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 1927

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DOMINION EXPERIMENTAL FARM, NAPPAN, N.S.

REPORT OF THE SUPERINTENDENT, W. W. BAIRD, B.S.A.

THE SEASON

Taking the winter of 1926-27 throughout, it was somewhat milder than the average for nineteen years. The first really cold weather came on December 3, although a few days of quite frosty weather were experienced during November, followed by a mild spell. Sufficient snow fell in December to make good sledding and while January was quite stormy, it did not seriously curtail lumbering operations. February was a very steady winter month, with an average mean temperature of 0·87° below the nineteen-year average for the same period. March was an average winter month with very little broken weather, thus facilitating the winding up of all operations in the woods. April was mild and the fields and roads were bare of snow by the middle of the month. Very warm, drying winds were experienced during the latter part of the month, permitting some ploughing and harvesting on the well drained fields. The stecklings were planted at this Farm on April 27. Unfortunately these favourable conditions did not continue throughout May, which was a cold, backward month, and practically no seeding operations were carried out until the last week in May and the first week of June, when seeding became quite general in this district. June was an ideal month for farm operations and most crops germinated rapidly. Corn was the only exception and this was due more to poor seed than weather conditions. June conditions prevailed up to July 8, but from the 8th of July until the end of November, the weather was extremely unsettled. There were 15 rainy days in July, 10 in August, 11 in September, 17 in October and 13 in November, with a total fall of 4·65, 7·16, 3·32, 4·21 and 3·88 inches of rain respectively, making a total precipitation of 23·22 inches in 154 days, with rainfall recorded on 66 days. In comparing the precipitation and sunshine records of these five months, it will be noted that the precipitation was much higher for each of them than the average for twenty years and that the sunshine was much lower than the average for the last sixteen years. The natural consequences of such weather are crops below the average both in yield and quality and such results were very prevalent throughout this district, for it was impossible to give the necessary cultivation to insure good growth and most crops suffered from excessive moisture, especially on the heavy to medium clay soils. It was equally difficult to get the crops stored in even reasonably fit shape to keep properly. Clover hay, grain and potatoes suffered most of all. The seasonal conditions are reflected fairly well in the unit cost of production as shown under the Field Husbandry Division of this report. The fall was on the average a very open one. While freezing temperatures were recorded on November 9 and 21, it soon thawed out and the real cold weather began on December 2, 1927.

WEATHER OBSERVATIONS AT EXPERIMENTAL FARM, NAPPAN, N.S., 1927

Month	Temperature °F.				Precipitation						Sunshine		
					Rainfall		Snowfall						
	Maximum	Minimum	Mean	Average for 19 years	Days	Inches	Days	Inches	Total years	Average for 20 years	Days	Hrs.	Average for 16 years
									ins.	ins.			hours
January	46	−11	24·68	17·01	9	3·56	1	6	4·16	2·91	20	74·2	96·1
February	35	−10	15·36	16·12	.....	.....	5	25	2·50	2·80	16	71·6	105·1
March	54	−6	27·15	26·08	3	1·90	3	13	3·20	2·85	24	132·8	120·7
April	73	17	37·38	37·50	6	2·15	1	6	2·75	2·80	27	182·8	135·2
May	69	25	46·10	48·30	14	3·71	.....	.....	2·71	2·29	29	170·3	179·9
June	77	30	56·80	57·42	8	1·96	.....	.....	1·96	2·98	29	235·1	207·8
July	82	38	66·40	64·17	15	4·65	.....	.....	4·65	3·10	26	185·3	213·8
August	80	41	62·57	62·84	10	7·16	.....	.....	7·16	3·59	27	231·1	212·8
September	77	30	56·99	55·63	11	3·32	.....	.....	3·32	2·87	25	156·7	163·3
October	75	29	49·54	47·00	17	4·21	.....	.....	4·21	3·80	23	76·6	125·4
November	68	18	39·80	35·49	13	3·88	.....	.....	3·88	3·35	19	80·9	82·6
December	63	1	27·52	22·65	7	3·53	8	23	5·83	3·51	12	48·0	75·1

Days of rainfall	113	Inches of rainfall	40·03
Days of snowfall	18	Inches of snowfall (equal to 7·3 inches rain)	73
Days of sunshine	277	Hours of sunshine	1,645·4
		Average hours of sunshine for 16 years	1,717·8

Total precipitation	47·33
Average precipitation for 20 years	36·85

ANIMAL HUSBANDRY

The work in this Division has to do with maintenance and experimental work with the various classes of stock. During the year data were collected on cost of maintenance, cost of production, experimental feeding, breeding, and marketing.

CATTLE

The following cattle were on hand January 1, 1928:—

	Males	Females
Guernseys	9	37
Holsteins	1	..
Grade Ayrshires	..	13
Grade Holsteins	..	17
Feeding Cattle	..	25
Total		102

The following table gives the individual records of all Guernsey cows completing a lactation period during 1927:—

GUERNSEYS—INDIVIDUAL MILK RECORDS COMPLETED DURING THE YEAR 1927

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 40 cents per pound	Value of skim-milk at 20 cents per cwt.	Total value of product.	Amount of meal eaten at $1.90 per cwt.	Amount of roots eaten at $4.97 per ton	Amount of hay eaten at $9.90 per ton	Amount of green feed eaten at $4 per ton	Amount of ensilage eaten at $4.50 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.	$
Patricia of Stannox-2125.	June 13/26	6	457	7,228·4	15·82	5·71	485·58	194·23	13·63	207·86	2,728	4,575	4,712	2,523	3,482	7 7/15	114·35	1·58	24	16	93·51
Princess of Stannox-2120.	Feb. 1/26	12	493	5,258·3	10·67	5·83	360·66	144·26	9·90	154·16	2,681	8,510	6,799	2,503	3,597	4 1/2	127·84	2·43	35	5	26·32
Princess Daisy LK of H. 2nd 2041	Sept. 24/26	6	369	4,155·0	11·26	6·04	295·25	118·10	7·81	125·91	1,939	3,360	3,538	2,543	2,470	6 23/30	86·88	2·09	29	11	39·03
Princess Dairymaid of L.K. 4th 2044	Nov. 7/26	6	244	3,454·9	14·16	5·59	227·21	90·88	6·52	97·40	1,995	3,850	3,538	2,097	2,470	3 1/6	81·07	2·35	36	4	16·33
Princess Stannox of Nappan 2384	Oct. 19/26	5	339	6,250·9	18·44	4·89	359·61	143·84	11·89	155·73	2,191	4,535	3,538	2,475	2,415	6 2/15	93·06	1·49	26	14	62·67
Cabbage Rose of Nappan 2715	Jan. 30/26	4	365	8,037·2	22·02	5·76	544·64	217·86	15·15	233·01	3,016	7,690	4,512	2,543	1,102	4 1/2	115·31	1·43	21	19	117·70
Nappan Daisy LK 2998..	July 15/26	3	294	3,100·8	10·55	5·34	194·80	77·92	5·87	83·79	1,976	3,615	3,570	2,503	2,182	4 1/2	83·11	2·68	43	—3	0·68
Rose of Nappan 3599.....	Jan. 21/26	2	564	6,807·1	12·07	5·56	445·26	178·10	12·86	190·96	3,027	6,581	5,754	2,543	3,342	6 3/10	127·55	1·87	29	11	63·41
Nappan Stannox 3615....	Feb. 21/26	2	366	6,449·9	17·62	5·03	381·68	152·67	12·25	164·92	2,193	4,740	3,578	2,503	927	4 1/2	87·25	1·35	23	17	77·67
Nappan Stannox 2nd 3616	Mar. 2/26	2	333	5,328·7	16·00	5·16	323·48	129·39	10·11	139·50	2,007	3,720	3,074	2,503	927	4 1/2	78·69	1·48	23	17	60·81
Patricia of Nappan 2nd 3603	Nov. 2/26	2	290	3,685·7	12·71	5·17	224·18	89·67	6·99	96·66	1,421	3,615	3,250	435	2,415	2 1/6	62·71	1·70	28	12	33·95
Stannox of Nappan 3394..	Oct. 24/26	3	299	4,517·3	15·11	5·13	272·63	109·05	8·57	117·62	1,899	3,755	3,358	615	2,415	2 1/6	73·03	1·62	27	13	44·59
Cabbage Rose of Nappan 2nd 3397	May 22/26	2	277	2,571·7	9·28	5·55	167·81	67·12	4·86	71·98	1,416	2,790	2,153	2,543	387	4 1/2	59·45	2·31	35	5	12·53
Patricia of Nappan 3086.	Feb. 17/27	4	292	3,712·2	12·71	5·36	234·09	93·64	7·03	100·67	1,342	3,595	3,402	850	2,415	4 8/15	67·47	1·82	29	11	33·20
Princess Daisy of Nappan 3395	Feb. 14/27	3	284	4,414·6	15·54	4·46	231·64	92·66	8·44	101·10	1,522	3,620	3,226	850	2,870	4 8/15	71·11	1·61	31	9	29·99
Cabbage Rose of Nappan 2nd 3397	Apr. 19/27	3	253	2,824·9	11·17	5·63	187·11	74·84	5·33	80·17	1,096	1,605	2,577	850	2,415	4 8/15	53·77	1·90	29	11	26·40
Total for herd 16 cows...	.....	....	5,519	77,797·6	14·10	5·39	4,935·63	1,974·23	147·21	2,121·44	32,449	70,156	60,579	30,879	35,831	74 23/30	1,382·65	1·78	28	12	738·79
Average for herd 16 cows	.....	....	345	4,862·4	14·10	5·39	308·48	123·39	9·20	132·59	2,028	4,385	3,786	1,930	2,240	4 2/3	86·42	1·78	28	12	46·17
Totals and Averages for 6 years																					
1922-6 cows..	.....	....	2,748	53,136·1	20·40	5·67	3,581·74	1,611·79	101·19	1,712·98	31,583	53,918	31,426	3,545	.....	39 11/15	1,017·65	1·92	29	16	695·33
1923-9 cows	.....	....	30,989	57,976·8	18·73	5·70	3,833·53	1,610·08	109·42	1,719·50	28,699	55,862	28,749	10,593	.....	41 4/5	919·30	1·64	24	18	800·20
1924-9 cows	.....	....	3,012	50,362·0	16·68	5·63	3,305·84	1,322·34	95·10	1,417·44	25,425	57,231	33,564	18,184	.....	36 1/10	839,19	1·67	25	15	578·25
1925-11 cows	.....	....	3,762	55,365·6	14·98	5·39	3,572·88	1,429·15	106·65	1,535·80	26,465	46,414	45,200	27,483	18,680	48 4/5	983·49	1·74	28	12	552·31
1926-10 cows	.....	....	3,379	51,610·7	15·27	5·28	3,234·14	1,293·66	97·71	1,391·37	22,783	62,070	39,990	26,824	12,068	44 1/2	948·54	1·84	29	11	442·83
1927-16 cows	.....	....	5,519	77,797·6	14·10	5·39	4,935·63	1,974·23	147·21	2,121·44	32,449	70,156	60,579	30,879	35,831	74 23/30	1,382·65	1·78	28	12	738·79
Total-61 cows	.....	....	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	285 7/10	6,090·82	1·75	27	14	3,807·71
Average	.....	4·8	353	5,692·6	16·14	5·5	368·26	151·50	10·77	162·27	2,744	5,666	3,926	1,926	1,091	4 7/10	99·85	1·75	27	14	62·42

The following table gives the individual records of all grade cows completing a lactation period in 1927:—

GRADE HERDS PRODUCTION—LACTATION PERIODS COMPLETED IN 1927

Name of cow	Date of dropping calf	Number of lactation period	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 1¼ 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 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
Ayrshires—				lb.	lb.		lb.	$	$	$	lb.	lb.	lb.	lb.		$	$	cts.	cts.	$
Bell 1AS12	Mar. 11/26	5	296	6,455·5	21·81	4·55	345·56	103·67	12·32	115·99	2,437	7,607	4,808	2,459	$4^{11}/_{30}$	62·95	0·98	18	12	53·04
Jessie 1A54	Oct. 23/26	2	403	7,384·4	18·32	4·38	380·51	114·15	14·12	128·27	2,424	6,530	4,006	2,740	$6^{2}/_{5}$	61·63	0·83	16	14	66·64
Jessie 1A512	Jan. 17/27	2	287	6,329·0	22·05	4·31	320·92	96·28	12·11	108·39	1,819	6,320	2,622	.....	$4^{8}/_{15}$	42·77	0·68	13	17	65·62
Jessie 1A1213	Jan. 18/27	2	338	6,772·6	20·04	4·14	329·86	98·96	12·98	111·94	2,103	7,800	3,962	1,105	$4^{8}/_{15}$	54·16	0·80	16	14	57·78
Jessie 1A122	Oct. 26/25	4	432	11,119·4	25·74	4·40	575·59	172·68	21·26	193·94	3,484	10,727	4,919	3,154	$7^{14}/_{15}$	84·16	0·76	15	15	109·78
Jessie 1A1221	Feb. 8/26.	2	360	8,360·5	23·22	4·55	447·53	134·26	15·96	150·22	2,979	8,947	5,176	2,355	$4^{11}/_{30}$	72·20	0·86	16	14	78·02
Spot 1A42	Feb. 24/26	5	311	7,161·2	23·03	4·43	373·22	111·97	13·69	125·66	2,250	6,057	3,775	2,265	$4^{11}/_{30}$	55·16	0·77	15	15	70·50
Spot 1A423	Jan. 16/27	1	312	5,241·1	16·80	4·35	268·22	80·47	10·03	90·50	1,279	4,480	2,607	850	$4^{8}/_{15}$	35·40	0·68	13	17	55·10
Myrtle 1A112	Feb. 18/27	6	312	7,089·1	22·72	4·10	341·94	102·58	13·60	116·18	1,871	7,700	4,282	1,485	$4^{8}/_{15}$	52·84	0·75	15	15	63·34
Holsteins—																				
Jessie 1H41	Jan. 1/26	3	365	8,011·6	21·95	3·80	358·17	107·45	15·41	122·86	2,648	6,567	3,663	2,265	$4^{11}/_{30}$	60·25	0·75	17	13	62·61
Jessie 1HS24	Oct. 26/26	1	335	8,020·5	23·94	3·63	342·52	102·76	15·46	118·22	2,320	6,940	3,334	575	$3^{2}/_{5}$	51·87	0·65	15	15	66·35
Jessie 1HS31	Dec. 31/25	1	395	6,614·6	16·75	3·77	293·38	88·01	12·73	100·74	2,409	7,697	4,084	2,265	$4^{11}/_{30}$	59·87	0·91	20	10	40·87
Myrtle 1HS21	May 8/26	4	352	7,119·1	20·22	3·70	309·89	92·97	13·71	106·68	2,569	7,867	5,071	2,265	$4^{11}/_{30}$	65·49	0·92	21	9	41·19
Myrtle 1HS4	Oct. 17/26.	4	287	4,905·1	17·09	3·81	219·86	65·96	9·44	75·40	1,992	6,418	3,538	1,736	$3^{7}/_{15}$	49·77	1·01	23	7	25·63
Myrtle 1HS41	Jan. 30/26	1	371	6,539·9	17·63	3·47	266·98	80·09	12·63	92·72	2,307	6,627	3,693	2,265	$4^{11}/_{30}$	56·15	0·86	21	9	36·57
Myrtle 1H43	Mar. 29/26	3	295	6,149·1	20·84	3·55	256·82	77·05	11·86	88·91	1,883	5,247	3,648	2,265	$4^{11}/_{30}$	49·32	0·80	19	11	39·59
Spot 1H32	Oct. 20/26	5	422	9,246·4	21·91	3·78	411·19	123·36	17·79	141·15	3,100	7,670	4,262	2,202	$5^{29}/_{30}$	70·61	0·76	17	13	70·54
Spot 1H323	Jan. 2/27	1	348	6,415·6	18·44	3·80	286·82	86·05	12·34	98·39	1,845	5,340	3,156	850	$4^{8}/_{15}$	45·26	0·71	16	14	53·13
Vera 1H411	Oct. 15/26	3	238	7,754·4	32·58	3·88	353·97	106·19	14·91	121·10	2,288	7,940	3,478	2,070	$2^{11}/_{30}$	54·18	0·70	15	15	66·92

The prices used in above table are not in keeping with present day prices.

These prices are kept constant from year to year in order that a fairer comparison may be made of progeny with their dams at same age.

GRADE HERD—COMPARISON OF DAMS AND PROGENY AT SAME AGE:

Cows completing a lactation period in 1927

	Ayrshires		Holsteins	
	Dam	Progeny	Dam	Progeny
Number of cows	8	8	8	8
Lactation period	.....	1927	.....	1927
Average days in milk	275	342	373	344
Pounds milk	5231·2	7353·0	8023·4	6721·9
Daily average pounds	18·83	21·48	21·51	19·58
Average test per cent	4·56	4·39	4·02	3·69
Pounds butter	280·80	380·18	379·42	291·81
Feed cost $	48·64	58·56	64·97	54·75
Profit over feed cost $	45·59	69·56	64·25	45·74
Average increase or decrease in milk over dams in pounds	.....	2121·8	.....	−1301·5
Percent increase or decrease in milk over dams	.....	40·56	.....	− 16·22
Average increase or decrease in butter over dams in pounds	.....	99·38	.....	−75·19
Percent increase or decrease in butter	.....	35·39	.....	−19·80
Increase or decrease in profit over feed cost per cow $	.....	23·97	.....	−18·51
Percentage of progeny superior to dams	.....	100·	.....	37·5

FEED COST OF PRODUCTION OF MILK AND BUTTERFAT FOR GRADE HERD OF HOLSTEINS AND AYRSHIRES IN 1927 WITH 6—YEAR AND 15—YEAR AVERAGES

Amount of feed per 100 lb. milk	Price of feed	Cost of feed
(1927)		
Meal—32·2 lb	$1 90 per cwt.	$0·612
Roots and ensilage,—98·4 lb	4 75 " ton	0·234
Hay—54·2 lb	9 90 " ton	0·268
Green feed—25·7 lb	4 00 " ton	0·051
Pasture—1·9 days	2 00 " month	0·127
		$1·292
Six-year Average		
Meal—35·5 lb	$1 96 per cwt.	$0·696
Roots and ensilage—91·1 lb	3 74 " ton	0·170
Hay—57·7 lb	9 57 " ton	0·276
Green feed—24·9 lb	4 27 " ton	0·053
Pasture—2·12 days	2 00 " month	0·141
		$1·336
Fifteen-year Average		
Meal—36·4 lb	$2 28 per cwt.	$0·830
Roots and ensilage—104·2 lb	3 29 " ton	0·171
Hay—71·1 lb	11·03 " ton	0·392
Green feed—31 lb	3·51 " ton	0·054
Pasture—3·4 days	2 00 " month	0·227
		$1·674

In 1927 the average percentage of butterfat was 4·03, the feed cost per pound being 32·1 cents, calculated on nineteen lactation periods, while the average production of milk was 7,194·2 pounds. For the six-year average, based on one hundred and forty-two lactations, the average percentage of fat was 4·12, costing 32·4 cents per pound, and the average production of milk was 6,476·7 pounds. The average per cent butterfat for the fifteen-year average was 4, the feed cost per pound 41·9 cents, based on three hundred and eighty-three lactation periods, while the average milk production for the period was 5,420 pounds.

FEED COST OF PRODUCTION OF MILK AND BUTTERFAT FOR GUERNSEY HERD—1927 AND 6—YEAR AVERAGE

Amount of feed per 100 lb. milk	Price of feed	Cost of feed
1927		
Meal—41·7 lb.	$1 90 per cwt.	$0·792
Roots—90·2 lb.	4 97 " ton	0·224
Hay—77·9 lb.	9 90 " ton	0·386
Ensilage—46·1 lb.	4 50 " ton	0·104
Green feed—39·7 lb.	4 00 " ton	0·079
Pasture—2·9 days	2 00 " month	0·193
		$1·778
Six-year Average		
Meal—48·7 lb.	$1 96 per cwt.	$0·955
Roots and ensilage—117·5 lb.	3 72 " ton	0·219
Hay—68·3 lb.	9 57 " ton	0·327
Green feed—33·5 lb.	4 27 " ton	0·072
Pasture—2·4 days	2 00 " month	0·160
		$1·733

In 1927 the average butterfat test was 5·39 per cent and the feed cost per pound was 33 cents, based on sixteen lactation periods. The average butterfat percentage for six years was 5·5, with a feed cost per pound of 31·9 cents, based on sixty-one lactations with an average milk production of 5,692·6 pounds.

WEEKLY FEED COST OF MILK PRODUCTION, 1927

Feeds required for 100 lb. milk

Week ending	Cows	Meal	Roots	Hay	Silage	Feed Cost per 100 lb. milk
	No.	lb.	lb.	lb.	lb.	$
Jan. 1	18	38·3	175·0	76·0	.....	1 41
" 8	15	37·0	159·0	66·0	.....	1 31
" 15	15	36·2	156·0	65·0	.....	1 29
" 22	18	35·2	159·0	73·0	.....	1 31
" 29	17	31·8	145·0	66·0	.....	1 19
Feb. 5	16	32·0	111·1	63·7	19·0	1 25
" 12	14	32·2	90·9	58·1	27·6	1 20
" 19	14	33·0	98·0	57·5	27·3	1 23
" 26	17	28·9	119·1	57·8	6·5	1 15
Mar. 5	18	28·0	117·7	52·1	.....	1 08
" 12	18	30·4	125·0	54·6	.....	1 16
" 19	18	32·5	63·0	57·5	69·5	1 23
" 26	18	31·3	55·0	57·1	73·0	1 19
April 2	19	30·3	.....	55·6	71·3	1 16
" 9	20	32·5	23·6	58·8	116·3	1 26
" 16	23	30·2	20·0	57·5	113·6	1 19
" 23	24	30·6	18·7	55·9	111·1	1 18
" 30	22	30·3	.....	53·8	130·0	1 17
May 7	21	30·0	.....	53·0	135·1	1 14
" 14	21	30·0	.....	53·2	133·3	1 11
" 21	21	29·6	.....	53·2	131·6	1 09
" 28	21	29·5	.....	54·0	135·6	1 10
June 4	19	30·6	.....	53·8	135·9	1 12
" 11	19	32·6	.....	57·8	142·9	1 19
					Pasture (days)	
" 18	17	22·9	.....	24·6	2·19	0 70
" 25	17	16·8	.....	.....	3·40	0 55
July 2	17	14·5	.....	.....	3·6	0 52
" 9	17	15·3	.....	.....	3·8	0 54
" 16	19	15·8	.....	.....	4·0	0 57
" 23	19	16·2	.....	.....	4·1	0 58
" 30	19	8·0	.....	.....	4·3	0 44

WEEKLY FEED COST OF MILK PRODUCTION, 1927—*Concluded*

Feeds required for 100 lb. milk

Week ending	Cows	Meal	Roots	Hay	Silage	Feed Cost per 100 lb. milk
	No.	lb.	lb.	lb.	lb.	$
Aug. 6	18	7·8	.....	.....	4·0	0 42
" 13	18	7·1	.....	.....	4·1	0 42
" 20	18	8·3	.....	.....	4·3	0 45
" 27	18	8·8	.....	.....	4·5	0 47
Sept. 3	18	15·6	.....	.....	4·8	0 62
" 10	18	19·3	.....	.....	4·7	0 68
" 17	19	20·3	.....	.....	4·9	0 71
" 24	18	28·3	.....	.....	5·5	0 91
Oct. 1	19	31·5	.....	.....	5·6	0 97
" 8	19	36·2	.....	.....	5·6	1 06
" 15	19	39·2	.....	.....	6·0	1 15
" 22	19	40·2	.....	.....	6·1	1 17
" 29	19	43·3	.....	79·6	6·6	1 71
					Green feed lb.	
Nov. 5	18	40·3	.....	70·9	180·0	1 56
" 12	18	38·3	.....	69·0	300·0	1 69
" 19	19	41·3	.....	100·0	312·5	1 80
" 26	19	37·7	109·9	87·7	.....	1 54
Dec. 3	18	37·6	112·4	89·3	.....	1 63
" 10	17	39·5	115·0	91·7	.....	1 69
" 17	17	42·2	123·5	99·0	.....	1 74
" 24	16	37·6	111·1	89·3	.....	1 76
" 31	14	37·7	100·0	80·0	.....	1 65

CORN SILAGE, SUNFLOWER SILAGE AND TURNIPS FOR MILK PRODUCTION

One experiment was conducted in 1926-27 as a continuation of the tests started in 1922-23. Six cows were used in a test comparing turnips with sunflower silage, the plan of the experiment being similar to that used in previous tests. The results of ths experiment are given in table A, followed in table B by the 5-year average results of the same experiment. The 1927 results are seen to be in favour of the silage but the averages show turnips to be slightly superior to sunflowers although the difference is very slight.

Table C gives the average results of three feeding trials comparing turnips with corn silage and again turnips show up as slightly superior to corn as the succulent portion of the ration.

Table D shows the results of a two-year experiment with corn and sunflower silages in which corn proved to be a little superior to the sunflowers.

Our experience has been that taking one year with another good yields are obtained from sunflowers, and, notwithstanding the fact that the silage therefrom is somewhat unpalatable and causes an excessive amount of urine, it apparently has no ill effect on the cows and, judging from the feeding test, compares favourably with corn silage or roots in cost of milk production. Therefore, in districts where corn cannot be successfully grown, that is, where twelve to fifteen tons of good corn or a yield of from eight to ten ton of O.P.V. per acre, cannot be obtained, it is advisable to grow sunflowers for silage in order to provide plenty of succulence for the dairy herd. In the Maritime Provinces the main succulent crop should be roots. They are a reasonably sure crop, easily housed, and feeding tests have shown that they have few equals as a succulent fodder.

The chief reason for having a supply of silage on hand is to fill in the gap between the root supply and the pasture season.

TABLE A.—TURNIPS VERSUS SUNFLOWER SILAGE, 1927

—		Period 1	Period 2	Period 3	Average of Periods 1 and 3
		Turnip	Sunflower silage	Turnip	Turnip
Number of cows on test	No.	6	6	6	6
Pounds of milk produced	Lb.	795·1	719·4	669·8	732 5
Average pounds milk per cow per day	"	18·9	17·1	15·9	17·4
Average per cent fat	%	4·4	4·3	4·2	4·3
Total pounds fat produced	Lb.	35·0	30·9	28·1	31·5
Average pounds fat per cow per day	"	0·83	0·74	0·67	0·75
Total pounds meal consumed	"	350	350	350	350
Total pounds hay consumed	"	630	630	630	630
Total pounds turnips consumed	"	1,400	.....	1,400	1,400
Total pounds sunflower silage consumed	"	.....	1,050	.....	.....
Pounds meal consumed per 100 pounds milk	"	44	48·7	52·3	47·8
Pounds turnips consumed per 100 pounds milk	"	176	.....	209	191
Pounds silage consumed per 100 pounds milk	"	.....	146	.....	.....
Findings from Experiment					
Cost of meal mixture at $1.90 per cwt	$	6 65	6 65	6 65	6 65
Cost of hay mixture at $9.90 per ton	$	3 12	3 12	3 12	3 12
Cost of turnips at $4.97 per ton	$	3 48	.....	3 48	3 48
Cost of silage at $4.02 per ton	$	.....	2 11	.....	.....
Total cost of feed	$	13 25	11 88	13 25	13 25
Cost of feed to produce 100 pounds milk	$	1 67	1 65	1 98	1 81
Cost of feed to produce 100 pounds fat	$	37 86	38 50	47 15	42 06
Pounds fat corrected milk (F.C.M.) produced	Lb.	843·04	751·26	689·42	766·23
Pounds dry matter consumed	"	1,036	1,081	1,036	1,036
Pounds F.C.M. per 100 lb. D.M. consumed	"	81·37	69·49	66·55	73·96
Cost of F.C.M. per 100 lb. D.M. consumed	$	1 28	1 10	1 28	1 28

TABLE B—TURNIPS VS. SUNFLOWER SILAGE FOR MILK PRODUCTION.

AVERAGE OF 5 FEEDING TRIALS

—		Turnips	Sunflower silage
Number of cows in test	No.	31	31
Total pounds milk produced in 7 days	Lb.	4,022·3	3,650·8
Average pounds milk produced per cow per day	"	18·5	16·8
Total pounds meal consumed	"	1,806	1,806
Total pounds hay consumed	"	3,262	3,262
Total pounds turnips consumed	"	7,070	.....
Total pounds silage consumed	"	.....	5,425
Pounds meal consumed per 100 pounds milk	"	44·9	49·5
Pounds turnips consumed per 100 pounds milk	"	175·8	.....
Pounds silage consumed per 100 pounds milk	"	.....	148·6
Total cost of feed	$	63 23	59 39
Cost of feed per 100 pounds of milk	$	1 57	1 63

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

Using standard prices—Meal $40.00, Turnips $3.62, Hay $10.00, and Sunflowers $3.20, the following results were obtained:

Total cost of feed	$	65 22	61 11
Cost per 100 lb. milk	$	1 62	1 67

TABLE C—TURNIPS VS. CORN SILAGE FOR MILK PRODUCTION, AVERAGE OF THREE FEEDING TRIALS.

——		Turnips	Corn and Silage
Number of cows in tests	No.	23	23
Total pounds milk produced in 7 days	Lb.	2884·7	2624·1
Average pounds milk produced per cow per day	"	17·9	16·2
Total pounds meal consumed	"	1309	1309
Total pounds hay consumed	"	2450	2450
Total pounds turnips consumed	"	5460	.....
Total pounds silage consumed	"	.....	3675
Pounds meal consumed per 100 pounds milk	"	45·4	50·4
Pounds turnips consumed per 100 pounds milk	"	189·3	.....
Pounds silage consumed per 100 pounds milk	"	.....	141·4
Total cost of feed	$	46 41	44·03
Cost of feed per 100 pounds of milk	$	1 61	1 68

FEED PRICES USED PER TON.

Year	Meal	Hay	Turnips	Silage
1923	$ 41 00	$ 9 82	$ 3 27	$ 2 97
1925	36 40	10 75	4 20	4 40
1926	38 00	8 00	3 50	5 16

TABLE D—CORN SILAGE VS. SUNFLOWER SILAGE FOR MILK PRODUCTION, AVERAGE 2 YEARS

——		Corn Silage	Sunflower Silage
Number of Cows in test	No.	13	13
Total pounds milk produced in 7 days	Lb.	1,435·8	1,470.0
Average pounds milk produced per cow per day	"	15·8	16·2
Total pounds meal consumed	"	763	763
Total pounds hay consumed	"	1,330	1,330
Total pounds corn silage consumed	"	2,310	.....
Total pounds sunflower silage consumed	"	.....	2,310
Meal consumed per 100 pounds milk	"	53·1	51·9
Silage consumed per 100 pounds milk	"	160·9	157·1
Total cost of feed	$	25 66	25 42
Cost of feed per 100 pounds milk	$	1 79	1 73

PRICES USED.

Year	Meal	Hay	Corn silage	Sunflower silage
1923	$ 41 00	$ 9 82	$ 2 97	$ 2 63
1925	36 40	10 75	4 75	4 40

BEEF CATTLE

The beef cattle work at this farm consists entirely of feeding tests with steers during the winter months. In 1926-27, forty-two steers were carried over from November to April. Forty of these were on a feeding experiment, comparing high, medium and low grain rations. The following table gives the results of this test and shows that for this experiment at least, the lighter meal feeding

was the more profitable. Pen 3, which was fed a maximum of six pounds of meal, shows the greatest gain per unit of dry matter and leads the other pens in labour and investment returns per head. Each pen was fed 2 pounds of meal at the beginning of the period. This was gradually increased until during the final six weeks pen 1 received 10 pounds; pen 2, 8 pounds; pen 3, 6 pounds, and pen 4, 4 pounds. The hay and roots were kept equal for all four pens.

RESULTS OF TEST COMPARING HIGH, LOW, AND MEDIUM GRAIN RATIONS FOR STEERS

——	Pen 1	Pen 2	Pen 3	Pen 4
Number of steers in test ..... No.	10	10	10	10
Initial weight, December 1, 1926 gross ..... lb.	9,770	9,590	9,600	10,210
Average weight per steer ..... lb.	977	959	960	1,021
Finished weight, April 9, 1927, 130 days ..... lb.	12,670	12,250	12,340	12,080
Finished weight, average, 130 days ..... lb.	1,267	1,225	1,234	1,208
Total gain in 130 days ..... lb.	2,900	2,660	2,740	1,870
Average gain in 130 days ..... lb.	290	266	274	187
Average daily gain ..... lb.	2·23	2·05	2·11	1·44
Total hay consumed ..... lb.	18,200	18,200	18,200	18,200
Total roots consumed ..... lb.	35,450	35,450	35,450	35,450
Total meal consumed ..... lb.	10,300	8,150	6,450	4,270
Average meal consumed per steer per day ..... lb.	7·9	6 27	4·96	3·28
Total cost of hay at $9.90 per ton ..... $	90 09	90 09	90 09	90 09
Total cost of roots at $4.97 per ton ..... $	88 09	88 09	88 09	88 09
Total cost of meal at $41.40 per ton ..... $	213 21	168 71	133 52	88 39
Total cost of feed ..... $	391 39	346 89	311 70	266 57
Total cost of feed per pound gain ..... cts.	13·49	13·04	11·38	14·26
Initial cost of steers at $5.84 per cwt. ..... $	570 57	560 06	560 64	596 26
Final value of steers at $8.00 per cwt. ..... $	1,013 60	980 00	987 20	966 40
Value of spread plus gain ..... $	443 03	419 94	426 56	370 14
Increase over cost of feed, total ..... $	51 64	73 05	114 86	103 57
Increase over cost of feed, average ..... $	5 16	7 31	11 59	10 36
Total dry matter consumed ..... lb.	29,357	27,416	25,881	23,913
Total dry matter consumed per pound gain ..... lb.	10·12	10·31	9·45	12·79
Grain per 1,000 lb. live weight per 1,000 lb. dry matter consumed	10·11	10·12	11·03	7·66

Feed prices —		
Bran	Per ton $	35 00
Shorts	"	36 00
Oats	"	38 80
Corn meal	"	45 00
Oil meal	"	58 50
Cotton seed	"	50 00
Roots	"	4 97
Hay	"	9 90

Meal Mixture —	
Bran	150 lb.
Shorts	50 "
Oats	50 "
Corn meal	50 "
Oil meal	50 "
Cotton seed	50 "
	400 "

DEHORNING STEERS

In November, 1927, seventeen steers were dehorned. These were weighed the day of dehorning and again four weeks later. The total loss in weight was 400 pounds or an average of 23·6 pounds per steer. During the next four weeks the steers gained an average of 60 pounds per steer. Dehorning, while causing a temporary loss in weight, has many advantages and is recommended in all cases where cattle are being fed for market purposes.

SWINE

The swine herd on January 1, 1928, consisted of sixty-one pure-bred Yorkshires. Fifty-one of these were experimental feeders, six aged sows, three gilts and one aged boar. During the year, eighteen young pigs were sold at six weeks of age, and seventy-two hogs were sold for slaughter including three aged sows and sixty-nine market hogs. Sixty-five of the latter lot were sold

on a graded basis, grading sixty-three per cent select, twenty per cent thick smooth and seventeen per cent shop hogs. During the past three years a total of 180 live hogs have been sold from this farm and graded by a representative of the Federal Live Stock Branch. The average grading select was 42 per cent, with 26 per cent thick smooth and 20 per cent shop hogs, the balance being heavies and feeders. The majority of these were sired by the imported boar Rogerfield Wonder (88844) which still heads the herd.

The demand for breeding stock during the past year has been lighter than usual, due to the slump in the market price of bacon hogs which occurred in 1927. The average price during the year was 10 cents, varying from 11 cents in January to 10 cents in October and 8·5 in December.

The feeds are all charged at market or cost of production prices and many products otherwise unmarketable find a sale through the bacon hog.

Following is a summary of the financial statement of the eight brood sows, considering feed cost only, which farrowed litters in 1927:—

FINANCIAL STATEMENT OF BROOD SOWS.

No. 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 at 6 weeks	Average value at 6 weeks
No.	lb.	$					$	$
8	4	39 59	12	13·4	8·5	63·4	3 10	6 29

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 29
Average profit per pig over feed cost	$	3 19
Number of pigs raised per sow in the year	No.	12·75
Average profit per sow over feed cost	$	40 67
Total profit on eight sows over feed cost	$	325 32

FINANCIAL STATEMENT OF THE SWINE HERD 1927.
(8 sows, 1 boar and progeny)

Debit

22,181 pounds crushed oats at $38.80 per ton	$	430 31
14,086 pounds shorts at $36.00 per ton		253 55
5,453 pounds bran at $35.00 per ton		95 43
3,089 pounds middlings at $38.00 per ton		58 69
1,097 pounds feed flour at $35.00 per ton		19 20
1,532 pounds oil meal at $58.50 per ton		44 81
10,498 pounds barley at $48.00 per ton		251 95
854 pounds wheat at $50.00 per ton		21 35
154 pounds bean meal at $22.00 per ton		1 69
89,684 pounds skim milk at $4.00 per ton		179 37
140 pounds whole milk at $25.60 per ton		1 79
22,804 pounds roots at $4.97 per ton		56 67
4,710 pounds cull potatoes at $6.67 per ton		15 71
5,888 pounds miscellaneous green feed at $3.00 per ton		8 83
1,120 pounds fishmeal at $36.00 per ton		20 16
200 pounds charcoal at $60.00 per ton		6 00
160 pounds soft coal at $6.00 per ton		48
50 pounds salt at $25.00 per ton		63
10 pounds sulphur at $120.00 per ton		60
20 pounds bonemeal at $85.00 per ton		85
20 pounds stock food at $140.00 per ton		1 40
13·8 months pasture at 50 cents per month		6 90
10 tons straw at $5.00 per ton		50 00
	$	1,526 37

FINANCIAL STATEMENT OF THE SWINE HERD—*Concluded*

(8 sows, 1 boar and progeny)

Credit

By sale of pork—(live weight prices):—		
836 pounds heavy pork at 5 cents per pound		$ 41 80
540 pounds heavy pork at 5·25 cents per pound		28 35
576 pounds heavy pork at 6 cents per pound		34 56
620 pounds heavy pork at 6·891 cents per pound		42 72
303 pounds light pork at 7·5 cents per pound		22 72
1,073 pounds light pork at 8 cents per pound		85 84
1,818 pounds light pork at 8·5 cents per pound		154 53
1,189 pounds light pork at 8·891 cents per pound		105 72
328 pounds light pork at 9 cents per pound		29 52
1,128 pounds light pork at 9·391 cents per pound		105 93
179 pounds light pork at 9·5 cents per pound		17 01
4,183 pounds light pork at 9·891 cents per pound		413 74
2,122 pounds light pork at 10 cents per pound		212 20
227 pounds light pork at 11½ cents per pound		26 11
By sale of breeding stock and feeders:—		
9 pigs non-registered at $6.00		54 00
8 pigs registered at $10.00		80 00
1 pig non-registered at $8.00		8 00
Young feeders on hand 51 at $6.00		306 00
70 tons manure at $2.00 per ton		140 00
		$ 1,908 75
Labour and investment returns		$ 382 38

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

To feed per 8 sows	$ 316 68	
12 boar services at $1.00	12 00	
2 tons straw at $5.00	10 00	
		$ 338 68
By 8 tons manure at $2.00		16 00
Total cost to raise 102 pigs to six weeks		$ 322 68
Total cost to raise 1 pig to six weeks		3 16
To cost of 65 pigs at six weeks of age at $3.16		$ 205 40
Feed for 65 pigs 150 days		859 01
3 tons straw at $5.00		15 00
		$ 1,079 41
By 10 tons manure at $2.00		20 00
Total cost to produce 12,256 pounds of pork		$ 1,059 41
Total cost to produce 1 pound of pork		8·64 cents.

The average feed cost of pork per 100 pounds live weight was $8.64 and the average market price received was $9.50 leaving a margin of 86 cents per cwt. for labour and investment returns. The feed charges include many unmarketable products such as small potatoes, cull apples, beans, pumpkins, etc., so that the actual returns to the feeder are more than this statement shows.

The meal mixture fed the brood sows was made up as follows:—

Crushed oats	200 pounds
Shorts	200 pounds
Bran	100 pounds
Feed flour (damaged)	25 pounds

The feeders received a mixture as follows:—

(*a*) During weaning period up to 8 weeks of age: Equal parts of sifted crushed oats and flour middlings

(*b*) To 4 months of age: Crushed oats, 2 parts; Barley, shorts and middlings, 1 part each; bran ½ part and 3 pounds of oil meal per 100 pounds of mixture.

(*c*) Finishing period: Crushed oats and barley, 2 parts each; shorts 1 part; oil meal as above, while bran is included until the hogs are 5 months of age.

EXPERIMENTAL WORK

Two experiments were conducted during 1927 with the object of determining the value of fish-meal as a supplement to the grain ration for raising and fattening pigs, and to compare this supplement with skim-milk for the same purpose.

Five hogs are fed in each lot and these are made up of litter mates of as near the same weight and thirft as possible. Skim-milk was fed to all the pens until the pigs were three months old, after which the various changes were made as shown in the tables.

These hogs were all sold out on a graded basis and the results of this grading are also given.

FISH-MEAL VS. SKIM-MILK FOR BACON PRODUCTION

(Winter fed, 1926-27)

—	Pen 1	Pen 2	Pen 3	Pen 4	Pen 5	Pen 6	Pen 7
	Skim-milk from weaning to finish	Fish-meal after 3 months old	Fish-meal after 4 months old	Fish-meal after 5 months old	Skim-milk until 3 months then grain alone	Skim-milk until 4 months then grain alone	Skim-milk until 5 months then grain alone
Hogs in test.....No.	5	5	5	5	5	5	5
Initial gross weight.....lb.	208	316	313	289	272	297	273
Initial average weight...lb.	41·6	63·2	62·6	57·8	54·4	59·4	54·6
Days on test.....No.	146	146	146	146	146	146	146
Finished gross weight....lb.	898	984	982	931	863	904	938
Finished average weight.lb.	179·6	196·8	196·4	186·2	172·6	180·8	187·6
Total gain for period.....lb.	690	668	669	642	591	607	665
Average gain for period..lb.	138	133·6	133·8	128·4	118·2	121·4	133
Average daily gain per hog.....lb.	0·945	0·915	0·916	0·879	0·810	0·832	0·911
Total meal consumed....lb.	2,555	3,016	3,016	3,016	3,016	3,016	3,016
Total roots consumed....lb.	751	751	751	751	751	751	751
Total skim-milk consumed.....lb.	5,478	175	175	175	175	885	2,135
Total fish-meal consumed lb.	.....	235	203	164	.....	.....	.....
Meal consumed per pound gain.....lb.	3·7	4·5	4·5	4·7	5·1	5·0	4·5
Total cost of feed.....$	65 21	68 28	67 70	67 00	64 05	65 47	67 97
Average cost of feed per hog.....$	13 04	13 66	13 54	13 40	12 81	13 09	13 59
Cost of feed per hog per day.....cts.	8·93	9·35	9·27	9·18	8·77	8·96	9·31
Cost of feed per lb. gain..cts.	9·45	10·22	10·12	10·44	10·84	10·79	10·22

Feed Prices—

Meal	$ 41 00	per ton
Roots	4 97	"
Skim-milk	4 00	"
Fish-meal	36 00	"

FISH-MEAL VS. SKIM-MILK FOR BACON PRODUCTION

(Summer fed, 1927)

Item	Pen 1	Pen 2	Pen 3	Pen 4	Pen 5	Pen 6
	Skim-milk from weaning to finish	Fish-meal after 3 months	Fish-meal after 4 months	Fish-meal after 5 months	Skim-milk to 3 months, then grain only	Skim-milk to 4 months, then grain only
Hogs in test.....No.	5	5	5	5	5	5
Initial weight, gross.....lb.	155	154	154	134	136	140
Initial weight, average.....lb.	31	30·8	30·8	26·8	27·2	28
Days on test.....No.	138	138	138	173	173	173
Finished weight, gross.....lb.	985	949	951	974	945	952
Finished weight, average.....lb.	197	189·8	190·2	194·8	189	190·4
Total gain per period.....lb.	830	795	797	840	809	812
Average gain per period.....lb.	166	159	159·4	168	161·8	162·4
Average daily gain per hog.....lb.	1·203	1·152	1·155	0·971	0·935	0·939
Total meal consumed.....lb.	2,667	2,667	2,667	3,060	3,250	3,060
Total green feed consumed.....lb.	526	529	529	995	995	995
Total skim-milk consumed.....lb.	3,500	875	875	970	970	2,020
Total fish-meal consumed.....lb.	.....	205	169	163	.....	.....
Meal consumed per pound gain.....lb.	3·21	3·35	3·35	3·64	4·02	3·77
Total cost of feed.....$	62 73	61 17	60 52	69 59	70 56	68 76
Average cost of feed per hog.....$	12 55	12 23	12 10	13 92	14 11	13 75
Cost of feed per hog per day.....cts.	9·09	8·86	8·77	8·05	8·16	7·95
Cost of feed per pound gain.....cts.	7·56	7·69	7·59	8·28	8·72	8·47

Feed Prices used—

Meal	$41 00 per ton
Green feed	4 00 "
Skim-milk	4 00 "
Fish-meal	36 00 "

NOTE.—Duration of experiment—

Pens 1, 2 and 3, May 30 to Oct. 14; Pens 4, 5 and 6, June 26 to Dec. 15.

GRADING OF HOGS IN FEEDING EXPERIMENTS—1927

Lot No.	Winter Fed			Summer Fed		
	Select	Thick Smooth	Shop	Select	Thick Smooth	Shop
1	3	2	.....	5	.....	.....
2	5	.....	.....	4	.....	1
3	4	.....	1	3	1	1
4	1	3	1	3	2	.....
5	3	.....	2	2	3	.....
6	2	1	2	3	1	1
7	3	.....	2	.....	.....	.....

Combining the two experiments, we get the following results, showing the per cent graded in each class.

——	Lot 1	Lot 2	Lot 3	Lot 4	Lot 5	Lot 6	Lot 7
Select	80	90	70	40	50	50	60
Thick smooth	20	.....	10	50	30	20	.....
Shop	.....	10	20	10	20	30	40

To date this experiment shows that a good type of bacon hog can be produced by substituting fish-meal for skim-milk after the pigs are three months of age. The economy of this depends to a great extent upon the cost of the fish-meal and the strength of the hog market at the time of sale.

These experiments are being continued and when further data are available, more definite conclusions and recommendations will be made than are justifiable at the present time.

SHEEP

The flock of pure-bred Shropshires numbered forty-eight head on January 1, 1928. These consisted of twenty breeding ewes, ten shearlings, twelve ewe lambs, five ram lambs and one aged ram. The imported ram, Buttar 332—38074—, still heads the flock and his progeny are very uniform and are proving good breeders. Fourteen daughters in the flock have given 132 per cent production, nearly all with their first crop of lambs. In 1927, the twenty-nine breeding ewes dropped 42 lambs, raising 41 or 141·4 per cent. The average percentage raised per ewe during the past eight years is 128, while during the past four years the average is 133 per cent and the two-year-average is 143·1 per cent. The flock was culled heavily during the year and all off-type and poor breeding ewes were removed. The average wool clip in 1927 was 8·3 pounds for the breeding ewes, 8 pounds for the shearling ewes, 8·54 for the shearling rams and 10 pounds for the aged ram. The following is a financial statement of the pure-bred flock for 1927:—

FINANCIAL STATEMENT FOR THE PURE-BRED FLOCK OF SHROPSHIRES

Dr.

To feed for 29 ewes and ram—		
4,188 pounds meal at $41.22 per ton	$ 86 31	
17,907 pounds roots at $4.97 per ton	44 50	
16,318 pounds hay at $9.90 per ton	80 77	
4,440 days on pasture at 2 cents per day	88 80	
		$300 38
To feed for 13 yearling ewes—		
166 pounds meal at $41.22 per ton	3 42	
6,253 pounds roots at $4.97 per ton	15 54	
5,947 pounds hay at $9.90 per ton	29 44	
1,855 days on pasture at 2 cents per day	37 10	
		$ 85 50
To feed for 9 yearling rams—		
185 pounds meal at $41.22 per ton	3 81	
2,719 pounds roots at $4.97 per ton	6 76	
2,719 pounds hay at $9.90 per ton	13 46	
799 days on pasture at 2 cents per day	15 98	
		$ 40 01
To feed for 41 lambs—		
1,066 pounds meal at $41.22 per ton	21 97	
1,792 pounds roots at $4.97 per ton	4 45	
1,354 pounds hay at $9.90 per ton	6 70	
5,618 days on pasture at 1 cent per day	56 18	
		$ 89 30
Total feed coast		$ 515 19
To purchase of 1 ram at $20		20 00
To loss of 2 ewes at $20		40 00
		$ 575 19

Cr.

By—		
Sale of 190 pounds wool at 27 cents per pound	$ 51 30	
Sale of 217 pounds wool at 26 cents	56 42	
Sale of 200 pounds mutton at 5 cents (live weight)	10 00	
Sale of 454 pounds mutton at 4 cents (live weight)	18 16	
Sale of 140 pounds lamb at 9½ cents (live weight)	13 30	
Sale of 210 pounds lamb at 8½ cents (live weight)	17 85	
Sale of 460 pounds lamb at 11½ cents (live weight)	52 90	

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FINANCIAL STATEMENT FOR THE PURE-BRED FLOCK OF SHROPSHIRES—*Concluded*

By—	*Cr.*		
Sale of 463 pounds lamb at 9¼ cents (live weight)	42 83		
Sale of 68 pounds lamb at 8¼ cents (live weight)	5 61		
Sale of 224 pounds lamb at 7¼ cents (live weight)	16 24		
Sale of 4 yearling rams at $35 per ram	140 00		
Sale of 2 yearling rams at $30 per ram	60 00		
Sale of 1 yearling ram (unregistered)	15 00		
Sale of 1 yearling ewe	20 00		
Sale of 4 aged ewes at $15 per ewe	60 00		
Sale of 4 ram lambs at $22.50 per lamb	90 00		
Sale of 1 ram lamb	20 00		
Increased stock, 12 ewe lambs at $15	180 00		
3 XX rams carried over at $18	54 00		
2 XXX rams carried over at $22	44 00		
30 tons of manure at $2 per ton	60 00		
		$1,027	61
Labour and investment returns		$ 452	42
Cost of maintaining a Pure-bred Flock—			
Total feed coats of 42 ewes and ram	$ 385 88		
Average feed cost of 1 ewe for 1 year	8 97		
Cost to raise pure-bred lambs—			
To feed cost of 29 ewes and ram	$ 300 38		
To feed cost of 41 lambs	89 30		
		$ 389	68
By—			
235 pounds wool at 26·5 cents per pound	$ 62 28		
25 tons manure at $2 per ton	50 00		
		112	28
Total feed cost for 41 lambs		277	40
Total feed cost for 1 lamb		6	77
Value of wintering pure-berd ram lambs—			
To—			
Value of 9 rams, 1926, at $18	162 00		
Feed cost	40 01		
		$ 202	01
By—			
Sale of 4 yearling rams at $35	$ 140 00		
Sale of 2 yearling rams at $30	60 00		
Sale of 1 yearling ram at $15	15 00		
Sale of 2 yearling rams for mutton	17 85		
Sale of 59 pounds wool at 26·5 cents	15 64		
2·5 tons manure at $2	5 00		
		253	49
Credit balance		51	48
Average per ram		5	72

The above statement shows that for 1926-27 at least, greater returns could be received by holding over ram lambs until the following autumn when a much higher price could be obtained. Two of the nine rams held over developed poorly so were slaughtered and in spite of this fact the labour and investment returns amounted to $5.72 per head. In November, 100 head of feeder lambs were purchased and a number of feeding trials are being conducted during the present winter. These will be reported on in the next report from this Farm.

HORSES

There were fifteen horses in stock on January 1, 1928. Of these, eleven are pure-bred Clydesdales, consisting of five aged mares, one aged gelding, two stallions, one three-year-old and one two-year-old mare, and one colt. Of the remaining four, three are grade Clydesdales and one a driving mare.

A stallion was obtained to head the stud from the Experimental Farm at Indian Head, Sask. This horse, "His Eminence (24426)" is a three-year-old, weighing over 1,600 pounds and is a very good type of draft horse with excellent feet and legs, and should leave some good stock in this district.

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

MAINTENANCE COST OF FOUR HEAVY HORSES

To—	
404 bushels oats at 66 cents per bushel	$ 266 64
95 tons bran at $35.00 per ton	33 25
150 pounds oil meal at $58.50 per ton	4 39
1.16 tons roots at $4.97 per ton	5 77
12 tons hay at $2.90 per ton	118 80
Total feed cost for 4 horses	$ 428 85
Total feed cost for 1 horse	$ 107 21
By—	
6033 hours work at 10 cents	$ 603 30
Average hours work 1 horse at 10 cents	150 83
Profit over feed cost for labour of 4 horses	174 45
Profit over feed cost for labour of 1 horse	43 61
Average feeds consumed per horse for one year—	Pounds
Hay	6,000
Oats	3,434
Bran	475
Roots	580

FIELD HUSBANDRY

CULTURAL EXPERIMENTS

In 1922, ten cultural experiments were started, testing various cultural methods in the production of grain, roots, sunflowers and hay. Records have been kept on these and the following are the results to date:—

PREPARATION OF SOD LAND FOR GRAIN

Plot No.	Crop	Plot treatment		Yield per acre	
				Yield 1927	Average yield 5 years
				lb.	lb.
93	Oats	Plough 6 inches deep, early August, disk remainder of season	Grain	1,720	1,640
			Straw	3,000	1,992
94	Oats	Plough 6 inches deep, early August, disk and rib remainder of season	Grain	1,760	1,744
			Straw	3,520	2,512
95	Oats	Plough 6 inches deep, early August, disk remainder of season	Grain	1,680	1,736
			Straw	3,480	2,544
96	Oats	Plough 6 inches deep, September, disk remainder of season	Grain	1,760	1,640
			Straw	3,520	2,632
97	Oats	Plough 6 inches deep, October, disk remainder of season	Grain	1,960	1,592
			Straw	3,640	2,272
98	Oats	Plough 6 inches deep, October no top work	Grain	1,920	1,576
			Straw	3,520	2,408
99	Oats	Plough shallow in August, top work replough late in autumn	Grain	1,800	1,688
			Straw	2,960	2,240
100	Oats	Plough 6 inches deep in spring	Grain	1,520	1,536
			Straw	2,640	2,224
101	Oats	Plough 6 inches deep, early August, disk remainder of season	Grain	1,640	1,488
			Straw	3,080	2,208

The results of this experiment to date would indicate that early summer or fall ploughing will return the largest yields. Plot 101 gave very good yields, excepting in 1923, when surface wash reduced the yield, which in turn cut down the average, as shown above. Indications are that reploughing does not increase the yield of oats and the additional expense of such treatment is wasted. Spring ploughing gives materially lower yields than does fall ploughing, especially in dry seasons. Disking and ribbing on heavy soil is apparently all the treatment necessary after the first ploughing.

AFTER HARVEST CULTIVATION OF SUNFLOWER GROUND FOR GRAIN

Plot No.	Crop	Plot Treatment		Yield per acre	
				Yield 1927	Average yield 5 years
				lb.	lb
10	Oats.....	Plough shallow in spring.....	Grain	2,320	2,216
			Straw	5,160	3,392
11	Oats.....	No autumn treatment, disk in spring.....	Grain	2,200	2,368
			Straw	4,680	3,480
12	Oats.....	Plough shallow in autumn.....	Grain	2,040	2,160
			Straw	4,840	3,352
13	Oats.....	Plough shallow in spring.....	Grain	2,240	2,168
			Straw	4,680	3,368
14	Oats.....	Rib in autumn.....	Grain	2,200	2,168
			Straw	4,360	3,336
15	Oats.....	Plough shallow in spring.....	Grain	1,880	2,072
			Straw	4,200	3,280

This project has brought out a very striking result in the yield of oats on plot 11, following the working up of a seed bed without ploughing. The yields have been higher nearly every year, following this treatment, and it is the one in general use at this farm following all hoed crops, unless the land is badly infested with weeds.

SEED BED PREPARATION FOR GRAIN

Plot No.	Crop	Plot treatment		Yield per acre	
				Yield 1927	Average yield 5 years
				lb.	lb.
210	Oats.....	Disk, seed, smooth harrow.....	Grain	1,292	1,586
			Straw	875	1,647
211	Oats.....	Double disk, smooth harrow, seed, smooth harrow.....	Grain	1,022	1,492
			Straw	1,244	1,633
212	Oats.....	Double disk, smooth harrow, seed, roll, smooth harrow..	Grain	1,042	1,568
			Straw	1,917	1,759

The results to date from this project indicate that if a fairly good seed bed is obtained from one disking and smoothing, satisfactory yields may be realized and that additional harrowings only add unnecessary cost. On this heavy clay soil no particular benefit was received from rolling.

PREPARATION OF SOD LAND FOR SUNFLOWERS

Plot No.	Crop	Plot treatment	Yield per acre	
			Yield 1927	Average yield 5 years
			lb.	lb.
78	Sunflower	Manure in summer, plough in August, top work	35,600	37,352
79	"	Manure in summer, plough in August, top work, replough in spring	38,000	39,504
80	"	Manure and plough late in fall	34,800	34,104
81	"	Manure in winter or spring, spring plough	24,800	32,896
82	"	Manure in summer, plough in August, top work, replough in spring	37,600	37,112

The yield of sunflowers in this experiment is seen to be influenced to a considerable extent by the season in which the sod land is broken previous to the crop. Spring ploughing has given consistently lower yields than have the fall-ploughed plots, and reploughing shows slightly higher returns than where only one ploughing is practised, but not sufficient to warrant the extra expenditure so far as these data indicate.

PREPARATION OF SOD LAND FOR ROOTS

Plot No.	Crop	Plot treatment	Yield per acre	
			Yield 1927	Average yield 5 years
			lb	lb.
69	Turnips	Manure in Summer, plough in August, top work	23,320	35,752
70	"	Manure in Summer, plough in August, top work, replough in spring	21,440	30,184
71	"	Manure and late fall plough	19,080	29,200
72	"	Manure in winter or spring, spring plough seed on flat	13,880	20,784
73	"	Manure in summer, plough in August, top work, replough in spring	19,520	32,615

The treatment of sod land for turnips shows slightly different results from those obtained in the project *re* the preparation of sod land for sunflowers. The indications are that where ploughing is done in August and the land well disked, equally as good or better yields can be obtained than where two ploughings are practised. Following a four-year-old sod or older, however, these results might not hold true. Spring ploughing here, also, gives the poorest results of any practised.

DEPTH OF PLOUGHING SOD LAND FOR GRAIN

Plot No.	Crop	Plot treatment		Yield per acre	
				Yield 1927	Average yield 5 years
				lb.	lb.
108	Oats	Plough 5 inches deep in spring	Grain	1,317	1,327
			Straw	2,829	1,958
109	"	Plough 7 inches deep in autumn	Grain	1,707	1,589
			Straw	3,122	2,352
110	"	Plough 9 inches deep in autumn	Grain	1,789	1,606
			Straw	3,842	2,560
111	"	Plough 5 inches deep in autumn	Grain	1,895	1,723
			Straw	4,421	2,708
112	"	Plough 5 inches deep in spring	Grain	1,412	1,466
			Straw	3,247	2,153
113	"	Plough 7 inches deep in spring	Grain	1,579	1,460
			Straw	3,737	2,147
114	"	Plough 5 inches deep in spring	Grain	1,550	1,402
			Straw	3,450	2,074

Very little difference is seen to date in the yields following different depths of ploughing as outlined above. The fall-ploughed plots, however, show consistently higher yields than those ploughed in the spring, bearing out the results obtained in the other experiments.

RATES OF SEEDING NURSE CROP OF OATS

Plot No.	Crop	Plot treatment		Yield per acre	
				Yield 1927	Average yield 5 years
				lb.	lb.
28	Oats	2 bushels per acre	Grain	1,784	1,573
			Straw	3,568	2,258
29	"	2¾ bushels per acre	Grain	1,662	1,540
			Straw	3,221	2,164
30	"	3½ bushels per acre	Grain	1,513	1,623
			Straw	3,135	1,899
31	"	2¾ bushels per acre	Grain	1,548	1,654
			Straw	3,871	2,190
166	Clover	Following 2 bushels seeding		4,080	3,664
167	"	Following 2¾ bushels seeding		4,480	3,368
168	"	Following 3½ bushels seeding		4,760	3,288
169	"	Following 2¾ bushels seeding		5,600	3,528
120	Timothy	Following 2 bushels seeding		3,560	4,016
121	"	Following 2¾ bushels seeding		3,720	3,480
122	"	Following 3½ bushels seeding		3,200	3,112
123	"	Following 2¾ bushels seeding		3,040	3,344

In this project it is seen that there is very little difference between the yields of grain following the different rates of seeding. The clover and timothy yields are somewhat higher, however, following the lighter seedings of nurse crop, indicating that a better catch was obtained where this crop was seeded rather lightly.

Plot No.	Crop	Plot treatment	Yield per acre: Yield 1927	Yield per acre: Average yield 4 years	Cost of manure or fertilizer per acre	Value of crop per acre after deducting cost of manure or fertilizer: Value 1927	Value of crop per acre after deducting cost of manure or fertilizer: Average value 4 years
			lb.	lb.			
83	Turnips		20,680	32,480	$ 12 80	$ 7 88	$ 46 97
37	Oats	Grain	1,897	1,848	9 60	33 46	28 06
		Straw	3,128	2,102			
175	Clover	16 tons manure in winter or spring before roots.	3,880	3,430	6 40	16 88	11 72
129	Timothy		3,280	3,620	3 20	16 48	15 72
		Total			$ 32 00	$ 74 70	$ 102 47
84	Turnips		18,560	29,930	9 60	8 96	45 62
38	Oats	Grain	1,455	1,674			
		Straw	2,848	1,942	7 20	26 72	26 87
176	Clover	12 tons manure in winter or spring before roots.	3,280	3,010	4 80	14 88	11 07
130	Timothy		3,280	3,490	2 40	17 28	15 87
		Total			24 00	$ 67 84	$ 99 43
85	Turnips		24,320	33,250	16 00	8 32	44 42
38	Oats	Grain	1,840	1,840			
		Straw	4,480	2,770	12 00	32 65	26 81
176	Clover	20 tons manure in winter or spring before roots.	4,120	3,810	8 00	16 72	12 09
130	Timothy		5,160	4,160	4 00	26 96	18 10
		Total			$ 40 00	$ 84 65	$ 101 42
86	Turnips		3,720	14,630		$ 7 44	$ 29 26
39	Oats	Grain	1,161	1,430			
		Straw	2,710	1,737		25 91	28 72
177	Clover		1,760	2,050		8 80	10 26
131	Timothy	No manure application	2,880	3,160		14 40	15 80
		Total				$ 56 55	$ 84 04
87	Turnips		15,680	28,130	$ 9 60	$ 6 08	$ 42 74
41	Oats	Grain	1,622	1,705			
		Grain	2,865	1,817	6 40	30 80	28 05
179	Clover	Top dress clover sod in winter or spring for timothy 16 tons per acre	3,320	2,580	3 20	16 72	10 53
133	Timothy		2,920	4,170	12 80	4 72	8 79
		Total			$ 32 00	$ 58 32	$ 90 11
88	Turnips		18,400	30,300	9 60	8 80	46 40
42	Oats	8 tons manure on stubble for clover. Grain	1,766	1,692			
		Straw	3,377	2,054	6 40	34 61	28 33
180	Clover		5,040	4,160	9 60	20 64	12 47
134	Timothy	8 tons manure in winter or spring before roots.	4,760	4,400	6 40	22 16	16 79
		Total			$ 32 00	$ 86 21	$ 103 99
89	Turnips		18,400	29,480	$ 12 80	$ 5 60	$ 41 56
43	Oats	Grain	2,051	1,953			
		Straw	3,538	2,334	9 60	26 96	27 87
181	Clover	16 tons manure in winter or spring before roots.	4,240	3,840	6 40	19 04	13 87
135	Timothy		5,240	4,180	3 20	28 24	19 02
		Total			$ 32 00	$ 79 84	$ 102 32

While this experiment has only been under way for four years, the real value of farm manures can be seen by comparing the results of the check or untreated set of plots with any of those which received manure. The 16 tons per acre application has given the best results to date and indications are that this will be more profitably used if applied twice in the rotation, or at the rate of 8 tons before the hoed crop and 8 tons on the grain stubble before the clover crop.

FERTILIZER EXPERIMENT WITH HAY

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	
			Yield 1927	Average yield 4 years		Value 1927	Average value 4 years
			lb.	lb.			
44	Oats	Grain	2,146	1,817			
		Straw	3,854	2,293	$ 2 06	$ 47 16	$ 35 50
90	Timothy	75 lb. nitrate of soda and 200 lb. 18 per cent basic slag applied in early spring.	3,200	3,670	4 37	14 83	14 79
136	Timothy	75 lb. nitrate of soda and 200 lb. 18 per cent basic slag applied early in spring.	3,120	3,570	3 08	15 64	15 55
182	Clover		2,680	2,340	77	15 31	11 55
		Total				$ 92 94	$ 77 39
45	Oats	Grain	2,098	1,824			
		Straw	3,707	2,387	4 11	44 00	33 79
91	Timothy	150 lb. nitrate of soda and 400 lbs. 18 per cent basic slag applied in early spring.	4,240	4,280	8 74	16 70	13 72
137	Timothy	150 lb. nitrate of soda and 400 lb. 18 per cent basic slag applied in early spring.	3,480	4,030	6 17	14 71	14 85
183	Clover		3,080	2,640	1 54	16 94	12 43
		Total				$ 92 35	$ 74 79
46	Oats	Grain	1,663	1,608			
		Straw	2,517	1,979		37 30	33 04
92	Timothy	No fertilizer applied	3,800	3,120		22 80	16 55
138	Timothy	No fertilizer applied	3,280	3,110		19 68	16 37
184	Clover		2,920	2,410		17 42	12 78
		Total				$ 97 30	$ 78 74

The benefits from the use of fertilizers as outlined above are slower in becoming apparent than when farm manure is used, but each year is showing a further increase in returns from its use and no doubt the results will continue to show increased value from the use of commercial fertilizer.

Project F.78, a "Green Manure Experiment," was first outlined with sweet clover as the manure crop. Very poor results were obtained with this as the clover winter-killed severely and the outline has been changed so that red clover will replace the sweet clover in the rotation.

Three rotations are being carried on at this Farm, a three-year rotation of turnips, oats and hay; a four-year rotation of turnips, oats, hay, and hay or pasture the fourth year; and a five-year rotation of turnips, oats, hay, hay or pasture, and oats. The results to date would indicate that either the four- or five-year rotation is better than the three-year one, and for turnip production in particular, the five-year rotation, where turnips follow grain, is best. The amount of work necessary in the preparation of the soil is materially reduced and hoeing made easier than where the root crop is following sod.

COST OF PRODUCTION OF FARM CROPS, 1927

Cost Values.—

Rent and taxes, per acre	$ 4 00
Manure, per ton	2 00
Machinery, per acre	2 85
Seed wheat, per bushel	2 00
Seed oats, per bushel	1 30
Seed barley, per bushel	1 50
Seed sunflowers, per pound	0 12
Seed peas, per bushel	2 90
Seed vetches, per bushel	3 00
Seed timothy, per pound	0 09½
Seed red clover, per pound	0 31
Seed alsike, per pound	0 31
Seed turnips, per pound	0 50

COST OF PRODUCTION OF FARM CROPS, 1927—*Concluded*

Cost Values.—

Manual labour, per hour	0 29
Teamster labour, per hour	0 33
Tractor operator, per hour	0 40
Horse labour, per hour	0 [illegible]
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 16½

Return Values—

Hay, per ton	12 00
Oat and barley straw, per ton	4 00
Wheat straw, per ton	2 00
Turnips, per ton	2 00
Sunflower silage, per ton	4 00
O. P. V. silage, per ton	4 50
Oats, per bushel	0 66
Wheat, per bushel	1 75
Barley, per bushel	1 10

Based on the above figures the cost of the various farm crops as grown in 1927 is given below, also the average cost from 1922 to 1927 inclusive. Corn was a complete failure in 1927 due to poor germination, and for this reason the cost of production figures are only given for the five-year period 1922 to 1926.

Mixed grain was not grown in 1927, nor was O.P.V. silage in 1926, which accounts for the five-year average being given for these crops. The cost of the various farm crops, especially for oats, barley and mixed grain (which is a mixture of 1¾ bushels oats, 1 bushel of barley and ½ bushel of wheat, seeded at 3 bushels per acre), is seen to be low when compared with the value of these crops on the open market. It is more profitable to grow our home grown grains, as given above, in Eastern Canada than to purchase these feeds in Western Canada and all farmers are urged to increase their acreage and, by using good seed and proper cultural methods, increase also their yield per acre, for one must have both quantity and quality production to make agriculture a paying proposition.

COST OF PRODUCTION OF FARM CROPS—1927

Items of Expense	Oats	Wheat	Barley	Sunflower Silage	O. P. V. Silage	Turnips	Hay
Rent and taxes	$ 4 00	$ 4 00	$ 4 00	$ 4 00	$ 4 00	$ 4 00	$ 4 00
Manure	12 00	12 00	12 00	16 00	16 00	16 00	8 00
Seed	3 90	4 00	3 00	2 40	6 15	1 00	1 97
Machinery	2 85	2 85	2 85	2 85	2 85	2 85	2 85
Twine	57	49	49	41	–	–	–
Manual labour	4 49	3 97	3 99	29 83	15 32	40 86	6 39
Horse labour	1 87	93	1 72	4 50	4 10	5 33	1 01
Tractor labour	90	90	90	7 50	6 30	5 10	–
Threshing	1 45	1 09	1 15	–	–	–	–
Total cost per acre	32 03	30 23	30 10	67 49	54 72	75 14	24 22
Yield per acre, grain	36·2 bush	15·5 bush.	23·0 bush.	7·005 tons	5·946 tons	10·018 tons	2·45 tons
Yield per acre, straw	0·75 tons	0·76 tons	1·2 tons	.....	.....	400·7 bush.	.....
Value per acre, grain	$ 23 89	$ 27 13	$ 25 30	$ 28 02	$ 24 62	$ 20 02	$ 29 40
Value per acre, straw	3 00	1 52	4 80	–	–	–	–
Total value per acre	26 89	28 64	30 10	28 02	24 62	20 02	29 40
Profit or loss per acre	−5 14	−1 58	0 00	−39 47	−30 10	−55 12	5 18
Cost per bushel (or ton) considering value of straw	0·802	1 85	1 10	9 63 per ton	9 20 per ton	7 50 per ton 0 188 per bush	9 88 per ton

Items of expense	Oats	Wheat	Barley	Mixed grain*	Corn silage*	Sunflower silage	O. P. V. silage*	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 00	8 00
Seed	3 24	4 00	2 92	3 98	1 13	1 63	6 12	0 95	1 81
Machinery	2 85	2 85	2 85	2 85	2 85	2 85	2 85	2 85	2 85
Twine	0 45	0 32	0 38	0 42	0 35	0 62	.....	.....	.....
Manual labour	5 61	5 15	5 37	6 93	27 35	31 49	14 42	39 24	5 45
Horse labour	1 96	1 60	1 77	2 14	5 03	5 11	3 22	6 13	1 02
Tractor labour	1 86	1 83	1 91	2 01	6 52	7 68	5 51	5 41	.....
Threshing	2 11	1 35	1 67	2 43	.....	.....	.....	.....	.....
Total cost per acre	34 08	33 10	32 87	36 76	63 23	69 38	52 12	74 58	23 13
Yield per acre, grain	52·8 bush.	19·23 bush.	33·3 bush.	48·61 bush.	14·01 tons	16·25 tons	6·36 tons	17·446 tons	2·357 tons
Yield per acre, straw	1·01 tons	0·86 tons	1·01 tons	1·05 tons	.....	.....	.....	697·84 bush.	.....
Value per acre, grain	$31 68	$28 85	$33 30	$38 89	$56 04	$60 13	$28 62	$34 89	$25 93
Value per acre, straw	4 04	1 72	4 04	4 20	.....	.....	.....	.....	.....
Total value per acre	35 72	30 57	37 34	43 09	56 04	60 13	28 62	34 89	25 93
Profit or loss per acre	1 64	−2 53	4 47	6 33	−7 19	−9 25	−23 50	−39 69	2 80
Cost per bushel or ton considering value of straw	0 569	1 63	0 866	0 67	4·51 per ton	4 27 per ton	8 19 per ton	4·27 per ton 0·107 per bush.	9 81 per ton

*Five year averages.

EXPERIMENTS WITH SUNFLOWERS

DIFFERENT DATES OF SEEDING SUNFLOWERS

This experiment has been carried on since 1921 with the object of determining the best time to seed sunflowers in order to obtain the maximum yields together with quality of feed. It has been found impossible, due to seasonal conditions, to seed on any particular date, over a period of years, so the data are presented to show the range of dates in which each seeding was made. Our data indicate that the earlier seedings will give the most satisfactory returns.

DATES OF SEEDING SUNFLOWERS—1927

Date of seeding	Stage of maturity when harvested	Yield per acre	
		tons	lb.
June 20	100 per cent bloom	15	474
June 27	90 per cent bloom	11	1,528
July 4	90 per cent bloom	8	581
July 11	75 per cent bloom	8	581

DATES OF SEEDING SUNFLOWERS, AVERAGE 1921-27

Range of seedings	Number years tested	Average yield per acre	
		tons	lb.
May 20 to June 20	7	23	1,845
May 27 to June 27	7	21	1,581
June 3 to July 4	6	21	1,967
June 10 to July 11	5	20	1,076

DISTANCE APART FOR SEEDING SUNFLOWERS

This experiment has been conducted for seven years with sunflowers seeded in rows 2½, 3 and 3½ feet apart. The average results show no significant difference between these three methods but the 3-foot row has been found to be more easily cultivated than the 2½-foot distance and gives a better quality product than does the 3½-foot row. The sunflowers in the latter case are inclined to be more coarse and woody than where grown in rows nearer together.

DISTANCE APART FOR SEEDING SUNFLOWERS

Distance between rows	Stage of maturity, 1927	Yield per acre, 1927		Average yield per acre 1921-27	
		tons	lb.	tons	lb.
2½ feet	100 per cent bloom	17	956	21	222
3 feet	100 per cent bloom	14	1,578	20	1,593
3½ feet	100 per cent bloom	15	1,380	20	1,037

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, while the other half was left untreated. In the fall of 1925 the treated section was top dressed again with 16 tons of manure per acre. The object of this experiment is to find out the value of manure as a top dressing for hay land

and to determine whether a good quality of hay can be produced without reseeding the land. To date the yield has been satisfactory on the top dressed area but the entire field is rapidly becoming infested with such weeds as ox-eyed daisy and king devil which are hard to eradicate without the use of a hoed crop or a summer-fallow. The yields obtained are as follows:—

BARNYARD MANURE ON HAY LAND

Treatment	1927 yield per acre	Seven-year average yield per acre
	tons	tons
Manured	1·584	2·37
Unmanured	0·802	1·79

FERTILIZER AND LIME EXPERIMENTS ON MARSH LANDS

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

The results of these experiments are as follows:—

RESULTS WITH FERTILIZER AND LIMESTONE ON MARSH LANDS

Started 1922

Treatment	Oats 1922 yield per acre	Hay 1927 yield per acre	Hay, 5 years average yield per acre	Total value per acre after deducting cost of fertilizer or lime
	bush.	tons	tons	$
½ ton slag (18%)	33·9	1·789	2·021	119 18
Check	25·3	1·777	1·812	113 91
1½ tons limestone	29·5	2·206	2·260	129 50
2½ tons limestone	31·7	2·305	2·305	127 04
Check	22·6	1·932	1·950	107 40
½ ton slag (18%)	26·8	2·186	2·237	124 01
1,400 lb. wood ashes	25·8	2·236	2·262	130 48

Started 1924

Treatment	Hay 1927 yield per acre	Hay, 3 years' average yield per acre	Total value per acre after deducting cost of fertilizer or lime
	tons	tons	$
1,200 lb. English slag (16% P_2O_5)	3·326	3·554	105 57
1,400 lb. wood ashes	2·572	2·879	88 43
Check	2·037	2·475	78 34
1,400 lb. Sydney slag (14% P_2O_5)	2·319	2·820	84 01
2 tons limestone	2·312	2·731	79 94
1,400 lb. Sydney slag (14% P_2O_5)	2·124	2·666	77 61
Check	1·989	2·396	75 85

Started 1925

Treatment	Yield per acre of oats in 1925		Yield per acre of hay		Value per acre after deducting cost of fertilizer or lime
	Grain	Straw	1926	1927	
	bush.	lb.	tons	tons	$
Check	25·41	1,866	2·33	2·22	68 91
2½ tons limestone	34·59	2,400	2·65	2·59	77 50
1½ tons limestone	31·41	2,440	2·66	2·61	78 26
½ ton Sydney slag (14%)	27·50	2,860	2·71	2·61	72 99
Check	13·79	1,067	2 37	2 35	60 51
1,400 lb. wood ashes	28·50	2,020	2·51	2·56	72 20

From a careful study of the preceding tables, it will be noted that increased production was obtained from the use of slag, wood-ashes and ground limestone, when applied to marsh lands. Slag shows up best of all with wood ashes and ground limestone about on a par, although perhaps wood ashes on the average would show slightly better yields.

Another experiment under way is a four-year rotation on marsh land with sunflowers, manured at the rate of 16 tons barnyard manure per acre, followed by oats, then two years in hay. This was started in 1925 and will be reported after the rotation is completed.

DRAINAGE EXPERIMENTS

These projects were started in 1922.

The field was laid off in 21 plots each 30 feet in width as shown by the table given below. The yields as obtained each year since 1924 are given in the table, also the averages for the different depths and for the undrained and drained areas. The plots on either side of the drained areas are termed semi-checks as they will be influenced somewhat by the drains.

RESULTS OF DRAINAGE EXPERIMENT

Plot No.	Treatment	Hay yield per acre 1924	Grain yield per acre, 1925		Hay yield per acre 1926	Hay yield per acre 1927	Average yield per acre of hay
			Grain	Straw			
		tons	lb.	lb.	tons	tons	tons
1	Check	1·250	1,431	2,381	1·256	2·140	1·549
2	Semi-check	1·333	1,609	2,240	1·297	2·770	1·800
3	Tile 2 feet deep	1·074	1,679	2,203	1·595	2·658	1·776
4	Semi-check	1·239	1,533	2,256	1·483	2·543	1·755
5	Check	1·160	1,367	2,169	1·532	2·814	1·835
6	Semi-check	1·729	1,214	2,137	1·616	2·589	1·978
7	Tile 2½ feet deep	1·842	1,171	1,948	1·662	2·554	2·019
8	Semi-check	1·658	1,144	1,932	1·587	2·575	1·940
9	Check	1·446	1,093	1,620	1·662	2·744	1·951
10	Semi-check	1·440	1,105	1,591	1·753	2·753	1·982
11	Tile 3 feet deep	1·774	1,190	1,818	1·594	2·892	2·087
12	Semi-check	1·550	1,169	1,948	1·362	2·879	1·930
13	Check	1·400	1,348	2,108	1·525	2·778	1·901
14	Semi-check	1·267	1,395	1,992	1·423	2·611	1·767
15	Tile 3½ feet deep	1·595	1,543	2,340	1·684	2·329	1·869
16	Semi-check	1·384	1,255	2,087	1·528	2·466	1·793
17	Check	1·657	1,304	2,345	1·878	2·265	1·933
18	Semi-check	1·780	1,305	2,198	1·695	2·251	1·909
19	Tile 4 feet deep	1·781	1,365	2,313	1·941	2·250	1·991
20	Semi-check	1·632	1,166	2,012	1·924	2·318	1·958
21	Check	1·593	849	1,430	1·672	2·562	1·942

Average of drained plots.....Hay 1·948 tons Grain 1,390 lb.
Average of semi-check plots.....Hay 1·881 tons Grain 1,290 lb.
Average of check plots.....Hay 1·852 tons Grain 1,232 lb.

HORTICULTURE

Seasonal conditions were not favourable to a maximum production. Spring opened early, but cold, backward weather prevented the early working of the soil. Vegetable seeding was general by June 1. Germination was good and leaf growth was vigorous but excessive moisture prevented the proper development and maturity of most crops. A heavy rain and wind storm on August 23 caused a forty per cent drop in the apple crop, and did serious damage to many fruit trees. Very little scab developed during the season but after the fruit was packed it developed very rapidly. The varieties of apples that gave the best yields were Tolman Sweet, Northern Spy, Bethel and Duchess.

The strawberry crop had a splendid setting of fruit and ripened rapidly until the 15th of July, but following that date, a very dry period cut the crop yield below that of the previous year.

TREE FRUIT

The following table gives the financial statement of the commercial orchard for 1927:—

TREE FRUIT

COMMERCIAL ORCHARD

Pruning, 19 hours at 30 cents		$ 5 70
Gathering limbs, 5 hours at 30 cents=$1.50; 1 team, 5 hours at 52 cts.=$2.60		4 10
Drawing manure, 44 hours at 52 cents=$22.88; 1 man 17 hours at 30 cents=$5.10		27 98
Ploughing and cultivation (tractor), 24 hours at $1.00		24 00
Mowing and removing grass, 11 hours at 30c.=$3.30; 1 horse, 11 hours at 40 cents=$4.40		7 70
Digging couch grass (boy labour), 180 hours at 21 cents		37 80
Spraying, 20 hours at 52 cents=$10.40, 1 man, 20 hours at 30 cents=$6.00		16 40
Spraying material, 4 applications at $1.32		5 28
40 tons manure at $2.00 per ton, 50 per cent this year		40 00
Picking, 99 hours at 28 cents		27 72
165 barrels at 50 cents		82 50
1927 total cost		$ 279 18
165 barrels apples at $2.50	$ 412 50	
	279 18	
Profit	$ 133 32	

SMALL FRUITS

STRAWBERRIES

Sixty-five varieties were tested in small plots and the corrected average production per acre was 11,260 pounds. The following table gives a sixteen-year average for the fifteen leading varieties:—

STRAWBERRY VARIETY TEST—16 YEARS

Variety	Average Yield per acre	Description
	lb.	
Seedling No. 15	9,317·2	Light red, medium size, good quality.
G. H. Coughill	8,592·2	Dark red, large, good quality.
*Senator Dunlap	8,558·3	Rich red, large, conical to pointed.
Seedling No. 12	8,557·9	Dark red, large, uniform.
Michel Earley	8,499·1	Light red, large, pointed.
Jeanne d'Arc	8,383·5	Dark red, medium, firm.
Crescent	8,247·9	Dark red, medium, firm.
Equinox	8,089·0	Rich, red medium, firm.
Thompson Late	8,030·0	Dark red, large, conical.
Bisel	7,926·0	Rich red, medium, pointed, firm.
Joe	7,674·6	Light red, large, rough, soft.
Cole seedling	7,602·8	Dark red, medium, firm.
Barton	7,351·00	Dark red, large, good quality.
Nick Ohmer	7,353·5	Rich red, medium, rough, round.
Harverland	7,130·4	Dull red, small, pointed, poor.

* 15 years only

RASPBERRIES

A new plantation was started in 1926, adopting the hill system, staking and tying each hill, and planting only such varieties as gave evidence of being free from mosaic. The loss from breaking down was small and all varieties made a vigorous growth during the growing season of 1927. A slight trace of mosaic was recorded on a few of the varieties. There was only a small yield of fruit but the quality and size were excellent.

BLACK CURRANTS

Ten varieties or strains were under test in 1927. The bushes came through the winter in good condition. A vigorous growth and an abundance of bloom was recorded. The yield was lower than the six-year average but the fruit was of fair quality. The following are the leading varieties with their six-year average production given in pounds per acre: Kerry, 12,496 pounds; Eagle, 10,633 pounds; Topsy, 10,025 pounds; Climax, 9,016 pounds; Magnus, 9,004 pounds; Saunders, 8,716 pounds; Buddenborg, 7,271 pounds; Victoria, 6,941 pounds; Climax O. 1373, 6,164 pounds; Boskoop Giant, 3,106 pounds.

RED CURRANTS

Five varieties were under test during 1927 and the following is a six-year average production of pounds per acre: London Market, 12,056 pounds; Perfection, 11,315 pounds; Wilder, 9,211 pounds; Cherry, 8,180 pounds; Fay Prolific, 5,874 pounds.

GOOSEBERRIES

The yield of the 1927 crop was below that of the previous year, but the fruit was free from disease and of good quality. The following is a four-year average yield in pounds per acre for the varieties now on test: Duncan, 11,443 pounds; Rideau, 11,088 pounds; Pearl, 9,900 pounds; Silvia, 9,482 pounds; Charles, 8,850 pounds; Red Jacket, 7,150 pounds; Alma, 5,008 pounds; with only three-year averages, Barrett, 5,133 pounds; Mabel, 1,305 pounds.

VEGETABLES

SEASON

The season of 1927 was fairly favourable for vegetable gardening. The land was in good condition for planting operations by the first of June and most of the seeding was accomplished at that time. On the average, germination was good and the growth was uniform throughout the season with but few exceptions. The quality in some cases was not the best, but this was due largely to the wet weather experienced during the hardening off season. Beans especially were badly affected by rust, but tomatoes, corn and onions developed a good foliage.

The continuation of the variety tests of vegetables during the past season revealed some variation in yields from those of previous years. However, it is not expedient to decide the merits of any one variety on its performance for one year. It is possible to obtain a fairly accurate impression of the relative merits of different varieties when tested over a period of years, say five or more. Therefore, the following list is recommended for this district and in making these recommendations, the following important factors have been borne in mind: productiveness, resistancy to diseases, quality and market requirements.

CABBAGE

Copenhagen Market, Fottler, Improved Brunswick, Danish Ballhead, Flat Swedish, Glory of Enkhuizen and Early Jersey Wakefield.

CAULIFLOWER

Early Snowball and Early Erfurt.

CARROTS

Chantenay, Scarlet Nantes, St. Valery Market Garden and Danish Half Long.

BEETS

Detroit Dark Red, Eclipse, Black Red Ball, Cardinal Globe and Egyptian Flat.

STRING BEANS (GREEN)

Masterpiece, Refugee or 1000 to 1, Stringless Green Pod, Yellow Eyed Green Pod, Bountiful Green Bush and Princess of Artois.

STRING BEANS (YELLOW)

Hodson Long Pod, Davis White Wax, Early Valentine, Wardwell Kidney Wax and Challenge Black Wax.

PEAS

Thomas Laxton, Gradus, McLean Advancer, Telephone, Lincoln and American Wonder.

CUCUMBERS

Improved Long Green, XXX Table, Davis Perfect, Early White Spine and Early Frame.

SQUASH

Green Hubbard, Golden Hubbard, Kitchenette and Table Queen.

CORN

Golden Bantam, Early Cory, Malcolm, Early Squaw and Pickaninny.

LETTUCE

Grand Rapids, Iceberg, Black Seeded Simpson, New York and Big Boston.

PARSNIPS

Hollow Crown is the best so far tested.

RADISH

Scarlet Globe, Scarlet Turnip and Saxa Forcing.

TOMATOES

Bony Best, Alacrity, Earliana, Chalk Early, Jewel and John Baer.

ONIONS

Yellow Globe Danver, Giant Yellow Prizetaker, Early Selected Large Wethersfield and Large Red Wethersfield.

SPINACH

Princess Juliana, King of Denmark, Bloomsdale, Big Crop, Winter Ebenezer and Noble Gaudry.

VARIETY BEANS

Twenty-seven varieties of beans were sown on June 10 in duplicate plots of 1/968 of an acre.

Germination was uniform and good throughout. The plant growth was vigorous and the indications were in favour of good yields but the continued wet weather throughout July made ideal conditions for the development of rust which was very bad on some varieties and reduced the yield in most cases. The following table gives the data collected.

BEANS FOR CANNING

Eight varieties were sown on June 11 in duplicate plots of $\frac{1}{193.6}$ of an acre each. The object was to collect data on the suitability of these varieties for canning purposes. The seed was sown very thick but with unfavourable weather prevailing, ideal conditions existed for the more rapid development of disease. As there was only a very limited quantity of each variety available at any one time, it was impossible to collect data on the quality of each variety when canned. The following records were taken on each variety grown in 1927:—

BEANS FOR CANNING—RESULTS IN 1927

Variety and Source	First picking	Length of pod	Height	Yield per acre
		ins.	ins.	lb.
Refugee 1,000 to 1 (Rice)	Aug. 18	4	14	7,696
Stringless Green Pod (Rice)	Aug. 20	5	15	8,422
Early Red Valentine (Ewing)	Aug. 11	4	14	13,310
Pencil Pod Black Wax (D. & F.)	Aug. 11	6	12	10,890
Stringless Green Pod (Ewing)	Aug. 20	5	16	9,841
Masterpiece (Ewing)	Aug. 9	7	12	15,488
Hodson Long Pod (Ewing)	Aug. 20	6	14	13,190
Unrivalled Wax (Harris)	Aug. 12	5	10	10,219

Refugees or 1000 to 1 is light in colour, mottled, has short pods, is a fair yielder and when free from disease, should be a fairly satisfactory bean for canning. Under unfavourable weather conditions it rusts easily, the rust developing to its greatest degree at midseason.

Stringless Green Pod is a strong, vigorous grower, has a longer pod than Refugee and like the latter is very susceptible to rust, the difference being that Stringless Green Pod developed the rust slightly earlier in the season. Even when free from disease it could only be considered a fair canning bean.

Early Red Valentine is an early maturing bean and if picked early would be a fair canning bean but if allowed to stay on the stock too long, the pods become tough. It is also susceptible to rust.

Masterpiece is a vigorous grower, a good yielder, is resistant to rust and for that reason alone it is a very desirable bean to grow. Its long pod may be an objectionable factor as a No. 1 canning bean.

Hodson Long Pod is very much like the Masterpiece in that it is resistant to rust and is a splendid yielder. The main difference is that Hodson Long Pod is a yellow podded variety, while Masterpiece is a green podded bean. It is shorter in the pod which is desirable for a really good canning bean. However, to get it at the best, it must be picked early.

Unrivalled Wax is small, rusts easily and produces an unattractive pod which cannot be looked upon as a suitable canning bean.

Pencil Pod Black Wax is not a desirable bean for canning. It is a slow growing bean with rough coarse pods and is a good subject for rust.

CANNING PEAS

Four varieties were planted in duplicate plots June 3. Seed was sown with a Planet Jr. in rows eight inches apart.

This experiment is to determine the most suitable canning varieties for this locality. The important factors looked for in these varieties were uniformity of ripening, freedom from worm and disease, and yield. The following table gives the yields of mature and immature pods per acre at one harvesting.

CANNING PEAS—RESULTS IN 1927

Variety and Source	Per cent germination	Size of pod	Length of vine	Unmarketable, per acre	Marketable, per acre
		ins.	ins.	lb.	lb.
Alaska (Ottawa)	75	2	18	1,694	7,865
Horsford Market Garden (Ottawa)	67·5	2	24	726	5,445
The Lincoln (Invermere)	77·5	3	16	1,403	6,816
Advancer (Rice)	75	2	30	1,936	5,445

Alaska is a smooth round pea, with pods well filled, that ripens fairly uniformly and has the appearance of being an excellent pea for canning purposes. It may well be stated that a very high percentage of the 1,694 pounds of unmarketable peas were over ripe for canning purposes.

Horsford Market Garden is a very round compact podded pea but does not ripen nearly as uniformly as Alaska nor has it the appearance of being as suitable for canning purposes. Moreover, it is susceptible to blight at the base of the stem. The major portion of the 726 pounds of unmarketable peas were immature.

The Lincoln is a very smooth small round pea but is slow in developing. It has the appearance of being an excellent pea for canning purposes but is not quite as heavy a yielder as the Alaska. Of the 1,403 pounds of unmarketable peas, the major portion were immature.

Advancer is a pea of medium size, lacks uniformity in ripening, blights early in the season and for that reason may be looked upon as only a fair canner.

PROTECTION OF CABBAGE FROM ROOT MAGGOT

The object of this test is to study the relative merits of different methods of protecting cabbage from root maggot. Two varieties were used, namely, Copenhagen Market and Danish Ballhead (1) Tar paper discs were placed around the stems when plants were set, (2) spraying with corrosive sublimate four days after transplanting and again in ten days, (3) the third plot was a check. The following gives the results obtained in 1927:—

METHODS OF PROTECTING CABBAGE FROM ROOT MAGGOTS—RESULTS IN 1927

Variety	Method	Results	Corrected weight per plot	Corrected weight per acre
			lb.	lb.
Copenhagen Market	Tar paper	1 dead of maggot	70·5	34,122
Danish Ballhead	"	2 dead of maggots, 2 dead of cutworms	80·0	38,720
Copenhagen Market	Solution	2 dead of cutworms	83·7	40,511
Danish Ballhead	"	3 dead of cutworms	75·4	36,494
Copenhagen Market	Check	3 dead of cutworms, 2 dead of maggot	70·7	34,219
Danish Ballhead	"	2 dead of cutworms, 1 dead of maggot	75·3	36,445

HOTBED VERSUS OPEN SEEDING FOR CABBAGE

To determine the relative merits of starting seeds in hotbeds and transplanting to the open versus the planting of the seed in the open and thinning, two varieties were used, namely, Copenhagen Market and Danish Ballhead. The following table gives the yields from the two methods on a corrected yield basis.

HOTBED VS. OPEN SEEDING FOR CABBAGE—RESULTS IN 1927

Variety	Method	Yield per plot	Yield per acre	Acre difference	In favour of
		lb.	lb.	lb.	
Copenhagen Market	Hotbed	70·6	34,170	4,404	Hotbeds.
Copenhagen Market	Open	61·5	29,766		
Danish Ballhead	Hotbed	60·0	29,040	4,211	Hotbeds.
Danish Ballhead	Open	51·3	24,829		

METHODS OF PRUNING TOMATOES

To study the relative merits of different methods of pruning to single stem, two varieties were used, namely, Bonny Best from Stokes and Alacrity from Ottawa. Seed was sown in the hotbeds on April 18 and transplanted to the open on June 13 in duplicate plots of $\frac{1}{363}$ of an acre. The following table gives the yields of ripe fruit from each variety, also method of treatment.

METHODS OF PRUNING TOMATOES—RESULTS I 1927

Variety	Method	Date of first picking	Weight per plot	Weight per acre	Average of each method per acre
			lb.	lb.	lb.
Bonny Best	Single stem, not headed back	Aug. 29	25·5	9,257	10,255
Alacrity	Single stem, not headed back	"	31·0	11,253	
Bonny Best	Single stem, stopped at 3rd truss	"	26·75	9,710	9,846·5
Alacrity	Single stem, stopped at 3rd truss	"	27·5	9,983	
Bonny Best	Single stem, stopped at 2nd truss	"	31·5	11,435	11,026·5
Alacrity	Single stem, stopped at 2nd truss	"	29·25	10,618	
Bonny Best	Single stem, stopped at 1st truss	"	18·0	6,534	8,031·5
Alacrity	Single stem, stopped at 1st truss	"	26·25	9,529	

STRAIN TESTS OF POTATOES

Four strains of Irish Cobbler were planted by hand on June 8 in triplicate plots of $\frac{1}{199·6}$ of an acre. All were harvested between October 5 and 7. Government inspections were made during the summer and the potatoes passed as disease free stock. The following table gives the results.

STRAIN TESTS OF POTATOES—RESULTS IN 1927 AND AVERAGE

Variety and source	Description	Disease per cent		Marketable per plot	Unmarketable per plot				Total yield per plot	Total yield per acre	Four year average per acre
		Rot	Scab		Grub	Small	Large	Total			
				lb.	lb.	lb.	lb.	lb.	lb.	bush.	bush.
Irish Cobbler (W. Steel)	Medium sized, smooth	....	....	129·7	5	17·3	1·7	24	153·7	255·1	277·7
Irish Cobbler (Nappan)	Large, rough	3·3	3·3	134	1·7	8·7	8·3	25·3	159·3	264·4	269·2
Irish Cobbler (Fawcett)	Medium, niform	....	....	108·7	....	11·0	0·7	11·7	120·4	199·9	224·5
Irish Cobbler (McGregor)	Large, 3mooth	....	....	118·3	2·3	10·3	1·3	13·9	132·2	219·5	257·0

SPROUTING EXPERIMENTS WITH POTATOES

This experiment was conducted in order to collect data on the relative merits of planting potatoes.

Experiment No. 1 (*a*) Potatoes that are subjected to subdued light at a temperature of from 40° to 50° F. for four weeks, (*b*) Potatoes that have been kept as dormant as possible all spring, (*c*) Potatoes taken from the ordinary cellar bin at time of planting, seed selected from corresponding plots of 1926.

Experiment No. 2, same as No. 1 only that potatoes were all selected from general bin in spring and handled in the same way.

RESULTS OF DIFFERENT METHODS OF PREPARING POTATOES FOR PLANTING

Variety	Procedure	Average yield marketable		Average yield unmarketable		Total yield per acre 1927	Total yield per acre 1926
		Per plot	Per acre	Per plot	Plot acre		
Experiment No. 1—		lb.	bush.	lb.	bush.	bush.	bush.
Irish Cobbler	Dormant	62·5	103·1	14	23·1	126·2	137·21
"	Subdued	71·5	118·0	16·5	27·2	145·2	168·02
"	General	63·0	104·0	17·5	28·9	132·9	148·3
Experiment No. 2—							
Irish Cobbler	Dormant	35·0	57·8	12·5	20·6	78·4	.....
"	Subdued	50·0	82·5	12·5	20·6	103·1	.....
"	General	29·0	47·9	14·5	23·9	71·8	.....

FLORICULTURE

From a floricultural standpoint the season of 1927 was most favourable up to August 23 when a heavy wind and rain storm did much damage to the taller plants. Notwithstanding this damage, a fair amount of bloom was maintained in the perennial border and the annual flower beds throughout the balance of the season. The annuals were started in the hotbed on April 14, one day earlier than for 1926. They were transplanted to the open the middle of June. The germination on the average was good and uniform and ideal weather was experienced during June for the growth of all flowering plants. The first killing frost was on October 29, which was just one month later than for 1926.

ASTERS

Forty varieties or strains of asters were on display and of the forty the following seventeen varieties made splendid growth: Crego Purple; Late Blooming Snow White; Late Blooming Peerless Pink; Late Blooming Purple; Late Blooming Lavender; Late Blooming Dark Violet; Early Blooming Dark Violet; Imperial Daybreak; Rochester White; Violet King; Rochester Rose; Lavender King; American Beauty Rose; Blushing Beauty; Snow Queen; King of the Belgians; Perfection White.

The following ten varieties were affected with blight: Crego White; Crego Crimson; Crego Shell Pink; Crego Lavender; Late Blooming Peach Blossom; Late Blooming Crimson; Late Blooming Rose; Perfection Shell Pink; Meteor; Buff Beauty Primrose.

OTHER ANNUALS

The following forty-five varieties of annuals were on display: Ageratum; Amaranthus; Clarkia Elegans; Celosia Plumosa; Coreopsis; Candytuft; Cosmos; Chrysanthemum; Calendula; Cockscomb; Carnation; Cobaea Scandens; Castor Oil Plant; Balsams; Dahlias; Dianthus; Dimorphotheca; Godetia; Gaillardia;

Hibiscus; Helichrysum Jacobea; Kochia; Lobelia; Larkspur; Lavatera; Marvel of Peru; Nemesia; Nigella; Nemophlia; Petunia; Perilla; Pansy; Portulaca; Phlox; Rhodanthe; Stocks; Salvia; Salpiglossis; Scabious; Tagetes; Verbena; Vinca; Whitlavia; Zinnia.

BULBS, 1927

EARLY TULIPS

The nine varieties of early tulips were as follows: Duchesse de Parma; Lady Boreel; Artus; Chrysolora; Vermillion Brilliant; Pottebakker White; Pottebakker Scarlet; Joost Von Vondel; Cottage Maid.

DARWIN TULIPS

The thirteen varieties grown were: Baron de la Tonnaye; Bartigon; Clara Butt; Edmee; Europe; Farncombe Sanders; Isis; King Harold; La Tulipe Noire; Madame Krelage; Nora Ware; Rauwenhof; Rev. Ewhank.

DAFFODILS

The eight varieties of Daffodils grown were as follows: Empress; Golden Spur; Mme. de Graaff; Princeps; Barri Conspicuus; Victoria; Sir Watkin; Leedsi White Lady.

DAHLIAS

The Dahlias made a splendid showing until destroyed by the heavy rain on August 24. The varieties grown were: Papa Chomit; Premier; Countess of Lonsdale; Decorative; Sou de Bernardeau; Pierrot; Diadem; Sou de Chambame; Longworth; Prince Gailtzine; Guardian; Snowball; Mme. L. Ferroid; Dr. Van Korkrum; Penelope.

GLADIOLI

The twelve varieties of Gladioli grown were as follows: Sheila; Nerga; Nastrodamus; Ramosa; Topay; Regal; Wraith; White Beauty; Tupelo; Sulphide; Maiden Blush; Reine Victoria.

PERENNIALS

The perennials made a very nice display until August 24 when many of the taller plants were badly broken down. The following are a few of the most hardy varieties that appear to do exceptionally well in this district: Phlox; Irises; Paeonies; Larkspur; Sweet William; White Rocket; Golden Glow and Dianthus.

CEREALS

CHARACTER OF SEASON

The spring of 1927 was cold and late. The first cereal plots were seeded on May 26 and with the exception of a few odd lots, seeding was completed on June 4. During May the rainfall was 3·71 inches, June 1·96 inches, and July 4·65 inches. The total rainfall from June 1 to September 30 was 17·09 inches as compared with 7·10 inches for the same period last year. Germination was rapid and early in the season cereals gave promise of being a bumper crop. Early in July wet weather set in and continued throughout the growing season with the result that grain crops were below average in yield and quality.

VARIETY TESTS OF GRAIN

The leading varieties 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 nearly as possible. In addition to these, twenty-five varieties of wheat, thirty of oats, twenty of barley and eight of peas were tested in rod row plots. The work with head selection and hybrid material was continued. Eighty-eight varieties of oats were grown in single rod row plots for classification purposes. A uniform rust nursery with wheat and oats was conducted in conjunction with the Rust Laboratory in Winnipeg.

SPRING WHEAT

Seven varieties were under test in 1927. The seed was sown on June 2 and the wheat harvested as the different varieties ripened. Rust infection was considerably less severe than during the previous year. Huron, White Russian and Early Red Fife are still leading in average yields per acre, with Early Red Fife slightly ahead but not significantly so. The following table gives the results for the years 1923-27 inclusive:—

YIELDS OF WHEAT AT NAPPAN 1923–27 INCLUSIVE

Variety	Yields per acre by years and 5 year average					
	1923	1924	1925	1926	1927	Average
	bush.	bush.	bush.	bush.	bush.	bush.
Early Red Fife	43·0	33·5	33·7	25·3	23·0	31·7
White Russian	45·5	35·0	29·7	21·3	21·5	30·6
Huron	34·5	37·5	30·0	22·7	27·5	30·4
Marquis	36·0	32·5	30·3	23·0	20·8	28·5
Ruby	23·0	27·3	24·7	25·3	18·3	23·7
Garnet	.....	.....	.....	16·0	20·3	.....
White Prussian Fredericton	.....	.....	.....	26·0	24·8	.....

BARLEY

Three varieties of six-rowed and three of two-rowed barley were under test in 1927. The seed was sown on June 3 and the different varieties were harvested as they ripened. The following table gives the results:—

YIELDS OF BARLEY AT NAPPAN, 1923-27 INCLUSIVE

Variety	Yields per acre by years and 5-year average					
	1923	1924	1925	1926	1927	Average
	bush.	bush.	bush.	bush.	bush.	bush.
Two-rowed—						
Charlottetown No. 80	55·0	64·2	44·2	42·8	37·5	48·7
Duckbill	43·8	54·2	38·5	48·4	11·9	39·4
Gold	.....	.....	.....	44·1	22·5	.....
Six-rowed—						
Chinese	46·9	44·6	37·9	40·9	40·9	42·2
O. A. C. No. 21	41·9	46·3	38·8	43·8	39·9	42·1
*Himalayan (hulless)	56·3	58·8	40·4	40·3	26·9	44·5

*Hulless figured at 48 pounds per bushel.

Charlottetown No. 80, a two-rowed sort, leads in yield over the five-year period and has been a consistently good producer. Chinese and O.A.C. No. 21 vary very little in yield, but the former matures a few days earlier. Himalayan, a hulless variety, is a good producer, but is very short and weak in the straw, making it very hard to harvest. All varieties were particularly free from smut and rust.

OATS

Six varieties of oats were tested in 1927. The seed was sown on June 2 and 3 and the crop harvested as the various varieties ripened. The following table gives the yields from 1923-27 inclusive:—

YIELDS OF OATS AT NAPPAN, 1923–27 INCLUSIVE

Variety	Yields per acre by years and 5-year average					
	1923	1924	1925	1926	1927	Average
	bush.	bush.	bush.	bush.	bush.	bush.
Victory	78·2	80·0	81·8	65·3	54·3	71·9
Banner	90·9	82·9	65·3	45·9	56·0	68·2
Gold Rain	81·2	80·6	68·2	51·6	52·9	66·9
O. A. C. No. 72	81·2	72·4	68·8	46·3	52·1	64·2
Alaska	63·5	78·8	.....	47·6	45·4	58·8*
Laurel (hulless)	.....	65·3	56·5	40·1	39·3	50·3*

*Only 4-year average.
Hulless figured at 34 pounds per bushel.

Banner was the highest yielder this year but Victory stands first over the five-year period. Gold Rain while not as heavy a yielder is undoubtedly an exceptionally good variety, running high in weight per measured bushel and having a fairly low percentage of hull. Alaska, a comparatively new variety, matures in about ninety days, gives a good yield and is well suited to a short growing season or for use with six-rowed barleys in mixed grain. It has an exceptionally low percentage of hull. Laurel, a hulless variety, is finding favour among some as a feed for poultry and young pigs and at this Farm is proving a fair yielder.

BUCKWHEAT

Twelve varieties and selections of buckwheat were under test in 1927. They were seeded on June 20 and harvested as they ripened. The following table gives the number of days maturing and the yield.

BUCKWHEAT—AVERAGE AND 1927 YIELDS

Variety	Number of years tested	Average number of days maturing	Average yield per acre		Yield per acre 1927	
			bush.	lb.	bush.	lb.
Japanese J.	3	91·7	47	14	40	—
Tartarian D.	3	87·7	44	18	31	12
Russian H.	3	91·7	44	3	33	6
Japanese M.	3	91·7	43	46	28	36
Grey D.	3	91·7	43	56	38	36
Tartarian G.	3	87·7	41	17	35	—
Silverhull J.	3	91·7	40	45	35	30
Petrograd	3	91·7	40	45	26	12
Grey F.	3	91·7	40	25	29	18
Rye F.	3	86·0	39	3	26	42
Rye A.	3	86·0	37	39	25	—
Rye H.	3	86·0	36	22	28	36

REGISTERED SEED GRAIN

Eight acres were seeded to Extra No. 1 Banner oats which yielded 36·2 bushels per acre. Four acres of registered Huron wheat yielded 15·5 bushels per acre and four acres of registered Charlottetown No. 80 barley yielded 23·0

bushels per acre. These yields are the lowest that have been harvested at this farm for some years. The major part of this stock will be for sale during the spring of 1928 for seed.

FORAGE CROPS

CHARACTER OF SEASON

A late spring retarded seeding operations and the work of this division was not started until June 8. From then until seeding was finished, conditions were very favourable. Germination was good but due to the excessively wet weather, growth throughout the season was only fair and yields were greatly reduced. Weather conditions at harvest time were only fair but the crops were stored in fairly good condition.

SOIL AND CULTURAL METHODS

The variety test plots of corn, sunflower, and roots were seeded with a "Planet Junior" drill. The roots were in triplicate plots one-one hundredth acre each, while the corn and sunflowers were in one-two hundredth acre plots with four replications. The soil ranged from a medium clay loam to a fairly heavy clay with a heavy clay subsoil. The corn and sunflowers followed a grain crop and the roots a crop of sunflowers. The land was manured in the spring, ploughed and worked enough to make a good seed bed. The season was very wet but the plots were kept free of weeds.

CROPS FOR ENSILAGE

INDIAN CORN

Twenty-two varieties or strains of corn were tested in 1927. The seed was sown on June 8 and the crop was harvested October 3 to 5. Fairly good yields were recorded but the corn was hardly as mature as in the two years previous. Longfellow, some of the Northwestern Dents and certain hybrids or cross-bred varieties continue to be the highest yielders and seem best suited to our conditions. They reach a greater stage of maturity and produce a heavier yield of dry matter per acre. The accompanying table gives the yields as recorded from the 1927 and previous tests:—

CORN—VARIETY TESTS—1927 AND AVERAGE YIELDS

Variety and Source	Number of years tested	Yield per acre 1927	Average yield per acre	Percentage of dry matter in crop		Pounds of dry matter per acre	
				1927	Average	1927	Average
		tons lb.	tons lb.				
Longfellow—Disco	5	16 80	19 1,799·2	15·593	13·563	5,002·2	5,387·5
Compton's Early—Duke	5	15 720	18 547·3	15·458	13·562	4,748·7	5,008·1
90 Day White Dent—Disco	5	15 1,600	17 1,952·0	17·500	14·568	5,530·0	5,103·4
Longfellow—Duke	5	14 1,680	17 1,766·0	15·648	13·646	4,644·3	4,837·0
Leaming—Duke	5	13 560	17 565·2	15·183	13·616	4,032·6	4,631·0
North Dakota—Steele Briggs	5	15 520	17 14·0	16·728	15·182	5·105·4	5,193·9
Wisconsin No. 7—Duke	5	19 320	15 1,377·2	14·385	13·775	5,512·3	4,352·1
Golden Glow—Duke	5	12 1,160	15 488·6	16·105	14·926	4·052·0	4,595·5
White Cap Yellow Dent—Steele Briggs	5	12 1,290	13 988·0	16·813	14·987	4,252·0	4,054·8
Burr Leaming—Carter	4	22 1,520	21 1,929·8	16·583	15·162	7.548·6	6,679·3
Hybrid—Wimple	4	20 1,080	20 1,728·2	16·805	14·728	6,903·5	6,134·7
Northwestern Dent—Disco	4	19 80	18 94·8	17·245	15·852	6·566·9	5,680·0
Yellow Dent—Wimple	4	14 1,080	18 61·5	17·110	14·785	4,975·6	5,288·6
Bailey—Duke	4	13 1,080	17 911·7	16·543	14·957	4,479·8	5,167·4
Amber Flint—Wimple	4	14 1,240	15 1,260·0	13·263	14·245	3,878·1	4,538·8
Pride Yellow Dent—Disco	4	14 1,240	14 430·8	15,975	16·172	4,671·1	4,703·1
Northwestern Dent—Brandon	4	14 80	14 378·3	20·050	16·184	5,630·0	4,673·3

CORN—VARIETY TESTS—1027 AND AVERAGE YIELDS—*Concluded*

Variety and Source	Number of years tested	Yield per acre 1927	Average yield per acre	Percentage of dry matter in crop		Pounds of dry matter per acre	
				1927	Average	1927	Average
		tons lb.	tons lb.				
Quebec 28—McDonald College	4	15 ..	13 1,156·2	16·103	15·347	4,830·9	5,233·1
Northwestern Dent, Nebraska grown—McKenzie	3	.....	19 1,544·3	.....	15·347	.....	5,951·8
Canada Yellow Flint—Dupuy and Ferguson	3	14 1,600	17 755·7	17·628	15·328	5,217·9	5,218·1
Wisconsin No. 7—Parks	3	.....	16 1,416·7	.....	13·797	.....	4,709·2
Northwestern Dent, North Dakota grown—McKenzie	3	.....	14 1,799·7	.....	16·070	.....	4,834·6
Quebec 28—Dr. Todd	3	15 920	12 1,740·0	16·975	14·312	5,248·7	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
Leaming—Parks	1	.....	21 ..	.....	12·300	.....	5,166·0
Northwestern Dent, South Dakota grown—McKenzie	1	19 460	19 460·0	15·595	15·595	5,997·8	5,997·8
Northwestern Dent, Crookston strain—McKenzie	1	17 1,840	17 1,840·0	17·918	17·918	6,421·8	6,421·8
Twitchel's Pride—Experimental Farm, Fredericton	1	.....	13 750·0	.....	15·350	.....	4,106·1
Northwestern Red Dent—Disco	1	.....	12 1,250·0	.....	13·910	.....	3,512·3
Northwestern Dent—McKenzie	1	.....	11 250·0	.....	13·700	.....	3,048·3

SUNFLOWERS

Three varieties of sunflowers were tested in 1927. Seeding was done on June 8 and the crop harvested on September 30 and October 1. Mammoth Russian and Russian Giant continue to be the highest producers both of green forage and dry matter per acre. Either of these varieties have considerably outyielded any other varieties on test. The following table gives the results of the 1927 and previous tests:—

SUNFLOWERS—VARIETY TESTS—1927 AND AVERAGE YIELDS

Variety and Source	Number of years tested	Yield per acre 1927	Average yield per acre	Percentage dry matter in crop		Pounds dry matter per acre	
				1927	Average	1927	Average
		tons lb.	tons lb.				
Mammoth Russian—McDonald	5	23 480	25 632·6	14·473	15·175	6,727·1	7,527·8
Russian Giant—Disco	5	16 1,720	24 1,434·0	14·973	14·458	5,048·9	7,100·3
Ottawa 76—C.E.F. Ottawa	5	14 720	17 1,857·2	16·085	13·787	4,619·6	4,920·5
Manchurian—McKenzie	4	.....	17 708·3	.....	13·549	.....	4,565·6
Mixed Mennonite—Rosthern	4	.....	11 1,866·5	.....	14·200	.....	3,382·5
Manteca—Canadian Pacific Railway	3	.....	22 305·7	.....	12·797	.....	5 828·8
Black—Canadian Pacific Railway	3	.....	21 150·0	.....	13·090	.....	5,505·8
Mixed—Canadian Pacific Railway	3	.....	20 1,694·3	.....	12·577	.....	5,236·1
Manchurian—Canadian Pacific Railway	2	.....	22 166·5	.....	12·685	.....	5,597·6
Russian Giant—Canadian Pacific Railway	2	.....	17 125·0	.....	13·265	.....	4,128·2
Mammoth Russian—Canadian Pacific Railway	1	.....	25 667·0	.....	11·070	.....	5,608·8

ROOTS

MANGELS

Thirty-four varieties or strains were tested in 1927. These were seeded on June 9 and the crop harvested on November 3. Germination was fairly good but the continued wet weather resulted in a very small crop. The same varieties continue to lead in average production although their relative positions were somewhat changed. Jumbo (Rennie) continues to be a consistent producer and is a very uniform sugar mangel. Several varieties from the Hjalmar Hartmann Company are proving uniformly good yielders. Leviathan (Rennie) is a very smooth mangel and is now leading in yield over a period of four years. The yields recorded in the 1927 and previous tests are given in the accompanying table.

MANGELS—VARIETY TESTS—1927 AND AVERAGE YIELDS

Variety and source	Number of years tested	Yield per acre on corrected yield basis						Percentage dry matter in crop		Pounds dry matter per acre	
		1927			Average			1927	Average	1927	Average
		tons	lb.	bush.	tons	lb.	bush.				
Leviathan—Rennie	4	29	969·6	1,179·4	25	1,580·9	1,031·6	13·085	10·777	7,716·2	5,586·9
Jumbo—Rennie	4	14	604·6	572·1	23	1,733·4	954·7	12·440	11,503	3,558·4	5,408·7
Yellow Eckendorfor—H.Hartmann	4	13	357·8	527·2	23	1,630·4	952·6	11·230	10·714	2,960·0	5,040·4
Red Exkendorfer—Gen. Swedish Seed Co	4	17	1,251·2	705·0	23	1,330·6	946·6	9·300	10·950	3,278·4	5,231·4
Strymo Barres—H. Hartmann	4	12	1,700·6	514·0	22	1,914·9	918·3	11·910	11·372	3·060·9	4,991·0
Rosted Barres—H. Hartmann	4	12	1,478·5	509·6	22	1,726·4	914·5	12·205	12·481	3,109·7	5,623·1
Giant Yellow Globe—Ewing	4	15	1,006·7	620·1	22	705·5	894·1	10·935	10·294	3,390·6	4,556·9
Fjerritsler Barres—H. Hartmann	4	11	271·7	445·4	21	1,421·7	868·4	11·875	11·618	2,644·8	5,028·5
Yellow Eckendorfer—Gen. Swedish Seed Co	4	13	1,638·2	552·8	21	201·8	844·0	12·110	11·968	3,347·0	5,035·3
Barres Oval—Gen. Swedish Seed Co	4	14	1,261·5	585·2	21	53·1	841·1	11·115	11·695	3,252·4	4,867·0
Eckendorfer Red—H. Hartmann	4	12	1,649·1	513·0	21	46·8	840·9	10·565	10·771	2,709·8	4,416·6
Danish Sludstrup—Ewing	4	14	1,997·9	600·0	20	1,905·5	838·1	13·455	14·031	4,036·2	5,834·7
Perfection Mammoth Long Red—Rennie	4	9	1,877·3	397·5	20	1,546·1	830·9	13·085	12,685	2,600·9	5,233·6
Barres Half Long—Gen. Swedish Seed Co	4	9	1,219·2	384·4	20	1,467·3	829·3	13·865	12·343	2,664·7	4,974·2
Select Giant Rose Intermediate Sugar—Ewing	4	10	1,956·1	439·1	20	462·8	809·3	15·000	14·676	3,293·4	5,885·2
Yellow Intermediate—C. E. F. Ottawa	4	8	1,218·7	344·4	19	1,826·2	796·5	14·885	13·229	2,563·0	5.133·9
Yellow Leviathan—Rennie	4	9	51·3	361·0	19	1,706·1	794·1	13·105	11·760	2,365·6	4,570·4
Giant Yellow Globe—Rennie	4	7	1.988·9	319·8	19	1,352·2	787·0	11·055	10·318	1,767·6	3,958·7
Red Globe—Dupuy & Ferguson	4	7	1,797·3	315·9	19	1,257·6	785·2	14·120	11·872	2,230·6	4,483·7
Long Red Mammoth—Ewing	4	8	279·8	325·6	19	1,217·2	784·3	14·020	12·811	2,282·4	4,871·9
Golden Tankard—Ewing	4	8	1,288·1	345·8	18	1,661·6	753·2	13·810	12·273	2,387·5	4,501·6
Long Yellow—Ewing	4	9	416·9	368·3	18	1,111·3	742·2	14·025	13·659	2,583·0	4,995·5
Svalof Original Alfa—General Swedish Seed Co	4	10	1,366·2	427·3	18	1,064·3	741·3	13·590	12·118	2,903·7	4,349·9
Red Globe—Ewing	4	9	729·6	374·6	18	919·7	738·4	14·025	12·855	2,626·8	4,634·8
Golden Tankard—Rennie	4	7	1,847·9	317·0	18	23·2	720·5	12·540	13·125	1,987·3	4,768·8
Taaroje Barres—H. Hartmann	3	.....	.....	.....	26	28·3	1,040·6	.....	11·135	.....	5,705·6
Danish Sludstrup—McDonald	3	13	1,645·5	552·9	23	1,544·8	950·9	13·145	10·968	3,634·0	4,993·1
Elevatham Mammoth — H. Hartmann	3	10	1,401·1	428·0	20	669·7	813·4	12·620	12·547	2,700·8	5,100·2
Svalof Original Rubra—General Swedish Seed Co	3	8	1,303·4	346·1	16	697·1	653·9	15·470	14·227	2,676·8	4,502·8
White Red Top Half Sugar—H. Hartmann	2	.....	.....	.....	23	8,385·0	936·8	.....	11·520	.....	5,395·1
White Green Top Half Sugar—H. Hartmann	2	.....	.....	.....	22	1,248·5	905·0	.....	12·100	.....	5,494·3
Green Top White Sugar—Ewing	2	.....	.....	.....	17	628·5	692·6	.....	23·180	.....	8,021·0
Giant Intermediate Yellow—Halifax Seed Co	2	8	290·9	325·8	17	303·0	686·1	12·910	11·650	2,103·2	3,769·4
Half Sugar Green Top—H. Hartmann	2	11	1,432·6	468·7	15	855·3	617·1	14·025	13·673	3,286·4	4,192·5
Giant White Half Sugar—Ewing	2	13	1,084·7	541·7	15	172·9	603·5	14·140	14·063	3,829·8	4,240·7
Half Sugar Red Top—H. Hartmann	2	9	18·0	360·4	12	1,509·0	510·2	13·615	14·328	2,453·2	3,708·2
Svalof Red—General Swedish Seed Co	1	.....	.....	.....	27	1,347·0	1,106·9	.....	12·170	.....	6,735·7
Barres Sludstrup—General Swedish Seed Co	1	.....	.....	.....	27	875·0	1,097·5	.....	12·730	.....	6,985·6
Barres Sludstrup—H. Hartmann	1	.....	.....	.....	26	242·0	1,044·8	.....	10·900	.....	5,694·4
Giant Half Sugar White—J. M. Steeves & Son	1	10	1,049·5	421·0	10	1,049·5	421·0	13·635	13·635	2,870·1	2,870·1
Sludstrup—J. M. Steeves & Son	1	8	1.937·9	358·8	8	1,937·9	358·8	13·925	13·925	2,497·9	2,497·9

TURNIPS

Thirty varieties or strains of Swedes were tested in 1927. The seed was sown on June 10 and harvesting was completed on November 4. The same varieties continue to lead in average yield per acre. There was very little club-root infection in 1927 and all varieties were exceptionally clean and free from other diseases. The accompanying table gives the 1927 and average yields to date:—

SWEDES—VARIETY TEST—1927 AND AVERAGE YIELDS

Variety and source	Number of years tested	Yield per acre on corrected yield basis						Percentage dry matter in crop		Pounds dry matter per acre	
		1927			Average			1927	Average	1927	Average
		tons	lb.	bush.	tons	lb.	bush.				
Hall's Westbury—Ewing	4	21	914·4	858·3	31	1,613·4	1,272·3	10·040	9·136	4,308·6	5,803·9
Invicta Bronze Top—Rennie	4	16	1,617·9	672·4	31	883·0	1,257·7	9·845	8·439	3,309·7	5,148·6
Invicta Bronze Top—Ewing	4	18	530·7	730·6	31	42·7	1,240·9	11·445	9·529	4,180·9	5,830·1
Ditmars—McNutt	4	18	1,409·1	748·2	30	1,376·6	1,227·5	10·060	8·412	3,763·4	4,995·7
Olsgaard Bangholm—H. Hartmann	4	15	569·4	611·4	29	1,962·4	1,199·2	11·425	9·376	3,492·6	5,419·2
Best of All—Rennie	4	14	1,821·4	596·4	29	1,352·8	1,197·1	10·765	9·710	3,210·3	5,687·1
Best of All—Ewing	4	15	877·6	617·6	29	1,846·7	1,196·9	9·920	8·769	3,063·1	5,149·1
Selected Hazard's Improved—Rennie	4	16	546·5	650·9	29	1,840·7	1,196·8	10·155	9·034	3,305·1	5,289·2
Improved Yellow Swedish—General Swedish Seed Co	4	18	847·4	736·9	28	1,275·8	1,145·5	10·995	9·767	4,051·4	5,483·5
Bangholm—McKenzie	4	14	1,656·6	593·1	28	595·4	1,131·9	11·290	9·750	3,343·2	5,341·5
Bangholm—Ewing	4	14	1,775·3	595·5	28	139·1	1,122·8	11·075	9·583	3,297·6	5,276·9
Shepherds Golden Globe—H. Hartmann	4	17	38·3	680·8	27	1,439·6	1,109·8	11,325	9·805	3,854·8	5,324·6
Improved Jumbo or Elephant—Rennie	4	14	421·4	563·4	27	1,106·6	1,102·1	10·290	8·378	2,924·6	4,770·5
Bangholm—General Swedish Seed Co	4	17	1,199·6	704·0	26	821·7	1,056·4	10·995	9·570	3,870·2	4,954·6
Kangaroo—Ewing	4	14	453·0	569·1	26	555·5	1,051·1	10·660	8·853	3,033·1	4,510·5
Bangholm—Nappan	4	13	932·1	538·6	25	1,279·1	1,025·6	13·045	11·869	3,513·3	5,988·8
Elephant or Monarch Improved—Ewing	4	16	277·2	645·5	25	1,143·3	1,023·0	10·640	8·351	3,434·3	4,115·2
Sutton's Champion Purple Top—Ewing	4	13	1,445·6	548·9	25	38·2	1,000·8	11·190	10·751	3,071·2	5,349·4
Shepherd 1283—Trifolium	3	.....			33	1,763·0	1,355·4	.....	8·615	.....	5,823·4
Selected Magnum Bonum—Rennie	3	17	336·0	636·7	27	1,049·0	1,101·0	10·310	8·643	3,540·0	4,530·5
Hall's Westbury—Rennie	3	16	568·3	651·4	27	919·8	1,093·4	10·075	9·395	3,281·3	5,075·2
Canadian Gem—Rennie	3	15	639·4	612·8	25	1,980·5	1,039·6	10·290	8·997	3,152·8	4,540·5
Bangholm Swede Turnip—Halifax Seed Co	3	15	1,296·2	625·9	25	1,057·4	1,021·1	11·755	10·780	3,673·9	5,432·9
Bangholm—Charlottetown	3	18	1,463·6	749·3	24	1,521·2	990·4	12·465	10·658	4,669·8	5,132·5
Kangaroo Bronze Top—Rennie	2	.....			32	730·5	1,194·6	.....	9·220	.....	5,960·5
Sutton's Champion Purple Top—Rennie	2	.....			31	773·5	1,255·6	.....	9·990	.....	6,287·1
Bangholm Purple Top—Rennie	2	.....			30	463·0	1,209·3	.....	9·460	.....	5,693·7
Wilhelmsburger C. R. Resistant D. L. F	2	16	1,216·6	664·3	25	611·3	1,012·2	11·875	10·508	3,944·5	5,080·1
Kangaroo—Graham Bros	2	17	1,133·0	703·7	23	1,635·0	952·7	11·835	10·683	4,163·9	4,945·1
Bangholm Studsgaard Christensen's Selected—D. L. F	2	15	1,436·7	629·7	23	583·4	931·7	12·150	10·500	3,825·6	4,642·2
Bangholm—Kentville	2	15	1,735·5	634·7	20	1,991·3	839·8	12·770	11·405	4,052·6	4,649·1
Kangaroo—Rennie	2	12	1,726·8	514·5	20	99·4	802·0	10·525	9·923	2,707·7	3,892·3
Bangholm 116—Trifolium	1	.....			35	1,306·0	1,426·1	.....	10·330	.....	7,365·9
Westbury Purple Top—Rennie	1	.....			34	1,401·0	1,388·0	.....	10·140	.....	7,037·3
Bangholm—Trifolium	1	.....			33	1,964·0	1,359·3	.....	9·560	.....	6,497·4
Magnum Bonum—Ewing	1	.....			33	531·0	1,331·6	.....	9·150	.....	6,092·2
Kilway's Perfect Model—O.A.C	1	.....			32	1,053·0	1,301·2	.....	7·755	.....	5,045·2
Bangholm 1322—Trifolium	1	.....			32	349·0	1,257·0	.....	9,650	.....	6,209·7
Bangholm Pajbjerg V—Trifolium	1	.....			31	56·0	1,241·1	.....	9·355	.....	5,805·8
Champion Purple Top—Rennie	1	.....			30	1,400·0	1,223·0	.....	8·085	.....	4,964·2
Bangholm 1029—Trifolium	1	.....			29	842·0	1,176·8	.....	10·000	.....	5,834·2
Bangholm Studsguaard—Trifolium	1	.....			28	542·0	1,130·8	.....	8·595	.....	4,859·8
Bangholm Klank—Trifolium	1	.....			28	414·0	1,128·3	.....	9,645	.....	5,441·1
KangarooBronzeTop—Graham Bros	1	.....			27	817·0	1,096·3	.....	8·930	.....	4,895·2
Laplander—D. C. Hilton	1	.....			24	877·0	977·5	.....	9·605	.....	4,694·6
Prize Purple Top—Rennie	1	17	474·5	689·5	17	474·5	689·5	10·665	10·665	3·676·7	3,676·7
Cornings—Yarmouth Fruit Producers	1	14	1,230·4	584·6	14	1,230·4	584·6	13·260	13·260	3,876·0	3,876·0

CARROTS

Thirteen varieties or strains of carrots were tested in 1927. Seeding was done on June 10 and harvesting completed on November 14. Improved Intermediate White (Ewing), White Belgian (Dupuy and Ferguson) and Mammoth Short White (Rennie) are still leading in average yield over a period of four years. The accompanying table gives the results to date:—

CARROTS—VARIETY TEST—1927 AND AVERAGE YIELDS

Variety and Source	No. of years tested	Yield per acre on corrected yield basis						Percentage dry matter in crop		Pounds dry matter per acre	
		1927			Average			1927	Average	1927	Average
		tons	lh.	hush.	tons	lh.	hush.				
Improved Intermediate White-Ewing	4	13	1,750·6	555·0	14	1,849·2	597·0	10·490	9·875	2,911·0	2,984·1
White Belgian—Dupuy & Ferguson	4	13	1,771·4	555·4	14	1,441·1	588·8	11·075	10·348	3,075·7	3,086·1
Mammoth Short White—Rennie	4	12	1,133·3	502·7	13	1,165·1	543·3	10·160	9·997	2,553·5	2,736·7
Danish Champion—C.E.F.	4	11	1,631·7	472·6	13	1,039·0	540·8	11·620	10·650	2,746·0	2,918·7
White Belgian—H. Hartmann	4	13	394·8	527·9	13	593·0	531·9	12·770	11·285	3,370·6	3,016·8
Large White Belgian—Rennie	4	11	80·3	441·6	13	543·6	530·9	11·835	10·172	2,613·2	2,685·5
New Yellow Intermediate—Ewing	4	12	1,785·7	515·7	13	325·9	520·5	11·525	10·357	2,971·8	2,747·3
Yellow Belgian—Ewing	4	11	1,968·8	479·4	13	300·0	526·0	11·270	11·253	2,701·3	2,971·5
Large White Vosges—Dupuy & Ferguson	4	10	1,125·9	422·5	12	560·2	491·2	12·445	10·904	2,629·1	2,689·9
Mammoth White Intermediate—Rennie	3	14	1,263·8	585·3	16	1,630·3	672·6	10·270	9·683	3,005·4	3,260·3
White Belgian—Ewing	3	11	568·9	451·4	13	498·0	530·0	11·720	10·840	2,645·1	2,874·2
Half Long White—General Swedish Seed Co	3	.....			12	1,974·7	519·5	.....	11·097	.....	2,947·8
Danish Champion—H. Hartmann	2	.....			16	285·5	645·7	.....	11·775	.....	3,807·1
New Yellow Intermediate—Halifax Seed Co	2	11	1,586·7	471·7	11	902·9	458·1	12·715	13·058	2,999·0	2,988·2
Champion—H. Hartmann	2	12	871·7	497·4	10	468·4	409·4	12·855	11·905	3,197·3	2,478·6
James B. L. 781—D. L. F.	2	.....			10	74·0	401·5	.....	12·528	.....	2,517·4
White Belgian 9008—Trifolium	1	.....			15	90·0	601·8	.....	11·210	.....	3,373·1
French White Belgian—Ewing	1	.....			13	1,907·0	558·1	.....	9·420	.....	2,628·8
Champion—General Swedish Seed Co	1	.....			13	1,435·0	548·7	.....	9·640	.....	2,644·7
White Belgian No. 1207—Trifolium	1	.....			13	1,033·0	540·7	.....	14·070	.....	3,803·5
White Intermediate—Experimental Station, Summerland	1	.....			10	404·0	408·1	.....	9·065	.....	1,849·6
Yellow Intermediate—Halifax Seed Company	1	.....			8	1,262·0	345·2	.....	10·820	.....	1,867·7
White Belgian—Trifolium	1	.....			8	1,204·0	344·1	.....	11·485	.....	1,975·9

TURNIP SEED PRODUCTION

Two hundred and seventy-four bushels of Bangholm club-root-resistant Swede turnips were pitted during the fall of 1926 for use as stecklings the following spring. The roots kept exceptionally well and only five bushels were unfit for use. The stecklings were planted on April 27 and made excellent growth throughout the season. Twelve hundred and thirty-two pounds of good plump seed were produced giving a yield of thirteen hundred and ninety-two pounds per acre. The early planting gave ample time for ripening before the heavy fall storms did very much damage to the crop. The plants were cut when the seed was about two-thirds ripe and left in small bunches until dry and then threshed with the flax deseeder which did a very good job. The rollers were set far enough apart so as not to crush the seed and it was found that this method of threshing reduced the cost of production considerably.

COST TO PRODUCE TURNIP SEED, 1927

Area, 1 acre.	
Rent of land	$ 4 00
Use of machinery	2 85
Pitting stecklings in fall of 1926—	
15 hours man labour at 29 cents	4 35
1 man and 2 horses, 8 hours at 53 cents	4 24
Manure, 8 tons at $2.00	16 00
Ploughing, 1 man, 2 horses, 11 hours at 53 certs	5 83
Harrowing, 1 man, 2 horses, 3·4 hours at 53 cents	1 80
Smoothing, 1 man, 2 horses, 3·4 hours at 53 cents	1 80
Running drills, 1 man, 2 horses, 5·8 hours at 53 cents	3 07
Uncovering pit, 1 man, 6·8 hours at 29 cents	1 97
Planting and covering, 1 man, 46·6 hours at 29 cents	13 51
Hauling stecklings, 1 horse, 9 hours at 10 cents	0 90
Filling in misses, 1 man, 5·7 hours at 29 cents	1 65
Hoeing, 1 man, 73·9 hours at 29 cents	21 43
Cultivating, 1 man and 1 horse, 11·9 hours at 39 cents	4 64
Cutting, 1 man, 72·7 hours at 29 cents	21 08
Threshing, 1 man, 27·3 hours at 29 cents	7 92
Cleaning seed, 1 man, 51·1 hours at 29 cents	14 82
Cleaning away refuse from field, 1 man and horse, 7·4 hours at 39 cents	2 89
Setting up deseeder, 1 man, 4 hours at 29 cents	1 16
Gasoline for truck and tractor, 9 gals. at 32 cents	2 88
274 bushels of turnips at 12 cents	32 88
Total cost	171 67

Yield per acre—1,392 pounds.
Cost per acre—$171.67.
Cost per pound—12·3 cents.
Four-year average cost per pound—23·6 cents.

EXPERIMENTS WITH FERTILIZERS

The experimental work with fertilizer was continued and while it is not thought desirable to publish the results from a few years' work, the older experiments have been running long enough now to give some comparative results. Lack of space will not permit a detailed account of all this work, but anyone wishing these details may secure them by writing to the Superintendent, Experimental Farm, Nappan, N.S.

FERTILIZER FORMULÆ FOR POTATOES

This experiment has been running for five years and fairly uniform results may be expected from now on. Applications of 1,000, 1,500 and 2,000 pounds per acre of each of the following formulæ were made: 6-6-6, 5-6-6, 4-6-6, 3-6-6, 5-8-6, 4-8-6, 3-8-6, 4-8-10, 4-8-8, and 4-8-4. In each case the potato crop followed a clover sod. The cost of the fertilizer is all charged against the potato crop although the rotation is a three-year one of potatoes, oats and clover hay. For the potato crop alone our results indicate that a fertilizer not too high in nitrogen and medium to high in phosphoric acid and potash will give the greatest profit over the cost of fertilizer, such as a 3-6-6, 3-8-6, 4-8-8 or a 4-8-10 mixture. The following table gives the 1927 and five-year average results:—

FERTILIZER FORMULAE FOR POTATOES—1927

Formulae	6-6-6			5-6-6			4-6-6			3-6-6			5-8-6		
Application per acre in pounds	1,000	1,500	2,000	1,000	1,500	2,000	1,000	1,500	2,000	1,000	1,500	2,000	1,000	1,500	2,000
Average yield of duplicate plots in bushels—															
Marketable..... bush.	127·3	147·0	164·0	123·7	149·0	179·1	104·3	175·7	164·3	151·3	161·3	180·3	168·0	144·7	158·7
Unmarketable..... "	33·3	28·7	32·9	38·0	31·3	36·2	36·0	37·0	39·0	37·3	32·0	39·3	39·3	27·3	49·7
Increase over average of checks—															
Marketable..... bush.	99·6	119·3	136·3	96·0	121·3	151·4	76·6	148·0	136·6	123·6	133·6	152·6	140·3	117·0	131·0
Unmarketable..... "	14·3	9·7	13·9	19·0	12·3	17·2	17·0	18·0	20·0	18·3	13·0	20·3	20·3	8·3	30·7
Value of increase.....$	62 62	73 52	84 56	61 40	75 24	94 28	49 36	92 40	85 96	77 82	82 76	95 62	88 24	71 86	84 74
Cost of fertilizer.....$	16 96	25 44	33 92	15 07	22 61	30 14	13 34	20 00	26 67	11 53	17 29	23 05	16 32	24 48	32 64
Profit over cost of fertilizer.....$	45 66	48 08	50 64	46 33	52 63	64 14	36 02	72 40	59 29	66 29	65 47	72 57	71 92	47 38	52 10
Average profit of applications.....$	48 13			54 37			55 90			68 11			57 13		
Five-year average profit over cost of fertilizer.....$	23 44	19 62	18 90	23 79	28 65	26 91	26 44	39 94	40 92	36 68	33 53	42 61	33 06	26 13	28 97
Five-year average profit of applications.....$	20 66			26 45			35 76			37 61			29 39		

FERTILIZER FORMULAE FOR POTATOES, 1927

Formulae	4-8-6			3-8-6			4-8-10			4-8-8			4-8-4		
Application per acre in pounds	1,000	1,500	2,000	1,000	1,500	2,000	1,000	1,500	2,000	1,000	1,500	2,000	1,000	1,500	2,000
Average yield of duplicate plots in bushels—															
Marketable..... bush.	121·7	157·3	169·3	135·7	149·0	154·7	163·7	157·3	185·7	120·3	198·3	207·3	139·7	164·3	159·0
Unmarketable..... bush.	41·3	29·7	37·0	37·3	33·3	38·7	37·3	34·0	35·3	37·0	38·0	38·3	34·3	32·3	34·3
Increase over average of checks—															
Marketable..... bush.	94·0	129·6	141·6	108·0	121·3	127·0	136·0	129·6	158·0	92·6	170·6	179·6	112·0	136·6	131·3
Unmarketable..... "	22·3	10·7	18·0	18·3	14·3	19·7	18·3	15·0	16·3	18·0	19·0	19·3	15·3	13·3	15·3
Value of increase..... $	60 86	79 90	88 56	68 46	75 64	80 14	85 26	80 76	98 06	59 16	106 16	111 62	70 26	84 62	81 84
Cost of fertilizer..... $	14 59	21 88	29 17	12 78	19 16	25 55	16 15	24 22	32 29	15 37	23 05	30 73	13 81	20 71	27 61
Profit over cost of fertilizer..... $	46 27	58 02	59 39	55 68	56 48	54 59	69 11	56 54	65 77	43 79	83 11	80 89	56 45	63 91	54 23
Average profit of applications..... $	54 56			55 58			63 81			69 26			58 20		
Five-year average profit over cost of fertilizer $	30 81	33 32	30 50	35 00	32 99	40 55	37 62	41 15	39 39	32 46	44 83	39 71	27 77	32 80	29 42
Five-year average profit of applications... $	31 54			36 18			39 39			39 00			30 00		

Prices used:

Nitrate of soda, per ton	$63 00
Sulphate of ammonia, per ton	63 00
Superphosphate, per ton	20 00
Muriate of potash, per ton	39 00
Marketable potatoes, per bushel	0 60
Unmarketable potatoes, per bushel	0 20

14 check plots averaged—

Marketable	bush.	27·7
Unmarketable	"	19·0

BASIC SLAG EXPERIMENT

An experiment was started in 1923 making a comparison of some of the phosphatic fertilizers then on the market with special reference to the different brands of slag. All plots, check plots included, received an application of nitrate of soda and muriate of potash at the rates of 100 pounds and 50 pounds per acre respectively at the time of seeding the grain. Nitrogen, phosphoric acid and potash commonly known as the essential elements of fertility may become depleted in our soils. Each one of these elements has a separate function to perform in the growth of the plant. If one is deficient, crop growth will be restricted by the lack of a supply of that element even although the others may be present in sufficient amounts for maximum production. In this experiment, therefore, nitrate of soda and muriate of potash were added in order that the greatest benefit might be derived from the applications of phosphoric acid. The phosphatic fertilizers employed varied in their percentage of phosphoric acid and were applied at rates which furnished 70 and 140 pounds of that element per acre.

A three-year rotation of oats, clover hay, clover and timothy hay, was adopted. Two areas were used in this experiment. On one area a full rotation was completed and on the other, two full rotations were completed with the exception that, at the end of the first year's hay, the land was again ploughed and the rotation recommenced. This accounts for only five years' results with hay instead of six years' as would have been the case had the plan of the rotation been followed exactly.

The following table gives the results to date and includes the yields, cost of fertilizer, value of product and gain or loss:—

Fertilizer used and pounds applied per acre	Production of oats per acre						Production of hay per acre					Cost of fertilizer	Value of product	Gain in value over check plots	Profit or loss over cost of fertilizer
	1923 (1st area)		1924 (2nd area)		1925 (1st area)		1924 (1st area)	1925 (2nd area)	1926 (1st area)	1926 (2nd area)	1927 (1st area)				
	Grain	Straw	Grain	Straw	Grain	Straw									
	bush.	tons	bush.	tons	bush.	tons	tons	tons	tons	tons	tons	$ cts.	$ cts.	$ cts.	$ cts.
XXX Fortified slag, 1,000 lb., 14 per cent.	55·7	1·76	50·7	0·99	63·1	1·42	1·31	2·18	1·67	1·84	1·71	34 50	215 68	27 58	−6 92
XX Fortified slag, 500 lb., 14 per cent.	48·6	1·53	47·1	0·97	59·6	1·37	0·86	2·07	1·82	1·53	1·88	17 25	200 23	12 13	−5 12
XXX Fortified slag, 825 lb., 17 per cent.	56·8	1·90	53·8	1·00	55·7	1·49	1·12	2·32	1·69	1·77	1·63	30 94	212 55	24 45	−6 49
XXX Fortified slag, 412 lb., 17 per cent.	62·3	1·96	55·4	1·02	56·9	1·27	0·67	2·19	1·54	1·57	1·67	15 45	208 48	20 38	+4 93
Best of All fortified slag, 700 lb., 20 per cent.	68·6	2·03	54·8	1·03	54·5	1·22	1·12	2·35	1·62	1·74	1·77	28 35	220 52	32 42	+4 07
Best of All fortified slag, 350 lb., 20 per cent.	54·1	1·48	56·1	1·07	61·6	1·57	1·43	2·01	1·49	1·61	1·62	14 18	211 27	23 17	+8 99
Belgian slag, 875 lb., 16 per cent.	57·6	1·82	56·7	1·04	64·3	1·46	1·30	2·51	1·89	1·76	1·70	39 38	226 58	38 48	−0 90
Belgian slag, 437 lb., 16 per cent.	61·9	1·95	55·2	0·97	62·8	1·49	1·22	2·35	1·36	1·76	1·36	19 67	216 00	27 90	+8 23
English slag, 875 lb., 16 per cent.	60·4	1·93	61·5	1·04	53·7	1·25	1·06	2·67	2·11	1·98	1·59	34 13	226 54	38 44	+4 31
English slag, 437 lb., 16 per cent.	58·4	1·86	53·5	1·04	57·3	1·39	0·83	2·21	1·90	1·54	1·75	17 04	211 25	23 15	+6 11
Open Hearth not fortified, 1,270 lb. 10 to 11 per cent.	50·2	1·58	58·2	1·01	56·1	1·37	0·97	2·20	1·80	1·64	1·62	41 91	206 66	18 56	−23 35
Open Hearth not fortified, 635 lb., 10 to 11 per cent.	54·9	1·53	52·7	1·06	56·1	1·37	1·00	2·14	1·50	1·76	1·51	20 96	202 73	14 63	−6 33
Ground Natural rock phosphate, 1,000 lb., 28 to 30 per cent.	49·4	1·53	58·0	1·03	56·1	1·32	0·93	2·12	1·43	1·80	1·24	52 50	197 84	9 74	−42 76
Ground natural rock phosphate, 500 lb., 28 to 30 per cent.	50·2	1·61	55·8	1·00	63·1	1·53	0·90	1·93	1·39	1·51	1·62	26 25	201 52	13 42	−12 83
Ground natural rock phosphate, 250 lb., 28 to 30 per cent.	53·3	1·71	53·2	0·85	52·2	1·25	0·66	1·80	1·33	1·53	1·77	13 13	191 25	3 15	−9 98
Superphosphate, 875 lb., 16 per cent.	49·8	1·56	57·3	1·08	59·6	1·43	0·99	2·48	1·51	1·97	1·32	32 82	208 31	20 21	−12 61
Superphosphate, 437 lb., 16 per cent.	50·6	1·69	55·0	1·01	61·6	1·39	1·03	2·16	1·39	1·69	1·16	16 39	199 99	11 89	−4 50
Superphosphate, 437 lb., 16 per cent.	50·2	1·63	52·2	1·04	57·3	1·36	0·95	2·41	2·35	1·93	2·18	52 39	220 89	32 79	−19 60
Ground limestone, 4,000 lb.	52·6	1·65	51·4	1·03	56·9	1·35	1·02	1·87	1·11	1·46	1·20	.....	188 10	.....	.....
Checks															

Prices— Oats, 64 cents per bushel.
Straw, $4 per ton.
Hay 1924, 1925 and 1926, $10 per ton.
1927, $12 per ton.

XX Slag	$23 00 per ton.	Open Hearth	$22 00 per ton.
XXX Slag	25 00 "	Ground natural rock phosphate	35 00 "
Best of All	27 00 "	Superphosphate	25 00 "
Belgian	30 00 "	Limestone	4 00 "
English	26 00 "		

MALAGASH SALT

This experiment was outlined to determine if possible the effect of Malagash salt and common salt on crop yields. Up to the present time the application of either Malagash or common salt has not appreciably affected the yields of turnips, grain and hay.

EPHOS BASIC PHOSPHATE

The object of this experiment is to determine the value of "Ephos," a ground Egyptian rock phosphate containing 27·5 per cent phosphoric acid, in comparison with basic slag and superphosphate in a four-year rotation of turnips, grain, clover hay and timothy hay. Results indicate that as a source of phosphoric acid on these crops, Ephos when used in conjunction with nitrogen and potash is equal to superphosphate and basic slag. The experiment will be continued before a definite statement can be made in this regard.

POULTRY

Weather conditions throughout the entire year were favourable for the poultry industry. The mildness of the winter, with sufficient sunshine throughout March and April, made pen conditions most pleasant for the birds. Production increased uniformly, reaching a maximum in April, which held firm until the first of June, when production started on the decline, reaching bottom the last week in October. The bright sunshine and fine days of March and April were excellent for all breeding stock, having a very beneficial effect on the hatches and on the brooding chicks. May was almost too cold to realize maximum growth in the young growing chicks, the winds were cold, thus keeping the soil cold and damp. The month of June and the first week in July were ideal for all range chicks, but from July 8 to August 4, a very rainy period was experienced, making conditions unfavourable for real thrifty growth. However, the average chicks were fairly well matured by the end of October and went into winter quarters in fairly good condition.

PEDIGREE BREEDING

Many failures on the average farm may very often, in fact too often, be traced back to a lack of careful thought and consideration of the problems confronting the breeder on every side, and poultry breeding on many many farms is no exception to the rule. If success is to be made in the poultry industry, a great deal more thought and care must be given to our breeding work.

The three main factors essential to greater progress are the standard of perfection, in type, size and colouring, and high production of eggs of standard weight. When birds that will meet the requirements of the standard of perfection and will produce two hundred eggs or better of standard weight are raised in numbers, a real mile stone will have been passed.

The number of matings made at Nappan during the spring of 1927 was 171, of which four were registered females.

The following is a summary of the production of all birds laying over 150 eggs for the last eight years.

SUMMARY OF PRODUCTION BY YEARS

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	275·9	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

During the last three years it has been found necessary to drop out several of the highest producing families, on account of their small eggs. The size-of-egg factor is a very important one to-day and no one can afford to lose sight of it in their breeding operations.

FEEDING EXPERIMENTS

Next in importance to breeding in the poultry work is feeding. Projects were started in 1925-26 in order to study the relative merits of Epsom salts vs. mangels vs. clover vs. sprouted oats as green feeds, of beef scrap vs. fish meal as animal protein feed, and of oyster shells vs. clam shells vs. gypsum and grit as mineral feeds.

In the experiment comparing Epsom salts, mangels, clover and sprouted oats as green feeds, the birds receiving Epsom salts besides the standard ration laid an average per bird of 77·9 eggs during the 183 days of the experiment. The birds receiving mangels laid an average of 76·9 eggs each during the same period, those receiving clover, 70 eggs, and those fed sprouted oats, 64·2 eggs. The profit over feed per bird was $1.64 for both the mangel fed birds and those receiving Epsom salts, while those fed clover showed a profit of $1.14 and those receiving sprouted oats 85 cents per bird.

These results do not coincide with those obtained the previous year, when birds receiving sprouted oats and clover gave a higher production and a greater profit over feed cost than those receiving mangels or Epsom salts, which only goes to show that data must be collected over a period of years to permit any definite deductions being made on the relative merits of the various feeds.

In the test to determine the relative value of beef scrap and fish meal as animal protein, during the 183 days of the test, the birds receiving beef scrap in the ration laid an average of 86 eggs each while those receiving fish meal laid 82·4 eggs each. The profit per bird over feed was $1.89 for the birds receiving beef scrap and $1.60 for those receiving fish meal. These results are very similar to those obtained in the previous year.

In the experiment to determine the relative merits of oyster shell, clam shell and gypsum as a source of lime in the ration, the results, as in the previous year, showed that clam shells gave slightly better returns than oyster shells and both shells gave better results than gypsum.

SKIM-MILK VERSUS BEEF SCRAP, FIVE YEAR TEST

—		Skim-milk	Beef scrap
Average cost of feed for period of 5 years	$	13 43	12 13
Average number of eggs laid in 5 years	no.	698·4	621 40
Value of eggs laid, average 5 years	$	27 21	23 64
Average profit over period of 5 years	$	13 78	11 50
Average cost per dozen	$	0·23	0 23

From this experiment, covering a period of five years, the results have been such to prove that skim-milk may be advantageously marketed through the egg.

EXPERIMENTAL FEEDING WORK CARRIED ON WITH BREEDING STOCK

Four 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.

EXPERIMENTAL FEEDING WORK CARRIED ON WITH BREEDING STOCK.

Pen	Number of birds	Special feed	Period	Eggs set	Fertile	Blood rings	Dead germs	Dead in shell	Hatched	Per cent fertile	Per cent fertile hatched	Per cent total hatched	Dead in 3 weeks	Per cent mortality in 3 weeks
8	15	Cod-liver oil	Regular mating	96	53	2	1	22	28	55·2	52·8	29·1	4	14·3
			Males alternated	37	29	0	13	12	4	78·3	13·7	10·8	3	75·0
			Total	133	82	2	14	34	32	61·6	39·0	24·0	7	21·8
9	10	Check	Regular mating	196	72	5	7	35	25	36·7	34·7	12·7	1	4·0
			Males alternated	46	37	0	2	12	23	80·4	62·1	50·0	17	73·9
			Total	242	109	5	9	47	48	45·0	44·0	19·8	18	37·5
10	14	Raw liver	Regular mating	238	215	4	11	112	88	90·3	40·9	36·9	11	12·5
			Males alternated	39	32	0	2	13	17	82·0	53·1	43·5	13	76·4
			Total	277	247	4	13	125	95	89·1	45·3	34·1	24	25·0
11	12	Bone meal	Regular mating	231	204	9	20	83	92	88·3	45·0	39·8	13	14·1
			Males alternated	45	41	0	7	14	21	91·1	51·2	46·6	17	80·9
			Total	276	245	9	27	97	113	88·7	46·1	40·9	30	26·5

In pen 9 the percentage infertile from the regular matings ran very high. This was due to the first cockerel used. He was found to be an inactive bird and consequently all eggs set from his matings were infertile. After this bird was replaced, there was a marked improvement in the fertility of the eggs from this pen.

The reason for such a high mortality in the case of alternate matings was mostly due to cats and weasels killing the young chicks before they reached three weeks of age. Therefore a fair comparison of livability at three weeks of age cannot be made.

SUMMARY OF STATEMENT OF PRODUCTION

The following is a summarized statement of the cost of production and labour and investment returns over feed cost from pullets and hens:—

SUMMARIZED STATEMENT OF PRODUCTION

—		Pullets	Hens
Number of birds, November 1, 1926	No.	188	123
Number of birds, October 31, 1927	"	82	35
Average number of birds (based on bird days)	"	131·77	54·40
Total feed consumed	lb.	15,281	6,110
Total feed cost	$	315 07	139 60
Eggs laid	No.	19,256	5,039
Value of eggs laid	$	661 25	161 18
Profit over feed cost	$	346 18	21 92
Cost of eggs per dozen	cts.	19·6	33·2
Cost per bird	$	2 39	2 56
Eggs per bird	No.	146·12	92·64
Profit over feed cost per bird	$	2 63	0·401

COST OF REARING CHICKS

The following is a statement of the cost of rearing chicks up to October 31, on which date they are usually put into their winter quarters.

COST OF INCUBATION

The cost of incubation is divided into three sections: (*a*) Hatched by hens, (*b*) Hatched by Prairie State Incubator of 224 egg capacity, (*c*) Hatched by a Buckeye Incubator of 2,400 egg capacity.

A. Hens—
Total eggs set, 167 at 34·6 cents per dozen ..... $ 4·815
Cost of feed, 50 lb. cracked corn at 2·15 cents ..... 1·075
$ 5·89
Cost of 62 chickens hatched ..... $ 5·89
Cost of 1 chick hatched ..... 9·5 cents

B. Prairie State Machine—
Total eggs set, 454 at 34·6 cents per dozen ..... $ 13·09
Cost of oil, 10 gals. at 27½ cents ..... 2·75
$ 15·84
Cost of 95 chickens hatched ..... $ 15·84
Cost of 1 chick hatched ..... 16·7 cents

C. Buckeye No. 9—
Total eggs set, 4,103 at 34·6 cents per dozen ..... $118·303
Cost of oil, 81·75 gals. at 27½ cents ..... 22·481
$140·784
Cost of 1,040 chickens hatched ..... $140·78
Cost of 1 chick hatched ..... 13·5 cents

Summary

Cost of 62 hen hatched chickens	$ 5·89
Cost of 95 Prairie State hatched chickens	15·84
Cost of 1,040 Buckeye hatched chickens	140·78
Total cost of 1,197 chickens hatched	$162·51
Cost of 1 chicken hatched	13·6 cents

BROODING PERIOD

760 lb. hard coal at $20.00 per ton	$ 7·60
1,790 lb. soft coal at $6.75 per ton	6·041
200 lb. mash at $1.93 per cwt	3·86
100 lb. mash at $4.75 per cwt	4·75
100 lb. chicken chow at $5.00 per cwt	5·00
445 lb. grain at $2.28 per cwt	10·146
186 lb. chick grain at $4.50 per cwt	8·37
500 lb. chick grain at $2.63 per cwt	13·15
1,000 lb. milk at 20 cents per cwt	2·00
12 lb. grit at $1.80 per cwt	0·216
12 lb. shell at $2.25 per cwt	0·27
Total for period	$ 61·403
Total chickens put in brooder	1,197
Number of chickens alive end of brooding period	768
Cost of brooding 768 chickens	$ 61·503
Cost of brooding 1 chicken	8·04 cents

RANGE PERIOD, JUNE 1 TO SEPTEMBER 30

6,550 lb. of grain at $2.37 per cwt	$155·235
195 lb. of grain at $2.77 per cwt	5·401
3,345 lb. of mash at $2.25 per cwt	75·263
300 lb. of mash at $1.97 per cwt	5·910
32 lb. of grit at $1.80 per cwt	0·576
32 lb. of shell at $1.85 per cwt	0·592
Total for period	$242·978

Chickens put on range June 1	768	
Chickens on hand September 30	623	
Difference	145	

NOTE.—This difference of 145 is made up as follows:—

Sold as broilers	40
Died from results of caponizing	40
Died from other causes	65
Range cost of 623 chicks	$242·976
Range cost of 1 chick	0·39

Summary

Cost of incubation of 1,197 chicks	$162·51
Cost of brooding 768 chicks	61·403
Cost of range period for 623 chicks	242·976
Total	$466·884
Total cost to raise 623 chicks	$466·88
Total cost to raise 1 chick	75 cents

The following table gives a summary of the chicks raised for each of the past six years with total cost and average cost per chick for each year:—

COST OF RAISING CHICKS DURING SIX SEASONS

Year	Total chicks raised to 5 months	Total cost for 5 months	Average cost per chick
	No.	$	$
Season of 1922	719	436 58	0 61
Season of 1923	330	273 42	0 83
Season of 1924	207	274 32	1 33
Season of 1925	480	493 76	1 03
Season of 1926	366	575 63	1 57
Season fo 1927	623	466 88	0 75
Total and six year average	2,725	2,570 59	0·925

The total chicks raised to five and a half months of age was 2,725 at a feed cost of $2,520.59 or 92·5 cents per chick.

HATCHING RESULTS FOR 1926 AND FOUR YEAR AVERAGE

—	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 eggs for one chick wing banded
1927 totals	3,657	2,681	73·3	732	20	27·3	614	83·9	4·9	3·6	5·9
Pullets	2,846	2,105	73·9	489	17·1	23·2	403	82·3	5·8	4·3	5·9
Hens	811	576	71·0	243	29·9	42·1	211	86·4	3·3	2·3	3·8
4-year Average											
Pullets	2,079	1,476	71·0	361	17·4	24·5	221	61·2	5·8	4·1	9·4
Hens	1,557	1,115	71·6	361	23·2	32·4	253	70·1	4·3	3·1	6·2
Prairie State	454	337	74·2	93	20·5	27·6	74	79·6	4·9	3·6	6·1
Buckeye No. 9	3,119	2,279	73·1	614	19·7	26·9	524	85·3	5·1	3·7	6·0
4-year Average											
Prairie State	576	433	75·2	128	22·2	29·5	76	59·7	4·5	3·4	7·6
Buckeye No. 9	2,665	1,773	66·50	444	16·6	25·0	335	75·4	6·0	4·0	7·9
March	1,332	995	74·7	188	14·1	18·9	160	85·1	7·1	5·3	8·3
April	2,325	1,686	72·5	544	23·4	32·3	454	83·5	4·2	3·1	5·1
4-year Average											
March (3 year)	1,208	835	69·1	151	12·47	18·04	384	84·96	8·0	5·5	9·4
April	1,717	1,106	64·45	338	19·69	30·55	1,089	80·55	5·1	3·3	6·3
May	700	532	76·01	122	17·42	22·92	77	62·80	5·7	4·4	9·1

EGG-LAYING CONTEST

The eighth Nova Scotia Egg-Laying Contest was completed at Nappan on October 31, 1927. There were twenty-one pens of twelve birds each entered, making a total of 252 birds. Of these, two birds in each pen were substitutes, ten birds only from each pen being reported on in the weekly reports.

The contest work has been very encouraging during the past year. A much keener interest has been exhibited in the work of the birds. There has been an increased demand for the contest reports from various points in Canada and the United States and this, in itself, should act as an incentive to the contestants to keep up the good work in breeding better stock and to follow the work up consistently, for the records of their birds are becoming more widely distributed each year. After all, the greatest value of the contest work can only be obtained by a follow-up process with the progeny of the registered birds.

On going over the contest entries for the past two years, it was noted that in the 1925 and 1926 contests there were seven contestants from New Brunswick and fourteen from Nova Scotia and in the 1927 and 1928 contests there were seven from New Brunswick, ten from Nova Scotia (including two from the Experimental Farm, Nappan), and one each from Ontario and British Columbia.

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

RESULTS IN THE 1926-27 CONTEST

Pen No.	Owner and address	Breed	Eggs laid	Points
			No.	
7	B. M. Smith, Wallace Bridge, N.S.	W. W.	1,866	2,172·3
19	Experimental Farm, Nappan, N.S.	B. R.	2,146	2,135·0
9	A. H. Weldon, New Glasgow, N.S.	W. W.	1,770	2,058·3
10	C. A. Brown, New Glasgow, N.S.	W. W.	1,656	1,988·7
18	R. A. Snowball, Chatham, N.B.	B. R.	2,047	1,948·4
12	J. R. McMullen, Truro, N.S.	B. R.	2,014	1,892·8
16	E. N. Smith, Shinimicas Bridge, N.S.	B. R.	1,980	1,867·3
11	J. R. McMullen, Truro, N.S.	L. S.	1,874	1,825·3
21	W. C. Dunlop, Windsor, N.S.	R. R.	1,717	1,811·1
1	R. A. Snowball, Chatham, N.B.	W. L.	1,774	1,800·6
3	Mrs. Thomas Raymond, Fredericton, N.B.	W. L.	1,818	1,774·9
13	Hilton Bros,. Carleton, N.S.	B. R.	1,700	1,650·5
14	W. Sandford Smith, Pugwash, N.S.	B. R.	1,892	1,646·6
17	G. M. Avard, Sackville, N.B.	B. R.	1,765	1,553·5
2	Everlay Poultry Farm, Lewisville, N.B.	W. L.	1,643	1,533·5
5	W. C. Black, Amherst, N.S.	W. L.	1,662	1,528·7
15	Mrs. George Stewart, Pugwash, N.S.	B. R.	1,598	1,527·1
6	Lakewood Poultry Farm, Lakewood, N.B.	W. L.	1,617	1,520·6
4	Miss Helen Parks, St. John, N.B.	W. L.	1,205	1,273·2
8	R. S. Black, Sackville, N.B.	W. W.	1,195	1,251·9
20	Logan Bros., Amherst, N.S.	W. R.	915	914·1

The 210 birds laid 35,854 eggs, or an average of 170·73 eggs each. The total feed cost for 2,987·83 dozen eggs was $525.46 or 17·6 cents per dozen. The average feed cost per bird per year was $2·502.

The bird scoring the highest number of points was hen No. 11, pen 1, with 255 eggs and 301·9 points, owned by R. A. Snowball, Chatham, N.B.

There were seven hens with records of over 250 eggs each, twenty with over 225 and under 250, thirty-three with over 200 and under 225, forty-four with over 175 and under 200, forty-six over 150 and under 175, and sixty under 150 eggs each.

The grain ration fed twice daily in the litter was as follows: from November 1, 1926, to May 1, 1927, 200 pounds of wheat, 200 pounds cracked corn, 100 pounds of oats. The remainder of the season it was made up of equal parts wheat, oats, and corn.

The dry mash, which was fed from a hopper and before the birds at all times, was made up as follows: 100 pounds each of bran, shorts, corn meal, crushed oats and fine beef meal, plus 50 pounds oilcake and 15 pounds charcoal.

The birds received one feed of moist mash each day at noon, and also had plenty of green feed in the form of mangels, cabbage, turnips or sprouted oats each day. Grit, oyster shell, and plenty of fresh water are before the birds at all times.

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

SUMMARY OF EGG-LAYING 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

APICULTURE

The work in this department was continued during 1927. The production was very satisfactory considering the exceptionally dull wet summer. Clover furnished the bulk of the honey crop although some buckwheat and golden-rod honey was stored during August and early September. The rainfall during the months of May to October inclusive was 25·01 inches as compared with a twenty-year average of 18·63 inches for those months.

WINTERING

Fifteen colonies were packed for winter in October, 1926, in two-colony wintering cases with shavings as the packing material. These were fed a sugar syrup consisting of two parts of sugar to one of water from ten-pound honey pails with perforated tops. The first spring examination was made on April 22. Two colonies were queenless and were united with queen-right colonies, leaving a spring count of thirteen colonies. During the summer two colonies swarmed and five were divided making a total of twenty colonies by September. These were packed the first of October as eighteen single colonies and one double, the latter being two weak colonies in one hive each having a good queen. A total of 943·5 pounds honey was produced or an average (of the spring count colonies) of 72·6 pounds. The highest production for one hive was 134·5 pounds.

FINANCIAL STATEMENT

To 943·5 pounds honey at 15 cents		$ 141 53
To 4 colonies increase at $7		28·00
By 600 pounds sugar at $6.95	$ 41 70	
By 192 hours labour at 28 cents	53·76	
	$ 95 46	$169 53
Profit	74 07	
	$ 169 53	$169 53

DETECTING PREPARATIONS FOR SWARMING

Shallow supers were placed on the colonies in June below the queen excluder. During the swarming season preparations for swarming could be detected by tipping these supers. In every case queen cells were observed on the lower edge of the frame. These colonies were then treated for swarming.

CONTROL OF SWARMING BY DEQUEENING AND REQUEENING

Five colonies were treated by removing the old queen as soon as larvae were found in queen cells. All queen cells were destroyed at this examination. In nine days the colony was examined again, all queen cells destroyed and a young laying queen introduced. One of the hives so treated swarmed with the new queen, a queen cell being overlooked in the last examination. The others showed no further signs of swarming but worked throughout the time they were under treatment.

SWARM CONTROL BY SEPARATION OF QUEEN AND BROOD

Two hives were treated by this method which consists in removing all combs containing brood from the brood chamber and placing the queen on empty drawn combs while the combs containing brood are put above the queen excluder. One of the hives so treated swarmed. This method has not proven so satisfactory as the one outlined in the previous paragraph.

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