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Canada

DOMINION OF CANADA

DEPARTMENT OF AGRICULTURE

DOMINION EXPERIMENTAL FARMS

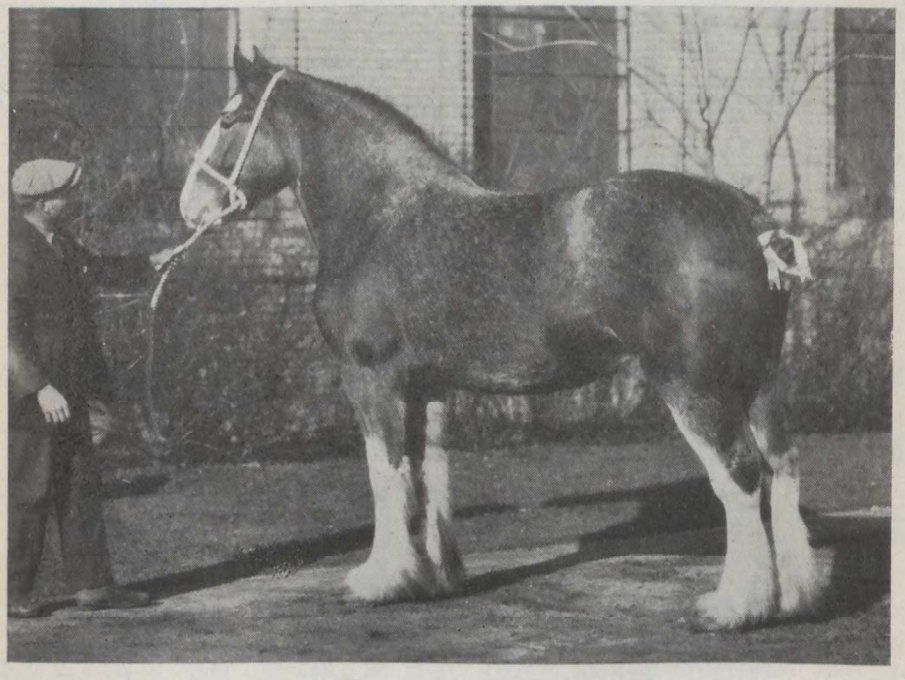
EXPERIMENTAL FARM

INDIAN HEAD, SASK.

REPORT OF THE SUPERINTENDENT

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

FOR THE YEAR 1926



"Lady Price" from the Dominion Experimental Farm, Indian Head, reserve grand champion Clydesdale mare at the Toronto "Royal" and Chicago "International" in 1926.

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

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DOMINION EXPERIMENTAL FARM, INDIAN HEAD, SASK.
REPORT FOR 1926

SEASONAL NOTES

The season of 1926 may be characterized as one of the most successful in the history of the Farm. During the early part of the year, arrangements were concluded with W. R. Patterson for the lease of Section 30-18-12, west of the second meridian, immediately adjoining the Experimental Farm on the north, for a period of fifteen years. At the termination of the lease, this section is being presented as a gift to the Government, to form part of the Experimental Farm and to be used for experimental and investigational work. Mr. Patterson is to be commended for his most generous contribution toward the development of agriculture in Saskatchewan.

The season opened moderately early. Operations commenced April 15, with wheat seeding the same afternoon. The soil was in fine tilth, thus insuring a good seed-bed. Abundance of moisture present in the soil, together with the fine weather following seeding, gave the grain crops an excellent start, which was maintained throughout the season.

The Experimental Farm commenced harvesting O.A.C. 21 barley on July 30. Threshing field crops on the Farm commenced August 25 and was completed September 17. On the newly acquired farm, the following quantities of grain were threshed: barley, 780 bushels; oats, 9,000 bushels; wheat, 6,836 bushels, totalling 16,616 bushels. The Experimental Farm produced 1,839 bushels of barley, 2,669 bushels of oats and 1.519 bushels of wheat, making a total of 6,027 bushels of grain. The total amount for the two farms was 22,643 bushels of grain.

Generally speaking, grain crops throughout the district were good. Threshing operations, however, were seriously impeded by inclement weather conditions during September and October. During these two months, rain or snow was recorded on twenty-one days, making the total precipitation for this period 4.02 inches. Under these conditions, large quantities of grain were threshed and delivered to the elevators in tough condition, with serious financial loss to many farmers.

METEOROLOGICAL RECORD—1926

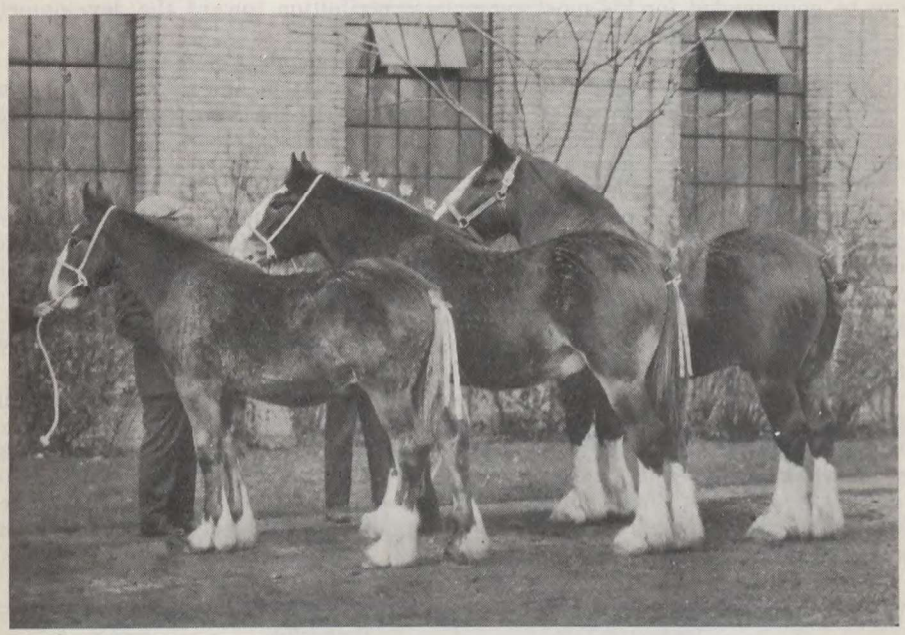
Month	Temperature °Fahr.						Precipitation				Sunshine		Evaporation
	Mean		Maximum		Minimum		Rain	Snow	Total precipitation		1926	Average 20 years	
	1926	Average 20 years	Highest	Mean	Lowest	Mean			1926	Average 20 years			
							Inches	Inches	Inches	Inches	Hours	Hours	Inches
January	14·00	−7·63	41	23·61	−22	4·42	.....	3·00	0·30	0·94	45·6	62·5	.....
February	16·75	9·55	43	25·85	−16	7·67	0·13	10·00	1·13	0·81	62·5	92·6	.....
March	22·10	18·35	56	32·32	−20	11·90	0·23	2·75	0·51	1·20	141·9	135·6	.....
April	38·86	34·93	82	52·80	2	24·96	0·69	6·50	1·34	1·03	213·8	176·4	.....
May	53·32	49·21	82	68·16	16	38·51	3·07	.....	3·07	2·08	202·2	217·4	.....
June	55·36	59·32	88	68·66	30	42·06	1·99	.....	1·99	3·27	202·4	227·2	2·51
July	66·87	62·99	99	82·80	40	50·96	1·25	.....	1·25	2·51	295·2	272·6	4·51
August	59·55	60·79	87	73·26	35	45·84	1·97	.....	1·97	2·18	198·1	245·6	3·81
September	45·40	51·23	77	57·20	8	33·63	0·99	5·00	1·49	1·61	112·5	166·8	1·61
October	37·32	38·33	69	47·03	11	27·64	2·28	2·50	2·53	1·45	97·0	128·6	.....
November	16·03	24·10	53	23·03	−18	9·03	0·18	20·00	2·18	0·96	30·4	67·2	.....
December	2·00	7·72	37	11·00	−33	−7·20	.....	9·75	0·97	0·81	50·1	50·1	.....
							12·78	59·50	18·73	.....	1,651·7	.....	12·44

ANIMAL HUSBANDRY

HORSES

The horses maintained on the Experimental Farm are pure-bred Clydesdales and Clydesdale grades. They are used for work and breeding purposes. Progress in breeding operations has been reported from time to time. During the year, exhibits from the Experimental Farm were shown at Regina Summer and Winter Fairs, Toronto Royal and Chicago International, with very good success. "Lady Price" easily won the three-year-old class, and was made Reserve Grand Champion female at both the last-named shows.

In addition to maintaining a Clydesdale stud at Indian Head, experimental work is carried on with the control of joint-ill, breeding and development of draught horses, cost studies of feed required for the different ages, and methods of wintering brood mares and idle horses.



Trio of Clydesdale Stallions from Indian Head—Prize-winners at Toronto "Royal" and Chicago "International".

The following tables will give some idea regarding the comparative cost of raising draught horses:—

COST OF MAINTAINING BROOD MARES FROM OCTOBER 1, 1925, TO SEPTEMBER 30, 1926.

(Five brood mares)

Feed consumed—	
8,470 pounds oats at 1c. per pound	$ 84 70
935 pounds bran at 1c. per pound	9 35
14,990 pounds hay at $10 per ton	74 95
9,290 pounds straw at $2 per ton	9 29
5 months pasture at $2 per month	50 00
Total feed cost	$ 228 29
Average feed cost for year	$ 45 66

COST OF MAINTAINING WORK HORSES FROM OCTOBER 1, 1925, TO SEPTEMBER 30, 1926

(Five work mares)

Feed consumed—	
18,145 pounds oats at 1c. per pound	$ 181 45
1,483 pounds bran at 1c. per pound	14 83
25,754 pounds hay at $10 per ton	128 77
10,785 pounds straw at $2 per ton	10 78
5 months pasture at $2 per month	50 00
Total feed cost	$ 385 83
Average feed cost for year	$ 77 16

COST OF MAINTAINING TWO-YEAR-OLD COLTS FROM OCTOBER 1, 1925, TO SEPTEMBER 30, 1926

(Four two-year-old colts)

Feed consumed—	
6,050 pounds oats at 1c. per pound	$ 60 50
986 pounds bran at 1c. per pound	9 86
3,824 pounds hay at $10 per ton	19 12
10,850 pounds straw at $2 per ton	10 85
5 months pasture at $2 per month	40 00
Total feed cost	$ 140 33
Average feed cost for year	$ 35 08

COST OF MAINTAINING TWO-YEAR-OLD STALLION FROM OCTOBER 1, 1925, TO SEPTEMBER 30, 1926

(One stallion)

Feed consumed—	
2,580 pounds oats at 1c. per pound	$ 25 80
493 pounds bran at 1c. per pound	4 93
4,800 pounds hay at $10 per ton	24 00
2,200 pounds straw at $2 per ton	2 20
5 months pasture at $2 per month	10 00
Total feed cost	$ 66 93

COST OF MAINTAINING YEARLING COLTS FROM OCTOBER 1, 1925, TO SEPTEMBER 30, 1926

(Three yearling colts)

Feed consumed—	
3,700 pounds oats at 1c. per pound	$ 37 00
799 pounds bran at 1c. per pound	7 99
3,850 pounds hay at $10 per ton	19 25
4,100 pounds straw at $2 per ton	4 10
5 months pasture at $2 per month	30 00
Total feed cost	$ 98 34
Average feed cost for year	$ 32 78

COST OF MAINTAINING YEARLING STALLION FROM OCTOBER 1, 1925, TO SEPTEMBER 30, 1926

(One stallion)

Feed consumed—	
2,475 pounds oats at 1c. per pound	$ 24 75
488 pounds bran at 1c. per pound	4 88
3,550 pounds hay at $10 per ton	17 75
1,875 pounds straw at $2 per ton	1 87
5 months pasture at $2 per month	10 00
Total feed cost	$ 59 25

The maintenance cost figures show a wide difference in comparative feed requirements for mature and growing horses. The horses at work require a much heavier ration than the brood mares and young growing horses. The young horses are fed a limited grain ration except when on pasture. The young stallions, as the figures indicate, cost considerably more to maintain on account of the high fit for sale or exhibition.

TREATMENT FOR NAVEL-ILL

Experimental work for the control of navel-ill continued throughout 1926. Brood mares are fed potassium iodide during pregnancy, vaccinated previous to foaling, and every precaution is taken to insure healthy foals. In every case where vaccine and potassium iodide were used, the foals were born strong and vigorous. On the other hand, however, a mare receiving only potassium iodide had difficulty in foaling. Consequently, comparisons are not available. Summarizing the work of 1926, together with the previous five years' results, it is obvious that the use of vaccines and the feeding of potassium iodide increase the percentage of healthy, vigorous foals. Further work for the control of joint-ill will be continued.

CATTLE

BREEDING SHORTHORNS

A breeding herd of Shorthorns is maintained at the Experimental Farm. The original foundation stock were of dual-purpose breeding. Bulls combining beef and milk production were used with good success. The progeny of these bulls showed a marked improvement over their dams in beef and milk production. Breeding stock are readily sold to farmers throughout the district at fairly remunerative prices. The present herd sire, "Berserker" —161908—, is an outstanding individual of "Browndale" breeding. At the Regina Exhibition, "Berserker" stood second to "Manor Chief", the Grand Champion Shorthorn bull on the Western Circuit, the Canadian National Exhibition and the Toronto Royal in 1926. Several of our Shorthorn females were shown at the Regina Summer Fair with good success. Rigid selection is practised, and sires of the best type and blood lines that can be obtained are used for breeding purposes.

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
				lbs.		$	$	$
Indian Head Mayflower	Mar. 29, 1919	July 31, 1925	334	6,552·6	4·2	176·67	35·52	141·15
Prairie Red Rose 15th	April 8, 1919	June 14, 1925	365	5,202·2	4·2	138·24	41·69	96·55
Prairie Red Rose 18th	Mar. 6, 1921	April 26, 1925	356	5,370·6	4·0	135·73	45·25	90·48
Total			1,055	17,125·4	12·4	450·64	122·46	328·18
Average			351	5,708·4	4·1	150·21	40·82	109·39

COST OF RAISING SHORTHORN HEIFERS

From the following figures, it will be observed that yearlings are more expensive to raise than two-year-olds and three-year-olds. This is due, in a large measure, to the milk and highly expensive concentrates consumed during the early part of their development. Thrifty, well-grown calves comparatively reduce the cost of raising two-year-olds and three-year-olds.

Average feed cost of raising calves to yearlings	$ 64 69
Average feed cost of raising yearlings to two-year-olds	25 23
Average feed cost of raising two-year-olds to three-year-olds	23 49

COMMERCIAL STEER-FEEDING

During the fall and winter of 1925-26, a carload of steers were purchased locally and fed as a commercial proposition for the purpose of utilizing roughage and coarse grains such as are grown on the average farm. These steers were fed and handled as cheaply, and under as nearly average farm conditions, as possible, with the exception that after January 1, 1926, a little cracked corn was added to the ration to hurry them along for the Easter market.

The following figures indicate a slight profit on feeding steers for 1926.

COSTS IN STEER-FEEDING—1926

Number of steers fed		18	
Length of feeding period	days	129	
Total initial weight	lb.	20,170	
Average initial weight	lb.	1,120	
Total gain for lot	lb.	2,334	
Average gain	lb.	129	7
Gross final weight	lb.	22,504	
Average final weight	lb.	1,250	
Cost of steers per cwt	$	4	90
Total initial cost	$	988	33
Cost per head	$	54	91
Total cost of feed	$	305	28
Cost of feed per head	$	16	96
Sale price per cwt	$	6	00
Total receipts from sale	$	1,350	28
Average price per head	$	75	01
Profit or loss on lot	$	56	67
Profit or loss per steer	$	3	15

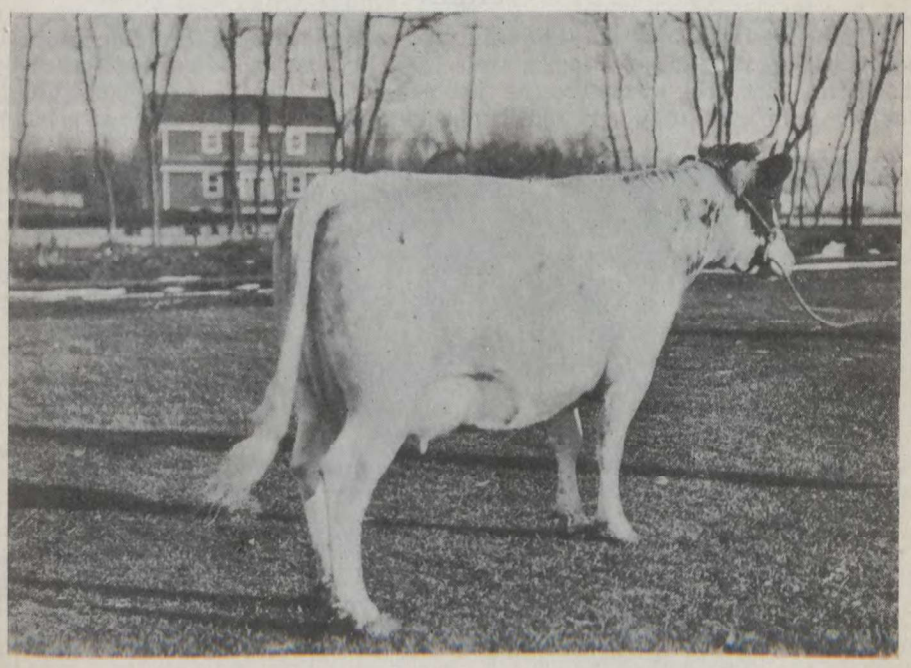
The following will give some idea of the rations fed this lot of steers.

RATIONS—1925-26

Grain.—November 14 to December 31 (1925) barley and oats (equal parts).
January 1 to January 25 (1926) barley and cracked corn (equal parts).
January 26 to March 20 (1926) $\frac{2}{3}$ barley and $\frac{1}{3}$ corn.
Ensilage and cut straw—equivalent to 35-40 pounds per day.
Roughage—wheat straw.

DAIRY CATTLE—AYRSHIRES

Dairy farming is gradually gaining in favour in this district. Following the establishment of a dairy herd at the Experimental Farm, two carloads of grade Ayrshires were distributed throughout the Weyburn and Indian Head districts. During the fall of 1925 and summer of 1926, six heifer calves were



"Tullochgorum Dorothy"—Honor roll record, 12,402 pounds milk.

born at the Farm, making a total of twelve females in the herd. The most outstanding female in the herd is "Tullochgorum Dorothy." This heifer has already dropped two fine heifer calves, and completed her first lactation period with 12,402 pounds of milk and 421 pounds of fat in the Honor Roll class. Four head were shown at the Regina Summer Fair. The herd sire, "Hobsland Speculator", won second in the aged bull class. "Tullochgorum Dorothy" was senior champion female, and "Indian Head Jean" reserve junior champion female.

Milk records are here tabulated.

AYSHIRE 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
				lb.	
Tullochgorum Dorothy	May 11, 1923	Oct. 5, 1925	305	12,402·0	3·4
Queen of Brackley	Dec. 1, 1919	Jan. 5, 1926	330	11,141·0	4·5
Clover Ridge Glenwood	Dec. 30, 1917	May 8, 1925	289	8,390·0	3·8
Tullochgorum Jean	July 10, 1917	June 2, 1925	321	8,145·0	3·4
Average production				10,019·7	3·77

"Burnside Nell" and "Bessie Lee 3rd" have official records of performance of 8,725 pounds of milk, averaging 3.9 per cent fat, and 10,720 pounds of milk, averaging 3.7 per cent fat, respectively.

COST OF RAISING AYRSHIRE HEIFERS

Average feed cost of raising calves to yearlings.....$ 71 35

SHEEP

The pure-bred flock of Shropshires is maintained as a breeding proposition. Surplus ram and ewe lambs are sold to farmers in the district served by the Farm. The flock at the present time consists of twenty-seven choice breeding ewes, nine ewe lambs, five ram lambs and one stock ram. Three ram lambs

Sheep are used to keep shelter-belts and lanes free from weeds.

were sold to go into local flocks. The balance is carried over as shearlings for 1927 sale. A small flock of foundation ewes was sold to Mr. P. A. Taylor, Kisbey, Sask.

Ensilage constituted part of the ration fed to breeding ewes last winter, and it was observed, in several cases, that the lambs were overgrown and flabby, resulting in trouble and, in a few cases, death at birth. It was also observed that where ewes had access to iodized salt only, a number of lambs were lost at birth through goitre, indicating the lack of sufficient iodine in the salt.

The sheep are used to keep lanes and shelter-belts clean and free from grass and weeds.

SWINE

The Farm maintains a small herd of breeding Yorkshires. During the year, the demand for young breeding stock has greatly increased, indicating a wider interest in the production of bacon hogs.

The 1925 report contained results of work with fall litters up to weaning. Thirty of these pigs were carried forward and placed on a growing ration as follows:—

Mixture.—Shorts, 125 pounds; oat chop, 50 pounds; barley chop, 25 pounds; tankage, 10 pounds.

FALL PIGS ON GROWING RATION

—		Pen 1	Pen 2	Pen 3	Pen 4	Pen 5
Number of pigs on test		5	6	7	6	6
Number of days on test		55	55	55	55	55
Initial weight of pigs	lb.	450	405	400	325	295
Final weight of pigs	"	830	855	870	660	665
Total gain during test	"	380	450	470	335	370
Average daily gain during test	"	1·38	1·36	1·22	1·02	1·12
Amount barley consumed	"	108	108	108	82	82
Value of barley at 1¾c. per lb	$	1·89	1·89	1·89	1·44	1·44
Amount of oats consumed	lb.	263	263	263	167	167
Value of oats at 1½c. per lb	$	3·95	3·95	3·95	2·51	2·51
Amount shorts consumed	lb.	515	515	515	415	415
Value of shorts at 1.35c. per lb	$	6·95	6·95	6·95	5·60	5·60
Amount tankage consumed	lb.	41	41	41	29	29
Value of tankage at 5c. per lb	$	2·05	2·05	2·05	1·45	1·45
Amount skim milk consumed	lb.	450	450	450	450	450
Value of skim milk at 30c. 100 lbs	$	1·35	1·35	1·35	1·35	1·35
Total cost of feed consumed	$	16·19	16·19	16·19	12·35	12·35
Cost per pound gain	c.	4·26	3·60	3·44	3·69	3·34

It will be observed from the foregoing table that the pigs averaged 62.5 pounds at the commencement of the test, and at the end of fifty days they averaged 129.33 pounds, making an average gain for all lots of 66.80 pounds or an average daily gain of 1.21 pounds.

Twenty-seven of these pigs were carried forward and placed on different meal rations to determine the most economical ration for finishing for market. Information relating to the results is here tabulated.

COMPARISON OF GRAINS FOR FINISHING FALL PIGS
(Test Period—January 25 to February 22, 1926).

—	Pen 1	Pen 2	Pen 3	Pen 4	Pen 5
	100 corn 100 shorts 10 tankage	100 pea meal 100 shorts 10 tankage	100 barley 100 shorts 10 tankage	100 oat chop 100 shorts 10 tankage	40 corn 40 pea meal 40 barley 40 oats 40 shorts 10 tankage
Number of pigs on test	5	6	6	5	5
Number of days on test	28	28	28	28	28
Initial weight of pigs lb.	830	855	750	600	515
Final weight of pigs "	1,020	1,065	955	725	720
Total gain during test "	190	210	205	125	205
Average daily gain during test "	1·35	1·25	1·22	0·89	1·46
Amount corn consumed "	300	.....	.....	.....	80
Value of corn at 2½c. per lb. $	7·50	.....	.....	.....	2·00
Amount shorts consumed lb.	300	300	300	200	80
Value of shorts consumed at 1.35c. per lb.	4·05	4·05	4·05	2·70	1·08
Amount tankage consumed lb.	30	30	30	20	20
Value of tankage at 3c. per lb. $	0·90	0·90	0·90	0·60	0·60
Amount pea meal consumed lb.	.....	300	.....	.....	80
Value of pea meal at 2½c. per lb. $	.....	7·50	.....	.....	2·00
Amount barley consumed lb.	.....	.....	300	.....	80
Value of barley at 1¾c. per lb. $	.....	.....	5·25	.....	1·40
Amount oats consumed lb.	.....	.....	.....	200	80
Value of oats at 1½c. per lb. $	.....	.....	.....	3·00	1·20
Total cost of feed $	12·45	12·45	10·20	6·30	8·28
Cost per pound gain c.	6·55	5·93	4·97	5·04	4·03
Value of gain, selling price 12c. per lb. $	22·80	25·20	24·60	15·00	24·60
Profit or loss over cost of feed $	+10·35	+12·75	+14·40	+8·70	+16·32

At the conclusion of the feeding test, a number of pigs showed signs of weakening in the legs, due, in all probability, to the lack of exercise as well as the heavy meal ration. Pen 5, receiving the meal mixture of equal parts corn, peas, barley, oats, shorts and 5 per cent tankage, made the highest average daily gain as well as the largest profit over cost of feed. The lot on barley gave good results, leaving a profit of $14.40 over cost of feed as compared with $8.70 in the case of the lot fed oat chop, $10.35 for the lot fed corn, and $12.75 for the lot fed pea meal.

PASTURE FOR HOGS

Annual crops and mixtures were tested out during the year. For young, growing pigs, rape gives the best results and is easily the best annual pasture for our conditions. Barley and oats, sown in combination, or barley and oats sown alone, give abundance of succulent pasture for a short period during the summer. However, oats and fall rye, sown in combination early in June, provide succulent pasture throughout the entire season. When the oat pasture becomes exhausted, the fall rye gradually takes its place and remains green and succulent all fall. Fall rye, sown in June, provides excellent pasture for the fall litters.

Pastures are essential for the health and vigour of young, growing pigs and brood sows.

COST OF MAINTAINING BROOD SOWS

Average feed cost of maintaining mature sows for four months during pregnancy, $10.40 or 8.6 cents per day.

Average feed cost of maintaining young sows for four months during pregnancy, $8.12 or 6.7 cents per day.

COST OF RAISING SPRING LITTERS FROM FARROWING TO WEANING

From the data it will be observed that the average feed cost of raising spring litters from mature sows was $7.04. These sows raised an average of nine pigs per litter, or 76.6 per cent of the pigs farrowed. In the case of young sows, however, the feed cost and average number of pigs weaned is slightly lower as

compared with the mature sows, the young sows showing an average feed cost of five cents less during the nursing period while they weaned an average of 73.2 of the pigs farrowed, or 3.4 per cent less than the mature sows.

COST OF RAISING SPRING LITTERS—FARROWING TO WEANING

Name of Sow	Mature Sows				
	Date farrowed	Date weaned	Number of pigs farrowed	Number of pigs weaned	Total cost of feed
					$
University Maiden 3	March 4	April 19	11	9	5·41
Indian Head 42	March 11	April 26	11	9	6·17
Duchess 045	March 22	May 10	14	9	6·34
Duchess 020	April 21	June 5	11	9	10·24
Total			47	36	28·16
Average			11·75	9	7·04

Name of Sow	Young Sows				
	Date farrowed	Date weaned	Number of pigs farrowed	Number of pigs weaned	Total cost of feed
					$
Ottawa A218	March 7	April 24	12	9	6·76
Indian Head	" 8	" 24	8	8	5·65
Indian Head 62	" 9	" 24	10	9	5·55
Indian Head 55	" 7	" 24	11	4	10·02
Total			41	30	27·98
Average			10·27	7·5	6·99

COST OF RAISING FALL LITTERS FROM FARROWING TO WEANING

In comparison with spring litters, the feed cost is slightly lower, while the average number of pigs farrowed shows a slight increase over spring litters and the number raised to weaning also slightly increased. Generally, conditions are more favourable for raising young pigs in August and September than in March and April. To insure maximum returns, it is necessary to raise two litters per year; otherwise, the cost of maintaining the brood sow must be charged against the one litter. If available, skim-milk, or some milk substitute, should be added to the ration of fall pigs at weaning time.

COST OF RAISING FALL LITTERS—FARROWING TO WEANING

Name of Sow	Date farrowed	Date weaned	Number of pigs farrowed	Number of pigs weaned	Total cost of feed
					$
Ottawa A. 217	Aug. 4	Sept. 15	14	11	9·04
Indian Head 64	" 4	" 15	10	9	4·54
Indian Head 65	" 10	" 15	10	8	4·03
University Maiden 3	" 18	Oct. 15	10	8	7·86
Ottawa A. 218	" 20	" 15	17	10	7·70
Indian Head 42	" 25	" 15	14	13	7·29
Indian Head 63	" 25	" 15	11	8	7·29
Indian Head 62	" 29	" 15	11	5	6·61
Duchess 045	Sept. 18	" 29	10	8	5·93
Total			107	80	60·29
Average			11·88	8·8	6·69

Here the percentage of pigs weaned was 74.8 per cent of those farrowed, while the total for spring litters from both old and young sows showed 75 per cent raised. Compared on the percentage basis the results are therefore very similar. Because of the somewhat larger litters farrowed in the fall, the number of pigs weaned was therefore greater—8.8 pigs as compared to 8.3 for the spring-farrowed litters.

Winter housing for fall pigs at Indian Head.

Winter quarters for brood sows at Indian Head.

FIELD HUSBANDRY

CULTURAL EXPERIMENTS

Cultural experiments are simply methods of preparing the soil for crops. These methods include not only cultivation and fertilizers, but also rates and dates of seeding. The group of experiments which follow deal with field crops such as grains, grasses, corn and sunflowers. Results of three years' work are summarized in tables, with a short discussion on each experiment.

The reader should bear in mind that these experiments have been conducted on deep, heavy clay land where the annual precipitation is approximately 17 inches.

SUMMER-FALLOW TREATMENT

The best method of handling the summer-fallow is an important consideration on the prairie. Results of four methods of treating the summer-fallow on the wheat crop are shown in table F. 144. The treatments given are briefly outlined. The results on the wheat yield do not show sufficient advantage to recommend one of these methods as the best. Any method of cultivation for the summer-fallow which controls the weed growth will apparently produce the desired result.

TABLE F. 144.—SUMMER-FALLOW TREATMENTS.

Plot Treatment	Average yield per acre 1924-26 wheat	
	bush.	lb.
Ploughed 6 inches June 15 and cultivated as necessary	43	40
Fall ploughed 6 inches and cultivated during summer-fallow year	45	13
Fall disked before summer-fallow and cultivated as necessary during summer-fallow year, but not ploughed	45	20
Cultivated during summer-fallow year, but not ploughed	44	27
Ploughed 6 inches June 15 and cultivated as necessary	43	00

SUMMER-FALLOW SUBSTITUTES

During recent years, it has often been asked, "Can any crop be grown in place of the summer-fallow and not affect the yield of crops following on the same land?" An attempt to find an answer to that question is shown in table F. 145. In three years the results produced are interesting, but not conclusive. Of the hoed crops, corn has shown up well, but sunflowers have a serious effect on the following grain crops. Further evidence of this can be seen by comparing table F. 179 with F. 192. A thin seeding of a grain crop is not as satisfactory a substitute as grain in rows, but both are impossible in weedy land. A late-sown crop, which is cut for hay in time to prevent weeds going to seed, is apparently easier on the soil moisture, as indicated by subsequent crops. This experiment must go on for more years to satisfactorily answer this question.

TABLE F. 145—SUMMER-FALLOW SUBSTITUTES

Plot treatment	Average yield per acre, 1924–26					
	Yield of substitute		Wheat 2nd year		Oats 3rd year	
	tons	lb.	bush.	lb.	bush.	lb.
Summer-fallow—ploughed 6 inches early in June	..	..	34	13	62	25
Corn sown in rows 36 inches apart	5	947	28	40	45	10
Sunflowers sown in rows 36 inches apart	8	145	23	53	40	33
	bush.					
Potatoes planted in rows 36 inches apart	44	26	28	27	40	33
Oats sown in drills (2 drills) in rows 36 inches apart	31	19	27	27	41	13
Oats sown in drills (3 drills) in rows 36 inches apart	32	05	30	53	44	11
Summer-fallow—ploughed 6 inches early in June	..	..	34	40	55	17
	tons					
Oats sown in drills (2 drills) in rows 36 inches apart, and cut for green feed	1	686	31	40	51	19
Oats sown in ordinary way for green feed, July 1st (2¾ bushels per acre)	1	861	28	26	49	14
	bush.					
Oats sown in ordinary way (1 bushel per acre)	46	02	28	36	44	24
Summer-fallow—ploughed 6 inches early in June	..	..	36	26	60	..
Wheat sown in drills (2 drills) in rows 36 inches apart	21	07	33	26	52	05
Wheat sown in drills (3 drills) in rows 36 inches apart	19	33	29	53	50	..
Wheat sown in ordinary way (¾ bushel per acre)	23	47	26	40	48	21
Barley sown in drills (2 drills) in rows 36 inches apart	27	31	34	20	58	21
Summer-fallow—ploughed 6 inches early in June	..	..	37	53	69	07
Barley sown in drills (3 drills) in rows 36 inches apart	20	80	31	13	52	32
	tons					
Hubam sweet clover sown in drills (2 drills) in rows 36 inches apart	1	393	33	47	50	20
Millet sown in drills (2 drills) in rows 36 inches apart	1	1,440	38	47	65	10
Summer-fallow—ploughed 6 inches early in June	..	..	41	13	70	20

STUBBLE TREATMENT FOR WHEAT

The treatment of summer-fallow wheat stubble to be again seeded to wheat is the subject of another experiment. The results of five methods are shown in table F. 146A. An average of three years shows that under our conditions fall ploughing is equal to spring ploughing for this purpose. There was no apparent difference in the weed content of plots where the stubble was burned. There is not enough difference in yields to recommend any method tested.

TABLE F. 146A.—STUBBLE TREATMENT FOR WHEAT

Plot treatment	Average yield per acre, 1924–26	
	bush.	lb.
Ploughed in spring	40	07
Ploughed in fall	40	13
Burn stubble in spring—seed without cultivating	39	..
Burn stubble in spring, cultivate and seed	42	07
Plough in spring	40	..
Disk stubble in spring, and seed	38	47

STUBBLE TREATMENT FOR OATS

The same methods as described have been applied to summer-fallow wheat stubble for oats. More fluctuation in yields has been secured with oats than with wheat, as shown in table F. 146B. Further work is necessary to make conclusions definite.

TABLE F. 146B.—STUBBLE TREATMENT FOR OATS

Plot treatment	Average yield per acre, 1924–26	
	bush.	lb.
Stubble ploughed in spring	43	18
Stubble ploughed in fall	45	17
Stubble burned in spring—seeded without cultivating	47	02
Stubble burned in spring—cultivated and seeded	49	21
Stubble ploughed in spring	39	01
Stubble disked in spring and seeded	39	01

METHODS OF BREAKING BROME SOD

In table F. 147, three methods of breaking brome grass sod for wheat are shown. Any of these methods will destroy the brome sod when the work is done carefully. The results indicate that it does not pay to break in early spring and summer-fallow all season. The cutting of brome and breaking immediately after the hay crop is removed gives more profit when the value of the hay and wheat are considered. The indications are quite pronounced in this experiment.

TABLE F. 147.—METHODS OF BREAKING BROME SOD

Plot treatment	Average yield per acre, 1924-26			
	Hay treatment year		Wheat	
	tons	lb.	bush.	lb.
Plough 5 inches deep immediately after removing hay crop; disk and work as required	2	680	25	40
Plough 5 inches deep immediately after removing hay crop; disk and work as required, and backset September 15	2	80	24	59
Plough 5 inches deep early in the spring and summer-fallow throughout the year	..	..	34	13

PLACE IN ROTATION TO SEED FALL RYE

Fall rye has received more consideration on the prairies in recent years because hardy seed is available and because of its ability to smother weeds. How best to grow the crop is, therefore, of increasing interest. Results in this connection are shown in table F. 153. It is quite evident that our conditions do not favour sowing fall rye with a spring grain crop. A good crop is produced on summer-fallow, but a more paying crop can be grown by seeding it on disked stubble after summer-fallow. Another experiment in this connection (for which no table is shown) has demonstrated that a satisfactory crop of fall rye can be produced on sod land when it is broken immediately after the hay crop is removed.

TABLE F. 153.—PLACE IN ROTATION TO SEED FALL RYE

Method of seeding fall rye	Average yield per acre 1924–26	
	bush.	lb.
Seeded on summer-fallow August 15	48	19
Seeded with wheat in spring	20	..
Seeded on disked wheat stubble	45	33
Seeded with oats in spring	12	28
Seeded on summer-fallow August 15	46	44
Seeded on disked oat stubble	42	34
Seeded with oats for green feed June 21	30	47
Seeded when oats are 4 inches high	24	42
Seeded on summer-fallow August 15	37	41

DATES OF SEEDING SUNFLOWERS

Sunflowers are a valuable silage crop in sections where corn cannot be successfully grown. The results of seeding sunflowers from the first of May, with intervals of a week, till the eighteenth of June are shown in table F. 156. It is evident that the general practice of seeding sunflowers after the grains, about the third week in May, is quite satisfactory. The yields of wheat and oats after sunflowers are worthy of comparison with the yields following corn, as shown in table F. 192.

TABLE F. 156.—DATES OF SEEDING SUNFLOWERS

Date seeded	Average yield per acre, 1924–26					
	Sunflowers		Wheat		Oats	
	tons	lb.	bush.	lb.	bush.	lb.
Seeded May 1	16	1,613	28	53	52	32
Seeded May 7	15	760	26	53	53	04
Seeded May 14	15	1,213	26	..	53	31
Seeded May 21	16	680	26	26	56	09
Seeded May 28	15	1,130	25	13	54	04
Seeded June 4	15	493	27	53	54	24
Seeded June 11	14	186	27	20	55	30
Seeded June 18	12	1,226	25	26	46	23

DATES OF SEEDING FALL RYE

Enquiries about fall rye usually include a question about the time to seed this crop. An answer to this question is shown in table F. 157. Not only is the yield greater by seeding during the early part of September, but the straw usually stands up better. Fall rye matures in the order of seeding, with early September seedings maturing early in August the following year. It would appear advisable to avoid early or late seeding of this crop.

TABLE F. 157.—DATES OF SEEDING FALL RYE

Date seeded	Average yield per acre 1924–26	
	bush.	lb.
Seeded July 1	28	12
" July 15	32	41
" August 1	35	51
" August 15	35	27
" September 1	41	44
" September 15	44	23
" October 1	40	40
" October 15	42	01

METHODS OF SEEDING DOWN ALFALFA AND WESTERN RYE

Permanent hay and pasture mixtures are demanding more attention on the prairies. The question of how to seed down a mixture of alfalfa and western rye grass is of vital importance. The results of nine methods are shown in table F. 196A. Seeding alone has given highest yields, but it pays to seed down with a nurse-crop. The greatest lesson from this experiment is to avoid seeding down a hay mixture with fall rye in the fall. Fall rye can be used as a nurse-crop, but the grass seed should be sown in the spring. Spring grains are equally satisfactory as a nurse-crop, with a stubble crop preferred for this purpose on heavy land.

TABLE F. 169A.—METHODS OF SEEDING DOWN ALFALFA AND WESTERN RYE

Plot treatment	Average yield per acre, 1924–26			
	Hay first year		Hay second year	
	tons	lb.	tons	lb.
Seeded with wheat first crop after summer-fallow	1	1,447	2	1,720
Seeded with wheat second crop after summer-fallow	2	753	2	1,467
Seeded with oats second crop after summer-fallow	2	307	2	520
Seeded with barley second crop after summer-fallow	2	753	2	347
Seeded with oats second crop after summer-fallow; cut oats for green feed with binder	2	973	2	373
Seeded with fall rye first crop after summer-fallow; seed grass in spring	2	480	2	1,360
Seeded with fall rye first crop after summer-fallow; seed grass in fall when seeding rye	0	546	0	1,873
Grass seed seeded alone after summer-fallow wheat	3	1,220	2	1,800
Seeded with oats second crop after summer-fallow	2	213	2	1,653

CULTURAL METHODS FOR SUNFLOWERS

Sunflowers are hard on soil moisture. For that reason, various cultural methods have been tried to find out their effect. It is evident that sunflowers yield higher on summer-fallow, according to table F. 179. Indifferent success has been obtained in applying different methods when growing sunflowers in a three-year rotation with wheat and oats. The results to date are confusing and further work must be done before reaching any decisions on the subject.

TABLE F. 179.—CULTURAL METHODS FOR SUNFLOWERS

Cultural method	Average yield per acre, 1924–26					
	Sunflowers		Wheat		Oats	
	tons	lb.	bush.	lb.	bush.	lb.
Seeded on spring-ploughed ground, in rows 36 inches apart	15	93	27	06	45	23
Seeded on fall-ploughed ground, in rows 36 inches paart	15	1,613	23	46	45	30
Seeded on fall-ploughed ground, in rows 36 inches apart; plants thinned to 3 inches apart in rows	16	1,080	25	20	49	01
Seeded on fall-ploughed ground, in rows 36 inches apart; plants thinned to 6 inches apart in rows	15	1,013	24	06	48	15
Seeded on fall-ploughed ground, in rows 36 inches apart; plants thinned to 10 inches apart in rows	14	840	25	53	48	15
Seeded on fall-ploughed ground, in rows 42 inches apart; plants thinned to 6 inches apart in rows	13	1,106	24	53	44	31
Seeded on fall-ploughed ground, in rows 30 inches apart; plants thinned to 6 inches apart in rows	15	1,493	25	13	49	27
Sunflowers in rows 36 inches apart; cultivated 6 times	15	813	24	53	44	24
Sunflowers in rows 36 inches apart; harrowed when coming up, but not cultivated	14	1,506	23	33	43	11
Seeded on summer-fallow, in rows 36 inches apart	20	1,560	31	53	..	..

APPLYING BARNYARD MANURE FOR WHEAT

Table F. 189A deals with the application of barnyard manure for wheat. Eight tons of rotted manure were applied in three different ways. Top-dressing stubble or the land after seeding has produced no effect in three years. Ploughing manure in with the summer-fallow has shown a marked increase over other methods.

TABLE F. 189A.—APPLYING BARNYARD MANURE FOR WHEAT

Plot treatment	Average yield per acre, 1924–26			
	Wheat		Wheat	
	bush.	lb.	bush.	lb.
No manure; stubble ploughed in fall	37	13	30	..
Apply 8 tons rotted manure on summer-fallow before ploughing	42	13	31	..
Apply 8 tons rotted manure on first year stubble, and plough in	36	33	30	13
Top-dress with 8 tons rotted manure, second year grain immediately after seeding	35	53	28	..
No manure	37	47	28	47

APPLYING BARNYARD MANURE FOR CORN

The practice of applying barnyard manure for corn has not been given popular approval in this province. The results of applying barnyard manure for corn are shown in table F. 192. All methods of application show an increase in corn tonnage over the plot which received no manure. Corn growers will be well advised to study the results presented in this experiment, although the manure has not had sufficient time to really show its effect.

TABLE F. 192.—APPLYING BARNYARD MANURE FOR CORN

Plot treatment	Average yield per acre, 1924–26					
	Corn		Wheat		Oats	
	tons	lb.	bush.	lb.	bush.	lb.
Oat stubble fall ploughed; 8 tons rotted manure applied before ploughing	11	907	37	33	55	17
Oat stubble fall-ploughed; 8 tons rotted manure applied after freeze-up; disked in spring	11	1,817	34	53	55	03
8 tons rotted manure applied in spring and ploughed in	11	440	36	47	58	01
Oat stubble ploughed in autumn. No manure	9	1,427	33	27	34	18
16 tons rotted manure applied in fall on oat stubble and ploughed in	12	1,160	40	53	59	21
16 tons rotted manure applied in spring and ploughed in	11	250	33	40	50	07
Top dress corn immediately after seeding with 8 tons rotted manure; oat stubble ploughed in fall	12	1,573	33	07	49	01

COMMERCIAL FERTILIZERS FOR WHEAT

Commercial fertilizers have not played a prominent part in the extensive methods of prairie agriculture, and are not likely to be used in wheat production, as the results show in table F. 193. The slight increases obtained do not pay for the initial cost of the fertilizer.

TABLE F. 193—COMMERCIAL FERTIZERS FOR WHEAT

Plot Treatment	Average yield per acre 1924-26			
	Wheat		Wheat	
	bush.	lb.	bush.	lb.
Barnyard manure, 12 tons, applied previous to seeding stubble wheat	38	33	39	33
Complete fertilizer, applied for summer-fallow wheat	39	20	36	20
Nitrate of soda (100 lb.) applied previous to seeding stubble wheat	38	10	35	20
No manure	37	07	31	47
Superphosphate (300 lb.) applied previous to seeding stubble wheat	37	40	32	..
Muriate of potash (100 lb.) applied previous to seeding stubble wheat	35	53	30	07
Complete fertilizer, applied previous to seeding stubble wheat	36	33	31	..

GREEN MANURE

Ploughing down a green manure with the summer-fallow has been tried in comparison with other methods. According to the results shown in table F.

194, it has advantages over ordinary summer-fallowing. Peas ploughed down early in July has shown a marked increase over other methods shown. The results from this experiment, like other cultural practices, should show more conclusive data when the experiment has been carried on for a greater number of years.

TABLE F. 194—GREEN MANURE

Green Manure	Average yield per acre, 1924-26			
	Wheat		Oats	
	bush.	lb.	bush.	lb.
Summer-fallow	35	20	56	03
Peas (2 bush. Chancellor) ploughed early in July	42	47	63	31
Peas (2 bush. Chancellor) ploughed late in July	37	40	62	19
Vetches (1 bush.) ploughed late in July	36	40	59	14
Summer-fallowed—barnyard manure 12 tons per acre	37	10	56	29
Summer-fallow	33	47	52	05

ROTATIONS

For a period of years a number of practical rotations have been under investigation. These rotations are designed to meet the requirements of the grain and diversified farmer, from the standpoint of profit and soil fertility.

Rotations under test are as follows:—

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.

A mixture of alfalfa and western rye grass is used in all rotation and field work. It is well adapted to our conditions, and gives abundance of hay and pasture.

The cost of crop production on the various rotations appears on the tabulated summary of values, etc.

ROTATION "C"

Rotation "C" is of three years' duration (wheat, wheat, fallow) and has grown wheat continuously since 1912. Comparing the yields in this rotation for the past fourteen years: in 1912 the average yield on fallow was 24.6 bushels per acre and 30.8 bushels per acre in 1926. From these returns, we are assured of the absence of any serious depletion in our soil fertility.

ROTATION "C"—SUMMARY OF COST OF PRODUCTION

Crop	Yield per Acre		Value of crop per acre, 1926	Cost of production per acre, 1926	Cost of production per bushel, 1926	Profit or Loss per Acre	
	1926	Average five years				1926	Average six years
	bush.	bush.	$	$	$	$	$
Fallow							−10 66
Wheat	30 8	25·9	38 50	19 90	0 65	18 60	8 96
Wheat	25·4	20·5	31 75	18 30	0 72	13 45	5 21
Totals for rotation			70 25	38 20		32 05	14 17
Average per acre			23 42	12 73		10 68	4 72

ROTATION " J "

The crop sequence in this rotation is as follows: wheat, oats, corn, wheat (seeded down), hay, hay. This rotation is laid down for the purpose of meeting the demand of the live stock farmer, and, at the same time, eliminating the bare fallow.

Rotation " J " has not given the results anticipated. In 1925, the corn and oat crops suffered considerable cut-worm damage, and, in 1926, the hay crop following wheat was a total failure.

ROTATION "J"—SUMMARY OF COST OF PRODUCTION

Crop	Yield per Acre		Value of crop per acre, 1926	Cost of production per acre, 1926	Cost of production per bushel, or ton 1926	Profit or Loss per acre	
	1926	Average four years				1926	Average four years
	bush.	bush.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.
Oats	69·9	.....	39 71	23 29	0 33	16 42	.....
	tons	tons					
Corn	4·22	4·93	16 88	27 02	6 40	—10 14	—11 50
	bush.	bush.					
Wheat (seeded down)	38·8	29·8	48 50	17 51	0 50	30 99	17 23
	tons	tons					
Hay	Failure	1·28	.....	7 74	.....	— 7 74	0 23
Hay	1·08	1·65	12 96	22 08	20 44	—9 12	1 96
	bush.	bush.					
Wheat	37·5	22·4	46 88	22 09	0 59	24 79	5 82
Totals for rotation	.....	.....	164 93	119 73	.....	45 20	.....
Average per acre	.....	.....	27 49	19 96	.....	7 54	.....

ROTATION " P "

The crop sequence allows this rotation to be reduced from eight years' duration to six years'. In each case, it is almost ideal for the live stock farmer because it provides a cash-crop, coarse grains for the feeding of live stock, corn and hay for ensilage, and roughage.

ROTATION "P"—SUMMARY OF COST OF PRODUCTION

Crop	Yield per Acre		Value of crop per acre, 1926	Cost of production per acre, 1926	Cost of production per bushel, or ton 1926	Profit or Loss per Acre	
	1926	Average four years				1926	Average four years
	tons	tons	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.
Hay	1·56	1·60	12 72	12 46	11 75	0 26	4 31
Hay—break	0·92	1·34	11 04	12 03	13 08	—0 99	1 84
	bush.	bush.					
Wheat	32·5	27·1	40 63	22 59	0 70	18 04	9 68
Oats	60·2	45·6	34 20	20 65	0 34	13 55	3 77
	tons	tons					
Corn	6·36	6·23	25 44	28 69	4 51	—8 25	—7 82
	bush.	bush.					
Barley (seeded down)	52·4	35·0	36 46	16 76	0 32	19 70	6 38
	tons	tons					
Hay	1·15	1·85	13 80	11 66	10 14	2 14	7 35
Hay	1·00	1·62	12 00	11 20	11 20	0 80	5 59
Totals for rotation	.....	.....	186 29	136 04	.....	50 25	31 10
Average per acre	.....	.....	23 29	17 00	.....	6 29	3 89

ROTATION " R "

Rotation " R " is of nine years' duration, and is especially designed for the maintenance of live stock and soil fertility. For average conditions, however, it is considered somewhat lengthy and unsuitable.

ROTATION "R"—SUMMARY OF COST OF PRODUCTION

Crop	Yield per acre		Value of crop per acre, 1926	Cost of production per acre, 1926	Cost of production per bushel, or ton 1926	Profit or Loss per Acre	
	1926	Average five years				1926	Average six years
	tons	tons	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.
Hay	1·11	1·63	13 32	11 80	10 63	1 52	8 07
Hay	1·01	1·69	12 12	11 54	11 42	0 58	9 33
Hay—break	0·99	1·48	11 88	11 43	11 54	0 45	4 70
Corn	6·12	8·80	24 48	33 01	5 39	—8 53	—·46
	bush.	bush.					
Wheat	41·1	31·5	51 38	16 73	0 41	34 65	16 98
Oats	57·7	49·9	32 77	22 68	0 39	10 09	3 60
Fallow	.....	.....	.....	.....	.....	.....	—11 15
Wheat	44·2	38·2	55 25	23 74	0 54	31 51	19 56
Oats (seeded down)	60·6	46·4	34 56	22 35	0 37	12 21	4 53
Totals for rotation	.....	.....	235 76	153 28	.....	82 48	55 16
Average per acre	.....	.....	26 20	17 03	.....	9 16	6 13

CEREALS

Investigation work with cereals at this farm is conducted on a much larger scale than this report indicates in detail. This work embraces the various stages in developing new varieties and improving existing standard ones. Selection and hybridization are the methods employed. The procedure involves preliminary tests in rod-row plots replicated four times and final tests in one-fortieth-acre plots. Seeding of the latter plots is done with a disk drill. Plots are trimmed at harvest time to remove border effects, except in the case of field peas. In the case of wheat, oats and barley, the results are given for crops produced both on fallow and on stubble.

Where possible, results covering the past five years are supplied in order that the reader may more intelligently evaluate the varieties. The percentage figures listed in the tables show at a glance the relative yielding ability of varieties in comparison with a standard variety. Supplementary notes supply other information on the merits of varieties.

The season of 1926 was above the average for the production of grain. Conditions at seeding time permitted rapid germination, resulting in perfect stands. There were frequent showers which gradually decreased through the growing season. The plants were vigorous, with no harmful effect from plant diseases. In the case of wheat, the season was particularly favourable for early varieties.

It should be borne in mind that these tests were conducted on a heavy clay soil where the average annual precipitation is approximately 17 inches.

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.
	1921	1923	1925	1926	1921	1922	1923	1925	1926	1921	1922	1923	1925	1926	
										bush.	bush.	bush.	bush.	bush.	per cent
Brownie O. 491	.....	.....	112	105	.....	.....	.....	8·5	9·0	.....	.....	.....	39·2	47·0	.....
Ceres	.....	.....	111	110	.....	.....	.....	7·5	6·0	.....	.....	.....	40·4	54·6	.....
Duchess O. 933	.....	101·5	107	99	.....	10	10	5·0	6·0	.....	65·3	26·2	43·3	55·4	.....
Garnet O. 652	99	100·0	107	99	10	10	7	8·5	7·0	30·0	52·7	29·0	48·8	57·5	106·3
Golden—Sask	.....	.....	114	110	.....	.....	.....	8·0	7·0	.....	.....	.....	43·3	53·3	.....
Kitchener—Wheeler	108	111·0	118	113	10	7	7	8·0	8·0	16·0	54·3	25·3	44·6	54·6	95·0
Kota	107	106·0	114	110	5	7	7	7·5	4·0	21·3	48·7	12·0	37·9	49·6	82·6
Marquis O. 15	109	105·0	115	109	10	10	7	8	7·0	22·7	60·7	26·7	45·8	49·2	100·0
Orchard's Selection	110	121·0	117	.....	.....	.....	10	8·5	6·5	.....	.....	19·0	34·2	48·3	.....
Parker's Selection	.....	.....	114	106	.....	.....	.....	8·0	7·0	.....	.....	.....	40·4	47·9	.....
Red Bobs 222	.....	.....	.....	105	.....	.....	.....	.....	8·0	.....	.....	.....	.....	56·7	.....
Red Fife O·17	111	111·0	122	116	10	7	7	9·0	7·0	21·3	42·3	16·0	41·3	44·6	80·7
Renfrew	.....	.....	.....	113	.....	.....	.....	.....	9·0	.....	.....	.....	.....	52·5	.....
Reward	.....	102·5	105	99	.....	5	10	9·0	8·0	.....	58·0	31·3	41·9	45·8	.....
Supreme-Wheeler	.....	.....	114	109	.....	.....	.....	8·5	8·0	.....	.....	.....	39·6	59·6	.....
Wyler's—Red Bobs	.....	.....	112	105	.....	.....	.....	7·0	8·0	.....	.....	.....	47·1	55·4	.....

VARIETY TESTS OF COMMON SPRING WHEAT ON STUBBLE

Variety	Number of days maturing				Strength of straw on scale of 10 points					Yield per acre in bushels					Relative yield; Marquis 100 per cent.
	1921	1923	1925	1926	1921	1922	1923	1925	1926	1921	1922	1923	1925	1926	
										bush.	bush.	bush.	bush.	bush.	per cent
Brownie O. 491	.....	.....	111	105	.....	.....	.....	8·5	8·5	.....	.....	.....	17·5	40·0	.....
Ceres	.....	.....	115	105	.....	.....	.....	9·0	7·5	.....	.....	.....	16·7	36·3	.....
Duchess O. 933	.....	101	107	99	.....	10	10	7·0	7·0	.....	32·7	21·0	21·7	46·3	.....
Garnet O. 652	89	100	107	99	5	10	7	8·0	7·0	19·3	30·7	22·3	22·1	45·8	99·6
Golden—Sask	.....	.....	117	108	.....	.....	.....	9·0	8·0	.....	.....	.....	17·1	35·4	.....
Kitchener-Wheeler	104	112	118	110	10	10	7	9·75	8·0	14·7	39·0	25·7	18·8	38·3	97·0
Kota	.....	106	114	108	.....	7	7	8·0	4·5	.....	28·0	23·3	19·2	38·6	.....
Marquis O. 15	103	105	115	108	10	7	7	9·0	8·0	24·0	35·8	25·3	19·2	36·4	100·0
Orchard's Selection	.....	110	121	116	.....	.....	10	9·75	7·0	.....	.....	28·3	22·1	37·1	.....
Parker's Selection	.....	.....	114	105	.....	.....	.....	9·0	8·0	.....	.....	.....	16·7	35·4	.....
Red Bobs 222	.....	.....	.....	105	.....	.....	.....	.....	8·0	.....	.....	.....	.....	38·8	.....
Red Fife O. 17	109	109	121	115	10	10	7	9·75	7·0	16·0	38·7	21·3	18·8	36·3	93·2
Renfrew	.....	.....	.....	113	.....	.....	.....	.....	8·0	.....	.....	.....	.....	41·7	.....
Reward	.....	103	105	99	.....	10	10	9·5	8·0	.....	30·0	22·7	16·7	32·1	.....
Supreme—Wheeler	.....	.....	112	106	.....	.....	.....	9·0	8·0	.....	.....	.....	20·0	40·8	.....
Wyler's Red Bobs	.....	.....	112	104	.....	.....	.....	8·5	8·0	.....	.....	.....	21·7	42·1	.....

In tests of wheat on fallow there are no significant differences in yield between Marquis, Garnet and Kitchener. Other factors must be considered in comparing these varieties however. The merits of Marquis are well known to growers. Reward possesses earliness, very strong straw, large, dark red kernels and produces a high-quality flour. It has not yielded particularly well however on stubble. Garnet has earliness, straw of medium strength and elongated kernels of fair size. Kitchener differs from Marquis in type of head, colour of straw and date of maturity.

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	
	1925	1926	1925	1926	1925	1926
Acme	121	110	5·0	5	41·7	52·5
Kahla	121	110	7·5	5	33·8	52·9
Kubanka	121	116	7·0	5	37·1	56·3
Mindum	118	110	9·0	6	39·6	46·3
Monad	121	110	6·5	5	41·7	47·5

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	
	1925	1926	1925	1926	1925	1926
Acme	120	116	8·0	5	17·5	40·0
Kahla	120	113	9·0	5	13·7	38·7
Kubanka	121	113	8·75	5	22·1	39·6
Mindum	121	113	8·75	5	14·6	36·7
Monad	120	113	8·5	5	17·1	38·3

Unfortunately in the case of Durum wheats we have results only from two years' work up to the present. Under our conditions of heavy soil and moderate rainfall, this class of grain is very weak in the straw. Mindum is the best variety in this respect, but has been outyielded by other common varieties. The general conclusion, from our observations to date, is that under conditions similar to those at this farm, Durum wheats cannot be recommended in preference to common spring wheats.

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 O·49=100 per cent
	1922	1923	1924	1925	1926	1922	1923	1924	1925	1926	1922	1923	1924	1925	1926	
											bush.	bush.	bush.	bush.	bush.	
Alaska	86	93	102	88	89	10	7	7	8·0	8·5	83·5	49·4	51·8	62·5	62·5	80·8
Banner O. 49	97	100	117	103	103	7	7	10	9·75	9·5	124·7	70·6	31·4	66·2	90·4	100·0
Gerlach—Sask.	.....	104	117	106	104	.....	7	10	9·0	8·5	.....	45·3	31·6	61·0	95·6	.....
Gold Rain	97	100	116	103	100	7	5	10	9·75	9·5	120·6	64·7	31·6	66·2	92·6	98·0
Laurel O. 477	92	96	110	92	92	10	10	7	8·0	9·5	68·2	50·0	25·1	48·5	110·3	78·8
Leader	95	104	117	105	103	10	7	10	8·5	9·5	112·4	62·4	39·2	58·1	102·2	97·6
Longfellow O. 478	86	104	112	99	99	10	7	9	8·5	9·0	115·3	61·2	26·6	52·2	92·6	90·8
Progress No. 6	.....	99	117	106	100	.....	7	10	8·0	9·5	.....	63·5	29·5	69·9	92·6	.....
Victory	97	100	118	103	103	10	7	10	9·5	9·5	115·3	62·4	25·9	66·2	108·8	98·7

VARIETY TESTS OF OATS ON STUBBLE

Variety	Number of days maturing					Strength of straw on scale of 10 points					Yield psr acre in bushels					Relative yield; Banner O·49=100 per cent
	1922	1923	1924	1925	1926	1922	1923	1924	1925	1926	1922	1923	1924	1925	1926	
											bush.	bush.	bush.	bush.	bush.	
Alaska	85	93	102	93	89	10	10	8	8·0	7·5	54·1	33·5	41·3	41·2	50·7	76·1
Banner O. 49	102	103	115	107	104	5	10	10	9·0	9·0	103·5	47·1	27·3	39·0	73·5	100·0
Gerlach—Sask.	.....	108	117	107	104	.....	10	10	8·5	8·5	.....	45·9	20·1	51·5	75·0	.....
Gold Rain	97	106	115	107	102	5	10	10	9·0	9·0	70·6	42·9	25·1	43·4	65·4	85·2
Laurel O. 477	93	104	114	93	92	10	10	10	8·0	9·5	28·2	18·8	27·3	33·8	48·5	54·0
Leader	96	106	115	107	103	10	10	10	8·5	9·5	78·8	40·6	34·7	38·2	80·1	93·8
Longfellow O. 478	86	106	112	107	99	10	10	10	8·5	9·0	74·1	37·6	24·4	36·0	69·9	83·4
Progress No. 6	.....	99	115	117	104	.....	10	10	8·5	9·0	.....	51·8	27·3	39·7	69·1	.....
Victory	102	107	117	107	104	10	10	10	9·0	8·5	61·2	45·3	22·3	54·4	96·3	96·2

There is very little to choose between Victory and Banner oats for our conditions, according to the variety tests of oats covering the past five years. Both are white oats with a spreading panicle. Gold Rain on stubble takes a drop and is at a disadvantage because of its yellow colour. Longfellow and Leader are side-headed varieties. Laurel is a hulless sort, while Alaska represents the early white varieties. Not only is Alaska lower in yield, but it produces much less stray than the later maturing varieties.

TESTS OF BARLEY VARIETIES ON FALLOW

Variety	Number of days maturing					Strength of straw on scale of 10 points					Yield per acre in bushels					Relative yield O.A.C 21 100·0 per cent
	1922	1923	1924	1925	1926	1922	1923	1924	1925	1926	1922	1923	1924	1925	1926	
Bearer	94	93	115	101	97	5	7	9	7	8·0	87·5	45·8	27·5	32·8	64·6	101·1
Chinese	86	90	112	93	90	7	7	10	8	8·5	76·7	34·6	27·0	40·6	55·7	99·1
Duckbill	95	100	119	106	98	10	10	10	10	9·5	67·5	31·5	22·4	24·0	51·0	83·4
Feeder	84	91	111	87	88	7	7	10	8	9·5	53·3	36·5	11·2	35·9	41·7	75·5
Gold	.....	.....	.....	.....	97	.....	.....	.....	.....	8·0	.....	.....	.....	.....	63·0	.....
Himalayan	85	93	91	83	85	7	7	7	7	7·0	76·7	35·8	29·3	40·1	61·5	102·8
Junior	84	91	99	83	82	7	7	6	7	8·5	77·5	38·8	30·5	41·1	58·3	104·0
O. A. C. 21	86	102	112	93	89	7	7	10	8	8·5	70·8	39·2	27·8	41·7	57·3	100·0

TEST OF BARLEY VARIETIES ON STUBBLE

Varieties	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
	1922	1923	1924	1925	1926	1922	1923	1924	1925	1926	1922	1923	1924	1925	1926	
Bearer	97	93	117	117	100	5	7	10	8·5	8·5	50·8	25·4	25·5	35·4	44·8	107·2
Chinese	85	90	112	107	91	7	7	10	9·0	8·5	39·2	24·6	28·3	27·6	52·1	101·1
Duckbill	100	107	119	117	100	10	10	10	9·0	9·5	40·8	14·4	21·9	19·8	38·0	79·4
Feeder	84	91	111	93	89	7	7	10	8·5	9·0	28·3	16·3	14·5	25·0	39·1	72·5
Gold	.....	.....	.....	.....	102	.....	.....	.....	.....	8·0	.....	.....	.....	.....	47·4	.....
Himalayan	86	93	91	89	86	7	7	6	8·5	8·5	35·8	24·2	30·0	31·3	38·0	93·8
Junior	84	91	99	89	85	7	7	9	8·5	8·5	40·8	28·8	29·0	27·1	38·0	96·4
O. A. C. 21	89	108	112	107	89	10	10	10	9·0	8·5	35·8	33·3	28·2	22·4	50·0	100·0

Bearer barley appears to be very promising for our conditions, according to tests in comparison with O.A.C. 21. For a long time the latter variety has been recognized as the best all-round barley for our conditions. Himalayan and junior are hulless sorts with apparent high yields, which are, to some extent, explainable by the use of the standard weight for barley of 48 pounds per bushel in calculating the yields per acre. Feeder is a six-rowed hooded variety which shatters badly and is better adapted for annual hay than for grain production. Duckbill is a two-rowed barley with a strong straw, but shows considerable fluctuation in yield from year to year.

TEST 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
	1922	1923	1924	1925	1926	1922	1923	1924	1925	1926	1922	1923	1924	1925	1926	
Crown (Sask. 272)	.....	.....	99	107	113	.....	.....	10	9	10	.....	.....	13·6	12·5	12·3	.....
Longstem	102	128	100	107	107	.....	7	10	9	10	12·3	8·9	13·1	7·6	9·9	71·8
Novelty O. 53	100	126	99	107	113	.....	7	10	9	10	17·8	12·1	18·3	11·4	12·5	100·2
Premost	93	124	96	99	100	.....	7	10	9	10	19·3	13·6	20·5	8·9	9·8	100·0

The tests of flax over the past five years show that there is no essential difference in yield between Novelty and Premost. Longstem is essentially a fibre flax and is not recommended for seed production. Crown, a variety received from the University of Saskatchewan, has been outyielded by Novelty in the three years it has been under test at this Farm.

TEST 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 O·25=100 per cent
	1922	1923	1924	1925	1926	1922	1923	1924	1925	1926	1922	1923	1924	1925	1926	
Arthur O. 18.....	98	105	121	112	101	49	58	27	36	35	33·0	20·7	22·7	29·6	36·4	93·2
Cartier O. 19.....	100	102	118	115	102	34	45	25	34	40	29·7	18·0	16·7	20·0	37·8	80·0
Champlain O. 32.	100	105	118	112	103	39	44	24	30	43	31·3	19·3	18·0	42·5	35·7	96·2
Chancellor O. 26.	93	101	105	104	96	48	41	19	34	37	32·0	19·0	17·3	39·1	32·2	91·4
Golden Vine.....	99	103	122	112	103	42	51	22	39	44	31·0	21·7	12·3	42·5	35·0	94·4
MacKay O. 25...	98	105	102	115	106	47	60	23	37	48	34·7	17·7	16·0	37·5	46·9	100·0
Sask. 625.....	.....	.....	.....	.....	96	.....	.....	.....	.....	37	.....	.....	.....	.....	31·5	.....

Field peas under test show considerable variation in yield of grain. Early varieties like Chancellor are not so productive as later sorts under our conditions. Golden Vine, a well known variety, has been outyielded by MacKay in the past five years. MacKay is somewhat later in maturing, and the peas have black hilums (eyes) which make them distinctive. From one year's observations, it is apparent that Saskatchewan 625 is identical with Chancellor in appearance of grain and field characters, with no significant difference in yield.

FORAGE CROPS

Within recent years there has been a marked increase in the number of useful forage crops suited to prairie conditions. Remarkable strides are being made in the development of strains which withstand severe winters and dry summers. There are yet a great many obstacles to be overcome before entirely satisfactory crops are available, but the Experimental Farm is endeavouring to keep pace with the growing demand for forage crops better suited to prairie requirements.

The testing of varieties and strains which show possibilities constitutes the main portion of the forage crop work at Indian Head. Carefully conducted tests are made with a large number of replications to obtain reliable results in the shortest possible time. All future yields will be taken from plots with the border growth removed in order to obtain yields closely comparable with field conditions. Work is in progress in an endeavour to obtain a strain of uniform, hardy alfalfa which will be a good seed setter. During the past year, an additional field was seeded to plots for testing alfalfa varieties, western rye grass strains, rates of seeding alfalfa and western rye grass, and grasses and clovers, both alone and in combination.

The yields obtained with various classes of forage crops under test during the past year are reported here. The season did not produce high yields of corn or permanent hay crops, but emergency hay crops and sunflowers did exceptionally well. This serves to illustrate the importance of diversified farming.

CORN

Corn varieties produced fair yields of green tonnage in 1926, but the dry matter content was low. In fact, there was very little difference when the varieties are compared on the dry matter basis, as shown in table Ag. 1. There is one exception. A cross of Wisconsin No. 7 on Howes Alberta, made at Harrow, Ontario, in 1925, had a commanding lead over commercial varieties and seems exceptionally promising. The two varieties at the bottom of the table were low because of poor germination. A more intelligent idea of the performance

of corn varieties may be obtained from the table giving figures covering an average of the past four years (table AG 1a). The figures in the column under relative yield of dry matter show at a glance the percentage yields of corn varieties compared with Northwestern Dent.

TABLE AG. 1.—CORN VARIETIES

Variety	Source of seed	Height	Maturity at harvest	Green weight per acre		Dry matter per acre	
		inches		tons	lb.	tons	lb.
Wisconsin No. 7 x Howe's Alberta	Experimental Farm, Harrow, Ont	72·0	Early dough	15	660	2	1,562
Northwestern Dent	Dakota Improved Seed Co	66·0	Late milk	12	728	1	1,734
Quebec 28	Macdonald College	62·2	Early milk	12	976	1	1,704
Hybird	Wimple	72·8	Silking	12	1,672	1	1,696
Longfellow	Dakota Improved Seed Co	69·3	Silking	13	1,632	1	1,580
Falconer	A. E. McKenzie	63·0	Late milk	12	1,340	1	1,500
Northwestern Dent (Nebraska grown)	A. E. McKenzie	68·1	Silking	11	1,556	1	1,364
Compton's Early	J. O. Duke	68·2	Silking	13	792	1	1,354
Longfellow	J. O. Duke	69·9	Silking	12	972	1	1,286
North Dakota	Steele, Briggs	68·0	Cobs forming	12	238	1	1,246
Amber Flint	Wimple	61·6	Early milk	12	168	1	1,210
Burr Leaming	G. S. Carter	73·0	Tasselling	13	76	1	1,106
Minnesota 13	A. E. McKenzie	69·2	Tasselling	10	1,876	1	1,056
Bailey	J. O. Duke	73·6	Tasselling	10	878	1	1,004
Yellow Dent	Wimple	69·9	Silking	11	1,380	1	946
Wisconsin No. 7	J. O. Duke	69·3	Tasselling	10	1,000	1	926
Golden Glow	J. O. Duke	73·8	Silking	10	2	1	904
Leaming	J. O. Duke	69·4	Tasselling	11	872	1	872
White Cap Yellow Dent	Steele, Briggs	72·2	Ears forming	9	1,092	1	816
Minnesota 13	Haney	67·0	Late milk	8	72	1	648
Quebec 28	Todd	59·5	Early milk	8	1,098	1	576

TABLE AG. 1 A.—ENSILAGE CORN—FOUR-YEAR AVERAGE

Variety	Source of seed	Average height	Average yield per acre, 1923-26				Relative yield dry matter per acre
			Green weight		Dry matter		
		inches	tons	lb.	tons	lb.	per cent
White Cap Yellow Dent	Steele, Briggs	78·0	10	476	2	450	105·3
Longfellow	Dakota Improved Seed Co	69·0	13	74	2	410	104·3
Northwestern Dent	McKenzie	60·5	10	1,620	2	262	100·8
Northwestern Dent	Dakota Improved Seed Co	69·0	12	468	2	228	100·0
Leaming	J. O. Duke	74·0	11	1,058	2	4	94·7
Wisconsin No. 7	J. O. Duke	•74·0	10	840	1	1,692	87·3
Golden Glow	J. O. Duke	74·2	10	200	1	1,672	86·8
Longfellow	J. O. Duke	69·0	10	1,100	1	1,572	84·5
Quebec 28	Macdonald College	58·0	10	364	1	1,572	84·5
Compton's Early	J. O. Duke	71·0	11	194	1	1,554	84·1
North Dakota	Steele, Briggs	68·0	11	10	1	1,504	82·9

MANGELS

Instead of testing a large number of varieties of mangels, we have adopted the plan of testing two varieties representing each standard type. These types are long, half-long, intermediate, tankard, and globe. The yields obtained in 1926, as shown in table Ag. 16, were low. The indications are not very pronounced, but the two varieties representing the intermediate type head the list for yield of dry matter per acre. Further tests are necessary to determine which type is best adapted for our soil.

TABLE AG. 16—MANGELS

Type of root	Variety	Source of seed	Yield per acre		Dry matter per acre	
			tons	lb.	tons	lb.
Intermediate	Yellow Intermediate	Central Experimental Farm, Ottawa, Ont.	8	1,763	1	239
Intermediate	Rosted Barres	Hjalmar Hartmann Co., Copenhagen	9	1,502	1	207
Tankard	Eclipse	A. E. McKenzie Seed Co., Brandon, Man.	10	.....	1	204
Long	Eleventh Mammoth	Hjalmar Hartmann Co., Copenhagen	8	1,091	0	1,964
Half Long	Danish Half Sugar White Green Top	Hjalmar Hartmann Co., Copenhagen	8	1,494	0	1,960
Tankard	Eckendorfer	Hjalmar Hartmann Co., Copenhagen	10	1,444	0	1,880
Long	Giant Long Red	A. E. McKenzie Seed Co., Brandon, Man.	8	1,042	0	1,822
Half Long	Giant White Feeding Sugar	Steele, Briggs	8	1,955	0	1,611
Globe	Giant Yellow Globe	Steele, Briggs	9	1,124	0	1,580
Globe	Golden Globe	Sutton, England	7	1,754	0	1,317

FIELD CARROTS

As with mangels, types were used as a basis for testing field carrots. The results shown in table Ag. 36 favour the intermediate type. The long varieties are too difficult to harvest. The yields in all cases are low.

TABLE AG. 36.—FIELD CARROTS

Type of root	Variety	Source of seed	Yield per acre		Dry matter per acre	
			tons	lb.	tons	lb.
Intermediate	Champion	Hjalmar Hartmann, Copenhagen	4	253	0	711
Intermediate	White Giant	Experimental Farm, Summerland, B.C.	4	1,186	0	648
Intermediate	Danish Champion	Central Experimental Farm, Ottawa, Ont.	3	1,027	0	641
Long	Long Orange Belgian	A. E. McKenzie Seed Co., Brandon, Man.	3	24	0	602
Short	Oxheart	H. McFayden, Winnipeg, Man.	3	1,668	0	599
Long	Long Red Surrey	Steele, Briggs	3	478	0	591
Short	Improved Short White	Steele, Briggs	4	912	0	548

SWEDES

The globe types of swede turnips have a very slight margin over the ovals for our conditions, according to 1926 yields shown in table Ag. 51. Like other field roots, these were sown the third week in May and harvested early in October. In spite of excellent stands, the season did not produce high yields.

TABLE AG. 51.—SWEDE TURNIPS

Variety	Source of seed	Type	Green weight per acre		Dry matter per acre	
			tons	lb.	tons	lb.
Ditmars	H. H. McNutt	Globe	9	612	0	1,692
Invicta Bronze Top	Wm. Rennie	Globe	6	1,990	0	1,475
Improved Jumbo	Wm. Rennie	Oval	6	828	0	1,338
Monarch	A. E. McKenzie	Oval	6	42	0	1,070

SUGAR BEETS

We are occasionally asked about profits from sugar beets under our conditions. Previous tests have demonstrated that, except in a very favourable season, this crop is of no economic importance here. The purpose of growing them at this farm is merely to supply data and samples to the Chemistry Division for analysis. The yields obtained in 1926 are shown in table Ag. 66.

TABLE AG. 66.—SUGAR BEETS

Variety	Yield per acre		Dry matter per acre	
	tons	lb.	tons	lb.
Dippe	3	442	0	1,439
Horning	3	93	0	1,240
Schreiber & Son	3	296	0	1,292

SUNFLOWERS

The past season was favourable for sunflowers. Yields were high, but maturity was slower than an average year. The total yield of dry matter for 1926, as shown in table Ag. 76, is approximately a ton higher per acre than an average of the past four years. The figures reveal that tall-growing, late-maturing varieties such as Mammoth Russian contain a comparatively higher percentage of water at harvest time. The variety known as Mennonite is low-growing and will ripen seed every year under our conditions. Among the commercial varieties, Manchurian usually reaches a suitable dough stage here for sunflower silage, but Mammoth Russian and Ottawa 76 have given a slightly higher yield of dry matter since sunflowers have been under test at this Farm.

TABLE AG. 76.—SUNFLOWER VARIETIES

Variety	Source of seed	Height	Maturity at harvest	Yield per acre		Dry matter per acre	
		inches		tons	lb.	tons	lb.
Manchurian	A. E. McKenzie	73	Early dough	18	1,783	3	748
Mammoth Russian.	K. McDonald	90	Head forming	22	783	3	534
Mammoth Russian.	Dakota Improved Seed Co.	80	Early milk	19	1,865	3	236
Ottawa 76	Central Experimental Farm	71	Early dough	17	1,254	3	6
Mennonite	Experimental Station, Rosthern	48	Late dough	15	49	2	991

ALFALFA VARIETIES

Varieties and strains of alfalfa tested last year are shown in table Ag. 16. The variation in yield is, generally speaking, in proportion to the amount of winter-killing. Northern-grown strains of Grimm alfalfa seed produced under prairie conditions winter-kill about 25 per cent in one of our average winters. This is not enough to materially affect the yield. The Cossack has not proved as hardy as Grimm from seed produced under parallel conditions. Canadian-grown seed of Siberian Yellow-Flowered has shown to be extremely hardy. Ontario-grown Grimm seed winter-kills here 50 to 80 per cent. Southern-grown alfalfa seed of any variety is useless for our conditions. The yields shown are from untrimmed, triplicated, small plots, and, consequently, represent about double the yield which would be obtained under field conditions.

TABLE AG. 126.—ALFALFA VARIETIES

Variety	Source of seed	Yield per acre, 1926					
		Green weight		Hay		Dry matter	
		tons	lb.	tons	lb.	tons	lb.
Sask. 451	University of Saskatchewan, Saskatoon, Sask.	11	1,196	3	946	3	1,090
Siberian Yellow-Flowered	Paramount Alfalfa Farm, Rife, Alta.	10	976	3	1,498	3	598
Grimm	Steele, Briggs	11	680	3	1,298	3	422
Lyman's Grimm	A. B. Lyman, Excelsior, Minn., U.S.A.	9	198	3	816	2	1,998
Siberian Yellow-Flowered	Central Experimental Farm, Ottawa	9	1,524	3	770	2	1,958
Cossack	Paramount Alfalfa Farm, Rife, Alta.	10	1,684	3	564	2	1,776
Turkestan	Steele, Briggs	8	1,580	3	388	2	1,622
Cossack	Dakota Improved Seed Co., Mitchell, South Dakota, U.S.A.	8	1,856	2	1,880	2	1,174
Wisconsin Hardy	University of Wisconsin, Madison, Wis., U.S.A.	8	1,880	2	1,834	2	1,134
MacCannus	R. MacCannus, Ontario	7	1,936	2	1,810	2	1,112
Ontario Variegated	Peel County Alfalfa Growers' Association, Brampton, Ont.	9	360	2	1,400	2	752
Variegated	Steele, Briggs	6	1,704	2	988	2	390
Grimm	Ontario Agricultural College, Guelph, Ont.	6	1,476	2	434	1	1,902
Shoobut	From South Argentine—R. Elliott & Sons, New York, U.S.A.	4	760	1	1,116	1	742

RED CLOVER

Favoured by a mild winter, red clover seed in 1925 produced satisfactory yields except in two cases. Red clover seed from Italy will not stand our mildest winters. The names, listed in the variety column in table Ag. 146, indicate the source of the seed. Altaswede is merely seed of Swedish Late grown in Alberta. It is regretted that we have not found any variety or strain of this high-quality forage crop which can be recommended for our climatic conditions.

TABLE AG. 146—RED CLOVER VARIETIES

Variety	Average height	Yield per acre 1926					
		Green weight		Hay		Dry matter	
	inch.	tons	lb.	tons	lb.	tons	lb.
Altaswede	24	7	1,310	2	424	1	1,894
St. Clet, Que.	17	7	1,150	2	380	1	1,854
Oxdrift, Ont.	22	6	1,270	1	1,578	1	1,148
Ottawa, Ont.	17	6	600	1	1,496	1	1,076
Swedish Late	22	6	1,230	1	1,216	1	830
Swedish Medium Late	21	5	934	1	882	1	536
Swedish Early	18	4	220	1	166	0	1,906
Marche—North Central Italy	16	2	560	0	1,214	0	1,068
North Italy	17	1	840	0	762	0	672

SWEET CLOVER

Sweet clover varieties show more difference than table Ag. 161 indicates. All were cut in the late bud stage. Common White heads the list; it is much the coarsest. The Yellow supplied by J. G. Haney was the earliest and finest in quality. Arctic not only had the largest number of fibrous roots, but possessed larger and more nodules. Root-rot, which is the greatest cause of winter-killing, was present in all varieties but Arctic. Maccor was very susceptible and had a comparatively low yield. All other varieties showed a moderate infection.

TABLE AG. 161—SWEET CLOVER VARIETIES

Variety	Source of Seed	Height when cut	Yield per Acre					
			Green weight		Hay		Dry matter	
		inch.	tons	lb.	tons	lb.	tons	lb.
Common white	Steel, Briggs	38·0	16	1,300	3	1,340	3	460
Yellow	Steel, Briggs	39·5	14	900	3	240	2	1,490
Arctic	Steel, Briggs	38·0	13	1,860	3	80	2	1,348
Yellow	J. G. Haney (I.H.C.)	42	17	1,700	3	1,560	2	782
Maccor	Manitoba Agricultural College	33	10	40	2	140	1	1,646

WESTERN RYE GRASS VARIETIES

The western rye grass varieties, known yet only by number, represent selections from the native prairie grass made by Dr. Malte, formerly Dominion Agrostologist, about ten years ago. Tables 221a and 221b illustrate that these have ability in different extent as producers of hay and seed. The tables do not bring out the difference in colour, time of maturity, and quality. The object of these tests is to determine the strain best adapted for our conditions and then to multiply it for distribution.

TABLE AG. 221a—WESTERN RYE GRASS FOR HAY

Number	Height when cut weight	Average Yield per Acre 1925–26					
		Green weight		Hay		Dry matter	
	inch.	tons	lb.	tons	lb.	tons	lb.
4	42·0	6	300	3	30	2	1,390
97	35·0	5	550	2	1,450	2	830
19	40·0	5	150	2	1,220	2	630
10	39·0	5	325	2	1,100	2	520
13	43·5	4	1,325	2	1,090	2	504
118	32·5	4	1,525	2	1,070	2	500
95	36·0	4	1,725	2	1,000	2	430
74	37·0	4	1,325	2	1,330	2	280
91	34·0	4	1,025	2	800	2	260
55	40·0	4	825	2	300	2	250
79	34·0	4	1,712	2	750	2	210
89	34·0	4	925	2	730	2	190
116	33·5	4	75	2	60	1	1,600

TABLE AG. 221b—WESTERN RYE GRASS FOR SEED

Number	Estimated per cent stand	Kind of Soil	Yield of Seed per acre
			lb.
118	60	Medium loam	970·5
116	70	Clay loam	710·67
91	60	Medium loam	669·0
19	65	Clay loam	654·71
13	80	Clay loam	570·5
74	60	Medium loam	502·50
97	70	Clay loam	471·97
79	70	Clay loam	453·37
80	10	Medium loam	228·0
89	25	Medium loam	60·0

DATES OF SEEDING OATS FOR HAY

From the standpoint of yield, our results to date show there is very little difference in seeding oats for green feed between the middle of May and the

end of June. There is a danger of later seedings being caught by frost before the dough stage is reached, as indicated by the "date cut" column in table Ag. 242. On the other hand, later seedings permit greater weed destruction. July seedings produce low yields because the crop merely has an opportunity to develop a green crop with a high water-content. In the light of these figures, the date to seed oats for hay will depend on the local situation.

TABLE AG. 242—DATES OF SEEDING OATS FOR HAY

Date Seeded	Date cut	Height	Average yield per acre 1925-26					
			Green weight		Hay		Dry matter	
		inch.	tons	lb.	tons	lb.	tons	lb.
May 22	Aug. 28	40	5	1,478	2	1,820	2	1,146
June 12	Sept. 22	46	5	1,330	2	1,710	2	1,049
May 15	Aug. 18	42	5	1,780	2	1,030	2	451
June 19	Sept. 22	46	6	180	2	840	2	285
June 5	Sept. 6	45	5	1,530	2	725	2	181
June 26	Sept. 22	46	6	1,220	2	620	2	88
May 29	Sept. 6	40	4	1,730	2	335	1	1,782
July 3	Sept. 22	43	5	1,204	1	1,700	1	1,282
July 10	Sept. 22	26	4	349	1	380	1	64
July 17	Sept. 22	15	3	477	0	1,210	0	1,080

TIME OF HARVESTING OATS FOR HAY

After oats have headed there are three distinct stages before ripening, namely: bloom, milk and dough. We have been conducting an experiment with seven varieties of oats for hay cut at these three stages in order to determine the best stage at which to cut. The results for the past two years are averaged in table Ag. 245. The dough stage produces the highest yield, irrespective of the variety used. Standard late-maturing varieties, such as Banner and Victory, are excellent for this purpose, but early varieties are not suitable. Although oats cut in the dough stage are preferred for horses, those cut in the milk stage produce a more suitable feed for milking cows.

TABLE AG. 245—TIME OF HARVESTING OATS FOR HAY

Variety	Stage cut	Average Yield per Acre 1925-26					
		Green weight		Hay		Dry matter	
		tons	lb.	tons	lb.	tons	lb.
Banner	Dough	7	70	3	1,060	3	254
Victory	Dough	7	980	3	30	2	1,576
Leader	Dough	6	195	2	1,560	2	930
Longfellow	Dough	5	1,860	2	1,305	2	665
Gold Rain	Dough	6	1,570	2	1,040	2	458
Laurel	Dough	5	1,480	2	880	2	325
Alaska	Dough	5	210	2	435	1	1,975
Gold Rain	Milk	6	790	2	520	1	1,750
Victory	Milk	6	260	1	1,870	1	1,420
Laurel	Milk	5	650	1	1,700	1	1,348
Banner	Milk	5	1540	1	1,700	1	1,279
Longfellow	Milk	5	100	1	1,420	1	1,043
Leader	Milk	5	270	1	1,440	1	1,040
Victory	Bloom	5	660	1	1,010	1	666
Gold Rain	Bloom	4	1,290	1	975	1	634
Alaska	Milk	4	675	1	825	1	510
Banner	Bloom	4	1,520	1	660	1	357
Laurel	Bloom	4	220	1	515	1	230
Leader	Bloom	3	1,660	1	320	1	45
Longfellow	Bloom	3	930	1	250	0	1,975
Alaska	Bloom	3	840	0	1,824	0	1,660

ANNUAL HAY CROPS—GRAIN VARIETIES

Ten grain varieties, either singly or in combination, were tested as annual hay crops during the past season. According to table Ag. 246, none of those tested can compare with oats. For further information regarding oats for use as an annual hay crop the reader should consult tables Ag. 242 and 245.

TABLE AG. 246—ANNUAL HAY CROPS—GRAIN VARIETIES

Crop	Height	Yield per Acre					
		Green weight		Hay		Dry matter	
	inch.	tons	lb.	tons	lb.	tons	lb.
Oats	48	9	440	4	260	3	1,266
Wheat	42	7	320	3	420	2	1,642
Barley	38	8	1,400	3	20	2	1,300
Peas (Chancellor) and oats (Banner)	(p)27 (o)45	9	400	2	1,820	2	1,114
Oats and barley	(o)45 (b)45	8	1,480	2	1,680	2	998
Oats and rye	(o)44 (r)48	7	1,000	2	1,580	2	904
Peas (MacKay) and oats (Banner)	(p)32 (o)42	8	1,640	2	1,160	2	534
Spring rye	50	6	600	2	1,120	2	510
Peas (MacKay) and spring rye	(p)34 (r)46	6	240	2	360	1	1,842
MacKay peas	35	9	80	1	1,960	1	1,486

ANNUAL HAY CROPS—LEGUMES

Good average yields were obtained in 1926 from tests of annual legumes suitable for hay. The results are summarized in table Ag. 247. These crops are more difficult to cut and cure than the grains and grasses suitable for emergency hay crops. Sand vetches are especially hard to handle. Being legumes, however, they leave the soil in good condition for the succeeding crop.

TABLE AG. 247—ANNUAL HAY CROPS—LEGUMES

Crop	Height	Yield per Acre					
		Green weight		Hay		Dry matter	
	inch.	tons	lb.	tons	lb.	tons	lb.
Vetches (common) and sweet clover (Hubam)	(v)30 (c)26	8	1,880	2	660	2	190
Vetches (common)	29	7	560	2	320	1	1,800
Peas (McKay) and vetches (common)	(p)34 (v)24	9	40	2	20	1	1,536
Peas (MacKay) and sweet clover (Hubam)	(p)35 (c)22	8	800	1	1,640	1	1,208
Sand vetches	28	8	1,680	1	1,420	1	1,004

ANNUAL HAY CROPS—GRASSES

Four varieties of millet and one of sudan grass were tested as annual hay crops. Excellent stands were secured and even, high growth developed. The yields, as shown in table Ag. 248, are representative, except that the yield of the hog millet was decreased by a heavy infection of smut. In previous tests, Siberian millet has shown a greater superiority over other millets.

TABLE AG. 248—ANNUAL HAY CROPS—GRASSES

Crop	Height	Yield per acre					
		Green weight		Hay		Dry matter	
	inch.	tons	lb.	tons	lb.	tons	lb.
Siberian millet	38·6	7	1,280	2	1,740	2	1,048
Common millet	39·6	6	1,400	2	1,340	2	698
Sudan grass	55·0	5	1,520	2	540	2	.....
Japanese millet	35·2	6	1,680	1	1,680	1	1,234
Hog millet	29·0	6	560	1	1,560	1	1,132

HORTICULTURE

The winter of 1925-26 was characterized by an abnormally light snowfall (see meteorological records). Extremely low, sudden, or wide variations in temperatures were rare. These circumstances tended to keep winter-killing at a minimum, a few pines and spruce seedlings planted in the spring of 1925 being the only sufferers.

Evidence of awakening plant life was apparent early in spring. The first seeds were sown in the open on April 29, but germination was slow. Growth was, likewise, by no means rapid, May being a particularly wet, cold month with the soil temperature remaining very low. Compared with previous years, May was wet, June medium, July wet, and August wet in 1926.

Considerable damage was done to early fruit blossoms in the district by frost on June 2. Early planted potatoes, tomatoes and other tender crops also underwent a severe check at this time, and in many cases replanting and resowing were necessary. From meteorological data compiled during the past nineteen years, an average minimum temperature of 35.65 degrees Fah. for the month of May was recorded. During that time, freezing temperatures in June were experienced in six of the nineteen years. With this information, and the experience in handling of tender crops, growers are advised not to plant out tomatoes or have beans above ground many days before June 10.

Not until the end of June did the temperature of the soil reach a point conducive to optimum growth. This condition was reflected in the slow development and ultimate poor showing of such garden crops as beans, corn, tomatoes and vines crops.

It was an off-year with the crab apple trees on the farm, as only a few bore crops of fruit and these were light. A number of seedlings and cross-breds yielded their first fruits, some of which were very attractive. Plums yielded well, although a considerable quantity of developing fruits was destroyed by the frost on June 2. A few of the later seedling plums failed to mature their fruit before killing frosts.

Some insect pests were particularly rare during the past season, while others were prevalent. The absence of the potato beetle was most noticeable. Aphis, especially on the plums, were persistent and abundant. Cabbage worms (cabbage), rose sawfly (rose), tent caterpillar (rose, apple), cutworm (onion), cucumber thrip (cucumber), red spider (currant, raspberry), and aphis (plum, rutabaga) damaged the crop plants specified.

Diseases causing most damage were rhizoctonia and mosaic (potato), blossom end rot (tomato), scab (potato), plum pocket (plum), drop and tip burn (lettuce), wilt (spinach) and anthracnose (bean).

VEGETABLES

BEAN—VARIETY TEST.—The result of this test, in which seventeen varieties and strains of bush and pole beans were included, clearly demonstrated the need of a quick growing, early maturing variety for the prairies. Unfavourable growing conditions attended the early life of this crop, and all varieties failed to mature sufficiently to ripen any pods before killing frost on September 9. Heretofore, yield of ripe beans have been the basis upon which the suitability of varieties has been determined. However, from data giving date of blossoming, pod development and characteristics, the following varieties are recommended: Princess Artois, Interloper Challenge Black Wax (Ottawa), Davis White Wax (Ottawa), Wardwell Kidney Wax (Ottawa), Yellow Eye (Ottawa), and Masterpiece (Sutton).

BEAN—PLANTING DISTANCES.—Under different planting distances of 2, 4 and 6 inches apart in the row, respectively, growth and maturity did not seem to be materially affected in 1926, when Stringless Green Pod and Round Pod Kidney Wax were tested. The crop was destroyed by frost before any harvesting was done, so that no definite information can be given regarding this experiment.

BEET (TABLE)—VARIETY TEST.—Fourteen varieties and strains were included in this test. Seed was sown on April 29 and all varieties had germinated on May 20. Growth was slow, in consequence of cool weather in May. Total yields were very satisfactory and Early Wonder, Early Model, Eclipse, Extra Early Egyptian, Extra Early Flat Egyptian and Crosby Egyptian are recommended for early beets. According to percentage of yield marketable, they are placed in the following order: Detroit Blood Red, Detroit Dark Red, Crimson Globe, Extra Early Flat Egyptian, Early Wonder, Early Model, Cardinal Globe and Crosby Egyptian.

BEET (TABLE)—DATES OF PLANTING.—As in former years, the Detroit Dark Red variety was selected for this experiment. Six sowings were made, from April 29 to June 21, at ten-day intervals. Germination dates ranged from May 17 to July 6, with an average requirement of sixteen days. Yields of marketable beets, harvested on October 11 from these sowings, were 50, 31, 34, 24, 17 and 14 pounds, respectively, from rows 32 feet long. Corresponding yields of unmarketable roots were 42, 34, 27, 0, 0 and 0 pounds, indicating that, for beets intended for storage purposes, seed should be sown during the period May 15 to May 31.

BRUSSELS SPROUTS—VARIETY TEST.—From thirty-three plants each of Paris Market and Improved Dwarf, 3 pounds and 1½ pounds, respectively, were harvested on October 12. The development of this crop was better than in former years, which indicates that the growing of it is possible with the development of strains suitable to the climatic and soil conditions of southern Saskatchewan.

CABBAGE—VARIETY TEST.—Seed of this crop was sown on April 9 under glass. The seedlings were transplanted during the first week of May and planted in the garden on June 4. All varieties were represented by thirty-three plants, set two feet apart in rows three feet apart.

Of the twenty-two varieties and strains of white, savoy and red cabbages tested, Golden Acre and Early Paris Market were first ready for use by a fairly wide margin. Some of the former were harvested on July 28. Maturing a few days later was Copenhagen Market, a variety which should find a place in every garden. Danish Summer Ballhead, Enkhuizen Glory, Danish Roundhead and Northern Favourite yielded the largest average heads in 1926.

The somewhat cool and moist season brought about very fine development of the savoy varieties. Chester Savoy, as in previous years, produced much larger heads than Drumhead Savoy.

In order of yield, the red cabbage varieties are placed as follows: Dutch Red, Haco and Danish Stonehead. Haco was about eleven days earlier than the other two varieties.

CABBAGE—DATES OF SOWING.—This experiment will be discontinued in 1927. From the results obtained covering a period of years, even the first sowings in the open have yielded unsatisfactory crops. The practice of starting plants under glass and transplanting to the garden toward the end of May is recommended. It was also apparent in 1926 that those plants grown from seed sown in the open succumbed more to the ravages of the cabbage-worms than those started indoors and transplanted.

CAULIFLOWER—VARIETY TEST.—Throughout the district, the development of the cauliflower crop was generally unsatisfactory in 1926. Three varieties were tested, Early Snowball, Early Dwarf Erfurt and Veitch Autumn Giant. Leaf development was excessive and only a few good heads formed in each variety, the last mentioned yielding only two heads. The low soil temperatures in June and the abnormally rainy season during July and August are thought to have been responsible for the poor results. Early Snowball gave the highest yield, although Dwarf Erfurt was a week earlier.

CARROT—VARIETY TEST.—Seven varieties, representing short, intermediate and long types, were included in this test in 1926. Seed sown on April 29 germinated between May 14 and May 19. Results from all varieties, with the exception of Early French Forcing, which yielded a considerable number of cracked roots, were satisfactory. Yields placed them in the following order: Chantenay (McDonald), Chantenay (Ottawa), Nantes Half Long (Lethbridge), St. Valery, Nantes Half Long (McDonald) and Oxheart.

CARROT—DATES OF PLANTING.—Unlike beets, this crop, from the standpoint of quality and yield, graded in order from the first to the last sowing—April 29 to June 21. The total yield from the former was 65 pounds as compared with 1 pound from the latter, from a row 32 feet long.

CELERY—VARIETY TEST.—Very fine stalks were produced by some of the fourteen varieties and strains under test. Frequent rains throughout the season permitted of continuous growth, and with the absence of severe frosts until October 24 blanching was fairly complete on October 30 when all were harvested. All planting was done on the level and earth was used for blanching as growth proceeded. Of the fall varieties tested, Giant Pascal was outstanding, producing stalks weighing on the average more than one-half pound. Paris Golden Yellow, Golden Self Blanching, Golden Plume and New Golden followed in the order given. For late varieties, Winter King and Winter Queen are recommended.

CELERY—METHOD OF BLANCHING.—While the practice of growing celery in a trench can be safely recommended, the lot planted on the level and hilled with earth during the season produced, in 1926, the largest and best quality stalks. Golden Self Blanching was the variety used.

Little protection was afforded by boards or paper; and lots being blanched with these materials were destroyed by frost on September 25, whereas growth of those being blanched with soil continued for another month. In making a choice between boards or paper for blanching early varieties the former is recommended.

CHARD—VARIETY TEST.—In this test, three varieties were included. While Lucullus made the strongest growth, followed in order by Silver Leaf and Ford-

hook Giant, the order was reversed when quality of stalks was considered. This vegetable stands up well during hot weather and provides greens of good quality and flavour during the season.

CORN (TABLE)—VARIETY TEST.—Owing to very low soil temperatures following the sowing of this crop, germination of most varieties was very irregular and growth slow. All varieties were planted on May 28. Pickaninny, the earliest variety, came into silk on July 21 and some ears were harvested on August 24. Maturing in the order given, and soon after Pickaninny, were Alpha, Banting and Early Adams. Later came Sweet Squaw, Improved Early Dakota, Earliest of All, Gehu, Golden Bantam and Early Mayflower, with Malakoff, Assiniboine, Early Malcolm, Extra Early Cory, Early Fordhook and Tom Thumb Pop ready for use about the middle of September. Golden Justice, Whipple New Yellow, Pocahantas and Burbank failed to mature any ears before growth was checked by frost.

CORN (TABLE)—REMOVING SUCKERS.—As in former years, the varieties Early Malcolm and Golden Bantam were tested with respect to the effect of the removal of suckers during the growing season. Mature ears developed only on the plants of the Early Malcolm variety from which the suckers were removed.

It was also noted that where the suckers were removed the plants suffered the least from drought and high temperatures. They also came into silk from five to seven days earlier than those on which the suckers were allowed to remain. The practice would seem to have much to commend it, especially where corn is being grown for seed purposes.

CITRON—VARIETY TEST.—This crop, with other vine crops, reflected the cool, wet weather in the poor development made and low yields given in 1926. Plants were set in the garden on June 9. Red Seeded was considered ready for use on September 8, five days ahead of Colorado, although the latter variety outyielded the former and produced more fruits per plant.

CUCUMBER—VARIETY TEST.—Cucumber varieties tested in 1926 totalled fifteen, which included eight numbered selections, Borodin introductions. From the standpoint of earliness, Early Russian had a margin of six days over White Spine, Giant Pera, Early White Spine and the numbered varieties. Late varieties were Davis Perfect and XXX Table. Thrip ravages interfered with the development of The Vaughan. Yields were low compared with those of former years, and ranged from 20 pounds to 3 pounds from rows 32 feet long.

The numbered varieties, of the short-spine type, gave very promising returns and will be tested further. With the named varieties the order of yield was Early Russian, Giant Pera, White Spine, Davis Perfect, XXX Table and Early White Spine (the yield of the latter variety was reduced as a result of thrips).

EGG PLANT—VARIETY TEST.—A comparison was made between an Indian Head selection of Extra Early Dwarf and a commercial strain. It was noted that the latter produced plants much more vegetative in character than the Indian Head strain. The Indian Head strain also excelled from the standpoint of earliness and total yield. Yields were low, but fruit matured by September 9.

Black Beauty variety failed to bloom and is considered too late for conditions at Indian Head.

KALE—VARIETY TEST.—Tall Green Curled and Dwarf Green Curled were tested, being transplanted to the garden as were other members of the cabbage family. Dwarf Green Curled is recommended as the most desirable variety.

KOHL-RABI—VARIETY TEST.—This little-known and little-grown vegetable has much to recommend its use in home gardens. Two varieties, Purple Giant and White Vienna, were tested in 1926 with very satisfactory results. Sown and treated like cabbage, and planted in the garden on June 11, the harvesting

of the White Vienna variety commenced on July 29. When harvested and used before the roots become mature and woody, the flavour of this vegetable is very pleasing. White Vienna gave a yield of 60 pounds from thirty-three plants, while from the same number of plants of Purple Giant the yield was 16 pounds.

LETTUCE—VARIETY TEST.—The season was very favourable for the development of the lettuce crop. Seed was sown in the garden on April 29, and germination was completed by May 19.

LEAF LETTUCE.—Strains of Grand Rapids and Black Seeded Simpson remained crisp and vigorous until August 2 when the former went to seed. From these results, it would seem that, in a cool season, one sowing made in the spring would suffice to maintain a fresh supply of this vegetable.

HEAD LETTUCE—BUTTER TYPE.—Crisp as Ice was considered the best of the seven varieties and strains of this type tested. From the standpoint of firmest heads on July 24 they were placed in the following order: Crisp as Ice, All Heart, Salamander, California Cream Butter, and Big Boston. On that date a Lethbridge strain of Big Boston and an Ottawa strain of Early Paris Market were almost in flower.

HEAD LETTUCE—ICEBERG TYPE.—Heads of the Iceberg variety were considered firm enough to harvest on July 10. This variety also was the first of this group to develop seed stalks, but its earliness is much to recommend it. New York and Crystal Head were somewhat later in maturing, but produced heads of good quality.

The Cos variety of lettuce, while producing strong plants, was of inferior quality to that of the Iceberg group.

MUSKMELON—VARIETY TEST.—Results from this experiment indicated very forcibly the need of quick maturing selections for this locality. Of the seven varieties tested, only four produced any marketable fruits. These were considered ripe on October 7. Some strains received from the Morden Experimental Station were very promising, and, no doubt, would have ripened more fruits had the season been less wet and cold.

Comparative yields from plants set in the garden on June 6 placed the varieties tested as follows: M. E. S. Early (Morden), Special (Morden), Pages Early and Maryland. Jenny Lind, Montreal and Milwaukee (Morden) did not mature any fruits.

ONION—VARIETY TEST.—There seemed to be a complete absence of onion maggots in 1926, although cutworms, during the early life of the onions, thinned out some of the rows considerably. Seed of nineteen varieties and strains was sown in the garden on April 29 and germination was completed by May 20.

White Barletta and Silver King were the pickling varieties tested. The former ripened on July 23, three days earlier than the latter, and yielded a slightly greater yield of bulbs from the same length of row. In 1925 Silver King outyielded White Barletta.

Climatic conditions in 1926 were particularly well suited for exposing early ripening and quick maturing varieties. On August 10, the following condition of tops was recorded: Extra Early Flat Red, practically all flattened; Ebenezers, about 50 per cent; Australian Brown, a small percentage flattened. The remainder were still green. All varieties, however, had ripened sufficiently before the end of the season to provide dry bulbs for storage.

As would be expected, early maturing varieties were low in total yield. Recommendations, from the standpoints of yield and desirable type of bulbs, would be in the following order: Giant Gibralter, Ailsa Craig, Giant Prizetaker, Ohio Yellow Globe, Large Red Wethersfield (Graham), Large Red Wethersfield (McDonald), Southport Yellow Globe and Yellow Globe Danvers.

PARSLEY—VARIETY TEST.—Further support to the recommendation made in the 1925 report from this farm—viz. sow seed of this crop under glass early

in spring and transplant to the garden in May—was obtained in 1926. Moss Curled and Triple Curled were tested, and both varieties made fair, but incomplete, development from sowings made in the garden on April 29.

PARSNIP—VARIETY TEST.—Cooper Champion, Guernsey XXX and three strains of Hollow Crown represented this test in 1926. Yields of marketable roots exceeded those of 1925. Thinning of the plants to 3 inches apart is essential for full development of this crop. Hollow Crown (Graham) gave the highest yield, followed by Cooper Champion, Hollow Crown (Ottawa), Hollow Crown (McKenzie) and Guernsey XXX, a medium long variety, in last place.

PARSNIP—DATES OF PLANTING.—From results extending over a number of years, it seems safe to conclude that with this crop the earlier the seed is sown in the spring the greater will be the total and marketable yields in the fall. The first sowing was made on May 5 and the remaining five at ten-day intervals. Yields were in the order, one to six, 48 pounds being the yield of marketable roots of the former from a row 32 feet long, and 2 pounds that from the latter from the same length of row.

PEA—VARIETY TEST.—Twenty-one varieties were tested. Alaska, a medium quality, smooth pea, was earliest. Seed of all varieties was sown on April 29, and pods of the Alaska variety were large enough to pick on June 29.

In the table which follows, varieties are arranged in groups with respect to season of maturity according to yields of ripe peas harvested from rows 32 feet long.

PEA—VARIETY TEST

Group	Variety	Seedsman	Length of vine July 14	Average length of pods	Yield	
			inches	inches	lb.	oz.
1—Extra early	Alaska	D. and F.	26	2·25	2	07
2—Early	Extra Early Pedigree	Gregory	38	2·50	3	08
	Gregory Surprise	Gregory	30	2·25	3	05
	Gradus X American Wonder	O–3584	40	2·25	2	10
	Bloomfield	Child	20	2·50	2	10
	Little Marvel	Rennie	26	2·75	2	05½
	Thomas Laxton	McDonald	28	2·75	2	05
	Marchioness	Stokes	33	2·75	2	05
	Laxtonian	Graham	22	3·50	2	03
	Blue Bantam	Graham	20	3·50	1	14
3—Medium early	Eldorado	Sharpe	18	3·75	2	14
	Pioneer	Gregory	20	4·00	2	02
	English Wonder	O–8622	16	2·75	1	13
	Gregory Surprise X English Wonder	O–6471	36	2·00	1	00
4—Late	Stratagem	Graham	36	3·50	3	09
	Lincoln	Sharpe	26	3·25	3	08
	Sutton Excelsior	Harris	28	3·25	3	02½
	McLean Advancer	Livingston	30	3·00	2	10
	Telephone	D. & F.	48	4·00	2	08
	Admiral Beatty	Sharpe	40	4·00	2	08
	Senator	D. and F.	30	3·00	2	01

PEA—PLANTING DISTANCES.—With one exception, planting at 1 inch apart, using the three varieties, English Wonder, Thos. Laxton and Stratagem, gave the highest yield, followed in order by the planting distances of 2 inches and 3 inches, respectively. In drawing conclusions from these results, and from those of former years, nothing of a definite nature can be stated. It would seem, however, that if moisture is abundant during the early summer thick sowing should be adopted, and vice versa—a condition now recognized as being most satisfactory with other agricultural crops.

PEPPER—VARIETY TEST.—On account of the month of August being abnormally cold and wet, the pepper crop did not reach the stage of maturity it has

done in former years. In fact, no ripe peppers were picked in 1926. No fruits were harvested from Long Red Cayenne, Red Chile (McDonald) and Red Chile (Indian Head).

Yields of green fruit placed the remaining varieties which were under test in the following order, with yields considerably lower than those of 1925: Golden Dawn, Hamilton Market, Harris' Earliest (Indian Head), Neapolitan and Harris' Earliest (Harris).

PUMPKIN—VARIETY TEST.—Like other vine crops, pumpkins suffered by the unfavourable weather in July and August. The first light frost on September 9 also shortened their growing season. Five varieties were tested. Seed was sown indoors and planting in the open accomplished on June 6. Connecticut Field and Small Sugar were outstanding for earliness and productivity, followed by Sweet or Sugar (0—5548) and Sugar Sweet Pie. Quaker Pie was an unsatisfactory cropper and ripened no fruits.

POTATO—VARIETY TEST.—This test was made with twenty-one varieties and strains, and comparisons based on the yields from rows representing 1/166 acre. In an attempt to eliminate virus and other diseases, and establish definite variety types, the tuber-unit method of planting was adopted in 1926. Results were very satisfactory and gratifying. Seed for the 1927 crop will be selected from units, the products of individual potatoes of the 1925 crop.

POTATO—VARIETY TEST

Variety	Yield per acre, 1926					
	Marketable		Unmarketable		Total	
	bush.	lb.	bush.	lb.	bush.	lb.
Dalmeny Beauty	347	54	99	15	447	09
New London	317	08	125	32	442	40
Everitt	327	09	89	03	416	12
Morgan Seedling	304	20	106	20	410	40
Seedling (Mrs. Mercer)	326	07	78	30	404	37
Green Mountain	309	10	94	35	403	45
Houlton Rose	214	46	181	54	396	40
Late Puritan	326	07	69	10	395	17
Table Talk	267	19	127	36	394	55
Gold Coin E5603	304	51	82	28	387	19
Early Bovee	256	36	128	49	385	15
Golden Russet	319	12	56	53	376	05
Early Ohio (sel.)	276	40	97	21	374	01
King Geo. V	189	31	184	00	373	31
Empire State E5602	279	26	94	04	373	30
Irish Cobbler	271	08	89	03	360	11
Manitoba Wonder	259	22	83	00	342	22
Rawling Kidney	262	50	61	13	324	03
Seedling (R. Day)	219	16	104	26	323	42
King Seedling	272	00	47	54	319	54
Early Ohio E5605	201	58	33	30	235	28

POTATO—DATES OF PLANTING.—Beginning on May 18, five plantings were made, fourteen days apart, of the varieties, Early Ohio and Irish Cobbler. All seed was obtained from the same source and sets were made as uniform as possible.

Results were very irregular, with the first plantings yielding one-half as much again as the second plantings. There was an equally wide variation between yields from the second and third plantings, more so between the third and fourth, with a most unsatisfactory yield from the fifth plantings made on July 12. The recommendation to plant not later than June 15 is made.

POTATO—COST OF PRODUCTION.—Production costs were based on data obtained from growing one-half acre blocks of two varieties, Early Ohio and Irish Cobbler. The plot of ground used was that on which potatoes were grown in 1925. Little preparation of the land was, therefore, necessary, and a modern machine was used for planting the sets.

Items considered in estimating production charges were: cost of seed, preparing and planting seed, hoeing and cultivating, digging, picking and hauling potatoes, rent of land and machinery depreciation. No spraying for the control of diseases and insects was necessary.

The quality of potatoes harvested was good and yields very satisfactory. Early Ohio yielded at the rate of 269 bushels per acre, at a cost of 17.94 cents per bushel, while Irish Cobbler yielded at the rate of 206 bushels per acre at a cost of 20.04 cents per bushel.

POTATO—SPROUTING SEED.—This experiment was continued in 1926, using the varieties, Early Ohio and Irish Cobbler as heretofore. Planting was completed on May 18 when the sprouts on the sprouted lots were strong and vigorous. These were harvested on October 7, and computed yields are given in the accompanying table.

POTATO—SPROUTING SEED

Variety	Yield per acre, 1926					
	Marketable		Unmarketable		Total	
	bush.	lb.	bush.	lb.	bush.	lb.
Early Ohio (sprouted)	440	00	45	39	485	39
Early Ohio (unsprouted)	268	22	34	35	302	57
Irish Cobbler (sprouted)	326	28	113	26	439	54
Irish Cobbler (unsprouted)	264	13	62	15	326	28

The seed used in this experiment had been kept dormant during the winter, and, hence, was not weakened by virtue of sprouts having been removed. Sprouting apparently was instrumental in increasing the total, as well as the marketable, tubers in both varieties. The time at which the sprouted and unsprouted lots of Irish Cobblers were ready for digging was practically the same. With the Early Ohio variety, the unsprouted lots were slightly later than those that were sprouted before planting.

RADISH—VARIETY TEST.—There was little difference in quality and desirability between the early varieties in this test. Growth of all was satisfactory. Twenty-Day, Sparkler, Ne Plus Ultra, Early Scarlet Globe, French Breakfast and Chartier, a long radish, can be recommended.

For a summer radish, White Icicle was considered superior to White Strasburg. The winter radish, Long Black Spanish, which was not affected by maggots, produced better roots than Short Black Spanish.

RUTABAGA—VARIETY TEST.—In growing rutabagas, attention should be paid to the control of aphis by spraying with nicotine sulphate solution.

From the results obtained in 1926, American Purple Top greatly outyielded Yellow Globe and produced roots ideal for storage. Seed was sown April 29 and harvesting completed October 14.

SALSIFY—VARIETY TEST.—As in former years, Mammoth Sandwich Island and Long White were the varieties tested. From the standpoints of yield and quality, the former excelled. This vegetable is perfectly hardy and should be sown outdoors early in spring.

SPINACH—VARIETY TEST.—The season was favourable for the development of this crop. During a period of heavy rains and moist atmosphere an attack of fungus threatened, but damage was slight. Bloomsdale and King of Denmark are large free-growing varieties, while Broad Leaf (Lethbridge) produced plants conforming to its name. The conditions of the varieties as regards production of seed stalks on July 3 was: Bloomsdale, most; Victoria and Broad Leaf, many; Long Standing, a few; King of Denmark, none.

New Zealand spinach, a variety most valuable during hot weather, was nicely ready for use on August 2.

Notes taken on a late sowing of the spinach varieties credited Bloomsdale and Broad Leaf with the best type of growth. No damage was done to this crop by 24 degrees of frost.

SQUASH—VARIETY TEST.—Despite the somewhat unfavourable climatic conditions during the latter part of the growing season, the yields obtained from nine varieties tested compared very favourably with those obtained in 1925. Plants started under glass were planted in the garden on June 9, a week earlier than in 1925, but the date of blossoming ranged from 0 to 14 days later. Based on total crop harvested, varieties are placed as follows: English Vegetable Marrow, Green Hubbard, Long White Bush, Delicious, Perfect Gem, Golden Hubbard, Giant Crookneck and Table Queen. The last-mentioned variety was very unsatisfactory.

For the home garden, Long White Bush Marrow, Green Hubbard, Delicious and Golden Hubbard squash are recommended.

TOMATOES—VARIETY TEST.—Forty-four varieties and strains, represented by five plants each, planted 3 by 3 feet apart and pruned to single stems tied to stakes, were tested in 1926. Grown under glass until danger of frost was over, these were planted in the garden on June 8, 9 and 10. Yields of ripe fruit were comparatively low, as will be seen from the table which follows:—

TOMATOES—DETAILS OF VARIETY TEST

Variety	Source of seed	Date in blossom	Date first ripe fruit	Yield					
				Ripe fruit		Green fruit		Total from 5 plants	
				lb.	oz.	lb.	oz.	lb.	oz
Prosperity	Patmore	June 19	Aug. 30	9	03	19	12	28	15
IXL Early	Rennie	" 17	Sept. 1	8	14½	19	08	28	06½
First and Best	Bruce	" 26	" 1	8	09½	16	04	24	13½
Alacrity	O-6560	" 21	" 2	7	13	27	00	34	13
Monumental	Bolgiano	" 21	" 2	7	11½	17	12	25	07½
Chalks Early Jewel	Steele, Briggs	" 22	Aug. 30	7	09½	18	00	25	09½
Burbank	Bruce	" 21	Sept. 1	7	00	22	00	29	00
Wayahead	Bruce	" 15	Aug. 28	6	15½	22	04	29	03½
Avon Early	Ferry	" 21	Sept. 4	6	11	22	11	29	06
John Baer	Steele, Briggs	" 21	" 1	6	09	18	00	24	09
Alacrity X Hipper	O-6568	" 17	Aug. 30	6	05	20	12	27	01
Bonny Best	Langdon	" 25	" 30	6	05	19	00	25	05
Avon Early	Dreer	July 5	Sept. 4	6	02	16	04	22	06
Danish Export	Wiebolt	June 17	Aug. 14	5	15½	9	08	15	07½
Bonny Best	Stokes	" 21	Sept. 1	5	15	15	12	21	11
Manyfold	Livingston	" 18	Aug. 28	5	12½	19	00	24	12½
Marglobe	Stokes	" 25	" 30	5	12	16	00	21	12
Earliana Grade 2	Langdon	" 16	" 30	5	11½	28	00	33	11½
No. 6 Sonoma	Diener	July 5	Sept. 4	5	11½	15	00	20	11½
Alacrity X Earlibell	O-6570	June 15	" 1	5	10	25	08	31	02
Sparks Earliana	McDonald	" 17	" 4	5	09½	20	04	25	13½
Pink No. 2	O-6569	" 21	" 4	5	04	14	08	19	12
Bonny Best	Keith	" 19	Aug. 30	5	02½	23	04	28	06½
Favorite	Livingston	July 27	" 30	4	10½	8	00	12	10½
Pink No. 1	O-6574	June 18	Sept. 4	4	09½	14	04	18	13½
No. 5 Geronimo	Diener	July 7	" 4	4	07½	17	00	21	07½
Early Abundance	Diener	June 24	Aug. 30	4	07	19	08	23	15
Best of All	Sutton	" 21	Sept. 7	4	01½	16	00	20	01½
Burbank	Burbank	" 19	Aug. 28	4	01	17	00	21	01
Sunberry	Burbank	" 8	" 27	4	00	frozen		..	..
Stone	Langdon	" 18	Sept. 2	3	13	14	12	18	09
Beauty	Livingston	" 24	" 1	3	12½	9	00	12	12½
No. 1 Navato	Diener	July 5	" 4	3	10½	14	08	18	02½
John Baer	Moore	June 26	" 1	3	10½	12	04	15	14½
Sparks Earliana	Ewing	" 21	" 1	2	14½	25	00	27	14½
No. 3 Petaluma	Diener	July 7	" 4	2	10	16	08	19	02
Bolgiano	Bolgiano	June 21	" 1	2	08	17	12	20	04
No. Ignacio	Diener	July 5	" 7	2	07	18	00	20	07
Bonny Best	Moore	June 26	" 9	2	00	14	12	16	12
Prune	Diener	July 10	Aug. 28	2	00	8	04	10	04
Magnus	Livingston	" 24	Sept. 7	1	15	14	00	15	15
No. 4 Tulare	Diener	" 9	" 10	1	11	20	04	21	15
No. 1099	Burpee	June 19	" 9	1	05	8	00	9	05
Richard Diener	Diener	" 21	.....	..	..	17	08	17	08

From the table, it will be observed that the varieties yielding the largest crop of ripe fruits have been, in previous tests, considered early maturing varieties. The advantages from growing these in a year like 1926 were very apparent and selections should be made for early maturing qualities together with high-yielding potentialities.

TOMATO—METHOD OF TRAINING.—As in former years, plants of the Bonny Best and Alacrity varieties were compared. Grown as one-stem plants, four lots of twenty-five each, of both varieties, were pruned as indicated in the following table.

TOMATOES—METHOD OF TRAINING

Variety	Treatment	Date in bloom	Date first ripe fruit	Yield					
				Ripe fruit		Green fruit		Total from 25 plants	
				lb.	oz.	lb.	oz.	lb.	oz.
Bonny Best	Stopped at 1st truss	June 26	Aug. 21	21	10½	7	00	28	10½
"	Stopped at 2nd truss	" 29	" 26	37	11½	24	00	61	11½
"	Stopped at 3rd truss	" 26	" 30	31	13	51	06½	83	03½
"	Not stopped	" 26	" 24	26	08	51	02	77	10
Alacrity	Stopped at 1st truss	" 11	" 7	18	06	7	12½	26	02½
"	Stopped at 2nd truss	" 11	" 5	38	11	9	14	48	09
"	Stopped at 3rd truss	" 11	" 5	45	00	26	10	71	10
"	Not stopped	" 11	" 5	44	00	33	08	77	08

It will be observed that the greatest amount of ripe fruit was harvested from the " second-truss " plants of the Bonny Best variety, and the " third-truss" plants of the Alacrity variety. While the results vary slightly from those obtained heretofore, the same conclusions seem justifiable with this addition. With early maturing strains and varieties, stopping may be deferred until the fourth or fifth trusses have been differentiated.

TURNIP—VARIETY TEST.—Of the four varieties tested, Extra Early Purple Top Milan was outstanding for earliness. Red Top Strap Leaf, Red Top White Globe and Golden Ball followed in the order given. When considering yield and quality, however, the order of these is reversed. Golden Ball is recommended, particularly as a late summer and fall turnip.

WATERMELON—VARIETY TEST.—Little success attended the growing of five varieties of watermelons except that the need of heat for the development of this crop was clearly demonstrated. From two hills of Will Sugar (Morden) 1 pound 4 ounces of fruit was harvested, and 7 ounces from the same number of plants of Peerless or Ice Cream before killing frosts were experienced. Fordhook Early, Harris Earliest and Kleckley Sweet were too late for conditions accompanying this test.

FRUITS

APPLES

Little more than a bushel of crab apples were harvested from the entire crab apple orchard. This condition thoroughly illustrates the fact that heavy crops of fruit should not be expected every year under normal methods of cultivation. Growth of all trees, however, was strong and vigorous, and conditions during the early summer were such that the accumulation of abundant reserves for the differentiation of fruit buds undoubtedly took place.

Production from the cross-bred apples planted in 1916 was also light. A Pioneer x Ontario (0-2883) cross was considered the best of the 1926 croppers. This tree produced apples 1¾ inches wide by 1⅝ inches deep, firm in flesh, and

of a sub-acid, agreeable flavour. Prince x McIntosh (0-2838) later in the season produced slightly smaller fruit, but fruit of much better keeping quality, firm in flesh, juicy, and of pleasant flavour. While Charles x Tetofsky, Dean x McIntosh and Piotosh again bore a little fruit, pollination did not seem to have been very efficient, and damage, no doubt, resulted from the frost on June 2.

Two new cross-bred apples came into bearing in 1926. Their fruit, however, is of doubtful value. The more promising Jewel x Tetofsky (O-2868), perhaps the earliest maturing apple growing at the Experimental Farm, ripened on August 28. Its fruit, red in colour when ripe, was of the following dimensions: 1½ inches wide by 1¼ inches deep, and of poor keeping qualities.

Among the nine new seedling apples which fruited was a Charlamoff seedling of great promise. This tree is perfectly hardy and a strong grower. The fruit measured 2¼ inches wide by 1⅞ inches deep, was bright red on greenish yellow ground in colour, firm in flesh, juicy and of good flavour. Its season is the latter half of September. One other Charlamoff seedling bore fruit of fair quality, as also did a Yellow Transparent seedling, but the fruit of the remaining seedlings which fruited was either poor in quality or small in size.

Root-stock material from seeds of the hardiest crab apples sown on October 15, 1925, for the propagation of hardy and suitable seedlings and cross-bred apples, is now on hand. These seedlings will be used chiefly for budding in the fall of 1927, when they will be considered large enough for that purpose.

The hardy standard varieties planted in 1925 survived the winter in splendid condition. Good growth was made during the summer, and, from the results of various pruning and cultural treatments on these, it is hoped to obtain interesting and valuable information regarding winter hardiness and time of coming into bearing. In all the orchards at the Experimental Farm clean cultivation is practised.

PLUMS

Two trees each of Sapa and Opata were added in the spring to the varieties under test in the plum orchard. These made good growth and became firmly established before the end of the summer.

No winter injury was apparently done to any of the bearing trees. There was an abundance of blossoms, the first trees coming into bloom as early as May 9. Damage to developing fruits was considerable on June 2 when 4 degrees of frost were registered. Despite this fact, and injury from a severe infestation of aphis, a fair crop of fruit was harvested. Development and ripening, however, did not take place as rapidly as in 1925, with the result that none of the fruit on many of the late maturing trees was picked.

Unnamed native seedlings were the heaviest croppers, and Assiniboine was the only named variety which fruited.

In reporting the growth of seedlings from the pits sown in 1925, it is worthy of note that a much better per cent germination and stand was obtained where the pits were planted immediately after being washed out of the plums. This information was kept in mind when a large number of pits from the best named and unnamed plums were planted in 1926.

STRAWBERRIES

Twenty-five plants of four varieties, Senator Dunlap, Easy Picker, Dr. Burrill and Portia, were set out in the spring. These made very satisfactory growth and runners formed in abundance, especially on the two first named varieties. To insure an even stand of plants, the runners were layered and evenly distributed around the parent plants. Other varieties will be added in future.

In the plot set out in 1925, the everbearing variety, Progressive, bore the most fruit. Some plants were particularly productive, and from these runners will be selected for the propagation of this variety. The soil in this plot of ground is of inferior quality, and fruit, as well as runner, production was unsatisfactory.

RASPBERRIES

A new plantation was established in the spring. Varieties planted were Brighton, Newman No. 23, Latham, Herbert, Ohta, Sunbeam, Marlboro, Golden Queen and Wild White. Thirteen numbered seedlings, originated at the Minnesota Fruit Breeding Farm, and represented by eight to twelve plants each, were also placed in this plantation. Commercial varieties were represented by twenty-five plants 3 feet apart in rows 6 feet apart. The hill system of cultivation will be adopted, and in the plantation rows are alternately raspberries and currants. The object of this procedure is to facilitate maintaining the purity of the raspberry varieties by having the raspberry rows actually twelve feet apart.

GOOSEBERRIES

Despite the extreme age of the bushes in the old plantation, many of them bore quite large crops of fruit. Smith Improved and Transparent were the heaviest yielders.

Only one variety was set out in the new plantation. This was Mabel, a variety introduced by the Horticultural Division, Central Experimental Farm, Ottawa. Others will be added as suitable stock is obtained.

RED AND WHITE CURRANTS

Six bushes each of thirteen varieties were planted 6 feet apart in rows alternate with raspberry rows in the spring of 1926. The plantation was cultivated regularly, and growth of all varieties was strong and vigorous. These will be carefully pruned in the spring with a view to the formation of the most productive type of bushes.

The investigation involving treatment of cuttings whereby a maximum "catch" can be obtained the following spring yielded results which indicate that fall planting is most satisfactory for red and white currants. With some varieties set out in the fall the "catch" was almost perfect. Where the cuttings were kept in moist sand in a cellar over winter, and set out in the spring, a much smaller proportion rotted. This test is being continued.

BLACK CURRANTS

A planting scheme similar to that outlined for the red and white currants was adopted with seven black currant varieties. These bushes also made healthy and vigorous growth, and were well established before the growing season ended.

Indications are that for black currants best results follow the practice of allowing cuttings to callus during the winter in moist sand before being planted in the spring. Continuation of this test will produce evidence to substantiate or contradict this suggestion.

FLORICULTURE

ANNUALS

Particular attention was given to the growing of sweet peas; fall trenching and spring digging of the ground were compared as soil preparation practices. Seed was sown in the open on April 21, and germination complete by May 10. A single row of chicken wire, 4 feet wide, provided necessary support to the vines, and the individuality and beauty of the blossoms was enhanced by varieties being planted separately and in a suitable colour sequence. Bloom extended from July 13 to September 10. The vines on the ground prepared in the fall made the best showing.

A satisfactory showing will be obtained if the following varieties of annual flowers are sown in a well prepared border in spring: alyssum, arctotis grandis, asperula azurea, calendula, candytuft, centaurea (cornflower), clarkia, eschscholtzia, godetia, lavatera, linaria, malope, mignonette, nasturtium, poppy (shirley), sweet sultan and xeranthemum.

So-called half hardy annuals, as acroclinum, ageratum, antirrhinum, aster, balsam, chrysanthemum, cosmos, helichrysum, lobelia, marigold (African and French), nicotiana, nemesia, petunia (single and double), phlox drummondii, portulaca, salpiglossis, salvia, scabiosa, schizanthus, statice suworowii, stock, tagetes, verbena and zinnia, are started under glass early in spring and later transplanted to the open border.

In a long border, clumps should be irregular in outline and size, and tall-growing specimens placed so that those of dwarfish habit will not be hidden.

PERENNIALS

The time spent in replanting part of the perennial border in the spring was well spent. New life and vigour was given to many of the herbaceous perennials by virtue of the root clumps being divided into smaller portions, and a number bloomed during the summer.

Planting in the fall is recommended for aconitum, aquilegia, delphinium, dictamnus, dianthus barbatus, hollyhock, paeony, papaver and spiraea. Transplanting in spring may be safely followed with other perennials given into the 1925 report from this farm.

Irises were the first perennials to provide blossoms in the summer. A few specimens died as the result of some rhizome-destroying fungus, and others failed to bloom because of too deep planting.

Following closely with a wealth of blossoms, and for a much longer season, were the paeonies. An addition of twenty-seven varieties was made to the collection in the fall of 1925. These survived the winter splendidly and made vigorous growth in 1926.

All perennial flowering plants are given a light covering of strawy manure after freeze-up. This litter is removed in the spring before the frost is out of the ground.

BULBS

For outdoor flowering, the cultural requirements of tulips are very simple. Those at the Experimental Farm were planted on October 19 and 20, 6 inches deep, in beds in which annual flowers had grown during the summer. By way of preparation, the soil was forked over to the depth of 9 inches after the removal of the flowers at the end of September. After freeze-up a covering of rotted manure, to the depth of 6 inches, was given. This was not removed until April 16, when the bulbs had made growths of an inch or more above ground.

The showing of the single and double tulips was very pleasing. The Experimental Farm officers will gladly give, upon request, the names of suitable varieties.

ROSES

All roses were severely pruned in the spring in the hope that wintering forms of a species of saw-fly which caused damage the previous season to growing stems might be destroyed. This resulted in vigorous wood growth and fewer blooms than heretofore.

The life history of the saw-fly referred to is not definitely known, and no satisfactory remedial measures can be given. Neither has an effective means of combating the black snout rose beetle been discovered. Hand-picking and destroying the insects in coal-oil is a slow but sure method of control.

HEDGES, ORNAMENTAL TREES AND SHRUBS

Suggested lists of trees and shrubs for ornamental and shade purposes were given in the 1925 report from this Farm. These need not be repeated; but it should be remembered that in making selections of plants suitable for a hedge various circumstances should be considered: Will the hedge be permanent? Is rapid growth and immediate shelter required? Does the hedge form the background or foreground of a landscape?

Shrubs and trees should also be ornamental in effect not only in summer but also during the fall and winter. In striking contrast to the refreshing green of evergreens, bark and leaf colour of such deciduous subjects as dogwood, birch, saskatoon, viburnum, cotoneaster, maples and mountain ash stand out boldly after the general leaf-fall. Beauty of this kind should be well considered by all who contemplate decorating the home grounds by tree-planting.

POULTRY

Poultry at the Indian Head Experimental Farm is represented by the White Wyandotte breed. White Wyandottes are considered good utility birds from the standpoints of (*a*) egg producers, (*b*) table birds, and (*c*) ability to withstand the climatic conditions of the prairies.

As evidence of the progress made towards high egg production in the Farm flock, five of the twenty birds entered in the seventh Saskatchewan Egg-laying Contest qualified for registration. In selection and breeding work, breed type is kept in mind so that suitable breeding stock can be offered to the public and the standard of the flock maintained.

Owing to unsatisfactory hatching results experimental work with types of incubator and hatching dates was limited. From one project, in which supplementary feeds were used in addition to a recognized breeding-stock mash, it was clearly demonstrated that cod-liver oil, impregnated with the corn meal of the mash, was responsible for a marked increase in the number of eggs laid.

Immediately following the hatching season, the old stock of the Farm flock was disposed of. Fresh blood was introduced, and a new foundation laid by the purchase of 200 day-old chicks from L. F. Solly, Westholme, B.C. These chicks were received in two lots, on April 1 and April 26, respectively.

DEVELOPMENT OF CHICKS

A close check was kept on the development of the first lot of chicks received. Beginning when three weeks old, they were weighed at weekly intervals until the fourteenth week, at which time they were on alfalfa range and housed in portable cotton-fronted colony houses.

One hundred and two birds were received, and the same number of birds were alive at fourteen weeks. Of these, fifty-eight were pullets and forty-four cockerels. The average gain made by the former from the third week to the fourteenth week was 52.80 ounces, or an average weekly gain of 4.80 ounces. More rapid gains were made by the cockerels, e.g. 62.30 ounces for the same period, or an average weekly gain of 5.66 ounces. From these figures, the stage of maturity of the birds on August 1 may be estimated.

EGG PRODUCTION OF PULLETS

In the table which follows, data relating to the egg production of the best ten pullets from August 1 to December 31 are given.

EGG PRODUCTION OF PULLETS—AUGUST 1 TO DECEMBER 31

Number	Weight at 3 weeks	Weight at 14 weeks	Weight on Dec. 31	Date first egg	Total eggs laid	Average egg weight per dozen
	oz.	lb.	lb.			oz.
K 26	7·0	3·70	5·9	Aug. 1..	125	23
K 13	7·0	3·71	4·8	" 25..	104	24
K 12	8·0	4·2	5·6	" 25..	101	24
K 53	8·0	3·75	5·0	" 19..	101	24
K 71	6·5	3·56	6·0	Sept. 3..	101	23
K 36	7·0	3·71	5·9	" 3..	97	24
K 1 (I. H)	8·0	3·53	4·6	Aug. 1..	95	24
K 19	6·0	3·70	5·5	" 30..	95	25
K 25	7·0	3·81	5·9	Sept. 10..	94	24
K 41	5·5	3·56	5·5	" 3	94	23

SEVENTH SASKATCHEWAN EGG-LAYING CONTEST

Poultry registration becomes more popular with successive egg-laying contests, and the increasing interest displayed by poultry breeders throughout the province in contest work is most gratifying to the management.

The seventh Saskatchewan Egg-laying Contest commenced on November 1, 1925, and continued till October 30, 1926. Thirty-two pens were entered, representing nine standard breeds of poultry. The performance of a number of these, however, was unsatisfactory and they were returned to the owners before the end of the contest.

For three years in succession, Barred Plymouth Rocks belonging to the Winter Egg Poultry Farm, Lethbridge, Alberta, have led the Saskatchewan contest. Steady progress has been noted in the performance of these birds from year to year, and the 1925-26 entry was composed of a pen of second-generation full-sister birds. The average production of this pen during the "contest year" was 225 eggs per bird, an average increase of 7 eggs per bird over the average production of the leading pen in the sixth Saskatchewan Egg-laying Contest.

Birds which qualified for registration numbered twenty-nine. Details of the production of these birds are herewith given in tabular form.

RECORD OF BIRDS WHICH QUALIFIED FOR REGISTRATION IN SASKATCHEWAN EGG-LAYING CONTEST, 1925-26

Bird No.	Owner	Breed	Date first egg	Date last egg	Days in production	Total eggs laid	Per cent production
13	A. G. Mitchell, Radisson, Sask.	S.C.R.I.R.	Dec. 28..	Oct. 26..	303	208	68·6
17	" "	"	" 25..	" 28..	308	208	67·5
82	Mark Ridley, 1331 Redland Ave., Moose Jaw, Sask.	S.C.W.L.	Nov. 1..	Oct. 22..	356	251	70·5
124	H. Barton, Davidson, Sask.	B.P.R.	Nov. 2..	Oct. 30..	363	200	55·0

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
160	T. Hampson, Birch Hills, Sask.	B.P.R.	Dec. 21.	Oct. 24.	308	203	65·9
161	F. Jackson, Box 13, Sub. P.O. No. 1, Saskatoon, Sask.	B.P.R.	Nov. 11.	Oct. 28.	352	273	77·5
162	"	"	Jan. 7.	" 28.	295	203	68·8
163	"	"	Nov. 9.	" 29.	355	261	73·5
165	"	"	Dec. 21.	" 12.	295	220	74·5
181	Ursaki & Avery, Findlater, Sask.	B.P.R.	Nov. 1.	Oct. 30.	364	234	64·2
182	"	"	" 4.	" 22.	353	245	69·4
185	"	"	" 3.	" 30.	362	200	55·2
190	"	"	Jan. 9.	" 23.	288	206	71·5
204	Winter Egg Poultry Farm, 331-20th St., N., Lethbridge, Alberta	B.P.R.	Nov. 1.	Oct. 26.	360	240	66·6
205	"	"	Dec. 6.	" 7.	306	202	66·0
206	"	"	Jan. 11.	" 29.	292	236	80·8
207	"	"	Nov. 2.	" 30.	363	269	74·1
209	"	"	" 1.	" 30.	364	252	69·2
210	"	"	" 1.	" 30.	364	220	60·4
214	C. N. Fisher, Davidson, Sask.	B.P.R.	Nov. 22.	Oct. 29.	342	225	65·7
219	"	"	" 25.	" 22.	332	201	60·5
229	"	W.W.	" 22.	" 29.	342	230	67·2
264	W. H. Moore, 1503 Ave. E, N., Saskatoon, Sask.	W.W.	Nov. 2.	Oct. 2.	335	235	70·1
266	"	"	" 25.	" 28.	338	232	68·6
271	Experimental Farm, Indian Head	W.W.	Nov. 27.	Oct. 28.	336	217	64·5
272	"	"	" 5.	" 29.	359	221	61·5
276	"	"	" 14.	" 29.	350	208	59·4
281	"	"	" 1.	" 28.	362	242	66·8
287	"	"	Dec. 14.	" 20.	311	206	66·2

Feeds used in seventh Saskatchewan Egg-laying Contest differed slightly from those used in previous contests. Cracked corn and corn meal were substituted for barley and barley chop in the scratch feed and laying mash, respectively. The removal of useless and unnecessary fibre was accomplished by replacing oat chop with oatmeal.

That this arrangement was satisfactory the condition and performance of the birds at the end of the contest testified. During the final weeks of the contest, production of the heavy breeds remained near the 50 per cent mark, indicating but slightly impaired vitality though many were on the verge of molting.

The birds were housed in colony houses, two pens in each house, as heretofore. At the time of writing this report, another contest is under way, but under different conditions. A new "contest" house has been erected, which provides quarters that are comfortable, convenient, and conducive to maximum production.

Poultry-keepers who are interested in poultry registration are invited to inquire at the Experimental Farm, Indian Head, for rules and regulations governing contest work.

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