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 1927

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SEASONAL NOTES

An abundance of rain early in the season of 1927 gave all crops a splendid start and copious showers throughout the growing months produced a very heavy growth. July and August were warm with frequent rains and heavy night dews these conditions being very favourable for rust development. Comparatively slight damage was caused by hail and only isolated sections throughout the district suffered from frost. The wet weather continued during September and October greatly delaying harvesting operations and reducing the value of the various cereal crops. In many cases threshing has not been completed in this district and practically no fall ploughing has been done. Cold weather set in on November 6 and was followed by snow. November and December were exceedingly cold.

METEOROLOGICAL RECORDS AT ROSTHERN, 1927

Month	Temperature F.				Precipitation in Inches			17-year average 1911-27	Evaporation
	Highest	Lowest	Mean 1927	Mean 17-year average 1911-27	Rain	Snow	Total precipitation 1927		1927 inches
January	35·0	−39·9	− 1·3	− 3·1	.....	3·0	0·30	0·78	.....
February	36·2	−35·2	0·4	2·0	.....	2·0	0·20	0·45	.....
March	42·0	−18·9	19·9	14·1	.....	21·0	2·10	0·68	.....
April	69·2	2·5	35·7	37·3	0·18	13·5	1·53	0·92	.....
May	71·1	27·5	47·0	50·2	2·62	.....	2·62	1·69	2·18
June	83·0	33·1	58·5	59·4	4·32	.....	4·32	2·20	3·60
July	88·2	42·1	64·1	63·4	5·63	.....	5·63	2·69	3·78
August	87·0	35·1	61·4	60·8	1·22	.....	1·22	1·96	3·42
September	86·6	22·0	52·1	50·3	2·38	.....	2·38	1·66	2·43
October	77·2	22·5	42·2	37·6	1·52	.....	1·52	1·56	.....
November	46·1	−27·0	7·8	20·2	.....	7·5	0·75	0·59	.....
December	35·5	−36·8	− 9·6	− 0·1	.....	1·0	0·10	0·55	.....
Totals	.....	.....	.....	.....	17·87	48·0	22·67	15·73	15·41

ANIMAL HUSBANDRY

The Holstein-Friesian herd at the end of the year numbered twenty-nine head, made up of the herd sires, Agassiz King Pietje Canary, and Rosthern Madrigal Inferno, son of R. E. S. Madrigal Gypsy Keyes, one bull calf, seven mature cows, three four-year olds, two three-year olds, three two-year olds, ten yearling heifers, and one heifer calf. Thirteen heifers were sired by the former herd sire, Inferno Woodcrest, who died suddenly on the tenth day of June at the age of ten years.

In December the herd successfully passed its seventh accreditation test.

The average production of the twelve cows finishing a lactation period within the calendar year 1927 was 11,813 pounds of milk, and 440·10 pounds of fat,

for an average milking period of 342 days. The high records were made chiefly by mature cows. One mature cow completed a 365-day R.O.P. record with 19,647 pounds of milk, and 717·2 pounds butter-fat, and one two-year-old with 10,632·2 pounds milk, and 422 pounds of butter-fat.

DAIRY CATTLE

FEEDING THE DAIRY HERD

Sunflower silage, turnips, and western rye grass hay supplied the bulk of the roughage ration during the winter of 1927. In the fall of 1927 the chief roughages were mixed brome and rye grass hay, corn silage and swede turnips. The cows were fed turnips once a day in the winter and spring of 1927 until the 15th of May, and the amount of silage was increased until the 1st of June when the cows were put on brome pasture. The succulent roughages are fed in the proportion of thirty pounds of turnips and thirty pounds of corn silage in the morning before they are milked, turnips at noon, and turnips and silage in the evening after milking. Hay is fed after everything else both in the morning and in the evening. Meal is fed on top of the silage or roots and mixed. Three ounces bone meal per day is also given to each cow together with a pinch of salt. The meal mixture fed to the cows consists of 300 pounds oat chop, 300 pounds bran, 200 pounds oil cake meal, and 150 pounds barley chop. The cows are fed no meal for one month before calving except that for a few days previous to calving they are given a few pounds of bran, and this is followed by a bran mash after calving. After about the fifth or sixth day of their lactation period the cows are fed the standard meal mixture, increasing gradually until the required amount is fed. The meal is fed at the rate of one pound of meal to each 3·5 pounds of milk produced. During the summer months the cows had brome pasture for three months, and for the remaining two months, had access to sweet clover, brome grass, and rye grass pasture. The cows favoured the brome grass until it was rather short when they gradually worked into the sweet clover, and during the last month they spent the major portion of the time feeding on the sweet clover.

MILK PRODUCTION OF PURE-BRED COWS

In the accompanying table is a statement of the production of each of the twelve cows and heifers completing their lactation period within the calendar year 1927, together with the amount of feed consumed, cost of milk produced, and profit over feed from each cow. In the case of heifers, 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.

Name of Animal	Number of lactation period	Number of days in milk	Total number pounds milk for period	Daily average yield of milk	Average per cent fat in milk	Pounds butter produced in period	Value of of butter at 40c. per lb.	Value of of skim-milk at 20c. cwt.	Total value of product.
				lbs.			$	$	$
R.E.S. Sarcastic Mechthilde 91968	3	305	10,826·0	35·5	4·2	569·0	227·60	20·74	248·34
R.E.S. Madrigal Gypsy Keyes 68180	6	305	17,530·3	57·4	3·75	821·71	328·68	33·76	362·44
R.E.S. Mechthilde Gypsy Keyes 92490	3	268	11,375·8	42·4	3·35	476·37	190·55	21·99	212·54
Rosthern Pietje Marcelle 124302	1	355	7,179·9	20·2	3·6	323·08	129·23	13·84	143·07
R.E.S. Pontiac Madrigal 81022	4	365	13,626·0	37·33	3·72	633·75	253·50	26·24	279·74
Rosthern Pietje Emma 110665	2	365	10,446·0	28·62	3·55	463·75	185·50	20·15	205·65
R.E.S. Abberkerk Johanna Keyes 90505	3	288	9,523·5	33·0	3·7	440·46	176·18	18·34	194·52
Rosthern Abbekerk Sylvia 101455	3	365	10,583·1	29·0	4·0	529·15	211·66	20·32	231·98
R.E.S. Johanna Keys Lass 68182	4	365	19,647·0	53·82	3·65	896·25	358·50	37·86	396·36
Rosthern Pietje Gypsy 110667	2	365	10,659·0	29·20	3·53	470·0	188·00	20·56	208·56
Rosthern Pietje Dollie 110666	2	365	9,731·9	26·6	3·7	450·10	180·04	18·74	198·78
Rosthern Pietje Nancy 127886	1	365	10,623·2	29·1	3·97	528·00	211·20	20·40	231·60
Total		4,076	141,751·7			6,601·62	2,640·64	272·94	2,913·58
Average		339·7	11,812·6	34·77	3·73	550·13	220·05	22·74	242·80

Name of Animal	Amount of meal eaten	Roots eaten	Ensilage eaten	Amount hay consumed	Months on pasture $2 per month	Total cost of feed between calvings	Cost to produce 100 lb. milk	Cost to produce 1 lb. butter	Profit on 1 lb. butter, skim-milk neglected	Profit on cows between calvings, labour and calf neglected
	lb.	lb.	lb.	lb.	months	$	c.	c.	c.	$
R.E.S. Sarcastic Mechthilde 91968	2,989	2,100	7,720	4,480	4·5	86 49	79·9	15·2	24·8	161 85
R.E.S. Madrigal Gypsy Keyes 68180	4,682	3,760	6,520	4,319	4·5	111 93	63·8	13·6	26·4	250 51
R.E.S. Mechthilde Gypsy Keyes 92490	3,429	3,400	6,540	4,256	4·5	92 37	81·2	19·4	20·6	120 17
Rosthern Pietje Marcelle 124302	1,790	3,909	6,380	4,317	4·5	68 55	95·5	21·2	18·8	74 52
R.E.S. Pontiac Madrigal 81022	3,398	4,034	6,530	4,291	4·5	92 98	68 2	14 7	25·3	186 76
Rosthern Pietje Emma 110665	2,606	3,405	6,360	4,319	4·5	80 02	76·6	17·3	22·7	125 63
R.E.S. Abberkerk Johanna Keyes 90505	2,378	2,100	5,640	3,020	4·5	68 36	71·8	15·5	24·5	126 16
Rosthern Abbekerk Sylvia 101455	2,645	2,100	7,200	3,470	4·5	76 51	72·3	14·5	25·5	155 47
R.E.S. Johanna Keyes Lass 68182	4,905	4,124	6,620	4,237	4·5	115 65	58·9	12·9	27·1	280 71
Rosthern Pietje Gypsy 110667	2,669	3,918	6,620	4,304	4·5	82 07	76·9	17·5	22·5	126 49
Rosthern Pietje Dollie 110666	2,426	3,555	6,380	4,299	4·5	77 49	79·6	17·2	22·8	121 29
Rosthern Pietje Nancy 127886	2,651	3,818	6,480	4,304	4·5	81 44	76·7	15·4	24·6	150 16
Total	36,568	40,223	78,990	49,616	54·0	1,033 86				1,879 72
Average	3,047·3	3,352	6,582·5	4,134·6	4·5	86·155	72·93	15·66	24·34	156 64

The Holstein-Friesian herd has not increased in numbers during the past year. Of the calves born a large percentage were bulls. Four of the cows aborted.

Two of the aborting cows has two foetuses each, both apparently normally developed but of different ages. In both cases one foetus seemed to be about five months and the other, nine months, which would indicate superfoetation in both cases.

SALE OF BREEDING STOCK

It has been the policy for several years to sell our surplus bulls as calves at three months old for a flat price of $50, but it has been found that in many cases the calves when sold at this age do not receive proper treatment and consequently fail to develop as they should. It is now the policy not to sell any bull until he is at least six months old.

SUMMER FEEDING OF DAIRY HEIFERS

The heifers were pastured on brome grass pasture along with the sheep, having access to bluffs. Water was pumped regularly each day for them, and they received salt three times each week. They were moved to a hay field in which was sweet clover and brome and rye grass. They pastured at first chiefly on the brome but they gradually went over to the sweet clover until finally they pastured practically all of the time on the sweet clover. It made excellent aftermath for the dairy cows and heifers. About the 15th of October, the heifers were allowed to run out on the aftermath of brome and rye grass and they also had the turnip tops to feed on. On the second day of November they were stabled in fairly good condition.

WINTER FEEDING OF DAIRY HEIFERS

The heifers during the winter months are fed equal parts of corn silage and swedes, thirty pounds altogether. They receive hay twice a day and they are allowed to run around the straw stacks during the day time where they pick up a lot of chaff. The heifers receive no grain unless they are in an unthrifty condition or previous to calving. They receive salt every day and they are watered twice daily.

CALF-FEEDING

No experimenting in calf-feeding has been carried on during the past year, but it has been the object to grow the calves without overfeeding them, so the effort is made to give them a varied diet. The young calves are never allowed to suckle their dams but they receive their dams' milk until three months old, commencing with eight to nine pounds per day and increasing until the calf receives fifteen to sixteen pounds of new milk per day. After they reach three months the calves are gradually weaned from whole milk to skim-milk. The young calves receive whole oats as soon as they commence to eat hay, and after two months, are changed to ground oats and bran. The calves, during the summer months, are kept in paddocks.

The calves are dehorned at from four to nine days old. The hair is clipped and vaseline rubbed on the hair wherever the caustic is likely to touch. The top of the button is snipped off with a sharp knife and caustic rubbed on the wound until bleeding is stopped. Bleeding will no doubt start again when the calf is allowed to get up but this does not matter.

HORSES

The horses at this Station, at the end of 1927, comprised fifteen draught and general purpose horses which were used for work on the farm and experimental plots. As for their breeding, much mixed breeding is evident, although Clydesdale blood appears to be predominant. They can be classed only as good work horses and answer this purpose well.

One driving and general purpose mare is kept for general use.

The work-horses as a whole, are idle during the late autumn months and the winter months, so it is an important problem to winter them as inexpensively as possible. They are housed at night in a dry, cool, well-ventilated barn, and well-bedded down. Their grain feed is cut down one-half, and the amount of hay fed is also cut down considerably. During the daytime they are allowed free access to a straw stack, and slough pasture where they get a variety of feed and the necessary exercise to keep them in good condition.

EXPERIMENTAL BREEDING IN HORSES

Four brood mares were flushed on Brome pasture in the summer of 1926, and were not worked for a month before they were bred and were allowed to run until fall on pasture. The four mares were worked alternately during the winter months, so that they would receive the necessary exercise to keep them in a healthy condition. They were fed a gallon and a half of oats and half a gallon of bran with a little flax seed, as well as hay and straw. The brood mares were given potassium iodide, commencing from the first of January as a preventive against joint-ill in the foals. One ounce of potassium iodide was dissolved in a gallon of water and twelve fluid ounces of the solution were given twice weekly (on Tuesday and Friday) to each mare, on the grain.

The four brood mares were made use of during the spring seeding, but they were not abused in any way, or placed on the tongue of any of the implements. About two weeks before they were due to foal they were allowed to run out in the pasture during the daytime and housed at night. They all foaled normally and with strong healthy foals. One horse colt after the first week became lame with swelling in the hocks and fetlocks which had all the symptoms of joint-ill. The colt was given careful and regular attention, the hocks and fetlocks were bathed with hot water and the colt was given nuclein solution in warm water three times each day until the lameness and swelling disappeared. The foals were weaned December 1. The four colts are all in extra good condition at the end of the year.

TABLE OF WEIGHTS AND GAINS MADE BY BROOD MARES AND FOALS DURING THE SUMMER AND FALL MONTHS OF 1927

Name	Age years	Date of birth of foal	Weight at birth	Weight Aug. 1	Weight Sept. 1	Weight Oct. 1	Weight Nov. 1	Weight Dec. 1	Weight Dec. 31	Total gain for period	Average gain per per day
Sally	12	.....	.....	1,538	1,470	1,463	1,476	1,440	1,430	.....	.....
Belle	.....	June 14	126	262	334	457	524	585	636	510	2·55
Dora	12	.....	.....	1,538	1,496	1,512	1,480	1,475	1,454	.....	.....
Francis	.....	June 14	130	262	344	469	492	570	598	468	2·34
June	9	.....	.....	1,570	1,544	1,609	1,600	1,585	1,602	.....	.....
Bruce	.....	June 20	130	285	361	471	540	565	620	490	2·53
Flora	8	.....	.....	1,452	1,392	1,427	1,502	1,470	.....	.....	.....
Star	.....	July 11	110	220	323	443	550	605	632	514	2·97
Total of Foals	.....	.....	504	1,029	1,362	1,840	2,106	2,325	2,486	1,982	.....
Average of Foals	.....	.....	126	257·2	340·5	460	526·5	581·2	621·5	495·5	2·60

SWINE

The herd of swine now numbers twenty-eight head, made up of Yorkshire, Tamworth, and Berkshire. During the year, two choice boars have been added to the herd. A two-year-old Tamworth boar was bought from Douglas and Sons, pioneer breeders of Tamworth swine at Mitchell, Ont. This boar is an exceptionally good individual, and was awarded Grand Championship at the Toronto Royal this year. The addition of this boar to the herd will go far toward strengthening and improving the quality of the Tamworth herd. The Berkshire boar introduced this year came from Scott Experimental Station and is also an exceptionally good individual. He has extra good length for a Berkshire and has more size and smoothness than the old Berkshire boar, his predecessor, which was disposed of this fall. This boar should give more length to the Berkshires at this Station and so develop a better class of Berkshire bacon hogs. A Yorkshire gilt was received from the Central Experimental Farm at Ottawa, and was bred to Ottawa Alexander 86, which is an extra good bacon hog. Two Yorkshire-Tamworth gilts were kept this year because of their extra quality, smoothness, and vigour.

Results at farrowing time were rather unsatisfactory during the spring of 1927. The mortality was very high because of inclement weather and crowded quarters during the farrowing season.

The brood sows were on sweet clover, brome and rye grass pasture during the summer months. The sows favoured the brome grass pasture in the early part of the season but later on they relished the white and yellow sweet clover. It has been found that brood sows in pig should receive some grain and mineral matter along with the pasture, in order to obtain good results with fall litters. The Tamworth sows kept in better condition on pasture than did the Berkshire or Yorkshire sows.

The boars were on brome pasture during the summer months. They received four pounds of meal daily, and all the water they could drink. A box of mineral mixture was placed so that the boars could have access to it. The mineral mixture consisted of four bushels charcoal, two quarts slaked lime, eight pounds common salt, one pound of sulphur, and two pounds of animal bone meal.

Sun-scald was prevalent among the Yorkshire pigs at this Station during the summer months. They were treated with a mixture of two pounds sulphur, eight ounces of oil of tar and 10 pounds of raw linseed oil, and hand washed four times at ten-day intervals. In a few cases this gave good results, providing they were not badly scalded, but when badly scalded, a vigourous rubbing with carbolic salve gave superior results, but in the latter case it was necessary to house for a few days, to procure the best results.

A number of the market pigs developed curvature of the spinal column, which was not noticeable until after the pigs were weaned. The carcass of one of these pigs was examined and it was found that there was a very distinct curve, the vertebræ were narrow and the spinal processes were very brittle and fine. This condition could be caused by lack of sufficient mineral matter.

A small pig from one litter was killed on reaching 100 pounds in weight and it was found that one of the lungs was attached to the ribs and one rib was broken.

Four Yorkshire boar pigs were sold for breeding purposes in the vicinity of the Station. Numerous inquiries were received for Berkshire boars.

PIG-FEEDING METHODS

An experiment was conducted during the summer and fall months with the following objects in view:—

1. To determine the value of tankage, skim-milk and buttermilk 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.

2. To compare self-feeding and limited hand feeding as to their influence on hogs on dry-lot conditions.

3. To compare the Berkshire, Tamworth, Yorkshire and their crosses as bacon hogs.

4. To compare rape, oats and wheat, barley and rye pasture.

5. To determine whether the use of pasture is conducive to the economical production of the bacon hog.

EXPERIMENTAL METHODS

Pure-bred Yorkshire, Tamworth and Berkshire and crosses from these breeds were used in the experiment, seventy pigs in all. Fifty-four pigs were divided into seven lots. As uniform a distribution as possible was made with respect to size, age, type, breeding and general thrift. Besides this there was a pen of eight pigs which were the culls of the numerous litters, a pen of four Yorkshire boar pigs and a pen of four gilts, this latter pen consisting of two pure-bred Yorkshire and two pure-bred Tamworths.

The pigs were farrowed between March 7, 1927 and April 1, 1927 inclusive. Previous to the commencement of the test the feeding and management of all the pigs were practically the same.

The arrangement of the lots was as follows:—

Lot 1. Skim-milk and grain. Limited hand feeding. Dry lot.
Lot 2. Buttermilk and grain. Limited hand feeding. Rape pasture.
Lot 3. Tankage and grain. Self-feeder. Dry lot.
Lot 4. Tankage and grain. Limited hand feeding. Rape pasture.
Lot 5. Tankage and grain. Limited hand feeding. Oat and wheat pasture.
Lot 6. Skim-milk and grain. Limited hand feeding. Wheat pasture.
Lot 7. Buttermilk and grain. Limited hand feeding. Wheat pasture.
Lot 8. Tankage and grain. Limited hand feeding. Oat and barley pasture.
Lot 9. Tankage and grain. Limited hand feeding. Oat and barley pasture.
Lot 10. Tankage and grain. Heavy hand feeding. Rye and rape pasture.

All lots were given the same basic ration which at first consisted of two parts of oat-chop and two parts shorts. The shorts were gradually replaced by ground barley, and at the close of the finishing period the pigs were receiving three-quarters barley chop and one-quarter oat chop. Lots 1 and 6 received 73.7 pounds of skim-milk each day and lots 2 and 7 received 73.7 pounds of buttermilk per day throughout the experiment. Lots 3, 4, 5, 8, 9, and 10 received eight per cent digester tankage. The supplements were fed throughout the experiment.

The hogs were weighed individually at the commencement of the period and every month until they were marketed and a final weight was taken the day before they were loaded for Prince Albert.

COST OF FEEDS

Oat chop, 51.5 cents per bushel.
Barley chop, 50 cents per bushel.
Shorts, $30 per ton.
Tankage, $45 per ton.
Buttermilk and skim-milk, 1 cent per gallon.

		Lot 1 Skim-milk, limited hand-feeding, dry lot	Lot 2 Butter-milk, limited hand-feeding, rape pasture	Lot 3 Tankage, self-feeder, dry lot	Lot 4 Tankage, limited hand-feeding, rape pasture	Lot 5 Tankage, limited hand-feeding, oats and wheat pasture	Lot 6 Skim-milk, limited hand-feeding, wheat pasture	Lot 7 Butter-milk, limited hand-feeding, wheat pasture	Lot 8 York boars, oats and barley pasture, tankage	Lot 9 Gilts, tankage, oats and barley pasture	Lot 10 Small pigs from numerous litters, tankage, rye and rape pasture
Number of hogs in experiment		8	8	8	7	7	8	8	4	4	8
Gross weight, June 15	lb.	336	323	335	254	278	332	328	220	198	174·2
Average weight, June 15	lb.	42	40·4	41·9	36·3	39·7	41·5	41	55	49·5	21·8
Gross weight, July 15	lb.	716	686·5	707·5	560·5	557	620	662	396	400	448·45
Average weight, July 15	lb.	89·5	85·8	88·4	80·1	79·57	77·5	82·5	99	100	56·05
Gross weight, Aug. 15	lb.	963·5	938·75	955·25	780	773	875·75	917·5	536·8	508	649·8
Average weight, Aug. 15	lb.	120·4	117·34	119·41	111·4	110·4	109·47	114·7	134·2	127	81·2
Gross weight, Sept. 15	lb.	1,186	1,203	1,368·6	1,051	1,040·5	1,158·5	1,229·5	660	613	923
Average weight, Sept. 15	lb.	148·2	150·4	171·1	150·1	148·6	144·8	153·7	165	153·2	115·4
Gross weight, Oct. 19	lb.	1,543·5	1,500	1,758·75	1,380·5	1,308·5	1,493	1,676	835·2	776	1,201
Average weight, Oct. 19	lb.	192·9	187·5	219·84	197·2	186·9	186·6	209·5	208·8	194	150·1
Number of days in experiment		126	126	126	126	126	126	126	126	126	126
Total gain for period	lb.	1,207·5	1,177	1,423·75	1,126·5	1,030·5	1,161	1,348	615·2	578	1,026·8
Average gain per animal for period	lb.	150·9	147·1	177·9	160·9	147·2	145·1	168·5	153·8	144·5	128·3
Average daily gain per animal	lb.	1·197	1·167	1·412	1·277	1·168	1·152	1·337	1·220	1·146	1·018
Amount of meal eaten by group	lb.	5,172	5,172	8,425	4,436	4,436	5,172	5,172	2,476	2,476	4,472
Amount of tankage consumed	lb.			456	336	336			120	120	296
Amount of skim-milk and buttermilk consumed	lb.	9,288	9,288				9,288	9,288	4,968	4,968	
Cost of protein supplement per lot	$	9·28	9·28	10·26	7·56	7·56	9·28	9·28	7·66	7·66	6·66
Amount of meal eaten per pound gain	lb.	4·28	4·39	5·92	3·94	4·30	4·46	3·84	4·02	4·28	4·35
Amount of tankage per pound gained	lb.			0·32	0·29	0·32			0·195	0·207	0·29
Amount of buttermilk and skim milk per pound gain	lb.	7·69	7·89				8·00	6·89	8·07	8·60	
Total cost of feed	$	77·54	77·54	115·07	64·10	64·10	77·54	77·54	40·29	40·29	65·66
Cost of feed per head	$	9·69	9·69	14·38	9·16	9·16	9·69	9·69	10·0	10·07	8·21
Cost of feed per head per day	$	·076	·076	·114	·073	·073	·076	·076	·08	·08	·0652
Cost to produce 1 lb. gain	$	·064	·065	·081	·057	·063	·066	·057	·0655	·0698	·064
Average dressing percentage		69·07	69·5	70·85	69·89	69·89	70·71	69·49			72·23
Number of hogs sold out of lot		7	7	8	6	5	7	8			3
Number of hogs grading "select" on foot		3	2		2	2	1	2			
Number of hogs grading "select" on foot were graded on the rail		2	1		1	1		1			
Number of carcasses grading "select"		2	1		2	1	1	2			

Lots 8 and 9 were kept for breeding purposes. All from these two lots graded select on foot.

DEDUCTIONS

1. *Dry Lot vs. Wheat Pasture.*—In making a comparison between lot 1, the dry lot and wheat pasture, lot 6, the dry lot hogs made an average daily gain of 0.045 pounds per animal above that of the hogs on wheat pasture. Dry lot hogs consumed 0.18 pounds of meal less per pound gain and required 0.31 pounds less skim-milk per pound gain. In previous experiments in comparing limited hand fed hogs on dry lot and on pasture, the hogs on the pasture made greater gains at a lower cost per hundred pounds than did those without pasture. Wheat pasture had not been tried alone in previous experiments, which may account for the slight difference. The hogs in the dry lot appeared to be a little more thrifty throughout the experiment. There was a higher percentage of hogs which graded select in the dry lot.

2. *Wheat Pasture vs. Rape Pasture.*—A comparison of lots 2 and 7 shows that the lot on wheat pasture made 0.170 higher daily gain per animal and produced these gains at a cost of 0.80 cents less per pound than the lot on rape pasture. The hogs in lot 2 required 0.55 pounds of meal more per pound gain. The rape and wheat pasture made very little difference in the type of hogs. The hogs showed more finish on the wheat pasture.

3. *Tankage vs. Buttermilk.*—In comparing lot 2 with lot 4, the buttermilk-fed pigs made more rapid gains during the first two months, but the last thirty-four days the tankage lot made 1.385 pounds gain per animal per day in comparison with 1.091 pounds per animal per day for the buttermilk lot. The tankage lot made an average gain per animal of 0.11 pounds per day above the buttermilk lot. The cost to produce one pound gain was slightly higher in the buttermilk lot.

4. *Buttermilk vs. Skim-milk.*—A comparison of lots 6 and 7 shows that the buttermilk lot made an average daily gain per animal of 0.185 pounds above the skim-milk lot. The amount of meal per pound gain was 0.62 higher in the skim-milk lot and it required 1.11 pounds more skim-milk per pound gain than it did buttermilk.

5. *Rape Pasture vs. Oat and Wheat Pasture.*—In comparing lot 4 with lot 5 the average daily gain per animal was 0.109 pounds higher on rape pasture than on oat and wheat pasture and required 0.36 pounds more meal per pound gain. The cost to produce one pound gain was 5.7 cents on the rape pasture and 6.3 cents on the oat and wheat pasture.,

6. *York Boars vs. Gilts.*—York boars made an average daily gain of 1.22 pounds and the gilts 1.146 pounds. The gilts required 0.26 pounds more meal per pound gain than the boars. The cost to produce one pound gain was 6.55 cents for the boars and 6.98 cents for the gilts, showing a difference of 0.43 cents in favour of the boars. The gilts took more exercise during the summer months which may partially account for the difference.

Soft Pork.—Of the forty-eight pigs that went through the abattoir, there were no carcasses classed as "soft." The carcasses from Lot 1 and Lot 7 were the most uniform and also a little firmer in fleshing than those from the other lots. Lot 7, which was fed buttermilk as a protein supplement, gave the best finished carcasses.

Type.—The hogs from the self-feeder lot graded thick smooth or heavies. They were exceptionally well finished, but they were short and very heavy in the middle. The hogs fed skim-milk but no pasture were of extra good type, three grading select, while four more of this pen were very close to the select hog type. This lot lacked a little in finish compared to the pen on skim-milk and

pasture, although the pen without the pasture made slightly better gains. The two tankage lots were very uniform but the tankage lot on rape pasture made the most economical gains.

Pure-Breds and Cross-Breds.—The cross-bred hogs all finished within market weights. They appeared to be thriftier and better feeders than the pure-breds. Most of the cross-breds would classify into the thick smooth grade.

The number of "selects" indicated in the table is not a fair representation of the actual type of the different lots. In order to market all the pigs at the same time, those on the 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 "thick smooth." Likewise among lightly hand-fed lots there were several not up to weight which might have graded "select" if carried a little longer.

WEIGHTS OF PIGS IN THE VARIOUS LOTS

Lot Number	Under 170 lb.	Between 170-230 lb.	Over 230 lb.
Lot 1. Limited meal, skim-milk, no pasture	1	7	
Lot 2. Limited meal, buttermilk, rape pasture	.....	8	
Lot 3. Self feeder, tankage, no pasture	.....	7	1
Lot 4. Limited meal, tankage, rape pasture	1	6	
Lot 5. Limited meal, tankage, oats and wheat	.....	7	
Lot 6. Limited meal, skim-milk, wheat	1	7	
Lot 7. Limited meal, buttermilk, wheat	.....	8	
Lot 10. Heavy feeding meal, tankage, rye and rape pasture	7	1	

TABLE SHOWING WEIGHTS AND GRADES ACCORDING TO BREEDS

Name	Under 170 lb.	Between 170 and 230 lb.	Over 230 lb.	Number grading select on foot
Berkshire	4	4	.....	.....
Yorkshire	3	9	.....	7
Tamworth	3	10	1	4
Yorkshire x Tamworth	.....	5	1	2
Yorkshire x Berkshire	.....	3	.....	.....
Tamworth x Berkshire	.....	24	3	2

Type of Crosses.—The Tamworth-Yorkshire cross produced a very uniform litter. These pigs were smooth in the shoulder, of good length and early maturity. Two graded select and the other four pigs were right on the margin between thick-smooth and select type.

SHEEP

Pure-bred Suffolk and grade Leicester flocks are kept at this Station. The Leicester flock has been graded up from range-bred ewes which were purchased in 1915. The present flock is very uniform in type, and the lambs are typical Leicesters in character and type. The ewes are inclined to be a little open in the fleece, so in selecting ewes for the breeding flock, those which have hairy fleeces are discarded. Riverview 20, a pure-bred Leicester ram, bred by H. J. Thompson, Weyburn, Saskatchewan, has improved the crimp in the fleeces. Eight grade Leicester ewe lambs were selected from this year's lamb crop to be retained for breeding purposes.

Twenty of the grade Leicester ewes were bred to the Suffolk ram in the fall of 1926. The object in view was to study the age of maturity of the lambs and also the rate of gains made by this cross as compared with that of the Leicester grades.

Average weights of the lambs on November 1 are as follows: Leicester-Suffolk cross-bred lambs, 121.4 pounds, and the grade Leicester 109.12 pounds. Two Suffolk pure-bred lambs weighed an average of 134.2 pounds on November 1. Cross-breeding appeared to affect the size, rate of growth, and early maturity of the lambs. The ewes were pastured on brome grass from the first of June until the twenty-fifth of August, when they were moved to sweet clover pasture. The ewes and lambs did exceptionally well on the sweet clover. One

Lambs in sweet clover. Suffolk and Grade Leicester.

lot of ewes were flushed on alfalfa aftermath, another lot were flushed on sweet clover, and a third lot on turnip tops and rye and brome grass aftermath. Sixteen grade Leicester ewes weighed an average of 163.2 pounds, and eleven grade Leicester ewe lambs weighed an average of 90.4 pounds when sold for breeding purposes in October.

Purple King, a three star ram, was purchased in the fall from J. D. Whitehead, Saskatoon, Saskatchewan, to breed to the Leicester ewe lambs. This ram has proven his worth both as a sire and as a show individual. He is very active, massive in size, and possesses characteristics which are desired in the Leicester breed. It is expected to get good results by mating this ram to the graded-up ewe lambs.

FIELD HUSBANDRY

The seasonal conditions were nearly ideal during spring and summer for most field crops. Spring work commenced the first week in May and little time was lost during seeding by broken weather though the temperatures were below normal for this time. There was an abundance of moisture at all times during the growing season and cereals made very heavy stands. The summer was moderately warm but due to an abundance of moisture maturity was delayed about ten days. Due to the heavy growth of straw and damp warm weather during the last week in July and early August, conditions were favourable for rust which took a heavy toll from the wheat and oat crops. Harvesting was delayed greatly by wet weather during September and October which reduced the value of the crop by weathering.

All cereals yielded well above average excepting one field of wheat which was late and very badly damaged by rust. The barley crop was the best ever grown at this station.

Due to the cool, wet spring corn made a poor start which it never overcame during the season and the yields were slightly below average. Sunflowers made very good growth though rather slow early in the season. They, however took full advantage of the abundant moisture and yielded above average.

The yield of swede turnips was good and of excellent quality.

The stands of rye grass hay were good and yielded well above the average. One field of sweet clover did not winter well enough to be left for hay and was ploughed down. Other plots and fields on the station wintered well however and to other causes than lack of hardiness must be attributed its failure.

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

Wheat	$ 0 84 per bushel
Oats	0 45 per bushel
Barley	0 60 per bushel
Western rye grass hay	9 00 per ton
Oat and barley straw	2 00 per ton
Sunflowers and corn for ensilage	3 00 per ton

Cost values

Rent	$ 3 00 per acre
Barnyard manure	1 00 per ton
Seed wheat	1 50 per bushel
Seed oats	0 80 per bushel
Seed barley	1 00 per bushel
Seed turnips	0 90 per lb.
Seed sunflowers	0 10 per lb.
Seed sweet clover	0 12 per lb.
Seed western rye grass	0 07 per lb.
Seed corn	0 09 per lb.
Machinery	1 35 per acre
Horse labour, single horse	0 08 per hour
Manual labour	0 25 per hour
Threshing wheat	0 15 per bushel
Threshing oats	0 12 per bushel
Threshing barley	0 13 per bushel
Twine	0 17 per lb.
Tractor operator	0 08 per hour
Use of tractor	1 00 per hour
Rent of ensiling machinery	0 18 per ton

COST PER ACRE OF PRODUCING WHEAT

	After Summer-fallow		After Wheat		After Hoed Crop		After Hay	
	1927	Average 1923-1927	1927	Average 1923-1927	1927	Average 1923-1927	1927	Average 1923-1927
	$	$	$	$	$	$	$	$
Rent and taxes	3 00	3 00	3 00	3 00	3 00	3 00	3 00	3 00
Manure	0 50	0 91	0 63	0 72	2 75	2 28	2 50	1 80
Seed	1 88	1 99	1 88	1 95	1 88	2 03	1 88	2 03
Machinery	1 35	1 35	1 35	1 35	1 35	1 35	1 35	1 35
Twine	0 85	0 57	0 75	0 47	0 75	0 42	0 44	0 31
Manual labour	0 72	0 68	1 30	1 17	1 19	1 24	1 25	1 46
Horse labour	0 64	0 72	1 41	1 42	1 27	1 54	1 44	1 88
Threshing	4 64	3 85	4 31	3 15	4 51	3 20	3 48	2 43
Cost of summer-fallow	5 46	5 20	2 71	2 61	.....	.....	.....	.....
Total cost per acre	19 04	18 27	17 34	15 84	16 70	15 06	15 34	14 26
Yield per acre	bush. 30·9	bush. 26·7	bush. 28·7	bush. 21·7	bush. 30·1	bush. 21·9	bush. 23·2	bush. 16·8
Value per acre	$ 25·99	$ 27·73	$ 24·13	$ 22·26	$ 25·28	$ 23·02	$ 19·49	$ 17·18
Profit per acre	6·95	9·46	6·79	6·42	8·58	7·95	4·15	2·92
Cost per bushel	0·62	0·68	0·60	0·73	0·55	0·69	0·66	0·85

The average production costs and return values for wheat on summer-fallow are the average of five fields for each year, on wheat stubble four fields are averaged, on hoed crop land three fields, and on hay land one.

The charges for manure vary considerably because manure is applied only to rotations in which hoed crops are grown. Summer-fallow is charged to the first two crops in the ratio of two-thirds to the first and one-third to the second.

Cost per Acre of Producing Oats and Barley

	Oats after		Barley after			
	Wheat		Hoed Crop		Oats	
	1927	Average 1923-27	1927	Average 1923-27	1927	Average 1923-27
	$	$	$	$	$	$
Rent and taxes	3 00	3 00	3 00	3 00	3 00	3 00
Manure	1 37	1 53	2 50	2 30	3 00	2 76
Seed	1 60	1 55	2 00	1 92	2 00	1 92
Machinery	1 35	1 35	1 35	1 35	1 35	1 35
Twine	0 83	0 46	0 92	0 46	0 75	0 42
Manual labour	1 28	1 22	1 30	1 19	1 30	1 24
Horse labour	1 33	1 48	1 34	1 42	1 41	1 53
Threshing	9 95	6 10	9 26	4 32	8 87	4 10
Cost of summer-fallow	.....	.....	2 46	2 50	.....	.....
Total cost per acre	20·71	16·69	24·13	18·46	21·68	16·32
Yield per acre bush.	82·9	53·1	71·2	34·8	68·2	33·1
Value per acre $	41 43	25 31	44 34	20 80	44 46	20 12
Profit per acre	20 72	8 62	20 21	2 34	22 78	3 80
Cost per bushel	0 25	0 31	0 34	0 53	0 32	0 49

The results from four fields of oats were averaged for each year while the barley is from one field in each case. Two fields of oats each year were used as nurse crop for western rye grass.

The barley following hoed crop was seeded with western rye grass and that following oats with sweet clover.

Cost per Acre of Producing Corn, Sunflowers, and Turnips

	Corn		Sunflowers		Turnips	
	1927	Average 1923 to 1927	1927	Average 1923 to 1927	1927	Average 1923 to 1927
	$	$	$	$	$	$
Rent and taxes	3 00	3 00	3 00	3 00	3 00	3 00
Manure	2 67	2 13	2 50	2 25	2 50	2 30
Seed	3 09	2 13	1 76	1 79	2 70	2 94
Machinery	2 96	2 56	3 31	2 62	1 35	1 35
Twine	0 70	0 63	0 51	0 56	.....	.....
Manual labour	12 20	9 24	15 40	11 55	22 05	19 00
Horse and tractor labour	8 01	5 89	9 22	6 17	4 70	4 46
Cost of summer-fallow	1 64	0 98	.....	.....	4 92	5 00
Total cost per acre	34 27	26 56	35 70	27 94	41 22	38 05
Yield per acre tons	8·91	8·24	10·88	8·50	20·69	17·23
Value per acre $	26 73	24 71	32 64	25 49	.....	.....
Profit per acre $	.....	.....	.....	.....	.....	.....
Loss per acre $	7 54	1 85	3 06	2 45	.....	.....
Cost per ton $	3 85	3 22	3 28	3 29	2 00	2 21

Three fields of corn, one of sunflowers, and one of turnips, were used each year for these data.

SUMMARY OF ROTATIONS

The following tables are summaries of yields, cost, value and profit or loss per acre for six rotations. Where the rotation 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 "Costs and return values," statement.

ROTATION SUMMARY—ROTATION J2—DURATION, SIX YEARS

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

Rotation Year	Crop	Yield per acre		Value of crop 1927	Cost of production 1927	Profit or loss per acre	
		1927	Average 8 years			1927	Average 8 years
		(bush. or tons)		$	$	$	$
1	Wheat	23·2	18·3	19 49	15 34	4 15	7 02
2	Sunflowers	10·88	8·76	32 64	35 70	−3 06	6 09
2	Corn	7·14	7·44	21 42	30 25	−8 83	1 23
3	Wheat	29·0	20·1	24 36	16 34	8 02	6 81
4	Oats seeded down	75·7	46·1	37 83	20 85	16 98	6 51
5	Hay	1·69	0·86	15 21	10 47	4 74	−0 23
6	Hay	1·81	0·73	16 29	10 66	5 63	0 64
	Totals for rotation			167 24	139 61	27 63	28 07
	Average per acre			23·89	19·94	3 95	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		Value of crop 1927	Cost of production 1927	Profit or loss per acre	
		1927	Average 15 years			1927	Average 15 years
		(bush. or tons)		$	$	$	$
1	Summer-fallow				8 23	−8 23	−6 43
2	Wheat	36·0	28·2	30 24	16 43	13 81	14 43
3	Wheat	30·0	20·2	25 20	16 62	8 58	7 49
4	Summer-fallow				7 38	−7 38	−6 45
5	Corn	10·14	11·76	30 42	33 99	−3 57	4 88
5	Turnip	20·69	13·62	31 04	36 30	−5 26	10 93
6	Barley seeded down	71·2	38·7	44 34	21 67	22 67	8 08
7	Hay	1·38	0·78	12 42	10 03	2 39	0 29
8	Hay	2·89	1·04	26 01	12 26	13 75	3 14
	Totals for rotation			199 67	162 91	36 76	36 36
	Average per acre			22 19	18 10	4 09	4 04

ROTATION SUMMARY—ROTATION 5-YEAR—DURATION, FIVE YEARS

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

Rotation Year	Crop	Yield per acre		Value of crop 1927	Cost of production 1927	Profit or loss per acre	
		1927	Average 11 years			1927	Average 11 years
		(bush. or tons)		$	$	$	$
1	Corn	9·46	9·53	28 38	33 62	−5 24	−2 96
2	Wheat	31·2	21·6	26 21	17 06	9 15	10 63
3	Oats	84·0	45·8	42 40	22 47	19 93	8 11
4	Barley seeded down	68·2	29·3	44 46	21 68	22 78	5 06
5	Oats replacing hay	62·0	.....	31 88	19 51	12 57	1 42
	Cost of seeding hay	.....	.....	.....	2 05	−2 05	−0 19
	Totals for rotation	.....	.....	173·33	116 39	56 94	22 07
	Average per acre	.....	.....	34 67	23 28	11 39	4 41

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 1927	Cost of production 1927	Profit or loss per acre	
		1927	15 years			1927	15 years
		(bush. or tons)		$	$	$	$
1	Summer-fallow	.....	.....	.....	8 34	−8 34	−6 07
2	Wheat	17·3	25·2	14 53	10 77	3 76	13 49
3	Wheat	21·7	18·5	18 23	12 75	5 48	7 67
4	Oats seeded down	73·3	40·1	37 47	18 24	19 23	7 44
5	Hay	1·93	0·53	17 37	8 27	9 10	1 88
6	Hay	2·34	0·81	21 06	8 88	12 18	2 69
	Totals for rotation			108 66	67 25	41 41	27 10
	Average per acre			18 11	11 21	6 90	4 52

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 1927	Cost of production 1927	Profit or loss per acre	
		1927	Average 9 years			1927	Average 9 years
		(bush. or tons)		$	$	$	$
1	Summer-fallow	.....	.....	.....	8 11	−8 11	−6 49
2	Wheat	30·8	29·5	25 87	12 92	12 95	16 82
3	Wheat	31·2	21·1	26 21	14 32	11 89	10 48
	Totals for rotation			52 08	35 35	16 73	20 81
	Average per acre			17 36	11 78	5 58	6 93

With the exception of hoed crops, all fields in the rotations have shown profits this year. The yields from hoed crops were nearly average but as there is no market for such produce it is difficult to arrive at their real value. In the rotations they are given a value on the dry matter which they contain as com-

pared with hay while in a feeding ration they are also used to supply succulence which is difficult to obtain during the winter months. In cases where they are grown for a special feed they would be worth more than the value given them in these tables and in such cases would show a profit.

CULTURAL EXPERIMENTS

Thirty-six 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 a number of years are reported in detail in the following tables.

DATES OF SEEDING

Five cereals and two ensilage crops have been sown at various dates for four years or more and while these results are not conclusive, the following inferences can be made. Sunflowers give the best results for ensilage purposes when sown as early as possible. Wheat and flax are best sown as soon as the land is in a good friable condition which is about one week after work commences in the spring. Flax is very susceptible to frost and should not be sown too early as there is danger of late spring frost. Oats give best results when sown early and barley about two weeks after spring work commences. Corn does not do well if sown too early. Three weeks after spring work commences and a week or two later appear to give equally good results. Fall rye has given consistent results in favour of September sowing and may be seeded until freeze-up with fairly good results though the crop will be later in ripening the following year.

DATES OF SEEDING WHEAT

Plot No.	Crop	Plot treatment	Yield per acre	
			1927	Average four years
			lb.	lb.
1	Wheat	Sown as early as possible	2,430	1,628
2	"	Sown four days later	2,700	1,703
3	"	Sown seven days later	2,180	1,616
4	"	Sown eleven days later	2,430	1,606
5	"	Sown fourteen days later	2,300	1,522
6	"	Sown eighteen days later	2,340	1,509
7	"	Sown twenty-one days later	2,400	1,509
8	"	Sown twenty-five days later	2,160	1,510
9	"	Sown twenty-eight days later	1,980	1,376

DATES OF SEEDING OATS FOR SEED

Plot No.	Crop	Plot treatment	Yield per acre	
			1927	Average four years
			lb.	lb.
1	Oats	Sown as early as possible	3,960	2,269
2	"	Sown four days later	3,440	2,115
3	"	Sown seven days later	3,900	2,246
4	"	Sown eleven days later	3,540	2,130
5	"	Sown fourteen days later	3,112	2,035
6	"	Sown eighteen days later	3,120	1,910
7	"	Sown twenty-one days later	3,020	1,950
8	"	Sown twenty-five days later	3,080	1,878
9	"	Sown twenty-eight days later	2,720	1,715

DATES OF SEEDING BARLEY

Plot No.	Crop	Plot treatment	Yield per acre	
			1927	Average four years
			lb.	lb.
1	Barley	Sown as early as possible	2,331	1,794
2	"	Sown four days later	2,478	1,875
3	"	Sown seven days later	2,794	1,944
4	"	Sown eleven days later	3,264	2,041
5	"	Sown fourteen days later	3,105	2,023
6	"	Sown eighteen days later	2,959	1,977
7	"	Sown twenty-one days later	3,265	2,065
8	"	Sown twenty-five days later	2,242	1,707
9	"	Sown twenty-eight days later	3,010	1,796

DATES OF SEEDING FLAX

Plot No.	Crop	Plot treatment	Yield per acre	
			1927	Average five years
			lb.	lb.
1	Flax	Sown as early as possible (4 yr. average)	1,085	660
2	"	Sown one week later	1,364	761
3	"	Sown two weeks later	1,302	795
4	"	Sown three weeks later	1,240	726
5	"	Sown four weeks later	1,333	571
6	"	Sown five weeks later	1,271	546

DATES OF PLANTING CORN FOR ENSILAGE

Plot No.	Crop	Plot treatment	Yield per acre	
			1927	Average four years
			tons	tons
1	Corn	Seeded as early as possible	8·45	12·78
2	"	Seeded one week later	9·57	13·50
3	"	Seeded two weeks later	10·69	14·23
4	"	Seeded three weeks later	10·89	14·52
5	"	Seeded four weeks later	10·53	14·12
6	"	Seeded five weeks later	9·97	14·01
7	"	Seeded six weeks later	12·41	12·41
8	"	Seeded seven weeks later	10·59	11·62
9	"	Seeded eight weeks later	6·05	6·24

DATES OF SEEDING FALL RYE

Plot No.	Crop	Plot treatment	Yield per acre	
			Yield 1927	Average yield four years
			lb.	lb.
1	Fall rye	Sown July 1, 1926	420	325
2	"	Sown July 15, 1926	452	386
3	"	Sown Aug. 1, 1926	952	751
4	"	Sown Aug. 15, 1926	1,408	943
5	"	Sown Sept. 1, 1926	1,652	1,503
6	"	Sown Sept. 15, 1926	1,500	1,475
7	"	Sown Oct. 1, 1926	1,300	1,345
8	"	Sown Oct. 15, 1926	1,632	1,386
9	"	Sown Oct. 30, 1926	1,620	1,195

DATES OF PLANTING SUNFLOWERS FOR ENSILAGE

Plot No.	Crop	Plot treatment	Yield per acre	
			Yield 1927	Average yield five years
			tons	tons
1	Sunflowers..	Planted as early as possible	19·34	14·90
2	" ..	Planted one week later	17·66	12·61
3	" ..	Planted two weeks later	19·01	12·40
4	" ..	Planted three weeks later	15·08	12·13
5	" ..	Planted four weeks later	15·48	12·36
6	" ..	Planted five weeks later	14·75	11·83
7	" ..	Planted six weeks later	14·98	11·88
8	" ..	Planted seven weeks later	13·20	10·84
9	" ..	Planted eight weeks later	13·46	10·88
10	" ..	Planted nine weeks later	11·06	9·52

RATES OF SEEDING FLAX AND WHEAT

In a five year average the lightest seeding of flax has given the highest yield. This year the results were in favour of heavier seeding but this was no doubt due to the wet season. One and three-quarter bushels appears to be the optimum rate to sow wheat though this will vary somewhat with the size of the kernels and the quality of the seed.

RATES OF SEEDING FLAX

Plot No.	Crop	Plot treatment	Yield per acre	
			Yield 1927	Average yield five years
			lb.	lb.
1	Flax.....	Sown at 0·25 bush. per acre	1,333	904
2	"	Sown at 0·50 bush. per acre	1,457	850
3	"	Sown at 0·75 bush. per acre	1,209	799
4	"	Sown at 1·0 bush. per acre	1,178	780

RATES OF SEEDING WHEAT

Plot No.	Crop	Plot treatment	Yield per acre	
			Yield 1927	Average yield 4 years
			lb.	lb.
1	Wheat.....	Sown at 0·5 bushel per acre	2,025	1,096
2	"	Sown at 1·0 bushel per acre	2,093	1,365
3	"	Sown at 1·5 bushel per acre	2,520	1,450
4	"	Sown at 1·75 bushel per acre	2,700	1,495
5	"	Sown at 2·0 bushels per acre	2,025	1,246
6	"	Sown at 2·5 bushels per acre	2,250	1,333

METHODS OF PLANTING SUNFLOWERS

Sunflowers have been grown by different methods for five years. The average results in the following table show that the highest yields are obtained from the thirty-inch spacing between rows though finer stalks and possibly a finer quality of ensilage is obtained from the six-inch spacing. The yield this

year was highest from the thickest seeding due to the wet season. The thick seeding can usually be cut with a grain binder conveniently and in this way the purchase of a corn binder might be eliminated. From the second table on thinning of sunflowers it would appear that it does not pay to thin.

METHODS OF PLANTING SUNFLOWERS

Plot No.	Crop	Plot treatment	Yield per acre	
			Yield 1927	Average yield 5 years
			tons	tons
1	Sunflowers..	Planted in 6-inch rows	20·62	13·67
2	" ..	Planted in 24 inch rows	19·56	14·92
3	" ..	Planted in 30-inch rows	19·38	15·73
4	" ..	Planted in 36-inch rows	17·92	13·64

DISTANCE OF THINNING SUNFLOWERS

Plot No.	Crop	Plot treatment	Yield per acre	
			Yield 1927	Average yield 2 years.
			tons	tons
1	Sunflowers..	Thinned to 3 inches	23·34	20·51
2	" ..	Thinned to 6 inches	19·78	18·57
3	" ..	Thinned to 9 inches	18·85	18·17
4	" ..	Thinned to 12 inches	17·78	17·84
5	" ..	Thinned to 15 inches	16·47	17·13
6	" ..	Thinned to 18 inches	13·61	16·31

VARIOUS MIXTURES OF CEREALS

With the exception of a mixture of oats and barley no increase has been shown by mixing over straight grains. A mixture of nearly equal oats and barley has shown an advantage this year and on an average. The two cereals in this case also ripened nearly together. The mixture of three cereals show no increase and unless a very early variety of wheat is used it ripens considerably later than the oats and barley. Flax and wheat are admirably suited to be grown together as they ripen at nearly the same time and can be separated very easily after threshing if so desired. Considerable increase is shown in the yield where they are sown in alternate rows rather than mixed together.

MIXTURES OF OATS AND BARLEY FOR GRAIN

Plot No.	Crop	Proportions of grain sown			Yield per acre	
		Oats	Barley	Rate on drill	Yield 1927	Average yield 4 years
		lb.	lb.	bushels	lb.	lb.
1	Oats	85	.....	2½ oats	2,460	1,805
2	Mixture	63	18	2½ "	2,720	1,793
3	"	54	36	2 "	2,960	1,845
4	"	34	54	1⅞ "	2,980	1,625
5	"	17	72	1⅝ "	2,520	1,460
6	Barley	.....	96	2 "	2,480	1,475

MIXTURES OF WHEAT, OATS AND BARLEY FOR GRAIN

Plot No.	Crop	Proportions of grain sown				Yield per acre	
		Wheat	Oats	Barley	Rate on drill	Yield 1927	Average yield 4 years
		lb.	lb.	lb.	bushels	lb.	lb.
1	Oats	.....	85	.....	2½ oats	2,772	1,613
2	Mixture	18	54	18	2 "	2,800	1,583
3	"	9	62	10	2¼ "	2,832	1,521
4	"	30	30	30	2½ "	2,640	1,543
5	Barley	.....	.....	96	2 barley	2,348	1,400
6	Mixture	18	17	54	2 oats	2,780	1,503
7	"	54	17	18	1½ barley	2,680	1,458
8	"	72	8	10	1½ barley	2,420	1,440
9	Wheat	90	.....	.....	1½ wheat	2,300	1,342
10	Mixture	9	8	87	1½ oats	2,652	1,366

MIXTURES OF WHEAT AND FLAX FOR GRAIN

Plot No.	Crop	Proportions of grain grown			Yield per acre	
		Wheat	Flax	Rate on drill	Yield 1927	Average yield 4 years
		lb.	lb.	bushels	lb.	lb.
1	Wheat	90	.....	1½ wheat	2,240	1,288
2	Mixture	72	7	1¼ "	2,230	1,213
3	"	45	14	1 "	2,220	1,200
4	"	36	21	1 "	2,060	1,083
5	"	Alternate rows 36	21	1 "	2,180	1,325
6	"	20	25	¾ "	1,640	928
7	"	Alternate rows 20	25	¾ "	1,960	1,215
8	"	8	28	½ "	1,560	845
9	Flax	.....	30	.....	1,420	807

BREAKING SOD FROM WESTERN RYE GRASS SOD

By the following table it is evident that spring breaking and summer-fallowing will give the highest yields and that late fall and spring breaking, which do not allow the sod to rot, are poorest.

From the three years' results it is also evident that two ploughings are detrimental. Rye grass is very easily killed and there was no grass in any of the wheat.

BREAKING SOD FROM CULTIVATED GRASS

Plot	Crop	Plot treatment	Yield per acre	
			Yield 1927	Average yield 3 years
			lb.	lb.
1	Wheat	Ploughed 5 inches immediately after hay was removed, disced and worked as required	1,500	1,253
2-19	"	Ploughed 5 inches in October	1,452	1,204
3-20	"	Ploughed 5 inches in the spring, disced and seeded immediately	1,440	1,073
4-21	"	Ploughed 4 inches after hay was removed, disced and backset September 15	1,160	1,100
5-22	"	Ploughed 5 inches May 15 and worked as summer-fallow	1,680	1,327

HORTICULTURE

SEASONAL NOTES

The summer of 1927 was cool with liberal rains throughout the growing season. This provided almost ideal conditions for transplanting nursery material and all new and transplanted shrubs and fruits made a splendid growth. Cool-season vegetables yielded a heavy crop. Vine crops and corn were backward until August when warm bright days brought them up to almost the average for this district. Perennial and annual flowers made a fine showing, and the lawns remained green until winter set in.

VEGETABLES

ARTICHOKE

Two 30-foot rows of the Jerusalem artichoke were planted May 18 and harvested October 10. The total yield from the two rows was 17 pounds of small immature tubers.

ASPARAGUS

Asparagus was ready for use May 18 and cutting was continued until June 28. The yield from eleven 30-foot rows was 76 pounds.

BRUSSELS SPROUTS

Four varieties, Amager Market, Danish Prize, Improved Dwarf, and Paris Market were sown in the hotbed April 6 and transplanted to the open May 26. No sprouts worth harvesting were produced.

BEANS—DWARF OR BUSH

VARIETIES.—The cool wet season was unfavourable for the production of a crop of beans. Thirty varieties of bush beans were planted in 30-foot rows spaced 30 inches apart. The seed was sown on May 17 and the first edible pods were ready for use on August 8, which is three weeks later than in 1926. Twenty feet of each row were harvested for green beans and ten feet allowed to ripen for seed. Varieties giving the highest yields were: Masterpiece, Early Red Valentine, Princess of Artois, and Goliath.

DISTANCE OF PLANTING.—Two varieties, Round Pod Kidney Wax, and Stringless Green Pod, were sown May 17 for this experiment. Three 30-foot rows of each variety were used. In row one of each variety, the seed was spaced 2 inches, in row two, 4 inches, and in row three, 6 inches apart. With each variety the 2-inch spacing gave the highest yield and the six-inch sowing the lowest.

BEANS—POLE OR RUNNER

Three varieties were sown May 18. The first picking was made September 1, and the season continued until the middle of September. Kentucky Wonder, Green Pod yielded 42 pounds and Golden Cluster 17 pounds. The seed of the third variety, Giant Podded, failed to germinate.

BROAD BEANS

Long Pod Aquadulce and Long Pod Giant Seville were planted May 17, and were ready for use September 14. The yields were 16 pounds and 14 pounds per row of 30 feet.

BEETS

VARIETIES.—Eighteen varieties of beets were sown on May 17 and were ready for use about the middle of July. Varieties giving a high yield and of good quality and colour were Detroit Dark Red, Early Flat Egyptian, and Early Model.

DISTANCE OF THINNING.—Three rows of the variety Detroit Dark Red were sown on May 17 and thinned to 2, 4, and 6 inches in the row. The yields per 30-foot row were 54, 51, and 58 pounds respectively. The roots from the 6 inch spacing were large and coarse, those from the 4 inch spacing were medium to large and those from the 2 inch spacing were small. All were of good colour.

DATES OF SOWING.—Seed of Detroit Dark Red was sown at ten-day intervals beginning on May 17. The yield per row of 30 feet was 72 pounds from the first sowing, 60 pounds from the second, and 24 pounds from the third. The roots harvested from the first sowing were large and coarse, while those from the last sowing were just a nice size for culinary purposes.

CABBAGE

VARIETIES.—Seed of thirty-five varieties and strains of cabbage was sown in the hotbed on April 6 and in the open on May 16. Those sown in the hotbed were pricked out on April 24 and transplanted to the garden May 25. The plants in both treatments were grown in rows thirty inches apart and spaced two feet in the row. The first heads were cut on July 16 from plants of the variety Golden Acre raised in the hotbed and from Copenhagen Market sown in the open on August 1.

The earliest varieties under test were Golden Acre, Early Summer, Express Extra Early, Babyhead, and Copenhagen market.

Varieties yielding well and suitable for the main crop and storage are Copenhagen Market, Intermediate Danish Ballhead, Kildonan, Brandon Market, Flat Swedish, Allhead Early and Extra Amager Danish Ballhead (Ottawa—8939).

DATES OF SOWING FOR STORAGE PURPOSES.—Seed of Copenhagen Market and Extra Amager Danish Ballhead was sown on May 16 and 26. Heads of Copenhagen Market were over mature from both sowings while those from the Ballhead strain sown May 16 were in prime condition for storage when harvested on October 26. The second sowing of Ballhead produced only immature heads.

FIELD TRIALS.—An acre plot was sown to Copenhagen Market with a grain drill, at the rate of two pounds of seed per acre, on May 9 and harvested October 14. The yield was 12 tons, 405 pounds of cabbage from half of the plot. The heads were over mature for storage.

CARROTS

VARIETIES.—Nine varieties were grown in duplicate 30-foot rows. All were planted on May 11, thinned to three inches on June 23 and harvested on September 29. Chantenay yielded 70 pounds, Danvers Half-Long 68 pounds, St. Valery Intermediate 67 pounds, Oxheart 64 pounds, and French Forcing 61 pounds per 30-foot row. Scarlet Nantes while yielding only 54 pounds from a 30-foot row was the finest quality carrot under test.

DISTANCE OF THINNING.—Six rows of Chantenay were sown for a thinning experiment. Two rows were thinned to one inch, two to two inches, and two to three inches in the row. The yields were 71, 57, and 58 pounds respectively from a 30-foot row. The two-inch spacing gave the finest quality roots, those from the one-inch spacing being rather small and those from the wide spacing large and coarse.

DATES OF SOWING.—Chantenay seed was sown in duplicate rows on May 11 and two successive sowings were made at ten-day intervals. The first sowing gave 80 pounds of large coarse roots, the second 52 pounds of medium sized roots and the third, 33 pounds of small roots per 30-foot row.

CAULIFLOWER

Seven varieties of cauliflower were under test and all were given the following treatments:—Started in the hotbed and transplanted, sown in the open and thinned and sown in the open and transplanted. The first heads were cut from plants started in the hotbed on July 18 when Dwarf Snowball and Early Dwarf Erfurt were ready for use, and from those sown in the open on August 20 when Early Snowball, Early Dwarf Erfurt, Danish Perfection, and Danish Giant produced edible heads. The largest number of heads were harvested from plants started in the hotbed with those started in the open and transplanted taking second place.

The highest yielding varieties were when started in the hotbed, Veitch Autumn Giant, Danish Perfection and Danish Giant; when sown in the open and thinned, Early Dwarf Erfurt, Danish Giant and Early Snowball; and when sown in the open and transplanted, Early Dwarf Erfurt, Dwarf Snowball, and Danish Perfection. No heads were formed on plants of Veitch Autumn Giant where the seed was sown in the open.

CELERY

Twenty varieties and strains of celery were sown in the hotbed on March 29, pricked out April 30, and planted in the open on June 1. Level cultivation was practised until the plants were ready for blanching, when they were banked with soil.

Copious rains throughout the growing season favoured the production of good celery. In yield Paris Golden Yellow topped the list and also produced heads of good quality. Fordhook, Fordhook New Emperor and London Prize Head were next and equal in yield. The earliest varieties were White Plume and Golden Self-Blanching.

CUCUMBER

Seed was sown in small pots which were placed in the hotbed on May 12 and the plants set in the open June 14. Four hills of each variety were grown and a like number from seed sown in the open on May 28. Cool weather in June did not favour rapid growth and the plants were late in setting fruit. Plants from seed sown in the open were almost equal in earliness and yield to those started in the hotbed. From four hills of hotbed plants: Chicago Pickling yielded 78 fruits, Improved Long Green 66 fruits, and Davis Perfect 56 fruits. Early Russian, a variety bearing small fruits suitable for pickling, yielded 90 fruits from four hills.

CITRON

Two varieties, Red Seeded and Colorado Preserving or Green Seeded, were sown in pots in the hotbed on May 13 and in the open on May 28. Plants from the hotbed sowing were moved to the open on June 14. The yield from four hills of three plants each of Red Seeded was 18 fruits weighing 67 pounds when the plants were started in the hotbed, and 15 fruits weighing 41 pounds when sown in the open. The yield from Colorado was 27 fruits weighing 78 pounds when started in heat, and 13 fruits weighing 36 pounds when sown in the open.

CORN

Twenty-nine varieties and strains of corn were planted in hills three feet apart each way on May 27. The young plants were showing above ground on June 9, but owing to cool weather made slow progress until August when warm

bright days hastened their growth to such an extent that the first table ears were harvested on September 1, which was just six days later than in 1926. The harvest continued until September 26 when ten degrees of frost killed the plants. Pickaninny and Banting, recent introductions from the Central Experimental Farm, Ottawa, were two of the best early varieties under test but had strong competition from 60-day Golden and Sunshine. The two latter are new varieties tested at this Station for the first time in 1927. (60-day Golden has been introduced by the John Lewis Child Seed Company of Floral Park, New York and Sunshine was bred and introduced by the North Dakota Agricultural College.) They are almost as early as Pickaninny, Banting and Alpha (the three earliest varieties previously tested) and produce larger ears than these dwarf sorts. In quality they compare favourably with Pickanninny and Banting and are much superior to Alpha. For a later corn Golden Bantam surpassed all other varieties in quality and gave a good crop of table ears. Evergreen Bantam and Earliest Catawba have been under test for a number of years but are too late for this district, seldom producing edible ears.

PEAS

VARIETIES.—The earliest varieties under test were: Thomas Laxton, Gregory Surprise, Prosperity, Little Marvel, Extra Early Pedigree, and Alaska. Second early sorts that yielded well were: Blue Bantam, Lincoln, Bruce, Director, and Stratagem.

Successive Sowing of an Early Variety vs. Single Sowing of Early and Late Varieties

To extend the season for green peas it has been found more profitable to make a single sowing of early and late varieties than to make successive sowings of an early variety.

Thickness of Planting.—Three varieties were planted using three rows of each. In the first row of each variety the seeds were spaced one inch apart, in the second row two inches, and in the third row three inches. The results this year are in agreement with the five-year average, the closer planting giving the highest yield each season.

EGG PLANT

Three varieties were under test but none of them had fruits more than half grown when killed by the first frost.

HERBS

The following herbs were planted and all made a good growth; Sage, Summer Savory, Sweet Majoram, Borage, Sweet Basil, Fennel and Dill.

KOHL RABI

Three varieties were tested and all gave a good yield. This vegetable may be used instead of, and is preferred by many people to, early turnips.

KALE

Kale made a good growth and was in good condition for late greens.

LEEKS

Three varieties, Musselburg, Giant Carentan and Monstrous were under test. Giant Carantan and Monstorus are very similar. They gave practically the same yield and outyielded Musselburg.

Each variety was grown by three different methods, namely: Starting in the hotbed, and transplanting, sowing in the open, and sowing in the open and transplanting. Plants started in the hotbed outyielded those grown by the other methods.

LETTUCE

From seed sown in the open on May 12, the following varieties were ready for use on June 20: Grand Rapids, Early Curled Simpson, and Golden Queen. Varieties of head lettuce that made a good showing were: Big Boston, Improved Hanson, Iceberg, and New York. A hailstorm on July 16 severely damaged the crop, and as a result, decay started in many heads and no further records were taken.

MUSKMELON

Fourteen varieties were planted in the hotbed on May 13 and in the open on May 27. The season was cool and no fruits ripened.

WATERMELON

Seven varieties planted in the hotbed on May 13 and in the open on May 28 failed to mature any fruits.

ONIONS

VARIETIES.—Seed of twenty-three varieties of onions was sown in the open on May 16, and all varieties were harvested September 29. The Onion Root Maggot did considerable damage to the crop materially reducing the yields. The highest yielding varieties were in the following order: Ohio Yellow Globe 26 pounds, Cranston Excelsior 24 pounds, Ailsa Craig 21 pounds Giant Prizetaker 20 pounds, White Barletta 18 pounds, Yellow Globe Danvers 17 pounds, Southport Yellow Globe 15 pounds, and Large Red Wethersfield 14 pounds per 30 foot row.

Good keeping varieties are Red Wethersfield, Australian Brown, and Yellow Globe Danvers.

THINNING EXPERIMENT.—Three rows of each of three varieties were sown on May 16. One row of each variety was thinned to one inch, one row of each to two inches, and one row of each to three inches in the row. The Onion Root Maggot so damaged these sowings that the results are not considered reliable.

SOWING ONIONS IN THE HOTBED AND TRANSPLANTING.—Seed of eight varieties was sown in the hotbed March 3 and the young plants set in the open June 1. The following yields were secured: Cranston Excelsior 52 pounds, Giant Prizetaker 49 pounds, Ailsa Craig 43 pounds, Southport Yellow Globe 23 pounds, Red Wethersfield 32 pounds, Yellow Globe Danvers 25 pounds, and Southport White Globe 24 pounds per 30-foot row.

PARSNIPS

VARIETIES.—From seed sown in the open on May 16, and harvested October 6, the following yields were secured: Champion 53 pounds, Guernsey XXX 50 pounds, and Hollow Crown 45 pounds per 30-foot row. Guernsey XXX is a short variety and is easier to harvest than the longer sorts.

THINNING EXPERIMENT.—Six rows were sown for this experiment in two of which the plants were thinned to three inches, in two to four inches and in two to six inches. The wider spacing of the plants in the row reduced the yield.

DATES OF SOWING.—Seed of the variety Hollow Crown was sown May 11, May 21, and June 1. The yields from the different sowings were 45 pounds, 36 pounds, and 18 pounds, respectively, from a row of thirty feet.

PEPPERS

Ten varieties of peppers were sown in the hotbed on April 4, and transplanted to the open on June 13. The highest yield was secured from a Russian variety of the sweet pepper which produced 200 green fruits on twenty plants. The seed of this variety was brought from Russia and donated by a Mennonite settler. A Bulgarian variety of pickling pepper secured from the same source, produced 133 fruits on twenty plants. Yields from other varieties per twenty plants were : Neapolitan 138 fruits, Giant 60 fruits, Mammoth Golden Dawn 53 fruits, and from Harris Earliest 32 fruits. The fruits were all green when harvested.

PUMPKINS

Ten varieties were planted in the hotbed on May 16, and transplanted to the open on June 14. The same varieties were sown in the open on May 30. Fort Berthold ripened fruit on both lots of plants while Connecticut Field, King of the Mammoth, and Sugar had ripe fruit only on plants started in the hotbed.

RHUBARB

Stott Monarch gave the highest yield. This variety produces green stalks which are not in such favour with the housewife as the more highly coloured varieties such as Ruby and Macdonald. Ruby and seedlings of Ruby have been found more susceptible to disease than Stott Monarch or Victoria seedlings.

SPINACH

The ten varieties tested all gave a satisfactory crop. King of Denmark remained fit for use after other early varieties had formed seed stalks. New Zealand was ready for use July 20 and remained in good condition until frost.

SWISS CHARD

Three varieties, Fordhook Giant, Lucullus, and Silver Leaf, were sown May 12. When harvested on October 31, the weights of six heads were: Fordhook Giant 15 pounds, Lucullus 9 pounds, and Silver Leaf 7 pounds.

SQUASH

Seventeen varieties and strains of squash were planted in the hotbed on May 13, and in the open on May 30. The heaviest yields and more mature fruits were secured from those started in the hotbed and transplanted, but both treatments produced plants that gave a fair crop. English Vegetable Marrow, Golden Hubbard, Warty Hubbard, Perfect Green Cream, Kitchenette, and Table Queen were the heaviest yielding varieties and all produced a fair crop of fruit fit for table use.

TOMATOES

Forty-eight varieties were under test. A cool season with a damaging hail storm on July 16 resulted in a light crop of fruit. The heaviest yielding varieties were Avon Early, Bonny Best, and a selection from the Central Experimental Farm (O—11390).

POTATOES

There was ample moisture throughout the growing season for the potato crop and the absence of early frosts permitted most varieties under test to become well matured. Variety tests were planted May 21, and dug September 25. Seed was treated with corrosive sublimate at the rate of four ounces to thirty gallons of water. Except for common scab very little disease was present,

an exception being a late plot planted for the "Dates of Planting" experiment. This plot was planted on June 14, with untreated seed and had to be destroyed in early August because of blackleg. Since very little blackleg was found among the other plots grown from the same seed, but treated with corrosive sublimate, it would seem advisable to use this treatment for seed potatoes.

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. In these plots the rows were planted 36 inches apart with the sets spaced 15 inches in the rows. Early Ohio yielded at the rate of 284 bushels of large, and 42 bushels of small potatoes per acre, while Irish Cobbler yielded 229 bushels of large and 29 bushels of small tubers. The seed for these plots had not been treated for disease and the Irish Cobbler was affected with Blackleg which no doubt affected the yield.

Fourteen varieties were under test and each variety was represented by five 68-foot rows distributed over the field. Rows were planted 30 inches apart with the sets 15 inches apart in the rows. Guard rows were used where necessary and the rows extended sufficiently to permit trimming and discarding of the end hills at digging time. The sets were planted about four inches deep. Level cultivation sufficient to control weed growth was given throughout the growing season. With the exception of Up-to-Date all varieties were mature when dug on September 25.

In yield Bovee headed the list with 449 bushels per acre. Other varieties yielding at the rate of over four hundred bushels per acre were Up-to-Date, Irish Cobbler, Early Ohio, Everitt, and Vick Extra Early with yields of 438, 416, 407, 406, and 401 bushels respectively.

Distance of Planting.—Five different systems of planting were followed using the following spacings between the rows and plants: 10 by 27 inches, 12 by 30 inches, 14 by 33 inches, 16 by 36 inches, and 18 by 39 inches, the last number referring to the spacing between the rows. The first and the last mentioned spacings were tried out for the first time this season while for the others, fourteen years results are available and are given in the following table:—

DISTANCE OF PLANTING POTATOES

Spacing	1927			Fourteen year average
	Total yield	Small	Large	
	bush.	bush.	bush.	bush.
10 inches by 27	397	88	309	.....
12 inches by 30	380	74	306	365
14 inches by 33	368	60	308	342
16 inches by 36	329	42	287	316
18 inches by 39	345	41	304	.....

The closer spacing gave only a slightly higher yield of marketable potatoes this year and a much higher percentage of small ones. Even in those graded as large the tubers averaged much smaller from the two closest plantings than from the others. The spacings 14 inches by 33 inches and 16 inches by 36 inches gave the finest sample of potatoes. The tubers from the 18 inches by 39 inches spacing were very large and coarse.

WHOLE POTATOES VS. CUT POTATOES FOR SETS

The results from the different kinds of sets used are given in the following table. A seven-year average is also given.

WHOLE POTATOES VS. CUT POTATOES FOR SETS—YIELD PER ACRE

Kind of sets	1927			Seven year average
	Total yield	Small potatoes	Marketable potatoes	
	bush.	bush.	bush.	bush.
Whole medium size	507	84	423	364
Whole small size	463	78	385	350
Three eyes	426	48	378	344
Two eyes	401	46	355	336
One eye	391	40	351	221*
One eye from stem end	387	39	348	339
One eye from seed end	377	41	336	324
One eye from middle portion	350	31	319	323*

*Four years.

From the yields shown it is apparent that whole small and medium sized tubers have given a heavier yield than cut seed, but also a higher percentage of small potatoes.

Where potatoes are planted in rows three or more feet apart the increase in small tubers should not be so marked, and where seed is cheap, it is doubtful if cutting seed potatoes is a profitable practice.

ENVIRONMENT TEST.—Sets of Irish Cobbler potatoes grown at Scott, Beaverlodge, Morden, and Leacross in 1926 were grown for comparison with each other and with plants from Rosthern grown seed. From the yield obtained there is no evidence that the different environments under which the seed was grown had any effect on the yield.

SPROUTED VS. UNSPROUTED SEED.—The seed for this experiment was divided into four lots. Lot one was placed in a sunny window for one month before planting. Lot two was placed in the same room with lot one, but carefully covered from the light. Lot three was given treatment similar to that given lot two, but the sprouts were removed before planting. Lot four was kept in a cool cellar until planting time. Lot one yielded at the rate of 439, lot two 447, lot three 394 and lot four 363 bushels per acre respectively.

DEPTH OF PLANTING.—Early Ohio potato sets were planted at the following depths: two, four, and six inches. The four inch planting yielded at the rate of 418 bushels of marketable and 36 bushels of small potatoes. The six-inch planting yielded 410 large and 33 small, and the two-inch planting gave the smallest yield with 376 large and 49 bushels of small potatoes per acre. There was no apparent advantage in planting more than four inches deep. The shallow planting besides giving the lighest crop had more small potatoes than the four and six-inch plantings.

TREE FRUITS

APPLES

The crabapple trees wintered well and although rather late in blooming, set a heavy crop of fruit. A hail-storm in July spoiled the appearance of the fruit but did not detract from its usefulness for jelly-making.

Varieties doing well and fruiting at this Station are: Osman, Prince Charles, and Jewel. Tony and Pioneer are hardy also and bear well but owing to the late spring did not ripen their fruit.

A beginning in apple-breeding was made in 1927. Hardy trees that have reached bearing age in the Orchard were used as the female parents. The blossoms of these were fertilized with pollen from some of the best commercial

varieties at Ottawa, Morden, and Summerland. Earliness and hardiness were kept in mind in selecting the pollen parents.

Dr. C. F. Patterson, Horticulturist at the University of Saskatchewan, has used the Station Orchard for several seasons in connection with his apple breeding project. He continued his work this year and secured a fair set of fruit from the crosses made.

The Orchard has been fenced with page wire and poultry netting to safeguard the experimental work and to protect the trees from rabbits.

Five thousand apple stocks were transplanted from the seed bed to the nursery row in the spring. These made good growth and in August many of them were budded to promising and to new varieties. Among the varieties budded on these stocks are several seedlings that have fruited at the Station. These were believed to be of sufficient merit to warrant propagating them for further trial.

PLUMS

A number of selected Cheney seedlings again bore a fair crop of fruit. A few of these are worth propagating and it is proposed to undertake this work next season using as stocks seedlings of the Manitoba wild plum.

Plum Pocket *(Exoascus pruni)* was much in evidence the past season.

SMALL FRUITS

RASPBERRIES

An experiment comparing the yield of fruit from canes laid down and covered with soil in the fall with that from others left unprotected was carried on. Seven varieties were included in this experiment and the results are given in the following table:—

RASPBERRIES—PROTECTED VS. UNPROTECTED

Variety	Yield from 30 feet of row			
	Covered		Uncovered	
	lb.	oz.	lb.	oz.
Herbert	9	4	1	0
King	9	14	3	12
Sunbeam	11	4	9	13
Latham	16	6	0	11
Ohta	14	7	11	3
St. Regis	9	7	1	15
Newman	22	6	4	14

Each variety showed some injury to the canes in the unprotected portion of the row while in the covered part the canes fruited to the tips. Besides giving a higher yield the fruit on the covered sections of the rows was ripe from a few days to a week earlier than that on the unprotected portions, this depending to some extent on the variety.

Twenty-four new varieties were secured and set out at some distance from the old plantation. These were carefully inspected during the growing season and any plants showing signs of disease were removed and burned. A supply of healthy stock for future planting should soon be available from these plots.

CURRANTS

All varieties of currants were cut off a few inches above the ground level, in the fall of 1926, to see if it is possible to control the Current Fruit Fly by eliminating the crop for a year or two.

STRAWBERRIES

Eighteen varieties of strawberries were added to the test plots in 1927. The varieties Dakota and Rosthern June-Bearing gave a fair crop of fruit. Dakota is the hardiest variety yet tested at this Station.

TREES, SHRUBS AND FLOWERS

TREES

Evergreens have been freely and successfully used in landscaping the grounds at this Station. Conifers that are thriving in these plantings are: *Picea canadensis* (White spruce), *Picea excelsa* (Norway spruce), *Picea pungens* (Colorado spruce), *Pinus banksiana* (Jack pine), *Pinus contorta latifolia* (Lodge-pole pine), *Pinus sylvestris* (Scotch pine), *Pinus montana mughus* (Mugho pine), and *Abies balsamea* (Balsam fir).

Other species of conifers are under trial, but those listed have proved hardy for a period of seventeen years and may be taken as the most satisfactory for planting in this district. The Station soil is a loam with the subsoil at a depth of two feet changing to a fine sand. On heavier soils, or where the subsoil is clay, results with conifers might not be so favourable. Outstanding in hardiness and beauty, the white spruce is recommended for general planting where soil conditions are suitable. At Rosthern it is only a few miles removed from its native habitat and thrives well. Planted in rows, it is effective in providing shelter, particularly in winter when the deciduous trees are bare and open. It also forms one of the best hedges on the trial grounds and is the mainstay of the clump plantings. The other species of conifers are used to lend variety to the clumps of evergreens. These clumps are distinctive features of the landscape in winter and provide a fine background for borders of perennial and annual flowers in summer.

Deciduous trees that have proved hardy here for a period of years are: *Ulmus Americana* (American elm), *Fraxinus lanceolata* (Green ash), *Acer negundo* (Manitoba maple), *Betula papyrifera* (Canoe birch), *Populus petrowskyana* (Russian poplar), *Acer ginnala* (Amur maple), and *Acer tataricum* (Tartarian maple). The two latter, while listed as trees, may be grown in the bush form as tall shrubs. Both are fairly hardy although the Amur maple is sometimes injured by severe winters.

SHRUBS

The most useful of the shrubs tested, when beauty and hardiness are both considered, belong to the caraganas, lilacs and honeysuckles. Three species of caragana have done well: *Caragana arborescens* for shelter as a hedge, either trimmed or allowed to grow naturally, and as a specimen shrub, *Caragana frutescens* in clumps, and *Caragana pygmaea* for a low hedge or for planting around the base of the house where a low shrub is wanted. *Caragana frutescens* throws up many suckers and may be too aggressive if planted with weaker growing shrubs. *Caragana arborescens* and *Caragana pygmaea* do not sucker. Planted fifteen years, *Caragana arborescens* bushes are 10 to 15 feet, *Caragana frutescens* 4 to 7 feet and *Caragana pygmaea* 3 to 5 feet in height. Of the lilacs under trial, varieties of the common lilac, *Syringa vulgaris*, give the most and the finest blooms. *Syringa villosa* and *S. josikaea* are quite hardy and extend the blooming period by about 2 weeks. They are coarser and taller growing than the common lilac and have smaller flower spikes. *Syringa japonica*, the Japanese tree lilac, blooms in July after most shrubs have finished, and although some bushes show winter injury, there are fine specimens on the Station grounds. *Lonicera tatarica* (Tartarian honeysuckle), thrives and is attractive in bloom

and in fruit. *Lonicera alberti,* a procumbent species, attracts attention because of its unique habit of growth. It is hardy and may be used to advantage in shrubbery borders along drives, for base planting around the house or to add variety to clumps of shrubs.

Other shrubs worthy of mention are: *Cotoneaster acutifolia, Sorbus americana* (Mountain ash), *Pyrus baccata* (Siberian crab), *Prunus nigra* (Canada plum), *Prunus besseyi* (Sand cherry), *Prunus nanus* (Russian almond), and *Rosa rugosa* (Japanese rose).

Cotoneaster acutifolia is an attractive low-growing shrub that is doing well. It may be used for base planting around the house, makes a fine low hedge, and may be used in other places where a low shrub is desirable. It has dark, glossy, green leaves and the foliage takes on fine colour effects in autumn.

Mountain ash makes a fine showing every year when used as specimen shrubs or small trees on the lawn. The brightly coloured fruits are particularly attractive when ripe.

The Rugosa roses bloom profusely in late June and early July, and again in September. The red fruits are also ornamental and show up well in the fall after frost has denuded most plants of their foliage.

The Siberian crabs are beautiful while in bloom, and many varieties are ornamental in fruit. To get the best effect varieties having good form and large fruits should be propagated. The fruit may be used for jelly-making.

Some varieties of the Canada plum are proving hardy. They are fragrant in bloom and furnish edible fruit.

The Sandcherry is a low spreading shrub, with fragrant bloom and fruit that may be used in the home.

The Russian Almond is the first shrub to bloom in spring. Its pink flowers are borne in profusion and give a very pleasing effect.

FLOWERS

Perennial and annual flowers bloomed profusely throughout their seasons. The perennial border was at its best during June and July, while the annuals made their best showing in August.

A list of the twenty-five best perennials under trial is submitted as follows: *Achillea ptarmica fl pl.* (The Pearl), *Achillea millefolium rubra, Anthemis tinctoria kelwayi, Aquilegia caerulea (Columbine), Campanula carpatica, Chrysanthemum leucanthemum* (Oxeye Daisy), *Chrysanthemum coccineum* (Perennial Daisy), *Clematis integrifolia, Coreopsis lanceolata,* Delphinums (Perennial Larkspur), *Dianthus plumarius fl. pl.* (Perennial Pink), *Gaillardia aristata, Helianthus rigidus* Miss Mellish, *Hemerocallis flava* (Day Lily), *Iris Germanica, Iris Siberica, Lilium tigrinum* (Tiger Lily), *Lychnis chalcedonica* (Scarlet Lychnis), Pæonia (in variety), *Phlox sublata atropurpurea, Papaver nudicaule* (Iceland Poppy), *Papaver orientale* (Oriental Poppy), Tulips (in variety), *Veronica spicata, Gypsophila paniculata fl. pl.*

A new bulletin entitled " Ornamental Trees, Shrubs, and Woody Climbers " has just been published by the Dominion Department of Agriculture. The author is W. T. Macoun, Dominion Horticulturist. It contains more complete descriptions of the trees and shrubs listed in this report and describes many others hardy at Ottawa. It is free and may be had on request from the Publications Branch, Department of Agriculture, Ottawa, Ontario.

CEREALS

The stands of all cereals were good this year and the yields in nearly every case above average. An abundance of moisture throughout the growing season promoted a heavy growth of straw, particularly in the late maturing sorts and any tendency to weakness in the straw of varieties was very marked. Seeding commenced the last of April and was completed early in May with the exception

of beans which were sown on May 20. A hail storm on July 16 did considerable damage to early barley and wheat by damaging the heads and in some cases breaking the straw. No wind was present with the hail or the damage might have been much greater. Peas in pod also suffered from hail, as where the pods were damaged decomposition set in, which later affected the seed. Stem rust was first found on wheat July 25 and spread very rapidly, the long sappy straw and humid atmosphere supplying nearly ideal conditions for its development. It appeared in oats early in August and caused considerable damage to medium late and late sown crops. Some of the oats were badly lodged, which checked ripening and supplied better conditions for rust development. Little damage was noticed on barley from rust though it was present on most medium late and late varieties.

All the varieties of cereals were tested on corn land and most of them on cereal stubble as well. As in 1926, some varieties yielded higher on cereal stubble than on corn land. This would be brought about to some extent by the wet season, which would tend to equalize the two preparations. The grain on cereal stubble also matured earlier and suffered less from rust.

WHEAT

Sixteen varieties of common spring wheat and two of Emmer were under test on one-hundredth acre plots. All plots were edged before harvest to supply field conditions as nearly as possible. The medium early and early varieties have yielded highest in most cases, the very late and a few which were most susceptible to rust being reduced in yield from this cause. The notes on rust do not altogether indicate the damage from rust, as some of the varieties were attacked when nearly ripe and while the rust developed rapidly and was apparently as bad on these as on some of the later sorts the kernel was well developed and did not suffer so much. The time required for maturity was slightly longer than normal but all ripened before frost.

Some varieties which are usually quite low have yielded highest this year, due to rust resistance or ability to withstand unusual conditions. A six-year average of the more standard varieties is given below, which gives a much better idea of the value of the various sorts. By this latter table Marquis 0.15 shows the highest yield with Garnet a close second. The spread in yield of the first six, however, is not great and any one of them may prove best under special conditions.

WHEAT—TEST OF VARIETIES OR STRAINS ON FALLOW SUBSTITUTE—SOWN APRIL 29

Name of variety	Date of ripening	Number of days maturing	Average length of straw	Stem rust	Yield of grain per acre	Weight per measured bushel
			ins.		bush. lb.	lb.
Sanderson Selection	Sept. 1	126	48	bad	37 20	60·5
Russian 101	Sept. 2	127	56	consid.	36 50	61·5
Preston	Sept. 1	126	51	bad	36 30	58
Producer	Aug. 27	121	47	bad	34 20	58·5
Garnet	Aug. 20	114	46	consid.	34 00	62·0
Reward	Aug. 23	117	44	"	33 40	63·0
Ceres	Aug. 28	122	47	"	32 40	61·5
Early Triumph	Aug. 26	120	46	bad	32 30	55
Marquis O. 15	Aug. 29	123	46	"	31 30	61
Kota	Aug. 30	124	51	consid.	30 30	59
Supreme	Aug. 27	121	47	bad	29 10	54·5
Red Fife	Sept. 4	129	52	"	28 00	56
Kitchener	Sept. 3	128	53	"	27 30	55·5
Orchard's Selection	Sept. 4	129	52	"	25 10	57
Criddle Selection	Sept. 2	127	52	"	21 20	55·5
Early Red Fife	Aug. 30	124	50	"	19 40	53·5
Emmers—						
Early Ottawa 44	Sept. 1	126	50	Trace	33 20	55·5
Common	Sept. 3	128	50	None	30 50	43·5

WHEAT—TEST OF VARIETIES ON SUMMER-FALLOW

Name of variety	Yield per acre							Average number of days maturing
	1927	1926	1925	1924	1923	1922	Average	
	bush. lb.	bush. lb.	bush. lb.	bush. lb.	bush. lb.	bush. lb.	bush. lb.	
Marquis O. 15	31 30	18 32	36 40	17 40	36 57	43 20	30 47	121
Garnet	34 00	20 00	28 20	18 20	44 00	35 40	30 03	112
Supreme	29 10	22 42	37 20	17 00	37 00	35 20	29 45	119
Kitchener	27 30	18 20	31 00	19 00	36 40	42 40	29 12	124
Red Fife	28 00	18 20	33 20	17 20	35 12	39 00	28 32	125
Early Triumph	32 30	19 10	31 20	14 20	38 40	33 20	28 13	117
Kota	30 30	20 00	25 40	17 40	32 40	33 20	26 38	119
Reward	33 40	20 50	24 00	12 40	24 30	29 20	24 10	113

WHEAT—TEST OF VARIETIES ON WHEAT STUBBLE

Twelve of the more standard and promising varieties were grown on wheat stubble. The varieties in this test ripened a few days earlier than those on fallow substitute and for this reason suffered less from rust. There is considerable change in the order of yield of the varieties on stubble from fallow but the early and medium early are generally the highest yielders.

WHEAT—TEST OF VARIETIES ON WHEAT STUBBLE

Sown April 30

Name of variety	Date of ripening	Number of days maturing	Length of straw	Yield per acre	4-year average	
					per acre	No. of days maturing
			inches	bush. lb.	bush. lb.	
Supreme	Aug. 26	119	47	34 41	24 15	118
Garnet	Aug. 17	110	44	39 23	23 58	109
Marquis O. 15	Aug. 27	120	50	38 49	23 52	119
Kitchener	Sept. 2	126	50	27 45	20 56	123
Red Fife	Sept. 2	126	50	35 04	20 11	123
Kota	Aug. 29	122	51	31 08	19 55	118

OATS

The yield from the oat varieties was good as was also the sample of the threshed grain. All were sown quite early and thus largely escaped the rust damage, suffered by late sown oats. Rust was present on all varieties but in none was there a bad attack. Most varieties showed considerable strength of straw though a few were difficult to harvest due to lodging. Victory gave the highest yield this year and in a six-year average also holds top place. The following tables give the yields and other data for 1927 and an average for the more common varieties.

OATS—TEST OF VARIETIES OR STRAINS ON FALLOW SUBSTITUTE

Sown May 4

Name of variety	Date of ripening	Number days maturing	Average length of straw	Stem rust	Yield of grain per acre	Weight per measured bushel
			inches		bush. lb.	lb.
Victory	Aug. 25	114	50	consid.	89 04	41·5
Leader	Aug. 25	114	53	consid.	86 06	35·0
Banner Dow	Aug. 24	113	50	consid.	81 26	41·0
Banner O. 49	Aug. 24	113	51	trace	75 10	40·
Gerlach	Aug. 26	115	49	trace	74 24	40·5
O.A.C. No. 72	Aug. 26	115	54	consid.	72 12	38·5
Longfellow	Aug. 19	108	52	trace	63 18	40·5
Gold Rain	Aug. 22	111	52	consid.	59 24	45·5
Laurel (Hulless)	Aug. 22	111	46	consid.	52 32	46·5
Alaska	Aug. 20	109	48	trace	47 02	42
Liberty (Hulless)	Aug. 21	110	48	consid.	41 16	44·5

OATS—AVERAGE AND ANNUAL YIELDS

Name of variety	Yield per acre							Average number of days maturing
	1927	1926	1925	1924	1923	1922	Average	
	bush. lb.	bush. lb.	bush. lb.	bush. lb.	bush. lb.	bush. lb.	bush. lb.	
Victory	89 04	29 14	72 12	17 22	72 32	80 00	60 08	109
Leader	86 06	36 01	75 30	18 08	72 02	65 30	59 02	109
Gold Rain	59 24	39 24	66 16	25 10	76 15	77 22	57 19	108
Banner O. 49	75 10	36 01	78 08	17 22	67 02	69 14	57 10	109
Gerlach	74 24	35 10	66 06	15 10	64 24	65 10	53 20	109
Longfellow	63 18	36 26	67 02	16 16	57 22	76 16	52 33	105
Alaska	47 02	32 12	45 10	17 02	69 24	53 18	44 06	99
Liberty	41 16	30 05	45 30	12 12	54 04	41 26	37 21	104

OATS ON OAT STUBBLE

The same varieties tested on fallow substitute were also under test on oat stubble. The yields are in most cases slightly higher due, no doubt, to the earlier maturity which enabled the plants to escape the rust to a greater extent.

The same varieties are the high yielders though Banner 0.49 is slightly lower in order of yield. A four-year average places Leader first and Gerlach second with a fair margin. These two varieties were high in the stubble yields in 1926 and appear to do well under such conditions.

Of the two hulless sorts, Liberty and Laurel, the latter has given the largest yields at this Station. These varieties are very desirable for special feeds for poultry and young stock. They are both quite susceptible to smut and must be treated with copper carbonate dust for this fungus, formalin being very injurious to the germination.

OAT VARIETIES ON OAT STUBBLE

Sown May 4

Name of variety	Number of days maturing	Average length of straw	Yield per acre					Average number of days maturing
			1927	1926	1925	1924	Average	
			bush. lb.	bush. lb.	bush. lb.	bush. lb.	bush. lb.	
Leader	113	49	89 23	42 12	52 32	6 16	47 29	107
Gerlach	113	48	82 25	37 02	62 32	6 16	47 10	108
Victory	113	49	91 22	25 10	57 22	5 30	45 04	108
Banner O. 49	113	52	74 15	31 16	67 22	5 10	44 24	108
Gold Rain	111	47	80 03	29 24	60 20	7 22	44 17	107
Longfellow	107	51	79 25	27 22	59 14	7 02	43 16	102
Alaska	100	49	55 09	25 30	49 14	7 22	34 19	96
Liberty (Hulless)	107	47	55 31	20 20	42 32	5 30	31 11	101
O.A.C. No. 72	113	54	82 02	36 26	.....	.....	.....	.....
Banner Dow	113	50	71 05	31 21	.....	.....	.....	.....
Laurel (Hulless)	107	46	63 07	32 12	.....	.....	.....	.....

BARLEY

Twelve varieties or strains of barley were tested on summer-fallow substitute and eleven on barley stubble. The yields in both cases were well above the average and the sample of threshed grain good, though a few varieties were under weight. Rust did practically no damage though it was present on all the late varieties. The spread in yield between the same varieties under different treatments is very large, in favour of the cereal stubble. The grain on stubble ripened earlier and did not lodge so badly, which may be partly accountable for the difference in yield. Hail did considerable damage to some of the earlier sorts.

TEST OF BARLEY VARIETIES ON SUMMER-FALLOW SUBSTITUTE

Sown May 6

Name of variety	Date of ripening	Number of days maturing	Average length of straw	Stem rust	Yield of grain per acre	Weight per measured bushel
			ins.		bush. lb.	lb.
Hannchen	Aug. 19	106	42	None	47 04	51
Chinese	Aug. 16	105	48	"	45 40	46·5
Gold	Aug. 26	113	41	"	45 40	53
O.A.C. 21 Sask 228	Aug. 19	106	47	Trace	45 30	45·5
Manchurian	Aug. 18	105	46	"	40 40	50·5
Himalayan (Hulless)	Aug. 8	95	33	None	37 34	61
Duckbill	Aug. 23	110	49	Trace	38 06	53·5
Bearer	Aug. 23	110	45	"	36 22	50
Junior (Hulless)	Aug. 8	95	32	None	35 00	61
O.A.C. 21	Aug. 19	106	46	Trace	33 26	46
Feeder	Aug. 15	102	48	"	33 06	48·5
Albert	Aug. 8	95	36	None	20 00	47

BARLEY, AVERAGE AND ANNUAL YIELDS

Name of variety	Yield per acre							
	1927	1926	1925	1924	1923	1922	1921	Average
	bush. lb.	bush. lb.	bush. lb.	bush. lb.	bush. lb.	bush. lb.	bush. lb.	bush. lb.
Chinese	45 40	26 32	52 24	10 00	52 20	45 00	46 12	39 39
O.A.C. 21	33 26	19 38	47 44	12 24	52 01	60 00	37 04	37 29
Himalayan	37 34	24 08	40 00	15 00	39 28	45 40	40 20	34 32
Duckbill	38 06	25 30	43 16	16 32	35 40	30 40	35 20	32 13
Junior	35 00	31 12	38 36	6 22	35 20	42 24	32 44	31 36
Albert	20 00	23 06	20 00	7 04	28 26	27 44	27 44	22 04

BARLEY VARIETIES ON BARLEY STUBBLE

With the exception of Hannchen all the varieties tested on fallow substitute were also seeded on barley stubble. In nearly every case a higher yield was obtained on stubble than on fallow and they were slightly earlier. The order of yield is somewhat different but the low yielders on fallow are likewise low on stubble. A three-year average of eight varieties is given as well as the yields for 1927.

BARLEY, TEST OF VARIETIES ON STUBBLE

Sown May 6

Name of variety	Number of days maturing	Average length of straw	Yield per acre			
			1927	1926	1925	Average
		ins.	bush. lb.	bush. lb.	bush. lb.	bush. lb.
Bearer	106	50	58 29	25 40	35 20	39 46
Chinese	104	49	45 45	30 00	37 24	37 29
Himalayan	95	34	40 26	23 16	45 40	36 27
O.A.C. 21	102	49	39 29	23 36	36 32	33 16
Duckbill	106	52	48 14	24 38	26 12	33 05
Albert	97	42	43 42	24 08	29 28	32 26
Junior	95	36	45 00	22 24	29 28	32 17
Feeder	98	50	35 30	19 38	25 20	26 45
Gold	105	44	63 02	.....	.....	.....
Manchurian	101	48	48 36	.....	.....	.....
O.A.C. 21 Sask 228	101	46	44 03	.....	.....	.....

FIELD PEAS

The pea crop this year was the best ever harvested at this Station. Due to continuous wet weather growth was prolonged and some of the late varieties did not ripen off entirely before being cut though the threshed sample of grain was good. Mackay gave the largest yield and produced an abundance of straw which is greatly relished by stock and is particularly good for wintering sheep. Champlain and Arthur have yielded low though in previous years they have shown good results, Champlain giving the highest average yield of four varieties grown 1921 to 1926. Lemaire is a very promising variety which was obtained from a farmer of that name at Perigord, Sask. It ripened nearly a month earlier than any other variety tested and gave a good yield of grain though the vine is very short and is worth very little for forage. The seed is small, being slightly larger than Chancellor and cream coloured. This variety was the only one which suffered materially from the hail storm of July 16 by having the pods bruised by the hail stones and causing decomposition. The other varieties had not formed pods at this time.

FIELD PEAS—TEST OF VARIETIES

Sown May 3

Name of variety	Date of ripening	Number of days maturing	Average length of straw	Yield per acre grain		Weight per measured bushel
				1927	2-year average	
			ins.	bush. lb.	bush. lb.	lb.
Mackay	Sept. 26	112	60	59 40	40 10	64
Prussian Blue	Sept. 20	106	60	58 40	39 00	65
Early Feed	Sept. 18	104	50	53 00	37 16	64·5
Golden Vine	Sept. 15	101	48	52 40	36 10	65
Lemaire	Aug. 19	74	21	54 20	35 46	66·5
Cartier	Sept. 24	110	50	51 20	35 10	65
Champlain	Aug. 24	110	50	45 20	34 16	64
Arthur	Sept. 24	110	48	45 20	32 50	65
Chancellor	Sept. 15	101	48	48 00	32 50	64·5

FIELD BEANS

Five varieties of field beans were grown on small plots in a variety test this season. The results were not so good as in 1925 but three varieties produced satisfactory yields and ripened the majority of pods before being harvested on September 7. Beauty, a small white pea bean, gave the largest returns though Norwegian, a brown type, gave very good results. Either one of these varieties should prove satisfactory under our conditions, ripening well most seasons. Large White, another variety which has a solid white seed, does very well but is slightly later than the former two. A strain of Navy has been tried for four years with very little success, only producing enough ripe seed each year to perpetuate it.

FLAX

The flax varieties did exceptionally well this year producing yields well above average and a very good sample of grain. The straw was of good length which facilitated clean harvesting. Premost gave the highest yield this year but Crown stands in top place on an average though the difference between the three varieties is slight.

FLAX-TEST OF VARIETIES

Sown May 9

Name of variety	Date of ripening	Number of days maturing	Average length of straw	Yield per acre			
				1927		4-year average	
			ins.	bush.	lb.	bush.	lb.
Crown	Sept. 7	122	27	20	27	12	55
Premost	Sept. 8	123	27	23	14	12	34
Novelty	Sept. 7	122	26	22	08	12	23

FORAGE CROPS

This season was particularly favourable to all forage plants excepting those annuals which require plentiful heat and sunshine. An abundance of moisture was present throughout the season but during May and June the weather was cooler and there was less sunshine than in average seasons. Due to this, corn made a very poor start and did not give the corresponding increase in yield made by other forage plants. All other annuals did very well producing yields above average. Perennials and biennials wintered well, due to favourable conditions and though the season of 1926 was dry, stands were good. The snowfall during the late winter was heavy and there were no thaws to expose the ground during the cold months. Good stands of timothy, meadow fescue and orchard grass were grown which are quite tender at this Station, wintering about one year in five. Red clover and alsike also made fair stands where sown in a mixture to afford some protection. The aftermath from all hay crops was good due to the continuous supply of moisture which is usually quite light during July and August. A second cutting of alfalfa was made nearly equal to the first which makes the combined yield this year greater than most other hay crops, and due to its high food value and palatability, a more valuable crop than any of the others. The yields of sweet clover were high but excepting where quite thick, the hay was coarse and would lack in palatability.

ANNUAL HAY CROP

MISCELLANEOUS ANNUAL HAYS

Three strains of biennial sweet clover, three of millet, teff grass, common vetch, and sudan grass, were sown in a comparative test to determine their relative values as annual hays in respect to yield. The yields were all good excepting from sudan grass which was a very thin stand, due to poor germination. The highest yield was obtained from common vetch and the hay produced appeared to be of good quality. It is also quite frost hardy and will ripen seed in an average season. Teff also produced a high yield and the hay was of excellent quality being very fine, and is high in feeding value. It is, however, quite susceptible to frost. Zouave gave the highest returns of the sweet clover varieties though the common yellow blossom also yielded well. The yield of Arctic was rather low but the stand was thin. A good quality of hay was produced from all three, though the Zouave and common yellow were finer and leafier. The yields from the millet varieties were only average as compared with the other annual hays and as they are quite susceptible to early fall frosts, are rather an uncertain crop. The three varieties tested will ripen seed most seasons.

The following table shows the yields of the various crops. All were sown on May 26 and harvested September 9.

MISCELLANEOUS ANNUAL HAYS

Kind of Crop	Height of plants in inches	Yield per acre					
		Green		Air dry (containing 12% moisture)		Oven dry	
		tons	lb.	tons	lb.	tons	lb.
Common Vetch	51	19	1,360	4	51	3	1,085
Teff Grass	34	10	480	3	1,549	3	636
Zouave Sweet Clover	29	11	000	3	250	2	1,500
Common Yellow Blossom	31	9	440	2	736	2	168
Arctic Sweet Clover	38	6	1,320	1	1,497	1	1,077
Common Millet	36	6	1,040	2	1,290	2	655
Early Fortune Millet	36	4	800	1	1,070	1	702
Chinese Millet	31	4	560	1	773	1	440
Sudan Grass	39	2	160	0	1,059	0	932

OAT AND BARLEY VARIETIES FOR ANNUAL HAYS

Eight varieties of oats and one of barley were tested for suitability as annual hays. Each variety was cut at heading, two weeks later and when turning. All cuttings would make excellent feed but that at turning would contain a high percentage of kernel and the straw would still be quite palatable. The last cutting also gave the highest yield of cured hay. Banner gave the best returns at the last cutting though Victory, Gerlach, and Gold Rain were also high. In an average of the three cuttings, Gold Rain, Victory, and Banner show very good returns and appear to be quite suitable for annual hay purposes. A two-year average of all cuttings places Gerlach as the highest yielder though the difference is slight between all the later varieties. The yield from Liberty was low but the quality of feed produced was of the best.

The yield from feeder barley was lower than the oats but barley straw is usually more palatable. This variety is awnless and the straw remains green until the grain is nearly ripe making it admirably suited for hay. In the following table are given the yields from the various varieties cut at different stages.

OAT AND BARLEY VARIETIES FOR ANNUAL HAY

—	Yield per acre						Two-year average oven dry
	Air Dry Weights containing 12 p.c. moisture			Average yields			
	Cut when heading	Cut two weeks later	Cut when turning	Green	Air dry	Oven dry	
	tons lb.	tons lb.	tons lb.	tons lb.	tons lb.	tons lb.	tons lb.
Gerlach	3 499	3 1,185	5 1,184	13 1,987	4 289	3 1,293	2 804
Gold Rain	3 511	3 1,778	5 857	14 880	4 382	3 1,378	2 798
Victory	2 1,836	3 1,284	5 1,972	13 1,947	4 364	3 1,357	2 720
Banner	3 131	3 377	6 432	13 1,413	4 313	3 1,320	2 696
Leader	2 1,866	3 1,764	4 1,944	13 1,520	3 1,858	3 945	2 512
Longfellow	2 1,551	3 1,942	4 1,536	13 267	3 1,676	3 755	2 321
Alaska	3 544	3 784	3 764	11 524	3 697	2 1,894	1 1,884
Liberty	2 1,817	2 1,445	3 1,408	12 160	3 223	2 1,477	1 1,374
Feeder Barley	2 607	2 1,218	3 1,145	8 133	2 1,657	2 987	2 58

DATE OF SOWING OATS AND BARLEY FOR HAY

Victory oats and feeder barley were sown at eight dates of one week intervals commencing May 10. With oats the yield increased with each date of seeding up to the last of May, when there was a sudden falling off. The last two sowings yielded fairly well but were badly damaged by rust and frost, and made very poor feed. All were cut when turning excepting the last two which were frozen.

The earliest seeding has given the highest yield in a three-year average though the differences are very small.

The yields from dates of seeding barley are very erratic for this year but by a four-year average the later sowings show a considerable increase over some of the earlier ones. The feeding value of all cuttings was good, there being very little rust on any of them.

The following tables show the yields from the various dates of sowing:—

DATES OF SOWING VICTORY OATS

Dates of sowing	Yield per acre			Three-year average oven dry
	Green	Air dry containing 12 p.c. moisture	Oven dry	
	tons lb.	tons lb.	tons lb.	tons lb.
May 10	7 600	4 461	3 1,446	2 1,005
May 17	7 200	4 665	3 1,625	2 641
May 25	8 1,760	4 981	3 1,903	2 711
May 30	9 880	4 1,868	4 684	2 967
June 6	6 560	3 556	2 1,778	2 209
June 13	5 1,800	3 168	2 1,428	2 158
June 20	7 1,240	4 80	3 1,110	.....
June 27	7 760	3 1,716	3 790	.....

DATES OF SEEDING BARLEY FOR HAY

Dates of sowing	Yield per acre				Four-year average oven dry	
	Green		Air dry		Oven dry	
	tons	lb.	tons	lb.	tons	lb.	tons	lb.
May 10	7	420	2	1,128	2	513	1	1,520
May 17	5	1,300	2	880	2	294	1	1,590
May 25	6	20	2	1,217	2	591	1	1,431
May 30	3	1,340	2	463	1	1,927	1	1,347
June 6	4	200	2	482	1	1,944	1	1,188
June 13	5	220	3	1,002	3	162	2	133
June 20	6	720	3	70	2	1,342	2	207
June 27	5	900	2	1,202	2	578	.....	

MIXTURES OF PEAS AND OATS FOR HAY

Various mixtures of Mackay peas and oats were sown for hay to be cut when the oats were turning. The crop was very heavy and at the time the cutting should have been done the weather was quite wet, which made the harvesting of some of the mixtures at the proper time nearly impossible. They were cut when riper than is desirable for the best quality of hay, but the dry matter yields are quite comparable. The yields this year are nearly double the average due to the excessive rainfall. The percentage of pea vine was also larger than usual. The mixture with the largest percentage of peas gave the largest yield, though oats alone and oats, sown one week and two weeks after the peas, also yielded well. In a three-year average either peas or oats alone have out-yielded the mixtures but as the peas are difficult to harvest when sown alone and oats lack the food elements supplied by a legume, a good mixture is highly desirable. From our experiments so far, it would appear that to get a fair proportion of pea vine in the hay, the seed must be at least half peas, and the peas should be sown about one week before the oats.

The following are the yields of the various mixtures for this year and a three-year average of several:—

MIXTURES OF PEAS AND OATS FOR HAY

Mixtures or proportions by weight	Yield per acre						Three-year average oven dry	
	Green		Air dry (containing 12 p.c. moisture)		Oven dry			
	tons	lb.	tons	lb.	tons	lb.	tons	lb.
Mackay peas alone	12	80	5	1,438	5	65	3	261
Peas 7, oats 3	6	280	5	1,555	5	168	2	1,818
Peas 5, oats 5	6	240	3	342	2	1,581	2	837
Peas 3, oats 7	6	1,360	2	1,495	2	836	2	687
Oats alone	6	1,340	5	157	4	938	3	107
Peas 5, oats 5, alternate rows	6	720	4	485	3	1,467	.....	
Peas sown one week before oats	7	1,680	5	50	4	844	.....	
Peas sown two weeks before oats	7	260	4	102	3	1,130	.....	

SEEDING TO 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. With brome and rye grass, yields are given for two-year-old seedings as well as for the 1926 sowing. Stands were in nearly every case good, the seedings all wintering well. Yields are given for hay and for seed.

METHODS OF SOWING WESTERN RYE GRASS FOR HAY AND SEED

The following tables give the yields of rye grass sown by the various methods, the first year after seeding and also the second year for hay and seed. Four-year averages are shown for the first year seeding for hay, and three for seed. One year only is given for the second crop.

In the first year seeding, this year's result and a four-year average gives a considerably higher yield where no nurse crop has been used, though by the second season, the yields are nearly equal from both treatments. Seeding in six-inch rows has given the largest yields in every case excepting the second year after seeding alone. The yields in the others decrease in proportion to the distance of spacing.

The seed yields were largest this year from broadcast seeding with a nurse crop but some of the others were rather erratic. In a four-year average the seeding alone was highest in every case. The second year seeding sown alone was much the highest, indicating that two-year old sod is best for seed. The seed also ripened more uniformly.

METHODS OF SOWING WESTERN RYE GRASS FOR HAY, 1927

Method of sowing	Sown with nurse crop Yield per acre			Yield per acre 4-year average oven dry weight	Sown alone green weight	Yield per acre 1927		Yield per acre 4-year average oven dry weight
	Green weight	Air dry weight	Oven dry weight			Air dry weight containing 12 p.c. moisture	Oven dry weight	
	tons lb.	tons lb.	tons lb.	tons lb.	tons lb.	tons lb.	tons lb.	tons lb.
Broadcast	3 1,597	1 849	1 507	0 1,494	4 560	1 1,695	1 1,252	1 779
6-inch rows	3 1,599	1 920	1 570	0 1,560	4 998	1 1,850	1 1,388	1 1,984
24-inch rows	2 12	0 1,486	0 1,308	0 1,051	3 795	1 815	1 477	1 1,014
30-inch rows	1 1,959	0 1,422	0 1,251	0 1,412	3 420	1 860	1 517	1 341
36-inch rows	1 1,531	0 1,192	0 1,049	0 1,012	3 955	1 1,067	1 699	1 453

Second Year's Hay

Broadcast	2 1,885	1 849	1 507	.....	4 399	1 1,599	1 1,167	.....
6-inch rows	3 794	1 181	1 799	.....	3 1,811	1 1,400	1 992	.....
24-inch rows	3 313	1 891	1 544	.....	4 292	1 1,778	1 1,325	.....
30-inch rows	3 848	1 894	1 547	.....	3 1,490	1 1,200	1 816	.....
36-inch rows	2 1,778	1 403	1 115	.....	3 1,222	1 1,217	1 831	.....

METHODS OF SOWING WESTERN RYE GRASS FOR SEED

Method of sowing	Yield per acre, 1927		Three-year average Yield per acre	
	Sown alone	With nurse crop	Sown alone	With nurse crop
	lb.	lb.	lb.	lb.
Broadcast	320	620	467	417
6-inch drills	540	540	488	413
24-inch drills	510	390	690	287
30-inch drills	390	440	602	398
36-inch drills	425	290	446	229

SECOND YEAR'S WESTERN RYE GRASS FOR SEED

Method of sowing	Yield per acre, 1927	
	Sown alone	With nurse crop
	lb.	lb.
Broadcast	990	660
6-inch drills	840	610
24-inch drills	710	620
30-inch drills	630	860
36-inch drills	630	610

METHODS OF SOWING BROME GRASS FOR HAY AND SEED

The yields of hay average nearly a ton higher where sown alone than with a nurse crop in the first year seeding, while in the second year seeding, the yields are more nearly equal. In the first year seeding the six-inch rows gave the highest yield followed by broadcast while in the second year seeding, the wider spacings are in most cases highest.

Averages are available only for the first year seeding, and this shows a considerably larger yield from seeding alone. The six inches spacing, both in the grass sown alone and with a nurse crop, has given the highest yield in a three-year average.

Brome for seed has given very poor results, but yields are much higher where sown alone, than with a nurse crop. Brome produces few seed stalks the first year unless in rows and quite thick, and where sown with a nurse crop was not worth threshing. The yields from second year seeding gave more uniform results and were nearly as good following a nurse crop as when sown alone.

METHODS OF SOWING BROME GRASS FOR HAY, 1927

Method of Sowing	Sown with nurse crop Yield per acre, 1927			Three-year average oven dry weight	Sown alone Yield per acre, 1927			Three-year average oven dry weight
	Green weight	Air dry weight containing 12 p.c. moisture	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	4 988	1 614	1 300	0 1,460	4 1,469	1 1,352	1 950	1 1,108
6-inch rows	4 774	1 842	1 501	0 1,574	3 1,223	1 533	1 229	1 1,209
24-inch rows	3 46	0 1,786	0 1,572	0 1,258	4 1,041	1 1,320	1 922	1 647
30-inch rows	2 761	0 1,547	0 1,361	0 1,057	3 955	1 434	1 142	1 241
Second Year's Hay								
Broadcast	3 687	1 226	0 1,959	.....	4 881	1 1,322	1 923	.....
6-inch rows	3 206	1 245	0 1,976	.....	4 774	1 1,310	1 913	.....
24-inch rows	4 25	1 894	1 547	.....	4 1,844	1 1,626	1 1,191	.....
30-inch rows	2 1,831	1 140	0 1,883	.....	4 774	1 1,234	1 846	.....
36-inch rows	4 25	1 815	1 477	.....	5 1,556	2 401	1 1,873	.....

METHODS OF SEEDING BROME GRASS FOR SEED

Method of sowing	Yield per acre		Two-year average sown alone
	Sown alone	Sown with nurse crop	
	lb.	lb.	lb.
Broadcast	80	Not worth threshing	80
6-inch rows	140	"	120
24-inch rows	260		230
30-inch rows	260		310

BROME GRASS—SECOND YEAR AFTER SEEDING

Method of sowing	Yield per acre	
	Sown alone	Sown with nurse crop
	lb.	lb.
Broadcast	120	30
6-inch rows	20	110
24-inch rows	40	120
30-inch rows	160	120
36-inch rows	120	120

METHODS OF SOWING SWEET CLOVER FOR HAY AND SEED

Yields were highest where sown alone and were nearly equal from the various methods. Where a nurse crop was used, broadcast and six-inch methods of seeding were best and the quality of hay was also much superior to the wider spacing, and to that where no nurse crop was used. Sweet clover was inclined to grow tall and very coarse this season and excepting following a nurse crop, or where quite thick, would make poor feed. In a two-year average, the broadcast or six inch sowing are considerably higher in yield than the wider spacing.

The seed yields from the various methods of sowing sweet clover are rather erratic but indicate that a higher yield can be expected when it is sown alone. The quality of seed produced this year was good though growth continued rather late preventing ripening as early as is customary.

The yields of hay and seed from the various methods of seeding are given in the following tables and also a short average.

METHODS OF SOWING SWEET CLOVER FOR HAY

Method of sowing	Sown with a nurse crop			Two-year average oven dry	Sown alone green	Air dry (containing 12 p.c. moisture)	Oven dry	Two-year average oven dry
	Green	Air dry	Oven dry					
	tons lb.	tons lb.	tons lb.	tons lb.	tons lb.	tons lb.	tons lb.	tons lb.
Broadcast	9 83	1 1,432	1 1,020	1 420	15 1,458	3 76	2 1,347	1 1,835
6-inch rows	8 478	1 1,258	1 867	1 169	15 334	2 1,963	2 1,247	2 12
24-inch rows	5 432	1 75	0 1,826	0 1,221	13 1,499	2 991	2 392	1 989
30-inch rows	4 1,683	1 25	0 1,782	0 1,154	15 869	2 1,858	2 1,155	1 138
36-inch rows	4 881	0 1,867	0 1,643	0 1,079	11 1,807	2 1,167	2 547	1 784

METHODS OF SOWING SWEET CLOVER FOR SEED

Method of sowing	Yield per acre		Two-year average	
	Sown alone	Sown with nurse crop	Sown alone	Sown with nurse crop
	lb.	lb.	lb.	lb.
Broadcast	800	420	520	240
6-inch rows	1,100	520	630	280
24-inch rows	600	880	450	460
30-inch rows	780	800	530	420
36-inch rows	1,040	900	520	480

METHODS OF SOWING ALFALFA FOR HAY AND SEED

Alfalfa is seldom a paying crop at this station, the yields being quite low in an average year even though the stands are good. It usually winters well but excepting in years of over average rainfall one cutting is the limit of our harvest. This year, due to abundant moisture, two good cuttings were made making the yields equivalent and in some cases better than other hay crops. The palatability and feeding value of alfalfa ranks high, making equal amounts much superior in value to most of our other forage crops. The yields where it was sown alone were considerably higher than where a nurse crop was used and the thicker seedings higher than the wider spacings. The seed yields were negligible due no doubt to the persistent growth of foliage rather than seed setting by the alfalfa plants. This is usual with alfalfa which will continue growing foliage when there is an abundance of moisture.

The following table shows the yields obtained from the various methods of seeding. No averages are given as alfalfa was a total failure in 1926.

METHODS OF SOWING ALFALFA FOR HAY AND SEED

Method of seeding	Sown with a nurse crop				Sown alone			
	Green	Air dry (containing 12 p.c. moisture	Oven dry	Seed	Green	Air dry (containing 12 p.c.) moisture	Oven dry	Seed
	tons lb.	tons lb.	tons lb.	tons lb.	tons lb.	tons lb.	tons lb.	tons lb.
Broadcast	10 330	2 1,156	2 537	0 20	15 13	3 1,447	3 553	0 40
6-inch rows	11 256	2 1,899	2 1,191	0 20	14 676	3 1,361	3 478	0 80
24-inch rows	7 659	1 1,856	1 1,393	0 80	12 760	3 805	2 1,988	0 20
30-inch rows	6 1,321	1 1,492	1 1,073	0 80	12 877	3 711	2 1,906	0 40

SUNFLOWERS FOR ENSILAGE

Three varieties of sunflowers were tested under similar conditions for ensilage. The season proved very favourable and yields were well above average. The two types, Russian Giant and Mammoth Russian are very similar, both being late and making a very tall growth. Ottawa 76 is a finer growing type and usually earlier while the Mennonite is very early and short, yielding quite low as compared with the others. The Russian Giant or Mammoth Russian appear to be most suitable for ensilage producing a high yield and reaching a fair stage of maturity.

SUNFLOWERS—VARIETIES FOR ENSILAGE

Name of variety	Source of seed	Height in inches	Type of growth per cent single	Yield per acre		5-year average	
				Green	Oven dry	Maturity when cut	Oven dry yield
				tons lb.	tons lb.		tons lb.
Mammoth Russian	McKenzie	105	100	15 916	3 90	38% bloom	2 554
Russian Giant	Steele Briggs	108	92	19 280	3 1,149	62% bloom.	2 522
Ottawa 76	Ottawa	81	100	16 472	2 936	77% bloom.	1 1,111
Mennonite	Rosthern	54	100	11 1,496	2 1,214	89% bloom.	1 93

CORN VARIETIES FOR ENSILAGE

The variety test plots of corn underwent so many adversities this year that the results are rather unsatisfactory. The spring was wet and cool delaying germination and growth and causing poor stands in varieties where apparently the germination was originally weak.

Crows also did considerable damage to the young plants after emergence so that the stands were in many cases, about fifty per cent. None of the varieties reached maturity and in all cases the corn was in a younger stage when cut than in 1926.

The later and ranker growing varieties have, as is usual given the highest yields, but considering the stage of maturity reached, the medium early sorts are considered the most desirable at this station. The medium early sorts will produce a fair yield coupled with a well filled ear which is very desirable in corn for ensilage.

The following table shows the stage of maturity reached at harvest, yield in green and oven dry weights and a three-year average of oven dry yields. All were planted on May 17 and cut September 14.

CORN VARIETIES FOR ENSILAGE

Name of variety	Source of seed	Average height of plants	Maturity at harvest	Yield per acre		
				Green	Oven dry	Three-year average oven dry
		inches		tons lb.	tons lb.	tons lb.
Burr Leaming	Carter	73	Not tasselled	12 1,080	1 1,315	1 1,353
Longfellow	J. O. Duke	69	Tasselled	15 1,080	1 1,263	1 1,281
North Western Dent	Disco	66	Early milk	10 1,384	1 1,229	1 1,278
90-day White Dent No. 7	Disco	68	Tasselled	15 944	1 1,837	1 1,165
Wisconsin	J. O. Duke	66	Not tasselled	14 776	1 705	1 1,050
Bailey	J. O. Duke	64	Silked	11 1,490	1 1,172	1 962
N. Dakota North Western Dent	Steel Briggs	57	Late milk	9 216	1 186	1 842
North Dakota grown	McKenzie	61	Dough	8 1,424	1 788	1 821
Comptons Early	J. O. Duke	72	Tasselled	15 1,152	1 866	1 790
Golden Glow	J. O. Duke	62	Silked	10 1,912	1 454	1 772
Leaming	J. O. Duke	66	Silked	10 64	1 909	1 768
White Cap Yellow Dent	Steele Briggs	65	Silked	11 440	1 985	1 749
Quebec 28	Dr. Todd	52	Dough	8 368	1 161	1 733
Yellow Dent	A. Wimple	63	Silked	11 176	1 639	1 624
North Western Dent Hybrid	Brandon Exp. Farm	49	Dough	6 936	0 1,695	1 532
Amber Flint	A. Wimple	71	Late milk	13 1,456	1 1,185	1 491
Pride Yellow Dent North Western Dent	A. Wimple	51	Milk	6 1,992	0 1,693	1 146
Crooksten Strain	Disco	65	Tasselled	11 968	1 963	
	McKenzie	52	Milk	8 1,688	0 1,786	

ROOTS

The yields from the various classes of roots were good but the wet season did not make the proportional increase over an average year which would be expected. The dry matter content was lower than usual and the absolute dry matter yield correspondingly reduced. The quality of roots was good in most cases there being a lower percentage of decomposed roots than usual though there appeared to be a lack of maturity to which could be attributed the lack of yield. Growth appeared to be rather slow throughout the season, preventing them from reaching their maximum size before harvest.

SWEDES

Fifteen varieties or strains were tested in 66 foot rows replicated three times. All were thinned to 12 inches between the roots and the rows were 30 inches apart. The following table gives the results for the six highest yielders.

SWEDE VARIETIES

Name of variety	Source of seed	Yield per acre		Four-year average oven dry
		Green	Oven dry	
		tons lb.	tons lb.	tons lb.
Kangaroo	Steele Briggs	26 1,856	3 1,432	3 471
Hall's Westbury	Ewing	28 1,288	3 531	2 1,831
Ditmars	McNutt	31 264	3 494	2 1,526
Jumbo	Steele Briggs	25 160	2 1,217	2 1,419
Invicta	Rennie	25 424	2 1,345	2 1,351
Bangholm	Exp. Station, Charlottetown	27 648	3 394	2 1,261

FALL TURNIPS

The yields and quality of fall turnips were good this year, the lack of decomposed and hollow roots being quite marked. In average seasons at this Station, fall turnips of the larger types, such as Mammoths, decompose very quickly after they are mature, causing a considerable loss. This year they appeared to continue growing much later and were in excellent condition when harvested on September 20. Hardy Green Round, a firm type somewhat resembling green top Aberdeen, has given the highest yield of dry matter in a five year average, though the yields of the others approximate it very closely. The yields of the six highest yielders are given in the following table.

FALL TURNIP VARIETIES

Name of variety	Source of seed	Yield per acre, 1927		Five-year average yield oven dry
		Green	Oven dry	
		tons lb.	tons lb.	tons lb.
Hardy Green Round	Sutton	20 128	2 815	1 1,252
Greystone	Steele Briggs	19 1,600	1 1,722	1 1,235
Purple Top Mammoth	Sutton	23 464	2 89	1 1,222
Red Paragon	Sutton	22 1,936	2 979	1 1,214
White Globe	Ewing	20 656	1 1,456	1 1,205
Purple Top Mammoth	Steele Briggs	23 464	2 228	1 981

DATES OF SOWING FALL TURNIPS

Fall turnips were sown at eight dates of one week intervals commencing May 17. The highest yield was obtained from the earliest planting and yields of the others are correspondingly less with the lateness of sowing. From a five-year average it would appear that the middle of May is the most desirable time to sow fall turnips in order to get a maximum yield and also good quality roots.

MANGELS

The yields of mangels were below average this year though the stands were fairly good. The season for them was somewhat shortened by early fall frosts which froze the tops and checked growth. The yields may be somewhat less than they otherwise would have been for this reason. The oval types have given the largest returns this year and are a very desirable class to grow, being fairly easy to harvest and do well. A two-year average of the six highest yielders in dry matter is shown in the following table.

MANGEL VARIETIES

Name of variety	Source of seed	Yield per acre, 1927		Two-year average oven dry
		Green	Oven dry	
		tons lb.	tons lb.	tons lb.
Yellow Intermediate	Ottawa	22 1,672	2 1,344	3 316
Giant Rose	McKenzie	20 128	2 775	2 1,291
Barres Oval	Gen. Swd. Seed Co	24 48	2 613	2 1,000
Giant Yellow Oval	Steele Briggs	22 1,144	2 63	2 723
Giant Yellow Globe	McKenzie	21 1,296	2 156	2 688
Giant Long Red	McKenzie	20 1,712	1 1,754	2 282

MANGELS: DATES OF PLANTING AND TREATMENT OF SEED

Three varieties of mangels, Yellow Oval, Yellow Globe, and a half sugar mangel, were sown at three dates of ten day intervals commencing April 29. One lot of seed of each variety on each date was soaked in water for forty-eight hours before seeding and another lot sown dry. This experiment has been under way for several years but due to cutworm damage the stands were not comparable until this season. For this reason only one year's results are available and are not conclusive though the regularity of the variation warrants certain observations. The earliest sowing was the highest and the roots most mature, while the last sowing was low in yield and quite immature. The soaked seed gave the quickest germination, emerging one or two days earlier than the unsoaked seed. The yields were also slightly higher from the soaked, though the difference was too small to be significant. The increase in yield is more than offset by the difficulty of seeding the soaked seed with machinery, the seeds tending to cling together and feeding in bunches. From one year's results we would infer that early seeding of mangels is highly desirable, but that the value of soaking seed is doubtful.

CARROTS

Four varieties of carrots representing four of the most common types on the market were tested under uniform conditions. The yields were good and the roots were of good size and quality. The three medium long types have given the largest yields, and are all quite easy to harvest. The very short type yielded rather low and was rough and badly split due to overgrowth. Improved Short White, which is a smooth white type has given the highest dry matter yield in a two-year average.

CARROT VARIETIES

Name of variety	Source of seed	Yield per acre, 1927		Two-year average oven dry
		Green	Oven dry	
		tons lb.	tons lb.	tons lb.
Improved Short White	Ottawa	11 176	1 506	1 91
Danish Champion	Ottawa	9 1,008	1 509	1 65
White Intermediate	Exp. Station, Summerland	9 1,800	1 376	0 1,973
Oxheart	McFayden	7 784	0 1,862	0 1,562

SUGAR BEETS

Nine varieties or strains of sugar beets were tested this year. Five lots of seed were supplied by the Amtorg Trading Corporation of New York, and the remainder by the Dominion Sugar Company. The yields were good and though the green weights are lower than other classes of roots the dry matter content is much higher and compares very well in this respect. Sugar beets grow nearly completely under ground however and are very difficult to harvest without special machinery for the purpose. The following table gives the yields of four of the best varieties in a two-year average. The sugar content is also given which is rather low this year.

SUGAR BEET VARIETIES

Name of variety	Source of seed	Per cent sugar in juice	Yield per acre, 1927		Two-year average yield
			Green	Oven dry	
			tons lb.	tons lb.	tons lb.
Ivanosk	Amtorg Corp. (New York)	12·86	14 512	3 1,328	3 247
Dieppe	Dom. Sugar Co	13·85	16 472	3 754	2 1,782
Schreiber & Sons	Dom. Sugar Co	13·92	13 928	3 372	2 1,716
Horning	Dom. Sugar Co	14·78	12 1,608	2 1,626	2 1,320

POULTRY

The work in poultry during 1927 was largely confined to the continuation of the projects begun the previous year. Some considerable improvement was made in the average production of the pullets over that of previous years and the number of hens with a production of more than two hundred eggs in the pullet year is considerably greater than previously.

More interest is evident throughout the province in poultry raising, and judging by the letters of inquiry coming in and by the questions asked at farmers' meetings, the poultry raisers are more anxious to secure stock of reliable egg-laying strain than stock of fine markings that have doubtful egg-laying characteristics. The Station is trying to meet this demand by selling surplus eggs, chicks and mature stock and it is gratifying to note the improvement that is being made in many flocks by this means.

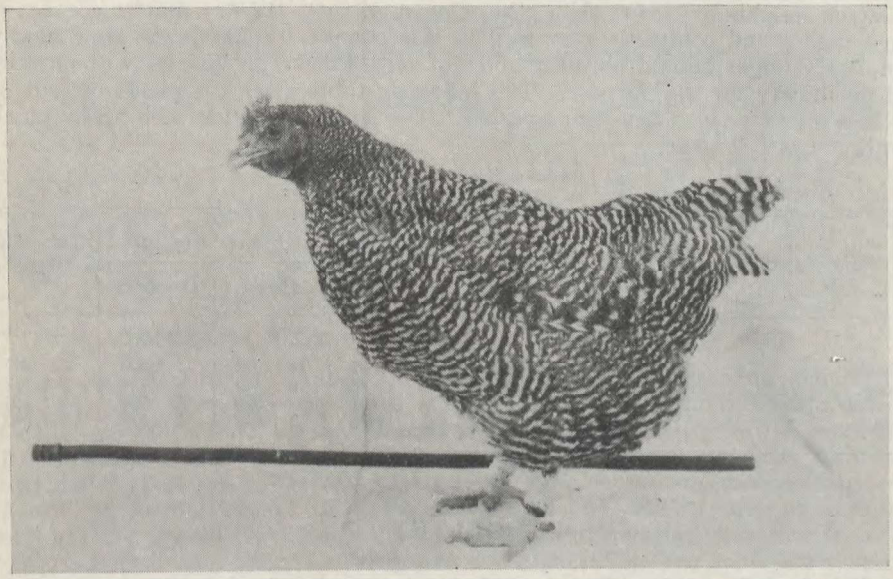
The pen from the Rosthern Station stood second highest in the last Saskatchewan Egg-laying Contest and our hen No. 277 made a record by being the first hen in any Saskatchewan contest to reach the production of 300. There are three full sisters to this hen on the Station from which we expect to develop a considerable progeny.

This experiment begun the previous year was repeated with slight change in detail. Seven pens of pullets were used, three of which were on a standard feed and four on different feeds. The standard ration was made up as follows:—

Scratch	lb.
Wheat	300
Oats	100
Barley	100

Mash	lb.
Shorts	150
Bran	100
Oat chop	100
Barley chop	100
Beef scrap	85
Bone meal	15
Salt	5

Grit, shell, and charcoal were supplied to all pens in hoppers, and each pen had a head of cabbage daily.



One of the Rosthern Experimental Station hens in the 1926-27 Saskatchewan egg-laying contest and the first hen in any Saskatchewan contest to lay 300 eggs.

The experiment is an endeavour to compare:—

(1) A ration of our common grains with
(2) Oats replaced by corn and
(3) Oats replaced by hulless oats and
(4) Barley replaced by hulless barley and
(5) Beef scrap replaced by tankage in the mash.

There was nothing outstanding in the results except that the pen having hulless oats in both the scratch and the mash was the pen that laid the most eggs and returned the highest profit. The pen on corn laid nearly as many eggs but the higher cost of the corn reduced the profit of the pen considerably.

From the two years' results it would seem that hulless oats is a satisfactory home-grown substitute for corn in the poultry ration.

FEEDING WET MASH TO LAYING HENS

Five pens of pullets were on an experiment to determine the value of a wet mash as compared with a dry mash, and also to determine the time to feed the wet mash. There was no significant difference in the results although the hens fed a wet mash in the evening laid a few more eggs than did the others.

FATTENING RATIONS FOR COCKERELS

On September 7 ninety cockerels were placed in a fattening experiment. They were divided into five lots and fed different rations as per the following:—

Lot 1.—Oat chop, barley chop, shorts.
Lot 2.—Oat chop, hulless barley chop, shorts.
Lot 3.—Oat chop, ground corn, shorts.
Lot 4.—Oat chop, barley chop, ground corn, shorts.
Lot 5.—Hulless oat chop, barley chop, shorts.
In each ration the different meals were in equal amounts.
Meal was fed mixed with skim-milk.
The feeding period was twenty days.

—	Lot 1	Lot 2	Lot 3	Lot 4	Lot 5
Number of birds	18	18	18	18	18
Average initial weight lb.	4·38	3·97	4·44	4·38	4·39
Average finished weight lb.	5·30	5·03	5·34	5·45	5·75
Average gain lb.	0·92	1·06	0·90	1·07	1·36
Average dressed weight lb.	4·77	4·50	4·78	4·89	4·60
Meal consumed per lot lb.	96·0	88·50	94·0	94·0	93·0
Value of meal $	1·44	1·32	1·87	1·76	1·39
Cost meal per lb gain c.	9·00	6·90	11·50	9·10	5·20

These results coincide very closely with results of previous experiments.

Corn in a ration in this province is expensive and as good and usually greater gains come from the use of hulless oats instead of corn. The cost per pound gain has always been lower where hulless oats were used than where corn was used.

Comparing these results with those of previous years we would infer that we would have had larger and more profitable gains if we had begun this experiment about a month earlier when the birds weighed about a pound less. We would also have been ready for a better market.

HATCHING RECORD

—	Total number eggs set	First Test			Second Test		Total hatched	Cripples	Put in brooder	Per cent fertile	Per cent fertile hatched	Per cent total eggs hatched	Number of eggs for chick to brooder
		Infertile	Blood rings	Left in	Dead germs	Left in							
Pullets	3,213	341	260	2,612	332	2,280	1,473	47	1,426	89·4	51·2	45·8	2·25
Hens	2,111	226	109	1,776	157	1,619	1,135	64	1,071	89·3	60·2	53·7	1·97
Buckeye	3,163	339	206	2,618	272	2,346	1,606	62	1,544	89·3	56·8	50·7	2·05
Cyphers	1,549	178	119	1,252	153	1,099	748	32	716	88·5	54·6	48·3	2·16
Tamlin	612	50	44	518	64	454	254	17	237	91·7	45·2	41·5	2·58
February	1,189	208	32	949	125	824	569	17	552	82·5	58·0	47·8	2·16
March	2,674	267	202	2,205	221	1,984	1,258	54	1,204	90·0	52·2	47·0	2·22
April	1,461	92	135	1,234	143	1,091	781	40	741	93·7	57·0	53·4	1·97

APICULTURE

For the winter of 1926-27, all colonies of bees were packed in outside wintering cases, eight quadruple and two single colony cases being used. The winter was a long severe one, and it was a real test for outside wintering of bees. All thirty-four colonies were found to be alive at the first examination in the spring (April 22), but seven of them were weak and one of these was queenless.

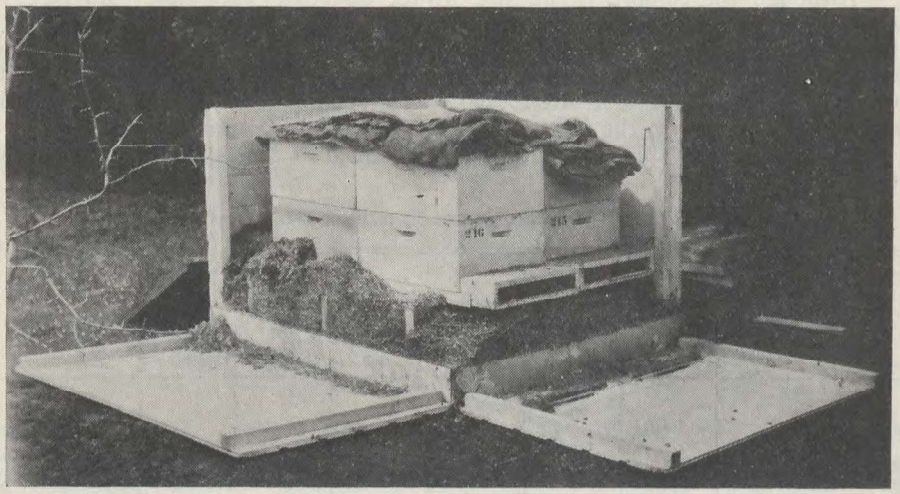
Although the colonies went into winter quarters with the same average strength as for the previous two years, which was 9·5 combs covered with bees, the loss of bees was greater during the 1926-27 winter by 0·7 of a comb, there being 4·5 combs covered at time of spring examination, as against 5·2 for the two previous years. This is attributed to a greater percentage of old bees going into winter quarters in the fall of 1926, as well as to the more severe winter.

The following table on wintering gives the fall and spring conditions and stores consumed:—

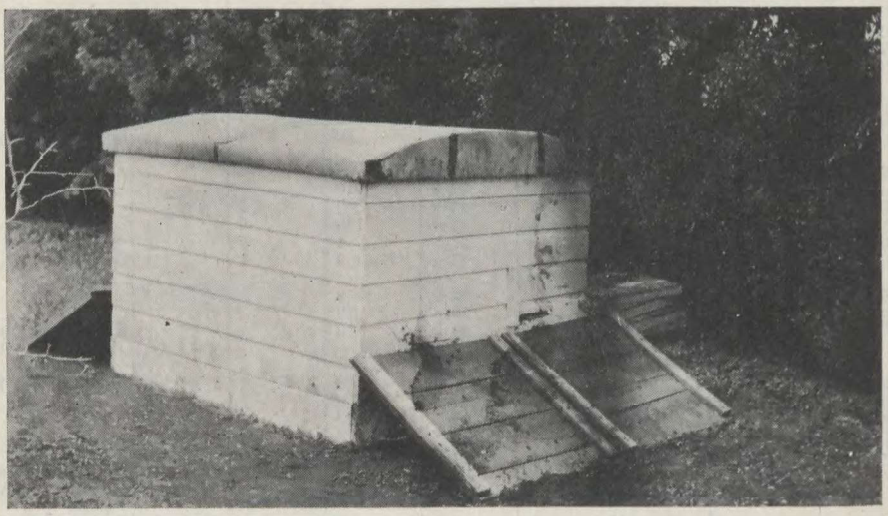
WINTERING 1926-27—FALL AND SPRING CONDITIONS AND STORES CONSUMED

Hive number	Weight of stores		Stores consumed	Number of combs covered by bees		Number of combs with brood first inspection	Remarks
	Fall	Spring		Fall	Spring		
	lb.	lb.	lb.				
201	39·5	10·0	29·5	10	4	3	Given 1 lb. pkg. bees.
202	40·0	5·0	35·0	10	5	4	
203	40·0	7·5	32·5	10	3	2	Given 2 lb. pkg. bees.
204	40·0	0	40·0	10	2	1	"
205	40·5	0	40·5	10	1	0	"
206	40·25	22·5	17·75	10	6	3	
207	35·0	25·0	10·0	10	3	1	
208	34·0	7·5	26·5	10	3	1	
209	40·0	25·0	15·0	10	5	1	
210	40·0	7·5	32·5	10	1	1	
211	43·5	15·0	28·5	10	9	2	
212	39·0	15·0	24·0	10	7	1	
213	38·0	20·0	18·0	9	6	2	
214	40·0	25·0	15·0	8	3	1	Given 1 comb brood.
215	39·5	20·0	19·5	10	5	2	
216	40·5	20·0	20·5	10	5	1	
217	41·0	22·5	18·5	10	2	1	Given 1 lb. pkg. bees.
218	39·0	20·0	19·0	8	2	1	"
219	40·0	10·0	30·0	10	9	1	
221	40·0	10·0	30·0	10	6	2	
222	39·5	12·5	27·0	10	5	1	
223	40·0	22·5	17·5	9	5	2	
224	40·0	22·5	17·5	9	4	1	Given 1 comb brood.
225	39·5	7·5	32·0	9	2	1	"
226	43·5	15·0	28·5	10	5	2	
227	40·0	25·0	15·0	10	4	2	United Alexander method April 29th.
228	40·0	17·5	22·5	9	8	3	Divided May 25th
229	40·0	17·5	22·5	9	7	2	
230	44·0	22·5	21·5	10	6	3	
231	39·5	22·5	17·0	9	4	1	
278	39·0	7·5	31·5	10	7	3	
351	40·0	15·0	25·0	8	3	1	United Alexander method April 29th.
352	43·5	20·0	23·5	8	4	2	Divided May 25th
353	45·0	7·5	37·5	9	2	0	Queenless. Requeened April 25th.

Owing to the sickness amongst the bees, no definite results were obtained from Project No. 37, "Comparison of Different Methods of Building Up Weak Colonies in the Spring," and No. 58, "Package Bees as a Means of Strengthening Colonies in the Spring." The addition of package bees to a weak colony would seem to be better than addings combs of brood from strong colonies.



Four colonies being prepared for winter.



Four colonies in winter quarters.

PACKAGE BEES

The same method was employed in handling package bees as in the previous year. All packages arrived in good condition and an average yield of 53.4 pounds of honey was obtained per package. The following table gives particulars of this test:—

PACKAGE BEES

Hive No.	Weight of package bees	Date package bees arrived	Bees were hived on	Date first super given	Crop	Remarks
	lb.				lb.	
233	2	April 25	Foundation	July 8	71·25	
234	3	" 25	"	June 7	112·35	
235	2	" 25	5 Foundation 5 combs.	" 21	7·0	Swarmed.
236	3	" 25	"	" 17	98·0	
237	2	" 25	Combs	July 27	20·75	
238	3	" 25	"	June 13	78·25	
239	2	May 12	Foundation	July 8	52·75	
240	3	" 12	"	Aug. 12	8·75	Greatly weakened by sickness in July.
241	2	" 12	5 Foundation 5 combs.	July 4	51·25	
242	3	" 12	"	June 17	44·0	
243	2	" 12	Combs	July 27	31·50	
244	3	" 12	"	" 8	64·75	

HONEY CROP

Exceptionally heavy rainfall for this district during the spring and summer (May, 2.62 inches; June, 4.32 inches; and July, 5.63 inches) was unfavourable for the rapid building up of colonies.

A sickness in the bees, similar to that reported the previous season, was noticed during the last week of May and persisted until late August. Some colonies were so weakened that they only produced a short crop and four were united to other colonies. These conditions not only affected the crop but the results of the different projects conducted. All colonies had to be fed sugar syrup or honey in the comb, until the main honey-flow started on July 10. The weather conditions during August and September were much more satisfactory for the gathering of nectar from sweet clover chiefly.

The total yield of surplus honey was 2,670 pounds. The thirty-four overwintered colonies (spring count) and their increase (one colony) gave 2,030 pounds, and the twelve colonies from package bees gave 640 pounds. The honey was of light amber colour and a pronounced flavour was again noticeable, which is believed to have come from the Snowberry (*Symphoricarpus racemosus*).

The following record of a colony kept on scales during the summer gives particulars as to the honey-flow and source:—

RECORD OF COLONY ON SCALES. No. 227

Month	Number of days showing gain	Number of days of gain of 1 lb. or more	Total gain or loss per month	Average daily gain	Chief source of nectar
			lb.	lb.	
June	2	.....	−5·0	−0·51	
July	19	11	29·0	0·93	Sweet and Dutch clovers and Snowberry.
August	24	23	59·0	1·9	" "
Sept. (half)	7	7	7·75	0·51	Sweet clover.

The highest daily gain was on August 11 when 7 pounds were recorded.

SWARM CONTROL

Four colonies were treated for swarm control by the separation of brood and queen. Three of the colonies made further preparations for swarming after treatment and two of them were requeened. No swarms issued from these hives and the yield from them was considerably higher than the average for overwintered colonies.

One colony was treated by the dequeening and requeening method and this colony made no further attempt to swarm and a good yield was obtained from it.

PREPARATION FOR WINTERING

Forty-seven colonies are being wintered in outside cases. Three of these are wintering two queens, by having a bee-tight division board in the centre of the hive and a separate entrance for each half.

An attempt is being made to winter eight of the colonies in two-story hives. Four of them have only honey for stores. All colonies were weighed on September 17 and were packed in the cases between September 20 and 22, and feeding was started on September 24 and completed on October 6.

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