DOMINION OF CANADA
DEPARTMENT OF AGRICULTURE
DOMINION EXPERIMENTAL FARMS

EXPERIMENTAL STATION

ROSTHERN, SASK.

REPORT OF THE SUPERINTENDENT

W. A. MUNRO, B.A., B.S.A.

FOR THE YEAR 1926

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SEASONAL NOTES

The season of 1926 was peculiar in having a high precipitation in May and very much below average precipitation in June, July and August. The conditions in May gave everything a good start but the dry weather later cut down the prospective yield in everything. Although the precipitation for September and October was below the average it came in showers so often as to keep much of the grain damp and make threshing difficult.

METEOROLOGICAL RECORDS AT ROSTHERN, 1926

Month	Temperature °F.				Precipitation in inches			Average 16 16 years	Evaporation
	Highest	Lowest	Mean 1926	Mean 16-yr. 1911-1926	Rain	Snow	Total precipitation 1926		1926 Inches
January	38·0	−25·1	12·2	−3·2	.....	2·0	0·20	0·81	
February	42·0	−24·2	14·2	2·1	.....	9·5	0·95	0·48	.....
March	53·3	−7·0	22·5	13·8	.....	4·7	0·47	0·58	.....
April	80·4	1·2	40·5	37·4	1·09	0·3	1·12	0·88	.....
May	85·0	25·0	53·4	50·4	3·38	.....	3·38	1·64	2·07
June	87·1	33·8	57·7	59·5	0·48	.....	0·48	2·07	4·42
July	95·5	42·0	66·8	63·4	0·79	.....	0·79	2·51	7·29
August	91·0	35·2	59·7	60·8	1·48	.....	1·48	2·01	3·14
September	70·8	22·6	44·4	50·2	0·88	1·0	0·98	1·62	1·41
October	69·1	16·1	37·8	37·3	1·14	0·6	1·20	1·56	.....
November	52·1	−25·0	14·5	21·0	0·03	8·0	0·83	0·58	.....
December	38·4	−32·0	2·0	4·7	.....	3·0	0·30	0·58	.....
Totals					9·27	29·1	12·18	15·32	18·33

ANIMAL HUSBANDRY

SHEEP

Pure-bred Suffolk and grade Leicester sheep are now maintained at this Station. The start in pure-bred Suffolks was made in the fall of 1925 when three pure-bred sheerling ewes and one pure-bred ram were purchased. There is no increase in the number of pure-breds at the end of the year. Three ewes gave birth to three lambs two of which developed "scurs" and were disposed of for mutton while the other lamb was sold for breeding purposes. The fleece of the three ewes and the one ram averaged 9.2 pounds.

The grade Leicesters developed in a grading-up experiment are at present a uniform flock and at the end of the year numbered fifty-five head made up of forty-seven breeding ewes, seven ewe lambs and one ram. Thirty-six grade ewes of breeding age gave birth to sixty-four lambs and raised fifty-four of them or

150 per cent. These lambs were all born between March 10, and April 30, inclusive. The wool-clip was 48 fleeces, 465.25 pounds or an average of 9.7 pounds per fleece.

In the fall of 1925 the grade flock was divided into two lots as nearly equal in regard to age and general quality as possible. One lot was bred to the Suffolk ram and one lot to the Leicester. In the spring and during the summer of 1926 the feeding and management of all sheep was practically the same. After the lambs were weaned on September 8, they were brought up to the buildings and weighed. Nineteen cross-bred lambs weighed 1,505 pounds or an average of 79.2 pounds. Twenty-nine Leicester lambs weighed 1,980 pounds or an average of 68.3 pounds. The average age of the two lots of lambs was 161 and 162 days, respectively. In addition to being heavier the cross-bred lambs were a more uniform lot and were better developed and fleshed.

Commencing December, 1925, the pregnant ewes were divided into two lots. Lot 1 was fed western rye grass hay, oat sheaves and corn silage. Lot 2 was fed similar feeds to Lot 1 excepting that they received turnips instead of silage. Two weeks before the lambing season began the ewes were fed $\frac{3}{4}$ pound per head per day of a mixture of equal parts of whole oats and bran. Notes were kept on the condition of the lambs at birth. The ewes of both lots all gave birth to normal lambs and no trouble was experienced from disease.

During the summer the breeding flock had the run of a western rye grass pasture with access to water. After threshing, the flock was turned into the stubble and root fields so as to flush the ewes preparatory to breeding. Twelve of the ewes were turned in with the ram on September 11, and thirty-eight on October 22, so as to have early, medium and late lambs from which to determine comparative returns.

SWINE

The breeding stock at the Station at the end of the year consists of eighteen head made up as follows: Six Berkshire sows and one boar, five Tamworth sows and one boar, and four Yorkshire sows and one boar.

In addition to the breeding stock the herd includes thirty-six fall pigs with which an experiment in mineral feeding was started in November.

The chief work with swine at this Station for the past three years has been the comparison of different breeds and crosses and the comparison of different feeds and methods of feeding for best results with pure-bred Berkshire, Tamworth and Yorkshire and their crosses.

During the year 1926 fourteen spring litters and five fall litters were farrowed. In all 200 pigs were born and 139 of these were raised to weaning age which gives an average of 10.5 pigs farrowed per litter and 7.3 pigs raised. Five Yorkshire sows gave an average of 12.4 pigs per litter and raised an average of 10.2. Six Berkshire sows gave an average of 10.5 pigs per litter and raised an average of 7.7. Eight Tamworth sows gave an average of 9.2 pigs per litter and raised an average of 5.3. Six of the nineteen sows had litters for the first time. The increase in the percenage mortality in the Tamworths may be accounted for in part at least when the fact is taken into consideration that two of the sows, though they farrowed an average of 10.5 pigs per litter, did not raise a single pig. The pigs of both these litters came small and weak and lived only a few hours. The cause of the poor showing is rather difficult to explain as the sows received the same care and management and were bred to the same sire as other sows which gave strong healthy litters. Both the sows had produced large litters of healthy pigs the two previous years.

In summarizing the average farrowing results comparing the prolificacy of old and young sows for the years 1924, 1925 and 1926 it is found that the average litter for the thirty-six sows more than a year old was 11.6 pigs with 7.7 raised, and for twenty-three young sows 8.7 pigs littered and 7.0 raised.

CARE OF BROOD SOWS

During the winter of 1925-26 the brood sows were housed in portable cabins each 8 feet by 10 feet. The cabins were placed about 6 feet apart with the entrances facing south. The sides and tops were covered with straw and manure and the inside was kept well bedded throughout the winter. The cabins were located about 200 yards from the feeding-trough and in this way the sows were forced to walk to and from the sleeping quarters. The feeds used were three parts oat chop and one part barley chop with the addition of one per cent bone meal and 10 per cent digester tankage. A mineral mixture consisting of 100 pounds coal dust, 10 pounds slacked lime, 10 pounds bone meal, 8 pounds salt and 2 pounds sulphur was placed in a box for the use of the sows during the winter. As a precaution against hairless pigs 1 ounce of potassium iodide was dissolved in one gallon of water and one tablespoonful of the solution, was given in the drinking water per sow per day during the gestation period.

PIG-FEEDING METHODS

In order to investigate the cause of soft pork conditions and to substantiate the results of experiments conducted during the two previous years the following experiment was carried on at this Station in the summer of 1926 its object being:

(1) To determine the effect on the carcass of the finished hog (relative to soft pork) of heavy feeding vs. very light hand-feeding vs. self-feeder vs. feeding so far as is known in the proper quantities all the way through for the development of a select pig.

(2) To determine the value of tankage and butter-milk as supplements to a grain ration with regard to type of hog and quality of carcass produced and in addition as to rate and economy of gains.

(3) To compare self-feeding and heavy and limited hand-feeding as to their influence on these points under both pasture and dry-lot conditions.

(4) To compare the Berkshire, Tamworth, Yorkshire and their crosses as bacon hogs.

(5) To compare rape, corn, and a mixture of oats and peas as pastures in the cost of production of the bacon hog.

(6) To determine whether the use of pasture is conducive to the economical production of the bacon type of hog as compared with dry-lot feeding with and without green feed.

EXPERIMENTAL METHODS.—Ninety-four pigs were used in this experiment, comprising 23 pure-bred Berkshires, 23 pure-bred Yorkshires, 13 pure-bred Tamworths, and 35 crosses from these three breeds. Eighty-eight pigs were divided into eleven lots containing 8 pigs each. As even a distribution as possible was made with respect to size, age, type, breeding, and general thrift. A twelfth lot of 6 was made up of unthrifty pigs, rendered so from various causes.

The pigs were of litters farrowed between March 6, and April 4, inclusive. The average weight of these pigs was approximately 70 pounds when the test started on June 26. These pigs averaged heavier at the beginning of the test than in previous experiments due to earlier farrowing. Previous to the beginning of the test the feeding and management of all pigs was practically the same.

The various groups lined up as follows:—

Lot 1. Grain and tankage—light hand-feeding on oat and pea pasture.
Lor 2. Grain and tankage—heavy hand-feeding on oat and pea pasture.
Lot 3. Grain and tankage—self-feeding on oat and pea pasture.
Lot 4. Grain and tankage—very light hand-feeding on oat and pea pasture.
Lot 5. Grain, no protein supplement—light hand-feeding on corn pasture.
Lot 6. Grain, no protein supplement—light hand-feeding on rape pasture.
Lot 7. Grain and buttermilk—light hand-feeding on rape pasture.
Lot 8. Grain and tankage—light-hand-feeding on rape pasture.
Lot 9. Grain and tankage—light-hand-feeding on dry lot.
Lot 10. Grain and tankage—self-feeding on dry-lot.
Lot 11. Grain and soiling crops—light hand-feeding on dry-lot.
Lot 12. Grain and tankage—light hand-feeding on rye pasture.

All lots were given the same basic ration throughout the test, which at first consisted of equal parts shorts and oat chop. Shorts was gradually replaced by barley chop and the percentage of oat chop increased. Toward the finishing period the percentage of barley chop was increased and finally made up three-fourths of the ration.

Lots 1, 5, 6, 7, 8, 9, 11, and 12 were given equal amounts of meal, which was about 4 per cent of the live weight of the hogs.

Lot 2 was fed an amount of meal as a daily ration equal to 5 per cent of the live weight of the hogs.

Lots 3 and 10 were self-fed throughout.

Lot 4 was fed an amount of meal as a daily ration equal to 3 per cent of the live weight of the hogs.

In the cases of lots 5, 6, 7, and 8 a slight deviation was made from exactly these proportions in order to have these lots all consume equal amounts.

When the pigs were approximately five months old all lots were given all they could eat.

The meal was fed dry in all cases and all pigs had access to fresh water and to a mineral mixture of coal dust, 100 pounds; slacked lime, 10 pounds; bone meal, 10 pounds; salt, 8 pounds; and sulphur, 2 pounds.

Where tankage was used it was fed in the proportion of 8 per cent of the meal ration. Buttermilk was fed to lot 7 at the rate of 2 pounds per pound of grain. During the last month no protein supplements were fed.

The pasture lots were three-quarters of an acre each. On May 19 four of the lots were sown to oats and peas, three to rape, and one to corn. On September 15 of the preceding year the fall rye was sown. The oats and peas in equal proportions were seeded at the rate of 3 bushels; the rape at the rate of 12 pounds; the corn at the rate of 20 pounds; and the rye at the rate of 1½ bushels per acre. All lots were seeded with the grain-drill. In seeding the rape care was taken not to cover the seed too deeply. At the time the experiment was started the oats were approximately 10 inches high and the rape and corn 5 inches. The grain and corn plots were devoid of forage by August 15. As in previous tests, the rape provided pasture late in the season, there being plenty of forage available when the experiment closed on October 16. A grove of Caragana 50 feet wide provided shelter at the northern end of the pastures. All lots of hogs on dry lot were sheltered and watered in pens in the main piggery but were fed in outside runs each 72 feet by 28 feet.

At the end of the experiment the hogs were graded by a Dominion Government grader. They were then slaughtered and the carcasses graded on the rail by the plant superintendent of the P. Burns Company, Prince Albert.

Cost of Feeds: Oats 35c. per bushel; barley 45c. per bushel; shorts $25.00 per ton; tankage $45.00 per ton; buttermilk 1c. per gallon.

	Lot 1 Tankage, limited feeding, oat and pea pasture	Lot 2 Tankage, heavy feeding, oat and pea pasture	Lot 3 Tankage, self-feeder, oat and pea pasture	Lot 4 Tankage, very limited, feeding, oat and pen pasture	Lot 5 No protein limited feeding, corn pasture	Lot 6 No protein, limited feeding, rape pasture	Lot 7 Buttermilk, limited feeding, rape pasture	Lot 8 Tankage, limited feeding, rape pasture	Lot 9 Tankage, limited feeding dry lot	Lot 10 Tankage, self-feeder dry lot	Lot 11 Soiling criops limited feeding dry lot	Lot 12 Tankage, limited feeding rye pasture
No. of hogs in experiment..... Lb.	8	8	8	8	8	8	8	8	8	8	8	8
Gross weight, June 26..... "	612	577	574	574	555	573	556	553	572	557	563	342
Average weight, June 26..... "	76·5	72·1	71·8	71·8	69·4	71·6	69·5	69·1	71·5	69·6	70·4	57·0
Gross weight, October 16..... "	1,560	1,600	1,920	1,510	1,430	1,630	1,790	1,600	1,480	1,730	1,450	1,040
Average wieght, October 16.... "	195·0	200·0	240·0	188·7	178·7	203·7	223·7	200·0	185·0	216·2	181·2	173·3
No. of days in experiment.....	113	113	113	113	113	113	113	113	113	113	113	113
Total gain for period..... Lb.	948	1,023	1,346	936	875	1,057	1,234	1,047	908	1,173	887	698
Average gain per animal for period..... "	118·5	127·9	168·2	117·0	109·4	132·1	154·2	130·9	113·5	146·6	110·9	116·3
Average daily gain per animal.. "	1·05	1·13	1·49	1·03	0·97	1·17	1·36	1·16	1·00	1·30	0·98	1·03
Amount of meal eaten by group "	4,780	5,574	8,035	4,366	4,720	4,720	4,720	4,720	4,852	7,955	4,852	3,752
Amount of tankage consumed by group..... "	238	304	486	206	.....	.....	.....	234	245	480	.....	160
Amount of buttermilk consumed by group..... "	.....	.....	.....	.....	.....	.....	10·880	.....	.....	.....	.....	.....
Cost of protein supplement per lot..... $	5·35	6·84	10·93	4·63	.....	.....	10·88	5·26	5·57	10·80	.....	3·60
Amount of meal eaten per pound gain..... Lb.	5·04	5·45	5·97	4·66	5·39	4·46	3·82	4·50	5·34	6·78	5·47	5·36
Amount of tankage per pound gain..... "	0·25	0·30	0·36	0·22	.....	.....	.....	0·22	0·27	0·41	.....	0·23
Amount of buttermilk per pound gain..... "	.....	.....	.....	.....	.....	.....	8·82	.....	.....	.....	.....	.....
Total cost of feed..... $	53·51	63·36	92·66	48·30	47·52	47·52	56·34	52·78	54·37	92·26	48·86	41·05
Cost of feed per head..... $	6·69	7·92	11·58	6·04	5·04	5·94	7·04	6·597	6·80	11·53	6·11	6·84
Cots of feed per head per day... $	·0592	·0701	·1025	·0534	·0526	·0526	·0623	·0584	·0602	·1021	·0541	·0605
Cost to produce one pound gain $	·0564	·0619	·0688	·0516	·0543	·0449	·0457	·0504	·0599	·0786	·0551	·0588
Average dessing percentage.....	68·2	67·8	69·6	70·8	67·5	66·4	69·2	65·6	69·0	69·8	70·6	65·5
No. of hogs sold out of lot.....	8	8	8	8	7	8	8	5	8	7	6	6
No. of hogs grading "select" on foot	2	2	0	2	1	1	0	2	2	2	1	0
No. grading "select" on foot that were later graded in carcass.....	1	1	0	2	1	0	0	2	1	0	1	0
No. of carcasses grading select.....	2	2	0	3	2	1	1	2	3	0	2	0

DEDUCTIONS.—1. *Soft Pork.*—Of the eighty-seven pigs that went through the abattoir there were no carcasses classed as "soft pork". There were a few, however, that were slightly soft, and these were in every case from unfinished and underweight pigs and did not seem to bear any relation whatever to kind of feed but were associated with very limited feeding.

2. *Protein Supplements.*—As in former years the feeding of protein supplements resulted in greater gains except on rape pasture. Those fed buttermilk made the greatest gains of any of the hand-fed lots and the most economical gains of any except those on rape pasture without protein.

3. *Methods of Feeding.*—Of the four lots that were fed on oat-and-pea pasture the self-fed lot made the greatest gain with the largest meal consumption and at the highest cost, followed in turn by the heavily hand-fed lot, the lightly hand-fed lot, and the very lightly hand-fed lot. The results in dry lot are in accord with the above results.

4. *Pastures.*—In comparing rape, corn, oat-and-pea pastures, and dry lot we have the following conclusions:—

In 1926 corn pasture was 82.7 per cent as efficient as rape pasture. A similar experiment in 1925 showed it to be 81.1 per cent.

Oat-and-pea pasture in 1926 was 89.8 per cent as efficient as rape.

Dry lot with limited hand-feeding was 84.1 per cent as efficient as rape pasture in the use of meal in production of pork and was 93.6 per cent as efficient as oat-and-pea pasture.

The value of pasture did not show up so large over that of dry lot when self-feeder was used. With the self-feeder dry lot was 88 per cent as efficient as oat-and-pea pasture.

Over a period of four years, 1923 to 1926, involving nine trials and including self-feeder and light and heavy hand-feeding, dry lot was 85.4 per cent as efficient as rape pasture.

5. *Type.*—The number of "selects" indicated in the table for the different lots is not a fair representation of the actual condition of the different lots. In order to market all the pigs at the same time those on self-feeder and those fed buttermilk were carried longer than they should have been, resulting in several going as "heavies" which might otherwise have gone "select". Likewise among lightly hand-fed were several not up to weight which might have graded "select" if carried a little longer.

Weights at close of experiment: The following table shows the weights according to lots:—

WEIGHTS OF PIGS IN THE VARIOUS LOTS

Lot Number	Under 170 Lb.	Between 170 and 230 Lb.	Over 230 Lb.
1. Limited meal, oat-and-pea pasture, tankage	0	8	0
2. Heavy meal, oat-and-pea pasture, tankage	0	8	0
3. Self-feeder meal, oat-and-pea pasture, tankage	0	3	5
4. Very limited meal oat and pea pasture tankage	1	7	0
5. Limited meal corn pasture	3	5	0
6. Limited meal rape pasture	0	8	0
7. Limited meal rape pasture, buttermilk	0	4	4
8. Limited meal rape pasture tankage	1	6	1
9. Limited meal dry lot tankage	1	7	0
10. Self feeder dry lot tankage	0	7	1
11. Limited meal dry lot green feed	4	4	0
12. Limited meal rye pasture tankage	1	5	0

TABLE SHOWING WEIGHTS AND GRADES ACCORDING TO BREEDS

Name	Under 170 Lbs.	Between 170 and 230 Lbs.	Over 170 Lbs.	No. Grading "Select" on Foot	No. of Carcasses Grading "Select"
Berkshire	2	18	3	0	0
Yorkshire	1	20	2	8	9
Tamworth	3	10	0	2	1
Yorkshire X Tamworth	0	6	1	0	2
Yorkshire X Berskhire	3	3	1	0	1
Tamworth X Yorkshire	1	9	2	4	5
Tamworth X Berkshire	1	6	2	1	0

CORRECTIVES IN WINTER FEEDING OF SWINE

During the winter of 1925-26 an experiment was conducted with fall pigs to determine whether any advantage could be gained by the feeding of a mineral mixture to pigs in the winter when they are unable to get for themselves any mineral from the earth.

Ten Tamworth-Yorkshire cross-bred pigs of approximately equal weight were taken from one litter and divided into two pens. The hogs were kept in the piggery and each lot received the same care and the same basic ration which consisted of equal parts of shorts, oat chop, and barley chop. The meal was fed dry to both lots twice daily. Lot 2 got the same meal ration with the mineral mixture added to the feed at the rate of about 2 pounds per day per lot.

The mineral mixture consisted of coal-dust 150 pounds; slacked lime 10 pounds; bone meal 10 pounds; salt 8 pounds and sulphur 1 pound.

CORRECTIVES IN WINTER FEEDING OF SWINE, 1925-26

—		Lot 1 Grain alone	Lot 2 Grain and Mineral Mixture
Date placed on test		Nov. 25, 1925	Nov. 25, 1925
Date finished		March 2, 1926	March 2, 1926
Number of days on feed		98	98
Number of pigs in lot		5	5
Initial weight, gross	lb.	436	432
Initial weight, average	"	87·2	86·4
Finished weight, gross	"	990	1,060
Finished weight, average	"	198	212
Total gain during period	"	554	628
Average gain per pig	"	110·8	125·6
Average daily gain per pig	"	1·13	1·28
Total grain fed per lot	"	2982	2982
Total cost of feed (including correctives)	$	29·82	20·62
Meal for 100 pounds gain	lb.	538	475
Cost of 100 pounds gain in weight	$	5·38	4·88
Value of gains made at 10 cents per pound	$	55·40	62·80
Profit of gains over cost of feed	$	25·58	32·18

Meal was charged at 1 cent per pound and 196 pounds mineral mixture cost approximately 80 cents.

For an outlay of 196 pounds of mineral mixture there was an increase of 74 pounds in returns.

We are scarcely justified in making deductions from one experiment but it seems quite apparent not only from the increased weight as shown in the table but also from the more thrifty appearance of the lot fed mineral mixture that the addition of minerals to the meal ration of growing pigs is to be recommended.

BEEF CATTLE

Steer-feeding trials have been conducted at this Station for ten of the past twelve winters with the object of securing information on some of the important factors related to economy of production under Saskatchewan conditions. Every year except one a fair market price has been realized for the feed consumed besides a profit which on the average represented good wages for a man for a period of between four and five months.

STEER-FEEDING EXPERIMENT

OBJECT OF EXPERIMENT—(1). To compare 1½-year-old and 2½-year-old steers. (2) To compare the feeding value of a combination of ensilage and roots (turnips) with ensilage alone for fattening steers. (3) To ascertain the cost of finishing beef under present-day conditions.

EXPERIMENTAL METHODS.—Sixty-three steers of grade Shorthorn, Aberdeen-Angus and Hereford breeding, 1½ and 2½ years old, were purchased at Prince Albert in November 1925 at a net cost of $2,675.70 plus $63.35 expenses. Twenty-one 2½-year-olds costs 5 cents per pound and forty-two ½-year-olds cost 4¼ and 4½ cents per pound in the stockyards. They were tuberculin-tested, two reacted and the carcasses were condemned. After the steers reached the Farm they were dehorned and turned into the stubble fields for three weeks after which they were brought into the corrals on December 3, divided into three lots and weighed.

Lot 1, consisting of twenty-one 2½-year-old steers, was fed oat and barley chop, corn and sunflower ensilage and oat straw from December 4 to March 17.

Lot 2, consisting of twenty 1½-year-old steers, was fed oat and barley chop, corn and sunflower ensilage, and oat straw from December 4 to April 29.

Lot 3, consisting of twenty steers similar to those in lot 2 was fed simliar feeds to lot 2, except that it received a combination of ensilages and sliced turnips instead of all ensilage.

At the start of the test on December 4, the meal was ground oats. Gradually ground barley was introduced until at the end of the test the ration had 3 parts barley to 1 part of oats.

At the beginning of the tests meal was fed to all lots at the rate of 5 pounds per steer per day and increased on December 12 to 10 pounds. Lot 1 received an increase on February 5 to 12 pounds, and on March 7 to 14 pounds and this amount of meal was continued until they were shipped on March 17. Lots 2 and 3 received an increase on March 7 to 12 pounds and on April 13 to 14 pounds per day, but they could not take this, and 12 pounds was resumed on April 15 and continued till the end.

Lot 1 was fed ensilage at the rate of 15 pounds per day per 1,000-pound steer from the beginning until December 12, when the amount was increased to 30 pounds which was continued to the end of the feeding period.

Lot 2 was fed ensilage at the rate of 13 pounds per head per day from the beginning until December 12, when it was increased to 26 pounds, and on January 5 to 30 pounds, which was continued to the end of the feeding period.

Lot 3 was started on 6½ pounds of ensilage and 10 pounds of turnips per head daily, which was gradually increased by January 5 to 15 pounds of ensilage and 20 pounds of turnips.

All lots were fed oat straw liberally, which was more than they could clean up. Sunflower ensilage was fed from January 12 until April 15, and corn ensilage from April 15 to the end.

The shelters provided were corrals enclosed by a tight board fence with an open shed at one end.

The shed was kept dry and well bedded throughout the winter, enabling the steers to lie down in comfort. The ensilage, turnips, and meal was fed in troughs in the morning and evening. Oat straw was kept before them continually in the feeding racks. The steers had access to water at all times and during the winter months tank-heaters were used to prevent the water from freezing. Salt was given in the form of solid cakes, to which they had access at all times.

RESULTS FROM EXPERIMENT.—In this experiment the older steers made greater gains and more economical gains than did the younger steers, but were put on the market in March, which for that particular year was considerably lower than the May market. The relative gains of the two ages are similar to those in previous trials. As in previous trials, the ensilage-fed lot made greater and more economical gains than did the turnip-fed lot.

Calculation shows that it required 69,466 pounds turnips, plus 3,371 pounds oat chop, 3,742 pounds barley chop, and 4 tons straw to replace 32,230 pounds of ensilage, which at prices charged for other feeds gives ensilage a value of $7.68 per ton, compared to a value of $1.50 per ton for turnips.

STEER-FEEDING EXPERIMENT

—		Lot 1	Lot 2	Lot 3
Number of steers in lot		21	20	20
Gross initial weight December 4, 1925	lb.	21470	17240	17350
Average initial weight December 4, 1925	"	1022	862	867
Finished gross weight, March 17, 1926	"	26370	22190	21960
Finished average weight, March 17, 1926	"	1256	1109	1098
Finished gross weight, April 29, 1926	"	.....	22780	21880
Finished average weight, April 29, 1926	"	.....	1139	1094
Total gain in 103 days	"	4900		
Total gain in 146 days	"	.....	5540	5540
Average gain per steer	"	233	277	227
Average daily gain per steer	"	2·26	1·89	1·55
Amount of oat chop fed	"	12230	15118	15118
Amount of barley chop fed	"	10750	16782	16782
Amount of ensilage fed	"	67680	82960	41480
Amount of turnips fed	"	.....	.....	56800
Amount of straw fed (estimated)	"	26000	36000	36000
Total cost of feeds	$	335·07	446·69	427·07
Average cost of feed per steer	$	15·95	22·35	21·35
Feed cost per 100 lb. gain	$	6·84	8·06	9·43
Initial cost of steers at 5.09 and 4.76	$	1092·82	820·62	825·86
Total cost including feed	$	1427·89	1267·31	1252·93
Returns at $5.25 and $6.25	$	1384·42	1423·75	1367·50
Profit per lot	$	.....	156·44	114·57
Loss per lot	$	43·47		

The steers were used in an experimental shipment to England and the price of $5.25 quoted for the older steers and $6.25 for the younger steers is what they would have realized in Rosthern at the time they were shipped. The older steers were shipped on March 17 and the younger on April 29.

The cost of feed for the four lots is computed from the following table of prices:—

Oat chop	95c. per cwt.
Barley chop	85c. per cwt.
Ensilage	$3 00 per ton
Turnips	1 50 per ton
Oat straw	2 00 per ton

DAIRY CATTLE

The Holstein-Friesian herd at the end of the year numbered 33 head, made up of 2 herd bulls, 2 bull calves, 8 mature cows, 2 four-year-olds, 4 three-year-olds, 2 two-year-olds, 3 yearlings, and 10 heifer calves. Of the thirteen calves dropped during the year, ten were heifers.

In November the herd successfully passed its sixth accreditation test.

Good progress has been made with the herd during the past year. The average production of the thirteen cows finishing a lactation period within the calendar year 1926 was 11,979 pounds of milk and 425 pounds of fat for an average milking period of 403 days. Four of these records were made by two-year-old heifers. Two mature cows completed 365-day R.O.P. records, averaging 15,810 pounds of milk and 595 pounds butter-fat, while one two-year-old heifer produced 10,383 pounds milk and 400 pounds of butter-fat. Three mature cows and two two-year-old heifers completed 305-day R.O.P. records, averaging 11,613 pounds of milk and 404 pounds of butter-fat.

FEEDING THE DAIRY HERD

Corn and sunflower ensilage, turnips, and western rye grass hay supply the bulk of the roughage ration during the winter. The succulent roughages are fed in the proportion of 20 pounds of turnips to 40 pounds of ensilage, making a total of 60 pounds per head per day. Ensilage is fed in the morning and evening before milking and sliced turnips at noon after milking. Meal is fed on top of the silage and roots. The meal mixture fed the cows consists of 400 pounds oat-chop, 200 pounds bran, 200 pounds oilcake meal, and 150 pounds barley-chop. This meal is fed on the basis of 1 pound of meal to each 3½ pounds of milk produced. During the summer the herd is on pasture and the meal ration is fed at the same rate as in the winter.

The herd bulls and the heifers not in milk were on pasture during the summer without meal. During the winter the herd bulls are confined to a corral 80 feet by 40 feet with a covering of poles and straw at one end for a length of 20 feet as the only protection afforded from the wind and snow. They are fed a roughage ration consisting chiefly of corn and sunflower ensilage, western rye grass hay and oat straw, together with 4 pounds of meal per head per day. The older calves and yearlings are given the run of a shed open to the south and fed corn and sunflower ensilage, western rye grass hay, and a meal mixture consisting of two parts oat-chop, two parts bran, and one part oilcake meal.

MILK PRODUCTION OF PURE-BRED COWS

In the accompanying table is a statement of the production of each of the thirteen cows and heifers ending their lactation period within the calendar year 1926, together with the amount of feed consumed, cost of milk produced, and profit over feed from each cow. In the case of heifers with their first calf, feed is charged from date of freshening. In the case of cows with previous lactation periods the charge for feed includes the period during which they were dry previous to freshening. In addition to those reported, there are several cows that have not completed a period during the year and heifers which are now milking in their first period.

The profit column shows a comparison only between cost of feed and value of milk produced. The cost of the labour and the interest on the investment are not included nor is the value of the calf at birth. Butter is computed at 30 cents per pound and skim-milk at 20 cents per 100 pounds.

In estimating the cost of feeds the following values were used:—

Meal (oats, bran, oilcake and barley)	$30 00	per ton
Corn and sunflower ensilage	3 00	"
Turnips	3 00	"
Hay	8 00	"
Pasture per month per cow	2 00	

The meal mixture is charged at cost price and roughage at cost of production.

Name of animal	Number of lactation period	Number of days in milk	Total pounds of milk for period	Daily average yield of milk	Average per cent fat in milk	Pounds of butter produced in period	Value of butter at 30c. per pound	Value of skim-milk at 20c. per cwt.	Total value of product
			lb.	lb.	p. c.	lb.	$ c.	$ c.	$ c.
R.E.S. Pontiac Madrigal—81022	3	410	17,137	41·8	3·60	771	231 30	33 04	264 34
R.E.S. Sarcastic Sylvia—68177	7	814	21,930	26·9	3·27	896	268 80	42 42	311 22
R.E.S. Johnna Keyes Lass—68182	3	350	13,673	39·1	3·73	637	191 10	26 33	217 43
Rosthern Merchtilde Lass—104426	2	291	14,736	50·6	3·10	571	171 30	28 56	199 86
Rosthern Pietje Rebecca—111762	1	525	12,771	24·3	3·85	615	184 50	24 56	209 06
R.E.S. Mechthilde Gypsy Keyes—92490	2	303	12,380	40·9	3·44	532	159 60	23 91	183 51
Rosthern Abbekerk Sylvia—101455	2	364	9,840	27·0	3·90	480	144 00	18 91	162 91
R.E.S. Abbekerk Johnna Keyes—90505	2	343	10,086	29·4	3·70	466	130 80	19 42	159 22
Rosthern Pietje Emma—110665	1	356	8,666	24·3	3·90	422	126 60	16 66	143 26
R.E.S. Abbekerk Madrigal Keyes—90506	3	372	10,204	27·4	3·20	408	122 40	19 75	142 15
Rosthern Pietje Gypsy—110667	1	369	9,306	25·2	3·32	386	115 80	17 99	133 79
R.E.S. Sarcastic Mechthilde—91968	2	373	7,704	20·6	4·0	385	115 50	14 79	139 29
Rosthern Pietje Dollie—110666	1	365	7,292	19·9	3·65	333	99 90	14 05	113 95
Total	.....	5,235	155,725	.....	.....	6,902	2,070 60	330 41	2,370 99
Average	.....	403	11,979	29·72	3·76	531	159 28	23 11	182 38

DAIRY HERD PRODUCTION—*Continued*

Name of animal	Amount of meal eaten	Roots and ensilage eaten	Amount of hay eaten	Straw at 10c. per cwt.	Months on pasture at $2 per month	Total cost of feed between calvings	Cost to to produce 100 pounds milk	Cost to produce 1 pound butter skim-milk neglected	Profit on pound of butter skim-milk neglected	Profit on cow between calvings labour and calf neglected
	lb.	lb.	lb.	lb.	months	$	c.	c.	c.	$
R.E.S. Pontiac Madrigal—81022....	4,922	15,780	3,895	2,630	5·5	126 71	74	16·4	13·5	137 63
R.E.S. Sarcastic Sylvia—68177.....	6,326	27,090	6,780	4,510	11·75	190 65	87	21·2	8·8	120 57
R.E.S. Johanna Keyes Lass—68182.	3,923	13,080	3,270	2,180	4·25	102 22	77	16·0	14·0	115 21
Rosthern Mechtilde Lass—104426...	4,223	8,160	2,040	1,360	5·0	95 10	65	16·6	13·4	104 76
Rosthern Pietje Rebecca—111762...	3,690	14,760	3,690	2,360	9·0	112 61	88	18·3	11·7	96 45
R.E.S. Mechthilde Gypsy Keyes—92490.....	3,590	9,360	2,340	1,560	4·75	88 31	71	16·6	13·4	95 20
Rosthern Abbekerk Sylvia—101455.	2,846	12,600	3,150	2,100	5·0	86 29	87	18·0	12·0	76 62
R.E.S. Abbekerk Johanna Keyes—90505.....	2,930	12,600	3,150	2,100	4·5	86 55	85	18·5	11·5	72 67
Rosthern Pietje Emma—110665.....	2,538	12,600	3,150	2,100	4·75	81 17	93	19·2	10·8	62 09
R.E.S. Abbekerk Madrigal Keyes-90506.....	2,920	13,080	3,270	2,180	5·0	88 68	87	21·7	8·3	53 47
Rosthern Pietje Gypsy.—110667....	2,666	13,080	3,270	2,180	4·8	84 47	91	21·9	8·1	40 32
R.E.S. Sarcastic Mechthilde—91968	2,220	13,560	3,390	2,260	4·75	78 96	102	20·5	9·5	51 27
Rosthern Pietje Dollie—110666.....	2,090	13,080	3,270	2,180	4·75	75 73	104	22·7	7·3	38 22
Total.....	44,884	178,830	44,665	29,700	73·80	1,297 45	1,111	247·6	142·3	1,064 48
Average.....	3,453	13,756	3,436	2,285	5·66	99 80	85	19·0	10·9	81 88

FIELD HUSBANDRY

The season began with a very open winter the snow thawing intermittently and exposing the bare ground on several occasions to great temperature changes. This was detrimental to perennials and biennials. Spring work on the land began early and much of the grain was sown in April, which is unusual in this district. An abundance of rain fell in May though the weather was dull and the temperatures rather low. During June, July and August little rainfall was recorded and that mostly in small showers which were of practically no benefit to the crops. The temperatures were also low during this time considering the extended drouth and with few exceptions grain ripened in about the average time. The first killing frost came early in September but practically all susceptible crops were harvested by this time.

All cereals were below average in yield excepting two fields of wheat on summer-fallow. Oats and barley were both low but barley suffered the most, yielding less than half a normal crop. The samples of threshed grain in the latter two were light and shrunken.

Ensilage crops made slow growth and neither corn nor sunflowers reached the usual stage of maturity. The yields in nearly every case were two or three tons below average.

The yield of swede turnips was light and due to the roots being small, expensive to handle.

The abundant rainfall in May insured an average crop of hay from western rye grass. The sweet clover was poor, however, due to poor stand and weak plants. The open winter allowed heaving of the soil which broke the clover roots and either killed or damaged the plants. Though a fair stand survived, the plants appeared to be weak and the growth was small.

PRODUCTION COSTS

The following tables give the cost of producing different crops on each rotation, showing in detail where the expense is incurred:—

COST AND RETURN VALUES

Return Values	$ c.
Wheat	1 11 per bush.
Barley	0 50 per bush.
Oats	0 40 per bush.
Western rye grass hay	9 00 per ton
Sweet clover hay	9 00 per ton
Oat and barley straw	2 00 per ton
Sunflowers for ensilage	3 00 per ton
Corn for ensilage	3 00 per ton
Cost Values	
Rent	3 00 per acre
Barnyard manure	1 00 per acre
Seed wheat	2 00 per bush.
Seed oats	0 80 per bush.
Seed barley	1 00 per bush.
Seed turnips	0 90 per lb.
Seed sunflowers	0 09 per lb.
Seed sweet clover	0 12 per lb.
Seed western rye grass	0 07 per lb.
Seed corn	0 085 per lb.
Machinery	1 35 per acre
Horse labour, single horse	0 08 per hr.
Manual labour	0 25 per hr.
Threshing wheat	0 15 per bush.
Threshing barley	0 13 per bush.
Threshing oats	0 12 per bush.
Twine	0 17 per lb.
Tractor operator	0 80 per hr.
Use of tractor	0 52 per hr.
Rent of ensiling machinery	0 18 per ton

COST PER ACRE OF GROWING WHEAT

—	Rotation—R—Following hoed crop	Rotation—R—Following summer-fallow	Rotation—J2—Following hay	Rotation—J2—Following hoed crop	Rotation—P—Following summer-fallow	Rotation—P—following wheat	Rotation—5 yr.—Following Corn	Rotation—J—Following summer-fallow	Rotation—J—Following wheat	Rotation—C—Following summer-fallow	Rotation—C—Following wheat
	$ c.	$ c.	$ c.	$ c.	$ c.	$ c.	$ c.	$ c.	$ c.	$ c.	$ c.
Rent and hail insurance	3 00	3 05	3 00	3 05	3 05	3 05	3 05	3 05	3 05	3 05	3 05
Machinery	1 35	1 35	1 35	1 35	1 35	1 35	1 35	1 35	1 35	1 35	1 35
Manure	1 71	1 71	2 00	2 00	2 00	2 00	2 40	.....	.....	.....	.....
Ploughing	1 25	.....	1 37	1 25	.....	1 25	1 25	.....	1 25	.....	1 25
Disking	.....	.....	0 34	.....	.....	.....	.....	.....	.....	.....	.....
Packing	.....	.....	0 23	.....	.....	.....	.....	.....	0 11	.....	.....
Harrowing	0 28	0 28	0 28	0 28	0 28	0 28	0 28	0 28	0 12	0 28	0 28
Seed	3 00	3 00	2 50	2 50	2 00	2 00	2 50	2 50	2 50	2 00	2 00
Seeding	0 28	0 28	0 28	0 28	0 28	0 28	0 28	0 28	0 28	0 28	0 28
Cutting	0 29	0 29	0 29	0 29	0 29	0 29	0 29	0 29	0 29	0 29	0 29
Stooking	0 10	0 11	0 10	0 10	0 13	0 10	0 13	0 13	0 10	0 13	0 10
Twine	0 24	0 41	0 24	0 34	0 54	0 41	0 51	0 45	0 23	0 54	0 34
Threshing	1 98	4 17	2 04	2 82	4 02	3 33	4 38	4 50	2 11	4 56	3 00
Cost of fallow	2 72	4 20	.....	.....	4 60	2 31	.....	4 48	2 26	4 18	2 11
Cost per acre	16 20	18 85	14 02	14 26	18 54	16 65	16 42	17 31	13 65	16 66	14 05
	bush.	bush.	bush.	bush.	bush.	bush.	bush.	bush.	bush.	bush.	bush.
Yield per acre	13·2	27·8	13·6	18·8	26·8	22·2	29·2	30·0	14·1	30·4	20·0
	$	$	$	$	$	$	$	$	$	$	$
Value per acre at $1.11 per bu.	14 65	30 86	15 10	20 87	29 75	24 64	32 41	33 30	15 65	33 74	22 20
Cost per bushel	1 22	0 62	1 03	0 76	0 69	0 75	0 56	0 58	0 97	0 55	0 70
Profit per acre	.....	12 01	1 08	6 61	11 21	7 99	15 99	15 99	2 00	17 08	8 15
Loss per acre	1 55	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....

COST OF GROWING OATS AND BARLEY

—	Cost per acre of growing oats					Barley	
	Rotation—R—Following wheat	Rotation—R—Following wheat	Rotation—J2—Following wheat	Rotation—5 yr.—Following wheat	Rotation—J—Following wheat	Rotation—P—Following hoed crop	Rotation—5 yr.—Following oats
	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.
Rent	3 00	3 00	3 00	3 00	3 00	3 00	3 00
Machinery	1 35	1 35	1 35	1 35	1 35	1 35	1 35
Manure	1 71	1 71	2 00	2 40	.....	2 00	2 40
Ploughing	1 25	1 25	1 25	1 25	1 25	1 25	1 14
Packing	.....	.....	.....	.....	.....	.....	0 25
Harrowing	0 28	0 28	0 28	0 28	0 18	0 28	0 14
Seed	1 60	1 60	1 60	1 40	1 60	2 00	2 00
Seeding	0 28	0 28	0 28	0 28	0 28	0 28	0 28
Cutting	0 29	0 29	0 29	0 29	0 29	0 29	0 29
Stooking	0 11	0 10	0 11	0 10	0 10	0 10	0 10
Twine	0 37	0 41	0 31	0 31	0 28	0 27	0 31
Threshing	5 16	2 47	3 77	3 65	3 10	1 59	1 88
Cost of fallow	.....	2 09	.....	.....	.....	2 41	.....
Cost per acre	15 40	14 83	14 24	14 31	11 43	14 82	13 14
	bush.	bush.	bush.	bush.	bush.	bush.	bush.
Yield per acre	43 0	20·6	31·4	30·4	25·8	12·2	14·5
	$	$	$	$	$	$	$
Value per acre—Oats at 40c.; Barley at 50c.: Straw at $2 per ton	17 92	9 80	13 96	13 48	11 44	7 10	8 35
Cost per bushel	0 36	0 72	0 45	0 47	0 44	1 21	0 90
Profit per acre	2 52	.....	.....	.....	0 01	.....	.....
Loss per acre	.....	5 03	0 28	0 83	.....	7 72	4 79

COST PER ACRE OF GROWING CORN AND SUNFLOWERS

—	Rotation R Sunflowers Following Fallow	Rotation J2 Sunflowers Following Wheat	Rotation R Corn Following Fallow	Rotation J2 Corn Following Wheat	Rotation P Corn Following Fallow	Rotation 5-year Corn Following Hay
	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.
Rent	3 00	3 00	3 00	3 00	3 00	3 00
Machinery	2 41	1 98	1 98	1 92	1 86	1 80
Manure	1 71	2 00	1 71	2 00	2 00	2 40
Ploughing	.....	1 25	.....	1 25	.....	1 37
Harrowing	0 14	0 14	0 14	0 14	0 14	.....
Packing	.....	.....	.....	.....	.....	0 25
Disking	.....	0 34	.....	0 34	.....	0 34
Seed	1 44	1 44	2 24	2 24	2 86	1 90
Seeding	0 28	0 28	0 28	0 28	0 28	0 28
Scuffeling	0 33	0 66	0 33	0 66	0 33	0 66
Cutting	0 78	0 78	0 78	0 78	0 78	0 78
Twine	0 57	0 51	0 45	0 51	0 51	0 58
Ensiling	8 90	5 29	5 30	4 79	5 86	5 38
Cost of fallow	5 44	.....	5 44	.....	4 84	.....
Cost per acre	25 00	17 67	21 65	17 91	22 46	18 74
	tons	tons	tons	tons	tons	tons
Yield per acre	11 74	7 04	7 04	6 30	7 70	7 10
	$	$	$	$	$	$
Value per acre at $3 per ton	35 22	21 12	21 12	18 90	23 10	21 30
Cost per ton	2 13	2 51	3 07	2 84	2 92	2 64
Profit per acre	10 22	3 45	.....	0 99	0 64	2 56
Loss per acre	.....	.....	0 53	.....	.....	.....

COST OF GROWING TURNIPS PER ACRE—ROTATION "P" ON SUMMER FALLOW

	$ cts.
Rent	3 00
Machinery	1 35
Manure	2 00
Harrowing	0 14
Seed	2 88
Seeding	0 28
Cultivating	0 33
Hoeing	4 80
Pulling and putting in cellar	16 90
Cost of Summer fallow	4 84
Cost per acre	36 52
Yield per acre in tons	11 06
Cost per ton	3 30

SUMMARY OF ROTATIONS

The following tables are summaries of yields, cost, value and profit or loss per acre, for six rotations. Where the rotations crop has been grown for a number of years an average of yields is given. The yields are in bushels for grain and tons for hay and intertilled crops. Barley and oats are credited with $2 a ton for straw, which is not shown in the yield column. The results shown on these tables are calculated from the " cost and return values " statement.

ROTATION SUMMARY—ROTATION "R"—DURATION, NINE YEARS
Summary of Yields, Value and Profit and Loss (per acre)

Rotation year	Crop	Yield per acre: 1926	Yield per acre: Average fourteen years	Value of crop 1926	Cost of production 1926	Profit or loss per acre: 1926	Profit or loss per acre: Average fourteen years
		tons	tons	$ cts.	$ cts.	$ cts.	$ cts.
1	Summer-fallow				8 16	− 8 16	− 7 30
2	Corn—4-year average	7·04	11·63	21 12	16 21	4 91	5 86
2	Sunflowers—8-year average	11·74	9·31	35 22	19 56	15 66	12 05
3	Wheat	13·2	27·4	14 65	13 48	1 17	14 71
4	Oats	43·0	53·5	17 92	15 40	2 52	8 50
5	Summer-fallow				6 29	− 6 29	− 6 08
6	Wheat	27·8	28·3	30 86	14 65	16 21	15 87
7	Oats—seeded down	20·6	51·5	9 80	12 74	− 2 94	7 98
8	Hay	1·15	·60	10 35	8 46	1 89	− 01
9	Hay	1·51	1·00	13 59	8 91	4 68	2 82
	Totals for rotation			153 51	123 86	29 65	54 40
	Average per acre			15 35	12 38	2 97	5 44

ROTATION SUMMARY—ROTATION "J2"—DURATION SIX YEARS
Summary of Yields, Value and Profit and Loss (per acre)

Rotation year	Crop	Yield per acre: 1926	Yield per acre: Average seven years	Value of crop 1926	Cost of production 1926	Profit or loss per acre: 1926	Profit or loss per acre: Average seven years
		tons	tons	$ cts.	$ cts.	$ cts.	$ cts.
1	Wheat	13·6	17·6	15 10	14 02	1 08	7 43
2	Sunflowers	7·04	8·41	21 12	17 67	3 45	7 40
2	Corn	6·30	7·49	18 90	17 91	99	2 62
3	Wheat	18·8	32·7	20 87	14 26	6 61	6 63
4	Oats—Seeded down	31·4	41·9	13 96	14 24	− 28	5 01
5	Hay	·86	·74	7 74	8 39	− 65	− 94
6	Hay	1·29	·57	11 61	8 93	2 68	− 08
	Totals for rotation			109 30	95 42	13 88	28 07
	Average per acre			15 61	13 63	1 98	4 01

ROTATION SUMMARY—ROTATION "P"—DURATION, EIGHT YEARS
Summary of Yields, Value and Profit and Loss (per acre)

Rotation year	Crop	Yield per acre: 1926	Yield per acre: Average fourteen years	Value of crop 1926	Cost of production 1926	Profit or loss per acre: 1926	Profit or loss per acre: Average fourteen years
		tons	tons	$ cts.	$ cts.	$ cts.	$ cts.
1	Summer-fallow				6 91	− 6 91	− 6 30
2	Wheat	26·8	27·6	29 75	13 94	15 81	14 47
3	Wheat	22·2	19·4	24 64	14 34	10 30	7 41
4	Summer-fallow				7 25	− 7 25	− 6 38
5	Corn	7·70	12·08	23 10	17 62	5 48	5 42
6	Turnips	11·06	13·11	16 59	31 68	−15 09	12 09
7	Barley—Seeded down	12·2	36·4	7 10	12 41	− 5 31	7 03
8	Hay	1·43	·74	12 87	9 12	3 75	14
	Totals for rotation			129 35	122 68	6 67	36 27
	Average per acre			14 37	13 63	74	4 03

ROTATION SUMMARY—ROTATION "FIVE-YEAR"—DURATION, FIVE YEARS

Summary of Yields, Value and Profit and Loss (per acre)

Rotation year	Crop	Yield per acre		Value of crop 1926	Cost of production 1926	Profit or loss per acre	
		1926	Average ten years			1926	Average ten years
		tons	tons	$ cts.	$ cts.	$ cts.	$ cts.
1	Corn—2 years	7·10	9·57	21 30	18 74	2 56	— 2 73
2	Wheat	29·2	20·06	32 41	16 42	15 99	10 79
3	Oats	30·4	42·0	13 48	14 31	— 83	6 92
4	Barley—Seeded down	14·5	32·6	8 35	13 14	—4 79	3 28
5	Hay—4 years	·69	·80	6 21	10 28	—4 07	.32
	Totals for rotation			81 75	72 89	8 86	18 58
	Average per acre			16 35	14 58	1 77	3 71

ROTATION SUMMARY—ROTATION "J"—DURATION, SIX YEARS

Summary of Yields, Value and Profit and Loss (per acre)

Rotation year	Crop	Yield per acre		Value of crop 1926	Cost of production 1926	Profit or loss per acre	
		1926	Average fourteen years			1926	Average fourteen years
		tons	tons	$ cts.	$ cts.	$ cts.	$ cts.
1	Summer-fallow				6 74	— 6 74	— 5 91
2	Wheat	30·0	25·5	33 30	12 83	20 47	14 19
3	Wheat	14·1	18·3	15 65	11 39	4 26	7 83
4	Oats—Seeded down	25·8	37·7	11 44	11 43	01	6 59
5	Hay	1·44	·43	12 96	7 05	5 91	1 36
6	Hay	1·5	·71	13 50	7 20	6 30	2 02
	Totals for rotation			86 85	56 64	30 21	26 08
	Average per acre			14 48	9 44	5 04	4 35

ROTATION SUMMARY—ROTATION "C"—DURATION, THREE YEARS

Summary of Yields, Value and Profit and Loss (per acre)

Rotation year	Crop	Yield per acre		Value of crop 1926	Cost of production 1926	Profit or loss per acre	
		1926	Average eight years			1926	Average eight years
		tons	tons	$ cts.	$ cts.	$ cts.	$ cts.
1	Summer-fallow				6 29	— 6 29	— 6 32
2	Wheat	30·4	29·3	33 74	12 48	21 26	17 31
3	Wheat	20·0	19·8	22 20	11 94	10 26	10 31
	Totals for rotation			55 94	30 71	25 23	21 30
	Average per acre			18 65	10 24	8 41	7 10

EFFECT OF SUNFLOWERS, CORN AND TURNIPS ON FOLLOWING CROP

An experiment to test the effect of different hoed crops on the following crops was carried on in conjunction with three of the rotations. The rotation fields are 5 acres in area and in the hoed crop year half was planted to corn and half to sunflowers or sunflowers and turnip. The following year this split field was sown all to one kind of grain and the halves harvested separately. The results are for three years and in each year have borne out the final average results.

From the following tables we can readily see that sunflowers are the most exhaustive crop, followed by turnip and corn. The yields of grain are smallest from rotation J.2 but in this case there is no summer-fallow in the rotation and we cannot expect such high yields.

ROTATION "R"—SUNFLOWERS AND TURNIPS

Hoed crop	Tons per acre				Following Crop	Bush. per acre			
	1922	1923	1925	Aver.		1923	1924	1926	Aver.
Sunflowers.....	15·36	11·03	10·16	12·18	Wheat.....	16·4	2·8	10·8	10·0
Turnips.....	16·98	27·70	34·99	26·56	Wheat.....	18·8	3·6	15·6	12·7

ROTATION "P"—SUNFLOWERS AND TURNIPS

Hoed crop	Tons per acre				Following crop	Bush. per acre			
	1922	1923	1925	Aver.		1923	1924	1926	Aver.
Sunflowers.....	20·46	9·70	14·01	14·72	Barley.....	41·6	4·4	11·6	19·2
Turnips.....	25·54	26·14	22·80	24·83	Barley.....	48·8	6·8	12·8	22·8

ROTATION "J2"—SUNFLOWERS AND CORN

Hoed crop	Tons per acre				Following crop	Bush. per acre			
	1922	1923	1925	Aver.		1923	1924	1926	Aver.
Sunflowers.....	11·58	6·43	11·07	9·69	Wheat.....	11·8	Dried out	15·2	9·0
Corn.....	8·79	8·45	8·01	8·42	Wheat.....	19·6	4·0	22·4	15·3

CULTURAL EXPERIMENTS

Twenty-eight cultural experiments are being carried on, some of which have not been under way long enough to draw any conclusions. Those which have shown consistent results for three years or more are reported here.

DATES OF SEEDING

The results from different dates of sowing of the various cereals and two ensilage crops are shown in the following tables and while these results are not definite we can make the following inferences. Sunflowers and oats give the largest yields when sown as early as possible. Wheat gives the largest yields when sown one week after spring work commences. Flax and corn give best returns when sown two or three weeks after spring work commences and

barley appears to do well any time until June. September is the most suitable time to sow fall rye although early in October also gives good results. During the years under test of the preceding crops there have been no severe late spring frosts. It is the general opinion that oats or barley will be killed if frozen shortly after emergence and in such a case early sowings would be detrimental. The earliest sowing of flax was frozen badly on May 17 in 1924 and did not recover.

DATES OF SEEDING WHEAT

Plot No.	Crop	Plot treatment	Yield per acre	
			1926	Average three years.
			lb.	lb.
1	Wheat	Sown as early as possible	978	1,366
2	"	Sown four days later	1,000	1,370
3	"	Sown seven days later	1,192	1,431
4	"	Sown eleven days later	1,280	1,332
5	"	Sown fourteen days later	1,180	1,262
6	"	Sown eighteen days later	1,220	1,232
7	"	Sown twenty-one days later	1,150	1,212
8	"	Sown twenty-five days later	1,260	1,293
9	"	Sown twenty-eight days later	960	1,174
10	"	Sown thirty-two days later	1,280	1,264

DATES OF SEEDING OATS

Plot No.	Crop	Plot treatment	Yield per acre	
			1926	Average three years
			lb.	lb.
1	Oats	Sown as early as possible	1,240	1,705
2	"	Sown four days later	1,120	1,673
3	"	Sown seven days later	947	1,694
4	"	Sown eleven days later	940	1,660
5	"	Sown fourteen days later	788	1,676
6	"	Sown eighteen days later	520	1,507
7	"	Sown twenty-one days later	820	1,593
8	"	Sown twenty-five days later	780	1,544
9	"	Sown twenty-eight days later	660	1,473
10	"	Sown thirty-two days later	700	1,353

DATES OF SEEDING BARLEY

Plot No.	Crop	Plot treatment	Yield per acre	
			1926	Average three years
			lb.	lb.
1	Barley	Sown as early as possible	1,545	1,615
2	"	Sown four days later	1,680	1,673
3	"	Sown seven days later	1,632	1,660
4	"	Sown eleven days later	1,480	1,633
5	"	Sown fourteen days later	1,360	1,662
6	"	Sown eighteen days later	1,220	1,650
7	"	Sown twenty-one days later	1,495	1,665
8	"	Sown twenty-five days later	1,220	1,529
9	"	Sown twenty-eight days later	1,320	1,391
10	"	Sown thirty-two days later	760	1,277

DATES OF SEEDING FLAX

Plot No.	Crop	Plot treatment	Yield per acre	
			1926	Average four years
			lb.	lb.
1	Flax	Sown as early as possible	410	519
2	"	Sown one week later	400	610
3	"	Sown two weeks later	520	668
4	"	Sown three weeks later	320	598
5	"	Sown four weeks later	260	380
6	"	Sown five weeks later	200	365

DATES OF SEEDING FALL RYE

Plot No.	Crop	Plot treatment	Yield per acre	
			1926	Average three years
			lb.	lb.
1	Fall rye	Sown July 1, 1925	400	293
2	"	Sown July 15, 1925	890	545
3	"	Sown August 1, 1925	1,560	680
4	"	Sown August 15, 1925	1,760	773
5	"	Sown September 1, 1925	1,960	1,453
6	"	Sown September 15, 1925	1,680	1,467
7	"	Sown October 1, 1925	1,440	1,360
8	"	Sown October 15, 1925	1,140	.....
9	"	Sown just before freeze-up	560	1,053

DATES OF SEEDING SUNFLOWERS

Plot No.	Crop	Plot treatment	Yield per acre	
			1926	Average four years
			tons	tons
1	Sunflowers	Sown as early as possible	6·19	13·79
2	"	Sown one week later	5·19	11·35
3	"	Sown two weeks later	5·39	10·75
4	"	Sown three weeks later	4·74	11·39
5	"	Sown four weeks later	3·77	11·58
6	"	Sown five weeks later	3·54	11·10
7	"	Sown six weeks later	4·49	11·11
8	"	Sown seven weeks later	4·83	10·25
9	"	Sown eight weeks later	.....	10·02
10	"	Sown nine weeks later	2·93	8·75

DATES OF PLANTING CORN

Plot No.	Crop	Plot treatment	Yield per acre	
			1926	Average three years
			tons	tons
1	Corn	Planted as early as possible	7·90	14·22
2	"	Planted one week later	7·77	14·81
3	"	Planted two weeks later	7·54	15·41
4	"	Planted three weeks later	8·70	15·73
5	"	Planted four weeks later	7·80	15·32
6	"	Planted five weeks later	7·64	15·36
7	"	Planted six weeks later (2-year average)	6·21	12·41
8	"	Planted seven weeks later (2-year average)	6·77	12·14
9	"	Planted eight weeks later	6·43	.....

RATES OF SOWING FLAX

The lightest rate of sowing of flax has proven best in a four-year average and was also best this year. Light sowing was a decided advantage with all cereals this year owing to the dry season.

RATES OF SEEDING FLAX

Plot No.	Crop	Plot treatment	Yield per acre	
			1926	Average four years
			lb.	lb.
1	Flax	Sown at 0·25 bush. per acre	460	797
2	"	Sown at 0·5 bush. per acre	380	690
3	"	Sown at 0·75 bush. per acre	340	696
4	"	Sown at 1·0 bush. per acre	300	681

DEPTH OF SEEDING FLAX

The four-year average in this experiment favours shallow seeding and is, we believe, fairly reliable. The results from this year alone favours deeper sowings on account of the drouth.

DEPTHS OF SEEDING FLAX

Plot No.	Crop	Plot treatment	Yield per acre	
			1926	Average four years
			lb.	lb.
1	Flax	Sown 1 inch deep	380	702
2	"	Sown 2 inches deep	340	678
3	"	Sown 3 inches deep	400	678
4	"	Sown 4 inches deep	440	668

METHODS OF PLANTING SUNFLOWERS

Medium-wide spacing of rows with sunflowers has given the highest yield in a four-year average which also corresponds with this year's findings. In a year of plentiful moisture the very thick sowing gives the largest yield in drier years, which predominate, the 24- or 30-inch spacing is preferable.

METHODS OF PLANTING SUNFLOWERS

Plot No.	Crop	Plot treatment	Yield per acre	
			1926	Average four years
			tons	tons
1	Sunflowers	Planted in 6-inch rows	4·05	11·94
2	"	" 24 "	6·74	13·76
3	"	" 30 "	8·49	14·59
4	"	" 36 "	7·46	12·31

VARIOUS MIXTURES OF CEREALS

Mixtures of the various cereals so far have not shown any increased yield over straight grains. The mixing of wheat, oats and barley appears to be detrimental as the barley and oats are ripe some time before the wheat, and the

general sample of grain is poor. The barley and oat, and the wheat and flax mixtures ripened fairly evenly and good samples were threshed. In the wheat and flax mixtures the wheat appears to smother the flax unless the two are sown in about equal weights. Where a smaller percentage of flax is sown there will be very little flax in the threshed grain. Sowing in alternate rows has shown a decided advantage this year in percentage of flax in the threshed grain and in total yield over the same mixture sown together.

MIXTURES OF OATS AND BARLEY

Plot No.	Crop	Rates of seeding per acre		Yield per acre	
		Oats	Barley	1926	Average three years
		lb.	lb.	lb.	lb.
1	Oats	85	00	1,760	1,587
2	Mixture	68	18	1,640	1,483
3	"	54	36	1,900	1,473
4	"	34	54	1,280	1,173
5	"	17	72	1,040	1,107
6	Barley	00	96	1,320	1,140

MIXTURES OF WHEAT, OATS AND BARLEY

Plot No.	Crop	Rates of seeding per acre			Yield per acre	
		Wheat	Oats	Barley	1926	Average three years
		lb.	lb.	lb.	lb.	lb.
1	Oats	00	85	00	520	1,227
2	Mixture	18	54	18	680	1,177
3	"	9	62	10	420	1,083
4	"	30	30	30	580	1,177
5	Barley	00	00	96	490	1,083
6	Mixture	18	17	54	470	1,077
7	"	54	17	18	770	1,050
8	"	72	8	10	1,000	1,113
9	Wheat	90	00	00	708	1,023
10	Mixture	9	8	87	530	937

MIXTURES OF WHEAT AND FLAX FOR GRAIN

Plot No.	Crop	Rate of seeding per acre		Yield per acre	
		Wheat	Flax	1926	Average three years
		lb.	lb.	lb.	lb.
1	Wheat	90	00	530	970
2	Mixture	72	7	400	873
3	"	45	14	380	860
4	"	36	21	430	757
5	"	36	21*	470	
6	"	20	25	440	690
7	"	20	25*	470	
8	"	8	28	460	607
9	Flax	00	30	320	500

*Alternate rows.

HORTICULTURE

The season of 1926 opened up very favourably. The ground was ready for working towards the end of April; there were no killing frosts after May 3; and during May there were 3.38 inches of rainfall. From the first of June to the middle of August there was not one good rain and lawns, flowers and many of the vegetables suffered. The shrubbery and trees did not seem to be affected but the bush fruits and strawberries were small.

VEGETABLES

POTATO

Due to the continued dry weather throughout the season the yield of potatoes was considerably below average. Some of the seasons in the past have been dry and hot for two or three months but were favoured with aboundant rain early in the fall, and in such seasons root crops and potatoes developed remarkably in a short time. This season was, however, dry from early June until nearly freeze-up and for this reason yields are almost the lowest ever reported. There was, however, much less of the common diseases present and the quality of the product was good. The percentage of small unmarketable potatoes was large, but overlarge and hollow tubers were rare.

One acre each of Early Ohio and Irish Cobbler potatoes were grown under field conditions as a summer-fallow substitute following two crops of oats. The distance of planting in this case was about 15 inches between sets in the rows, and 42 inches between the rows. The condition of fertility was not as good as in the variety and cultural test plots and naturally the yields were much lower. The yields were about 100 bushels per acre for each variety.

VARIETY TEST.—The variety tests and cultural experiments were conducted on land which has been heavily manured for a number of years and was in corn in 1925. These conditions were nearly ideal for potatoes.

The variety tests were conducted in 68-foot triplicate rows. Before harvest 1 foot was edged from each end of the rows leaving comparative rows of 66 feet from which to take yields. The various replications were placed on different parts of the field so that each variety was tested under all conditions of soil as nearly as possible. Eleven varieties were under test. All were treated for common scab, were planted 4 inches deep and cultivated sufficiently throughout the season to kill weeds and keep the soil loose.

The medium-early varieties gave the highest yields and also the best quality of potatoes. Irish Cobbler and Early Ohio, two varieties which have been recommended by this Station for a number of years were in top place. These varieties have been recommended because of their early maturity, their excellent cooking and keeping quality and their high average yield. In seasons of longer growth and abundant moisture they are surpassed by some of the later varieties, but as a general-purpose potato for this locality they are hard to excel. Other potatoes which have proven very good for cooking and fairly good in yield are Bovee and Gold Nugget. Everitt has also proven to be a good yielder and a fair quality potato.

The following table gives the yields of varieties for 1926 and an average for eleven years of most of them.

POTATO VARIETIES—YIELD PER ACRE

Name of Variety	1926			Eleven year average
	Large	Small	Total	
	bush.	bush.	bush.	bush.
Carman No. 1	253	26	279	338
Dalmeny Beauty	172	33	205	334
Everitt	261	32	293	333
Empire State	217	34	251	330
Irish Cobbler	276	21	297	320
Rochester Rose	236	50	286	314
Vick Extra Early	235	30	265	309
Early Ohio	258	38	296	302
Bovee	210	40	250	276
Up to Date	133	75	208	
Gold Nugget	173	30	203	

PLANTING WHOLE AND CUT POTATOES.—In the following table are given the results from the different kinds of sets used. A six year average is also shown with one exception in which two years results only were available.

WHOLE POTATOES VS. CUT POTATOES FOR SETS

Kind of Sets	1926			Six year average
	Large	Small	Total	
	bush.	bush.	bush.	bush.
Whole medium	274	51	325	354
Whole small	255	33	288	344
Three eyes	215	31	246	338
One eye from stem end	207	27	234	337
Two eyes	217	26	243	333
One eye from seed end	226	23	249	322
One eye from middle portion	212	21	233	330*

*Two years.

From the results as shown in the table it would appear that the larger the portion of potato planted the better the prospect of obtaining a good yield. It is generally considered that best results, considering cost of seed and amount of yield, are obtained by cutting the potato into sets having two eyes to a set. When the sets are smaller the proportion of large potatoes in the resulting crop is greater and when the sets are larger the cost of seed is disproportionally increased.

DISTANCE OF PLANTING.—Three plots of three rows each were planted at different distances, 12 by 30 inches, 14 by 33 inches and 16 by 36 inches (the last figure refers to the space between the rows). The results for 1926 and also a thirteen-year average are shown in the following table.

DISTANCE OF PLANTING POTATOES

Spacing	1926			Thirteen year average
	Large	Small	Total	
	bush.	bush.	bush.	bush.
12 inches by 30	229	43	272	370
14 inches by 33	235	38	273	345
16 inches by 36	274	35	309	340

The greater spacing this year gave the largest total yield of potatoes and the smallest percentage of small unsaleable ones. It would seem that this was largely due to the very dry season and the results shown in the average are more reliable. From it we can see that the closest planting has given the highest average yield during a thirteen-year test, but it also gives the highest percentage of small tubers. A compromise of 15 inches by 30 inches reduces the percentage of small ones and still retains a good yield and is possibly the most desirable distance to plant.

DATES OF PLANTING.—Two dates of planting were made this year. One on May 27, and one June 6. The yield from the first planting was 376 bushels per acre and the second 299 bushels per acre which shows a decided advantage in favour of early planting. This corresponds to results gained in previous years, and to get best results it would appear that potatoes should be planted early.

SPROUTED VS. UNSPROUTED SEED.—One lot of seed potatoes was allowed to develop short green sprouts by being exposed to light in a warm room for nearly six weeks. Another lot was kept in a cool dark cellar and both were planted at the same time. The sprouted lot yielded 279 bushels as against 212 bushels from the unsprouted seed. The results in 1925 under similar conditions were 585 bushels from the sprouted seed and 562 bushels from the unsprouted. In both seasons the crop from the sprouted seed was ready for use nearly two weeks earlier than that from the unsprouted.

DEPTH OF PLANTING.—Early Ohio potatoes were planted at each of the following depths: two, four and six inches. The yields for 1926 and also a ten year average are given in the table below.

DEPTH OF PLANTING POTATOES

Depth of planting	1926			Ten year average
	Large	Small	Total	
	bush.	bush.	bush.	bush.
Two inches	279	42	321	374
Four inches	282	31	313	398
Six inches	267	24	291	376

From the ten-year average we would infer that 4 inches is the best depth to plant potatoes. This year's results favoured the shallow planting but also gave a higher percentage of small tubers.

ASPARAGUS

Asparagus is one of the best sources of early greens, and once established required little labour to keep up. Light applications of manure, preferably hen-manure are very beneficial.

Cutting this year commenced on May 12, and extended until June 19. The total yield was low, being only about half of the average crop for four years. The average total yield per 30-foot row for the four previous years was 7 pounds, and this year about 3 pounds. The Washington variety was the one grown.

ARTICHOKES

Jerusalem white artichokes were planted on April 22, and harvested September 27. The yield of tubers was 9½ pounds from a 30-foot row while an average of the previous four years was 16½ pounds. The tubers were small and both this and the low yield may be attributed to the very dry season.

BRUSSELS SPROUTS

Three varieties, Paris Market, Improved Dwarf and Danish Prize were started in the hotbed and also sown in the open. The results from those started in heat and transplanted were much better than those sown in the open, but Danish Prize was the only one in either case which produced solid heads and they were very small. The results from Brussels Sprouts have never been satisfactory at this Station.

BEANS

VARIETIES.—Twenty-seven varieties of bush beans were under test. All were planted on May 5, in rows 30 inches apart. The rows were 30 feet long, 20 feet of which were used for green pods and the remainder allowed to ripen. The green pod and seed yields were both light. The green pods on most of the varieties were fit for use on July 21, and were used until August 12, the season being very short.

The highest-yielding varieties were: Masterpiece, Cream, Interloper, Challenge Wax and Henderson Bountiful, though Round Pod Kidney Wax gave the best quality pods. A fair quantity of ripe seed was harvested from most varieties.

DATES OF SOWING.—The results from different dates of sowing were the same as an average for several years. Those sown the first week in June yielded a third higher than those sown at two successive ten day intervals.

POLE OR RUNNER BEANS

Four varieties of pole beans were sown on May 15. Two of them Giant white and Improved Scarlet Runner gave small yields but due to the dry weather none made much growth.

BROAD BEANS

Aquadulce and Seville Long Pod Broad beans were planted on May 5. Germination was good and growth fair but practically no pods set because of the drouth.

BEETS

VARIETIES.—Sixteen varieties of beets were tested under similar conditions. All were sown on May 5, thinned June 8, and harvested September 21. They were planted in 30-foot rows, the rows being 2 feet apart. All varieties were ready for use as green vegetables about July 7, when from 1 to 2 inches in diameter.

The yields were much lower than usual but the quality good, and there was a lower percentage of overlarge roots. Lethbridge Early Wonder and Bruce Early Model both yielded 92 pounds and were smooth and of good quality.

DISTANCE OF THINNING.—One variety was sown on May 5, and thinned to 3, 4, and 6 inches to determine the best distance of spacing. The yields when harvested on September 21 were 56 pounds from the 3-inch spacing, 51 pounds from the 4-inch spacing, and 43 pounds from the 6-inch spacing. In seasons of adequate moisture the thick planting will also give the best quality as there is less tendency for them to grow large and coarse.

DATES OF SOWING.—Three dates of sowing were made at ten-day intervals commencing May 5. The first sowing produced fairly well, the second sowing

less than half of the first, and the third sowing was not worth harvesting. The results from this experiment are very much exaggerated this year due to the lack of moisture after the middle of June. The largest total yield is, however, obtained from the earliest sowing in an average year, but the best quality roots for most culinary purposes are obtained from the later sowings.

CABBAGE

VARIETIES.—Twenty-five varieties of cabbage were sown in the open on May 7. Ten of these varieties were also sown in the hotbed on April 7, and transplanted into the garden on May 26. In all cases the plants were 2 feet apart in the rows and the rows 30 inches apart. The earliest variety, Fordhook Forcing, was ready for use August 3, and Jersey Wakefield on August 7, when started in the hotbed and when sown in the open about ten days later. The total weight of ten heads from each of the ten varieties started in the hotbed was 480 pounds, and from the same varieties when sown in the open, 372 pounds.

Following are the five highest yielders placed in order of yield: Kildonan, Early Summer, Allhead Early, Brandon Market, and Danish Ballhead. All were of good quality.

DATES OF SOWING.—Two varieties of cabbage were sown in the open at three dates, each commencing on May 7, and successive sowings at ten-day intervals. The early sowing gave the best heads for storage purposes with both varieties, as well as the highest yield. Heads from the later sowings were lacking in firmness.

WINTER STORAGE.—Cabbage were stored in a root-cellar by three methods: hung by the roots from the ceiling; piled in pyramid form on planks 4 feet from the floor; and in pyramid piles on the floor. The temperature of the cellar was kept as near 34° as possible and the cellar was ventilated. Those hung from the ceiling kept best; those on planks next best; and those on the floor commenced to deteriorate in January.

CARROTS

VARIETIES.—Six varieties of carrots were grown under like conditions in a variety test. All were planted on May 6, and harvested September 21. Plants were thinned to 3 inches and yields taken from 30-foot rows. Chantenay and Early French Forcing were ready for use July 24, though Ox Heart gave the largest final yield. Ox Heart yielded 48 pounds, Chantenay 44, and Early French Forcing 41 pounds per 30-foot row. All were of good quality excepting Ox Heart, which is rather coarse and has a large core. Nantes Half Long produces the best quality roots.

DISTANCE OF THINNING.—Two varieties of carrots were sown for a thinning experiment. They were thinned to 1, 2, and 3 inches in the rows and yields taken from 30-foot rows. One variety favoured the 1-inch spacing, and the other the 2-inch, though the differences between the two closest thinnings were very slight in both cases. The widest spacing was lowest in yield with both varieties.

DATES OF SOWING.—Chantenay carrots were sown at three dates at ten-day intervals commencing on May 6. The yields from the various dates were 34 pounds, 25 pounds, and 23 pounds, the earliest being the largest and the latest the smallest.

CAULIFLOWER

Five varieties of cauliflower were started in heat and transplanted, sown in open and thinned, and sown in open and transplanted. The earliest heads were obtained from the hot-bed sowing and the latest from those sown in the open and transplanted. The total yields of ten heads from each variety were 101 pounds raised in heat, 94 pounds raised in open and thinned, and 86 pounds sown in open and transplanted. The highest-yielding varieties raised in heat were Early Dwarf Erfurt and Early Snowball; the highest sown in the open and thinned were Veitch Autumn Giant and Danish Dry Weather; and the highest sown in the open and transplanted were Early Snowball and Dutch Dry Weather. In a year of adequate moisture all the varieties mentioned are of good quality, but this year all excepting the very late heads were open and of poor colour.

CELERY

VARIETIES.—Twenty-two varieties of celery and one of celeriac were under test this year. All were sown in heat on March 3, pricked out April 8, and planted in the open June 8. The growth was fair considering the season but the yields were small. The highest yielders were Burpee Fordhook, 15 pounds; Golden Plume, 14 pounds; and Giant Pascal, 14 pounds. Golden Self Blanching and White Plume are the best quality varieties.

STORING CELERY.—Celery stored in a dark, well ventilated cellar and planted in soil 4 inches deep remained in good condition until March. The soil was moistened occasionally and a temperature around 34 degrees F. maintained. Those varieties poorly blanched, when put under these conditions complete the process very nicely.

CUCUMBERS

Of the five varieties of cucumbers tested all produced a fair amount of fruit though they were small in all cases. Davis Perfect yielded 17 fruits from one hill which weighed 4 pounds, Chicago Pickling 10 fruits weighing 3 pounds, and Improved Long Green 9 fruits weighing 2½ pounds.

MUSK MELON

Fruits were produced on four of the eight varieties tested. The fruits produced did not ripen on the vine but matured fairly well in the cellar. The varieties which produced fruit, in order of yield were Emerald Green, Remples (a local strain) Pages Early and Tip Top.

WATER MELON

Four varieties produced a few fruits which were ripened in the cellar. They were Extra Early Sugar, Cole Early, Early Fordhook and Monte Cristo.

The season was unusually cool and for this reason all melons and cucumbers did not do as well as they usually do. Long hot seasons are necessary to produce good melons.

CORN

Table corn was picked from all excepting four of the twenty-eight varieties sown. Though the season was dry the yield from several of the varieties surpassed those of 1925. Ears were picked from four varieties on August 26, two Alpha strains and Picaninny and Banting.

The varieties giving the highest total yields and producing through the longest season were Alpha, (Harris), Picaninny, Alpha, (Ferry), Wills Early June, Sweet Squaw, Golden Bantam and Banting. The earlier varieties gave the highest yields this year as the season was rather cool and development slow.

PEAS

VARIETIES.—Twenty-five varieties or strains of peas were under test. All were sown on May 7, in rows, 3 feet apart. Yields were taken from 30-foot rows, 20 feet for green peas and 10 feet for ripe seed. The three earliest in order of suitability for use were, Extra Early Pedigree, Gregory Surprise, and Invermere No. 2. The varieties giving the highest total production were Invermere No. 1, 23 pounds, Invermere No. 2, 17 pounds, Invermere No. 8, 17 pounds.

The Invermere strains have not been tested very long at this Station but show great promise as they are of excellent quality as well as high yielders.

Home-grown seed gave slightly poorer results than seed of the same varieties from the other sources. This is contrary to results from the same experiment in 1925.

DATES OF SOWING.—Two varieties were sown on May 7, 18 and 31, to test out various dates of sowing. In each case the yields from the earliest sowings were about one third larger than the latter two. The two later sowings yielded nearly alike with both varieties. The earliest sowings were fit for use about ten days earlier than the others.

THICKNESS OF PLANTING.—Three varieties were planted at distances of 1, 2 and 3 inches apart in the rows. In each case the yields decreased as the plants became thinner. These results correspond with those obtained in 1925 and indicate that close planting is desirable.

KOHL-RABI

Two varieties were sown, Purple Vienna and Green Goliath, both yielding 27 pounds per 30-foot row. These plants are used mostly in place of summer turnips but are not extensively grown in the West.

LEEKS

Two varieties of leeks were grown by three different methods, namely: planting in open and thinning, planting in open and transplanting, and starting in hotbed and transplanting. Starting in heat gave the highest yield followed by planting in the open and thinning. Giant Carentan outyielded Musselburg in each case.

LETTUCE

Seventeen varieties of lettuce were sown on May 6, in rows 18 inches apart. All were ready for use on June 9, and a fair crop was produced until July 2. On this date Early Paris Market commenced to send out seed stalks. Yields were taken at this date from a 10-foot row of each variety and the highest yielders in order of yield were Improved Hanson, Big Boston, Iceberg, Early Paris Market and Grand Rapids. Grand Rapids and Black Seeded Simpson are recommended for good quality early leaf lettuce and Improved Hanson, Big Boston and Crisp as Ice for cabbage lettuce.

Certain of the varieties were transplanted and compared with the same variety not transplanted. The only material difference noticed was that the transplanted ones were delayed for about two weeks.

ONIONS

Eighteen varieties of onions were sown on April 22, in rows 1 foot apart. Two White Barletta strains were harvested on August 7, and the remainder on September 17. The following table shows the yields of the leading varieties for 1926 and also a seven-year average.

ONIONS—TEST OF VARIETIES

Name of Variety	Yield 1926	Seven year average
	lb.	lb. oz.
Ailsa Craig	23	17 07
Southport Red Globe	12	17 00
Southport Yellow Globe	18	16 02
Extra Early Flat Red	21	15 03
Southport White Globe	13	14 12
Large Red Wethersfield	12	14 11
Danvers Yellow Globe	16	13 10
Australian Brown	17	13 07
White Barletta	12	10 12 (Two year average)
Cranston Excelsior	27	27 00

The yields in some varieties were slightly below average but the majority were above and considering the season the results are very gratifying. Ailsa Craig and Cranston Exelsior are very good yielders but not quite as firm as the other varieties mentioned.

PARSNIPS

Seven varieties of parsnips were sown in the open May 6, and harvested September 27. The yields were all very low, the highest being Cooper Champion and Elcombe Hollow Crown which yielded 27 and 24 pounds respectively from 30-foot rows. Guernsey XXX a half-long type only yielded 18 pounds but due to its shape and small core is one of the most desirable varieties to grow.

PUMPKINS

Of the nine varieties under test Small Sugar matured the best and produced the best quality fruits for culinary purposes. King of the Mammoth and Connecticut Field gave slightly higher yields but were not as well matured. The production from the other varieties was very low.

PEPPERS

Nine varieties of peppers were sown in the hotbed April 7, and planted in the open May 27. The first pods were picked on September 7, and the last before frozen on September 21. All yielded fairly well, the heaviest yielders being Red Chili, Bulgarian Sweet Pepper and Harris Earliest.

RHUBARB

Though the season was dry good yields of rhubarb were pulled from most varieties. The first pulling was done from Victoria, Ruby and Stotts Monarch on May 5, and from some of the later strains it was pulled as late as early August.

The yields and remarks on quality of the various varieties are shown in the following table.

RHUBARB VARIETIES

Variety	Source	Colour	Quality	Yield per Acre
				Lb.
Stott Monarch	Prince Albert.	Green	Excellent	137
Victoria	Rosthern	Red and green	Good	72
Victoria	Lethbridge	Red and green	Good	67
Ruby	Ottawa	Red	Excellent	59
Ruby	Prince Albert.	Red and green	Excellent	51

RADISH

The ten varieties under test all yielded well, surpassing the 1925 yield by about one third. All were sown May 6, and roots were pulled on June 5 from the following: XXX Red Scarlet Oval, Scarlet Turnip White Tipped, 20 Day, Sparkler or Perfection, Ne Plus Ultra, and French Breakfast. All were fit for use until July 2, the highest total yields being taken from XXX Red Scarlet Oval, 61 bunches, 20 Day, 48 bunches, Icicle 43 bunches and Sparkler or Perfection 43 bunches. The best quality red varieties were Scarlet Oval, 20 Day and Sparkler. Icicle and White Icicle are very good whites.

Three winter varieties were grown. They were sown on the same date as the others and harvested August 27. Long Black Spanish (Steele Briggs) yielded 30 bunches, Long Black Spanish (D. & F.) 16 pounds and Rose Scarlet China 6 pounds per 30 foot row. The latter two varieties began to seed rather early which no doubt lowered the yields and quality.

SPINACH

Six varieties were under test. All excepting New Zealand, a late variety, were ready for use on June 12, and were in good condition until the end of the month when they started to develop seed. New Zealand was ready for use July 9, and remained in good condition until frozen. All the varieties appeared to be of good quality.

SALSIFY

Large White and Mammoth Sandwich Island were sown May 6, and when harvested October 13, yielded 27 pounds and 23 pounds respectively.

SQUASH

Twelve varieties or strains of squash and marrows were planted in hotbed and in the open. Very poor results were obtained from those sown in the open, English Vegetable Marrow and Crookneck being the only two which produced fruits fit for use and those very few and small. The highest-yielding varieties started in heat were English Vegetable Marrow, Golden Hubbard and Hubbard.

SWISS CHARD

Fordhook, Lucullus and Silver Leaf were grown and on October 13, when harvested yielded 19 pounds, 12 pounds and 9 pounds per 6 heads.

TURNIPS

Four varieties of fall turnips and the same of swedes were tested. The fall turnips were used as green vegetables and the swedes as winter vegetables. Red Top Strap Leaf fall turnip was ready for use on June 30, and Extra Early Purple Top Milan and Early Snowball on July 10. The first mentioned was the highest yielder. All were sown on May 6. Selected Westbury is an excellent cooking swede and also gave the highest yield this year.

TOMATOES

Fifty-four varieties or strains were tested. All were sown in flats on April 6, and placed in the hotbed. The seedlings were pricked out April 24, and planted in the open May 27, allowing the plants three feet each way. The production of fruit was good but only a small percentage ripened. All were pruned to one stalk. Five plants of each variety were tied to stakes and an equal number were left unstaked. The results in the following table are the yields from five plants for each method and represent twenty-four of the highest yielders.

TOMATOES—VARIETY TEST

Name of Variety	Source	Staked				Unstaked			
		Ripe		Green		Ripe		Green	
		Lb.	Oz.	Lb.	Oz.	Lb.	Oz.	Lb.	Oz.
Alacrity	0–6560	14	03	16	00	11	14	9	01
Select Earliana	Moore	11	14	12	00	14	06	15	15
Earliest Market	Buckbee	11	06	16	00	13	07	17	08
Alacrity X Earlibell	0–6570	11	02	21	00	7	13	3	07
Alacrity X Hipper	0–6568	10	08	10	00	10	05	8	07
Monumental	Bolgiano	10	01	15	00	4	06	16	09
Bogiano	Bolgiano	9	14	8	00	6	14	17	08
Avon Early	Ferry	9	05	9	00	7	03	8	07
Wayahead	Bruce	9	03	7	08	5	00	15	00
Earliana Grade 2	Langdon	8	04	13	00	7	03	15	15
I. X. L.	Rennie	8	00	23	00	9	01	14	00
Avon Early	Dreer	7	14	24	00	7	14	7	12
Burbank	Burbank	7	13	17	00	10	10	15	00
Avon Early	Vaughan	7	13	21	00	6	09	6	07
50 Day	Buckbee	7	10	25	00	10	15	14	00
Burbank	Bruce	7	10	20	00	7	14	12	08
First of All	McKenzie	6	10	20	00	10	08	9	00
Sparks Earliana	Burpee	6	06	20	00	10	15	13	07
John Baer	Steele Briggs	6	05	19	00	5	00	5	00
Self pruning	Burpee	5	14	17	00	6	09	7	12
First and Best	Bruce	5	10	8	08	8	08	18	07
Danish Export	Wiboltt	5	09	6	00	6	07	7	12
Alice Roosvelt	Hiebert	5	06	9	00	3	08	8	07
No. 1 Navato	Diener	5	00	8	00	2	08	7	12
Total		199	4	365	00	195	05	275	00
Total Fruit		564	04			470	6		

Staking showed very little advantage this season in respect to yield of ripe tomatoes though there were considerably more green ones.

DIFFERENT METHODS OF PRUNING.—Two varieties were planted in the open on May 27, using three rows of each variety. As the fruit set, the plants in one row in each of the varieties were cut above the first bunch of fruit and this method of pruning was compared with cutting above the second and third bunches. The following table gives the yields of ripe and green fruit and the percentage of ripe fruit from each method. These results give the yields of 15 plants for each method.

METHODS OF PRUNING

Varieties	One Bunch				Two Bunches				Three Bunches			
	Ripe		Green		Ripe		Green		Ripe		Green	
	lb.	oz.	lb.	oz.	lb.	oz.	lb.	oz.	lb.	oz.	lb.	oz.
Bonny Best	16	10	7	08	16	08	22	00	14	05	27	00
Alacrity	14	15	1	08	25	09	11	00	18	10	16	00
Total	31	09	9	00	42	01	33	00	32	15	43	00
Percentage of ripe Fruit	78·				56·				44·			

Two or three bunches gave the highest yield of both ripe and green fruit though the percentage of ripe fruit decreased as the number of bunches increased. Fruit ripened first on the two bunch pruning and last on the three bunch with both varieties.

SOWN IN OPEN.—Three varieties were sown in the open May 9. The yields were very low and in no case did they equal the yield of the same variety started in heat and transplanted.

TREE FRUITS

The apple trees wintered well in 1925-26 and carried a heavy bloom in the spring. Due to the dry weather the fruit did not develop as well as in 1925 and the total yield was somewhat lower. All matured well however.

SMALL FRUITS

RASPBERRIES

Yields were very low due to the dry weather. The following table gives a five-year average yield as well as the 1926 yields. The acre yields were calculated from $\frac{1}{120}$ acre areas and are stated in standard berry-boxes (S.B.B.) which contain four-fifths of one quart. Herbert, Ohta and Newman No. 23 are recommended for their flavour.

RASPBERRY—VARIETY TEST

Name of Variety	Yield per acre 1926	Five Year average per acre
	S.B.B.*	S.B.B.*
Miller	1920	3232
Sunbeam	1403	2907
Herbert	307	2659
Newman No. 23	1140	2535
Latham (Min. No. 4)	675	2389
St. Regis	233	2164
Ohta	744	2142
King	570	1910

*Standard berry-boxes.

CURRANTS

The yield of currants was very small this year and no comparison of varieties can be made.

STRAWBERRIES

Large plots of Dakota strawberries were planted out in 1924 and 1925. They were covered with about 6 inches of slough hay after freeze-up which was removed early in May. All came through the winter fairly well and 1,314 quarts were picked from one-sixth acre. Picking commenced on July 10, and continued until July 26, the season being greatly shortened by the dry weather.

The abundance of moisture during May favoured the bloom of the shrubs and fruit trees. The four species of lilac-vulgaris, josikaea, villosa and japonica furnished bloom of various shades for nearly two months from early May till July. The Tartarian honeysuckle and caragana are also profuse and fragrant bloomers. But among the most beautiful of flowering shrubs must be classed the apple and plum. They open late in May and the time of bloom is short, being only a couple of weeks, but the shades from white to deep pink and the rich perfume which on a calm evening permeates the air for several hundred yards around make them among the most desirable of shrubs.

CEREALS

The season was very dry and the yields of all cereals were low. During May an abundance of moisture induced good germination though the temperatures were rather low for rapid growth. During June, July, and August, however, there was practically no beneficial rainfall and all crops suffered. The earlier varieties because of their ability to mature on less moisture than later ones have surpassed some of these in yields. Most of the cereal varieties were sown in April or early in May, which was to their advantage this season as they were well established before the weather became dry. The temperatures during the three summer months were average and though maturity was hastened by the extended drouth, the time of maturity of the varieties was not below normal. The drouth, however, caused short straw, and a poor sample of grain. The common diseases were present in the very late varieties but in no cases caused much damage. Wheat-stem saw-fly was quite abundant on wheat stubble but as the straw was short and the grain ripened rapidly no noticeable damage was done.

The main variety tests of all cereals were grown on summer-fallow substitutes of corn and potatoes. In normal seasons the yields from this land are nearly as good as from bare summer-fallow, but this year the yields of some cereal varieties are higher on stubble land. The reason for the lower value of the substitutes may have been due to the large crop of corn taken off in 1925 and to the abundance of fall rains which would have a tendency to equalize the productive power of fallow substitutes and cereal stubble land. Moisture was more of a limiting factor than available plant food.

WHEAT

Nineteen varieties of common spring wheat and two of emmer were each under test on four one-eightieth-acre plots. Before harvest the plots were edged to eliminate border effect, reducing their areas to one-hundredth acre. In nearly all cases the earlier varieties gave the higher yields, due no doubt to the very dry season. The spread in yield between the highest and lowest is slight, however, and will not form a basis for any definite conclusions. A five-year average of the leading varieties gives a much better idea of their relative values and in this it will be noticed that there is a very slight spread between the yields of the four or five highest, any one of which may lead the list under conditions most favourable to itself. The average number of days required for maturity is also entered and shows a preference for Garnet where an early wheat is desired.

WHEAT—TEST OF VARIETIES OF STRAINS ON FALLOW SUBSTITUTES

SOWN APRIL 22

Name of Variety	Date of Ripening	Number of Maturity	Average Length of Straw	Yield of Grain per Acre		Weight per measured Bushel
			inches	bush.	lb.	lb.
Supreme	Aug. 17	118	28	22	42	63
Producer	" 16	117	31	21	52	61
Early Red Fife	" 18	119	31	21	15	63
Reward	" 6	107	32	20	50	64
Preston	" 16	117	31	20	40	60·5
Garnet	" 7	108	32	20	00	62
Ruby	" 6	107	30	20	00	63
Golden	" 19	120	31	20	00	63
Kota	" 10	111	33	20	00	62·5
Ceres	" 15	116	28	19	35	62·5
Sanderson's selection	" 18	119	31	19	30	62
Early Triumph	" 14	115	29	19	10	61·5
Marquis O. 15	" 14	115	28	18	32	63
Brownie	" 14	115	32	18	32	62
Kitchener	" 18	119	31	18	20	60·5
Red Fife	" 20	121	29	18	20	60
Orchard's Selection	" 20	121	34	18	10	59·5
Criddle's Selection	" 20	121	29	16	40	61
Russian 101	" 20	121	37	15	50	61·5
Early Ottawa 44 (emmer)	" 11	112	34	15	40	58
Common emmer	" 12	113	27	14	22	55·5

WHEAT—TEST OF VARIETIES ON SUMMER-FALLOW

Name of Variety	Yield per Acre												Average Number of Days Maturing
	1926		1925		1924		1923		1922		Average		
	Bush.	Lb.	Bush.	Lb.	Bush.	Lb.	Bush.	Lb.	Bush.	Lb.	Bush.	Lb.	
Marquis O·15	18	32	36	40	17	40	36	57	43	20	30	38	120
Supreme	22	42	37	20	17	00	37	00	35	20	29	52	119
Kitchener	18	20	31	00	19	00	36	40	42	40	29	32	123
Garnet	20	00	28	20	18	20	44	00	35	40	29	16	111
Red Fife	18	20	33	20	17	20	35	12	39	00	28	38	124
Early Triumph	19	10	31	20	14	20	38	40	33	20	27	22	117
Kota	20	00	25	40	17	40	32	40	33	20	25	52	118
Ruby	20	00	26	20	15	00	30	40	27	40	23	56	111
Reward	20	50	24	00	12	40	24	30	29	20	22	16	112

WHEAT—TEST OF VARIETIES ON WHEAT STUBBLE

Eleven of the principal wheat varieties were grown on wheat stubble in a comparative test. There was a slight change in order of yields from those grown on fallow but the same varieties are near the top. The following table shows a three-year average for six of the varieties as well as the more detail notes for 1926.

WHEAT—TEST OF VARIETIES ON WHEAT STUBBLE

Sown April 24

Name of Variety	Date of Ripening	No. of days Maturity	Length of Straw	Yield per Acre		3-Year Average		
						Yield per Acre		No. of days Maturity
			Inches	Bush.	Lb.	Bush.	Lb.	
Supreme	Aug. 15	114	29	15	20	20	47	118
Marquis O·15	" 17	116	32	17	40	18	53	119
Garnet	" 9	108	30·5	15	30	18	50	108
Kitchener	" 19	118	31·5	13	20	18	40	122
Kota	" 17	116	31·5	13	30	16	10	116
Red Fife	" 21	120	31·5	12	00	15	13	122

OATS

The yields of oat varieties are considerably below average this year. There is also a very slight spread in yield between the varieties and any one of the first half dozen may give the highest yield another year. The samples of threshed grain were poor due to the dry season. Victory is very low in this year's test, which is difficult to account for, as an average of a number of years places it as one of our best yielders. The following two tables give the yields and other notes of varieties tested this year and annual and average yields of the older varieties for five years.

OATS—TEST OF VARIETIES OR STRAINS ON FALLOW SUBSTITUTE

Sown April 26

Name of Variety	Date of ripening	Number of days maturity	Average length of straw	Yield of Grain per acre	Wt. per measured bushel
			Inches	Bush. Lb.	Lb.
Gold rain	Aug. 4	101	32	39 24	39·5
Longfellow	" 1	98	29	36 26	38·5
O.A.C. 72	" 5	102	35	36 26	39·0
Leader	" 5	102	34	36 01	37·5
Banner, O. 49	" 5	102	32	36 01	37·5
Gerlach	" 4	101	32	35 10	40·5
Banner Cay	" 4	101	31	34 14	39·5
Alaska	July 26	92	30	32 12	38·5
Laurel—(hulless)	Aug. 2	99	24	32 12	48·5
Banner, Dow	" 7	104	35	31 21	39·5
Liberty (hulless)	July 30	96	32	30 05	44·5
Victory	Aug. 4	101	31	29 14	40·0

OATS AVERAGE AND ANNUAL YIELDS

Name of Variety	Yield per Acre												Average No. of Days Maturity
	1926		1925		1924		1923		1922		Average		
	Bush.	Lb.	Bush.	Lb.	Bush.	Lb.	Bush.	Lb.	Bush.	Lb.	Bush.	Lb.	
Gold Rain	39	24	66	16	25	10	76	15	77	22	47	04	107
Victory	29	14	72	12	17	22	72	32	80	00	54	16	108
Banner O. 49	36	01	78	08	17	22	67	02	69	14	53	23	108
Leader	36	01	75	30	18	08	72	02	65	30	53	21	108
Longfellow	36	26	67	02	16	16	57	22	76	16	50	30	105
Gerlach	35	10	66	06	15	10	64	24	65	10	49	12	109
Alaska	32	12	45	10	17	02	69	24	53	18	43	20	97
Liberty	30	05	45	30	12	12	54	04	41	26	36	29	102

OATS ON OAT STUBBLE

With a few exceptions the same varieties of oats tested on fallow were sown on fall-ploughed stubble. Leader in this case gave the highest yield but the best ones in the other test approximated it very closely. In a three-year average Gerlach is the highest yielder and it may have a special value under these conditions. Victory is again low and we are led to believe that a very dry season may effect this variety worse than some of the other sorts tested. It was rather low in 1924 which was a dry year at this Station.

Following is a list of the varieties tested on oat stubble with a three year average of yields and notes for 1926.

OATS VARIETIES ON OAT STUBBLE

Sown April, 27

Name of variety	Number of days maturing	Average length of straw	Yield per acre							
			1926		1925		1924		Average	
			bush.	lb.	bush.	lb.	bush.	lb.	bush.	lb.
Leader	105	29	42	12	52	32	6	16	33	31
Gerlach	105	29	37	02	62	32	6	16	35	17
Banner 0·49	102	26	31	16	67	22	5	10	34	27
Gold Rain	103	26	29	24	60	20	7	22	32	22
Longfellow	98	31	27	22	59	14	7	02	31	·13
Alaska	94	31	25	30	49	14	7	22	27	22
Victory	106	28	25	10	57	22	5	30	29	21
Liberty	95	27	20	20	42	32	5	30	23	05

BARLEY

The yields of barley from the variety tests were exceptionally good this year when we consider that barley generally suffers more quickly from drouth than do other cereals. Being sown early and having a plentiful supply of moisture to get well established is no doubt partly accountable for this. Requiring a short period for maturity would also be in its favour as there were no late rains to benefit the later maturing cereals. Medium early varieties were the highest yielders though as with most of the other cereals the differences were small. Following are the yields and other particulars of interest *re* the varieties under test.

TESTS OF BARLEY VARIETIES ON SUMMER-FALLOW SUBSTITUTES

Sown April 27

Name of variety	Date of ripening	Number of days maturity	Average length of straw	Yield of grain per acre		Weight per measured bushel
			inches	bush.	lb.	bush. lb.
O.A.C. 21 (Sask.)	July 27	92	33	32	04	48·5
Manchuran	" 25	90	29	31	12	51·5
Junion (hulless)	" 24	89	30	31	12	62
Hannchen (2 row)	" 30	95	28	31	02	54
Chinese	" 26	91	28	26	32	50
Duckbill (2 row)	Aug. 4	100	29	25	30	52
Himalayan (hulless)	July 24	89	28	24	08	63·5
Albert	" 24	89	33	23	06	48·5
Bearer	Aug. 1	97	30	22	44	47·5
O.A.C. 21	July 27	92	29	19	38	47
Feeder (hooded)	" 26	91	39	18	24	51·5

The following six-year average of the leading varieties changes the order of yields considerably but should be very reliable. The highest yielder this year is a selection of O.A.C. 21. Himalayan is a hulless type which usually produces an excellent sample of threshed grain and yields well. Duckbill is a late two-row type and does best with an abundance of moisture. Albert is an early type and suitable only for special purposes where a very early ripening variety is required.

BARLEY AVERAGES AND ANNUAL YIELDS—YIELDS PER ACRE IN BUSHELS AND POUNDS

Name of Variety	1926		1925		1924		1923		1922		1921		Average	
	bush.	lb.	bush.	lb.	bush.	lb.	bush.	lb.	bush.	lb.	bush.	lb.	bush.	lb.
Chinese	26	32	52	24	10	00	52	20	45	00	46	12	38	38
O.A.C. 21	19	38	47	44	12	24	52	01	60	20	37	04	38	14
Himalayan	24	08	40	00	15	00	39	28	45	40	40	20	34	08
Duckbill	25	30	43	16	16	32	35	40	30	40	35	20	31	14
Junior	31	12	38	36	6	22	35	20	42	24	32	44	31	10
Albert	23	06	20	00	7	04	28	26	27	44	27	44	22	20

BARLEY VARIETIES ON BARLEY STUBBLE

Varieties act quite differently when under good or poor conditions and to get a comparison of varieties, particularly of oats or barley, it is necessary to test them on stubble as well as on fallow conditions. The majority of the oats and barley grown in the west are grown on stubble land and the results from like conditions should be of more value. The results from a test of varieties on stubble this year more nearly approximates the six-year average than does the test on fallow. Following is a table showing the average yields of five varieties of barley grown on stubble for three years.

BARLEY TEST OF VARIETIES ON STUBBLE
Sown April 28

Name of variety	Number of days maturing	Average length of straw	Yield per acre						Average	
			1926		1925		1924			
		inches	bush.	lb.	bush.	lb.	bush.	lb.	bush.	lb.
Chinese	94	33·5	30	00	37	24	6	12	24	28
Himalayan	87	28·5	23	16	45	40	4	28	24	28
O.A.C. 21	98	33	23	36	36	32	6	12	22	11
Albert	85	32·5	24	08	29	28	5	40	19	41
Feeder	95	36	19	38	25	20	6	32	17	14

FIELD PEAS

The yield of peas was considerably below average this year but they ripened well and in comparison with other coarse grains gave good returns. Two new varieties were included in the variety test, one called Lemaire showing considerable promise for conditions where a very early sort is desired. It may not yield as well in comparison with some of the later varieties in a normal year, as it has this season, so a further test must be conducted to determine its real value. In a six-year average of four varieties we find that Champlain has given the highest yield. It has also yielded higher than all other varieties tested during each year of the six excepting two. Following are tables of yields and particulars of each variety for 1926 and the yields for six years of four varieties.

FIELD PEAS TEST OF VARIETIES
Sown May 5

Name of variety	Date of ripening	Number of days maturing	Average length of straw	Yield of grain per acre		Weight per measured bushel
			inches	bush.	lb.	lb.
Champlain	Aug. 11	99	40	23	12	66
Early Feed	" 9	97	35	21	32	65·5
Mackay	" 13	101	41	20	40	65·5
Arthur	" 10	98	36	20	20	66·5
Golden Vine	" 8	96	34	19	40	66
Prussian Blue	" 14	102	38	19	20	66·5
Cartier	" 12	100	35	19	00	66·5
Chancellor	" 7	95	32	17	40	66
Lemaire	July 20	77	26	17	12	66

FIELD PEAS, AVERAGE AND ANNUAL YIELDS—YIELD PER ACRE IN BUSHELS AND POUNDS

Name of variety	1926		1925		1924		1923		1922		1921		Average	
	bush.	lb.	bush.	lb.	bush.	lb.	bush.	lb.	bush.	lb.	bush.	lb.	bush.	lb.
Champlain	23	12	35	57	11	40	25	40	46	40	36	00	29	52
Arthur	20	20	41	02	11	00	19	20	45	20	35	20	28	44
Early Feed	21	32	37	52	9	00	24	20	43	20	30	00	27	41
Chancellor	17	40	33	22	9	10	26	00	40	00	26	40	25	29

FIELD BEANS

Six varieties of beans were grown in a variety test this year but the results were very unsatisfactory. The season appeared to be particularly unfavourable to beans or any plants which are susceptible to slight frost and which require hot weather for good growth. The spring was cool and seeding was delayed on this account until June 1. The weather during June and July was only moderately warm and this coupled with the drouth produced very poor growth. On August 7, and 13, there was sufficient frost to damage the foliage and growth was checked though the pods near maturity, ripened. The yields of threshed beans was very low, the best being about 6 bushels per acre.

FLAX

The yield of flax was below average this year but it ripened well and produced a good sample. The difference in yield between the three varieties under test was very small, and would not warrant changing varieties. Any one of the three appears to be suitable for this district. Following is a table showing yields and particulars for each variety for this year and for a three-year average.

FLAX TEST OF VARIETIES

Sown May 2

Name of variety	Date of ripening	Number of days maturing	Average length of straw	Yield per acre			
				1926		3-year average	
			inches	bush.	lb.	bush.	lb.
Crown	Aug. 30	122	18	7	08	10	27
Novelty	" 30	122	19	7	28	9	08
Premost	Sept. 1	123	18	7	48	9	00

FORAGE PLANTS

The yields from all forage plants were low, due mainly to the dry season. There were, however, other contributing factors. The stand of perennials and biennials sown in 1925 had been badly reduced by cutworms, and the freezing and thawing in the open winter caused many roots to be broken. The legumes suffered more from these causes than did the grasses. There was a high precipitation in May which resulted in fair hay crop in grasses when there was a good stand but the alfalfa and sweet clover did not survive the drouth of June and July to the extent of yielding any considerable crop. Any seed collected was of poor quality.

The yields of all annuals were low and more immature than usual when harvested.

ANNUAL HAY CROPS

SWEET CLOVER FOR ANNUAL HAY

Hubam and white-and yellow-blossom sweet-clover were sown by different methods in a comparative test. Hubam was the only one which made a tall enough growth to harvest and the yield from this was small, being less than 1 ton per acre.

As an annual hay Hubam has shown a superiority over the biennial types of sweet clover but the yields on an average are not large enough to warrant the purchase of the seed for one crop. In localities where larger yields are obtained it may have a place, but the seed is too expensive to give profitable returns in this locality. We have not been able to mature seed during the five years it has been grown at this Station.

TEFF GRASS

This is an annual grass introduced from South Africa which is said to be very drouth resistant and contain a high percentage of protein. It was sown at different rates this year and even the thinnest appeared to be much too thick as parts of the plots ceased growing and turned brown late in July. No seed stalks were formed on any of the plots and all showed indications of suffering from lack of moisture. The yields from the thinnest sowings were slightly less than half a ton per acre of cured hay which is less than half of the yield of western rye grass.

During the two years under test previously the yields were very gratifying; and it has possibilities where an annual hay of high quality is desired.

VARIETIES OF OATS FOR ANNUAL HAY

Eight varieties of oats were sown for hay in a variety test. Three plots of each variety were seeded. One plot of each variety was cut when headed, the second plot two weeks later and the third plot when turning. Each cutting made excellent feed but the last one contained more nourishment as the kernel was well filled and the straw still palatable.

The yields from the various varieties at the different stages of cutting are shown in the following table as well as a four-year average for four.

OAT VARIETIES FOR ANNUAL HAY—YIELD PER ACRE

Name of variety	Air dry weights						Average yield						Average for 4 years oven dry weight	
	Cut when heading		Cut two weeks later		Cut when turning		Green weight		Air dry weight		Oven dry weight			
	ton	lb.	ton	lb.	ton	lb.	ton	lb.	ton	lb.	ton	lb.	ton	lb.
Victory	1	432	1	16	1	520	2	1,680	1	323	1	74	2	134
Banner	1	77	1	707	1	784	3	360	1	523	1	253	2	86
Gold Rain	1	615	1	289	1	548	3	507	1	484	1	218	2	72
Longfellow	0	1,899	0	1,858	1	726	2	1,653	1	161	0	1,929	1	1,683
Gerlach	0	1,969	1	819	1	992	3	253	1	593	1	316	0	0
Leader	1	209	1	377	1	400	3	160	1	329	1	80	0	0
Alaska	0	800	1	798	1	365	2	1,360	0	1,988	0	1,775	0	0
Liberty	0	690	0	1,338	1	355	2	107	0	1,461	0	1,301	0	0

DATES OF SOWING OATS AND BARLEY FOR ANNUAL HAY

Two varieties of oats and one of barley were sown in duplicate plots at week intervals commencing May 3. Each sowing was cut when turning in order to determine at what date oats or barley should be sown to get the best returns.

A three-year average of yields is shown in the following tables as well as the yields for 1926. In normal years the last two sowings are rusted rather badly and may not for this reason be desirable, but this year they were free from this disease.

DATES OF SOWING VICTORY OATS FOR HAY—YIELD PER ACRE

Dates of sowing	Yields 192,						Three-year average oven-dry weight	
	Green weight		Air-dry weight		Oven-dry weight			
	ton	lb.	ton	lb.	ton	lb.	ton	lb.
May 3	1	1,360	0	1,712	0	1,528	1	1,029
" 10	1	1,320	0	1,554	0	1,388	1	633
" 17	0	1,520	0	1,110	0	991	1	639
" 24	0	1,880	0	1,057	0	944	1	632
" 31	0	1,240	0	1,000	0	893	1	811
June 7	0	960	0	785	0	701	1	786
" 14	0	1,960	0	1,449	0	1,249	.....	
" 21	1	720	0	1,828	0	1,632	.....	

DATES OF SOWING BANNER OATS FOR HAY—YIELD PER ACRE

Dates of sowing	Yields 1926						Three-year average oven-dry weight	
	Green weight		Air-dry weight		Oven-dry weight			
	ton	lb.	ton	lb.	ton	lb.	ton	lb.
May 3	1	1,280	0	1,756	0	1,568	1	1,193
" 10	1	1,520	0	1,652	0	1,475	1	1,171
" 17	0	1,680	0	1,279	0	1,142	1	1,127
" 24	0	1,660	0	1,208	0	1,168	1	837
" 31	0	1,360	0	1,092	0	975	1	1,479
June 7	0	1,080	0	847	0	756	1	1,061
" 14	0	1,240	0	911	0	813	.....	
" 21	1	560	1	150	0	19,20	.....	

DATES OF SOWING FEEDER BARLEY FOR HAY—YIELD PER ACRE

Dates of Sowing	Yields 1926						Three year average	
	Green-weight		Dry-weight		Oven-dry weight		Oven-dry weight	
	tons	lb.	tons	lb.	tons	lb.	tons	lb.
May 3	4	800	2	1,261	2	664	1	1,179
May 11	3	1,960	2	663	2	163	1	1,315
May 17	2	1,440	1	1,333	1	976	1	1,045
May 24	2	1,600	1	1,487	1	1,114	1	1,153
May 31	1	1,600	1	238	0	1,998	1	908
June 7	1	1,840	1	882	1	573	1	1,455
June 14	2	1,600	1	1,174	1	834	1	1,828
June 21	3	1,200	1	1,024	1	700	.....	

From the three-year average it would appear as if oats or barley for hay should either be sown very early or delayed until June. July is usually a dry month, which would account for the lower yields in the medium early sowings, as they should be making their maximum growth during this hot and dry period.

BARLEY VARIETIES FOR ANNUAL HAY

Seven varieties of barley were compared on uniform plots for annual hay. They were cut at similar stages to those in the oat variety test for hay and yielded as in the following table. Some of the varieties tested are not suited for hay because of awns, but an attempt has been made to represent each type.

BARLEY VARIETIES FOR ANNUAL HAY—YIELD PER ACRE

Name of variety	Air-dry weights						Average yield						Average for 2 years; oven-dry weight	
	Cut when heading		Cut two weeks later		Cut when turnung		Green weight		Air-dry weight		Oven-dry weight			
	tons	lb.	tons	lb.	tons	lb.	tons	lb.	tons	lb.	tons	lb.	tons	lb.
Duckbill	1	1,585	2	1,395	1	520	5	1,920	1	1,833	1	1,452	2	103
O.A.C. 21	0	1,302	3	280	1	1,024	4	1,640	1	1,535	1	1,157	1	1,678
Himalayan	0	1,719	2	1,789	2	831	6	40	2	113	1	1,672	1	1,657
Feeder	0	1,984	2	1,606	1	951	5	1,347	1	1,514	1	1,128	1	1,486
Junior	0	1,800	2	1,733	2	341	5	1,493	1	1,958	1	1,534	1	1,410
Chinese	0	1,138	2	814	1	1,326	5	1,040	1	1,093	1	761	1	1,196
Albert	0	1,480	2	1,195	1	1,837	4	1,853	1	1,504	1	1,128		

Duckbill has yielded consistently high during the two years tested but is not as suitable for feed as Feeder, which is free of awns. Feeder barley also has the added advantage of having the kernels nearly ripe while the straw is still green. It is the most suitable variety for feed of those tested.

PEA VARIETIES FOR ANNUAL HAY

The yield of pea hay was good this year regardless of the dry weather. The low temperatures did not affect them as they did some other crops, and the returns were about normal. The early varieties made the largest growth, however, and are also high in a three-year average. Following are the yields per acre for this year and a three-year average for three of the varieties:—

PEA VARIETIES FOR ANNUAL HAY—YIELD PER ACRE

Name of Variety	Green weight		Air-dry weight		Oven-dry weight		3-year average oven-dry weight	
	tons	lb.	tons	lb.	tons	lb.	tons	lb.
Chancellor	3	960	1	1,905	1	1,487	1	1,465
Early Feed	4	1,160	1	615	1	335	1	1,011
Arthur	3	400	0	1,162	0	1,037	1	249
Cartier	2	1,280	0	1,060	0	955	.....	

MIXTURES OF PEAS AND OATS FOR ANNUAL HAY

Various mixtures of peas and oats have been sown in order to determine which will give the greatest returns of hay. They have also been sown by various methods but in most of these we have only one year's results. From a two-year average of the mixtures it would appear that from point of yield there is no advantage in sowing mixtures. There is, however, a considerable advantage in feed value in the mixture over oats alone, and when peas are grown alone there is always difficulty in harvesting owing to their tendency to lodge.

MIXTURES OF PEAS AND OATS FOR ANNUAL HAY

Yield per acre in tons and pounds.

Mixtures or Proportion by Weight	Yield per Acre in Tons and Pounds							
	1926						2-Year Average, Oven-dry weight	
	Green Weight		Air-dry Weight		Oven-dry wieght			
	tons	lb.	tons	lb.	tons	lb.	tons	lb.
Arthur peas alone	2	680	1	1,501	1	1,126	2	360
Arthur peas 7, oats 3	2	1,440	1	1,171	1	742	1	1,643
Arthur peas 5, oats 5	2	1,760	1	1,753	1	1,352	2	465
Arthur peas 3, oats 7	3	240	2	32	1	1,600	2	613
Arthur peas 5, oats 5 (peas sown two weeks before oats)	1	1,200	1	222	0	1,984	1	1,372
Oats alone	2	1,760	1	1,754	1	1,352	2	601
Chancellor peas alone	1	1,600	1	1,540	1	1,163	2	137
Chancellor peas 7, oats 3	2	1,000	1	1,181	1	840	1	1,793
Chancellor peas 5, oats 5	2	1,840	1	1,499	1	1,124	1	1,466
Chancellor peas 3, oats 7	3	200	1	1,771	1	1,367	1	1,363
Oats alone	2	1,520	2	117	1	1,676	2	853
Chancellor peas 5, oats 5, (peas sown two weeks before oats)	1	760	1	114	0	1,888	.....	
Chancellor peas and oats in two alternate rows	2	1,200	1	1,133	1	798	.....	
Arthur peas and oats in two alternate rows	1	1,760	1	623	1	342	.....	

SEEDING GRASSES AND LEGUMES FOR HAY AND SEED

Western rye grass, brome grass, sweet clover and alfalfa were sown by five different methods as indicated in the tables and also with and without a nurse-crop of oats. All sowings were made in 1925 and a good stand was obtained excepting with the legumes where cutworms caused considerable injury. The open winter also caused some loss and for this reason a full report cannot be given.

METHODS OF SOWING WESTERN RYE GRASS FOR HAY AND SEED

The following two tables give the yields of hay and seed for rye grass. The stands on all plots were good and the two-year average gives a good indication of the best methods of sewing. The yields were considerably higher from the plots sown alone, but when we consider the value of the nurse-crop, this difference is offset. All seed yields were small and the seed light due to the extended dry weather.

METHODS OF SOWING WESTERN RYE GRASS FOR HAY

Method of Sowing	Sown with Nurse-Crop-Yield per Acre, 1926								Sown alone								Yield per Acre 2-year Average	
	Height in inches	Green weight		Air-dry weight		Oven-dry weight			Height in inches	Yield per Acre, 1926 Green weight		Air-dry weight		Oven-dry weight			Oven-dry weight	
		tons	lb.	tons	lb.	tons	lb.			tons	lb.	tons	lb.	tons	lb.		tons	lb.
Broadcast	20	1	40	0	1,001	0	894		31	1	1,770	0	1,966	0	1,755		1	706
6-inch drills	21	1	800	0	1,286	0	1,148		30	3	1,840	2	256	1	1,800		1	1,879
24-inch drills	28	0	1,720	0	836	0	746		33	2	760	1	491	1	223		1	1,811
30-inch drills	28	0	1,960	0	913	0	815		35	2	1,240	1	874	1	566		1	1,361
36-inch drills	21	1		0	858	0	766		34	2	880	1	657	1	372		1	808

NOTE:—The broadcast sowings were too thick to give the best results this year. The growth was short and ripened prematurely.

METHODS OF SOWING WESTERN RYE GRASS FOR SEED

Method of sowing	Yield per acre, 1926		Three-year Average yield per acre	
	Sown alone	With Nurse-crop	Sown alone	With Nurse-crop
	lb.	lb.	lb.	lb.
Broadcast	450	152	365	214
6-inch drills	480	200	425	237
24-inch drills	640	250	687	177
30-inch drills	720	250	558	267
36-inch drills	640	220	391	160

METHODS OF SOWING BROME GRASS FOR HAY AND SEED

The results from brome are similar to those from rye grass excepting that in nearly every case the yields are smaller. The yields of seed are much higher from the wide spacing, but were low from all plantings.

METHODS OF SOWING BROME GRASS FOR SEED-YIELD PER ACRE 1926

Method of Sowing	Sown alone	With Nurse-crop
	lb.	lb.
Broadcast	80	40
6-inch drills	100	30
24-inch drills	200	40
30-inch drills	360	30
36-inch drills	400	30

METHODS OF SOWING BROME FOR HAY

Methods of sowing	Sown with a Nurse-crop					Sown alone				
	Height in inches	Yield per acre 1926			Two-year average, oven-dry weight	Height in inches	Yield per acre 1926			Two-year average, oven-dry weight
		Green weight	Air-dry weight	Oven-dry weight			Green weight	Air-dry weight	Oven-dry weight	
		tons lb.	tons lb.	tons lb.	tons lb.		tons lb.	tons lb.	tons lb.	tons lb.
Broadcast	24	0 1,760	0 937	0 837	0 1,541	37	3 1,040	1 1,690	1 1,295	Destroyed in 1925.
7-inch drills	27	1 280	0 1,251	0 1,117	0 1,612	40	4 400	2 92	1 1,654	1 1,714
24-inch drills	36	0 1,680	0 869	0 776	0 1,101	43	2 1,640	1 792	1 493	1 510
30-inch drills	36	0 1,480	0 619	0 553	0 906	45	3	1 903	1 592	1 291
36-inch drills	36	0 1,440	0 645	0 576	0 828	42	2 1,960	1 1,484	1 1,111	1 308

As with rye grass the yields were not so great with the broadcast as with the row sowings, but the difference is not so great as with the rye grass.

METHODS OF SOWING SWEET CLOVER FOR HAY AND SEED

The yields of both hay and seed were relatively small this year. Though the stands were thin on the plots sown without a nurse-crop the yields are much higher than the others. This was due to cutworms damage in 1925, it being greater where there was no nurse-crop. The hay from the thin stands was coarse, however, and would make poor feed. There is no average given for that sown without a nurse-crop as it was completely destroyed by cutworms in 1924.

METHODS OF SOWING SWEET CLOVER FOR HAY AND SEED

Methods of sowing	Sown with Nurse-crop						Two-year Average		Sown alone					
	Height in inches	Per cent stand	Yield of hay per acre			Yield of seed	Oven-dry weight	Yield of seed	Height in inches	Per cent stand	Yield of hay per acre			Yield of seed
			Green weight	Air-dry weight	Oven-dry weight						Green weight	Air-dry weight	Oven-dry weight	
			tons lb.	tons lb.	tons lb.	lb.	tons lb.	tons lb.			tons lb.	tons lb.	tons lb.	lb.
Broadcast	29	100	2 1,760	0 38	0 1,820	60	1 1,016	0 1,030	44	64	4 40	1 603	1 324	240
6-inch drills	26	100	2 1,160	0 1,647	0 1,471	40	1 1,139	0 909	41	55	4 1,760	1 1,116	1 782	160
24-inch drills	29	83	1 280	0 690	0 616	40	1 23	0 353	57	48	3 80	0 1,777	0 1,587	300
30-inch drills	36	90	1	0 589	0 526	40	0 1,438	0 980	48	45	2 560	0 1,257	0 1,122	280
36-inch drills	33	90	0 1,760	0 578	0 516	60	0 1,573	0 1,360	50	40	2 840	0 1,144	0 1,021	.....

METHODS OF SOWING ALFALFA FOR HAY AND SEED

The damage of alfalfa by cutworms and winter-killing was about the same as with sweet clover. Alfalfa seldom makes a very strong growth here, however, even on a year of adequate moisture and the majority of it even on the plots sown without a nurse-crop was very short. For this reason yields are only given for those plots which were sown alone, and they are very low. Seed was produced only on the wider spacings and those yields are small.

METHODS OF SOWING ALFALFA FOR HAY AND SEED WITHOUT A NURSE-CROP

Method of sowing	Height in inches	Percentage stand	Yield per acre of Hay and Seed						
			Green weight		Air-dry weight		Oven-dry weight		Seed
			T.	lb.	T.	lb.	T.	lb.	lb.
Broadcast	20	93	1	1,920	0	1,861	0	1,662	no yield
6-inch drills	23	65	1	1,600	0	1,456	0	1,300	no yield
24-inch drills	27	50	1	1,400	0	1,174	0	1,048	40
30-inch drills	26	45	1	467	0	780	0	696	120
36-inch drills	31	73	1	1,145	0	1,028	0	918	160

ENSILAGE CROPS

SUNFLOWERS FOR ENSILAGE

Five varieties or strains of sunflowers were tested under similar conditions but due to the dry season the yields from the larger types did not exceed the small early ones very much this year. Ordinarily the green-weight yields of giant Russian and Mammoth Russian are much greater than the others and the Mennonite type, which is very early, the smallest. The yields from all varieties are light this year. The value of the varieties for ensilage is shown much better in the four-year average.

SUNFLOWER VARIETIES FOR ENSILAGE

Sown on May 14

Name of variety	Source of seed	Height in seed	Type of growth % single	Maturity when cut	Yield per acre 1926				4-year average oven-dry weight	
					Green weight		Oven-dry weight			
					T.	lb.	T.	lb.	T.	lb.
Mammoth Russian	McDonald	45	100	3% bloom	6	1,116	1	492	2	170
Giant Russian	Disco									
	A. E. McKenzie	46	93	54% "	6	1,344	1	929	1	1,865
Manchurian	Brandon	45	65	86% "	7	823	1	698	1	1,312
Ottawa 76	Ottawa	47	100	91% "	6	1,116	1	741	1	655
Mennonite	Rosthern	40	100	seed set...	5	1,436	1	264	1	563

CORN VARIETIES FOR ENSILAGE

The variation in yield between the different varieties of corn was slight and even the early types were immature when cut. The yields were relatively low as the cool dry season was particularly unfavourable to the growth of corn. A two-year average of dry-matter yields places North Western Dent as the highest yielder, and as it usually reaches a fair stage of maturity, is a desirable type for this district.

Name of variety	Source of seed	Date of tasseling	Date of silking	Height of plants	Height and number of ears			Number of suckers	Maturity at harvest	Yield per acre 1926		
					Upper	Lower	Number of ears			Green weight	Oven-dry weight	Two-year average, oven-dry weight
				inches	inches	inches				tons lb.	tons lb.	tons lb.
North Western Dent, Neb. grown	McKenzie	Sept. 7		40	0	0	0	1	Tasseled	7 1,159	0 1,789	1 1,384
Burr Leaming	G. Carter	" 7		45	0	0	0	0	Early tassel	7 488	0 1,565	1 1,373
North Western Dent	Disco	Aug. 12	Aug. 20	38	0	17	1	3	Silked	6 1,596	0 1,809	1 1,302
Longfellow	J. O. Duke	" 25	Sept. 6	50	26	22	2	2	Silked	8 1,677	1 139	1 1,291
North Dakota	Steele Briggs	" 17	Aug. 28	43	14	12	2	2	Silked	6 1,812	0 1,658	1 1,170
Gehu North Western grown	McKenzie	" 1	" 10	32	0	0	0	3	Milk	4 1,614	0 1,352	1 1,111
Quebec 28	J. L. Todd	" 12	" 20	41	0	10	1	2	Early milk	6 1,055	0 1,671	1 1,070
Wisconsin 7	J. O. Duke	Not tasseled		49	0	0	0	2	Not tasseled	8 1,070	0 1,860	1 967
North Western Red Dent	Brandon Exp. F.	Aug. 3	Aug. 13	40	0	10	1	1	Milk	5 66	0 1,510	1 951
Golden Glow	J. O. Duke	" 17	" 28	51	20	16	2	0	Silked	7 272	0 1,956	1 931
Bailey (N. Dak. grown)	J. O. Duke	" 24	Sept. 3	48	14	0	1	0	Silked	6 1,992	0 1,805	1 858
North Western Dent	McKenzie	" 3	Aug. 13	39	0	14	1	3	Milk	6 292	0 1,586	1 838
90 Day White Dent	Disco	" 26	Sept. 7	42	0	18	1	0	Silked	7 1,101	1 69	1 828
Compton's Early	J. O. Duke	" 25	" 9	43	0	18	1	2	Silked	7 1,465	0 1,794	1 753
Leaming	J. O. Duke	Not tasseled		48	0	0	0	1	Not tasseled	8 632	0 1,714	1 697
White Cap Yellow Dent	Steele Briggs	Aug. 26	Sept. 7	42	0	14	1	1	Silked	6 540	0 1,493	1 631
Yellow Dent	A. J. Wimple	Sept. 7		39	0	16	1	1	Tasseled	6 1,179	0 1,489	1 517
Amber Flint	A. J. Wimple	Aug. 16	Aug. 25	32	12	10	2	3	Early milk	5 90	0 1,160	1 373
Hybrid	A. J. Wimple	" 26	Sept. 7	43	0	13	1	2	Silked	6 1,828	0 1,797	0 0
Pride Yellow Dent	Disco	" 16	Aug. 27	38	0	15	1	1	Ears formed	6 1,481	0 1,416	0 0

*Planted May 14; cut September 7.

ROOTS

The yields of all roots were low, though the dry-matter content was slightly higher than average. Cutworms caused some damage in the mangels, carrots and sugar-beets but in most cases this was slight.

Mangels gave much higher yields than any other roots and where they can be grown successfully are a desirable type to raise, being very suitable for stock feed and keeping well in storage. Swedes, however, appear to be a more certain crop on all types of soil and fulfil the same feed requirements as mangels excepting that more care must be exercised when feeding to dairy cows in order to avoid tainting the milk. Fall turnips are very suitable for fall or early winter feeding but do not keep well in storage. The returns from carrots are much too low to have this crop grown extensively but a few of the roots as a conditioner for horses are hard to excell.

SWEDES

Fifteen varieties or strains of swedes were tested on 66-foot quadruplicate rows. The following table gives the results for the six highest yielders in dry matter for three years as well as yields for 1926.

SWEDE VARIETIES

Name of variety	Source of seed	Yield per acre 1926				3-year average oven-dry weight	
		Green weight		oven-dry weight			
		T.	lb.	T.	lb.	T.	T.
Bangholm	McKenzie Seed Co	12	103	1	1,157	3	172
Hall's Westbury	Ewing	11	1,950	1	803	2	1,597
Jumbo	Steele-Briggs	12	1,091	1	1,036	2	1,487
Invicta	Rennie	13	1,913	1	1,517	2	1,354
North Western	McKenzie Seed Co	12	116	1	652	2	1,350
Hazard's Improved	Steele-Briggs	12	1,898	1	1,418	2	1,272

FALL TURNIPS

In the following table are listed the six highest yielders of eleven varieties or strains tested.

Name of variety	Source of seed	Yield per acre					
		1926				4-year average, oven-dry weight	
		Green weight		oven-dry weight			
		T.	lb.	T.	lb.	T.	lb.
White Globe	Ewing	7	954	1	529	1	1,142
Hardy Green Roudn	Sutton	6	1,432	0	1,600	1	861
Red Paragon	Sutton	7	1,312	0	1,974	1	773
Aberdeen Green Top	Ewing	6	355	0	1,798	1	772
Aberdeen Purple Top	Sutton	6	1,712	0	1,768	1	737
Early Six Weeks	Sutton	8	354	0	1,836	1	632

DATES OF SOWING FALL TURNIPS

Purple top mammoth turnips were sown at one-week intervals commencing on May 3. The results from this year's testing are rather inconclusive, but when we take a four-year average we find that the highest yields are obtained from the earlier sowings. Fall turnips decompose very rapidly after maturity, however, and very early sowings are not desirable unless the roots are to be fed early in the fall. This year there was practically no decomposition even in the earliest sowings, as due to the cool dry season growth was backward.

In normal years they require about 122 days to reach maturity and they should be sown at such a date as to reach maturity at about the time required for feed. They will not keep long in storage.

DATES OF SOWING FALL TURNIPS

Time of sowing	Yield per acre					
	Green weight		oven-dry weight		4-year average	
	T.	lb.	T.	lb.	T.	lb.
Sown on May 3	12	576	1	335	1	1,913
Sown on May 10	12	191	1	757	1	1,549
Sown on May 17	12	412	1	733	1	1,731
Sown on May 24	9	1,103	1	216	1	992
Sown on May 31	12	1,954	1	1,256	1	300

MANGELS

The mangel crop was exceptionally good in comparison with all other roots this season. Ten varieties or strains were under test and the yields of the six highest are given in the following table.

MANGEL VARIETIES

Name of variety	Source of seed	Yield per acre			
		Green weight		Oven-dry weight	
		T.	lb.	T.	lb.
Yellow Intermediate	Central Exp. Farm	22	986	3	1,468
Manitoba Long red	McFayden Seed Co	22	22	3	1,287
Giant Rose	McKenzie Seed Co	17	1,814	2	1,806
Barres Oval	Gen. Swedish Seed Co	20	1,469	2	1,387
Giant Yellow Oval	Gen. Swedish Seed Co	18	736	2	1,382
Giant Yellow Globe	McKenzie Seed Co	15	1,997	2	1,219

CARROTS

The yield from carrots was good considering the dry season. In the following tables are given the yields for four of the best varieties and also a two-year average dry-matter yield. The average is drawn from the years 1924 and 1926 as the stands of some varieties were badly damaged by cutworms in 1925 and the relative yields were not accurate.

CARROT VARIETIES

Name of variety	Source of seed	Yield per acre					
		1926				2-year average, oven-dry weight	
		Green weight		oven-dry weight			
		T.	lb.	T.	lb.	T.	lb.
Half Long White	Gen. Swedish Seed Co	6	1,401	0	1,796	0	1,281
Danish Champion	Central Exp. Farm	6	1,179	0	1,621	0	1,088
Improved Short White	Steele Briggs	7	1,523	0	1,677	0	1,037
James	McFayden Seed Co	4	1,768	0	1,407	0	1,021

SUGAR-BEETS

Seven varieties or strains of sugar-beets were under test in plots similar to the swedes. The cutworms caused some damage but the stands were fair and the yields good. Following are the green and dry weight yields per acre. The percentage dry matter in sugar beets is about twice that of other roots.

SUGAR-BEET VARIETIES

Name of variety	Source of seed	Yield per acre			
		Green weight		oven-dry weight	
		T.	lb.	T.	lb.
Sachavobest Uladovsh Y. S.	Amtorg Co'p. New York	11	1,174	2	1,652
Sachavobest Ivanosk R. M.	Amtorg Co'p. New York	9	1,642	2	1,166
Schreiber and Sons	Dominion Sugar Co.	10	909	2	1,060
Horning	Dominion Sugar Co.	10	1,067	2	1,014
Sachavobest Ivanovsk	Amtorg Co'p. New York	10	402	2	970
Dippe	Dominion Sugar Co.	10	125	2	810
Royal Giant Sugar Mangel	Steele-Briggs	16	203	2	733

POULTRY

Interest in poultry-keeping has increased considerably during the past few years. Expecially is this noticeable in the desire expressed for foundation stock of ancestry of high egg production as constrasted with the desire a few years ago for exhibition stock. The demand for hatching-eggs and day-old chicks in the spring and for cockerels and pullets in the fall and winter exceeded the supply.

A new laying-house was built in the fall of 1926. This is 16 feet by 60 feet and has a capacity of 200 birds. It is divided into five pens and thus lends itself admirably to experimental feeding.

FEEDING FOR EGG PRODUCTION

Six pens of 26 birds each were used for the comparison of barley and corn, hulless oats and common oats, beef scrap and tankage and milk and water. The rations for the six pens were as follows:—

Pen 1.

scratch		mash	
wheat	200 lb.	shorts	150 lb.
common oats	100 "	bran	100 "
barley	100 "	common oat chop	100 "
hulless oats	50 "	barley chop	100 "
buckwheat	50 "	beef scrap	85 "
		bone meal	15 "
		salt	5 "

Pen 2.—Same as pen 1 except that corn replaced barley.
Pen 3.—Same as pen 1 except that hulless oats replaced common oats.
Pen 4.—Same as pen 1 except that there was no hulless oats.
Pen 5.—Same as pen 1 except that there was no milk.
Pen 6.—Same as pen 5 except that tankage replaced beef scrap.

All pens were fed a small head of cabbage daily and shell and grit were before the birds at all times. Pens 1 to 4 were given milk to drink and pens 5 and 6 water.

Following is the table showing details of feed and production average per bird:—

—	Pounds feed consumed			Feed cost	Eggs laid	Value of eggs	Profit over cost of feed
	Grain	Mash	Other feeds				
				$ cts		$ cts.	$ cts.
Pen No. 1	28·3	22·1	19·3	1 19	72·8	1 86	0 67
Pen No. 2	26·8	17·7	16·9	1 21	63·2	1 58	0 37
Pen No. 3	28·2	15·7	17·6	1 10	80·5	2 06	0 96
Pen No. 4	30·5	22·4	19·4	1 29	73·5	1 87	0 58
Pen No. 5	26·6	17·0	16·1	0 95	57·9	1 34	0 39
Pen No. 6	29·3	17·7	16·7	0 96	58·8	1 46	0 50

The small profit from pen 2 is explained by the high price that has to be paid for corn in this country. Home-grown feeds are much less expensive.

The lowest-producing pens were those not getting milk.

The highest producing pen as well as the pen showing the highest profit was the one which got milk and was fed hulless oats in both scratch and mash and did not get any common oats. From this one test it would appear that a satisfactory laying ration can be made up without the use of corn.

DIFFERENT DATES OF HATCHING

The experiment carried out in 1925, comparing the cost to October 1 of rearing chicks hatched at different dates was continued through the winter to compare the number of eggs laid by the different lots. In one pen were 60 birds made up of 20 hatched respectively on April 1, May 1, and May 28. Some of the older pullets began to lay in October, but unfortunately no record was made of these. Records were kept from November 1, 1925 till April 30, 1926 with the following results:—

EGGS LAID BY PULLETS OF DIFFERENT AGES

—	Nov.	Dec.	Jan.	Feb.	Mar.	April	Total
April 1, Hatch	17	84	234	238	239	288	1,000
May 1, Hatch	15	66	274	160	303	288	1,105
May 28, Hatch	.....	24	179	112	227	241	783

DRESSED POULTRY

The surplus cockerels and pullets were sold as they were ready for market from late July till November. Most of these were fattened in crates and sold as roasters at prices varying from 35 cents per pound in the early part of the season to 30 cents later. They were valued at from 25 cents per pound live weight in the early part of the period to 22 cents later and 20 cents near the end. The different lots were fed as follows:—

Lot 1.—Equal parts oat chop, barley chop, ground wheat.
Lot 2.—Equal parts oat chop, corn meal, ground wheat.
Lot 3.—Equal parts oat chop, corn meal, ground wheat, barley chop.
Lot 4.—Equal parts oat chop, barley chop.
Lot 5.—Equal parts oat chop, barley chop, 15 per cent beef scrap.

All oat chop and barley chop were sifted. The mash was made up with buttermilk. Following is a table showing the results of the experiment.

CRATE-FATTENING

——	Lot 1	Lot 2	Lot 3	Lot 4	Lot 5
Number of birds	77	77	77	77	77
Average initial weight lb.	4·5	4·45	4·4	4·5	4·4
Average finished weight alive lb.	5·2	5·3	5·2	5·25	5·05
Average gain per bird for an average period of 15 days lb.	·75	·85	·85	·65	·65
Average dressed weight lb.	4·5	4·6	4·55	4·4	4·5
Dressing percentage %	87·3	87·0	87·8	83·8	88·9
Initial value of each lot at 22 cents per pound $	76·38	76.13	70.06	77.42	77.31
Pounds mash consumed lb.	284	291·5	287·5	256·5	262
Cost of feed consumed $	4.73	6.27	5.80	3.94	4.70
Average cost per pound gain cts.	8	9·3	9	8	10
Selling value of each lot at 32 cents per pound $	112.16	114.08	112.48	108.48	111.20
Profit over intial value and cost of feed $	31·05	31.68	36.62	27.12	29.19
Average profit per bird cts.	40	40	47	35	38

Corn increases the cost of the ration and the cost per pound gain but birds fattened on a ration containing corn make the greatest gains and return greatest profit per bird.

Beef scrap was added to the ration of Lot 5 in the proportion of 15 per cent and showed a marked advantage in the earlier periods, but not in the later periods when the birds were more mature.

The prices assigned to the birds are the average of the actual prices prevailing at the time and show the importance of finishing the product for market.

HATCHING RECORD

—	Total No. eggs set	Infertile	Blood rings	Dead germs	Total hatched	Cripples	Put in brooder	Percentage fertile	Percentage fertile hatched	Percentage total eggs hatched	Number eggs for chick to brooder
Hatching results from hens and pullets											
Pullets	334	298	358	544	2,095	84	2,011	92·2	59·5	54·7	1·9
Hens	1,498	240	114	232	651	15	636	83·9	51·7	43·4	2·3
Hatching results by incubator											
Buckeye	1,991	194	166	268	990	40	950	90·2	55·0	49·6	2·1
Cyphers	2,930	303	301	422	1,523	47	1,476	89·3	57·9	51·9	2·0
Tamlin	411	41	5	86	233	12	221	90·0	62·9	56·6	1·9
Hatching results by the month											
February	808	126	18	82	363	10	353	84·4	53·2	44·9	2·3
March	2,395	210	94	342	1,395	59	1,336	91·5	63·4	58·2	1·7
April	2,129	202	360	352	988	30	958	90·5	51·2	46·4	2·2

BEES

The winter of 1925-26 was exceptionally mild for this district and bees wintered well. All colonies were alive at the time of first examination, and brood-rearing had started in each hive. Planer shavings gave as good results as a packing material as did the cut straw and chaff mixture, and are cleaner to work with.

The early spring being cold, the crocuses and willows were slow in flowering. The first pollen was seen going into the hives on April 18, eleven days later than the previous year. Before this time the bees were seen gathering the flour from oat chop as a substitute. Sufficient stores were left from the winter supplies to carry the bees through until nectar was coming in.

An average of six combs in each hive was covered with bees; 3.8 combs of honey and 2.3 combs with brood. The table on wintering gives this in detail.

WINTERING

Hive No.	Weight of Stores		Stores consumed	Number of Combs covered by bees		Number of combs with brood, first inspection	Remarks
	In fall	In spring* (approximate)		Fall	Spring		
	lb.	lb.	lb.				
201	35½	15	20½	10	7	2	
202	34½	15	19½	10	8	4	
203	44	15	29	10	8	3	
204	39	22½	16½	10	5	2	
205	39½	10	29½	10	8	4	
206	45	25	20	10	4	2	
207	35	25	10	10	3	1	
208	39	17½	21½	10	7	2	
209	23½	17½	16	6	3	1	
210	39½	15	24½	10	7	3	
211	42½	17½	25	10	8	3	
212	35	25	10	10	8	2	
213	36½	20	16½	10	7	3	
214	32½	25	7½	7	3	2	
215	38	22½	15½	10	7	2	
216	34	25	9	10	5	1	
217	32½	22½	10	9	5	3	
218	24	17½	6½	8	4	2	About ⅛ of 2 combs with brood.
219	38	15	23	8	7	3	
221	36	20	16	9	7	3	
222	31½	20	11½	9	4	2	
278	36½	15	21½	10	7	2	

*Colonies that were weak in the spring had just begun brood-rearing at the time of first inspection, so that the amount of stores consumed at that time was low.

Six new colonies were formed during the year in addition to the replacement of four packages and one colony.

PACKAGE BEES

Three 3-pound and three 2-pound packages of bees with queens were received on April 28. These were grouped in three lots, each having a 3-pound and a 2-pound package. One lot got all drawn combs in the brood-chamber, the second lot half foundation and half drawn combs, and the third lot all foundation. The experiment was duplicated with a second similar shipment received on May 12. All packages were fed only sugar syrup, each one in the first group getting 9 pounds of sugar made into syrup and the second group 7 pounds of sugar.

Two of the packages in the second shipment having lost nearly all the bees in transit, owing to a shortage of candy supplies in the cages, it was necessary to supply these with combs of brood and bees from over-wintered colonies. A sickness amongst the bees, believed to be caused by them obtaining some poison, killed out two of the packages and also one of the old colonies, and many others were weakened considerably. The average crop gathered by each package in the first (April) group was 15.7 pounds and the second (May) group 10.75 pounds. Owing to the sickness and the drought that set in at the end of July, when the packages had developed to surplus gathering strength, the crop results for the lots on combs, foundation and combs and foundation alone were very erratic. The experiment indicates, however, that 3-pound packages are better than 2-pound packages when they arrive at the end of April, but that for shipments during the middle of May, the 2-pound packages are satisfactory.

THE HONEY CROP

Caragana yielded well during the first ten days of June and most of the old colonies built up quickly on it and were in very good shape when the clover flow started at the end of June. July was a very favourable month, a hive on scales gaining 95.5 pounds, the peak of the flow being reached on July 21, 22, and 23, when 28.5 pounds gain was registered for the three days. The heavy rainfall of May (3.38 inches) seemed to suit the snowberries (*Symphoricarpus racemosus*) the bees working these vigorously along with the Dutch and sweet clover. Hot dry winds at the end of July quickly burned up practically all available bee-pasture and the lack of rain until late fall made it imperative that the bees be fed to keep up brood-rearing, so as to have a good percentage of young bees in the hives for winter. A thin syrup was used for this purpose in the proportion of 1 cup of sugar to 1 of water and given in small lots. Little holes were punched in the lid of the feeder tin, so that bees could not get the syrup too fast. The queens in most cases responded to this treatment but owing to a shortage of pollen also, some of the brood so started did not fully mature.

The total yield of surplus honey was 1,008 pounds. The twenty-two over-wintered colonies (spring count) gave 843.2 pounds. The eight colonies from packages gave 150.8 pounds and a new colony 14 pounds. The honey was of light amber colour and of a pronounced flavour which was much liked. The record of one colony on scales gives the chief sources of nectar and the duration and dates of different flows.

RECORD OF COLONY ON SCALES

Month	Number of days showing gain	Number of days of gain of 1 pound or more	Total gain per month	Average daily gain	Chief sources of nectar
			lb.	lb.	
June	15	3	22·25	·74	Caragana, dandelion, fruit trees, ornamental shrubs and white clover.
July	21	21	95·25	3·07	Sweet clover, white clover and snowberry.
August	.....	.....	.....	.....	Fed 2 pounds sugar in thin syrup.
Sept. (half)	.....	.....	.....	.....	

SWARM-CONTROL

No natural swarms issued during the season. Two colonies were given shallow supers as a second story and the queens allowed to run in these chambers all summer. The extra room so given seems to be sufficient for prolific queens, as no preparations for swarming were started in these two hives. To examine such colonies for indications of swarming the shallow super is tilted up and queen-cells looked for along the bottom edge of the shallow combs, and if no signs are detected the hive is closed again.

In the remaining colonies the queen was allowed the run of two full-depth storys, until the honey flow had definitely started, and was then confined to the bottom chamber. When preparations for swarming were found in these hives, two systems of swarm-control treatment were tested and found successful. One method used was that of dequeening and requeening. The queen was removed and all queen-cells destroyed. Ten days later all queen-cells were again destroyed and a young laying queen introduced. The second method was the Demaree system with this method all brood is raised to an upper story, after all queen-cells have been destroyed, and the queen is confined to the bottom chamber on empty combs. Usually a super is given at this time and the brood-combs removed to at least two storys from the queen.

QUEEN-REARING

Queen-rearing experiments were continued but results were disappointing because of bad weather conditions for this work. Six colonies were used to raise the eleven young queens which now head colonies. Three other young queens were obtained from Kapuskasing Experimental Station and three were purchased from Manitoba. Seven of the queens imported with packages, nine one-year-old and one two-year-old queens are being kept over.

PREPARATION FOR WINTERING

Thirty-four colonies are being wintered, in eight quadruple and two single cases. Cork is being used in one of the 4-colony cases as insulating material this winter. Heavy fall feeding was necessary to bring the hives up to weight, an average of 23¾ pounds of sugar made into syrup (2 of sugar to 1 of water) was given to each colony.

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