DOMINION OF CANADA

DEPARTMENT OF AGRICULTURE

DOMINION EXPERIMENTAL FARMS

EXPERIMENTAL FARM

INDIAN HEAD, SASK.

REPORT OF THE SUPERINTENDENT

W. H. GIBSON, B.S.A.

FOR THE YEAR 1927

Pasture scene, Dominion Experimental Farm, Indian Head.

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REPORT OF THE SUPERINTENDENT, W. H. GIBSON, B.S.A.

SEASONAL NOTES

Work commenced on the land at the Patterson farm April 25. Wheat seeding commenced on fallow April 27. Two hundred acres Garnet, Reward and Marquis were completed April 30. The land was in excellent tilth, with abundance of moisture to insure a good start for the newly seeded grain.

A severe hail-storm passed through the district July 9. Many farms suffered heavy loss, damage on the different farms being estimated from 10 to 100 per cent. The damage to Experimental Farm grain crops was estimated at about 15 per cent.

Rust began to appear with damaging effeet about July 20. The later sown crops were severely damaged, particularly oats, in fact, many fields were left uncut. The rusted straw has very little feeding value.

Harvest operation commenced August 22. Garnet on the Patterson farm and Marquis on Rotation "J" were the first grain crops to be cut.

Threshing on the Experimental Farm commenced September 5, and concluded October 21. The early part of the season was most promising for bumper crops, however, with hail, rust and inclement weather conditions during threshing, the farmers in this district suffered heavy financial loss.

METEOROLOGICAL RECORD, 1927

Month	Temperature—F.						Precipitation				Sunshine		Evaporation
	Mean		Maximum		Minimum		Rain	Snow	Total Precipitation				
	1927	Average 20 years	Highest	Mean	Lowest	Mean			1927	Average 20 years	1927	Average 20 years	
							In.	In.	In.	In.	Hours	Hours	In.
January	0·68	3·17	39	11·51	−44	−10·19	.....	6·0	0·60	0·94	79·8	63·3	.....
February	3·16	5·02	40	14·32	−33	− 8·0	.....	4·0	0·40	0·84	126·8	94·4	.....
March	21·09	18·09	41	30·96	−12	11·22	.....	23·75	2·38	1·25	130·6	135·3	.....
April	35·87	37·35	72	45·50	8	26·26	0·35	0·50	0·40	1·00	159·9	175·6	.....
May	44·94	49·55	71	54·71	19	35·16	3·43	.....	3·43	2·25	113·7	212·5	2·36
June	59·60	59·41	87	73·60	31	45·63	1·96	.....	1·96	3·06	280·6	229·7	2·25
July	63·32	63·08	88	75·26	45	51·74	4·78	.....	4·78	2·67	284·1	273·1	3·33
August	61·45	61·01	87	75·13	35	47·80	2·17	.....	2·17	2·09	202·5	247·8	3·48
September	51·77	51·54	85	63·0	18	40·56	3·89	2·50	4·12	1·71	168·2	166·8	2·29
October	42·23	38·47	75	52·32	23	32·16	1·23	0·75	1·31	1·52	103·8	127·4	1·54
November	10·66	23·32	47	19·10	−22	2·26	.....	11·75	1·18	1·06	72·4	67·5	.....
December	−6·16	6·77	35	2·55	−32	−14·87	.....	1·75	0·18	0·87	80·4	51·5	.....
	.....	.....	.....	.....	.....	.....	17·81	51·00	22·91	19·26	1,892·8	.....	15·25

ANIMAL HUSBANDRY

HORSES

Clydesdale horses are maintained on the Experimental Farm. They are used for work and breeding purposes. Exhibits from the Experimental Farm were shown at Toronto Royal and Chicago International with very good success. "Lady Price" won the Grand Championship in females. "His Majesty" won Reserve Junior Champion for stallions. It should be mentioned that "Lady

Price," "His Majesty" and "Indian Head Norina" won the get of sire group price for the best three animals. These animals were sired by "Dunure Norman," stud horse at the Indian Head Farm.

COST OF MAINTAINING AND RAISING HORSES

Average feed cost maintaining brood mares	$43 45
Average feed cost maintaining work horses	76 04
Average feed cost maintaining 3-year-old (not working)	36 96
Average feed cost maintaining 3-year-old (working)	49 91
Average feed cost maintaining 2-year-olds	36 11
Average feed cost maintaining 2-year-old-stallion	77 65
Average feed cost maintaining yearling colts	35 17
Average feed cost maintaining yearling stallion	46 50

Horses doing heavy work require a much heavier ration than brood mares. The cost of raising young horses under ordinary conditions is considerably less in comparison with young stallions kept in high condition for show or sale. The maintenance cost figures vary with the feed requirements of animals of different ages.

Wintering colts outdoors.

TREATMENT FOR NAVEL-ILL

Work with navel-ill has been in progress for the past six years. Results of the work have been reported from time to time. During the year six in-foal mares were fed potassium iodide and vaccinated during pregnancy. Six strong, vigorous, healthy foals were raised. It would appear that the use of vaccines and the feeding of potassium iodide are beneficial in the control of navel-ill.

CATTLE

BREEDING SHORTHORNS

The Experimental Farm at Indian Head maintains a breeding herd of Shorthorns. Sires combining the best type and blood-lines are used for breeding purposes. The young bulls and surplus females are sold to breeders throughout the province. The present herd sire, "Berserker"—161908—is an outstanding individual of "Browndale" breeding. The progeny from this bull show considerable promise.

SHORTHORN MILK RECORDS

Name of Cow	Date of birth	Date of last calving	Days in lactation period	Total milk production	Average per cent fat in milk	Value of milk produced	Total cost of feed	Profit on product
				lb.		$	$	$
Indian Head Bertha...	Oct. 9, 1920	April 7, 1927	268	3,827·2	4·0	94 50	24 21	70 29
Prairie Red Rose 13th	June 2, 1918	April 5, 1927	270	6,355·3	4·4	162 73	23 81	138 92
Prairie Red Rose 18th	Mar. 6, 1921	Sept. 1, 1927	119	2,612·6	4·1	71 48	13 90	57 58
Total			657	12,795·1	.....	328 71	61 92	266 79
Average			219	4,265	4·16	109 57	20 64	88 93

COST OF RAISING SHORTHORN HEIFERS

As in previous reports, it will be observed that yearlings are more expensive to raise than two-year-olds and three-year-olds. It is important to keep the yearlings growing to secure maximum development, therefore, the consumption of milk and highly expensive concentrates materially increase the cost of raising yearlings.

Average feed cost raising calves to yearlings	$56 25
Average feed cost raising yearlings to two-year-olds	18 19
Average feed cost raising two-year-olds to three-year-olds	17 28

DAIRY CATTLE—AYRSHIRES

The Experimental Farm maintains a small herd of Ayrshire cattle, the foundation of which was purchased in 1925. The herd numbers fifteen cows and heifers and one stock bull. The records from the six original cows average 8,971 pounds of milk testing 4 per cent butter fat. Details of individual records are tabulated in the accompanying table.

AYRSHIRE MILK RECORDS

Name of Cow	Date of birth	Date of last calving	Days lactation period	Total milk production	Average per cent fat in milk	Value of milk produced	Total cost of feed	Profit on product
				lb.	%	$	$	$
Bessie Lee 3rd.....	April 7, 1919	Jan. 20, 1927	354	12,108·6	4·1	321 80	54 18	267 62
Tullochgorum Dorothy.....	May 11, 1922	Oct. 18, 1927	440	10,891·8	3·5	316 44	70 60	245 84
Burnside Nell.....	Dec. 4, 1918	Feb. 14, 1927	310	8,883·6	4·2	231 70	51 33	180 37
Tullochgorum Jean	July 10, 1917	May 31, 1927	214	8,622·7	3·5	216 84	27 90	188 94
Clover Ridge Glenwood.....	Dec. 30, 1917	June 10, 1927	204	6,912·4	3·8	174 45	25 56	148 89
Queen of Brackley	Dec. 1, 1919	June 17, 1927	198	6,406·9	4·9	164 57	28 17	136 40
Total			1,720	53,824·0	.....	1,425 80	257 74	1,168 06
Average			286·6	8,971·0	4·0	234 30	42 95	194 67

COST OF RAISING AYRSHIRE HEIFERS

From data submitted it will be observed that the cost of raising heifers from birth to one-year-old is comparatively higher than two-year-olds and three-year-olds.

Average feed cost of raising calves to yearlings	$46 85
Average feed cost of raising yearlings to two-year-olds	29 08

SHEEP

The Farm maintains a small flock of breeding Shropshires. During the past four or five years imported rams from Great Britain have been used to improve the flock. The flock at the end of the calendar year consisted of twenty-six breeding ewes, thirteen lambs, five ram lambs and one stock ram. Surplus rams are sold to breeders in the district. Four shearling rams were sold during the fall at fairly remunerative prices.

SWINE

The Farm maintains a small herd of breeding Yorkshires. During the year a Yorkshire breeding club was formed comprising fifteen farmer members in the district. The object of the club is to breed improved Yorkshires and produce hogs of good bacon type in car-load lots.

SHELTERS FOR FALL PIGS

Fall pigs were carried forward to determine the economy and suitability of straw-covered cabins for wintering pigs as compared with piggery conditions. These pigs were divided into eight lots, four of which were placed outside in ordinary hog cabins covered over with straw. These pigs were kept dry and well bedded all winter. The remaining four lots were placed in the Farm piggery. The same meal ration was fed throughout. In addition pens 1 and 3 inside and outside received cod-liver oil while pens 2 and 4 inside and outside received tankage.

Details of this experiment are given in the accompanying table.

SHELTERS FOR FALL PIGS, 1926-27. (INSIDE PIGGERY)

Ration: Pens 1 and 3—100 lb. oat chop, 100 lb. shorts, 100 lb. barley chop, cod-liver oil added.
Pens 2 and 4—100 lb. oat chop, 100 lb. shorts, 100 lb. barley chop, 5 per cent tankage added.

—		Pen 1	Pen 2	Pen 3	Pen 4
Number of pigs on test		5	5	5	5
Number of days on test		56	56	56	56
Initial weight of pigs	lb.	400	360	345	320
Final weight of pigs	lb.	675	650	600	610
Total gain during test	lb.	275	290	255	290
Average daily gain	lb.	0·98	1·03	0·91	1·03
Amount shorts consumed	lb.	193	183	193	183
at 1½c. per lb	$	2·89	2·74	2·89	2·74
Amount oat chop consumed	lb.	193	184	193	184
at 1½c. per lb	$	2·89	2·76	2·89	2·76
Amount barley chop consumed	lb.	193	183	193	183
at 1¾c. per lb	$	3·38	3·20	3·38	3·20
Amount tankage consumed	lb.	.....	29	.....	29
at 5c. per lb	$	.....	1·45	.....	1·45
Amount cod-liver oil consumed	lb.	6	.....	6	.....
at 22½c. per lb	$	1·35	.....	1·35	.....
Cost of feed consumed	$	10·51	10·15	10·51	10·15
Cost of feed per lb. gain	c.	3·8	3·5	4·1	3·5

SHELTERS FOR FALL PIGS, 1926-27 (OUTSIDE CABINS)

Ration: Pens 1 and 3—100 lb. oat chop, 100 lb. shorts, 100 lb. barley chop, cod-liver oil added.
Pens 2 and 4—100 lb. oat chop, 100 lb. shorts, 100 lb. barley chop, 5 per cent tankage added.

——	Pen 1	Pen 2	Pen 3	Pen 4
Number of pigs on test	4	5	5	5
Number of days on test	56	56	56	56
Initial weight of pigs lb.	285	315	320	295
Final weight of pigs lb.	460	595	560	585
Total gain during test lb.	175	280	240	290
Average daily gain lb.	0·75	1·00	0·86	1·03
Amount shorts consumed lb.	193	183	193	183
at 1½c. per lb $	2·89	2·74	2·89	2·74
Amount oat chop consumed lb.	193	184	193	184
at 1½c. per lb $	2·89	2·76	2·89	2·76
Amount barley chop consumed lb.	193	183	193	183
at 1¾c. per lb $	3·38	3·20	3·38	3·20
Amount tankage consumed lb.	.....	29	.....	29
at 5c. per lb $	.....	1·45	.....	1·45
Amount cod-liver oil consumed lb.	6	.....	6	.....
at 22½c. per lb $	1·35	.....	1·35	.....
Cost of feed consumed $	10·51	10·15	10·51	10·15
Cost of feed per lb. gain c.	6	3·6	4·4	3·5

From the foregoing results it is obvious that pigs housed in properly constructed straw-covered cabins outside make equally as good gains as pigs housed in more expensive buildings. The important feature with straw-covered cabins is to keep pigs dry and comfortable. Tankage and cod-liver oil were added to the ration. Meantime, results favour tankage.

HOG PASTURES

Pasture mixtures and annual crops were grown for test during the year. Rape is one of the best annual pastures for our conditions. The unusually wet weather during fall had a noticeable effect on the pigs—the skins appeared to blister, become hard, and consequently the pigs were less thrifty. Oats or barley sown alone and in combination provide plenty of succulent pasture for young pigs during the early part of the season. Fall rye sown in combination with oats or barley gives abundance of pasture late in the year, and is particularly valuable for fall litters.

SELF-FED VERSUS HAND-FED

A swine feeding experiment was conducted to determine the percentage production of select hogs self-fed as compared with hand-feeding. Dry lots were used in which were placed eight hogs of approximately equal weight. These hogs were fed the same grain ration throughout the one hundred and twenty-six days on test. At the conclusion of the test the hogs were shipped to Swifts' Packing Plant, Moose Jaw, for final disposition as to weights, grades on rail and hoof, etc. Details of the experiment are shown in the accompanying tables.

SELF-FED

Experiment	Self-fed	Tag No.	Weight at farm	Weight at packing plant	Per cent shrinkage	Grade on hoof	Grade on rail	Finger grade for hardness	Remarks
			lb.	lb.					
Number of pigs on test.	8	125	195	180	7·7	*S.	T.S.	Hard	Wide shoulders. Unfinished back.
Number of days on test.	126								
Initial weight of pigs lb.	355	122	204	200	1·8	S.	S.	Hard	O.K. for Wiltshire side.
Final weight—Farm lb.	1,637								
Final weight—packing plant..... lb.	1,550	107	171	170	0·5	†T.S.	Shop	Hnrd	Unfinished.
Per cent shrinkage in transit..... %	5·3								
Total gain during test based on farm weights..... lb.	1,282	108	215	200	6·9	S.	S.	Hard	O.K. for Wiltshire side.
Average daily gain.. lb.	1·27	109	208	200	3·8	T.S.	T.S.	Haid	Short hog. Wide shoulders.
Amount barley consumed..... lb.	1,326								
at 1½c. per lb..... $	23·20	226	214	200	6·5	S.	T.S.	Hard	Short hog. Wide belly and shoulders.
Amount oats consumed..... lb.	3,962								
at 1½c. per lb..... $	59·43	123	215	200	6·9	S.	S.	Haid	O.K. for Wiltshire side.
Amount tankage consumed..... lb.	580								
at 2½c. per lb..... $	14·50	112	215	200	6·9	T.S.	T.S.	Hard	Wide belly. Short hog. Wide shoulders. Thin back.
Cost of feed consumed..... $	97·13								
Cost of feed per cwt. gain..... $	7·58								
			1,637	1,550	5·3				

*S.—Select. †T.S.—Thick smooth.

HAND-FED

Experiment	Hand-fed	Tag No.	Weight at farm	Weight at packing plant	Per cent shrinkage	Grade on hoof	Grade on rail	Finger grade for hardness	Remarks
			lb.	lb.					
Number of pigs on test.	8	113	225	190	15·5	*S.	S.	Hard	Unfinished back.
Number of days on test.	126	.....	.....	.....	.....	.....	.....	.....	Wiltshire type, but not suitable; fat uneven.
Initial weight of pigs lb.	365								
Final weight—Farm lb.	1,695	114	169	150	11·2	†T.S.	Shop	Hard	Right type. Very thin and unfinished.
Final weight—Packing plant..... lb.	1,530								
Per cent shrinkage in transit..... %	9·7	115	227	210	7·6	T.S.	T.S.	Hard	Short hog. Wide shoulders and belly.
Total gain during test based on farm weights..... lb.	1,330	116	169	150	11·2	T.S.	Shop	Hard	Unfinished. Use only for shop hog.
Average daily gain.. lb.	1·32								
Amount barley consumed..... lb.	1,395	117	253	220	13·0	S.	S.	Hard	O.K. for Wiltshire side.
at 1½c. per lb..... $	24·41								
Amount oats consumed..... lb.	4,147	118	249	230	7·6	T.S.	T.S.	Hard	Well finished but short and fat. Chunky shoulder and belly.
at 1½c. per lb..... $	62·62								
Amount tankage consumed..... lb.	619								
at 2½c. per lb..... $	15·47	119	231	220	4·7	T.S.	T.S.	Hard	Well finished but wide shoulder and belly.
Cost of feed consumed..... $	102·10								
Cost of feed per cwt. gain..... $	7·67	120	172	160	6·9	T.S.	T.S.	Hard	Should really grade shop hog. Unfinished.
			1,695	1,530	9·7				

*S.—Select. †T.S.—Thick smooth.

Summarizing the foregoing results it will be noted that in the case of the self-fed hogs, 62.5 per cent graded select on the hoof and 37.5 per cent graded select on the rail as compared with 25 per cent on hoof and rail in hand-fed lot.

Percentage Difference in Shrinkage.—The self-fed lot lost 5.3 per cent as compared with 9.7 per cent in the hand-fed lot.

The self-fed hand-fed experiment is being continued in duplicate lots with fall pigs, the results of which will appear in the next annual report.

COST OF RAISING SPRING LITTERS—FARROWING TO WEANING

From the data submitted it will be observed that the average feed cost of raising spring litters from eight mature sows was $6.11. Ninety-five pigs were farrowed and sixty-eight weaned or an average of 8.5 pigs per litter.

Name of sow	Mature sows				
	Date farrowed	Date weaned	Number of pigs farrowed	Number of pigs weaned	Total cost of feed
					$
Duchess 020	Feb. 26	April 18	10	8	7·08
Ottawa A 218	Mar. 3	April 18	12	10	6·00
Ottawa A 217	Mar. 3	April 18	7	3	5·78
Indian Head 63	Mar. 8	April 18	11	10	5·29
Indian Head 42	Mar. 9	April 22	17	12	5·91
University Maiden 3	Mar. 9	April 22	13	8	5·91
Duchess 045	Mar. 20	May 4	11	8	5·29
Indian Head 62	April 5	May 30	14	9	7·56
Total			95	68	48·91
Average			11·87	8·5	6·11

COST OF RAISING FALL LITTERS—FARROWING TO WEANING

In comparison with the production of spring litters the feed cost is slightly higher, while the average number of pigs farrowed is higher and the percentage weaned slightly lower. Generally, conditions are more favourable for raising young pigs in August and September than in March and April. However, the heavy rains during fall in a measure explains the lower percentage weaned this year.

Name of Sow	Mature Sows				
	Date farrowed	Date weaned	Number of pigs farrowed	Number of pigs weaned	Total cost of feed
					$
Ottawa A 218	Aug. 13	Oct. 11	14	8	6·90
Duchess 020	Aug. 14	Oct. 11	11	6	6·02
Indian Head 63	Aug. 16	Oct. 11	15	7	6·58
Indian Head 42	Aug. 22	Oct. 11	12	9	6·01
University Maiden 3	Aug. 22	Oct. 11	11	8	6·01
Ottawa A 217	Aug. 20	Oct. 11	13	9	6·21
Total			76	47	37·73
Average			12·6	7·83	6·29

CEREALS

Results of variety tests of wheat, oats, barley, flax, field peas and field beans are given in the cereal section of this report. The unit used as a basis for the yields quoted was one fortieth acre plots, which were sown with a double disk drill of sixteen runs. Except in the case of peas and beans, borders of plots were removed before harvesting. The relative yielding ability of varieties, under test for the past five years, is shown by the percentage figures quoted in the last column of the tables. Approximately one hundred additional varieties and strains not listed herein were tested in rod rows during the past season.

Precipitation for the crop year was not only above the average of eighteen inches, but its distribution during the growing season produced harmful effects. These were (1) a delay in spring operation, (2) increase in prevalence and percentage infection of plant diseases, and (3) discoloration of grain while in the stook. These factors provided an opportunity to observe the performance of varieties under abnormal conditions.

VARIETY TESTS OF COMMON SPRING WHEAT ON FALLOW

Variety	Number of days maturing					Strength of straw on scale of 10 points					Yield per acre in bushels					Relative yield; Marquis 100 per cent
	1922	1923	1925	1926	1927	1922	1923	1925	1926	1927	1922	1923	1925	1926	1927	
											bush.	bush.	bush.	bush.	bush.	per cent
Ceres	....	....	111	110	111	....	....	7·5	6·0	8·8	....	....	40·4	54·6	36·1	....
Garnet O. 652	99	100	107	99	103	10	7	8·5	7·0	9·5	52·7	29·0	48·8	57·5	30·0	97·5
Marquis O. 15	109	105·0	115	109	115	10	7	8·0	7·0	9·3	60·7	26·7	45·8	49·2	41·1	100·0
Marquis 10 B	....	....	....	....	115	....	....	....	....	9·0	....	....	....	....	39·4	....
Red Bobs 222	....	....	....	105	106	....	....	....	8·0	9·5	....	....	....	56·7	25·4	....
Red Fife O. 17	111	111·0	122	116	122	7	7	9·0	7·0	9·8	42·3	16·0	41·3	44·6	36·1	80·7
Renfrew	....	....	....	113	119	....	....	....	9·0	9·5	....	....	....	52·5	41·4	....
Reward O. 928	....	102·8	105	99	103	5	10	9·0	8·0	9·5	58·0	31·3	41·9	45·8	19·1	87·7
Supreme	....	....	114	109	111	....	....	8·5	8·0	9	....	....	39·6	59·6	37·1	....

VARIETY TESTS OF COMMON SPRING WHEAT ON STUBBLE

Ceres	....	....	115	105	108	....	....	9·0	7·5	9·3	....	....	16·7	36·3	20·6	....
Garnet O. 652	89	100	107	99	101	10	7	8·0	7·0	9·5	30·7	22·3	22·1	45·8	21·9	103·3
Marquis O. 15	103	105	115	108	108	7	7	9·0	8·0	9·5	35·8	25·3	19·2	36·4	21·5	100·0
Marquis 10 B	....	....	....	....	108	....	....	....	....	9·5	....	....	....	....	20·8	....
Red Bobs 222	....	....	....	105	106	....	....	....	8·0	8·5	....	....	....	38·8	18·6	....
Red Fife O·17	109	109	121	115	115	10	7	9·8	7·0	9·8	38·7	21·3	18·8	36·3	22·9	99·9
Renfrew	....	....	....	113	111	....	....	....	8·0	9·8	....	....	....	41·7	22·1	....
Reward O. 928	....	103	105	99	101	10	10	9·5	8·0	10·0	30·0	22·7	16·7	32·1	17·3	86·0
Supreme	....	....	112	106	106	....	....	9·0	8·0	9·0	....	....	20·0	40·8	23·3	....

Ceres is a Marquis-Kota cross. It is the only bearded wheat in the list. On heavy soil at this farm it has a tendency to be weak in the straw. The rust resistance of this variety in certain sections does not hold true here. It also seems more susceptible to smut and root rots than any other variety of wheat listed above.

Garnet is noted for earliness and high yield. The straw is of medium strength. In 1927 wet weather immediately after harvest caused considerable sprouting of this variety while in the stook.

Marquis retains its leading position for combined field characters, yield and quality. In spite of the prevalence of stem rust in 1927 this variety had less infection than any other variety except Reward.

Red Bobs 222 is a selection made by the University of Alberta. It is a beardless sort. Although it matures several days ahead of Marquis it always has shown a much higher percentage of rust infection. In 1927 the percentage of large seed was somewhat low and the weight per bushel was below the standard requirement. The yields have shown considerable variation since this variety has been under test.

Red Fife has gradually declined in commercial production during recent years because it is later in maturing and lower in yield than Marquis on summer-fallow. This variety still retains a place in these tests to provide a unit of comparison for varieties because it has always been grown in this project.

Renfrew is an attractive wheat in several ways. Its long strong straw of uniform height and well developed heads have thus far been a noted feature of its field appearance. The berries are large but in 1927 there was a falling off in weight per bushel.

Reward is an interesting wheat from many standpoints. The heads are essentially beardless but the glumes are covered with fine hairs. Earliness, very strong straw, non-shattering qualities and large dark red kernels make it an attractive wheat. The weight per bushel has always been several pounds above standard. The yield this year was considerably below Marquis but in other years it has done well in this respect.

Supreme is a selection by Dr. Seager Wheeler of Rosthern, Sask. It is a beardless variety and matures two or three days ahead of Marquis. For two years in the larger plot tests this variety appeared very promising, but in a rust year like 1927 it dropped below Marquis in yield, weight per bushel and percentage of large seed.

VARIETY TESTS OF DURUM WHEAT ON FALLOW

Variety	Number of days maturing			Strength of straw on scale of 10 points			Yield per acre in bushels			Relative yield; Mindum 100 per cent
	1925	1926	1927	1925	1926	1927	1925	1926	1927	
							bush.	bush.	bush.	
Kahla	121	110	114	7·5	5	7·5	33·8	52·9	37·5	100·0
Kubanka	121	116	114	7·0	5	7·5	37·1	56·3	37·9	105·7
Mindum	118	110	114	9·0	6	8·5	39·6	46·3	38·3	100·0
Monad	121	110	115	6·5	5	7·0	41·7	47·5	33·8	99·0

VARIETY TESTS OF DURUM WHEAT ON STUBBLE

Variety	Number of days maturing			Strength of straw on scale of 10 points			Yield per acre in bushels			Relative yield; Mindum 100 per cent
	1925	1926	1927	1925	1926	1927	1925	1926	1927	
							bush.	bush.	bush.	
Kahla	120	113	110	9·0	5	6·5	13·7	38·7	26·7	105·7
Kubanka	121	113	110	8·8	5	7·5	22·1	39·6	27·9	118·2
Mindum	121	113	110	8·8	5	8·5	14·6	36·7	24·6	100·0
Monad	120	113	110	8·5	5	5·0	17·1	38·3	23·3	103·7

During the past few years durum wheats have been a subject of much enquiry. Compared with the better common spring wheats, durums are later in maturing, weaker in the straw and possess no advantage in yield according to these results. For heavy soil and moderate moisture supply similar to conditions at this Farm, durums cannot be recommended in preference to the bread wheats. The above relative yield figures show that Mindum is not the highest yielder here, but other figures show it has the largest berries and a slightly heavier weight per bushel than the others under test.

VARIETY TESTS OF OATS ON FALLOW

Variety	Number of days maturing					Strength of straw on scale of 10 points					Yield per acre in bushels					Relative yield; Banner 100 per cent.
	1923	1924	1925	1926	1927	1923	1924	1925	1926	1927	1923	1924	1925	1926	1927	
											bush.	bush.	bush.	bush.	bush.	per cent.
Alaska	93	102	88	89	86	7	7	8·0	8·5	9·5	49·4	51·8	62·5	62·5	43·4	79·6
Banner O. 49	100	117	103	103	102	7	10	9·8	9·5	8·0	70·6	31·4	66·2	90·4	80·1	100·0
Gerlach-Sask	104	117	106	104	104	7	10	9·0	8·5	6·0	45·3	31·6	61·0	95·6	76·3	91·5
Gold Rain	100	116	103	100	102	5	10	9·8	9·5	7·0	64·7	31·6	66·2	92·6	80·1	99·0
Laurel O. 477	96	110	92	92	84	10	7	8·0	9·5	9·8	50·0	25·1	48·5	110·3	44·1	82·1
Leader	104	117	105	103	102	7	10	8·5	9·5	8·0	62·4	39·2	58·1	102·2	92·6	104·7
Longfellow O. 478	104	112	99	99	97	7	9	8·5	9·0	9·5	61·2	26·6	52·2	92·6	95·6	96·9
Progress No. 6	99	117	106	100	102	7	10	8·0	9·5	8·5	63·5	29·5	69·9	92·6	86·8	101·1
Victory	100	118	103	103	102	7	10	9·5	9·5	6·0	62·4	25·9	66·2	108·8	83·1	102·3

VARIETY TESTS OF OATS ON STUBBLE

Alaska	93	102	93	89	86	10	8	8·0	7·5	9·5	33·5	41·3	41·2	50·7	20·6	74·9
Banner O. 49	108	115	107	104	100	10	10	9·0	9·0	10·0	47·1	27·3	39·0	73·5	63·2	100·0
Gerlach-Sask	108	117	107	104	104	10	10	8·5	8·5	10·0	45·9	20·1	51·5	75·0	37·5	92·0
Gold Rain	106	115	107	102	102	10	10	9·0	9·0	10·0	42·9	25·1	43·4	65·4	27·9	81·8
Laurel O. 477	104	114	93	92	96	10	10	8·0	9·5	9·8	18·8	27·3	33·8	48·5	15·4	57·5
Leader	106	115	107	103	102	10	10	8·5	9·5	10·0	40·6	34·7	38·2	80·1	47·1	96·2
Longfellow	106	112	107	99	97	10	10	8·5	9·0	9·8	37·6	24·4	36·0	69·9	50·0	100·7
Progress No. 6	99	115	117	104	100	10	10	8·5	9·0	10·0	51·8	27·3	39·7	69·1	64·0	99·3
Victory	107	117	107	104	102	10	10	9·0	8·5	10·0	45·3	22·3	54·4	96·3	30·1	87·1

According to the oat variety tests shown above the farmer growing Banner or Victory is justified in doing so, but for the person growing Alaska under conditions similar to those at this Farm it would be advisable to make a change. Other tests of oats at this Farm have revealed that early oats do not produce yields of straw or grain comparable to the late standard varieties. Growing hulless oats also means sacrificing yield. Their relative yielding ability can be obtained by the percentage figures quoted in the last column.

VARIETY TESTS OF BARLEY ON STUBBLE

Variety	Number of days maturing					Strength of straw on scale of 10 points					Yield per acre in bushels					Relative yield; O.A.C. 21 100 per cent
	1923	1924	1925	1926	1927	1923	1924	1925	1926	1927	1923	1924	1925	1926	1927	
											bush.	bush.	bush.	bush.	bush.	per cent
Bearer O	93	117	117	100	96	7	10	8·5	8·5	9·0	25·4	25·5	35·4	44·8	45·8	112·5
Chinese O	90	112	107	91	90	7	10	9·0	8·5	9·8	24·6	28·3	27·6	52·1	33·3	105·5
Duckbill O	107	119	117	100	102	10	10	9·0	9·5	10·0	14·4	21·9	19·8	38·0	28·1	77·7
Feeder O	91	111	93	89	86	7	10	8·5	9·0	9·0	16·3	14·5	25·0	39·1	26·0	76·9
Gold	.....	.....	.....	102	98	.....	.....	.....	8·0	9·0	.....	.....	.....	47·4	21·9	.....
Hannchen	.....	.....	.....	.....	96	.....	.....	.....	.....	9·8	.....	.....	.....	.....	32·8	.....
Himalayan O	93	91	89	86	79	7	6	8·5	8·5	9·8	24·2	30·0	31·3	38·0	10·4	85·1
Junior	91	99	89	85	79	7	9	8·5	8·5	9·0	28·8	29·0	27·1	38·0	11·5	85·4
O.A.C. 21	108	112	107	89	90	10	10	9·0	8·5	9·8	33·3	28·2	22·4	50·0	23·4	100·0

VARIETY TESTS OF BARLEY ON FALLOW

Bearer O	93	115	101	97	96	7	9	7	8·0	9·0	45·8	27·5	32·8	64·6	52·6	105·9
Chinese O	90	112	93	90	90	7	10	8	8·5	9·5	34·6	27·0	40·6	55·7	50·5	98·9
Duckbill O	100	119	106	98	102	10	10	10	9·5	9·5	31·5	22·4	24·0	51·0	49·0	84·4
Feeder O	91	111	87	88	86	7	10	8	9·5	9·5	36·5	11·2	35·9	41·7	33·3	75·2
Gold	.....	.....	.....	97	102	.....	.....	.....	8·0	6·5	.....	.....	.....	63·0	54·2	.....
Hannchen	.....	.....	.....	.....	96	.....	.....	.....	.....	6·5	.....	.....	.....	.....	52·1	.....
Himalayan O	93	91	83	85	79	7	7	7	7·0	9·0	35·8	29·3	40·1	61·5	29·2	92·9
Junior O	91	99	83	82	79	7	6	7	8·5	7·5	38·8	30·5	41·1	58·3	24·0	91·4
O.A.C. 21	102	112	93	89	90	7	10	8	8·5	9·5	39·2	27·8	41·7	57·3	44·8	100·0

These tests show that Bearer barley, a white six-rowed sort, is somewhat later in maturity but a heavy yielder. In this respect it is ahead of the standard

six-rowed O.A.C. 21. Chinese is very similar to O.A.C. 21 in appearance and is fully equal to it in yield. An early hooded six-rowed variety like Feeder is at a considerable disadvantage in yield. Hulless sorts like Junior and Himalayan do not produce the bulk that the report indicates because the standard weight of 48 pounds per bushel has been used in calculating the yields. The late bearded two-rowed barleys such as Duckbill, Gold and Hannchen are fair yielders.

TESTS OF FLAX VARIETIES ON FALLOW

Variety	Number of days maturing					Strength of straw on scale of 10 points					Yield per acre in bushels					Relative yield; Premost 100 per cent.
	1923	1924	1925	1926	1927	1923	1924	1925	1926	1927	1923	1924	1925	1926	1927	
											bush.	bush.	bush.	bush.	bush.	per cent.
Crown-Sask. 272	.....	99	107	113	100	.....	10	9	10	10	.....	13·6	12·5	12·3	23·7	.....
Longstem O. 52	128	100	107	107	100	7	10	9	10	10	8·9	13·1	7·6	9·9	18·3	77·8
Novelty O. 53	126	99	107	113	101	7	10	9	10	10	12·1	18·3	11·4	12·5	21·0	101·3
Premost	124	96	99	100	98	7	10	9	10	10	13·6	20·5	8·9	9·8	21·5	100·0

Flax is not grown extensively in this vicinity but there are frequent enquiries from farmers residing in the area served by this farm. In the yield of grain there appears to be practically no difference between Crown, Novelty and Premost. Longstem is somewhat longer in the straw but is decidedly lower in yield of seed.

TESTS OF VARIETIES OF FIELD PEAS ON FALLOW

Variety	Number of days maturing					Length of vine in inches.					Yield per acre in bushels					Relative yield; Mackay 100 per cent
	1923	1924	1925	1926	1927	1923	1924	1925	1926	1927	1923	1924	1925	1926	1927	
											bush.	bush.	bush.	bush.	bush.	per cent
Arthur O. 18	105	121	112	101	109	58	27	36	35	18·2	20·7	22·7	29·6	36·4	40·1	82·5
Cartier O. 19	102	118	115	102	113	45	25	34	40	24·8	18·0	16·7	20·0	37·8	50·2	78·8
Champlain O. 32	105	118	112	103	115	44	24	30	43	26·2	19·3	18·0	42·5	35·7	63·8	99·0
Chancellor O. 26	101	105	104	96	105	41	19	34	37	19·4	19·0	17·3	39·1	32·2	47·4	85·5
Golden Vine	103	122	112	103	116	54	22	39	44	26·4	21·7	12·3	42·5	35·0	65·1	97·5
Mackay O. 25	105	102	115	106	115	60	23	37	48	27·8	17·7	16·0	37·5	46·9	63·1	100·0
Dashaway-Sask. 625	.....	.....	.....	96	105	.....	.....	.....	37	19·8	.....	.....	.....	31·5	50·9	.....

The wet season of 1927 produced high yields of field peas. This class of grain, although varying in yield considerably with seasonal conditions invariably gives a good account of iteslf. Disease is not a factor in affecting its yield. The early varieties are smaller peas, produce less straw and lower yields. Mackay is our choice of field peas.

FIELD HUSBANDRY

CULTURAL EXPERIMENTS

Results of some experiments dealing with different methods of preparing land for field crops are presented in the accompanying tables and short discussions. These experiments include the summer-fallow, stubble treatment, breaking, rates of seeding, dates of seeding, methods of seeding, manures and fertilizers. These experiments were arranged in rotations to accommodate the treatments involved, and include approximately four hundred and fifty-one fortieth-acre plots. Averages covering four years' work are included in the data presented. These results have been obtained on heavy clay soil where the average annual precipitation is approximately eighteen inches.

SUMMER-FALLOW TREATMENTS

Project F. 144.

Plot Treatment	Average yield per acre 1924-27 wheat
	bush. lb.
Ploughed 6 inches June 15 and cultivated as necessary	42 52
Fall-ploughed 6 inches and cultivated during summer-fallow year	45 00
Fall-disked before summer-fallow and cultivated as necessary during summer-fallow year, but not ploughed	44 41
Cultivated during summer-fallow year, but not ploughed	44 13

Some years ago an experiment conducted over a period of years demonstrated that, under our conditions, ploughing summer-fallow by June 15 produced greater yields of wheat than later ploughings. The methods used in project F. 144 were designed to test other summer-fallow methods against this standard date for yield and conservation of soil moisture. The yields of grain and percentages of soil moisture to a depth of four feet have shown no marked difference for the methods used. These results were obtained in a three-year rotation of summer-fallow, wheat and oats on land which was free from troublesome weeds. The treatments are not a measure of efficiency for weed control.

SUMMER-FALLOW SUBSTITUES

Project F. 145

Plot treatment	Average yield per acre, 1924-27		
	Yield of substitute	Wheat 2nd year	Oats 3rd year
	tons lb.	bush. lb.	bush. lb.
Summer-fallow—ploughed 6 inches early in June	.....	36 00	63 18
Corn sown in rows 36 inches apart	6 340	25 37	42 12
Sunflowers sown in rows 36 inches apart	12 700	20 20	39 16
	bush.		
Potatoes sown in rows 36 inches apart	156 10	22 38	39 16
Oats sown in 2-drill rows 36 inches apart	31 11	23 33	40 04
Oats sown in 3-drill rows 36 inches apart	32 32	28 37	45 04
	tons		
Oats sown in 2-drill rows 36 inches apart and cut for green feed	1 776	30 17	51 10
Oats sown in ordinary way for green feed, July 1st (2¼ bushels per acre)	.....	24 24	50 24
	bush.		
Oats sown in ordinary way (1 bushel per acre)	47 00	26 05	48 07
Wheat sown in 2-drill rows 36 inches apart	20 35	28 45	54 13
Wheat sown in 3-drill rows 36 inches apart	18 30	28 21	47 04
Wheat sown in ordinary way (¾ bushel per acre)	20 45	23 19	46 21
Barley sown in 2-drill rows 36 inches apart	27 29	33 34	58 28
Barley sown in 3-drill rows 36 inches apart	22 29	28 16	50 30
	tons		
Hubam sweet clover sown in 2-drill rows 36 inches apart	1 551	32 10	52 15
Millet sown in 2-drill rows 36 inches part	1 1,750	35 43	64 06

A comparison of crops in place of bare summer-fallow for the common prairie rotation is shown under project F. 145. The tests include hoed crops, grain in rows and annual hay crops in rows.

Over a period of years, corn has given more satisfactory results than sunflowers as a summer-fallow substitute. The yield of wheat after sunflowers becomes less as the rotation is continued. In 1925 the yield of wheat after corn was 30 bushels per acre, while after sunflowers the yield was 28 bushels. For 1927 the yields were 21 and 11 bushels per acre respectively. This is partly explained by the fact that, in the fall of 1926 there was an average of five per cent more soil moisture to a depth of four feet in the corn land than in that

where sunflowers grew. During the season of 1927 there was an abundant moisture supply, yet the wheat after sunflowers was six inches shorter than that after corn and produced approximately half the yield. Apart from soil moisture there is evidently another factor or factors causing the difference in yield of wheat following these crops.

Wheat after grain in rows favoured the development of weeds. With the continuance of this class of summer-fallow substitute there has been a marked lack of uniformity in height of grain and maturity of the crop. These variations depend on the position of the rows of the previous year. The wheat after grain in rows is not as good in quality as that from other substitutes tested. Oats in rows for hay produced better results than oats in rows for grain. While not recommending grain in rows for weedy land, the order of preference is barley, wheat and oats.

The use of hubam (annual) sweet clover and millet in two drill rows as a summer-fallow substitute for wheat have given very satisfactory results, which were indicated in field appearance, yield and quality of crop produced.

STUBBLE TREATMENT FOR WHEAT

F. 146A

Plot treatment	Average yield per acre 1924-27	
	bush.	lb.
Stubble ploughed in spring	41	26
Stubble ploughed in fall	40	02
Stubble burned in spring, seeded without cultivating	38	33
Stubble burned in spring, cultivated and seeded	41	41
Stubble disked in spring and seeded	37	54

Five methods of treating wheat stubble for wheat have been tested in project F. 146A.

No outstanding differences have been recorded in date of emergence, date of heading, time of maturity, length of straw, yield and quality of crop following the methods used. There have been variations in certain years for fall and spring ploughing but the average yield covering four years shows no significant difference in yield. From a practical standpoint, under our conditions, fall ploughing is always preferred. Burning stubble in the spring has produced no distinct advantage; but it appears that the cultivator is preferable to the disk as an implement in the spring to prepare stubble land for wheat.

STUBBLE TREATMENT FOR OATS

F. 146B.

Plot treatment	Average yield per acre 1924-27	
	bush.	lb.
Stubble ploughed in spring	50	24
Stubble ploughed in fall	57	06
Stubble burned in spring—seeded without cultivating	58	08
Stubble burned in spring—cultivated and seeded	60	21
Stubble disked in spring and seeded	50	20

A repetition of the methods tried on wheat stubble for wheat has been used for oats.

The results obtained are shown in project 146B. These are more pronounced than in the case of wheat. From the time the crop starts to emerge

the seeding on fall ploughing has shown a distinct advantage over spring ploughing which is also shown in the yields obtained. Not only has the fall ploughed land been in better physical condition but determinations reveal that its soil moisture has been higher and more constant throughout the growing season. Disking the stubble in the spring has not produced yields as high as where the stubble was burned. The percentages of weeds in these plots have not shown a noticeable variation.

METHODS OF BREAKING BROME SOD

Project F. 147

Plot treatment	Average yield per acre 1924-27		
	Hay treatment year	Wheat	Oats
	tons lb.	bush. lb.	bush. lb.
Sod ploughed 5 inches deep immediately after hay crop was removed; disked and worked as required	2 578	22 49	56 29
Sod ploughed 5 inches deep immediately after hay crop was removed; disked and worked as required and backsetted Sept. 15	2 19	21 56	38 14
Sod ploughed 5 inches deep early in spring and summer-fallowed throughout the year	.....	34 11	54 23

Three methods of breaking brome sod for wheat are shown in project F. 147. Two ways of breaking the sod after removing a hay crop are compared with breaking in early spring. The former procedure, even when heavily worked, has not destroyed all the brome except in a dry season and has produced in some years a high percentage of piebald wheat. On the other hand, the extra hay crop secured in this way has paid for itself when the returns from both methods are considered. The results do not warrant backsetting in September.

PLACE IN ROTATION TO SEED FALL RYE

Project F. 153

Method of seeding fall rye	Average yield per acre 1924-27
	bush. lb.
Seeded on summer-fallow August 15	42 05
Seeded with wheat in spring	20 05
Seeded on disked wheat stubble	38 17
Seeded with oats in spring	18 47
Seeded on disked oat stubble	34 31
Seeded with oats for green feed June 21	28 47
Seeded when oats are 4 inches high	23 02

Results obtained by seeding fall rye in grain rotations are shown in project F. 153. These show that comparatively poor results are obtained by seeding fall rye in the spring with spring grains for a crop the following year. Seeding on summer-fallow has given good results, but seeding on first year disked wheat stubble has given the most profitable returns. Many farmers have adopted this procedure with highly satisfactory results. We have obtained good crops of fall rye on land where western rye sod was broken immediately after removal of the hay crop; but this is not an ideal place in a rotation for this crop.

DATES OF SEEDING SUNFLOWERS

Project F. 156

Date seeded	Average yield per acre, 1924-27					
	Sunflowers		Wheat		Oats	
	tons	lb.	bush.	lb.	bush.	lb.
Seeded May 1	19	900	32	15	57	24
Seeded May 7	17	510	29	46	57	23
Seeded May 14	16	1,480	29	18	57	13
Seeded May 21	18	290	29	26	62	22
Seeded May 28	17	1,300	28	07	58	20
Seeded June 4	16	1,860	29	08	56	26
Seeded June 11	16	340	29	01	57	33
Seeded June 18	14	310	27	24	55	30

Four years results from dates of seeding sunflowers in a three-year rotation are shown in project F. 156. While these can be seeded early with good results, yet this can be done any time during May to fit in with other farm work without sacrificing yields in the rotation shown. The decreased yield of wheat following sunflowers is pronounced when compared with yields shown in other tables of these cultural experiments.

DATES OF SEEDING FALL RYE

Project F. 157

Date seeded	Average yield per acre, 1924-27			
	Rye		Oats	
	bush.	lb.	bush.	lb.
Seeded July 1	25	40	71	32
Seeded July 15	31	04	64	09
Seeded August 1	34	19	63	10
Seeded August 15	35	25	64	14
Seeded September 1	41	04	63	20
Seeded September 15	39	16	65	12
Seeded October 1	36	09	65	33
Seeded October 15	36	04	60	23

The yields obtained from dates of seeding fall rye are shown in project F. 157. These are self-explanatory. We have found, however, that the crop is taller and a much heavier yield of straw per acre has been secured from seedings made August 15 to September 15.

METHODS OF SEEDING DOWN ALFALFA AND WESTERN RYE

Project F. 169A

Method of seeding down	Average yield per acre 1924-27			
	Hay First year		Hay Second year	
	tons	lb.	tons	lb.
Seeded with wheat first crop after summer-fallow	1	1,713	2	1,203
Seeded with wheat second crop after summer-fallow	2	753*	2	1,664
Seeded with oats second crop after summer-fallow	2	343	2	889
Seeded with barley second crop after summer-fallow	2	703	2	264
Seeded with green feed oats second crop after summer-fallow	2	617	2	942
Seeded in spring on fall rye first crop after summer-fallow	2	191	2	1,550
Seeded in fall with fall rye first crop after summer-fallow	..	699	0	1,895
Seeded alone after summer-fallow wheat	3	1,421	2	1,691
Seeded with oats first crop after summer-fallow	2	462	2	1,818

*Three year average 1924-26.

Methods of seeding down have been tested in nine ways as reported in project F. 169A. The hay or pasture mixture used consisted of 10 pounds of alfalfa and 8 pounds of western rye grass. (For results on rates of seeding these two crops, the reader is referred to project Ag. 259A as reported in the forage crop section).

Some good observations can be made from this experiment. A good hay crop has been secured by seeding down with second crop grain after summer-fallow. Wheat, barley and oats give equal satisfaction for this purpose. The increased yield secured by seeding down alone has not compensated for the lost grain crop. It is not safe to seed down with fall rye in the fall, but a good catch can usually be secured by seeding down with this crop the following spring.

CULTURAL METHODS FOR SUNFLOWERS

Project F. 179

Cultural Method	Average yield per acre, 1924-27					
	Sunflowers		Wheat		Oats	
	tons	lb.	bush.	lb.	bush.	lb.
Seeded on spring-ploughed ground, in rows 36 inches apart	18	30	29	44	58	23
Seeded on fall-ploughed ground, in rows 36 inches apart	18	950	27	02	48	01
Seeded on fall-ploughed ground, in rows 36 inches apart; plants thinned to 3 inches apart in rows	19	170	28	06	54	26
Seeded on fall-ploughed ground, in rows 36 inches apart; plants thinned to 6 inches apart in rows	17	1,530	27	15	54	29
Seeded on fall-ploughed ground, in rows 36 inches apart; plants thinned to 10 inches apart in rows	16	1,870	27	20	53	27
Seeded on fall-ploughed ground, in rows 42 inches apart; plants thinned to 6 inches apart in rows	13	1,000	27	11	51	05
Seeded on fall-ploughed ground, in rows 30 inches apart; plants thinned to 6 inches apart in rows	17	1,000	25	39	54	22
Seeded in rows 36 inches apart; cultivated six times	16	350	26	05	50	04
Seeded in rows 36 inches apart, harrowed when coming up but not cultivated	15	1,290	25	23	49	15
Seeded on summer-fallow, in rows 36 inches apart	20	1,940	29	09	.....	

Different methods of seeding and handling sunflowers are shown in project F. 179.

While this crop is a rank grower yet the yield has been influenced by the method of growing it. Rows 36 inches apart have given better results than rows 42 inches apart. Differences in yield obtained by thinning to definite distances in the rows have not paid for the labour involved. Cultivation has proved to be beneficial for sunflowers.

APPLYING BARNYARD MANURE FOR WHEAT

Project F. 189

Plot treatment	Average yiel per acre, 1924-27			
	Wheat on fallow		Wheat 2nd year	
	bush.	lb.	bush.	lb.
No manure, stubble ploughed in fall	38	25	24	16
8 tons of rotted manure spread on summer-fallow and ploughed in	43	03	28	06
8 tons of rotted manure spread on first-year stubble and ploughed in	37	36	29	36
Second year grain top-dressed with 8 tons of rotted manure immediately after seeding	37	36	26	09

The effect of applying barnyard manure in three different ways for a rotation of summer-fallow, wheat and wheat is compared with no application in project F. 189.

Top-dressing second year grain after seeding has, so far, produced little effect on yield. Ploughing in manure with first year stubble in the fall has given better results. Ploughing in manure with the summer-fallow has given best results. In 1927 plots receiving applications of manure headed out and ripened slightly in advance of those receiving no manure. The effect of applications of manure becomes more pronounced as the rotation is continued.

APPLYING BARNYARD MANURE FOR CORN

Project F. 192.

Plot treatment	Average yield per acre, 1924-27					
	Corn		Wheat		*Oats	
	tons	lb.	bush.	lb.	bush.	lb.
Eight tons rotted manure spread on oat stubble and fall-ploughed	11	680	36	31	55	17
Oat stubble fall-ploughed; 8 tons rotted manure applied after freeze-up; disked in spring	11	870	34	37	55	03
Eight tons rotted manure applied in spring and ploughed in	13	1,690	36	36	58	01
Oat stubble ploughed in autumn; no manure	10	1,045	36	35	59	21
Sixteen tons rotted manure spread on oat stubble and fall-ploughed	13	1,000	39	11	59	21
Sixteen tons rotted manure applied in spring and ploughed in	12	30	34	15	50	07
Oat stubble ploughed in fall; corn top-dressed with 8 tons rotted manure immediately after seeding	12	930	32	50	49	01

*Three year average 1924-26.

The effect of applying 8 and 16 tons of rotted manure in different ways for corn is shown in project F. 192. There are increases for both amounts compared with the plots receiving no manure. The effect of these applications is becoming more pronounced as the experiment continues. While differences exist it is somewhat early to draw definite conclusions.

COMMERCIAL FERTILIZERS FOR WHEAT

Project F. 193.

Plot treatment	Average yield per acre, 1924-27			
	Wheat on fallow		Wheat 2nd year	
	bush.	lb.	bush.	lb.
Twelve tons rotted manure applied previous to seeding stubble wheat	39	48	37	41
Commercial fertilizers applied for summer-fallow wheat	40	59	34	29
One hundred lb. nitrate of soda applied previous to seeding stubble wheat	39	25	32	23
No manure	39	14	34	17
Three hundred lb. superphosphate applied previous to seeding stubble wheat	38	27	33	36
One hundred lb. muriate of potash applied previous to seeding stubble wheat	36	55	31	12
Complete fertilizer, applied previous to seeding stubble wheat	38	24	32	10

It is interesting to note the almost complete absence of effect on yield by applying commercial fertilizers for wheat as recorded in project F. 193. In 1927 complete fertilizer applied for summer-fallow wheat advanced date of heading and maturity three to five days ahead of other plots in this test. Advanced maturity of one to four days was also recorded when commercial fertilizer was applied for stubble wheat. Barnyard manure has, to date, given better results than commercial fertilizers tested in this series.

Plot treatment	Average yield per acre, 1924-27			
	Wheat		Oats	
	bush.	lb.	bush.	lb.
Summer-fallow; ploughed 6 inches early in June	32	22	55	18
Peas (2 bush. Chancellor) ploughed under early in July	42	53	67	05
Peas (2 bush. Chancellor) ploughed under late in July	38	39	66	22
Vetches (1 bush. common) ploughed under late in July	37	54	63	03
Summer-fallow; 12 tons barnyard manure ploughed in	36	59	61	50

Results obtained by ploughing down an annual legume can be noted in project F. 194. It is interesting to note that all crops ploughed under have proved beneficial. Best results have been secured by ploughing peas under early in July. The peas must be sown early. Vetches do not produce sufficient growth early in the season to be used as a green manure under our conditions. The necessity of carrying out farming operations in an exacting manner is again illustrated in the results of this experiment. In a similar experiment conducted some time ago nine years results failed to show any advantage from the ploughing down of peas or vetches.

ROTATIONS

Rotations inaugurated in 1912 and designed to meet the requirements of the grain and diversified farmer have been under investigation for the past fifteen years. In addition to their adaptability for grain and live stock farming, they provide a study in crop sequence, soil fertility, profit and cost of production. The following crops are used exclusively in these rotations:—

Wheat—Marquis.
Oats—Banner.
Barley—O.A.C. 21.
Corn—Early North West Dent.

Grasses and clovers—Western rye grass and alfalfa. Approximately 15 per cent damage to crops by hail July 9.

The following rotations are under test:—

Rotation " C "—wheat, wheat, fallow.
Rotation " J "—wheat, oats, corn, wheat (seeded down), hay, pasture and break.
Rotation " P "—wheat, oats, corn, barley (seeded down), hay, hay, hay or pasture, pasture and break.
Rotation " R "—wheat, oats, fallow, wheat, oats (seeded down), hay, hay or pasture, pasture and break, corn.

The cost of crop production, average yields, etc., on the various rotations appears in the tabulated summary.

ROTATION " C "

Rotation " C " has grown wheat continuously since 1912 with the following crop sequence, namely, wheat, wheat, fallow. It is obvious from a comparison of yields that the continuous growing of wheat does not seriously deplete soil fertility. In 1912 the average yield on fallow was 24.6 bushels per acre and 33.6 bushels per acre in 1927.

ROTATION "C"—SUMMARY OF COST OF PRODUCTION

Crop	Yield per acre		Value of crop per acre, 1927	Cost of production per acre, 1927	Cost of production per bushel, 1927	Profit per acre	
	1927	Average five years				1927	Average five years
	bush.	bush.	$	$	$	$	$
Wheat	33·6	27·2	42 00	19 81	0 59	22 19	11 15
Wheat	18·3	18·8	22 87	17 05	0 93	5 82	6 23
Fallow							
Totals for rotation			64 87	36 86		28 01	17 38
Average per acre			21 62	12 27		9 33	5 79

The cost of summer-fallow for 1927, which was $8.41 per acre, has been included in the costs of the two crops following the summer-fallow in the proportion of two-thirds to the first and one-third to the second.

ROTATION " J "

This rotation carried the following six-year crop sequence: wheat, oats, corn, wheat (seeded down), hay, hay. Rotation " J " has been changed from time to time, and, apparently without the desired results, as may be observed by the crop returns. It is especially intended for live stock farming.

ROTATION "J"—SUMMARY OF COST OF PRODUCTION

Crop	Yield per acre		Value of crop per acre, 1927	Cost of production per acre, 1927	Cost of production per bushel, or ton 1927	Profit or Loss per acre	
	1927	Average five years				1927	Average five years
	tons	tons	$	$	$	$	$
Corn	11·09	6·19	44 63	32 97	2 97	11 39	−6 92
	bush.	bush.					
Wheat (seeded down)	36·8	31·2	46 00	18 29	0 50	27 71	19 32
	tons	tons					
Hay	1·49	*1·32	17 88	15 04	10 10	2 84	0 75
Hay	1·53	1·63	18 36	16 49	10 77	1 87	1 94
	bush.	bush.					
Wheat	29·2	23·8	36 50	15 75	0 54	20 75	8 81
Oats	76·9	†44·3	44 85	19 03	0 25	25 82	9 17
Totals for rotation			207 95	117 57		90 38	33 07
Average per acre			34 65	19 59		15 06	5 51

*1925—Rotation "J," Block 2, Oats cut for green feed.
†1926—Rotation "J," Block 4, Hay, failure.

ROTATION " P "

Rotation " P " is especially designed for live stock farming. It provides a cash crop, coarse grains for the feeding of live stock, corn for ensilage and hay for roughage. This rotation carries an eight-year crop sequence, four of which are hay and pasture. This sequence permits the reduction from eight to six years, by dropping the hay and pasture years, if considered desirable.

ROTATION "P"—SUMMARY OF COST OF PRODUCTION

Crop	Yield per acre		Value of crop per acre, 1927	Cost of production per acre, 1927	Cost of production per bushel, or ton 1927	Profit or Loss per acre	
	1927	Average five years				1927	Average five years
	tons	tons	$	$	$	$	$
Hay—break	1·81	1·96	21 72	21 13	11 58	0 59	1 58
	bush.	bush.					
Wheat	32·8	28·5	41 00	16 09	0 92	24 91	12 72
Oats	70·1	52·7	37 91	19 74	0 38	18 17	7 37
	tons	tons					
Corn	13 73	7·60	54 92	44 98	3 27	9 94	−4 26
	bush.	bush.					
Barley (seeded down)	38·8	36·2	23 27	15 43	0 40	7 94	6 69
	tons	tons					
Hay	2·62	2·00	31 44	20 84	7 95	10 60	8 03
Hay	1·81	1·65	21 72	16 86	9 21	5 04	5 51
Hay	2·48	1·57	29 76	20 76	8 37	9 00	5 28
Totals for rotation			2o1 84	175 65	.....	88 19	42 92
Average per acre			32 73	21 96	.....	10 77	5 37

Rotation " R " is especially laid down for the maintenance of soil fertility and live stock farming. " R " is of nine years' duration, however, under present methods of farming, it might be considered lengthy and unsuitable. This rotation carries two cash crops in addition to coarse grain, corn, hay and pasture for live stock production.

ROTATION "R"—SUMMARY OF COST OF PRODUCTION

Crop	Yield per acre		Value of crop per acre, 1927	Cost of production per acre, 1927	Cost of production per bushel, or ton 1927	Profit or Loss per acre	
	1927	Average five years				1927	Average five years
	tons	tons	$	$	$	$	$
Hay	2·45	1·82	29 40	20 69	8 42	8 71	5 61
Hay—break	1·41	1·40	16 92	20 84	14 74	−3 92	0 41
Corn	10·49	8·14	41 96	45 74	5 68	−3 78	−6 50
	bush.	bush.					
Wheat	32·2	39·o	40 37	15 84	0 71	24 53	22 47
Oats	69·8	50·2	40 54	19 72	0 28	20 82	7 06
Fallow	.....	.....	.....	.....	.....	.....	.....
Wheat	37·7	37·0	47 12	22 89	0 61	24 23	17 19
Oats (seeded down)	66·5	49·4	37 61	22 44	0 34	15 17	4 89
	tons	tons					
Hay	1·50	1·59	18 00	15 34	10 22	2 66	4 46
Totals for rotation			271 92	183 50	.....	88 42	54 94
Average per acre			30 21	20 39	.....	9 83	6 10

The cost of summer-fallow for 1927, which was $9.40 per acre, has been included in the costs of the two crops following the summer-fallow in the proportion of two-thirds to the first and one-third to the second.

FORAGE CROPS

Questions asked by correspondents and visitors during the past year have indicated a growing interest in forage crops suitable for prairie conditions. Our work with forage crops is designed to supply this information for areas similar to those prevailing at this Farm.

The majority of plots used for this work are long and narrow. Their width is seven and a half feet because that is the strip sown by the sixteen run drill used in this work. Their length is so designed to provide, after trimming the ends, an area of one-hundredth acre when a five-foot cut is made with a mower down the centre of the plots. This method is giving excellent results for eliminating border effect, which is usually pronounced under our conditions. When the rate of seeding is important the seeder cannot be used, but the required amount is weighed out for each plot and sown by hand and usually mixed with sawdust.

Grasses and clovers emerged in the spring of 1927 with practically no winter killing. The average temperature during the growing season was normal but wide variations were recorded. On the other hand the rainfall was above the average. With certain exceptions, there was a heavy yield of forage crops during the past season. The character of the season had a tendency to produce abnormal yields in some cases for 1927, but the following results will serve as an added guide for farmers whose conditions are similar to those prevailing at this farm. These conditions are a heavy clay loam soil and an average annual precipitation of approximately eighteen inches.

Project Ag. 1. ENSILAGE CORN VARIETIES

Variety	Source of seed	Height	Maturity at harvest	Yield per acre, 1927	
				Green weight	Dry matter
		inches		tons lb.	tons lb.
Hybrid	Wimple	74	Cobs formed	19 1,240	3 1,660
Falconer	A. E. McKenize	63	Cobs formed	18 880	3 1,344
Yellow Dent	Wimple	75	Cobs formed	13 720	2 1,760
Longfellow	Dakota Improved Seed Co.	76	Cobs starting	20 1,560	2 1,482
Amber Flint	Wimple	62	Late milk	17 240	2 1,236
Burr Leaming	G. S. Carter	84	Cobs starting	18 128	2 1,114
Quebec 28	Macdonald College	70	Early dough	15 680	2 900
Northwestern Dent.	A. E. McKenzie (N. Dakota)	68	Cobs formed	14 1,000	2 886
Northwestern Dent.	A. E. McKenzie (S. Dakota)	71	Cobs starting	12 160	1 1,696
North Dakota	Steele, Briggs	70	Cobs forming	11 1,240	1 1,644
Wisconsin No. 7	J. O. Duke	79	No cobs	16	1 1,500
Longfellow	J. O. Duke	76	Cobs starting	13 460	1 1,348
Compton's Early	J. O. Duke	75	Cobs starting	11 1,600	1 1,266
Golden Glow	J. O. Duke	75	Milk	9 300	1 914
Bailey	J. O. Duke	74	Cobs starting	8 660	1 430
White Cap Yellow Dent.	Steele, Briggs	77	Cobs starting	8 880	1 382
Leaming	J. O. Duke	76	Cobs starting	6 1,600	1 300

Project Ag. 1A. ENSILAGE CORN VARIETIES—FIVE-YEAR AVERAGE

Variety	Source of Seed	Average height	Average yield per acre, 1923-27		Relative yield dry matter per acre
			Green weight	Dry matter	
		inch.	tons lb.	tons lb.	per cent
Longfellow	Dakota Improved Seed Co.	71·0	14 1,171	2 624	105·4
Northwestern Dent.	A. E. McKenzie	62·5	11 1,096	2 387	100·0
White Cap Yellow Dent.	Steele, Briggs	77·5	9 1,757	2 36	92·0
Quebec 28	Macdonald College	61·0	11 1,427	1 1,838	87·5
Leaming	J. O. Duke	74·5	10 1,166	1 1,663	83·5
Wisconsin No. 7	J. O. Duke	75·0	11 1,072	1 1,654	83·3
North Dakota	Steele, Briggs	68·5	11 256	1 1,532	80·5
Longfellow	J. O. Duke	71·0	11 172	1 1,527	80·4
Golden Glow	J. O. Duke	74·5	9 1,820	1 1,520	80·2
Compton's Early	J. O. Duke	72·0	11 475	1 1,496	79·7

The results of variety tests of ensilage corn serve to demonstrate the importance of variety and source of seed. A variety which reached an advanced stage gave best returns. Northern grown seed of the same variety has produced better results than seed of the same variety grown further south. Seed of Longfellow produced in North Dakota has given much better results than seed of the same variety produced in southwestern Ontario. Similarly seed of Northwestern Dent produced in North Dakota shows advance in maturity and yield over seed of the same variety produced further south. It is interesting to note that this year twenty bushels of Northwestern Dent seed corn, germinating close to 100 per cent after curing, was picked from a field of corn produced from North Dakota grown seed.

Project Ag. 16. MANGELS

Type of root	Variety	Source of seed	Average yield per acre 1926-27			
			Green weight		Dry matter	
			tons	lb.	tons	lb.
Intermediate	Rosted Barres	Hjalmar Hartmann Co., Copenhagen	13	251	1	389
Half Long	Giant White Feeding Sugar	Steele, Briggs	10	238	1	157
Intermediate	Yellow Intermediate	Central Experimental Farm, Ottawa	10	982	1	155
Tankard	Eckendorfer	Hjalmar Hartmann Co., Copenhagen	13	122	..	1,967
Half Long	Danish Half Sugar White Green Top	Hjalmar Hartmann Co., Copenhagen	10	647	..	1,919
Tankard	Eclipse	A. E. McKenzie Seed Co., Brandon	11	900	..	1,900
Long	Giant Long Red	A. E. McKenzie Seed Co., Brandon	10	1,081	..	1,824
Globe	Giant Yellow Globe	Steele, Briggs	13	62	..	1,727
Globe	Golden Globe	Sutton, England	9	1,517	..	1,725
Long	Elevetham Mammoth	Hjalmar Hartmann Co., Copenhagen	8	1,696	..	1,663

Seed from widely scattered sources representing five types of mangels have been tested for the past two years, as shown in project Ag. 16. The object is to determine which type, if any, is best adapted for our conditions. Two years' work is already showing fair indications. The Globe and long types have been the lowest yielders, but the margin of difference has not been sufficient to reach a decision. By a slight margin the intermediate type leads. Fortunately the intermediate type ranks among the easiest for harvesting which is an important consideration. While mangels are not heavy producers under our conditions yet this class of forage supplies a health requirement for live stock during the winter months.

Project Ag. 36. FIELD CARROTS

Type of root	Variety	Source of seed	Average yield per acre 1926-27			
			Green weight		Dry matter	
			tons	lb.	tons	lb.
Long	Long Red Surrey	Steele, Briggs	6	479	0	1,366
Intermediate	Champion	Hjalmar Hartmann, Copenhagen	6	627	0	1,206
Short	Improved Short White	Steele, Briggs	7	536	0	1,177
Short	Oxheart	H. McFayden, Winnipeg, Man	6	434	0	1,149
Intermediate	Danish Champion	Central Experimental Farm, Ottawa, Ont	5	1,474	0	1,145
Long	Long Orange Belgian	A. E. McKenzie Seed Co., Brandon, Man	4	252	0	871

Two years' work with types of field carrots, as shown in project Ag. 36, ranks all types as approximately equal when the yields are averaged. The variation in the two long types may be accounted for, to some extent, by the difference in shape. Both are long but the leading one is straight and smooth with a gradual tapering from the crown to the tip of the root. The lower yielding long type produced about 10 per cent twisted forms and 15 per cent prongy roots with a somewhat cylindrical shape. On the other hand with the two short varieties one pulls readily while with the other this is impossible. The intermediate type meets with general favour from the standpoint of ease of harvesting.

Project Ag. 51 — SWEDE TURNIPS

Type	Variety	Source of Seed	Average yield per acre 1926-27	
			Green weight	Dry matter
			tons lb.	tons lb.
Globe	Ditmars	H. H. McNutt	10 406	0 1,763
Globe	Invicta Bronze Top	Wm. Rennie	7 1,545	0 1,481
Oval	Improved Jumbo	Wm. Rennie	6 1,614	0 1,285
Oval	Monarch	A. E. McKenzie	6 1,721	0 1,256

Work on types, rather than varieties, is in progress with swede turnips as reported in project Ag. 51. Although the yields of both are low, the globe type gives indications, for the two years tested, of superiority over the oval type for our conditions.

Project Ag. 66 — SUGAR BEETS

Variety	Per cent sugar in juice	Per cent co-efficient of purity	Green weight per acre	Dry matter per acre
			tons lb.	tons lb.
Home Grown	13·43	82·22	7 1,680	1 716
Horning	12·59	79·02	7 680	1 574
Dippe	12·17	78·50	6 1,080	1 430
Schrieber	11·98	78·21	6 280	1 124

The tonnage per acre and percentage of sugar in the juice as reported in project Ag. 66 are somewhat low. As in other years, these figures demonstrate that the production of this crop under our conditions is not economically sound.

Project Ag. 242 — DATES OF SEEDING OATS FOR HAY

Date seeded	Date cut	Height	Average yield per acre 1925-27		
			Green weight	Hay	Dry matter
		ins.	tons lb.	tons lb.	tons lb.
May 22	Aug. 13	55	8 719	3 544	3 72
May 15	Aug. 13	52	8 453	3 536	2 1,768
May 29	Aug. 23	54	7 1,393	2 1,957	2 1,220
June 12	Sept. 6	54	6 1,313	2 1,894	2 1,199
June 5	Sept. 6	55	6 1,620	3 21	2 1,173
June 19	Sept. 20	49	6 427	2 983	2 399

Dates of seeding oats, as reported in project Ag. 242, have been conducted for the past three years. Ten sowings, a week apart, have been planted up to July 17. In 1927 seedings from June 26 onward did not reach the dough stage

before being caught by September storms and were readily flattened owing to heavy rust infection. In other years these dates (not shown in table) have been the poorest yielders. The early seedings, in addition to giving higher yields, can be handled before the rush of harvest work.

Project Ag. 245 TIME OF HARVESTING OATS FOR HAY

Variety	Stage cut	Average yield per acre 1925-27					
		Green weight		Hay		Dry matter	
		tons	lb.	tons	lb.	tons	lb.
Banner	Dough	9	487	4	2	3	1,069
Leader	Dough	6	363	2	1,420	3	128
Victory	Dough	9	427	3	727	3	99
Gold Rain	Dough	7	1,913	2	1,943	2	1,245
Longfellow	Dough	5	1,120	2	795	2	216
Laurel	Dough	4	1,920	2	207	1	1,722
Longfellow	Milk	6	467	2	201	1	1,714
Laurel	Milk	5	1,753	2	86	1	1,604
Alaska	Dough	4	843	1	1,427	1	1,357
Victory	Milk	5	1,360	1	1,733	1	1,295
Gold Rain	Milk	5	1,067	1	1,907	1	1,286
Banner	Milk	6	1,520	1	1,599	1	1,163
Leader	Milk	5	353	1	1,539	1	1,123
Victory	Bloom	5	707	1	1,021	1	670
Alaska	Milk	4	557	1	861	1	534
Gold Rain	Bloom	4	500	1	654	1	313
Banner	Bloom	4	1,347	1	599	1	298
Laurel	Bloom	3	1,933	1	382	1	107
Leader	Bloom	3	1,680	1	295	0	1,955
Longfellow	Bloom	3	1,300	0	1,912	0	1,680
Alaska	Bloom	3	413	0	1,763	0	1,588

For three years we have sown seven varieties of oats for hay on the same date each season. These have been cut in flower, milk and early dough. The results to date are shown in project Ag. 245.

When cut in the milk stage there has been an increase in yield and percentage of dry matter compared with the bloom stage. Highest yields have been secured by cutting oats for hay in the dough stage. The early oat (Alaska) and hulless oat (Laurel) used in this experiment have given comparatively poor returns. Late standard varieties of oats such as Banner and Victory are best adapted for this purpose.

Project Ag. 246. ANNUAL HAY CROPS—GRAIN VARIETIES

Crop	Height	Average yield per acre 1926-27					
		Green weight		Hay		Dry matter	
	ins.	tons	lb.	tons	lb.	tons	lb.
Banner oats	59	12	1,120	4	161	3	1,180
Marquis wheat	47	8	1,120	3	519	3	120
Banner oats and Feeder barley	(o)52 (b)45	10	640	3	321	2	1,980
*Oats and Siberian millet	(o)57 (m)31	13	1,340	3	736	2	1,927
Feeder barley	(b)43	8	1,800	3	237	2	1,877
Chancellor peas and Banner oats	(p)36 (o)54	12	400	3	33	2	1,680
Banner oats and Prolific Spring rye	(o)53 (r)51	10	300	2	1,759	2	1,421
Mackay peas and Banner oats	(p)46 (o)55	12	640	2	1,445	2	1,132
Prolific Spring rye	(r)51	6	540	2	601	2	296
Prolific Spring rye and Mackay peas	(r)48 (p)45	7	695	2	190	1	1,931

*1927 yield only.

Cutting hay plots to eliminate border effect.

Grain crops, both singly and in combination, have been tested for annual hays as reported in project Ag. 246. The season of 1927 was decidedly favourable for this test. The use of Spring rye either singly or in the combination used has not served to increase the yield or quality of the hay crop in comparison with others tested. Barley, using a hooded leafy variety, occupied an intermediate position when sown alone or in combination with oats. The addition of peas aided in field appearance and accordingly produced high green weights but the position of such mixtures was low when compared on a basis of cured hay. The possibilities of Marquis wheat for this purpose are shown but its use is not recommended. Among the grain varieties, Banner oats has given best results as an annual hay.

ANNUAL HAY CROP—LEGUMES

Project Ag. 247

Crop	Height	Average yield per acre 1926-27		
		Green weight	Hay	Dry matter
	ins.	tons lb.	tons lb.	tons lb.
Mackay peas	28	11 1,180	2 1,722	2 1,036
Mackay peas and common vetches	(p)30 (v)24	12 1,000	2 748	2 506
Common vetches and Hubam	21·5	10 1,850	2 726	2 491
Common vetches	22	9 440	2 295	2 35
Sand vetches	19	9 1,440	1 1,515	1 1,307
*Hubam sweet clover	35·5	6 880	1 534	1 330

*1927 yield only.

Peas, vetches and hubam sweet clover have been tested for leguminous annual hay crops as shown in project Ag. 247. Common vetches not only produced higher yield than sand vetches but were much easier handled. Hubam sweet clover is a doubtful proposition. Mackay peas have given good returns but their yield is considerably below Banner oats.

Project Ag. 248 ANNUAL HAY CROPS—GRASSES

Crop	Height	Average yield per acre 1926-1927		
		Green weight	Hay	Dry matter
	ins.	tons lb.	tons lb.	tons lb.
Common millet	40·5	7 1,500	3 64	2 1,327
Siberian millet	40·0	7 1,860	2 1,771	2 1,089
Japanese millet	40·5	9 940	2 1,168	2 545
Sudan grass	55·5	6 1,040	2 288	1 1,776
Hog millet	31·0	6 1,720	1 1,969	1 1,492

Four varieties of millet and sudan grass have been tested as annual grass crops for hay. Hog millet has been short and early compared to the other millets tested. Sudan grass is tall but somewhat low in yield. Common and Siberian millet are very similar in their leafy habit of growth and were ready to cut more than two weeks before Japanese. For better feeding results, the growing of millet (Siberian or common) in combination with oats is recommended.

Project Ag. 126 ALFALFA VARIETIES

Variety	Source of seed	Height when cut	Average yield per acre 1927		
			Green weight	Hay	Dry matter
		ins.	tons lb.	tons lb.	tons lb.
Cossack	Dakota Improved Seed Co	28·0	14 450	3 692	2 1,888
Baltic	Dakota Improved Seed Co	26·0	12 950	3 104	2 1,372
Cossack	Paramount Alfalfa Farm	25·5	12 1,400	3 101	2 1,369
Variegated	Steele, Briggs Co., Toronto	26·0	13 750	2 1,966	2 1,250
Grimm	Steele, Briggs Co., Regina	25·0	10 950	2 1,080	2 470
Grimm	Alberta Seed Growers	26·0	11 1,450	2 956	2 362
Sask. 666	University of Saskatchewan	25·0	10 1,550	2 717	2 152
Ontario Variegated	Peel County	22·5	9 1,150	2 537	1 1,992
Grimm	A. B. Lyman	24·5	9 1,450	2 477	1 1,943
Sask. 451	University of Saskatchewan	23·5	9 1,300	1 1,984	1 1,505
Medicago Falcata	Paramount Alfalfa Farm	23·5	7 850	1 1,607	1 1,175

Eleven lots of alfalfa were seeded in 1926. The yields from the first crop year representing two cuttings are reported in project Ag. 126. Where these plots were sown there was considerable Canada Thistle. It was found that this weed was held in check except in the case of Medicago Falcata which, it should be added, only produced one cutting. It was also found that this variety had two inches less growth than the others on June 1, which fact is useful in comparing their value for spring pasture. Due to abundant snow cover there was practically no winter-killing so that all varieties emerged in the spring with good stands. For this latter reason the yields cannot be considered a safe index of their performance after one of our normal winters.

Project Ag. 221 WESTERN RYE GRASS

Number	Height when cut	Average yield per acre 1927		
		Green weight	Hay	Dry matter
	ins.	tons lb.	tons lb.	tons lb.
93	38·5	8 300	2 1,644	2 967
63	41·0	7 1,700	2 1,592	2 921
83	40·0	7 1,550	2 1,565	2 897
57	41·5	8 600	2 1,388	2 741
31	37·5	7 1,650	2 1,331	2 691
39	40·0	6 1,750	2 1,317	2 679
54	37·0	7 400	2 1,265	2 633
97	41·0	7 550	2 916	2 326
Commercial	42·0	7 1,700	2 914	2 324
71	39·0	8 650	2 776	2 203

The slight differences recorded in yields of strains of western rye grass tested is undoubtedly due to the fact that there was abundant rainfall during the growing season. The results are really not a safe guide to their performance in an average season under our conditions.

MISCELLANEOUS GRASSES

Project Ag. 255

Variety and amount of seed used	Height when cut	Yield per acre 1927		
		Green weight	Hay	Dry matter
	ins.	tons lb.	tons lb.	tons lb.
Western rye—15 lb.	38·5	5 850	2 1,171	2 550
Timothy—15 lb.	39·0	5 1.050	2 703	2 139
Brome—15 lb.	45·0	5 300	2 217	1 1,711
Meadow fescue—30 lb.	33·0	4 550	1 1,416	1 1,006
Tall oat—30 lb.	45·0	4 300	1 1,219	1 833
Red top—24 lb.	33·5	4 300	1 1,150	1 772
Orchard—30 lb.	27·5	4 700	1 679	1 357
Canada blue—24 lb.	21·5	2 1,750	1 211	0 1,946

In a test of eight grasses sown alone, as reported in project Ag. 255, western rye grass occupies the leading position. This grass therefore maintains the position it has achieved in previous years. The commercial brome grass must be much higher in yield to offset its difficulty in eradication when compared with western rye. Even with a season of good rainfall the other grasses did not approach the yield of the two mentioned with the exception of Timothy. The yield of orchard grass was increased by rain, but Canada Blue is absolutely useless as a hay grass for our conditions.

HAY AND PASTURE MIXTURES USING ALFALFA AS A BASE

Project Ag. 259

Variety	Yield per acre 1927		
	Green weight	Hay	Dry matter
	tons lb.	tons lb.	tons lb.
Alfalfa and timothy	8 900	2 1,127	2 512
Alfalfa alone	9 1,400	2 1,114	2 500
Alfalfa and brome	8 50	2 970	2 374
Alfalfa and Canada blue	8 1,800	2 904	2 318
Alfalfa and meadow fescue	8 1,250	2 825	2 245
Alfalfa and western rye	8 350	2 808	2 231
Alfalfa and tall oat	8 800	2 789	2 215
Alfalfa and Kentucky blue	8 1,100	2 781	2 208
Alfalfa and red top	8 1,400	2 579	2 30
Alfalfa and orchard	7 400	2 210	1 1,705

A comparison of the yields quoted in projects Ag. 255 and 259 will show that, with one exception, a higher yield of hay was secured by growing grasses with alfalfa as compared with growing them alone. In this group of mixtures a second cutting was obtained. In both cuttings alfalfa predominated in the mixture. In the combinations of alfalfa with timothy, brome, meadow fescue and western rye grass there was from 15 to 20 per cent of the grass visible in plots at time of first cutting. In those containing the blue grasses the plots were all alfalfa. All other mixtures contained only traces of the grasses in the mixture. At least two more seasons are necessary to fully demonstrate the advantage of growing alfalfa mixed with one of these grasses as compared with growing the grass alone.

HAY AND PASTURE MIXTURE USING ALFALFA AS A BASE AND WESTERN RYE

Project Ag. 259A

Variety and amount of seed in pounds	Yield per acre 1927					
	Green weight		Hay		Dry matter	
	tons	lb.	tons	lb.	tons	lb.
Alfalfa (14) and western rye (8)	10	1,200	3	56	2	1,330
Alfalfa (10) and western rye (10)	9	1,550	3	9	2	1,288
Alfalfa (12) and western rye (12)	10	1,950	2	1,992	2	1,272
Alfalfa (10) and western rye (4)	11	200	2	1,960	2	1,246
Alfalfa (16) and western rye (8)	10	1,300	2	1,927	2	1,216
Alfalfa (10) and western rye (2)	11	1,550	2	1,703	2	1,018
Alfalfa (4) and western rye (8)	9	500	2	1,677	2	996
Alfalfa (10)	11	1,500	2	1,660	2	980
Alfalfa (6) and western rye (8)	9	1,400	2	1,609	2	939
Alfalfa (10) and western rye (14)	9	150	2	1,324	2	686
Alfalfa (10) and western rye (6)	10	800	2	1,281	2	648
Alfalfa (10) and western rye (8)	9	1,800	2	1,212	2	588
Alfalfa (8) and western rye (8)	8	1,550	2	1,199	2	576
Western rye (15)	8	650	2	1,172	2	552
Alfalfa (10) and western rye (12)	8	250	2	975	2	378

Because alfalfa and western rye grass in a mixture had, in previous years, demonstrated their superiority over other combinations a test was made to determine the best rate at which these should be sown. The results from one year, especially like a season of 1927, are not sufficient to form a basis for conclusions. It would appear that a low proportion of alfalfa can be used with very little effect on yield. This is important because of the relatively high price of western grown Grimm alfalfa seed compared with that of western rye grass.

HAY AND PASTURE MIXTURES USING SWEET CLOVER AS A BASE

Project Ag. 260

Variety	Yield per acre 1927					
	Green weight		Hay		Dry matter	
	tons	lb.	tons	lb.	tons	lb.
Yellow sweet clover and orchard	12	1,550	2	1,964	2	1,248
Yellow sweet clover and tall oat	12	1,750	2	1,816	2	1,118
Yellow sweet clover and Kentucky blue	13	300	2	1,801	2	1,106
Yellow sweet clover and timothy	12	550	2	1,779	2	1,086
Yellow sweet clover and meadow fescue	12	550	2	1,359	2	716
Yellow sweet clover and red top	12	1,250	2	1,300	2	664
Yellow sweet clover and Canada blue	12	1,250	2	1,297	2	662
Arctic sweet clover and meadow fescue	11	750	2	1,242	2	614
Yellow sweet clover and brome	11	800	2	1,231	2	604
Arctic sweet clover and western rye	11	1,550	2	1,174	2	554
Arctic sweet clover and timothy	11	950	2	1,134	2	518
Yellow sweet clover and alfalfa	12	300	2	997	2	398
Arctic sweet clover and brome	11	300	2	965	2	370
Arctic sweet clover and red top	11	1,300	2	785	2	211
Arctic sweet clover and alfalfa	10	200	2	748	2	178
Yellow sweet clover and western rye	10	950	2	679	2	118
Arctic sweet clover	10	1,050	2	623	2	69
Yellow sweet clover	10	1,350	2	593	2	45
Arctic sweet clover and tall oat	10	1,350	2	597	2	45
Arctic sweet clover and Canada blue	11	1,250	2	584	2	36
Arctic sweet clover and Kentucky blue	11	200	2	373	1	1,848
Arctic sweet clover and orchard	8	1,633	1	1,965	1	1,489

In addition to testing grasses alone and in combination with alfalfa these were sown with sweet clover using both arctic and yellow. The object is to determine the effect of this combination on the yields of hay after the first year. Strictly speaking these should be all grasses after the first hay year. Not only will this provide an opportunity to compare the residual effect of these two sweet clovers, but a comparison will be available against the grasses grown singly and

other legume combinations in this series. The results this (the first hay) year should therefore not be taken too seriously.

Project Ag. 264 GRASSES AND CLOVERS IN COMBINATION

Variety	Yield per acre 1927					
	Green weight		Hay		Dry matter	
	tons	lb.	tons	lb.	tons	lb.
Arctic sweet clover, alfalfa and tall oat	10	1,400	2	1,303	2	666
Arctic sweet clover, alfalfa and timothy	10	800	2	1,197	2	574
Arctic sweet clover, alfalfa and Canada blue	10	800	2	1,065	2	459
Arctic sweet clover, alfalfa and Kentucky blue	10	1,100	2	1,033	2	428
Yellow sweet clover, alfalfa and meadow fescue	11	433	2	1,016	2	414
Yellow sweet clover, alfalfa and timothy	11	....	2	909	2	320
Yellow sweet clover, alfalfa and western rye	10	1,666	2	870	2	286
Arctic sweet clover, alfalfa and red top	10	333	2	859	2	276
Yellow sweet clover, alfalfa and brome	10	1,600	2	853	2	270
Arctic sweet clover, alfalfa and orchard	9	1,700	2	819	2	242
Yellow sweet clover, alfalfa and orchard	10	1,066	2	755	2	184
Arctic sweet clover, alfalfa and meadow fescue	9	933	2	687	2	126
Yellow sweet clover, alfalfa and Canada blue	10	1,450	2	669	2	108
Yellow sweet clover, alfalfa and tall oat	10	466	2	529	1	1,985
Arctic sweet clover, alfalfa and western rye	9	900	2	472	1	1,936
Arctic sweet clover, alfalfa and brome	9	1,433	2	471	1	1,935
Yellow sweet clover, alfalfa and red top	10	700	2	446	1	1,912
Yellow sweet clover, alfalfa and Kentucky blue	10	533	2	436	1	1,904

As a further test on the alfalfa and sweet clover mixtures with grasses already mentioned a further extension was made to include all three. Yellow and white blossom arctic sweet clover were used separately. Five pounds of alfalfa, five pounds of sweet clover and one-third of the rate of grass per acre, as shown in project Ag. 255, were used in project Ag. 264. The yields from the first hay year, as might be expected do not show any marked difference from other combinations, but the effect of combining a biennial legume in this way will be determined by subsequent crops.

HORTICULTURE

To fully appreciate and comprehend the differences between one season and another one must compare concrete data. Herewith is given a table in which are set forth records at Indian Head for 1927 and the nineteen year period 1907 to 1925 of two important factors governing crop production. In considering these data arbitrary seasons have been adopted, viz: winter, November 1 to March 31: growing season, April 1 to July 31: fall, August 1 to October 31.

Month	Precipitation in inches		Mean temperature Fahr.	
	1927	Average for period 1907-1925 (incl.)	1927	Average for period 1907-1925 (incl.)
November	2·18 (snow)	0·90	16·03	24·53
December	0·98 "	0·80	2·03	8·13
January	0·60 "	0·97	0·69	−8·04
February	0·40 "	0·80	3·16	6·18
March	2·38 "	1·24	21·09	18·16
April	0·40 (rain)	1·02	35·87	36·77
May	3·43 "	2·03	44·94	49·00
June	1·96 "	3·34	59·60	59·53
July	4·78 "	2·58	63·32	62·79
August	2·17 (rain)	2·19	61·45	60·86
September	4·14—0·25 ins. as snow	1·62	51·77	51·54
October	1·30—0·07 ins. as snow	1·40	42·23	38·39

The season 1927 differed from the average in having (*a*) higher precipitation in November, March, May, July, and September, and lower precipitation in June (differences of one inch or more only considered), (*b*) a lower mean temperature in November and December and a higher mean temperature in January (differences of five degrees or more only considered).

Flowers, trees, fruits and vegetables went into winter with a heavy blanket of snow. Consequently low temperatures in early winter did no damage. The normal feed of rabbits however was beyond reach with the result that many trees, chiefly apple trees, were badly girdled. A chicken wire fence six feet high seems to be the best safeguard against destruction of fruit trees by rabbits.

Paeonies, roses and herbaceous plants were uncovered more than a week later than in the previous year. Seeding of vegetables in the garden was likewise ten days later. Apple trees on the average came into blossom two weeks later, and plum trees nearly three weeks later than in the previous season.

During May and June conditions were favourable for plant growth. Disaster, however, characterized the month of July. In the immediate district of Indian Head garden crops were in many instances 100 per cent destroyed and in most cases severely damaged by hail on July 9. Recovery of many vegetables, particularly tomatoes, corn, beans and onions, was slow and unsatisfactory, while what remained of tree fruits carried bruises to the end of the season. Heavy rains in July also produced abnormal vegetative or second growth in practically all garden crops. Variety tests and cultural experiments were unduly influenced, in some cases yielding no results.

A number of new projects comprising problems in fruit growing, vegetable production and floriculture got under way. Most of these will continue and be repeated for a number of years, and additional experiments will be outlined as they suggest themselves.

The development and spread of apple scab was favoured by July rains and although only a few trees were affected the attack of this disease was the worst experienced at this farm for many years. Other prevalent plant diseases were rhizoctonia (potato), plum pocket (plum), wilt (aster) and downy mildew (onion).

Insect pests necessitating spraying for control were aphis (maples, plums), caterpillar (roses, fruit trees), thrip (cucumber), potato beetle (potato), sawfly (gooseberry, currants), red turnip beetle (turnip) and black snout beetle (rose). For insects with sucking mouth parts a solution of $\frac{3}{4}$ pint nicotine sulphate in 50 gallons of water was used, and for those with biting mouth parts a solution of 2 pounds of arsenate of lead in 40 gallons of water.

FRUITS

APPLES

Owing to the unsaleable condition and low commercial value of the crab apples only enough to fill local orders were picked in 1927. Enormous crops of fruit were borne by most of the trees that fruited heavily in 1925. No accurate records were obtained however. Of the varieties in the trial orchard at Indian Head, Transcendent, Prince, Alberta, Eve and Pioneer can be recommended for farm orchards. The last mentioned variety usually ripens seven to ten days earlier than the rest.

Many of the cross-bred apples that fruited in 1926 were damaged by rabbits during the winter. In consequence the fruit crop was light. An outstanding cropper was Charles x Tetofsky (0-2867), mentioned in previous reports from this farm, which yielded forty pounds of apples measuring $1\frac{1}{4}$ inches deep by

1½ inches wide in most cases. Prince x McIntosh (0-2838) also bore some nice fruit, but this variety, and the Dean x McIntosh crosses which fruited, did not mature before being injured by fall frosts. Pioneer x Northern Spy (0-2826) deserves mention. Fruiting for the first time in 1927 this apple in colour is extensively splashed with dull red on greenish yellow ground, has fine, juicy breaking flesh, is sweet in flavour and has good keeping qualities.

Sufficient space is not available for descriptions of seedlings that fruited for the first time in 1927. These numbered in the neighbourhood of forty, bearing fruit ranging from crab apple size to that of large apples measuring over two inches in depth and width. A small quantity of scion wood suitable for grafting was obtained from those considered worthy of propagation. When a number of these grafts are available they will be sent out to volunteer co-operators for further trial.

There is little to report at this time on experimental work with apples. Attention is being given to the growing of seedlings from open pollinated good quality apples, in the hope that something better and hardier than those now growing at Indian Head will be obtained. Imported pollen has not been used on hardy apples fruiting at Indian Head with much success as yet.

Herewith is given some data on project H-592 in which six varieties of standard apples are concerned. Each variety is represented by three trees planted in the spring of 1925. Tree number 1 of each variety has not been pruned since being planted but has been mulched with rotted manure each fall. Tree number 2 of each variety has received severe summer pruning in that growing points of every shoot have been removed whenever the fourth leaf appeared, and given no mulch. Tree number 3 has received moderate, dormant pruning and no mulch. Where pruning was performed the amounts removed from each tree were weighed.

APPLES

Project H-592

Variety	Tree No.	Amounts removed in pruning, in grams	Increases in girth measurements from April 30, 1927, to Sept. 30, 1927, in inches
Blushed Calville	1	0·0	0·04
	2	14·80	0·04
	3	41·00	0·07
Charlamoff	1	0·0	0·06
	2	21·0	0·05
	3	60·40	0·06
Anis	1	0·0	0·10
	2	26·05	0·05
	3	24·70	0·09
Rosalota	1	0·0	0·15
	2	84·0	0·10
	3	98·80	0·13
Anoka	1	0·0	0·07
	2	73·60	0·08
	3	114·80	0·08
Hibernal	1	0·0	0·08
	2	43·50	0·08
	3	17·80	0·10

These results are presented to show that as far as trunk increase is concerned pruning seems to have little effect. Data for several years or until the trees come into bearing will be collected before any definite conclusions will be inferred.

Project H-593 is now under way and for this study a number of hardy crab apple seedlings will be root grafted during the winter. These will be planted in the orchard in spring together with a sufficient number of other seedlings to permit top-working with the same variety at different periods. In this way information as to how top-working apples at varying ages affects hardiness or time of coming into bearing may be obtained.

PLUMS

No plums blossomed until June 1. Conditions were favourable for fruit setting however, and there were prospects of a bountiful plum crop until hail on July 9 damaged and removed a great proportion of it. Despite a fall free from destructive frosts until September 26, only the fruit of Assiniboine and the earliest of the native selections ripened.

No new varieties were planted in 1927, but development of all young trees was satisfactory. Seedlings from which something of value may be obtained made good growth. Owing to the fact that many of the pits planted in the fall of 1925 did not germinate until the spring of 1927, transfer of the seedlings to nursery rows has not been made. This will be done in 1928. Fruit growers should therefore anticipate not disturbing plum seedlings for two years after planting the pits. Some budding of varieties recommended from other experimental stations was done, and about seven hundred more pits have been planted.

Plum pocket was again in evidence on a few trees during 1927. A dormant spray of the following ingredients and concentration was applied on May 17, 1927, before the buds had opened:—

12.5 gallons lime sulphur
1 pint nicotine sulphate

Plus enough water to make 100 gallons of solution.

The addition of the nicotine sulphate was made because of the severe infestation of aphis in 1926. A summer spray of the following ingredients and concentration was applied on June 28, 1927, after petal fall:—

2.5 gallons lime sulphur
2 pounds arsenate of lead
1 pint nicotine sulphate

Plus enough water to make 100 gallons of solution.

With these two applications of fungi-insecticide control of aphis and tent caterpillar was practically complete, and the spread of plum pocket largely checked.

STRAWBERRIES

Reporting on the four varieties being tested no actual figures are given. Notes taken during the season are herewith stated.

June 27, 1927.

Dr. Burrill—Quaternary blossoms just past, some double flower stems found, fair development of runners, runner plants just rooting.

Senator Dunlap—Quite similar to Dr. Burrill. Quaternary blossoms longer past, primary berries more developed, indications of fifth set of blossoms, three secondary flower trusses frequently found, runners numerous and runner plants rooting.

Easy Picker—Flower truss less spreading than that of former two varieties, berries less pointed almost round, quaternary blossoms just open, three secondary flower trusses occasionally found, runner development just beginning.

Portia—Irregular flower truss, tertiary blossoms just open, practically no runner development.

July 4, 1927.

Dr. Burrill—Primary berries ripe, many runners rooted.

Senator Dunlap—Development similar to that of former variety, trifle earlier, slightly stronger runner development.

Easy Picker—Primary berries beginning to show colour, runner plants just forming.

Portia—Primary berries not fully developed, runners just extending.

Progressive—Primary berries fully ripe, runners not quite as well developed as on Senator Dunlap. (This note was made on this everbearing variety in the old plantation.)

July 12, 1927.

Dr. Burrill, Senator Dunlap—Good set of runners.

Easy Picker—Runners less numerous than on former two varieties.

Portia—Few but vigorous runners, very little fruit.

July 23, 1927.

The final note states that the fruiting season of Senator Dunlap and Easy Picker was of about equal length. Size of berry was slightly better in the latter towards the end of the season. Dr. Burrill finished fruiting a few days earlier.

In order to study the effect of the removal of the primary blossom on yield, size of fruit, and duration of fruiting season, project H-624 was gotten under way. For this study fifty-two plants each of Senator Dunlap and Easy Picker were set out towards the end of August. These plants were well established before freeze-up, and, should they escape winter-killing preliminary results will be available for the next report from this farm. Only vigorous, early formed runner plants were selected for this project.

RASPBERRIES

All raspberry canes were bent over and covered with a few inches of soil during the winter 1926-'27. With a deep covering of snow such a procedure may not be necessary, but the uncertaintly of the snow blanket always exists. When covered with soil the canes are also safe from injury by rabbits, and the ill effects from freezing and thawing in the spring.

While all varieties made satisfactory growth in 1926 with practically no blanks in the rows, their development was not considered uniform enough to give comparative or representative fruit yields. No accurate records of the amount of fruit picked were kept, but the quality and size of the berries harvested were excellent. In the accompanying table a few important characteristics of the varieties are listed.

RASPBERRY VARIETIES—August 8, 1927

Variety	Season	Average height of canes in in inches	Remarks
Brighton	Medium early	60	Few branching canes, some irregular berries.
Newman 23	" "	52	Many branching canes.
Latham	" "	60	Few branching canes.
Herbert	Medium late	66	" "
Ohta	" "	52	Many branching canes.
Sunbeam	Early	52	Some branching canes.

Six to eight strong canes will be left at each hill to bear fruit in 1928. This will be considered a full crop and yields will be recorded together with other data. It may be pointed out that twelve plants of each variety were covered with soil before freeze-up, while twelve will pass the winter without this protection.

CURRANTS

Growth of all varieties planted in 1926 was vigorous and healthy in 1927 Many of the new shoots were broken by hail on July 9. By judicious pruning bushes of the most productive type are being developed, and some fruit is expected to be harvested in 1928.

Results in project H-591 on the propagation of currants are somewhat at variance with those previously obtained. As shown in the table herewith given the number which rooted, in practically all varieties, of the cuttings prepared and planted in the spring, was equal to, and in some cases surpassed, the number which rooted of those prepared and planted in the fall. Plentiful rains and abundant soil moisture undoubtedly favoured root development after planting the cuttings in the spring. In each case twenty-four cuttings were planted.

CURRANT CUTTINGS—NUMBER ROOTED AUGUST 8, 1927

Variety	Prepared and planted Oct. 16, 1926	Prepared Oct. 16, 1926, Stored in sand, planted April 25, 1927	Prepared and planted April 25, 1927
Kerry (B)	11	1	8
Eclipse (B)	8	2	10
Clipper (B)	5	1	7
Eagle (B)	16	0	14
Saunders (B)	6	3	11
Red Grape (R)	21	10	22
Wilder (R)	19	3	9
Rankin Red (R)	18	2	18
Red Dutch (R)	23	2	23
Victoria (R)	22	0	16
Large White (W)	24	2	20

It is apparent that black currant cuttings strike root less freely than red or white currant cuttings in the Indian Head type of soil. Apparently also particular conditions must accompany the storage of cuttings in sand in order to obtain satisfactory root development after planting in the spring. Experiments have shown that callusing interferes with water absorption by cuttings. This may in part account for the inability of the cuttings prepared in the fall, stored in sand during the winter, and planted in the spring, to strike root. In continuing with this project it was decided to include only one variety from each of black and red currants since the behaviour of varieties in each group was obviously similar. Eagle (B) and Red Grape (R) were the varieties selected

GOOSEBERRIES

Little work is being done with this fruit at the Experimental Farm, Indian Head. The old plantation has been rooted out, and the only variety planted so far in the new plantation is Mabel.

GRAPES

One hundred seedlings of native Manitoba grapes were received from the Experimental Station, Morden, Man. These were planted on April 29. 1927, along a page wire fence north of the front driveway. The growth of these seedlings was quite good, and, while no fruit of much consequence may be obtained from them, the appearance of the fence will be greatly improved.

VEGETABLES

ASPARAGUS.—Method of Propagation—Project H-596. This study has not progressed far enough to justify discussion. Good germination of seed of the Palmetto variety collected and sown on April 27, 1927, was recorded on June 8. Portions of old asparagus crowns were planted on April 30. Growth of these was vigourous only where more than one bud was present on the portions. This will be remembered when one year old crowns and portions of old crowns will be planted out for comparison in 1928.

The first tips were harvested from the old plantation on May 14, 1927.

ASPARAGUS.—Germination Studies—Project H-625. In order to study the effects that different methods of handling asparagus seed have on its germination this experiment was outlined and started in 1927. There is nothing to report on it at this time except that seed for the various treatments was secured.

BEAN.—Variety Test. It is quite evident from trials extending over a period of years that only early maturing varieties of beans should be grown in this district. Seed was planted on June 1, 1927 and germination completed on June 10. The earliest varieties came into blossom July 16, the latest on August 5. With the exception of Princess Artois (true dwarf) and Interloper Challenge Black Wax (semi-trailing), the varieties tested failed to ripen before a severe frost on September 26. Varieties recommended from a consideration of the data (*a*) date ready for use, (*b*) yield of ripe beans threshed, are: Princess Artois (0-9388), Interloper Challenge Black Wax (0-6876), Stringless Green Pod (0-5405), Round Pod Kidney Wax (McDonald), Wardwell Kidney Wax (0-5268), Giant Stringless Green Pod (Burpee), Round Pod Kidney Wax (Ottawa).

BEAN.—Planting Distances—Project H-58. As heretofore Round Pod Kidney Wax and Stringless Green Pod were tested, being planted respectively 2, 4 and 6 inches apart in rows 30 inches apart. No figures were obtained from the rows of the former variety, but from those of the latter variety the greatest yield of ripe beans was obtained where the planting distance was 2 inches, and the lowest yield where the planting distance was 6 inches.

BEET (Table).—Variety Test. Yields do not adequately denote the value or desirability of beet varieties for table use. Size of root can be largely controlled by thinning out the plants in the row or by varying the dates of sowing the seed or harvesting the crop. In the accompanying table some characteristics that may assist in evaluating the varieties are described.

BEET VARIETIES—1927[1]

Variety	Season	Quality based on inside colour and texture	Tops		Roots	
			Colour	Neck	Shape[2]	Colour of tap in cross-section
Detroit Dark Red	Early	Good	Green	Medium large	Roundish pointed	Dark
Black Red Ball	Medium	Medium	Red	Medium small	Roundish oblong	Medium dark
Cardinal Globe	Medium early	Medium	Green	Medium small	Round	Medium dark.
Improved Dark Red	Medium late	Good	Red	Medium large	Long	Dark
Early Model	Early	Poor to medium	Green	Medium small	Roundish pointed	Light
Eclipse	Medium early	Poor to medium	Green	Medium small	Oblong pointed.	Light
Crosby Egyptian	Medium late	Medium	Green	Medium small	Round	Light
Early Flat Egyptian	Early	Medium	Green	Small	Oblong flat	Medium dark
Black Red Ball	Medium early	Good	Red	Medium large	Roundish pointed.	Dark

[1]These notes were taken when roots were harvested August 25, 1927.
[2]Since most beet roots are round in cross-section, shape here refers to that in longitudinal section.

BEET (Table).—Dates of Seeding—Project H-65. Detroit Dark Red beet was used in this test, the results of which are tabulated below. Rows in each case were 32 feet long.

BEET—DATES OF SEEDING—1927

Sown	Germinated	Ready for use	Harvested	Yield of marketable beets	Per cent of yield marketable
				lb.	
May 11	May 30	July 8	Sept. 26	65·00	49·90
" 21	June 1	" 14	" 26	56·25	41·43
" 31	" 9	" 14	" 26	55·50	53·88
June 10	" 21	Aug. 10	" 26	24·50	100·00
" 20	" 28	Sept. 1	" 26	25·00	100·00
" 30	July 8	" 1	" 26	16·50	100·00

The small percentages of marketable beets in the first three sowings are due in part to the fact that harvesting was delayed so long after the beets were ready for use.

BRUSSELS SPROUTS.—Variety Test. Paris Market and Improved Dwarf were grown in 1927. No sprouts however were harvested from either variety although strong, vigourous plants developed before the close of the season.

CABBAGE.—Variety Test. Nineteen varieties and strains were tested. White Savoy and red sorts were represented by twenty-five plants each grown under glass until June 8 and 9, when they were planted in the garden. On August 10, Golden Acre and Copenhagen Market (round heads) and Early Jersey Wakefield (pointed heads) were ready for use. A few days later Northern Favourite (pointed heads) and Succession (round heads) were ready to harvest, followed by Enkhuizen Glory, Danish Summer Ballhead and Danish Roundhead, good, late, round varieties.

Chester Savoy excelled Kenver Globe savoy, a novelty, the latter coming into head too early and being of small size.

There was little room for choice between Haco and Danish Stonehead both producing satisfactory crops of red cabbages.

CARROT.—Variety Test. It was thought that information on this test could best be given in tabular form, particularly when total yields of roots may be misleading in determining the merit of varieties.

CARROT VARIETIES—1927[1]

Variety	Season	Quality based on texture and size of core	Size of Tops at neck	Roots	
				Shape	Size
Chantenay (Ottawa)	Medium	Good, half core	Small	Half-long conical	Medium
Early French Forcing	Medium early	Medium, more than half core	Small to medium	Short, blunt	Medium to large
Oxheart	Medium	Good, less than half core	Small	Short, pointed	Medium
Chantenay (McD.)	Medium	Good, half core	Medium	Half-long conical	Medium to large
Nantes Half-long	Medium	Good, less than half core	Small	Half-long blunt	Medium to large
Henderson Intermediate	Medium	Medium, three quarters core	Medium to large	Long, conical	Large

[1]These notes were taken when roots were harvested on August 25, 1927.

When examining these varieties it was observed that the size of the tops at the point of attachment to the roots (neck) was a fairly true indication of the size of the centre core. In selecting specimens for seed production or for exhibition this characteristic should therefore be borne in mind.

CARROT.—Dates of Seeding—Project H-79. Highest yields and best quality roots were obtained from the earliest sowings. Six sowings were made

at ten-day intervals, the first on May 11, the last on June 30. For profitable crops of this vegetable it would seem that seed should be sown not later than May 31.

CAULIFLOWER.—Variety Test. A just comparison of varieties was rendered impossible by the destruction of many plants by frost on April 18, 1927. Some varieties were represented in the garden by five plants, others by twenty-five plants. Danish Perfection produced some very fine large heads while Early Dwarf Erfurt and Early Snowball, varieties previously recommended, likewise yielded well.

CELERY.—Variety Test. Planting on the level and blanching by banking the plants with soil as growth proceeded were the cultural methods adopted with this vegetable. Twelve varieties and strains were tested in 1927 The seed was sown under glass in flats on March 30, and the plants set in the garden on June 14.

Conditions favoured the development of celery, the following varieties being outstanding: Giant Pascal, Winter King, Winter Queen (green varieties), Golden Self Blanching, Easy Blanching, Fordhook Emperor, and Golden Plume.

CELERY.—Dates of Planting—Project H-597. Two varieties, Giant Pascal and Winter King were tested, four lots of twenty-five plants each being planted at ten-day intervals from June 14 onward. Plants were hilled as appeared necessary.

There was a significant and gradual decrease in average weight of stalks from the first to the last plantings in both varieties. This would seem to indicate the need of early planting in order to secure good quality stalks in the fall.

CHARD.—Variety Test. All varieties of this vegetable tested in 1927 made strong growth. Two months from the date of seed germination (May 28) plants were ready for use. Fordhook Giant which produced nice white stalks of excellent quality was considered superior to either Lucullus or Silver Leaf.

CITRON.—Variety Test. Total yield from the variety Red Seeded exceeded more than twice that of the variety Colorado or Green Seeded. Both varieties were sown outdoors on June 7, and the former came into blossom on August 6. eleven days earlier than the latter. Development of this crop and other vine crops was rapid during August and September until the coming of frost.

CORN (Table).—Variety Test. Irregular germination marked the early development of the corn varieties under test. Seed of those included in the table below was sown on June 6, and germination took place from June 15 to June 20.

CORN VARIETIES, 1927

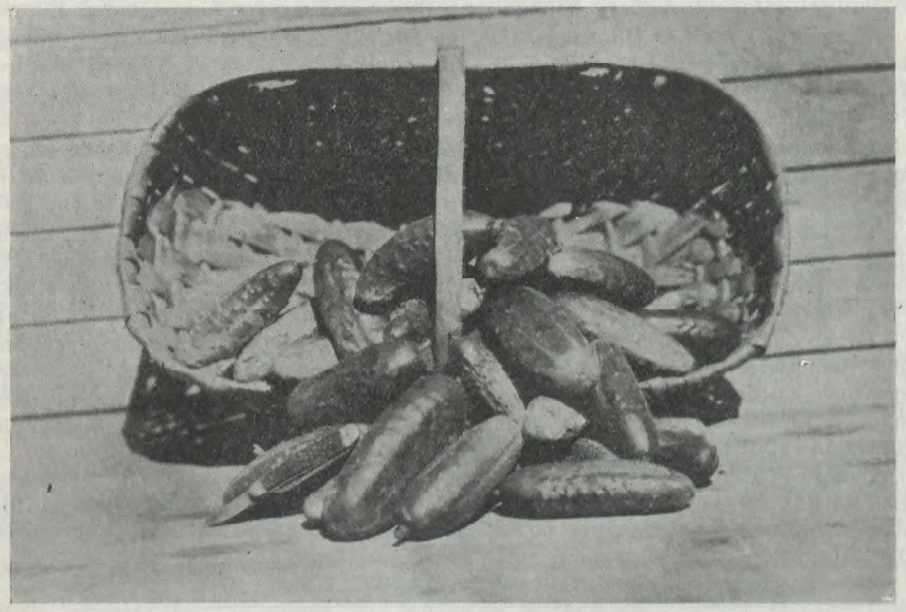
Variety	Source of seed	Date of appearance of silk	Date ready for use	Height of stalk in inches on Sept. 17	Weight of 12 average ears in pounds	Number of ears harvested	
						Sept. 2	Season
Assiniboine	Will	Aug. 12	Sept. 1	5·25	8·50	1	88
Alpha	Harris	" 4	Aug. 27	4·75	7·50	16	87
Pickaninny	O-6579	" 1	" 29	3·75	4·75	21	86
Banting	O-1926 strain	" 6	" 29	4·0	5·50	19	76
Sunshine	Will	" 8	Sept. 1	5·0	9·0	9	61
Burleigh Co. Mixture	Will	" 4	" 1	5·50	9·75	9	60
60 Day Golden	Child	" 10	" 1	5·50	10·0	9	59
Gehu	Will	" 10	" 1	5·50	9·25	2	49
Early Dighton	Moore	" 15	" 1	5·50	11·0	1	49
Golden Bantam	James	" 15	" 14	5·0	8·50	0	42
Early Adams	Ferry	" 4	" 1	4·50	8·0	2	35
Nuetta	I.H. 1926	" 10	" 1	4·75	9·0	1	33
Malakoff	Vaughan	" 16	" 10	4·50	8·0	0	33
Golden Bantam	McDonald	" 18	" 14	5·75	9·25	0	27
Early Malcolm	O-8988-9006	" 18	" 14	4·50	8·50	0	13

Varieties have been arranged in order of total yield and from the standpoints of earliness, quality and size of ear, Sunshine, Burleigh Co. Mixture and 60 Day Golden are of particular promise.

CORN (Table).—Removing Suckers—Project H-101.—Tassels appeared earliest on the plants from which the suckers were removed in both the varieties, Early Malcolm and Golden Bantam. Removing suckers likewise hastened the appearance of "silk" in Golden Bantam by eight days, and in Early Malcolm by three days. Ears were also larger on the plants of both varieties from which suckers were removed.

It may be pointed out that suckers were removed at a size when their contribution or utilization of carbohydrates could not be considered significant, weekly inspections being made in order to accomplish this.

CUCUMBER.—Variety Test. In 1927 cucumbers were compared in test rows thirty-two feet long, sown in the open on June 6. Plants were thinned to about eighteen inches apart in the rows. Yields from the various varieties



Field run White Spine; a valuable home garden variety.

ranged from 79 pounds to 20 pounds, the following being the order of yield, highest to the lowest: Giant Pera, White Spine, Early White Spine, Early Russian, Long Green, Davis Perfect and XXX Table. When vigour of vines was estimated the same order of merit was obtained.

EGG PLANT.—Variety Test. So far Extra Early Dwarf is the only variety that has fruited outdoors at this farm. An Indian Head selection of this variety was compared with Will's stock in 1927. These were given similar treatment until planted in the garden on June 24. The Indian Head selection came into bloom six days earlier than the commercial strain, and was much less vegetative in appearance and growth. On July 25 seventeen out of thirty-four plants of the former, and three out of the same number of plants of the latter, caried fruit about two inches long. Total yield for the season also favoured the local strain by one and one-half pounds.

HERBS.—Variety Test. Splendid growth was made by Sage and Summer Savory from seed sown in the open on May 10. One plant of Horehound grew, while Lavender and Thyme did not germinate.

KALE.—Variety Test. This test was confined to the growing of Dwarf Green Curled Kale, a variety that seems well adapted to the soil and climatic conditions of this section of the prairies. This vegetable was sown indoors and planted outside at the same time as cabbage varieties.

KOHL-RABI.—Variety Test. Hail on July 9 did more damage to this member of the cabbage family than to any other. Roots were injured, later development was irregular, and few uniform Kohl-Rabis were harvested. White Vienna was fit to harvest eight days earlier than Purple Vienna, and also yielded better.

LETTUCE.—Variety Test. One variety of leaf lettuce and eight varieties (four butter type and four iceberg type) of head lettuce, and one variety of Cos lettuce were tested in 1927. All were seeded on May 10, and germination completed by June 2.

LEAF LETTUCE.—Grand Rapids the variety representing this type of lettuce remained fit to use till well through the month of July.

HEAD LETTUCE.—Butter Type. Heads formed on varieties of this type, an average of six days earlier than on those of the Iceberg type. Notes taken on July 18, with respect to number of firm heads, placed them as follows: Big Boston, Crisp as Ice, Salamander and Early Paris Market. (On July 9 the last named variety, having gone to seed without forming any heads, was removed). By August 3 all the varieties of this type were producing seed stalks, those on Salamander being furthest developed.

HEAD LETTUCE.—Iceberg Type. Giant Crystal Head was the outstanding variety in this test. It was the first ready for use, and produced the largest heads. Wonderful (novelty), although considered better than New York, went to seed earlier. Iceberg formed some good heads but was inferior to the other lettuce varieties of this type. The above information was recorded on August 3 likewise the note in the following paragraph.

Cos lettuce was fit for use later than the other types. Some good heads formed but seed stalks quickly developed when the weather turned dry and hot.

LETTUCE.—Production of Head Lettuce—Project H-598. Details of this experiment will not be outlined here. Fall sown seed germinated in spring but frost on April 19 destroyed all the seedlings. Results in 1927 were in favour of the practice of growing plants indoors early in spring, and transplanting them to the garden when satisfactory conditions for planting existed. Heads formed earliest on this lot, the first being harvested on July 14. By the end of July, however, seed stalks began to appear on all lots, and, except from the transplanted lot, few heads were harvested. This project will be conducted for a number of years.

MUSKMELON.—Variety Test. The season was not favourable for melons outdoors. Page Early and Lake Champlain were the first varieties to bloom followed by Sugar Sweet, Knight or Maryland, Prospero and The Bender, but on none did any fruit mature before the advent of killing frosts.

ONION.—Variety Test. Germination of all varieties, and strains sown on May 10 was completed by June 6.

Early White Barletta, considered large enough for pickling on July 18, was harvested. Silver King, the other pickling variety tested, was not harvested until August 3. The yield of the latter was double that of the former from the same area, but many of the onions were deemed too large for pickling purposes.

In order of earliness, as indicated by tops ripening, the varieties tested were placed thus on August 30: (1) Extra Early Flat Red, (2) Yellow Globe Danvers (Ottawa), (3) Ebenezer, (4) Southport Yellow Globe, (5) Southport White Globe (I.H.), (6) Yellow Globe Danvers, (7) Ohio Yellow Globe, (8) Giant Prizetaker, (9) Large Yellow Prizetaker, (10) Southport Red Globe, (11) Large Red Wethersfield (Graham). No tops had ripened on the following varieties on August 30: Large Red Wethersfield (Ottawa), Giant Gibralter, Ailsa Craig and Australian Brown (last variety presumably not correctly named).

ONION.—Methods of Controlling Maggots—Project H-132. There were no indications of this pest during the past season so that the control measures suggested were not applied.

ONION.—Production for Winter Storage (Sets)—Project H-599. Results from this experiment in 1927 were quite significant. These are given in the table below.

ONION—PRODUCTION FOR WINTER STORAGE—1927

Treatments	Date planted	Date tops ripened	Yield of ripe onions in lbs.	
			Yellow sets—average of 2 rows 32 feet long in each treatment	Red sets 1 row 32 feet long in each treatment
(a) Planted 3 inches apart on the level—hilled slightly	May 10	Aug. 3	10·25	9·0
(b) Planted 3 inches apart and 3 inches deep—not hilled	May 10	Aug. 3	12·50	10·25
(c) Dropped carelessly into a furrow 3 inches deep—(distance between sets approximately 3 inches)	May 10	July 16	7·0	6·0

PARSLEY.—Variety Test. Seed sown outdoors on May 10, of two varieties, Moss Curled and Tripled Curled, had germinated by June 6. Frequent rains during the summer brought about full development of this vegetable by the middle of July, and no significant difference could be observed between the varieties tested.

Parsley plants came through the winter of 1926-27 without any protection. They went to seed, however, early in the summer.

PARSNIP.—Variety Test. The season was ideal for this vegetable and a heavy crop of large parsnips was harvested on October 18. Cooper Champion was the leading variety with a total yield of 68 pounds from a row of 32 feet long. This yield exceeded that of the highest yielding variety last year from the same length of row, by about 20 pounds. Yields from the other varieties in this test were progressively less, the following order obtaining: Hollow Crown (McKenzie), Guernsey Half Long, and Hollow Crown (O-8695).

PARSNIP.—Dates of Seeding. Project H-142. Results and yields from testing Hollow Crown at different dates of seeding in three consecutive seasons warrant the rather definite conclusion that, for this crop, seeding should be done as early in spring as possible. Thinning to four inches apart is also recommended if fully developed roots are desired.

PEA.—Variety Test. Nineteen varieties were included in this test. Seed was planted on May 9, and germination took place on May 25 and 26. Important details of the varieties are herewith tabulated.

PEA—VARIETY TEST—1927

Group	Variety	Average length of vines in inches	Average length of pods in inches	Shape of Pods	Average number of peas in pods	Quality on basis of 10 points	Yield of ripe peas from row 32 feet long	
							lb.	oz.
1. Very Early.....	Alaska.....	32	2·50	Straight.....	6	7·0	3	02½
2. Early.....	Gradus x American Wonder.....	48	2·75	Curved slightly.....	5	7·5	5	07
	Thos. Laxton.....	36	3·25	Straight.....	6	9·5	2	04
	Little Marvel.....	28	3·50	Straight.....	7	8·5	2	00
	Marchioness.....	38	3·25	Straight.....	5	8·0	1	13½
	Laxtonian.....	22	3·75	Curved slightly.....	6	8·5	1	10
	Early Six Weeks.....	20	3·25	Straight.....	6	8·0	1	00
3. Medium Early..	Gregory Surprise x English Wonder.....	50	2·50	Straight.....	4	7·5	5	05
	Pioneer.....	22	4·0	Curved slightly.....	7	8·5	2	09½
	English Wonder.....	24	3·0	Straight.....	6	8·5	2	03
	Blue Bantam.....	22	3·75	Curved slightly.....	6	9·0	2	02
	Eldorado.....	24	3·50	Straight.....	6	7·5	1	07
4. Late.....	Improved Stratagem....	42	4·0	Straight.....	8	8·0	7	00
	Telephone.....	48	4·25	Straight.....	7	8·5	5	08
	McLean Advancer.....	36	3·0	Straight.....	7	9·0	5	05
	Senator.....	52	3·75	Curved.....	7	8·0	4	13½
	Lincoln.....	40	3·50	Curved.....	6	8·0	3	00
	Admiral Beatty.....	39	4·25	Straight.....	8	8·0	2	08
	Excelsior.....	34	3·25	Straight.....	6	7·5	2	07½

PEA.—Planting Distances. Project H-148. Without details or records of individual plants the reasons for different results from year to year cannot be determined. As reported in 1926, with one exception, planting at one inch apart gave, by a slight margin, the highest yield in 1927 when English Wonder, Thomas Laxton and Stratagem were tested. The quantity of ripe peas harvested was the basis upon which plantings at one, two and three inches apart were compared. The time of blossoming, dates ready for use and ripening of any of the varieties did not seem to be affected by different planting distances.

PEPPER.—Variety Test. Harris Earliest and Mammoth Golden Dawn were tested. Some of the plants of the former were in bloom at the time of planting on June 24. From the same number of plants the yield of green peppers from Golden Dawn was double that from Harris Earliest. Over two pounds of ripe peppers were harvested from the latter, however, and this variety is considered the only variety tested so far, suitable for outdoor cultivation in this district.

PUMPKIN.—Variety Test. All varieties in this test made splendid development from seed sown in the open on June 7. Connecticut Field, the highest yielding variety, came into bloom on July 28. All were harvested on September 23, Small Sugar, Sweet or Sugar and Pie following Connecticut Field in the order given from the standpoint of yield.

POTATO.—Variety Test. Excessive rains and surface water prohibited normal development of many varieties (Indian Head stock) in the 1927 test. These have therefore not been included in the subjoined table. The tuber unit system of planting was adopted, and though each variety was originally represented by sixty-six hills ($\frac{1}{176}$ ac.) the presence of disease in some of these necessitated their removal during the summer. Yields per acre were computed from the yields of the number of hills harvested. Harvesting dates ranged from September 27 to October 12. On heavy land, great losses of potatoes through destruction by frost can be prevented by carefully hilling the rows. This operation should be done around the second or third week in July.

POTATO—VARIETY TEST—1927

Variety	Source of seed	Season	Diseases observed	Number of hills harvested	Computed yield per acre marketable tubers	
					bush.	lb.
Manistee	Invermere, B.C.	Late	Mosaic and Leaf-roll	62	578	27
Up-to-Date	Invermere, B.C.	Late		66	507	28
Wee McGregor	Invermere, B.C.	Late		66	492	48
Delaware	Invermere, B.C.	Late	Mosaic	56	471	54
Rural Russet	Invermere, B.C.	Late		66	467	08
Dalmeny Beauty	Indian Head, Sask.	Late		66	434	08
Irish Cobbler	Invermere, B.C.	Early		66	422	24
Bovee	Invermere, B.C.	Late	Mosaic	46	420	52
Earliest of All	Invermere, B.C.	*Late		66	417	16
Jersey Royal	Invermere, B.C.	Late		66	417	16
Early Ohio	Invermere, B.C.	Early		66	393	40
Golden Russet	Indian Head, Sask.	Late		66	393	04
Early Rose	Invermere, B.C.	Early		66	384	16
Gold Coin	Invermere, B.C.	Late	Mosaic	38	382	06
Irish Cobbler	Indian Head, Sask.	Early		66	381	20
Gold Nugget	Indian Head, Sask.	Early		66	380	51
Sir Walter Raleigh	Invermere, B.C.	Medium early.	Mosaic	46	378	47
Ashcroft	Invermere, B.C.	Early		66	375	28
Gold Nugget	Invermere, B.C.	Early	Mosaic	52	372	18
Late Puritan	Indian Head, Sask.	Late		66	363	44
Epicure	Invermere, B.C.	Early		66	356	24
Early Norther	Invermere, B.C.	Late		66	352	00
White Ohio	Invermere, B.C.	Early	Mosaic	47	348	40
Late Puritan	Invermere, B.C.	Late	Mosaic	50	348	29
Blue Snyder	Invermere, B.C.	Medium late	Mosaic	28	345	42
Bliss Triumph	Montana	Early		66	338	48
Netted Gem	Invermere, B.C.	Medium early		66	330	44
Precocity	Invermere, B.C.	Early		66	328	32
Seedling (R. Day)	Indian Head, Sask.	Late		66	328	32
Houlton Rose	Invermere, B.C.	Late		66	322	40
Kerr Pink	Invermere, B.C.	Very late		66	322	40
Early White Prize	Invermere, B.C.	Late		66	300	56
Green Mountain	Invermere, B.C.	Late		66	296	16
King Edward VII	Invermere, B.C.	Late		66	293	20
Carter Early	Invermere, B.C.	Early	Mosaic	48	282	20
Pearl	Invermere, B.C.	Very late		66	272	48
Sharpe Express	Invermere, B.C.	Medium early		66	258	08

*One tuber unit early.

POTATO.—Date of Planting—Project H-162.—In this experiment four plantings at fourteen-day intervals, beginning on May 21 were made in 1927, using the varieties Early Ohio and Irish Cobbler. Frequently after heavy rains the location in which these were grown was under water, so that growth was abnormally influenced. With Early Ohio the percentage yields were 100, 77, 75, 55, and with Irish Cobbler 100, 98, 58, 53, from plantings one to four respectively. The first planting of Early Ohio outyielded the first of Irish Cobbler by 17.5 pounds from the same length of row.

POTATO.—Sprouting Seed—Project H-159. Vigourous sprouts were present on Early Ohio and Irish Cobbler sets used in this experiment. These had been developing in slight heat and strong sunlight for more than six weeks before the time of planting. The unsprouted lots had been kept dormant until prepared

for planting on May 26. As indicated in the accompanying table sprouting has increased the yield of marketable tubers, more over a period of five years, than in 1927.

POTATO—SPROUTING SEED—1927

Variety	Computed yields of marketable tubers per acre	
	1927	Average of five-year period 1923-1927 (incl.)
	bush. lb.	bush. lb.
Early Ohio (sprouted)	209 44	335 50
Early Ohio (unsprouted)	176 00	269 28
Irish Cobbler (sprouted)	328 32	353 06
Irish Cobbler (unsprouted)	321 12	297 38

The most outstanding feature in this experiment is that the Early Ohio sprouted lot has been ready to harvest from ten to fourteen days earlier than the unsprouted lot. No such difference has been observed with Irish Cobblers.

RADISH.—Variety Test. Only a few radishes were grown in 1927. The quality of all varieties was good, and from the standpoint of earliness the following are recommended: Twenty Day, French Breakfast, Early Scarlet Globe, XXX Round Scarlet Oval and Scarlet Round White Tipped. Icicle is a good summer radish and Long Black Spanish is preferred to Round Black Spanish as a winter radish.

RUTABAGA.—Variety Test. American Purple Top and Yellow Globe were tested. Delay in sowing the seed of the former until June 14, and the proximity of other crops, resulted in very poor root development of that variety. Some very fine roots of Yellow Globe were harvested on October 13 from seed sown on May 10. In order to get suitable roots for winter storage plants should be at least six inches apart in the row, and harvesting should be postponed until one or two fairly severe frosts have been experienced. Slight freezing improves the flavour of rutabagas.

SALSIFY.—Variety Test. Mammoth Sandwich Island was the only variety tested in 1927. This is not a widely grown vegetable and in habit of growth its roots tend to become very much branched—a peculiarity that renders them unsatisfactory for table use. This vegetable will also winter over in the ground without protection.

SPINACH.—Variety Test. A long cutting season characterized this test, in which nine varieties and strains and New Zealand spinach were represented.

On June 2, when seed sown on May 10 was nicely germinated, harvesting of plants from seed sown early the previous August had begun. Even with no artificial protection during the winter, recovery of these plants was almost complete, and though seed stalks were developing freely by the end of May a fairly long cutting season was enjoyed. King of Denmark, the last variety to develop seed stalks, provided the most greens—followed by Broad Leaf and Bloomsdale in the order given.

Of the spring sown varieties tested, King of Denmark was considered the best home garden variety. This is a spreading broad-leaf, strong growing variety and produces seed stalks less readily than any other variety so far tested. Nobel Gandry another variety of the same type was good, while Princess Juliana a savoy-leaf, medium strong growing variety is worthy of further trial. All varieties had gone to seed by July 11.

New Zealand spinach was large enough to use on July 12 when other varieties of spinach were removed.

SQUASH AND VEGETABLE MARROW.—Variety Test. It seems desirable to report on these two vegetables in the same paragraph and table.

SQUASH AND VEGETABLE MARROW, 1927

Variety	Date sown out-doors 2 hills each	Date of germination	Date in bloom	Date harvested	Yield in lb.
English Vegetable Marrow	June 7	June 16	July 25	Sept. 23	261·50
Golden Hubbard	" 7	" 18	" 26	" 23	91·50
Summer Asparagus (bush)	" 7	" 16	Aug. 1	" 23	88·50
Long White (bush)	" 7	" 16	July 25	" 23	81·50
Green Hubbard	" 7	" 18	" 25	" 23	58·50
Delicious	" 7	" 16	" 30	" 23	56·00
Giant Summer Crookneck	" 7	" 18	" 28	" 23	27·25
Perfect Gem or Cream	" 7	" 21	Aug. 12	" 23	9·00
Des Moines	" 7	" 18	" 10	" 23	3·75

TOMATO.—Variety Test. Perhaps no plants suffered more from the hail on July 9 than those of the twenty-nine varieties tested in 1927, growing points were broken off to the extent of 25 per cent, the majority of expanded and expanding blossoms were cut off, and developing fruits that remained on the plants following the hail were so badly injured that their removal was deemed advisable. Data presented in the accompanying table, therefore, cannot be regarded as representing normal results of a comparison of varieties.

TOMATO—VARIETY TEST—1927

Variety	Source of seed	Date in blossom	Date first ripe fruit	Yield from 5 plants					
				Ripe fruit		Green fruit		Total	
				lb.	oz.	lb.	oz.	lb.	oz.
Early Atlantic	McKenzie	June 6	Aug. 8	9	13	12	4	22	1
Burbank	Bruce	" 2	" 20	8	12½	15	0	23	12½
*Earlibell	McDonald	" 18	" 10	8	6	10	0	18	6
Princess Mary	McKenzie	" 18	" 22	7	11½	15	4	22	15½
Sparks Earliana	McDonald	" 25	" 19	7	6	14	0	21	6
Pink No. 1	O-9731	" 28	" 22	7	5	11	4	18	9
*Alacrity x Hipper	O-9725	" 2	" 2	7	0	11	8	18	8
Alacrity	O-9720	" 2	" 29	6	11	11	0	17	11
*Alacrity x Earlibell	O-9729	" 18	" 19	6	7	12	0	18	7
Early Prolific	Bolgiano	" 25	Sept. 5	5	13½	6	12	12	9½
John Baer	Steele, Briggs	" 21	Aug. 16	5	12½	7	8	13	4½
Earliana Grade 2	Langdon	" 2	" 16	5	0	11	12	16	12
*Bonny Best	Stokes	" 29	" 8	4	7½	8	0	12	7½
Chalks Early Jewel	Steele, Briggs	" 21	" 10	4	1	6	12	10	13
L. G. B. B.	O-11392	" 29	" 29	4	0	5	0	9	0
Manyfold	Livingston	" 21	" 8	3	13½	10	0	13	13½
First and Best	Bruce	" 30	" 29	3	13	12	8	16	5
Monumental	Bolgiano	" 18	" 22	3	10	12	8	16	2
*Wayahead	Bruce	" 2	" 23	3	8	8	4	11	12
Alpha	Dreer	" 29	" 29	3	8	4	0	7	8
*Pink No. 2	O-9730	" 2	" 8	3	3½	4	12	7	15½
*A. B. B. No. 2	O-11390	" 25	" 15	2	15½	3	0	5	15½
Marglobe	Stokes	" 25	" 16	2	14½	6	0	8	14½
Select Earliana	Moore	" 21	" 16	2	14	11	0	13	14
*Jewel	Langdon	" 21	" 8	2	13½	5	12	8	9½
Red Rock	Langdon	" 21	" 16	2	11	6	12	9	7
Penn. State Earliana	Stokes	" 21	" 20	2	9½	10	8	13	1½
New Gregory	Gregory	" 2	" 1	1	13	12	8	14	5
Bloomsdale	Langdon	" 25	" 16	1	1½	10	4	11	5½

*These indicate what were considered early varieties before the hail storm on July 9.

TOMATO.—Method of Training—Project H-207. Comment on the abnormal influence of the July hail storm on the results of this experiment seems unnecessary. They are nevertheless given in the subjoined table, so that those covering a period of years may be complete.

TOMATO—METHOD OF TRAINING—1927

Variety	Treatment	Date in bloom	Date first ripe fruit	Yield from 25 plants					
				Ripe fruit		Green fruit		Total	
				lb.	oz.	lb.	oz.	lb.	oz.
Bonny Best	Stopped at 1st truss	June 29	Aug. 19	11	02	2	08	13	10
"	Stopped at 2nd truss	" 30	" 19	18	03½	7	00	25	03½
"	Stopped at 3rd truss	" 29	" 19	23	00	27	12	50	12
"	Not stoped	" 29	Sept. 5	20	02½	47	12	67	14½
Alacrity	Stopped at 1st truss	" 21	Aug. 16	9	06½	2	00	11	06½
"	Stopped at 2nd truss	" 21	" 16	16	03	9	12	25	15
"	Stopped at 3rd truss	" 21	" 19	33	08	36	12	70	04
"	Not stopped	" 30	" 29	27	05	57	00	84	05

TOMATO.—Early Ripening. Project H-600. Plants set out for this experiment were so badly damaged that no records of their behaviour were made. Improved methods in technique will be adopted in further tests of the treatments applied.

TOMATO.—Increasing Production. Project H-601. As in the preceding experiment, no results were obtained in 1927. Hand pollination and open pollination of blossoms are being tested with a view to determining the value of the former practice in tomato growing outdoors.

TURNIP.—Variety Test. Observations made on the varieties of turnips tested, seed of which were sown outdoors on May 10, showed that on July 11 Purple Top Milan was the earliest. The average size of the roots on that date was 2.5 to 3.5 inches, and their quality considered very good. On the whole late turnips were poor, July rains causing rapid growth, which resulted in many of the roots becoming slimy, rotten masses.

WATERMELON.—Variety Test. Peerless or Ice Cream was the only variety grown in 1927. Seed sown on June 7 germinated on June 18, and, though plants blossomed on August 23, no fruits developed large enough to be considered worth harvesting.

FLORICULTURE

ANNUALS

The value of sweet peas for outside decoration and cut flowers was again demonstrated by the varieties grown in 1927. If large blooms with strong stalks, and a long flowering season are desired, trenching as a method of soil preparation is recommended. This may be done in the fall or spring, the important point to bear in mind being to see that a layer of rotted manure three to six inches in depth is placed in the bottom of the trench, the trench being from 18 to 24 inches deep and 24 inches wide for a single row of sweet peas.

Sweet peas that will give a variety of colour are: Constance Hinton (white), Royal Purple (purple), Bridesmaid (pink), Austin Frederick (mauve), Royal Scot (scarlet), Annie Ireland (picotee), Sultan (maroon), Valentine (pink), Dobbies Orchid (mauve), Doris (cerise), Matchless (cream), Blue Bird (blue), Charity (red), Hebe (pink).

These varieties have given satisfaction at Indian Head. In 1927 seed was sown in the open in fall prepared ground on April 26 and in spring prepared ground on May 7. Germination of the former began on May 16 and that of the latter on May 25. Blossoming began soon after the middle of July and continued until frost curtailed further growth on September 26.

It would seem that seed of many hardy annuals may with safety be sown outdoors as early in the spring as soil conditions will permit. Sown on May 5, *Leptosyne stillmani*, mignonette, *clarkia, calendula officinalis, godetia,* shirley poppy, and malope had all germinated by June 2. They came into bloom in the order given from July 13 to July 23. While the flowering season for clarkia and shirley poppy was short, being over by August 27, that for the remainder continued for nearly two weeks longer. Volunteer seedlings of these annuals had developed their second seed leaves before freeze-up, and their ability to survive winter conditions will be recorded in the spring.

Half-hardy annuals sown under glass from March 31 to April 7, pricked out from April 25 to May 12, and transplanted outdoors from June 14 to June 28 were favoured with abundant moisture and sunshine. Recovery from the hail-storm on July 9 was rapid in most cases, and a varied and excellent showing was obtained. The following kinds were grown in 1927: petunia (single and double), *helichrysum, tagetes, acroclinum, statice suworowi,* zinnia, cosmos, *phlox Drummondii, ageratum, lobelia, nemesia,* stock, marigold (African), *matricaria, statice sinuata hybrida, antirrhinum, salpiglossis,* verbena, aster, dhalia and *scabiosa.* These are given in the order in which they began blossoming from June 16 to August 6, and, with the exception of *statice suworowi* and *acroclinum,* have a prolonged flowering season.

Aster wilt again made its appearance towards the end of the season and shortened the flowering period of many of the varieties. An investigation to test the practicability of soil sterilization as a means of controlling this disease is now being conducted.

PERENNIALS

Irises broken up and transplanted on August 3, 1926, made good growth and blossomed well in 1927. At the time of transplanting, fresh roots were developing. This suggested that the work should have been done somewhat earlier. Finely divided hydrated lime was incorporated with the soil when these irises were transplanted.

Some very fine blooms were to be seen from June 20 to July 19. Only with the earliest varieties were blossoms later in appearing than in former years, and the blossoming season of all varieties extended on the average one week longer. Of the thirty varieties growing at the Experimental Farm, Indian Head, Wyomissing, Othello, Gagus, Albert Victor, Eldorado, Parc de Neuilly, Honourable, Rose Unique, Loreley, Mrs. H. Darwin, Salvatori and Celeste deserve special mention.

The blossoming season of pæonies was little delayed by the late spring. During the past three years the time of coming into bloom of any variety has varied no more than a few days. Beginning around June 10 with Japanese pæonies, the variety and beauty of the pæony display was wide and intense until the last week of July. Recalling the damage done to the blooms by hail and heavy rains, the advice to loosely tie pæonies to short stout stakes does not seem amiss.

There was a decrease in the size, number and quality of the blooms on some of the longest established roots (1914), and after another season it will be necessary to trench, and replant that part of the pæony border. The best time to plant pæony roots is as soon after September 1 as the work can be done, and certainly not later than October 15.

Those ranking highest from the standpoints of size and quality of blooms are:—

Pink—Mons. Martin Cahuzac, Mme. Geisler, La Perle, Floral Treasure, Baroness Rothschild.

White—La Tendresse, Mme. Crousse, Mme. de Verneville.

Red—Felix Crousse, Mons. Krelage.

Herbaceous perennials recommended from the Experimental Farm, Indian Head, have been listed elsewhere.[1] These need not be repeated.

Although the season was not as dry as the average, it was observed that that part of the herbaceous border to which a top-dressing of rotted manure had been applied early in the summer, remained in a finer state of tilth than that not top-dressed. In the fall this was lightly forked into the soil around the plants, a practice which recommends itself, lest it be neglected in the spring.

Of the forty-three varieties and kinds of herbaceous perennial seeds sown on August 12 (a few were sown on September 1), twenty-one had germinated before freeze-up. How these seedlings will withstand the winter will be watched with interest. At the time of writing this report a covering of about 12 inches of snow was protecting them, and, in order to prevent freezing and thawing in the spring a covering of strawy litter will be applied before the snow disappears.

TULIPS

Flower growers cannot afford to miss the beauty of a tulip display in the spring. Early single and double tulips when planted around mid-October invariably make a fine showing in the spring without further thought or worry. Their season of blossoming is past early enough to permit half-hardy annuals being planted in the same beds or borders. Darwin tulips are also recommended for outdoor planting, but these do not come into bloom until quite late and the season extends somewhat longer.

HEDGES, ORNAMENTAL TREES AND SHRUBS

No home is completely furnished unless a few hedges, ornamental trees and shrubs adorn its surroundings. From observations and records made on specimens included in arboreta and hedge plant collections at the Dominion Experimental Farm, Indian Head, the following recommendations are given to guide those contemplating beautifying their homes.

Where a hedge six to eight feet in height is desired *Caragana arborescens* should be considered. Severe pruning will have to be adopted to keep a hedge of this kind tidy when the required height has been reached. Though slow growing and requiring practically no pruning *Picea canadensis* (white Spruce) is equally suitable and more permanent as a hedge plant for this height.

If a dwarf hedge is anticipated, beauty as well as usefulness will be obtained with any one of the following: *Caragana pygmaea, Lonicera tatarica, Acer tataricum, A. ginnala* and *Syringa villosa.* Propagation of these hedge plants may be accomplished by sowing the seed in the fall, in a well drained location.

To help in selecting and purchasing ornamental trees and shrubs the following are recommended with due consideration to individuality, size, rate of growth, beauty, susceptibility to insect pests, etc.:—

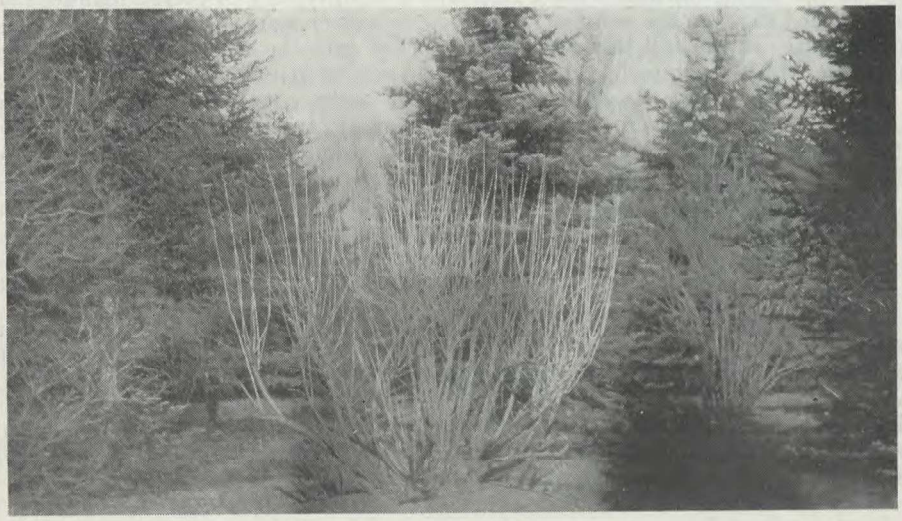
Evergreen Trees.—*Abies balsamea, Pinus sylvestris, Picea pungens.*

Deciduous Trees.—*Acer negundo, Betula populifolia, B. papyrifera, B. alba laciniata, B. alba pendula youngi, Fraxinus pennsylvanica, Ulmus americana, Populus petrowskyana, P. alba, Quercus macrocarpa, Larix laricina* and *Tilia americana.*

[1] Seasonable Hints (Prairie Edition) Nov., 1927.

EVERGREEN SHRUBS.—*Thuja occidentalis, T. occidentalis wareana, T. occidentalis pyramidalis, Juniperus sabina, J. virginiana variegata.*

DECIDUOUS SHRUBS.—Amongst the best are *Amelanchier alnifolia, Celtis occidentalis, Cornus alba sibirica, Cotoneaster tomentosa, Crataegus sanguinea, C. coccinea, Lonicera tatarica, Pyrus baccata, Ribes aureum, Spiraea arguta, S. sorbifolia, S. chamaedrifolia, Syringa vulgaris, S. villosa, S. japonica, S. pekinensis, Viburnum lentago, V. opulus* and *V. prunifolium.*



Lonicera tatarica—cut back spring 1926. Note one year's growth and symmetry of bush.

When planting ornamental trees and shrubs due consideration should be given to their ultimate size and shape. Practically no pruning should be performed on individual specimens except, for instance, when representatives of Syringa or Lonicera species become unsightly and straggling. The accompanying photograph illustrates the rapidity of growth and recovery of a *Lonicera tatarica* bush following pruning.

In extending this phase of the horticultural work at the experimental farm, Indian Head, there will be included in a new arboretum to be planted in the spring of 1928, specimens of as many varieties and species that have been hardy in this location for a number of years.

POULTRY

A flock of White Wyandotte poultry is maintained at the Experimental Farm, Indian Head. Steady progress is being made towards having a flock composed of registered dams, sires from registered dams, and their progeny.

The majority of eggs hatched in 1927 were from the females which registered at the close of the seventh Saskatchewan Egg-laying Contest. Fresh blood was infused into the flock by the purchase and use of high class male birds from the University B.C., L. F. Solly, and J. S. Martin strains of White Wyandottes.

Eggs from hens only were used for hatching.

RESULTS FROM SETTINGS BY MONTHS 1927

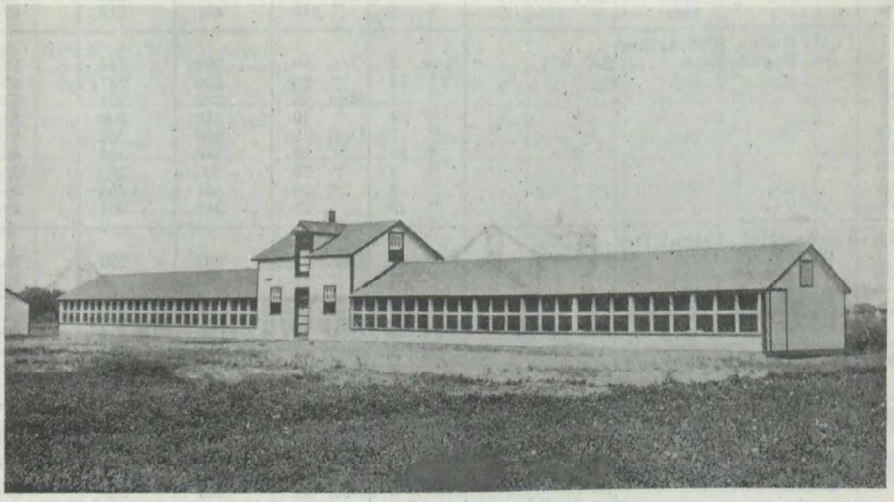
Month	Total eggs set	Number eggs fertile	Number of chicks hatched	Number chicks alive in 3 weeks	Total eggs required for each chick wing-banded
February	100	40	17	17	5·88
March	644	499	286	266	2·42
*April	248	192	149	139	1·78

*None set after April 9, 1927.

During the months of March and April fertility was quite similar being over 77 per cent, while that for the setting in February was only 40 per cent. Under careful management hatches in March can be successful and profitable, and for winter egg-production early hatched pullets are absolutely essential. A Mammoth Buckeye incubator was used entirely for hatching during 1927.

EIGHTH SASKATCHEWAN EGG-LAYING CONTEST

Poultry registration work is now familiar to a large proportion of poultry breeders in Saskatchewan. That it continues to be of value and service is evidenced by the fact that well known poultrymen regularly participate in it, and progressive amateurs take it up.



Egg-laying contest building.

Thirty-nine pens, viz: 16 Barred Plymouth Rocks, 11 Single Comb White Leghorns, 5 White Wyandottes, 1 Rose Comb White Leghorns, 1 Brown Leghorns, 1 Black Minorkas, 1 Single Comb Anconas, 1 Rose Comb Rhode Island Reds, 1 Single Comb Rhode Island Reds, and 1 Buff Orpingtons were entered in the eighth Saskatchewan Egg-laying Contest which commenced November 1, 1926 and continued to October 30, 1927.

The leading pen in the eighth Saskatchewan Egg-laying Contest was that belonging to F. W. Mahon, 2026 Arthur St., Regina. Throughout the contest

this pen of Single Comb White Leghorns maintained a substantial lead gained early in April. Its total production was 2,162 eggs, or an average of 216.2 per bird. The per cent production of Mr. Mahon's pen was calculated at 59.39 per cent, which is 2.53 per cent less than that of the leading pen in the seventh Saskatchewan Egg-laying Contest.

RECORDS OF BIRDS WHICH QUALIFIED FOR REGISTRATION IN SASKATCHEWAN EGG-LAYING CONTEST, 1926-27

Bird No.	Owner	Breed	Date first egg	Date last egg	Days in production	Total eggs laid	Per cent production
20	E. H. Kesterton, 1331 Redland Ave., Moose Jaw, Sask.	S.C.W.L.	Nov. 9	Oct. 25	351	218	62·1
49	B. C. Plewes, 1245-3rd Ave. N.E., Moose Jaw, Sask.	S.C.W.L.	Feb. 8	Oct. 16	251	201	80·0
50	"	"	Dec. 4	" 12	313	202	64·5
52	Tom Gibbs, 1158 Henleaze Ave., Moose Jaw, Sask.	S.C.W.L.	Jan. 6	Oct. 24	292	203	69·5
60	"	"	" 10	" 14	278	208	74·8
79	Mrs. L. Draper, Welwyn, Sask.	S.C.W.L.	Dec. 20	Oct. 15	300	210	70·0
81	M. Ridley, 1345 Redland Ave., Moose Jaw, Sask.	S.C.W.L.	Nov. 1	Sept. 29	331	204	61·6
84	"	"	Nov. 8	Oct. 15	342	224	65·4
85	"	"	" 1	" 5	337	204	60·5
88	"	"	" 3	" 19	351	219	62·3
111	F. W. Mahon, 2026 Arthur St., Regina, Sask.	S.C.W.L.	Nov. 2	Oct. 30	363	256	70·5
112	"	"	" 14	" 29	350	237	67·7
113	"	"	" 2	Sept. 25	326	221	67·7
114	"	"	" 4	" 19	318	200	62·8
115	"	"	" 7	Oct. 2	328	202	61·5
117	"	"	" 24	" 29	340	226	66·4
118	"	"	" 4	" 29	360	265	73·6
119	"	"	" 3	" 29	361	205	56·7
120	"	"	" 16	" 28	347	204	58·7
124	Poplar Hill Farm, De-Winton, Alta.	R.C.W.L.	Dec. 17	Oct. 15	303	229	75·5
129	"	"	" 16	" 13	302	211	69·8
179	J. J. Mustard, Findlater, Sask.	R.C.R.I.R.	Nov. 28	Oct. 13	320	214	66·8
535	A. G. Mitchell, Balmoral, Man.	S.C.R.I.R.	Dec. 21	Oct. 27	311	203	65·2
198	Ursaki & Avery, Findlater, Sask.	B.O.	Nov. 13	Oct. 26	348	208	59·7
207	W. E. Seller, Strasbourg, Sask.	B.R.	Nov. 3	Oct. 27	359	233	64·9
212	C. N. Fisher, Davidson, Sask.	W.W.	Nov. 1	Oct. 26	360	239	66·3
215	"	"	" 2	" 26	359	223	62·1
217	"	"	" 11	" 26	350	209	59·7
218	"	"	" 2	" 26	359	233	64·9
226	W. H. Moore, 1503 Ave. E, N., Saskatoon, Sask.	W.W.	Nov. 2	Oct. 26	359	206	57·3
227	"	"	Dec. 8	" 26	323	211	65·3
229	"	"	Nov. 9	" 26	352	251	71·3
401	Experimental Farm, Indian Head, Sask.	W.W.	Nov. 10	Sept. 24	317	222	70·0
410	"	"	" 4	Oct. 29	360	255	70·8

RECORD OF BIRDS WHICH QUALIFIED FOR REGISTRATION IN SASKATCHEWAN, ETC.—*Con.*

Bird No.	Owner	Breed	Date first egg	Date last egg	Days in production	Total eggs laid	Per cent production
252	T. H. Thompson, 510-4th St., Saskatoon, Sask.	B.P.R.	Dec. 20.	Oct. 27.	302	211	69·8
273	Experimental Station, Rosthern, Sask.	B.P.R.	Nov. 7.	Oct. 28.	356	256	71·9
274	"	"	" 1.	" 30.	364	265	72·8
277	"	"	" 2.	" 30.	363	300	82·6
279	"	"	" 11.	" 29.	353	225	63·7
280	"	"	" 16.	" 30.	349	204	58·4
281	C. N. Fisher, Davidson, Sask.	B.P.R.	Nov. 1.	Oct. 27.	361	254	70·3
285	"	"	Dec. 3.	" 27.	329	232	70·5
289	"	"	Nov. 4.	" 26.	357	243	68·0
290	"	"	" 6.	" 26.	355	213	60·0
291	W. J. White, Box 1296, Saskatoon, Sask.	B.P.R.	Jan. 4.	Oct. 26.	296	215	72·6
295	"	"	" 31.	" 11.	254	209	82·2
321	Mrs. Jas. Byrne, Welwyn, Sask.	B.P.R.	Dec. 16.	Sept. 30.	287	203	70·7
322	"	"	" 5.	Oct. 25.	325	224	68·9
343	T. Hampson, Birch Hills, Sask.	B.P.R.	Nov. 2.	Oct. 11.	342	223	65·2
344	"	"	" 1.	" 26.	360	236	65·5
345	"	"	Nov. 13.	" 25.	347	217	62·5
346	"	"	" 1.	Sept. 10.	312	211	67·6
350	"	"	" 3.	Oct. 9.	341	204	59·8
360	Miss H. M. Purdy, Aspenridge Farm, Balcarres, Sask.	B.P.R.	Nov. 2.	Oct. 26.	359	208	57·9
362	Ursaki & Avery, Findlater, Sask.	B.P.R.	Nov. 12.	Oct. 26.	349	200	57·3
377	P. G. Bacon, 1401 Ave. E, N, Saskatoon, Sask.	B.P.R.	Feb. 18.	Oct. 27.	252	200	79·3
382	H. Barton, Davidson, Sask.	B.P.R.	Nov. 14.	Oct. 12.	333	223	66·9
384	"	"	" 2.	" 27.	360	200	55·5
387	"	"	" 14.	" 27.	348	212	60·9
389	"	"	" 10.	" 27.	352	237	67·3
396	J. O'Hare, Findlater, Sask.	B.P.R.	Nov. 23.	Oct. 14.	326	241	73·9

Birds were housed in a new contest house soon after the commencement of the contest. This new house consists of eight compartments 16 by 16 feet, each compartment providing sufficient accommodation for sixty birds, *i.e.*, five pens. The front has two-thirds glass lights and one-third cotton lights. Ventilation is provided by these cotton lights and a straw filled attic.

Feeds used in the eighth Saskatchewan Egg-laying Contest were similar to those used in the previous contest. Charcoal, grit and shell were kept in self-feeding hoppers in each compartment. Clean water was at all times available and during the winter months sufficient quantities of cod-liver oil and a mineral supplement were incorporated in the mash.

ENTOMOLOGICAL BRANCH LABORATORY

The work of the two officers stationed at the Dominion Entomological Branch Laboratory at the Experimental Farm, Indian Head, during the past year has mainly dealt with shade tree insect investigations and a study of live stock insect conditions.

A detailed biological and control study of tent caterpillars has been one of the main projects under shade tree work. The control of the numerous insects affecting plantations and shelter belts has received much attention and considerable progress has been made in the control of out-breaks of red spider, bronze birch borer, box elder aphis, etc.

The live stock insect survey commenced in 1926 has been completed and special attention has been paid to the warble fly situation, a great deal of information having been accumulated on this most important pest. Both species of warble fly have been found to be abundant in almost every part of the province. The life histories of the main prairie mosquitoes have been worked out in detail, and considerable work has been carried out with other common biting flies, such as, black flies, horse flies, etc. Outbreaks of black flies and mosquitoes and the scarcity of horse flies were outstanding features of the season.

Officers in charge of the Entomological Laboratory are Mr. E. Hearle and Kenneth Stewart.

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