,916·40
8 pounds red clover, 4 pounds timothy, 2 pounds alsike, 4 pounds red top	17,735	5,808·95	10,063	4,076·98	13,899	4,942·97	5,815·26
8 pounds red clover, 6 pounds timothy, 2 pounds alsike, 2 pounds red top, 6 pounds meadow fescue	19,152	5,625·31	10,254	4,297·02	14,703	4,961·17	5,836·67
8 pounds red clover, 4 pounds timothy, 2 pounds alsike, 4 pounds red top, 6 pounds meadow fescue	19,056	5,765·10	9,897	3,966·83	14,476	4,865·97	5,724·67
*Experiment 10—Early and Late Red Clover with Early and Late Grasses**							
10 pounds early red clover, 8 pounds timothy	20,957	6,466·21	11,032	4,428·02	15,002	5,243·29	6,168·58
10 pounds early red clover, 15 pounds meadow fescue	19,997	5,909·94	8,946	3,374·90	13,366	4,388·91	5,163·42
10 pounds late red clover, 8 pounds timothy	25,960	7,524·23	10,435	4,278·26	16,645	5,576·65	6,560·76
10 pounds late red colver, 15 pounds meadow fescue	23,397	6,315·24	8,575	3,581·86	14,504	4,675·21	5,500·25
*Only two first cuttings (Clover killed out in 1923–24)							
Experiment 11—Meadow Fescue in Hay and Pasture Mixtures							
8 pounds red clover, 2 pounds alsike, 8 pounds timothy	15,615	5,032·54	9,281	4,085·48	12,448	4,559·01	5,363·54
8 pounds red clover, 2 pounds alsike, 7 pounds timothy, 2 pounds meadow fescue	17,386	5,768·32	9,657	4,261·57	13,522	5,014·95	5,899·94
8 pounds red clover, 2 pounds alsike, 7 pounds timothy, ¼ pounds meadow fescue	17,569	5,597·99	9,621	4,248·88	13,595	4,923·44	5,792·28
8 pounds red clover, 2 pounds alsike, 7 pounds timothy, 6 pounds meadow fescue	17,807	5,998·74	9,502	4,262·53	13,655	5,130·64	6,036·05
8 pounds red clover, 2 pounds alsike, 6 pounds timothy, 2 pounds meadow fescue	17,692	5,718·54	8,766	3,853·43	13,229	4,785·99	5,630·58
8 pounds red clover, 2 pounds alsike, 6 pounds timothy, 4 pounds meadow fescue	16,865	5,369·50	9,490	4,039·06	13,178	4,704·28	5,534·45
8 pounds red clover, 2 pounds alsike, 6 pounds timothy, 6 pounds meadow fescue	14,861	4,992·21	8,368	3,498·73	11,615	4,245·47	4,994·67
Timothy Variety Test†							
Boon	7,567	2,759·11	8,433	3,377·70	8,000	3,068·41	3,609·89
Huron	8,300	3,121·78	8,600	3,564·12	8,450	3,342·95	3,932·88
Commercial	9,333	3,453·91	10,200	4,200·75	9,767	3,827·33	4,502·74

† Average of one first and one second cutting.

ANNUAL HAYS

Seven varieties of annual hays were tested in 1927 and nine in 1928. The results to date show Japanese Millet leading in dry matter yield, with Teff Grass second and Golden Millet third. The results are given in the following table:—

ANNUAL HAYS, 1927 AND 1928

Variety	Green weight acre yields 1927	Per cent dry matter 1927	Green weight acre yields 1928	Per cent dry matter 1928	2-year average dry matter per acre	2-year average hay per acre on 15% moisture basis
	lb.	%	lb.	%	lb.	lb.
Golden millet	11,550	24·115	31,740	29·935	6,147·5	7,232·4
Hungarian millet	8,600	36·335	13,980	46·530	4,812·3	5,661·6
Japanese millet	27,800	23·480	40,140	25·395	8,347·1	9,820·1
Hog millet	12,550	28·024	20,940	32·030	5,121·3	6,025·1
Siberian millet	6,900	37·359	14,580	43·650	4,471·2	5,260·3
Tall Oat grass	5,150	28·108	14,340	33·545	3,129·3	3,681·6
Teff grass	19,200	30·794	28,680	25·390	6,602·4	7,767·5
Common millet	.....	.....	11,700	35·840	4,193·3	4,933·3
Sudan grass	.....	.....	17,460	22·950	4,007·1	4,714·2

COST TO PRODUCE TURNIP SEED, 1928

Area—1 acre.	
Rent of land	$ 4 00
Use of machinery	2 85
Pitting stecklings in fall of 1927—	
Manual labour, 15 hours at 29 cents	4 35
1 man and 2 horses 8 hours at 53 cents	4 24
Manure, 8 tons at $2	16 00
Ploughing, 1 man, 2 horses, 11 hours at 53 cents	5 83
Harrowing, 1 man, 2 horses, 5 hours at 53 cents	2 65
Smooth harrowing, 1 man, 2 horses, 3·4 hours at 53 cents	1 80
Running drills, 1 man, 2 horses, 5 hours at 53 cents	2 65
Uncovering pit, 1 man, 6·8 hours at 29 cents	1 97
Planting and covering, 72 hours at 29 cents	20 88
Hauling stecklings, 1 horse, 16 hours at 10 cents	1 60
Filling misses, 1 man, 1·5 hours at 29 cents	0 44
Hoeing, 1 man, 89 hours at 29 cents	25 81
Cultivating, 1 man, 12 hours at 29 cents	3 48
Cutting, 1 man, 105 hours at 29 cents	35 96
Threshing, 1 man, 60 hours at 29 cents	17 40
Cleaning seed, 1 man, 96 hours at 29 cents	27 84
Clearing away refuse from field, 1 man, 5 hours at 29 cents	1 45
Setting up deseeder, 1 man, 4 hours at 29 cents	1 16
Gasoline for truck and tractor, 10 gallons at 29 cents	2 90
274 bushels of seed turnips at 12 cents	32 88
Total cost	$ 218 14

Yield per acre—1,360 pounds
Cost per acre—$218.14
Cost per pound—16 cents
Five-year average cost per pound—19·46 cents.

CHEMISTRY

The fertilizer experimental work was continued in 1928. The results of a number of the experiments are given herein and in addition to these, experiments are also being conducted with cyanamid, urea and ammo-phos, with nitrate of soda, ammonium sulphate and superphosphate as sources of nitrogen and phosphoric acid in potato fertilizers. Lack of space prevents a detailed discussion of the fertilizer experiments, but further details may be obtained by applying to the Superintendent of this Farm.

FERTILIZER FORMULAE FOR POTATOES

In the 1927 report the results of this experiment were given, in so far as the yield of potatoes and the profits over fertilizer costs were concerned. These results indicated that the greatest returns might be expected from a 1,200 to 1,500-pound application of a fertilizer having a formula such as a 3-6-6, 4-8-8 or 4-6-6 mixture. This year the results of the grain yields following the potato crop are given, showing the increased yields due to the fertilizer application and the value of this increase based on a valuation of 64 cents per bushel for oats and $4 per ton for straw. In the course of another year we will be able to give a complete statement of four rotations of potatoes, grain and hay, showing the yields and value of increase, due to the application of the different fertilizer mixtures.

POTATO FERTILIZER FORMULAE—YIELD OF OATS FOLLOWING POTATOES—FOUR-YEAR AVERAGE

Treatment		4-year average yield per acre		Average increase over checks		Value of increase, oats 64 cts per bushel straw $4 per ton	Average value of increase for each formula employed
Formulae	pounds per acre	Grain	Straw	Grain	Straw		
		bush.	tons	bush.	tons	$	$
6-6-6	1,000	44·94	0·999	2·20	0·104	1 82	5 21
	1,500	50·47	1·075	7·73	0·180	5 67	
	2,000	53·44	1·217	10·70	0·322	8 14	
5-6-6	1,000	47·76	0·955	5·02	0·060	3 45	5 54
	1,500	49·10	1·033	6·36	0·188	4 82	
	2,000	53·19	1·309	10·45	0·414	8 34	
4-6-6	1,000	49·04	1·109	6·30	0·214	4 89	7 84
	1,500	53·99	1·079	11·25	0·184	7 94	
	2,000	57·42	1·219	14·68	0·324	10 69	
3-6-6	1,000	54·41	1·168	11·67	0·273	8 56	7 70
	1,500	50·29	1·178	7·55	0·283	5 96	
	2,000	53·99	1·242	11·25	0·347	8 59	
5-8-6	1,000	49·25	1·080	6·51	0·185	4 91	6 58
	1,500	50·55	1·077	7·81	0·182	5 73	
	2,000	54·85	1·234	12·11	0·339	9 11	
4-8-6	1,000	44·41	1·030	1·67	0·135	1 61	3 88
	1,500	47·64	1·018	4·90	0·123	3 63	
	2,000	51·31	1·125	8·56	0·230	6 40	
3-8-6	1,000	48·76	1·060	6·02	0·165	4 51	4 95
	1,500	47·49	1·027	4·75	0·132	3 57	
	2,000	51·59	1·171	8·85	0·276	6 77	
4-8-10	1,000	49·71	1·066	6·97	0·171	5 14	7 36
	1,500	51·59	1·192	8·85	0·297	6 85	
	2,000	56·34	1·245	13·60	0·350	10 10	
4-8-8	1,000	46·48	0·968	3·74	0·073	2 69	5 84
	1,500	51·97	1·193	9·23	0·298	7 10	
	2,000	53·21	1·151	10·47	0·256	7 72	
4-8-4	1,000	46·86	0·979	4·12	0·084	2 97	5 55
	1,500	50·60	1·148	7·86	0·253	6 04	
	2,000	52·92	1·173	10·18	0·278	7 63	
Checks		42·74	0·895	.....	.....	.....	.....

BASIC SLAG EXPERIMENT

This experiment was started in 1923 making a comparison of some of the phosphatic fertilizers then on the market. Various brands of basic slag then available were included and the results for five years were reported in 1927. Several of these brands of slag have since been removed from the market and it will be necessary to change the outline of the experiment. In 1927 and 1928 turnips were grown on the areas devoted to this work.

MALAGASH SALT EXPERIMENT

The following tables give the results of an experiment started in 1924 to determine the effect of applications of Malagash salt and common salt on crop yields. The experiment consisted of two sections: Section 1, in which a four-year rotation of turnips, grain, clover hay was followed, received an application of 15 tons of manure per acre previous to the turnip crop, in addition to the salt application noted. Section 2, in which a three-year rotation of grain, clover hay, timothy hay was followed, received only the treatment as given in the table. The results cover two complete rotations of this experiment. No marked beneficial effects are noted from the use of Malagash or common salt in either experiment. The differences in yields obtained might be due to uncontrollable variations in soil or to weather conditions.

MALAGASH SALT EXPERIMENT—SECTION 1

Treatment	Average yields per acre				
	Turnips	Oats	Straw	1st year hay	2nd year hay
	bush.	bush.	tons.	tons	tons
Malagash salt 200 pounds per acre	789·2	48·3	0·88	1·33	1·50
Malagash salt 400 " "	836·8	45·9	0·97	1·34	1·56
Malagash salt 600 " "	856·0	49·2	1·00	1·57	1·59
Common salt 200 " "	814·4	43·8	0·87	1·20	1·30
Common salt 400 " "	820·8	41·5	0·93	1·37	1·45
Checks	800·0	43·5	0·92	1·37	1·52

MALAGASH SALT EXPERIMENT—SECTION 2

Treatment	Average yields per acre			
	Oats	Straw	1st year hay	2nd year hay
	bush.	tons	tons	tons
Malagash salt 100 pounds per acre	40·3	1·00	1·03	0·88
Common salt 100 " "	45·5	1·08	1·17	1·00
Malagash salt 200 " "	40·1	1·10	1·04	0·88
Common salt 200 " "	45·2	1·19	1·01	0·88
Malagash salt 400 " "	44·0	1·07	1·25	0·92
Malagash salt 100 " " / Nitrate of soda 100 " "	42·1	1·11	1·17	0·96
Malagash salt 200 " " / Nitrate of soda 100 " "	45·9	1·16	1·42	1·09
Malagash salt 100 " " / Nitrate of soda 100 " " / Superphosphate 300 " "	48·9	1·28	1·43	1·12
Malagash salt 200 " " / Nitrate of soda 100 " " / Superphosphate 300 " "	46·8	1·23	1·36	1·05
Checks	42·6	1·06	1·13	1·06

EPHOS BASIC PHOSPHATE

The object of this experiment is to determine the fertilizing value of "Ephos," a ground Egyptian rock phosphate, containing 27·5 per cent phosphoric acid. It is compared with superphosphate and basic slag. The results given herein cover one complete rotation of turnips, oats, clover and timothy.

RESULTS OF EPHOS BASIC PHOSPHATE EXPERIMENT

Treatment	Yield of turnips, 1925	Yield of oats, 1926		Yield of hay	
		Grain	Straw	1927	1928
	bush.	bush.	tons	tons	tons
Ephos.....292 pounds per acre.....	480·0	40·0	0·76	0·81	1·01
Superphosphate.....500 " "	564·8	47·1	0·88	1·11	1·20
Basic slag.....500 " "	563·2	54·1	0·96	1·02	1·14
Ephos.....292 " "					
Nitrate of soda.....150 " "	665·6	54·1	0·80	1·03	1·26
Muriate of potash...100 " "					
Superphosphate.....500 " "					
Nitrate of soda.....150 " "	624·0	54·1	0·92	1·08	1·09
Muriate of potash...100 " "					
Basic slag.....500 " "					
Nitrate of soda.....150 " "	668·8	49·4	0·80	0·87	1·11
Muriate of potash...100 " "					
Nitrate of soda.....150 " "					
Muriate of potash...100 " "	379·2	47·1	0·76	0·80	1·23
Ammo-phos. 13-48..180 " "	560·0	54·1	0·72	0·66	0·88
Ammo-phos. 20-20..180 " "	561·6	49·4	0·64	1·08	1·14
Checks.....	297·6	46·4	0·73	0·75	1·05

GYPSUM AND SULPHUR EXPERIMENT

This experiment was started in 1926 to determine the effect on crop yields of applications of gypsum and sulphur alone or in combination with ground limestone and manure. The results to date, given in the accompanying table, do not permit of definite conclusions being drawn:—

RESULTS OF GYPSUM AND SULPHUR EXPERIMENT

Treatment	Yield per acre 1926		Hay per acre 1927	Hay per acre 1928
	Grain oats	Straw		
	bush.	tons	tons	tons
Gypsum..... 550 pounds per acre...	42·4	0·80	0·86	1·24
Gypsum.....1,100 " " ...	47·1	0·64	0·83	1·26
Gypsum.....2,200 " " ...	51·8	0·92	1·10	1·56
Sulphur..... 100 " " ...	35·3	0·72	0·81	1·05
Sulphur..... 200 " " ...	44·7	0·80	0·82	1·18
Sulphur..... 400 " " ...	42·4	0·76	0·70	1·00
Superphosphate..... 890 " " ...	44·7	0·84	1·00	1·74
Superphosphate.....1,780 " " ...	47·1	0·80	0·85	1·89
Ground rock phosphate..... 500 " " ...	49·4	0·84	1·10	1·53
Ground limestone..... 4,000 " " ...	42·4	0·84	0·89	1·37
Sulphur..... 200 " " ...	44·7	0·80	1·12	1·42
Ground limestone..... 4,000 " " ...				
Gypsum..... 500 " " ...	49·4	0·92	1·44	2·04
Manure..... 10 tons per acre.....				
Manure..... 10 " "	49·4	1·04	1·38	1·67
Checks.....	40·5	0·84	0·95	1·42

LIMESTONE, GYPSUM AND HYDRATED LIME

The chief object of this experiment was to learn if continued applications of ground magnesian limestone had a depressing effect on subsequent crop yields. The plan permits of a comparison of the influence of magnesian limestone with that of calcitic limestone, hydrated lime and gypsum. The results to date do not show any evidence of injurious effects on crop growth from the application of magnesian ground limestone.

CALCITIC VS. MAGNESIAN LIMESTONE VS. GYPSUM VS. HYDRATED LIME

1925-1928

Treatment	Turnips 1925 per acre	Oats 1926		Hay 1927	Hay 1928
		Grain	Straw		
	bush.	bush.	tons	tons	tons
Calcitic limestone 2 tons per acre	749·3	40·8	1·21	2·12	2·14
Calcitic limestone 6 " "	842·7	41·2	1·71	2·53	2·89
Magnesian " 2 " "	773·3	43·2	1·31	2·10	2·41
Magnesian " 6 " "	824·0	45·5	1·27	2·06	2·41
Gypsum 5 " "	802·7	34·5	1·07	1·81	2·38
Gypsum 1·5 " "	832·0	37·6	0·98	1·71	1·96
Hydrated lime 1 " "	776·0	41·2	1·21	1·87	2·27
Hydrated lime 3 " "	773·3	36·5	1·44	2·44	2·88
Checks	744·0	37·9	1·13	1·95	2·29

POULTRY

From the standpoint of poultry raising, the season of 1928 was equally as good, if not a more favourable one, than 1927. The winter of 1927-28 was reasonably mild and fairly free from severe, cold storms. It was somewhat cloudy and dull during the first two months, but from January on there was a satisfactory amount of sunshine. April and May were exceptionally good months for the young chicks and breeding stock. A short dry spell during July cut down the succulent foods, but did not last long enough to cause any serious effect on the growth of the chicks that were out on range, with the result that both the pullets and cockerels came off the range in excellent condition.

PEDIGREE BREEDING

Careful selection and breeding cannot be too strongly urged upon the poultry breeder. To obtain maximum production at a minimum of cost just means increase in profit over feed cost. But to receive maximum production, one must mate up the breeding females with only such cockerels as are known to be from high-producing stock. The surest and safest way to do this is by pedigree breeding. By following up pedigree breeding work on a plant, one is safeguarding to the highest degree the interest of poultry development, particularly its interest as to production and standard qualifications, two very important phases of the industry.

The number of matings made on the plant at Nappan during 1928 was 137, of which five were registered.

The objective should be standard fowl, size and colouring, combined with high production, say two hundred eggs or better, per bird, with eggs of not less than twenty-four ounces per dozen. It is far better to get a large number ranging in production around two hundred eggs than a few scattered individuals with a three hundred or three hundred and fifty egg record.

The following table is a summary of all birds laying over one hundred and fifty eggs for the last nine years:—

SUMMARY OF BIRDS LAYING OVER 150 EGGS

Year	Number of birds	Average egg production	Number of birds	Average egg production	Number of birds	Average egg production
1919-20	6	208·3	4	184·0	17	159·8
1920-21	11	218·0	13	187·1	16	164·3
1921-22	16	218·9	8	181·4	14	159·3
1922-23	8	275·0	19	223·3	14	174·1
1923-24	3	281·0	23	226·5	46	170·7
1924-25	4	208·0	6	184·0	6	162·2
1925-26	3	204·0	13	183·0	10	161·1
1926-27	3	269·0	17	218·2	31	173·8
1927-28	7	274·5	42	218·7	68	176·4

In the above table the results of breeding are showing up extremely well, particularly during the past two years. Note the number of birds over the two hundred egg mark. In addition there has been a very marked change in the percentage of birds laying eggs of standard weight, namely, twenty-four ounces to the dozen.

FEEDING EXPERIMENTS

Careful and judicious feeding of poultry is a very important factor in successful poultry husbandry and, for that reason, as many feeding experiments as may be carried on successfully are conducted each year, in order to collect data on this important phase of the work.

The following feeding projects are under way: Epsom salts vs. mangels vs. clover vs. sprouted oats as green feeds; beef scrap vs. fish meal as animal protein feeds; oyster shells vs. clam shells vs. gypsum and grit as mineral feeds; hulless oats vs. ordinary oats in order to determine the relative feeding value of a food low in fibre.

The following table gives the average results of three years for Epsom salts vs. mangels vs. clover vs. sprouted oats:—

MANGELS VS. EPSOM SALTS VS. SPROUTED OATS VS. CLOVER—3-YEAR AVERAGES

——		Mangels	Epsom salts	Sprouted oats	Clover
Number of days in experiment	No.	182·3	182·3	182·3	182·3
Number of birds on experiment	No.	15	15	15	15
Scratch grain consumed	lb.	494·3	492·6	487·3	507·3
Mash consumed	"	157·3	162·5	143·5	177·5
Beef scrap consumed	"	28·0	22·1	23·3	25·3
Mangels consumed	"	462·6	.....	.....	.....
Epsom salts consumed	"	.....	8·3	.....	.....
Sprouted oats consumed	"	.....	.....	147·0	.....
Clover consumed	"	.....	.....	.....	85·5
Grit consumed	"	13·6	12·3	12·6	14·3
Shell consumed	"	26·3	23·8	28·3	27·5
Total eggs laid	No.	1,173	1,193	1,174	1,200·3
Statement of Cost					
Scratch grain	$	12·75	12·706	12·57	13·09
Mash	$	4·17	4·306	3·82	4·636
Beef scrap	$	1·25	0·99	0·973	1·29
Mangels	$	0·936	.....	.....	.....
Epsom salts	$	.....	0·443	.....	.....
Sprouted oats	$	.....	.....	3·603	.....
Clover	$	.....	.....	.....	0·236
Grit	$	0·226	0·206	0·206	0·243
Shell	$	0·496	0·45	0·52	0·51
Total cost of feeds	$	19·83	19·103	21·693	30·006
Total value of eggs	$	41·103	42·21	42·033	41·933
Profit per pen over feed	$	21·273	23·106	20·34	21·926
Profit per bird over feed	$	1·419	1·541	1·355	1·461
Feed cost per dozen	$	0·206	0·195	0·227	0·205

From the preceding table it may be noted that the Epsom salts lot, over a period of three years, showed about one cent less per dozen in feed cost over mangels and clover, the latter two being about equal, while sprouted oats showed almost three cents per dozen more on the average.

OYSTER SHELLS VS. CLAM SHELLS VS. GYPSUM

The following table gives the average results obtained during the past three years. All pens received the same supply of grit:—

OYSTER SHELLS AND GRIT VS. CLAM SHELLS AND GRIT VS. GYPSUM—

Three-year Averages, 1926–1927–1928

—		Oyster shell and grit	Clam shell and grit	Gypsum
Number of days in experiment	No.	182·3	182·3	182·3
Number of birds on experiment	"	14·3	14·3	14·3
Scratch grain consumed	lb.	511·6	497·3	501·0
Mash consumed	"	151·1	143·3	140·1
Beef scrap consumed	"	27·3	25·5	38·8
Oyster shells consumed	"	24·8	.....	.....
Clam shells consumed	"	.....	28·1	.....
Grit consumed	"	11·5	11·3	.....
Gypsum consumed	"	.....	.....	59·0
Roots consumed	"	340·6	340·6	340·6
Clover consumed	"	5·0	5·0	5·0
Total eggs laid during experiment	No.	1,074·0	1,072·3	730·6
Statement of Cost				
Scratch grain	$	13·203	12·826	12·92
Mash	$	3·943	3·793	3·693
Beef scrap	$	1·236	1·126	1·746
Oyster shell	$	0·463	.....	.....
Clam shells	$	.....	0·39	.....
Grit	$	0·193	0·19	.....
Gypsum	$	.....	.....	1·113
Roots	$	0·676	0·676	0·676
Clover	$	0·02	0·02	0·02
Total cost of feed	$	19·736	19·023	20·17
Total value of eggs	$	36·926	37·756	25·973
Profit over feed per pen	$	17·19	18·733	5·803
Profit per bird	$	1·205	1·316	0·398
Feed cost per dozen	$	0·219	0·214	0·331

Taking the average results of three years, it would appear from the preceding figures that clam shells would give equally as good results as oyster shells, but that gypsum would not for it will be noted that the cost, using gypsum, is nearly 11 cents per dozen greater.

BEEF SCRAP VS. FISH MEAL

The following table gives the average of three years' feeding tests:—

BEEF SCRAP VS. FISH MEAL

3-year Averages

——		Beef scrap	Fish meal
Number of days in experiment	No.	182·3	182·3
Number of birds on experiment	"	14·3	14·0
Scratch grain consumed	lb.	482·6	486·6
Mash consumed	"	111·8	113·5
Beef scrap consumed	"	28·0	.....
Fish meal consumed	"	.....	27·1
Grit consumed	"	10·3	12·6
Shell consumed	"	27·6	28·8
Roots consumed	"	358·6	358·6
Clover consumed	"	5·3	5·3
Total eggs laid during experiment	No.	1,123·6	1,120·6
Statement of Cost			
Scratch grain	$	12·45	12·553
Mash	$	2·34	2·383
Beef scrap	$	1·186	.....
Fish meal	$	.....	0·803
Grit	$	0·17	0·213
Shell	$	0·51	0·54
Roots	$	0·706	0·706
Clover	$	0·03	0·02
Total cost of feed	$	17·383	17·22
Total value of eggs	$	39·863	39·016
Profit over feed per pen	$	22·48	21·796
Profit per bird	$	1·60	1·583
Feed cost per dozen	$	0·187	0·182

In comparing the figures in the preceding table it will be seen that so far as feed cost per dozen goes there is practically no difference between the fish meal and beef scrap over a period of three years, with a total of only three eggs more in favour of the beef scrap.

HULLESS VS. ORDINARY OATS

As there is only one year's results available for this experiment, it is not considered of sufficient value to publish the full table, but the following is a summary of the data collected:—

The fifteen birds on hulless oats laid 1,155 eggs, at a feed cost of $23.66. The market value was $39.05, leaving a profit over feed cost of $15.39. The fifteen birds on ordinary oats laid a total of 1,233 eggs, at a feed cost of $22.89. The market value was $38.13, leaving a profit over feed cost of $15.24. Therefore, the first year's trial does not show any very great advantage in favour of the hulless oats.

It may be of interest to the reader to know that in all these feeding tests, birds as uniform in age, breeding and as closely related as possible are equally divided in number and placed in each pen in order to overcome as far as possible experimental error. Even then, our data indicate that it is preferable not to place too much dependence on one year's results.

EXPERIMENTAL FEEDING WORK CARRIED ON WITH BREEDING STOCK

Five pens were used in this experimental feeding test of different kinds of vitamine foods in order to ascertain their effect, if any, on the fertility and hatchability of eggs and the livability of chicks hatched. The following table gives the feeds as fed and results obtained, both from the regular method of mating and from alternated male matings:—

RESULTS OF TEST OF DIFFERENT KINDS OF VITAMINE FOODS

Year Average	Number of birds	Special feed	Period	Eggs set	Fertile	Blood rings	Dead germs	Dead in shell	Hatched	Per cent fertile	Per cent fertile hatched	Per cent total hatched	Dead in 3 weeks	Per cent mortality in 3 weeks
3	15	Cod liver oil	Regular mating	223	151	5	12	61	73	67·7	48·3	32·7	12	16·4
			Males alternated	50	26	0	5	13	7	52·0	26·9	14·0	3	42·8
			Total	273	177	5	17	74	80	64·8	45·2	29·3	15	18·7
3	14	Raw liver	Regular mating	205	145	2	11	59	73	70·7	50·3	35·6	8	10·9
			Males alternated	37	27	1	3	11	11	72·9	40·7	29·7	5	45·4
			Total	242	172	3	14	70	84	71·0	48·8	34·7	13	15·4
3	13	Bone meal	Regular mating	198	128	3	10	40	75	64·6	58·5	37·8	9	12·0
			Males alternated	48	33	0	3	15	15	68·7	45·4	31·2	7	46·6
			Total	246	161	3	13	55	90	65·4	55·9	36·6	16	17·7
2	13	Cod liver oil, Raw liver, bone meal	Regular mating	181	121	2	10	34	74	66·8	61·1	40·8	19	25·6
			Males alternated	37	25	0	3	14	8	67·5	32·0	21·6	3	37·5
			Total	218	146	2	13	48	82	66·9	56·1	37·6	22	26·8
3	12	Check	Regular mating	188	89	7	12	35	35	47·3	39·3	18·6	4	11·4
			Males alternated	43	28	0	3	12	13	65·1	46·4	30·2	6	46·1
			Total	231	117	7	15	47	28	50·6	41·0	20·8	10	20·8

From a study of the preceding figures the following points of interest will be observed: that the addition of raw liver to the regular meal and grain ration proved to be beneficial both from the standpoint of fertility of the eggs and mortality of the chicks at three weeks of age and that a combination of all three vitamine foods gave the second best results over the check lot, with cod liver oil and bone meal standing third and fourth respectively.

PRODUCTION

The following table gives the production cost data collected for each month from the pullets carried on the farm plant for 1927-28:—

MONTHLY PRODUCTION COST, 1927-28

Month	Number of bird days	Total eggs laid	Market value	Total feed cost	Feed cost per dozen	Profit over feed cost	Feed cost per bird per day
	No.	No.	$	$	$	$	$
Nov., 1927.....	10,083	1,549	71 00	80 85	0·626	— 9 85	0·008018
Dec., 1927.....	10,446	4,054	202 70	82 45	0·244	120 25	0·00789
Jan., 1928.....	10,137	4,592	183 68	76 08	0·197	107 60	0·00751
Feb., 1928.....	9,278	3,969	142 22	78 22	0·236	64 00	0·00843
Mar., 1928.....	9,616	4,983	145 34	93 32	0·224	52 02	0·00970
April, 1928.....	9,171	5,825	121 35	84 64	0·174	36 71	0·00923
May, 1928.....	9,432	6,494	146 12	87 14	0·161	58 98	0·00924
June, 1928.....	8,715	5,753	139 03	70 37	0·146	68 66	0·00808
July, 1928.....	4,795	3,147	83 92	31 37	0·119	52 55	0·00654
Aug., 1928.....	4,402	2,421	68 59	22 72	0·112	45 87	0·00516
Sept., 1928.....	4,233	1,971	65 70	30 77	0·186	34 93	0·00727
Oct., 1928.....	4,278	969	32 30	23 94	0·296	8 36	0·00560

The bird days have been stated instead of the number of birds. For instance, there were 337 pullets put in on November 1; one died after the third day; therefore, there were 336 pullets for 30 days and 1 for 3 days, making a total of 10,083 bird days for November. Figured on the basis of bird days for the year, there was an average of 259·1 birds, which had an average production of 176·3 eggs per bird. The average cost of feed per bird was $2.94 and profit over feed cost was $2.47. The average feed cost to produce a dozen of eggs for the year was 19·9 cents.

The following table gives the production cost from the hens made up in three periods. The first period is from November 1, 1927, to February 29, 1928. The second period is from March 1 to June 30, 1928, and the third period is from July 1 to October 31, 1928.

Period	Bird days	Total eggs	Market value	Total feed cost	Feed cost per dozen	Profit over feed cost	Feed cost per bird
			$	$	$	$	$
1st.....	13,993	1,190	47 52	73 65	0·742	— 26 13	0·636
2nd.....	11,719	6,074	143 00	90 58	0·178	52 42	0·943
3rd.....	4,115	1,588	46 87	17 48	0·132	29 39	0·522

The average production per hen was 108·3 eggs, laid at an average feed cost of $2·223, leaving an average profit over feed cost of 68 cents per bird against $2.47 per bird as shown by the pullets.

The following is a statement of the cost of rearing chicks up to September 30, when the pullets were brought into winter quarters:—

COST OF INCUBATION, 1928

This cost is divided into two sections: (*a*) Prairie State machine; (*b*) Buckeye No. 9.

(*a*) Prairie State—		
Total eggs set, 1,166 at 31 cents per dozen		$ 30 12
Total oil used, 19½ gallons at 24 cents per gal		4 68
		$ 34 80
Cost of 224 chickens hatched	$ 34 80	
Cost of 1 chick	15·5 cents	
(*b*) Buckeye No. 9—		
Total eggs set, 2,946 at 31 cents per dozen		$ 76 11
Total oil used, 81 gallons at 24 cents per gallon		19 44
		$ 95 55
Cost of 1,377 chickens hatched	$ 95 55	
Cost of 1 chick hatched	6·9 cents	
Cost of 224 chickens hatched	$ 34 80	
Cost of 1,377 chickens hatched	95 55	
Cost of 1,601 chickens hatched	$ 130 35	
Cost of 1 chick hatched	8·14 cents	

BROODING PERIOD

1,812 pounds of hard coal at $15.70 per ton	$ 14 22
525 pounds of soft coal at $6.70 per ton	1 76
200 pounds of starting mash at $1.77 per cwt	3 54
1,080 pounds growing mash at $2.72 per cwt	29 38
200 pounds milk at 20 cents per cwt	0 40
300 pounds chick scratch at $4.25 per cwt	12 75
675 pounds regular scratch at $2.76 per cwt	18 63
8 pounds grit at $1.80 per cwt	0 14
8 pounds shell at $1.85 per cwt	0 15
25 pounds green feed (clover) at 55 cents per cwt	0 14
Total for period	$ 81 11
Total chickens put in brooder	1,601
Total chickens alive at end of brooding period	1,470
Cost of brooding 1,470 chickens	$ 81 11
Cost of brooding 1 chick	5·5 cents

RANGE PERIOD MAY 15 TO SEPTEMBER 30, 1928

1,851 pounds of grain at $2.76 per cwt	$ 51 09
6,390 pounds of grain at $2.70 per cwt	172 53
4,600 pounds of grain at $2.64 per cwt	121 44
6,703 pounds of mash at $2.72 per cwt	182 32
1,460 pounds of mash at $2.76 per cwt	40 30
750 pounds of mash at $2.68 per cwt	20 10
50 pounds of grit at $1.80 per cwt	0 90
40 pounds of shell at $1.65 per cwt	0 66
Total for period	$ 589 34
Total chickens put on range	1,470
Chickens alive at end of range period	1,067
Cost of 1,067 chickens	$ 589 34
Cost of 1 chicken	55·23 cents

SUMMARY

Cost of incubation of 1,601 chickens	$ 130 35
Cost of brooding of 1,470 chickens	81 11
Cost of range period of 1,067 chickens	589 34
Total cost of 1,067 chickens raised	$ 800 80
Total cost of 1 chicken	75 cents

AVERAGE COST FOR THE PAST SEVEN YEARS

Year	Total chicks at five months	Total cost	Average per chick
	No.	$	$
1922	719	436 58	0 61
1923	330	273 42	0 83
1924	207	274 32	1 33
1925	480	493 76	1 03
1926	366	575 63	1 57
1927	623	466 88	0 75
1928	1,067	800 80	0 75
	3,792	3,321 39	0·876

The total chicks raised to five months of age was 3,792, at a total cost of $3,321.34 or 88 cents per chick.

—	Total eggs set	Number fertile	Per cent fertile	Number of chicks	Per cent total eggs hatched	Per cent fertile eggs hatched	Number chicks alive when wing banded	Per cent chicks alive when wing banded	Total eggs for one chick hatched	Total fertile eggs for one chick hatched	Total for one chick alive when wing banded
1928 totals	2,601	2,081	80·0	1,173	45·1	56·3	1,039	88·5	2·2	1·7	2·5
Pullets	965	720	74·6	344	35·6	47·8	311	90·4	2·8	2·0	3·1
Hens	1,636	1,361	83·1	829	50·6	60·9	728	87·8	1·9	1·6	2·2
6-year average											
Pullets	1,893	1,355	71·58	358	18·91	26·42	236	65·9	5·3	3·8	8·0
Hens	1,570	1,156	73·63	439	27·96	37·97	332	75·6	3·5	2·6	4·7
Prairie State	454	328	72·2	51	11·2	15·5	47	92·1	8·9	6·4	9·6
Buckeye No. 9	2,147	1,753	81·6	1,122	52·2	64·0	992	88·4	1·9	1·5	2·1
5-year average											
Prairie State	552	412	74·64	112	20·29	27·18	70	62·5	4·9	3·6	7·8
Buckeye No. 9	2,561	1,769	69·07	579	22·60	32·73	466	80·5	4·4	3·0	5·5
March	1,466	1,160	79·1	545	37·1	46·9	496	91·0	2·6	2·1	2·9
April	1,135	921	81·1	628	55·3	68·1	543	86·4	1·8	1·4	2·0
March (4-year average)	1,260	916	72·69	249	19·76	27·18	220	88·3	5·0	3·6	5·7
April (5-year average)	1,600	1,069	66·81	396	24·75	37·04	326	82·3	4·0	2·7	4·9
May (3-year average)	700	532	76·00	122	17·42	22·92	77	63·1	5·7	4·4	9·1

EGG-LAYING CONTEST

Nine consecutive Egg-Laying Contests have been conducted at Nappan. The Contest year begins November 1 and closes on October 31 of the following year (fifty-two weeks' duration), but beginning with the 1928-29 Contest, fifty-one weeks will constitute a Contest year.

Twenty-one pens were entered in the 1927-28 Contest, but at the end of eight weeks one pen was withdrawn, leaving nineteen pens to complete the year.

Each contestant is allowed to send in twelve birds, but two birds remain in the pen as substitutes and are used to replace any bird that may die. All pens may be kept up to the full strength of ten birds throughout the entire year. The ten original birds must be marked at the time of entry.

To qualify for registration, a bird must be up to the standard of perfection for the breed and lay 200 eggs or more, with an average weight of 24 ounces to the dozen, after the first four weeks.

The standing of the pens or individuals in the contest is governed by the points scored during each week or for the year. One point is allowed for each egg which weighs 24 ounces to the dozen and a penalty of one-tenth point is deducted for each ounce that eggs average less than 24 ounces to the dozen; a bonus of one-tenth is added for each ounce eggs average over 24 ounces to the dozen. All eggs over 27 ounces are recorded as 27-ounce eggs. All eggs averaging less than 20 ounces per dozen, ill-shaped or soft shell are not officially taken to account. The egg weight is a very important factor to-day, as all eggs are sold on a graded basis.

The Contest work has made fairly satisfactory progress. Each year brings its increased requests for Contest reports, indicating a growing interest in the work, but there is still room for more constructive work in the adoption of a consistent policy of a follow-up process with the progeny of registered birds. It is quite evident that many breeders have not as yet grasped the full significance of the registration work with poultry and what it does mean to the industry throughout Canada, to say nothing of the stability it brings to the breeding work.

In the 1927-28 Contest there were seven pens entered from New Brunswick, ten from Nova Scotia, one from Ontario, and one from British Columbia.

The following table gives the name and address of each contestant; also breed of birds entered, with their yearly production and points scored on egg weight:—

RESULTS IN THE 1927-28 CONTEST

Pen No.	Owner and Address	Breed	Number of eggs laid	Points
13	Experimental Farm, Nappan, N.S.	B. P. R.	2,090	2,156·2
14	Mr. J. B. Gaudet, St. Joseph, N.B.	B. P. R.	1,887	2,148·7
15	Mr. G. M. Avard, Sackville, N.B.	B. P. R.	2,041	2,070·0
17	Mrs. Geo. Stewart, Pugwash, N.S.	B. P. R.	1,988	1,960·8
19	Mr. G. M. Bell, Walkerton, Ont.	B. P. R.	1,860	1,904·5
2	Mr. W. H. C. Chambre, Cody, N.B.	S. C. W. L.	1,654	1,888·3
8	Experimental Farm, Nappan, N.S.	B. P. R.	1,966	1,868·5
1	Mrs. T. Raymond, Fredericton, N.B.	S. C. W. L.	1,771	1,866·6
16	Mr. R. A. Snowball, Chatham, N.B.	B. P. R.	1,833	1,852·9
4	Everlay Poultry Farm, Moncton, N.B.	S. C. W. L.	1,602	1,763·9
12	Mr. C. A. P. Johnstone, Dartmouth, N.S.	W. W.	1,730	1,666·3
5	Mr. D. L. Turner, Preston Road, Dartmouth, N.S.	S. C. W. L.	1,748	1,608·8
11	Mr. A. H. Weldon, Dartmouth, N.S.	W. W.	1,424	1,563·3
20	University of B.C., Vancouver, B.C.	B. P. R.	1,569	1,541·0
7	Mr. W. S. Smith, Pugwash, N.S.	Bl. Min.	1,277	1,460·0
6	Hillside Orchard Farm, Canning, N.S.	S. C. W. L.	1,236	1,192·9
9	Mr. J. R. McMullen, Truro, N.S.	L. S.	1,119	1,099·6
18	Mr. John Milligan, Truro, N.S.	B. P. R.	1,052	1,076·5
3	Mr. A. Vye Gibson, Moncton, N.B.	S. C. W. L.	1,002	987·2

The 190 birds laid 30,849 eggs, or an average of 162·39 eggs each. The 2,570·75 dozen eggs were laid at a total feed cost of $508.55, or 19·8 cents per dozen. The average feed cost per bird was $2.68, leaving an average profit over feed cost of $2.40 per bird.

The three high birds were as follows: No. 134, with 269 eggs, scoring 245·8 points; No. 89, with 260 eggs, scoring 300·8 points—both owned by the Experimental Farm, Nappan—and bird No. 163, with 260 eggs, scoring 222·7 points, owned by Mr. R. A. Snowball, Chatham, N.B.

Three birds laid over 250 eggs each; seventeen laid over 225, but less than 250 eggs; thirty-one ranged from 200 to 225 eggs; thirty-four ranged from 175 to 200 eggs; thirty ranged from 150 to 175; while 75 laid less than 150 eggs each. These figures include spares that may have been used as substitute birds.

The following is a summary of the number of birds entered each year, with the average production for the past nine years:—

SUMMARY OF NINE CONTESTS

Year	Number of birds	Average production of eggs
1919-20	200	121·1
1920-21	220	127·8
1921-22	200	138·3
1922-23	200	143·3
1923-24	200	176·9
1924-25	240	166·5
1925-26	270	156·6
1926-27	210	170·7
1927-28	190	162·4

FEEDING

The grain ration consisted of 200 pounds wheat, 200 pounds cracked corn, 100 pounds oats, and 50 pounds buckwheat. This was fed from November 1, 1927, to February, 1928. For the balance of the year the grain mixture was the same, only the buckwheat was dropped. The dry mash was made up of 100 pounds each of bran, shorts, corn meal, crushed oats, and beef meal, 15 pounds bone meal, 20 pounds of charcoal, 25 pounds of oilcake, 3 pounds of salt, and 2 per cent cod-liver oil. After the last of June the cod-liver oil was dropped from the mixture. This mixture was before the birds at all times, as were grit, oyster shells, and charcoal. Plenty of fresh water is given each day; also green feed in the form of cabbage, mangels, and turnips. When these are exhausted, sprouted oats are given.

Care is taken to keep the houses clean, well ventilated, and free from mites. Just as soon as the straw gets dirty or damp, it is replaced with fresh straw.

APICULTURE

The winter of 1927-28 was comparatively steady, with light snow fall, and the bees wintered in excellent condition. The first flight was made on February 24, which is very early for this district. Several flights were also made in March. The ground was free of snow by March 15 and the first spring examination was made on April 11. Of the nineteen colonies packed in 1927, eighteen were alive on the above date, with only one queenless. The average strength was 7·8 frames of bees. Stores were light and spring feeding was necessary until the last of April, when the willow blossoms were out, followed by dandelion blooms soon after.

The summer was ideal, as far as weather conditions were concerned and, had clover been abundant, no doubt a record yield of honey would have been obtained. However, this crop was very light, having winter-killed badly, and nearly half the honey was produced from fall flowers.

An increase of three colonies was made during the summer and a total production of 1,840 pounds of honey secured, or an average of 102·2 pounds per colony, spring count. The highest production from one hive was 203·5 pounds.

Twenty-one colonies were placed in winter quarters in the fall of 1928, these being packed in two-colony wintering cases, with shavings as protection. The average strength when packed was ten frames of bees. These were fed between October 9 and 20 on a syrup made up of two parts granulated sugar to one of water.

METHOD FOR DETECTING PREPARATION FOR SWARMING

An experiment was conducted to determine the value of a double brood chamber for swarm detection.

The colonies in ten-frame Langstroth hives were given a shallow super of drawn comb as soon as additional room was needed in the spring. When these colonies were examined at intervals of nine to ten days, this shallow super was tipped from the rear to determine whether preparation for swarming could be detected by the presence of queen cells along the lower edge of the combs in the shallow super. Eight colonies were so treated and made preparations for swarming. In six of these, cells were observed, upon tipping the shallow super. The other two showed no cells, except in the lower brood chamber and both of these swarmed.

CONTROL OF SWARMING BY DEQUEENING AND REQUEENING

Four colonies that showed signs of swarming were dequeened and all queen cells destroyed. Nine days later queen cells were again destroyed and the colony requeened either with a virgin queen or a cell. One colony swarmed, probably due to a cell being missed at the last examination.

CONTROL OF SWARMING BY SEPARATION OF QUEEN AND BROOD

Two colonies were treated by this method. All combs containing brood were taken from the brood chamber and replaced by empty combs. The queen and bees shaken from one comb were left in the brood chamber and the combs containing brood placed above the queen excluder. Neither colony showed any further signs of swarming.

TWO-QUEEN SYSTEM

Two weak colonies were selected in the fall and five frames were removed from the brood chamber of each, the bees being shaken back into the chamber. The next day a solid division was placed in the centre of one hive body and the five frames from the other colony placed in one section thus provided. Then the colony was covered with a mat and packed away for the winter. Two openings were provided as far apart as possible from each other. The colony wintered well and both queens were alive in the spring.

WINTERING IN DOUBLE-BROOD CHAMBER

Two colonies that were very strong in the fall of 1927 were wintered with a shallow super of stores above the brood-chamber. Both wintered exceptionally well and were very strong in the spring. Following are the data collected on this project:—

	Double brood-chamber	Single brood-chamber
Number of colonies wintered	2	17
Number of colonies, spring count	2	16
Average strength, fall 1927 frames bees	15	9
Average strength, spring 1928 frames bees	10	7·6
Average production of honey 1928—pounds	147·8	92·8

COMPARISON OF DIFFERENT SIZES OF HIVES

Two colonies were carried through in 10-frame Jumbo hive bodies and compared with the balance in 10-frame Langstroth hives.

The results for 1927-28 are as follows:—

	10-frame Langstroth	10-frame Jumbo
Number of colonies	14	2
Average strength, fall 1927—frames bees	9	9
Average strength, spring 1928—frames bees	6·5	9
Number of colonies died	1	0
Number of colonies prepared to swarm	9	0
*Average crop produced....pounds	97	62·25

* Average of 13 colonies spring count.

FINANCIAL STATEMENT

To 1,840 pounds honey at 15 cents			$ 276 00
" 2 colonies increase at $7.00			14 00
			$ 290 00
By 500 pounds sugar at $6.10	$ 30 50		
" 205 hours labour at 28 cents	57 40		
	$ 87 90		
Credit balance	$ 202 10		
	$ 290 00		290 00

GENERAL NOTES

The dairy barn was remodelled inside and the old square silo was removed and dairy barn extended twenty feet. A two-foot stone wall was built along one side of the extension and across the end. A new cement floor was laid and up-to-date barn equipment installed in the form of metal partitions, stanchions and automatic water-bowls. Two ten-foot cement bases were built on the west side of the dairy barn and connected to the feed room by an opening through the stone wall. The old thirty-foot silo previously used at the piggery barn was cut in half and each half placed on top the cement bases, making two excellent silos, with a capacity of 80 tons each. This change in the dairy barn has made a very marked improvement on the barn, which will now accommodate 56 head of dairy cattle, in addition to four box stalls. It also provides a good milk room, a feed room and two root cellars, with a capacity of four to six thousand bushels of roots. A narrow strip along the face of the dairy barn was laid in cement thus improving the entrance to the barn. The usual general repairs were made to all buildings sufficient only to keep them in good shape.

All farm fences were put in good shape during the spring months and some 110 rods of new fence was erected on the line of the old farm just back of the wood orchard.

A road machine was used on all farm roads, thus making them in good shape for the season, as well as eliminating many weeds that grow by the roadsides and usually act as a great spreading medium for noxious weeds.

A Farm exhibit was put up at the following fairs and exhibitions: Amherst Winter Fair, Oxford and Pictou County Fairs.

Farmers' club enjoying a day on the Experimental Farm at Nappan.

During the year many of the agricultural clubs from the surrounding country had special field days at the Farm, and on July 14 the Cumberland County Farmers' Association held their annual picnic at this Farm. There were about 2,500 people present. Motor trucks were used to take the visitors over the farm and much interest was taken in the various experiments being conducted.

The superintendent and his two assistants, Messrs. Hilton and Cox, attended a great many agricultural meetings during the year and gave short talks on Field Husbandry, Animal Husbandry and Poultry. In addition to this work, they acted as judges at many of the fairs and exhibitions.

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