DOMINION OF CANADA

DEPARTMENT OF AGRICULTURE

DOMINION EXPERIMENTAL FARMS

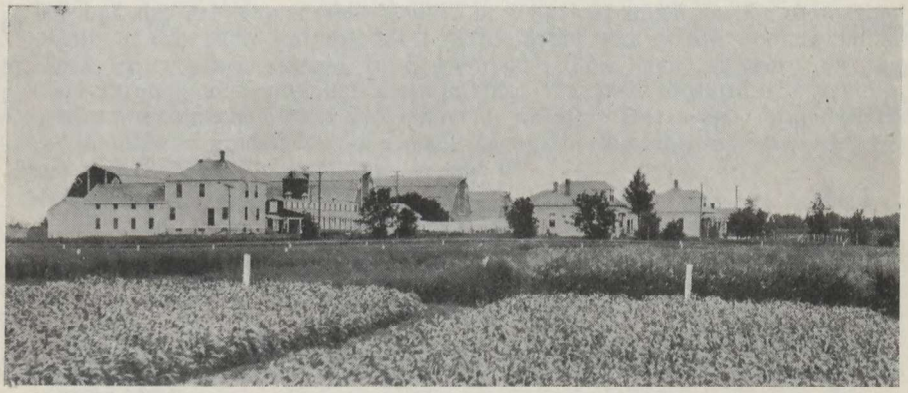
EXPERIMENTAL STATION

LACOMBE, ALBERTA

REPORT OF THE SUPERINTENDENT

F. H. REED, B.S.A.

FOR THE YEAR 1925



Live stock barns and cultural plots, Dominion Experimental Station, Lacombe, Alberta.

Printed by Authority of the Hon. W. R. Motherwell, Minister of Agriculture
Ottawa, 1926

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DOMINION EXPERIMENTAL STATION, LACOMBE, ALBERTA

SEASONAL NOTES

The season of 1925 was unusual in many respects. The snowfall during the winter of 1924-25 was very heavy with continuous low temperatures and deep snow on the ground. The spring was normal in every way. The large amount of snow melted quickly, most of the moisture being absorbed by the soil which contained very little frost as a result of the heavy protective covering of snow. The result was that farmers started spring work on the land a few days earlier than usual.

The mean temperatures of April, May, June and July were above the average, April being 4.57 degrees; May, 3.52 degrees; June, 2.10 degrees; and July, 3.21 degrees above normal. As a considerable portion of the crop of 1924 was caught in the stook by the heavy snow in the fall, these high temperatures, accompanied by unusually dry weather, during April and May, permitted farmers to get their crop threshed and their seeding completed almost as early as usual.

The heavy snows during the winter furnished considerable moisture, which, together with the warm weather, gave all winter grains, hay and pasture an excellent start and resulted in their being above the average in yield.

Cereals made an excellent start and developed good crops on summer-fallow. The stubble lands, which had no surplus moisture stored in the soil, gave very poor results as there was insufficient precipitation during the growing season to develop a normal crop.

The hot, dry growing season resulted in a harvest much earlier than usual. As a result of this early harvest, most of the grain was in the stook when the cool, showery weather started in September. This cool, showery weather continued throughout September and October. In fact, most of the grain of the district was threshed after November 1, or after freeze-up. Much of the grain of the district graded low as a result of weathering, and in some cases was so tough that the elevators would not handle it.

November was average in every way, but December was the mildest on record, the mean temperature being 11.64 degrees above the average.

The dates of farm operations will give the reader some idea of the season.

DATES OF FARM OPERATIONS

First working on land (ploughing)	April 15
Seeding wheat	" 28
Seeding oats	May 6
Seeding barley	" 2
Seeding peas	" 18
Seeding corn	" 28
Seeding sunflowers	" 25
Seeding mangolds	" 25
Summer-fallow ploughing	June 12
Cutting alfalfa, first crop	July 13
Cutting wheat	Aug. 19
Cutting oats	" 19
Cutting barley	" 25
Threshing	Sept. 23
Cutting corn	Aug. 27
Cutting sunflowers	Sept. 12
Freeze-up	Oct. 24

MONTHLY METEOROLOGICAL RECORDS FOR THE YEAR 1925

Month	Mean temperatures	Maximum temperatures	Minimum temperatures	Precipitation	Number of days on which precipitation occurred	Bright sunshine	Wind	Evaporation
	° F.	° F.	° F.	Inches		Hours	Miles	Inches
January	7·37	43·0	−33·0	0·35	6	84·5	5,189	.....
February	11·67	50·5	−30·0	0·40	5	81·2	3,790	.....
March	20·52	55·5	−32·0	0·45	5	142·1	5,524	.....
April	41·53	69·5	17·0	0·72	8	247·5	6,887	1·879
May	52·0	85·5	24·0	1·53	6	334·5	6,052	4·061
June	57·97	90·5	30·0	2·01	14	292·7	5,426	3·603
July	62·91	96·0	33·5	1·32	9	306·0	5,805	4·318
August	58·22	96·5	30·0	3·87	14	221·7	5,460	4·564
September	45·38	83·0	25·0	3·37	17	112·3	4,465	2·009
October	33·24	66·0	−11·5	0·995	8	116·1	.....	.....
November	25·12	52·0	− 7·0	1·43	5	100·0	4,602	.....
December	25·27	51·0	− 5·0	0·90	4	57·2	4,522	.....
Totals	.....	.....	.....	17·345	101	2,095·8	57,722	20·434

ANIMAL HUSBANDRY

HORSES

The horses kept at this Station numbered twenty-nine head of all ages at the close of the year. Six pure-bred Clydesdale mares, including one two-year-old filly, and two pure-bred Hackney mares, make up the pure-bred breeding females. Four of the Clydesdale mares and one Hackney had foals during the year, and two grade draft mares also raised good foals. The six draft foals were all raised and are good growthy foals; five of the six are sired by the Shire stallion, Marden Jupiter, and the sixth is a pure-bred Clydesdale and is an outstanding colt. One of the cross-bred fillies combines in an excellent manner the quality of the Clydesdale and the scale and substance of the Shire. The Hackney mare produced a fine filly foal by a Thoroughbred stallion, but unfortunately this foal died during the extremely hot period in August, of peritonitis. The yearling Shire stallion, Rising Sun L.E.S., a son of Hawton Carlton and Coxall Day Dawn, is developing well and promises to mature as a horse of immense scale and substance with plenty of quality, good action and real Shire character. At nineteen months of age he weighed 1,675 pounds in good growing condition. Eight mares, six pure-bred Clydesdale and two grades, were bred during the 1925 breeding season. At the close of the year it is quite certain that four are in foal, two doubtful and two not in foal. This Station sustained a very heavy loss on August 2 by the death of the great Shire stallion, Marden Jupiter. This horse at the time of his death was just finishing a very successful breeding season, having served 120 mares including pure-bred Shires, pure-bred Clydesdale, pure-bred Percherons and grades of all three breeds.

FEEDING POTASSIUM IODIDE

Beginning the first of March, potassium iodide was fed to the mares in foal for the prevention of joint-ill. One-half teaspoonful once in two weeks was fed to each mare, and no joint-ill or navel trouble was experienced. Similar preventative treatment is being carried on during the winter of 1925-26.

Experimental Work

Experimental work with horses during the year consisted in gathering cost data respecting the cost of horse labour and the cost of raising horses.

Project A 293—Cost of Horse Labour—was conducted in connection with ten head of work horses during the season of heavy work, and showed that it cost 4.98 cents per hour per horse.

Project No. A—294—Cost of Raising Colts—was begun in this year involving six mares and six foals. The cost of feeding the colts will be recorded until they are three years of age. The cost of feeding the mares for one year from date of foaling, or until they drop another foal, should it be less than a year, will be recorded. Any work done by the mares will be credited to them to offset feed cost, and the net cost of keeping the mares for the year will be charged against the foals. While the project will not be completed until 1928, yet the cost data from the time the foals were born until the end of 1925 will be of some value. Five of the six foals used were sired by a pure-bred Shire stallion, three, two colts and one filly, were out of pure-bred Clydesdale mares and two, one colt and one filly, from grade mares. The sixth foal is a pure-bred Clydesdale colt. The dates of foaling are as follows: April 22, May 10, June 9, 11 and 19, and July 1. The quantity and value of feeds consumed by mares and foals from foaling dates to December 31, 1925 are given in the following tabulation:—

Feed	Pounds	Cost
Sheaf green feed	9,307 at $6 per ton	$27 92
Cut green feed	229 " $7 "	0 80
Hay	815 " $24 "	9 78
Hay	4,582 " $15 "	37 36
Alfalfa	450 " $20 "	4 50
Rolled oats	7,104 " 40c. per bush.	83 60
Wheat bran	2,520 " $25 per ton	31 50
Oilcake meal	20 " $48 "	0 48
Barley (boiled)	158 " 48c. per bush.	1 58
Total cost		$197 52
Pasture for 3 months at $2 per mare per month		36 00
Total cost		$233 52
Horse labour done by mares after weaning and up to December 31: 2,655 hours at 4·98 cts		132 29
Net cost of raising foals to December 31		$101 23

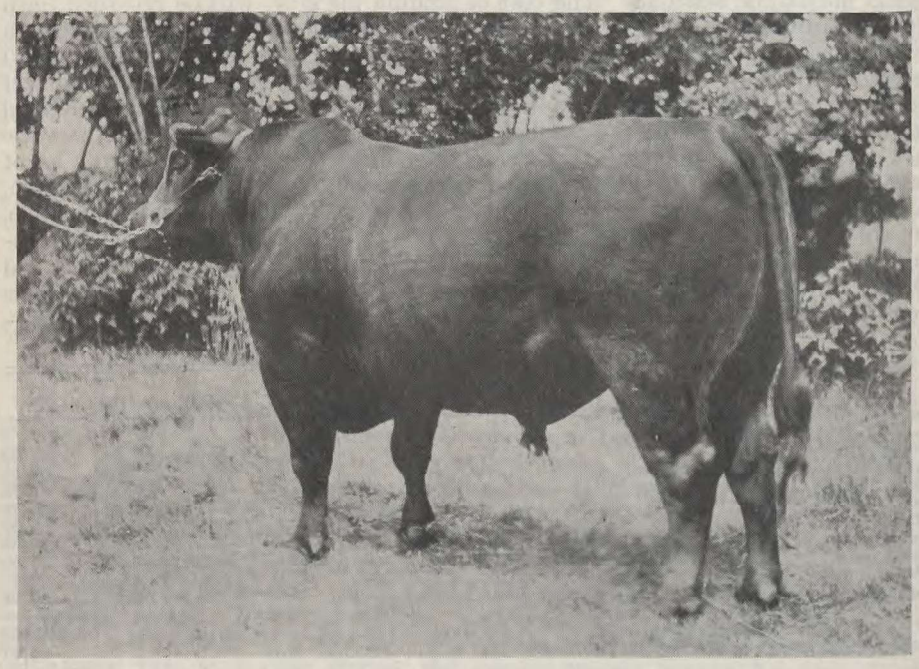
Average age of foals December 31, 1925—213 days (7 months).
Average weight of foals, December 31, 1925—743 lb.
Average net cost per head to rear to an average of 7 months—$16.87.

It will be noted that all feeds used with the exception of wheat bran and the small quantity of oilcake meal are all home-grown feeds. During the month of December the six foals consumed an average of 17 pounds green feed sheaves, 5 pounds rolled oats, 2 pounds bran per day at an average of between six and seven months of age.

In addition to the projects already mentioned in connection with horses, cost data are being gathered on the cost of wintering idle work horses. This, however, has not progressed far enough at the end of the year to make it worth while to tabulate the data. A full report of this will be available in the early spring of 1926 and will be included in the next annual report.

BEEF CATTLE

The beef cattle herd is made up entirely of pure-bred Aberdeen-Angus and numbered 88 head of all ages and sexes at the end of 1925. Five bulls including the old herd bull Eliminator of Gwenmawr 3rd, were sold at the Lacombe Bull Sale at prices ranging from $205 down to $85, striking an average of $123. Another bull was sold later in the season by private sale at $115. All were purchased by farmers in the district. Two good calves will be developed as show



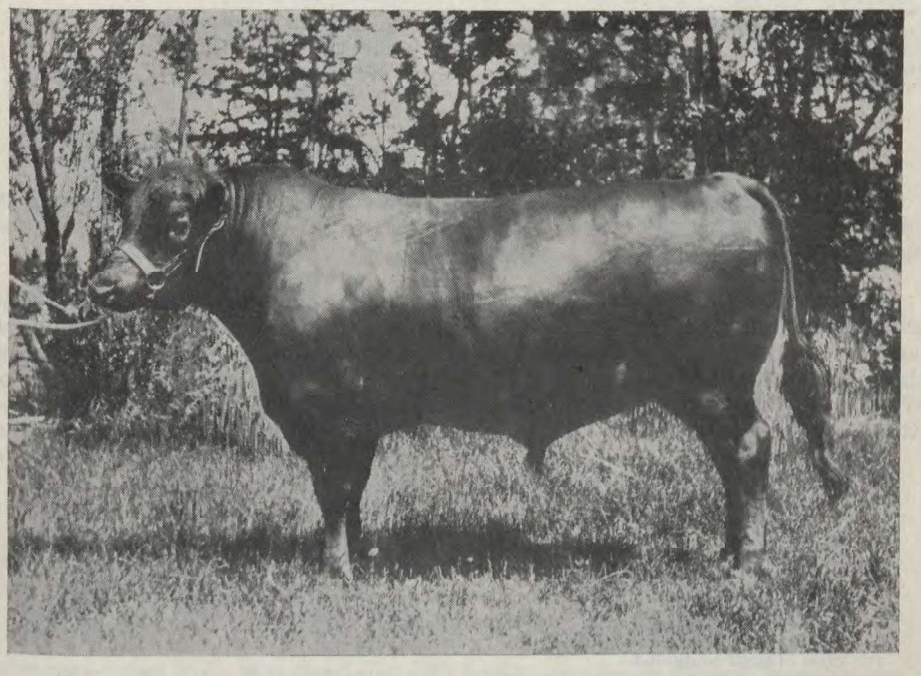
PRIDEMAN GLENCARNOCK—4TH—31949—SENIOR HERD SIRE

In just good breeding condition. Prideman Glencarnock 4th—31949—is a son of the famous $15,000 international grand champion and great sire, Blackcap Revolution. His dam is a richly bred Pride of Aberdeen. As a sire he ranks among the best.

steers; one is an exceptionally promising calf. The senior herd bull, Prideman of Glencarnock 4th, a Pride of Aberdeen bull and a son of the famous Blackcap Revolution is siring some very promising calves. The oldest of his get are yearlings and practically every one are of show calibre. A daughter of this bull was first as a senior calf at the 1925 Calgary Exhibition. The junior herd bull, Earl Eric of Glencarnock, a two-year-old Enchantress Erica bull by Eurotas of Glencarnock—No. 9449—and a grandson of the great Evreux of Harviestoun, is developing into a low-set, thick, high-quality bull of excellent breed character. A few calves have been dropped to his service and all appear to possess the character and quality looked for in the right kind of Aberdeen-Angus. As a show bull he has a good record, having been first in his class as senior calf at the 1924 Royal Show at Toronto and second at the Chicago International the same year. During the present year he was first and Junior Champion at the Calgary Exhibition, and first, Junior Champion, and reserve Grand Champion at Edmonton, the only two shows at which he was exhibited.

EXHIBITING

Aberdeen-Angus catte were exhibited at the Calgary and Edmonton Exhibitions in 1925 and made a creditable showing at both shows. The most gratifying win was senior and grand championship in bulls captured by L.E.S. Prince Eliminator, a bull bred at this Station, as was his dam, and his sire was calved



EARL ERIC OF GLENCARNOCK—32463—THE JUNIOR SIRE

Earl Eric of Glencarnock—32463—is a son of the great breeding bull Eurotas of Glencarnock—9449—and out of an Enchantress Erica dam, making him one of the choicest-bred "Enchantress Erica" bulls in service in Canada to-day. His excellent individuality is indicated by his winning first at the 1924 Royal at Toronto as a senior calf and second at the Chicago International the same year. In 1925, he was junior champion at both Calgary and Edmonton exhibitions and reserve grand champion at Edmonton.

the property of and developed at this Station. The different prizes won are as follows:—

Calgary Exhibition

Aged bull	First, senior and grand champion.
2-year-old bull	Third.
Senior yearling bull	First and junior champion.
Senior bull calf	Second.
Junior bull calf	Third.
Aged cow	Fourth.
Two-year-old heifer	Fifth.
Senior yearling heifer	First and reserve junior champion.
Junior yearling heifer	Third.
Senior heifer calf	First.
Junior heifer calf	Second and fourth.
Three, get of one sire	Second and fifth, also second in specials.
Two, progeny of one cow	Third, fifth and sixth, also third in specials.
Three calves under one year, bred and owned by exhibitor	Second.
Four calves under one year, bred and owned by exhibitor	Second.
Breeders herd, females to be bred by exhibitor	Second.

Edmonton Exhibition

Aged bull	First and reserve senior champion.
Bull, 2 years	Second.
Bull, senior yearling	First, junior and reserve grand champion.
Bull, senior calf	Second and third.
Bull, junior calf	Third.
Aged cow	Fourth.
Heifer, two-year old	Fifth.
Heifer, senior yearling	Second.
Heifer, junior yearling	Second and fourth.
Two, get of one sire	Second.
Two, progeny of one cow	Second.
Graded herd	Second.
Breeder's herd	Second.
Four calves under one year	Third.

EXPERIMENTAL FEEDING

Experimental feeding in beef cattle has been confined to the collecting of cost data respecting the cost of raising heifers to breeding age and the cost of maintaining herd bulls.

COST OF MAINTAINING BEEF BREEDING BULLS. (PROJECT A 457).—The data given in the following table show the feeds consumed, costs, weights and gains in connection with the feeding of two pure-bred Aberdeen-Angus herd bulls during the months of March, April and May, 1925. The bulls used were Eliminator of Gwenmawr 3rd—No. 17474—a mature bull and Prideman Glencarnock 4th—31949—a two-year-old bull. They were fed together in a bull-pen in the stable.

Date, commencement of test—March 1, 1925.			
Initial weight—mature bull	1,795 lb.		
2-year-old bull	1,505 lb.		
Total		3,300 lb.	
Final weight— mature bull	1,839 lb.		
2-year-old bull	1,605 lb.		
Total		3,444 lb.	
Total gain		144 lb.	
Total days fed		92	
*Average daily gain for each bull		0·78 lb.	
Value of feeds consumed—			
700 lb. sheaf green feed at $6 per ton		$ 2 10	
112 lb. cut green feed at $7 per ton		0 39	
1,210 lb. silage at $5 per ton		3 25	
966 lb. oat chop at 40c. per bushel		11 36	
727 lb. wheat bran at $32 per ton		11 63	
344 lb. oilcake meal at $48 per ton		8 25	
Total		$ 36 98	
Cost per month per head			$6 16

This project was closed on May 31 due to the fact that the mature bull was sold at the Lacombe Bull Sale, June 2nd, and the 2-year-old bull was fed a heavier ration in order to fit him for exhibition purposes.

COST OF REARING BEEF-BRED CALVES AND HEIFERS (PROJECT NO. A 375).—The cost of feeding the heifers from birth up to breeding age and the cost of feeding the dams for one year or up to next calving, if less than one year, is included under this project. Two cows, with heifer calves dropped January 1 and January 13, 1925, respectively, were selected, and on March 1, 1925, five head of yearling heifers were selected for use in the same project thus making it possible to get complete cost data in one year. The heifers and cows and calves were turned out to pasture on June 3.

* It will be noted that the mature bull gained 44 pounds during the feeding period, while the 2-year-old bull gained 100 pounds, which can be largely accounted for by growth rather than laying on of flesh.

The feeds consumed and costs are as follows:—

Yearling heifers:—				
Sheaf green feed	2,495 lb. at	$6.00 per ton	$ 7 48	
Cut green feed	224 lb. at	7.00 "	0 78	
Silage	2,848 lb. at	5.00 "	5 26	
Rolled oats	1,368 lb. at	0.40 per bushel	16 08	
Bran	1,327 lb. at	32.00 per ton	21 23	
Oil-meal	611 lb. at	48.00 per ton	14 66	
Pasture—5 months at $1 per head per month			25 00	
Total cost			$ 90 48	
Average feed cost per head				$ 18 09
Two cows and calves:—				
Sheaf green feed	6,329 lb. at	$ 6.00 per ton	$ 18 98	
Cut green feed	389 lb. at	7 00 "	1 36	
Silage	2,848 lb. at	5 00 "	7 12	
Rolled oats	1,897 lb. at	0.40 per bushel	22 32	
Wheat bran	1,480 lb. at	32.00 per ton	23 68	
Oil-meal	542 lb. at	48.00 "	13 00	
Pasture—5 months at $1 per head per month for cows			10 00	
			$ 96 46	
Total feed cost per head for heifer calves, including cost of feeding dams up to 10½ months of age				48 23
Total cost of rearing a pure-bred Aberdeen-Angus heifer to breeding age				**$66 32**

WINTERING OF BREEDING STOCK

Another project on the cost of wintering dry cows in calf was commenced in November but it is not considered that it has advanced sufficiently far at the end of the year to supply reliable figures. It might be stated, however, that these cows are kept in an open corral with a cheap board and straw shelter in the northwest corner, opening to the south, as a protection during stormy weather. These cows are fed silage twice each day and have good quality of oat straw in a feed rack before them at all times, and seem to be wintering very satisfactorily.

The two herd bulls are being kept in pens with yards adjoining; the doors of the pens are left open, except during stormy weather, and the bulls are allowed to go in and out at will. A water-tank with heater is in the yards and is accessible at all times to both bulls and cows.

DAIRY CATTLE

The dairy herd at the end of the year 1925 consists of 42 head of pure-bred Holstein-Friesians, all ages and both sexes, and two grade Holstein cows which are used mainly as nurse cows in the beef herd. The demand for dairy bulls of breeding age has exceeded our supply in spite of the fact that twelve bulls were sold during the year, all of serviceable age excepting one which was a three-months-old calf. The demand came, mainly, from districts tributary to Lacombe. However, one bull was shipped to the Lac La Biche district some 125 miles north of Edmonton, while two others were shipped east to Saskatchewan in the Saskatoon district; all of which indicates the wide demand we are having for Holstein bulls. One pure-bred cow was sold during the year as well as two grade cows and one heifer for breeding purposes to local farmers. Eight pure-bred cows and heifers were shipped to the Dominion Experimental Station, Lethbridge, as part of the foundation herd for that Station. We have had a large number of inquiries for Holstein heifers.

In March of the present year this Station suffered a heavy loss to the Holstein herd in the death of the Junior herd sire, Midnight King Jewel No.

51945. Since his death we have had a few calves dropped to his service and all, both male and female, are likely looking youngsters with great depth, constitution, quality and character. The senior herd sire, Ottawa Korndyke Keyes, No. 41184, had about completed his usefulness in our herd, for a year or two at least, so that he was loaned to a local breeder who had previously purchased a herd bull from this Station. The daughters of this bull, which completed records previous to the end of the present year, are making a creditable showing, as will be seen in a succeeding tabulation respecting the records made during the year under R.O.M. and R.O.P. tests.

One of the main features in connection with Holstein breeding enterprise is the Record of Performance, and to a less extent the Record of Merit testing. The following tabulation will give some interesting data respecting the production of cows and heifers which have completed records during the year and the production of their dams:—

Name of Cow	Age	Days in milk	Production		Sire
			Milk	Butter	
	years		lb.	lb.	
L.E.S. Korndyke Rosa No. 34367	9	365	16,402·0	685·0	Royalton Korndyke Count, No. 13237.
Dam's record	5	365	14,932·0	500·0	Inka Sylvia Beets Posch, No. 5563.
L.E.S. May Echo Mechthilde No. 70080	5	365	17,237·0	628·75	Prince Aaggie Mechthilde, No. 8482.
Dam's record	6	365	21,885·0	848·75	May Echo Lyons Segis, No. 16556.
L.E.S. Evergreen Johanna No. 56199	7	329	15,368·0	660·0	Sir Evergreen Ormsby, No. 20884.
Dam's record	6	365	14,569·0	575·0	Royalton Korndyle Count, No. 13237.
L.E.S. Princess Helbon No. 91371	4	365	20,707·0	877·50	Prince Aaggie Mechthilde, No. 8482.
Dam not officially tested.					
L.E.S. May Echo Korndyke No. 94302	2	305	12,385·0	523·75	Ottawa Korndyke Keyes, No. 41184.
Dam's record	2	365	12,992·0	511·0	Prince Aaggie Mechthilde, No. 8482.
L.E.S. Nina Mechthilde No. 94300	2	365	11,080·0	460·0	Prince Aaggie Mechthilde, No. 8482.
Dam's record	7	365	18,922·0	837·50	Royalton Korndyke Count, No. 13237.
Rosa Keyes, L.E.S. No. 107864	Jr. 2	365	13,488·0	570·0	Ottawa Korndyke Keyes, No. 41181.
Dam's record	5	365	14,932·0	500·0	Inka Sylvia Beets Posch, No. 5563.
Korndyke Johanna, L.E.S. No. 107866	2	365	16,444·0	645·0	Ottawa Korndyke Keyes, No. 41184.
Dam's record	Jr. 2	365	17,718·0	780·0	Roycroft King Spofford, No. 35904.
*L.E.S. Ianthe Aaggie DeKol	5	365	16,678·0	700·0	Prince Aaggie Mechthilde, No. 8482.
Dam's record	4	365	14,360·0	.....	DeKol Beets Segis, No. 43911.
*L. E. S. Korndyke Helbon, No. 91372	4	365	15,022·4	650·0	Prince Aaggie Mechthilde, No. 8482.
Dam not tested.					
Korndyke Evergreen L.E.S. No. 107868	2	7	411·6	21·72	Ottawa Korndyke Keyes, No. 41184.
Dam's record	5	7	487·1	26·37	Sir Evergreen Ormsby, No. 20884.
Dam's record	3	365	18,261·0	698·75	

* These cows were shipped to the Dominion Experimental Station, Lethbridge, Alberta, in August, 1925.

The record made by Korndyke Evergreen L.E.S. No. 107868 is the highest two-year-old seven-day record in the herd up to the present.

Herd Average for records completed during Year

The herd average for the ten R.O.P. records completed during the year is 15,481.1 pounds of milk and 640.0 pounds of butter; average test 3.31 per cent butter-fat. This average includes the records of four two-year-old heifers, one of which is a 305-day test, which averages 13,349 pounds of milk and 549.69 pounds of butter.

Sires and their Daughters

A survey of the results obtained from the use of the different herd sires in the Holstein herd from the standpoint of the production of their daughters brings out some interesting comparisons as well as some valuable data. The sires to be discussed are Royalton Korndyke Count No. 13237, Sir Evergreen Ormsby No. 20884, Roycroft King Spofford No. 35904, Prince Aaggie Mechthilde No. 8482, and Ottawa Kordyke Keyes No. 41184.

Royalton Korndyke Count No. 13237—is a son of Rag Apple Korndyke 5th (67210). During the period he was used in this herd he sired five good producing daughters as follows:—

Name of daughter	Age	Milk	Butter	Days
	years	lb.	lb.	
L.E.S. Nina Gem Lutske No. 34364	7	18,922·0	837·50	365
	9	514·5	24·60	7
L.E.S. Korndyke Rosa Echo No. 42578	5	19,244·0	776·25	365
	7	500·3	20·67	7
L.E.S. Royalton Korndyke Star No. 42578	5	18,653·0	748·75	365
L.E.S. Korndyke Rosa No. 34367	9	16,402·0	685·0	365
	8	445·8	21·76	7
L.E.S. Daisy Johanna No. 31601	6	14,569·0	575·0	365
	7	405·9	22·39	7

Sir Evergreen Ormsby No. 20884—is a son of King of the Ormby's No. 14959 by Sir Admiral Ormsby (4171). His dam is Evergreen March 3rd No. 12659 with a 5-year-old 7-day record of 560.5 pounds of milk and 25.31 pounds of butter. Her sire is Prince Posch Pietertje C. No. 4164, sire of 17 tested daughters and 13 proven sons. Only two daughters of Sir Evergreen Ormsby have been tested in this herd.

Name of daughter	Age	Milk	Butter	Days
	years	lb.	lb	
L.E.S. Evergreen Johanna No. 56199	5	16,014	697·5	349
	5	509·7	27·72	7

The maternal grand-dam and paternal grand-sire are both sired by Sir Admiral Ormsby, and she is a daughter of L.E.S. Daisy Johanna No. 31601, referred to above.

L.E.S. Evergreen Rosa No. 56204	3	18,261	698·75	365
	5	487·1	26·37	7

This cow is a daughter of L.E.S. Korndyke Rosa No. 34367, referred to under the first sire mentioned, and a granddaughter of Lawncrest Rosa Echo No. 15021, a daughter of Inka Sylvia Beets Posch No. 5563, and a maternal sister to May Echo Sylvia.

PRINCE AAGGIE MECHTHILDE No. 8482.—a son of Prince DeKol Posch No. 3858, sire of 19 tested daughters and 11 proven sons. Prince Aaggie Mechthilde is recognized as one of Canada's greatest sires. Before coming into this herd he sired many high-producing daughters, notably Calamity Snow Mechthilde, 25,424 pounds of milk, 1,133.75 pounds of butter in 365 days and 30.20 pounds butter in 7 days; Calamity Snow Mechthilde 2nd 25,598 pounds of milk, 1,108.75 pounds of butter in 365 days and 32.70 pounds of butter in 7 days; and Mechthilde Christmas Gift No. 32198, 24,144.0 pounds of milk, 1,136.25 pounds of butter in 365 days and 33.98 pounds of butter in 7 days.

Daughters sired in this herd are as follows:—

Name of daughter	Age	Milk	Butter	Days
	years	lb.	lb.	
L.E.S. Aaggie Mechthilde Echo No. 56200	4	15,563·0	695·0	345
	6	444·2	24·58	7
This cow is a maternal sister to L.E.S. Korndyke Rosa No. 34367 and L.E.S. Evergreen Rosa No. 56204 already referred to.				
L.E.S. Princess Helbon, No. 91371	2	17,839·0	775·0	365
	4	20,707·0	877·5	365
L.E.S. May Echo Mechthilde No. 70080	2	12,992·0	511·0	365
(See table of R.O.P. records for dam's record.)	3	477·4	21·75	7
	5	17,237·0	628·75	365
L.E.S. Ianthe Aaggie DeKol No. 70079	2	14,095·0	646·25	365
(See table of R.O.P. records for dam's record.)	5	16,678·0	700·0	365
L.E.S. Royalton Aaggie No. 91369	2	14,049·0	616·25	365
This cow is a daughter of L.E.S. Royalton Korndyke Star, a daughter of Royalton Korndyke Count.				

ROYCROFT KING SPOFFORD, No. 35904—son of King Segis Alcartra Spofford, No. 20352, sire of 41 tested daughters and 16 proven sons, by King Segis Pontiac Alcartra, No. 79602 A. His dam is a daughter of Pontiac Korndyke Het Loo, No. 17309, sire of 50 tested daughters and 9 proven sons, by the great Pontiac Korndyke No. 25982 A. This bull was in the herd only a short time but sired some of the best producers—

Name of daughter	Age	Milk	Butter	Days
	years	lb.	lb.	
L.E.S. Johanna Alcartra No. 75007	2	17,718·0	780·0	365
	3	418·3	27·56	7
The yearly record was completed in 1923, and was at that time the champion 2-year-old butter record in the Prairie Provinces. This cow is a daughter of L.E.S. Evergreen Johanna, No. 56199.				
L.E.S. Evergreen Gretchen No. 75005	1½	13,628·0	561·0	365
	3	299·2	17·83	7
This cow is a daughter of Evergreen Rosa No. 56204.				
L.E.S. May Echo Gretchen, No. 75006	2	16,068·0	662·5	365
L.E.S. Nina Alcartra No. 91370	2	18,185·0	702·5	365
This cow is a daughter of Nina Gem Lutske No. 10674, and a maternal sister to L.E.S. Nina Gem Lutske No. 34364. Her 2-year-old record, when made, was the champion milk record for the Prairie Provinces.				

OTTAWA KORNDYKE KEYES No. 41184—His sire's dam is a daughter of Inka Sylvia Beets Posch, No. 5563, and the sire of his dam is a son of the great Pontiac Korndyke No. 25982 A. He is registered under the advanced registration of bulls. His daughters which have freshened, have made the following records:—

Name of daughter	Age	Milk	Butter	Days
	years	lb.	lb.	
L.E.S. May Echo Korndyke No. 94302	2	12,385·0	523·75	305
	2	396·9	15·28	7
This cow is a daughter of L.E.S. May Echo Mechthilde No. 70080.				
Rosa Keyes, L.E.S. No. 107864	2	13,448·0	570·0	365
	2	353·3	16·72	7
This cow is a daughter of the foundation cow Lawncrest Rosa Echo No. 15021.				
Korndyke Johanna, L.E.S. No. 107866	2	16,444·0	645·0	365
	2	380·2	16·37	7
This cow is a daughter of L.E.S. Johanna Alcartra No. 75007.				
Korndyke Evergreen L.E.S.	2	411·6	21·72	7
This cow is a daughter of L.E.S. Evergreen Rosa No. 56204.				

The foregoing summary will indicate the results obtained from the use of the different herd sires which have tested daughters in the herd.

Other sires that have been used in the herd are Midnight King Jewel No. 51945, whose daughters are not of breeding age; L.E.S. Prince Echo Mechthilde No. 41325, a son of Prince Aaggie Mechthilde and Lawncrest Rosa Echo; and L.E.S. Prince Johanna No. 43304, a son of Prince Aaggie Mechthilde and L.E.S. Daisy Johanna. The last two mentioned bulls have one daughter each in the herd both of which are good producers.

ACCREDITED HERD

The herd at this Station, both dairy and beef, obtained the Accredited Herd Certificate in 1924 and passed the second clean T.B. test following accreditation in the fall of 1925.

SUNFLOWER SILAGE VS. SUNFLOWER SILAGE AND CUT GREEN FEED FOR MILK PRODUCTION

The feeding periods in the above test were for twenty days. Beginning February 22, 1925, thirteen cows were fed sunflower silage and cut green feed, mixed in the proportion of approximately one pound cut green feed to six pounds of silage, for twenty consecutive days. During the next twenty days sunflower silage was fed, and for the third twenty-day period the mixture of cut green feed and sunflower silage was fed. The average consumption of feeds during the first and third periods was compared with the feed consumption during the second period. A comparison of the milk and butter-fat production was made in the same way. The cows were milked three times per day, and a butter-fat test was made at the beginning and end of each period. The results are as follows:—

Table No. 1

Sunflower Silage and Cut Green Feed Test

		Feeding Periods	
		Average 1st and 3rd Sunflower silage and cut green feed	2nd Sunflower silage
Roughage—			
Sunflower silage	Lb.	5,081	7,786
Cut green feed	"	852	.....
Sheaf green feed	"	1,468	1,488
Alfalfa hay	"	3,609	3,214
Total roughage	"	11,010	12,488
Meal—			
Oat chop	"	1,618	1,258
Bran	"	1,295	1,012
Barley	"	650	506
Oilcake meal	"	650	506
Total meal	"	4,213	3,282
Total nutrients	"	7,477·43	6,208·33
Nutritive ratio		1 : 3·87	1 : 3·68
Milk and fat produced—			
Milk	Lb.	10,159	9,913·2
Fat	"	337·29	336·94
Test (% fat)	%	3·32	3·4
Feeds consumed per 100 lb. milk produced—			
Roughage	Lb.	108	126
Meal	"	41	33
Cost to produce 100 lb. milk	$	1·13	0·97
Cost to produce 1 lb. fat	cts.	34	28·5
Average quantity of feed consumed per cow per day—			
Roughage	Lb.	42·4	48·0
Meal	"	16·2	12·6
Average quantity of milk produced per cow per day		39·0	38·1

The ration containing the mixture of sunflower silage and cut green feed produced 2.5 per cent more milk and 0.4 per cent more butter-fat on slightly less roughage, but required more concentrates, resulting, in the final analysis, in more costly production, as will be seen in the tabulation. The mixture of silage and green feed seemed slightly more palatable, but in spite of this the cows consumed more of the straight silage. (Project A. 575.)

NOTE.—For feed prices and analysis of feeds, see under Project A. 577.

NUTRIENTS FED UNDER PROJECT NO.A 575—SUNFLOWER SILAGE AND CUT GREEN FEED

Average	Dry matter	Protein	Fat	Carbo-hydrates	Fibre	Ash	Total Nutrients
	lb.	lb.	lb.	lb.	lb.	lb.	lb.
First and third periods—							
Sunflower silage (5,081 lb.)	859·70	119·91	51·31	295·71	234·23	158·52	529·06
Cut green feed (852 lb.)	722·58	56·32	31·34	373·35	214·02	47·46	500·18
Sheaf green feed (1,468 lb.)	1,245·01	97·03	54·17	643·28	368·86	81·77	862·19
Alfalfa hay (3,609 lb.)	3,298·63	537·74	119·01	1,345·15	1,023·35	310·37	2,150·66
Oat chop (1,618 lb.)	1,469·04	200·63	71·19	964·33	176·36	56·63	1,325·14
Bran (1,295 lb.)	1,164·20	207·20	56·98	695·41	122·02	81·58	1,030·81
Barley (650 lb.)	589·55	74·75	13·65	453·70	29·90	17·55	559·16
Oilcake meal (650 lb.)	587·6	239·85	18·85	235·95	56·55	36·40	518·21
N.R. 1 : 3·87.	9,936·31	1,533·43	416·50	5,006·88	2,225·29	790·28	7,477·43
Second period—							
Sunflower silage (7,786 lb.)	1,317·39	183·75	78·64	453·14	358·93	242·92	813·83
Sheaf green feed (1,488 lb.)	1,261·97	98·36	54·91	652·04	373·78	82·88	873·95
Alfalfa hay (3,214 lb.)	2,937·60	478·89	73·92	1,198·82	909·56	276·40	1,844·03
Oat chop, (1,258 lb.)	1,141·26	155·99	55·35	751·77	137·12	34·03	1,032·30
Bran (1,012 lb.)	181·15	161·90	44·53	543·44	96·14	63·86	805·53
Barley (506 lb.)	458·94	58·19	10·63	353·19	23·28	13·66	435·30
Oilcake meal (506 lb.)	457·42	186·71	14·67	183·68	44·02	28·34	404·30
N.R. 1 : 3·68.	7,755·73	1,323·79	332·65	4,136·08	1,942·83	742·09	6,208·33

ANALYSIS OF SUNFLOWER SILAGE AND OAT GREEN FEED*

Lab'y No.	Material	Fresh material							Dry material						
		Moisture	Protein		Fat	Carbohydrates	Fibre	Ash	Protein		Fat	Carbohydrates	Fibre	Ash	
			Albuminoids	Non-Alb's					Albuminoids	Non-Alb's					
79462	Sunflower silage (Mammoth Russian)	83·08	2·07	0·29	1·01	5·82	4·61	3·12	12·27	1·65	5·99	34·42	27·26	18·41	Acidity 1·16
79465	Oat green feed (Banner)	15·19	6·61		3·69	43·82	25·12	5·57	.....	.....	.....	.....	.....	.....	.....

*Analysis made by Division of Chemistry, Central Experimental Farm, Ottawa.

THE ANALYSIS OF OTHER FEEDS USED IN PROJECT 575*

Kind of Feed	Moisture	Protein	Fat	Carbohydrates	Fibre	Ash
Prairie hay	6·5	8·0	2·6	44·7	30·5	7·7
Alfalfa hay	8·6	14·9	2·3	37·3	28·3	8·6
Oat chop	9·2	12·4	4·4	59·6	10·9	3·5
Bran	10·1	16·0	4·4	53·7	9·5	6·3
Barley	9·3	11·5	2·1	69·8	4·6	2·7
Oilcake meal	9·6	36·9	2·9	36·3	8·7	5·6

* Henry and Morrison: "Feeds and Feeding."

COST OF RAISING DAIRY CALVES AND HEIFERS

For this trial two heifer calves, a pure-bred born January 6, 1925, and a high-grade born February 5, 1925, were selected. In order to get complete data in one year, two heifers approximately one year older were also selected and put on test March 1, 1925. These two heifers were carried to October 31, or until they reached serviceable age. The first mentioned calves were carried on the test until their average was equal to that of the second pair of heifers on March 1, 1925.

Initial weight of calves at birth (average)	lb. 70
Final weight of calves	" 945
Gain	" 875
Average daily gain per head during period	" 1·52
Average age at conclusion of test (months)	18¾

Feeds consumed and costs:—

Whole milk, 1,100 lbs. at $1.50	$16 50
Skim-milk, 8,874 lbs at 20 cts	17 75
Alfalfa, 673 lbs. at $18.00	6 06
Sheaf green feed, 1,494 lbs. at $6.00	4 48
Silage, 3,051 lbs. at $5.00	7 63
Hay, 124 lbs. at $15.00	0 93
Oat chop, 1,452 lbs. at 40c	17 04
Wheat bran, 721 lbs. at $32.00	11 54
Oilcake meal, 32·5 lbs. at $48.00	0 78
	$82 71
Five months pasture for two heifers at $1 per head per month	10 00
Total cost	$92 71
Average cost per head to raise a dairy heifer to breeding age (18¾ months)	$46 35

COST OF REARING DAIRY BULLS AND BULL CALVES

This project was commenced on March 1, 1925. Two bulls born September 1 and September 8, 1924, respectively were selected, making their average age at the beginning of the test 177 days, or just under 6 months. Since the cost of rearing bulls and heifers are practically the same up to this age, the cost data from Project A 59 respecting heifer calves was used as the cost of rearing the bulls for the first six months.

Average initial age of bulls	177 days
Average initial weight	490 lb.
Average age at conclusion of test	14½ mos.
Average weight at conclusion of test	1,040 lb.
Average gain per head in 439 days	550 lb.
Average daily gain per head between 6 and 14½ months of age	1·25 lb.

Feeds consumed by bull from six months of age to 14½ months:—

Skim-milk, 5,938 lb. at $0.20 per cwt	$11 87
Oilcake meal, 55 lb. at $48.00 per ton	1 32
Wheat bran, 788 lb. at $32.00 per ton	12 60
Oat chop, 1,196 lb. at 40c. per bush	14 12
Alfalfa, 779 lb. at $18.00 per ton	7 00
Hay, 253 lb. at $15.00 per ton	1 90
Sheaf green feed, 1,636 lb. at $6.00 per ton	4 90
Cut green feed, 70 lb. at $7.00 per ton	0 25
Silage, 3,725 lb. at $5.00 per ton	9 31
	$63 28

Cost of raising heifer calves to six months of age, the data of which are used in connection with the cost or rearing bulls:—

Whole milk, 510 lb. at $1.50 per cwt	$ 7 65
Skim-milk, 4,984 lb. at 20c. per cwt	9 97
Wheat bran, 110 lb. at $32.00 per ton	1 76
Oat chop, 361 lb. at 40c. per bush	4 20
Alfalfa, 174 lb. at $18.00 per ton	1 57
Hay, 124 lb. at $15.00 per ton	0 93
Sheaf green feed, 71 lb. at $6.00 per ton	0 21
Silage, 344 lb. at $5.00 per ton	0 86
Total cost for heifer calves up to six months of age	$27 15
Total cost to raise two bulls from birth to serviceable age (14½ months)	$90 43

These bulls were in good condition at the conclusion of the test and were sold for service in small grade herds. (Project A. 456.)

SHEEP

The grading-up project with six breeds of sheep that has been conducted at this Station since 1917 was concluded in April of this year by the exhibiting and sale of lots of five wether lambs representing each of the six breeds at the Edmonton Spring Show April 13-18, 1925. Thirteen different lots contested both the live and dressed classes and lots belonging to this Station were placed as follows in the open classes:—

On the hoof—1st (Cheviots) 9th (Shropshires)
Carcass Competition—5th (Cheviots), 7th (Shropshires)
9th (Corriedales), 10th (Hampshires)
11th (Leicesters) and 12th (Oxfords).

Considering the six lots of lambs from this Station aside from other exhibits they ranked as follows:—

On the hoof	*In the carcass*
Cheviot	Cheviot
Shropshire	Shropshire
Corriedale	Corriedale
Hampshire	Hampshire
Oxford	Leicester
Leicester	Oxford

As a market lamb the Cheviot has been a fairly consistent winner, as shown by the following listings of three years' winnings at the Edmonton Spring Show, at which all judging is based on market requirements.

Breed	1923 placings		1924 placings		1925 placings	
	Hoof	Carcass	Hoof	Carcass	Hoof	Carcass
Cheviot	1	3	1	5	1	1
Shropshire	4	1	2	4	2	2
Oxford	2	2	3	3	5	6
*Corriedale	.....	.....	5	1	3	3
Hampshire	3	4	4	4	4	4
Leicester	5	5	6	5	6	5

*NOTE.—The Corriedales were exhibited only in 1924 and 1925.

The Cheviot again demonstrated its qualities as a market lamb by three firsts on the hoof and one in the carcass. The Shropshires ran a close second to the Cheviot. The Corriedales stood up well in the lamb classes notwithstanding the fact that they are regarded as a mutton sheep, hence the second year is allowed for further maturity and finishing under their native environment in New Zealand and Australia. The Oxford and Hampshire stand about even in these tests, with the Leicester consistently last. During the three years the lambs were fed and cared for by the same shepherd, ran on the same range, and conditions generally were practically identical with the exception of the uncontrollable seasonal variations.

SWINE

The year of 1925 has been marked by a revival in the swine industry. The natural reaction to the heavy sales of brood sows in 1924 has been experienced in that there has been during the fall of 1925 an almost unprecedented demand for breeding stock of both sexes and of almost every breed. The greatest demand has been for Yorkshires, and was far in excess of the supply. Eighty head of breeding stock of the three breeds, Yorkshire, Tamworth and Berkshire of both sexes were sold during the year—made up as follows:—

32 Yorkshire sows and 22 Yorkshires boars.
15 Tamworth sows and 3 Tamworth boars.
1 Berkshire sow and 7 Berkshire boars.

Several head of yearling sows were sold as breeding stock as the herd was considerably reduced during the year.

At the end of 1925, the breeding herd was made up of 13 Yorkshire sows and 3 Yorkshire boars; 9 Tamworth sows and 2 Tamworth boars; 5 Berkshire sows and 1 Berkshire boar and three cross-bred gilts, making a total of 30 head of sows and 6 boars. This is the smallest number of breeding sows that has been kept at this Station in any one year for some time. However, all three breeds were severely culled so that they consist of uniform individuals that represent the standard breed type and character of each breed.

The three cross-bred gilts, one Berkshire-Yorkshire and two Berkshire-Tamworths are being kept for the purpose of carrying the cross-breeding of hogs to the second generation.

No breeding stock was purchased during the year as the same herd boars used during the 1924-1925 breeding season reproduced satisfactorily and will be suitable for the 1925-1926 season's service.

FARROWING RESULTS

Litters are farrowed practically every month in the year at this Station. As a rule the early winter—January and February—litters are raised very successfully, but the very extreme winter weather of these months in 1925 caused severe loss in young pigs farrowed at that time. This will explain, in part, the heavy mortality in January and February litters as shown in the tabulation of the farrowing results.

FARROWING STATEMENT FOR 1925

—	Spring Litters				Fall Litters				Total Fall and Spring Litters				Herd Totals
	Yorks	Tams	Berks	Cross-breds	Yorks	Tams	Berks	Cross-breds	Yorks	Tams	Berks	Cross-breds	
Number of litters farrowed in 1925	22·0	15·0	9·0	4·0	7·0	6·0	4·0	7·0	29·0	21·0	13·0	11·0	74·0
Total number of pigs farrowed	238·0	103·0	83·0	40·0	68·0	41·0	30·0	61·0	306·0	144·0	113·0	101·0	664·0
Number of pigs per litter (average)	10·8	6·9	9·2	10·0	9·7	6·9	7·5	8·7	10·5	6·9	8·7	9·2	9·0
Number of pigs per litter weaned (average)	5·8	4·0	5·1	7·25	5·3	6·0	6·25	5·6	6·0	4·6	5·5	6·2	5·56
Per cent of pigs farrowed per litter weaned (average)	53·7	58·0	55·4	72·5	54·6	87·0	83·3	64·4	57·1	66·7	63·2	67·4	61·8

The cross-bred litters consisted of two Berkshire-Yorkshires; three Berkshire-Tamworths; four Yorkshire-Tamworths and two Tamworth-Berkshires.

The low percentage of pigs raised is partly due, as already stated, to the losses from early litters caused by the extremely cold weather; as an example, in the month of January, six Yorkshire litters were farrowed with a total of 77 pigs, of which only 24 or 31 per cent were raised to weaning age. Another point in this connection is that all the Tamworth spring litters with the exception of two were from gilts. Very few pigs were farrowed dead so that they are not taken into consideration in these calculations.

EXPERIMENTAL FEEDING

In interpreting the results from experimental feeding trials an attempt has been made to make the tabulations as brief as possible. The points which are of direct interest and value to farmers are:—

(1) Kinds and amounts of feeds consumed.
(2) Amount of feed required to produce 100 pounds of gain.
(3) Daily gains.
(4) Season of year in which test was conducted.
(5) Cost per 100 pounds of gain.

The quality of oats and barley from both the 1924 and 1925 crop was very mixed and variable, and for this reason the amounts of grain consumed in some lots seem somewhat abnormal as compared to feeding results from previous years.

EXPERIMENTAL PIG FEEDING—TABLE 1

PROJECT No. A156—Comparison of breeds and crosses in feeding characteristics.
OBJECT—To determine the difference, if any, in economy of gains made by the different breeds and crosses.
PROCEDURE—Uniform lots of Yorkshires, Tamworths, Berkshires and Berkshire-Tamworth cross-breds were selected and fed identical rations.

—	Pure-bred York No. 30	Pure-bred York No. 14	Pure-bred York No. 39	Pure-bred Tam No. 1	Cross-bred Berk. and Tam.	Pure-bred Berk-shire
Number of pigs in lot	10	9	9	10	9	10
Date commencement of test	June 13..	June 13..	June 13..	June 13..	July 8..	June 13..
Age of pigs at commencement of test Dys.	54	56	56	61	66	70
Initial weight (av. per pig) lb.	35·0	35·0	35·5	36	49·7	36·7
Days on test	112	112	112	112	137	131
Final weight (average per pig) lb.	176·4	184·0	189·1	179·3	208·4	179·1
Per cent of lot bacon type %	78·0	80·0	90·0	70·0	.....	30·0
Average daily gains per pig lb.	1·26	1·3	1·35	1·20	1·46	1·11
Meal required to produce 100 lb. gain	425·0	404·0	360·0	343·3	383·0	483·0
Feed cost per 100 pounds gain $	5 62	5 33	4 61	4 48	5 09	6 61
Feed consumed per head during feeding period of each lot						
Oats Av. lb.	292·0	341·5	330·7	273·7	287·8	347·7
Barley Av. lb.	271·5	194·4	181·7	192·5	241·6	295·5
Shorts Av. lb.	29·4	26·2	23·4	21·0	24·1	35·6
Tankage Av. lb.	7·9	7·2	6·0	4·7	5·6	9·5

The cost of grain is determined on the following prices: oats, 40c.; barley, 70c.; tankage, $45; shorts, $27.

It will be noted that pure-bred lots were practically the same age.

The three lots of Yorkshires were full litters in each respective lot, all by the same sire.

The Tamworth lot was made up of eight pigs from one litter and two from another litter by the same sire.

The cross-bred lot was sired by a Berkshire boar and all out of the same Tamworth sow.

The Berkshire lot was made up of eight pigs from one litter and two from another litter by the same sire.

An analysis of the results will show that the pure-bred Tamworths made the most economical gains during the feeding period while the cross-breds made the highest average daily gains.

A comparison of the three lots of Yorkshires shows the variation that occurred in "meal required to produce 100 pounds of gain" in different lots, all by the same sire. This indicates the difference that existed in the three sows, which from all outward appearance were good-type Yorkshire sows. Both numbers 30 and 39 Yorkshire sows were good mothers and splendid milkers. The former was a mature sow and the latter a gilt, by an imported boar, with her first litter. Yorkshire sow Number 14 was a good sow, better than the mother, and a good milker. The Tamworth, Berkshire, and cross-bred sows litters were from mature sows.

All lots were weaned at eight weeks of age and were subsequently fed in cereal pasture lots adjoining each other. The Yorkshire lots consumed more pasture than the other lots; so much so that during the latter part of the feeding period there was very little pasture available for the Yorkshire groups. Portable cabins in each lot provided shelter. In the pure-bred Yorkshire and Tamworth

lots, the male pigs were raised as boars; the sows and boars being separated and placed in adjoining lots when about four months of age. The grading was done, when the lots were six months of age by an official swine grader of the Dominion Live Stock Branch.

EXPERIMENTAL PIG-FEEDING—TABLE 2

PROJECT—Barley *vs* hulless barley for finishing pigs on self-feeder.
OBJECT—To determine if hulless barley will produce more economical gains than common barley.

—	Lot No. 29 Common barley	Lot No. 30 Hulless barley
Number of pigs in lot	10	10
Initial weight per head ..... Av. lb.	87·5	89·1
Weight at end of test ..... Av. lb.	134·3	143·8
Days on test (Commencing Nov. 15–24) ..... dys.	54·0	54·0
Daily gain per head ..... Av. lb.	·86	1·01
Meal consumed per head per day ..... Av. lb.	5·91	5·94
Meal required to produce 100 pounds gain ..... lb.	619·00	533·00
Feed cost per 100 pounds of gain ..... $	8 60	7 40
Meal consumed per head during feeding period		
Barley	226·1	.....
Hulless barley	.....	227·3
Oats	63·6	64·4

Cost of gain based on:—Oats at 40c. per bushel.
Barley at 70c. per bushel of 48 pounds.

This test was continued through the stormy and extremely cold weather until the supply of hulless barley was exhausted. In spite of the good gains we have had under outside feeding conditions during average winter weather, it will be noted that these pigs made slow and expensive gains, supposedly largely due to the extreme weather conditions.

At the conclusion of the 54-day feeding period, these lots were put in inside pens for finishing where they made almost phenomenal gains, going as high as 3 pounds per day per head for a period of one week. As, before stated, the hulless barley was all fed out at the end of the 54-day period, and these lots were finished on common barley.

Another test comparing barley with hulless barley was conducted in the fall of 1925, beginning November 18 and concluding December 31. Five pure-bred Yorkshire barrows were used in each lot and the results are as follows:—

EXPERIMENTAL PIG FEEDING—TABLE 2A

—	Lot No. 1 Barley	Lot No. 2 Hulless Barley
Number of pigs in lot	5	5
Initial weight per head (average) ..... lb.	100	119
Weight at end of test ..... "	138·8	157·8
Days on test (commencing November 18) ..... days	44	44
Daily gains per head (average) ..... lb.	0·90	0·90
Meal consumed per head per day—		
Barley ..... "	5·53	.....
Hulless barley ..... "	.....	6·00
Oat chop (total lbs.)	.....	140
Meal required to produce 100 lb. gain ..... lb.	633·0	757·7
Feed cost per 100 pounds gain ..... $	6·33	9·32

Cost of gain based on—Barley at 48c. per bushel, or 1c. per lb.
Hulless barley at 70c. per bushel, or 1¼ c. per lb.
Oats at 34c. per bushel, or 1c. per lb.

The chemical analyses of the barley and hulless barley are as follows:—

—	Moisture	Protein	Fat	Carbo-hyd's.	Fibre	Ash
Barley	13.71	10.18	2.94	63.42	5.41	2.33
Hulless barley	15.55	14.45	3.21	61.85	3.17	1.77

An analysis of these results will show a very unusual occurrence in that the daily gain and total gains were exactly the same in both lots. The feed costs of gains are decidely against the hulless barley which is not consistent with results obtained during the winter of 1924-1925 on the same feeds. For some reason the hulless barley was not palatable, making it necessary to add 20 per cent of oat chop at the beginning of the feeding period. The feeding of oat chop was continued for 18 days after which the pigs ate the hulless barley satisfactorily. The hulless barley had a slightly laxative effect on the hogs which undoubtedly accounts to some extent for the expensive gains.

Both lots were fed outside in adjoining lots with well-banked portable cabins for sleeping-quarters. Small runs 12 feet by 24 feet adjoined each cabin which provided space for limited exercise, and the feed-trough.

EXPERIMENTAL PIG FEEDING—TABLE 3

OBJECT—To determine the effect of minerals upon growing pigs

—		Lot No. 1 Grain alone	Lot No. 2 Grain and minerals
Number of pigs in lot		8	10
Days on test (commencing January 12, 1925)	days	95	95
Initial weight per head (average)	lb.	66·8	64·3
Final weight per head (average)	"	165·0	174·0
Gain per head (average)	"	98·2	109·7
Gain per head per day (average)	"	1·03	1·15
Feed requirement per one pound of gain (average)	"	5·14	3·35
Feed consumed during period on test—			
Barley	lb.	2,365·0	1,956·0
Oats	"	1,059·0	1,095·0
Wheat	"	618·0	628·0

It will be noted that the hogs in this test (cross-bred Yorkshire-Berkshire) which received minerals made 11.5 pounds greater gain per head during the feeding period of 95 days. The amount of meal required to produce 100 pounds of gain is decidedly in favour of the mineral-fed group. Both lots were self-fed outside and had well-banked portable cabins for shelter. Two pigs in the no-mineral group died during the course of the experiment. The feeding-lots and cabins adjoined each other. The mineral mixture fed was: Soft coal, 185 pounds; lime, 5 pounds; salt, 8 pounds, sulphur, 2 pounds.

EXPERIMENTAL PIG-FEEDING—TABLE 4

Effect of oat hulls on pig-feeding

—	Lot No. 1 Oat chop hulls removed	Lot No. 2 Oat chop
Date test commenced	June 18	June 18
Date test finished	Oct. 22	Oct. 22
Number of hogs in each lot	10	10
Average age of pigs at beginning of test ..... days	60	60
Average initial weight per pig ..... lb.	28·4	27·8
Average final weight per pig ..... lb.	190·6	147·3
Average gain per head ..... lb.	162·2	119·5
Number of days on test ..... days	127	127
Average daily gain per head ..... lb.	1·28	0·94
Feed required to produce 100 pounds of gain: Oat chop ..... lb.	266·5	484·2
Cost of feed per 100 pounds of gain ..... $	3 96	5 70

NOTE.—The cost of gain under lot No. 1 is based on the estimate that 20% by weight of the oat chop was removed as hulls in the sifting process, therefore the feed requirement per 100 pounds of gain is increased by 20 per cent for the purpose of calculating the cost of amount of oat chop actually used.

Two uniform lots of hogs were selected—one lot was fed oat chop and the second lot was fed oat chop with the hulls removed. The same protein supplements were used in each lot and will not be considered in the calculations. Lot Number 1 was made up of 9 pure-bred Tamworths and 1 pure-bred Yorkshire. Lot Number 2 consisted of 10 pure-bred Tamworths. The weights, gains and amount of oat chop consumed respecting both lots are given in table 7.

It should be explained that at the conclusion of the test on October 22, lot number 1 was finished and ready for market, whereas lot number 2 had to be carried on a barley ration until December 3 to be finished. On this date the average weight of lot No. 2 was 175.4 pounds. From October 2 to December 3 they consumed 2,665 pounds of barley chop and made a total gain of 281 pounds, or a feed requirement of 948.4 pounds of barley per 100 pounds of gain for the last 281 pounds of gain made by the lot of 10 hogs which had been fed oat chop from weaning at an average age of 60 up to an average age of 187 days.

The amount of labour involved in the sifting of oat chop by hand prohibits the following of this practice where large numbers of hogs are fed unless some mechanical device can be used for this purpose. Hulless oats is the logical feed to use in the weaning ration where middlings or shorts are not available, but during the season of 1925, the hulless oat crop was practically a failure at this Station.

This test, however, is quite in line with the results obtained in 1924 from the use of oat chop with hulls removed and hulless oats as compared to straight oat chop. Results obtained up to date seem to indicate that oat hulls as contained in oat chop are detrimental to young pigs during the weaning period and for the entire feeding period of the market hog when the oat ration is continued throughout the entire feeding period. It remains, however, for these results to be further confirmed before they can be accepted as final conclusions, and also it remains to be proven as to whether or not oat chop if fed alone *only* during the weaning period (after which it would be supplemented with barley) has the same effect as that shown in table 7.

PASTURE FOR PIGS

OATS, FALL RYE AND ALFALFA.—A mixture of fall rye (one bushel); oats (two bushels) and fifteen pounds of alfalfa per acre seeded in the spring has given good results at this Station as a hog pasture. On June 23, thirteen Tamworth sows were placed on a pasture of this kind after the oats had reached a

height of about six inches, for a period of twenty-three days and made an average again of 1 pound per day per sow on the pasture alone. No grain was fed.

RAPE.—On August 28, eight sows were placed on a rape pasture for flushing before breeding for early winter litters. No grain was fed during the twenty-seven days these sows were on this pasture and they made an average gain of 34.6 pounds per head during this period, or a daily gain of 1.28 pounds per head. The rape in this test was sown broadcast and had reached a height ranging from eight to ten inches before the sows were turned in the pasture plot.

FIELD HUSBANDRY

The experimental projects reported under this division are those which have a bearing on crop production with respect to cultural practices, crop management, crop rotation and the use of fertilizers.

CROP ROTATIONS

The Experimental Station, Lacombe, has been paying special attention to rotation experiments in connection with crop production. Five different rotations were started in 1914, one of which was shortly discontinued. At present fourteen rotations are under test, while suitable land is prepared for starting one more experiment in 1926. These different rotations include exclusive grain and hay rotations as well as mixed farming rotations with and without the application of barnyard manure. Interesting comparisons are possible with respect to the effect of crop sequence on the yield of different crops. By comparing the yield of wheat in different rotations and the method of seed-bed preparations, one can gain some idea of the systems of cropping that will give highest yields per acre.

Cost of production data are kept on all these rotations. The values used in estimating the profit or loss per acre are those current in the district; the return values are those which obtain on November 1. These values are given in the following table:—

COST VALUES

Rent per acre	$ 4 00
Manure per ton	1 00
Wheat per bushel	1 00
Barley per bushel	0 60
Oats per bushel	0 50
Fall rye per bushel	0 90
Corn per bushel	3 00
Potatoes per bushel	1 00
Mangolds per pound	0 70
Sunflowers per hundred pounds	13 00
Timothy per hundred pounds	18 00
Sweet clover per hundred pounds	13 00
Alfalfa per hundred pounds	45 00
Alsike per hundred pounds	20 00
Rye grass per hundred pounds	15 00
Brome grass per hundred pounds	15 00
Red clover per hundred pounds (Altaswede)	50 00
Machinery per acre	1 00
Tractor per hour	0 60
Silo-filling machinery per ton	0 25
Kerosene per gallon	0 27
Gear oil per gallon	1 25
Pasture per month	1 50
Manual labour per hour	0 30
Horse labour per hour	0 10
Binder twine per hundred	16 00
Threshing per bushel—Wheat	0 10
Barley	0 08
Oats	0 06

RETURN VALUES

Wheat per bushel	$ 0 94
Barley per bushel	0 44
Oats per bushel	0 33
Winter rye per bushel	0 50
Sweet clover per ton	10 00
Alfalfa per ton	18 00
Mixed hay per ton	15 00
Green feed per ton	6 00
Straw per ton	1 00
Ensilage per ton	5 00
Potatoes per ton	20 00
Pasture per month	1 50

A number of years of experimental work are required before definite conclusions can be drawn from any test. On the other hand, much of the data available at present are interesting in that the trend of the experiment is indicated so strongly that opinions are justifiable.

The rotations tested are as follows:—

ROTATION "K"

First year—Hoed crop (corn).

Second year—Wheat.

Third year—Barley, seeded down with 10 pounds each Grimm alfalfa and western rye grass.

Fourth year—Hay, manured 15 tons per acre after harvest.

Fifth year—Hay.

Sixth year—Hay, broken after first cutting, cultivated for balance of the season.

ROTATION "K"—SIX YEARS

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

Crop	Yield per acre		Value of crop 1925	Cost of production 1925	Profit or loss per acre	
	1925	Average twelve years			1925	Average twelve years
			$	$	$	$
Corn	8·96	6·64	44 80	29 80	15 00	6 86
Wheat	17·9	27·9	17 70	14 08	3 62	13 07
Barley	16·2	32·6	7 46	13 16	−5 50	5 84
Hay	0 89	1·33	13 35	11 65	1 70	4 62
Hay	1·15	0·63	17 25	11 67	5 58	−1 99
Hay	1·17	0·35	17 55	13 05	4 50	−3 03
Average profit per acre					4 15	4 23

This rotation produced an average profit per acre of $4.15 for 1925 and an average profit per acre of $4.23 for the past 12 years.

Rotation "K" is an excellent rotation in many respects but possibly has more years in hay than most farmers would care for. It is the writer's belief that one of the years in hay might be eliminated and the rotation still be as efficient in maintaining the root fibre in the soil. There is also the possibility that the rotation would be more profitable were the last year in hay eliminated as this year tends to be the least profitable in the rotation.

Corn is the hoed crop used in this rotation. All farmers might not wish one sixth of their land in corn; other crops might well be substituted for this crop. The crops which suggest themselves as substitutes are roots, potatoes, sunflowers and oat green feed.

ROTATION "O"

First year—Hoed crop, potatoes or roots.
Second year—Wheat.
Third year—Oats.
Fourth year—Summer-fallow.
Fifth year—Wheat, seeded down with 10 pounds alfalfa and 10 pounds western rye grass per acre.
Sixth year—Hay manured 15 tons per acre after harvest.
Seventh year—Hay, broken after first cutting.

ROTATION "O"—SEVEN YEARS

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

Crop	Yield per acre		Value of crop 1925	Cost of production 1925	Profit or loss per acre	
	1925	Average twelve years			1925	Average twelve years
			$	$	$	$
Hoed crop (Potatoes)	17,240	17,803	172 40	67 89	104 51	26 73
Wheat	1,632	2,046	25 57	11 91	13 66	20 32
Oats	1,064	2,034	11 00	17 52	−6 52	10 34
Summer-fallow				14 80	−14 80	−8 87
Wheat	1,632	1,526	26 74	11 00	15 74	11 00
Hay	2,260	2,728	16 95	18 18	−1 23	3 48
Hay	1,720	1,739	12 90	17 20	−4 30	−2 89
Average profit per acre					14 70	8 59

This rotation produced an average profit per acre of $14.70 for 1925 and an average profit per acre of $8.59 for the past 12 years. It is one of our most profitable rotations and has proven very satisfactory with respect to control of weeds and apparent conservation of soil fertility.

Rotation "O" is considered one of the best mixed farming rotations under test at Lacombe. It is a well-balanced rotation in every respect, and if suitable varieties of field crops are used will be found to give satisfactory results under most conditions where a mixed farming rotation is needed.

ROTATION "C"

First year—Summer-fallow.
Second year—Wheat.
Third year—Wheat.

ROTATION "C"—THREE YEARS

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

Crop	Yield per acre		Value of crop 1925	Cost of production 1925	Profit ot loss per acre	
	1925	Average eleven years			1925	Average eleven years
			$	$	$	$
Summer-fallow				7·92	−7 92	−8 70
Wheat	24·2	30·0	22 95	7 94	15 01	16 40
Wheat	16·6	17·3	16 10	9 39	6 71	8 08
Average profit per acre					4 60	5 26

This rotation produced an average profit per acre of $4.60 in 1925 and an average profit per acre of $5.26 for the past 11 years. It is reasonably satisfactory from the standpoint of profit per acre produced but it has some defects. It is without doubt a rotation that is used to a considerable extent in all grain-growing districts where the land is new. In the older districts where the organic matter is becoming depleted, satisfactory results cannot always be expected; weed troubles creep in that are not encountered in a rotation where grass and hoed crops are included.

ROTATION "LACOMBE".

First year—Sunflowers.

Second year—Wheat, seeded with 10 pounds sweet clover and 10 pounds western rye grass per acre.

Third year—Hay.

Fourth year—Hay.

Fifth year—Oat green feed—stubble fall-ploughed and rotted manure applied, 10 tons per acre, during the winter.

ROTATION "LACOMBE"—FIVE YEARS

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

Crop	Yield per acre		Value of crop 1925	Cost of production 1925	Profit or loss per acre	
	1925	Average three years			1925	Average three years
			$	$	$	$
Hoed crop (Sunflowers)	14·2	12·7	71 00	43 28	27 72	18 56
Wheat	38·0	36·6	36 72	15 05	21 67	10 73
Hay	12·3	12·7	18 45	10 74	7 71	6 81
Hay	12·3	14·4	23·40	10 96	12 44	3 70
Oat green feed	0·99	1·43	5 94	12 14	−6 20	−2 05
Totals for rotation					63 34	37 85
Average profit per acre					12 67	7 55

This rotation produced a profit per acre of $12.67 in 1925 and an average profit per acre of $7.55 during the past three years.

The year in oat green feed has been the least profitable of the five. It is felt that in years with normal precipitation the yield of green feed would be higher and the crop more profitable.

The sweet clover used in the hay mixture has proven of doubtful value for this district. The past season is the first since this rotation was started that the sweet clover has not completely winter-killed in this rotation.

ROTATION "INTERTILLED"

First year—Wheat (*a*).
Wheat (*b*).

Second year—Wheat.

Third year—Wheat (*a*) seeded thinly.
Wheat (*b*) seeded in rows.

ROTATION "INTERTILLED"—THREE YEARS

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

Crop	Yield per acre		Value of crop, 1925	Cost of production 1925	Profit or loss per acre	
	1925	Average three years			1925	Average three years
			$	$	$	$
(*a*) Wheat	20·0	1,346	19 60	11 18	8 42	8 22
(*b*) Wheat	28·0	1,466	27 32	12 08	15 24	9 86
Wheat	21·3	1,198	20 62	11 60	9 02	6 00
(*a*) Wheat (broadcast)	13·2	792	11 91	10 88	1 03	3 22
(*b*) Wheat (intertilled)	11·6	696	11 30	12 68	−1 38	−0 80
Average profit per acre					6 47	5 30

This rotation made an average profit per acre of $6.47 for the year 1925 and an average profit per acre of $5.30 for the past three years.

This rotation was designed to test the comparative value of wheat seeded in rows with wheat seeded thinly as a preparation for wheat. When compared with Rotation "C" it brings out the value of these two treatments as summer-fallow substitutes.

The past season is the first year in three that the wheat following wheat seeded in rows showed any advantage over wheat following wheat seeded thinly. The difference in favour of wheat seeded in rows was quite marked in 1925.

As usual the wheat seeded in rows was not as profitable nor did it yield as well as wheat seeded thinly in the regular way.

The wheat following wheat in rows was uneven in height and maturity. Evidence to date indicates that seeding wheat in rows as a summer-fallow substitute is of doubtful value.

ROTATION "MANITOBA"

First year—Wheat.
Second year—Wheat, stubbled in.
Third year—Oats, on spring ploughing.
Fourth year—Summer-fallow.

ROTATION "MANITOBA"—FOUR YEARS

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

Crop	Yield per acre		Value of crop 1925	Cost of production 1925	Profit or loss per acre	
	1925	Average three years			1925	Average three year
			$	$	$	$
Wheat	29·0	30·4	37 86	14 30	23 56	17 44
Wheat	24·0	23·5	23 56	11 31	12 25	9 72
Oats	44·0	49·5	15 52	13 74	1 78	5 55
Summer-fallow				9 20	−9 20	−9 45
Average profit per acre					11 70	5 81

This rotation produced an average profit per acre of $11.70 in 1925 and an average profit per acre of $5.81 during the past three years.

This rotation is used by many of the grain-growers of the West. It is reasonably profitable while the land is new and during years with a reasonable amount of precipitation. It is doubtful if it would be profitable for districts

with less rainfall than that which obtains at Lacombe. It has an undesirable feature in that no provision is made for maintaining the fertility of the soil.

ROTATION "SWEET CLOVER"

First year—Wheat.

Second year—Wheat, ½ seeded with biennial sweet clover and ½ seeded with annual sweet clover the following spring.

Third year—(*a*)—Biennial sweet clover.
(*b*) Anual sweet clover.

ROTATION "SWEET CLOVER"—THREE YEARS

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

Crop	Yield per acre		Value of crop 1925	Cost of production 1925	Profit or loss per acre	
	1925	Average three years			1925	Average three years
			$	$	$	$
Wheat	36·3	28·2	35 32	16 55	18 77	11 10
Wheat	26·3	25·6	25 52	10 09	15 43	10 66
*Biennial sweet clover	1·5	1·5	15 00	9 51	5 49	*5 49
Annual sweet clover	1·1	2·0	11 00	10 44	0 56	7 72
Average profit per acre					10 06	8 74

*One year only.

This rotation produced an average profit per acre of $10.06 in 1925 and an average profit per acre of $8.74 during the past three years.

The winter of 1924-25 was the first that biennial sweet clover was not completely winter-killed since this rotation was started. Even then the stand of sweet clover showed considerable thinning out. If the sweet clover were not subject to winter-killing this rotation would undoubtedly prove one of the most suitable rotations for grain-growers in districts with a reasonable amount of precipitation.

The effect of the sweet clover in the rotation is just beginning to make itself manifest. The yield of 36.3 bushel of wheat per acre following the sweet clover is almost equal to that produced by the highest-yielding summer-fallow blocks. This rotation will be watched with a good deal of interest.

ROTATION "H"

First year—Wheat.

Second year—Oats.

Third year—Summer-fallow.

Fourth year—Wheat, seeded with 10 pounds western rye grass and 10 pounds alfalfa per acre.

Fifth year—Hay, 15 tons rotted manure applied in the winter and applied in the spring.

Sixth year—Hay.

ROTATION "H"—SIX YEARS

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

Crop	Yield per acre		Value of crop 1925	Cost of production 1925	Profit or loss per acre	
	1925	Average three years			1925	Average three years
			$	$	$	$
Wheat	11·5	22·3	10 67	13 91	−3 24	5 89
Oats	17·3	38·6	5 71	13 12	−7 41	1 04
Summer-fallow				9 20	−9 20	−10 47
Wheat	23·3	27·7	22 48	13 69	8 79	11 98
Hay	1·6	*1·6	24 00	14 15	9 85	*9 85
Hay	1·5	*1·5	22 50	12 51	9 99	*9 99
Average profit per acre					1 46	4 71

*One year only.

This rotation produced an average profit per acre of $1.46 in 1925 and an average profit per acre of $4.71 during the past three years.

This rotation is very similar to rotation "O" except that there is no inter-tilled crop between the year in hay and the wheat crop. The results to date indicate that the hay, as handled in this rotation, is not a good preparatory crop for wheat. It would seem that with greater precipitation this rotation might be more satisfactory.

ROTATION "FALL RYE"

First year—Wheat, 15 tons manure applied during the winter and ploughed under in the spring.

Second year—Oats for silage, fall rye stubbed in.

Third year—Fall rye.

Fourth year—Summer-fallow.

ROTATION "FALL RYE"—FOUR YEARS

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

Crop	Yield per acre		Value of crop 1925	Cost of production 1925	Profit or loss per acre	
	1925	Average three years			1925	Average three years
			$	$	$	$
Wheat	35·0	35·1	33 90	16 05	17 85	15 11
Oats for silage	4·28	*5·63	21 40	21 42	−0 02	*6 88
Winter rye	32·6	†32·6	20 60	16 95	3 65	†3 65
Summer-fallow				9 20	−9 20	−9 05
Average profit per acre					3 07	3 89

* 2 years only. † 1 year only.

This rotation produced an average profit per acre of $3.07 in 1925 and average profit per acre of $3.89 during the past three years.

When this rotation was started the oats were used as green feed and the winter rye was seeded with the oats when the oats were about four inches high. This practice did not give very satisfactory results and the method of handling the oat and winter rye crops was changed to that followed at present. This method is working out quite satisfactorily two good crops of rye having been produced in this way.

The crop of wheat produced in this rotation has been one of the best grown at the Station. The summer-fallow has always completely eradicated the winter rye.

ROTATION "L"

First year—Hay.
Second year—Hay, manured in autumn 12 tons per acre.
Third year—Hay, broken after harvest.
Fourth year—Wheat.
Fifth year—Oats.
Sixth year—Barley, seeded with 4 pounds timothy, 4 pounds alsike, and 4 pounds red clover per acre.

ROTATION "L"—SIX YEARS

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

Crop	Yield per acre		Value of crop, 1925	Cost of production, 1925	Profit or loss per acre	
	1925	Average, three years			1925	Average, three years
			$ cts.	$ cts.	$ cts.	$ cts.
Hay	0·78	*0·78	11 70	12 00	−0 30	*−0 30
Hay	1·2	*1·2	18 00	11 48	6 52	*6 52
Hay	0·94	*0·94	14 10	11 29	2 81	*2 81
Wheat	27·0	27·1	26 04	16 49	9 55	10 75
Oats	28·3	42·6	10 00	13 61	−3 61	3 93
Barley	13·7	27·7	6 33	12 81	−6 48	0 79
Average profit per acre					1 41	4 08

* One year only.

This rotation produced an average profit per acre of $1.41 in 1925 and an average profit per acre of $4.08 during the past three years.

This rotation has not proven very satisfactory during the series of dry years through which we have just passed. The hay mixture used in this rotation does not give nearly as good results as the western rye grass-alfalfa mixture used in some of the other rotations. It has been found almost impossible to maintain this rotation, as the clovers winter-kill and the grass crops have not always developed a good stand.

ROTATION "LIVE STOCK"

First year—Silage crops and roots, manure 15 tons green manure per acre the preceding winter.

Second year—Oats, seeded with 10 pounds sweet clover and 10 pounds western rye grass.

Third year—Pasture, spring seed 1½ bushels oats and ½ bushel winter rye should grass winter-kill or fail to catch.

ROTATION "LIVE STOCK"—THREE YEARS

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

Crop	Yield per acre		Value of crop, 1925	Cost of production, 1925	Profit or loss per acre	
	1925	Average, three years			1925	Average, three years
			$ cts.	$ cts.	$ cts.	$ cts.
(a) Hoed crop (Corn)	7·5	9·0	37 50	27 25	10 25	−0 32
(b) Hoed crop (Sunflowers)	20·0	13·6	100 00	32 39	67 61	24 75
(a) Oats (Silage)	7·0	7·0	35 00	21 06	13 94	*13 94
(b) Oats (grain)	64·3	58·3	22 60	17 42	5 18	5 19
Pasture			3 92	11 80	−7 88	−7 03
Average profit per acre					17 82	7 31

* One year only.

This rotation produced an average profit per acre of $17.82 in 1925, and an average profit per acre of $7.31 for the past three years.

This rotation was started to ascertain if it is possible to make money from the land where intensive live stock production is followed as is the case near large cities where the land is devoted to the production of pasture and coarse forage crops and receives unusually heavy applications of barnyard manure.

ROTATION " BROME "

This rotation consists of brome continuously. It has produced a profit per acre of $7.55 in 1925, and an average profit per acre of $15.61 during the past two years.

The crop produced in 1925 of 0.94 tons per acre was not as heavy as expected. It would seem as though the brome may have to be renewed frequently if a high yield per acre is to be maintained. The sod had the appearance of being sod-bound at the time of harvesting the second season's hay crop.

ROTATION "BROME

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

Crop	Yield per acre		Value of crop, 1925	Cost of production, 1925	Profit or loss per acre	
	1925	Average, Two years			1925	Average, Two years
			$ cts.	$ cts.	$ cts.	$ cts.
Brome	0·94	1·5	14 30	6 75	7 55	15 61
Average profit per acre					7 55	15 61

ROTATION " ALFALFA "

This rotation consists of one 3-acre block which is left in alfalfa as long as a good stand is maintained. When the stand becomes thin or patchy the land will be ploughed and the field reseeded.

This rotation produced an average profit of $13.40 per acre in 1925 and an average profit of $12.01 per acre for the past three years. It is one of the most profitable rotations under test.

The stockman's attention is drawn to this rotation. It is the writer's belief that alfalfa might be profitably grown much more extensively in central Alberta than it is at the present time. The profits per acre here given were produced in comparatively dry seasons.

ROTATION "ALFALFA—1 YEAR

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

Crop	Yield per acre		Value of crop, 1925	Cost of production, 1925	Profit or loss per acre	
	1925	Average, three years			1925	Average, three years
			$ cts.	$ cts.	$ cts.	$ cts.
Alfalfa	1·1	1·8	19 80	6 40	13 40	12 01
Average profit per acre					13 40	12 01

CULTURAL EXPERIMENTS

Experimental results in connection with tillage of the soil and crop management are reported under this heading.

The yields presented in the following tables are representative of actual field conditions. The crops are all grown in plots. A one-foot border is removed before harvesting the plots to eliminate as much as possible the increased yields due to the plants growing in the borders of the plots drawing plant food from the adjoining paths or roadways.

Dry-matter determinations are made on all forage crop samples and the yields presented are based on absolute dry-matter determinations with ten per cent added to make them representative of hay or fodder cured in the normal way.

The present cultural experiments were started in 1922, consist of eleven separate projects, and utilize 471 plots. As 1922 crops were grown for the purpose of getting the rotations of the experiments started, very little evidence is available from that year.

SUMMER-FALLOW TREATMENT

This experiment was designed to ascertain the effect of different methods of summer-fallowing with respect to crop production, moisture conservation and weed control. The following three-year rotation has been followed: 1st year—summer-fallow; 2nd year—wheat, fall-plough for oats; 3rd year—oats. For this experiment 33 plots are necessary, in 3 groups of 11 each. Plots 1, 3, 7 and 11 are checks. As the summer-fallow treatment might be reflected in the second crop following the summer-fallow the data of this crop are also presented in the following table:—

SUMMER-FALLOW TREATMENT

Plot No.	Treatment given summer-fallow	Yield of wheat on summer-fallow				Yield of oats second season			
		1925		3-year average		1925		3-year average	
		Bush.	Lb.	Bush.	Lb.	Bush.	Lb.	Bush.	Lb.
1	Plough 6 ins. deep June 15, cultivate as necessary	25	50	18	12	47	27	39	7
2	Plough 6 ins. deep May 15, cultivate as necessary	27	55	21	40	55	30	49	9
3	Plough 6 ins. deep June 15, cultivate as necessary	29	10	20	58	63	8	45	12
4	Plough 6 ins. deep July 15, cultivate as necessary	28	20	22	25	81	21	51	33
5	Plough 6 ins. deep June 15 and Sept. 15, cultivate as necessary	30	25	21	7	75	25	48	1
6	Cultivate after harvest and plough 6 ins. deep June 15, cultivate as necessary	27	55	21	40	79	4	51	33
7	Plough 6 ins. deep June 15, cultivate as necessary	34	10	25	17	75	.....	55	22
8	Fall-plough 4 ins. after harvest and plough 6 ins. June 15, cultivate as necessary	30	25	24	2	81	11	58	11
9	Disk after harvest and cultivate throughout the summer-fallow year, (do not plough)	29	10	26	40	85	10	64	32
10	Cultivate throughout summer-fallow year, cultivation is first shallow with narrow teeth and then deeper with wider teeth. This plot is not ploughed at any time during the progression of the experiment.	33	20	26	18	89	24	64	16
11	Plough 6 ins. deep June 15, cultivate as necessary	34	10	26	7	88	2	68	16

The data presented in the table are somewhat surprising in that the different treatments given the summer-fallow have little effect on the yield. In most cases the amount of precipitation and the season during which it occurred appears to affect the yields more than the cultural treatments. In 1924 the season's rains practically all occured after the last ploughing of summer-fallow on July 15; this may be the explanation for the lack of difference in the yields of the 1925 crop of wheat on summer-fallow.

Plots 9 and 10 are of particular interest for the reason that plot 9 is only ploughed every third year when the wheat stubble is ploughed for oats, all the summer-fallowing being done with the cultivator and disk, while plot 10 has not been ploughed since the spring of 1921. These plots are producing equal if not superior to plots which have been ploughed both in the summer-fallow year and in preparation for the oat crop.

The question of weed control is not reflected in the yields per acre produced by the different treatments. Plot 10, on which no ploughing is done, does not control grasses or perennial weeds with creeping root-stalks nearly as well as do plots that are ploughed. Late ploughing the summer-fallow allows many of the early ripening annual weeds to mature seeds before ploughing. If it is not possible to complete the ploughing of the summer-fallow by June 15, it is a good practice from the standpoint of weed control alone to cultivate all the summer-fallow before starting the ploughs.

STUBBLE TREATMENT

This experiment was designed to gather information concerning the most satisfactory method of treatment for wheat stubble in preparation for wheat and oats. This experiment requires 33 plots in 3 groups of 11 plots each. A three-year rotation of summer-fallow, wheat, wheat and oats is followed. The summer-fallow is given uniform treatment, the variation in cultural methods occurring in the preparation of the wheat stubble for wheat and oats.

WHEAT STUBBLE TREATMENT FOR WHEAT

Plot No.	Treatment given	Yield per acre			
		1925		Three year average	
		Bush.	Lb.	Bush.	Lb.
1	Plough in autumn	40	.....	26	12
2	Plough in spring	22	55	18	36
3	Disk stubble in spring and seed	28	45	21	28
4	Plough in autumn	33	20	21	3
5	Burn stubble in spring, plough and seed	38	20	23	16
6	Burn stubble in spring, disk and seed	16	40	21	48
7	Plough in autumn	21	40	15	58

WHEAT STUBBLE TREATMENT FOR OATS

8	Plough in autumn	58	28	44	12
9	Plough in spring	30	30	43	13
10	Burn stubble in spring, disk and seed	33	3	34	11
11	Plough in autumn	73	18	46	11

In the preparation of wheat stubble for wheat, experimental plots 1, 4 and 7 are checks. It will be noted that there is a gradual reduction in the yield per acre produced by the plots from 1 to 7. In giving the 1925 results with this experiment closer study, it would seem that some factor or factors other than

cultural treatments influenced the yields to a marked extent. This theory is supported by the fact that the average of the check plots which were fall-ploughed is 31 bushels 40 pounds per acre while the check plots in the second year of the experiment, where wheat was grown on summer-fallowed land, produced an average yield of 31 bushels 23 pounds per acre. This may be explained by the fact that the rains of 1924 occurred after the crop had developed, and the fall-ploughed wheat stubble conserved moisture as efficiently as the earlier ploughed summer-fallow. In view of the data presented in the tables, one would be justified in getting as much of their land fall-ploughed as possible.

In this district considerable oat stubble is used for the production of grain. While the preparation of oat stubble is not included in this experiment, it is felt that the fall ploughing of oat stubble would show greater advantages over spring ploughing than indicated in the table. Field observations have shown that oat stubble usually develops a heavy second growth as a result of summer and fall rains, while wheat stubble does not develop this second growth. Fall ploughing would check this growth and conserve the moisture utilized in its development. The foregoing table indicates that the ploughing down of stubble is not an important factor from the standpoint of immediate yields.

In the section of this experiment pertaining to wheat stubble treatment for oats, there was much less volunteer wheat on the fall ploughing than on spring ploughing or where the stubble had been burned and the land disked. There was little difference apparent in the development of weeds or volunteer grain on the spring-ploughed, and the burned and disked oat stubble.

SUMMER-FALLOW SUBSTITUTES

The object of this experiment is to study the effect of different intertilled crops, as compared with the bare fallow, on the production of wheat. A three-year rotation—summer-fallow and summer-fallow substitutes, wheat and wheat is followed. In this experiment 42 plots of 3 groups of 14 plots each are used. The plots in the second and third years receive the same treatment. The treatment the plots receive during the first year is varied as needed by the different summer-fallow substitute crops grown. The land is spring-ploughed during the last week in May for the summer-fallow substitute crops and is disked in the fall after the crop is removed, and harrowed in the spring for the first crop of wheat. The wheat stubble is fall-ploughed for the second crop of wheat.

SUMMER-FALLOW SUBSTITUTES

Plot No.	Treatment	Yield per acre of summer-fallow substitutes				Yield per acre of 1st year wheat				Yield per acre of 2nd-year wheat			
		1925		Four year average		1925		Three year average		1925		Three year average	
		Lb.		Lb.		Bush.	Lb.	Bush.	Lb.	Bush.	Lb.	Bush.	Lb.
1	Summer-fallow					27	55	22	47	35	25	19	52
2	Corn, dry matter	1,665		2,459		26	40	21	40	37	30	20	46
3	Sunflowers, dry matter	3,986		4,330		31	15	24	2	33	20	19	14
4	Oat green feed, dry matter	5,190		4,510		28	45	20	25	23	20	15	25
5	Summer-fallow					24	10	20	17	28	45	17	1
		Bush.	Lb.	Bush.	Lb.								
6	Oats (3 bush. per acre)	50	20	45	27	38	20	16	2	18	20	13	16
7	Oats (1½ bush. per acre)	53	18	40	9	25	25	14	56	15	40	12	29
8	Summer-fallow					29	35	21	52	18	20	13	49
9	Oats, 2 drills oats alternating with 36 ins. intertilled space	55	10	37	8	26	40	15	37	17	55	12	34
10	Oats, 3 drills oats alternating with 36 ins. intertilled space	55	30	45	5	29	35	18	53	22	30	14	14
11	Summer-fallow					30		21	7	27	5	16	44
12	Oats, 4 drills oats alternating with 36 ins. intertilled space	47	12	35	26	27	55	17	55	22	30	14	56
13	Oats, 5 drills oats alternating with 36 ins. intertilled space	48	28	37	8	24	10	16	23	26	15	17	35
14	Summer-fallow					3	10	23	37	31	40	18	37

The data presented in the table indicates that corn, sunflowers and oat green feed are all satisfactory summer-fallow substitutes, and that there apparently is little advantage in growing grain in rows as a summer-fallow substitute crop. It will be noticed that the effect of the summer-fallow and the substitutes is manifest to some extent in the second-year crop following the treatment. Unusual as it may seem, the sunflower crop appears to have left the land in as good condition as the corn crop.

The wheat on the summer-fallowed plots matured earlier than did the crop following substitute crops. It was felt that the unusual season was responsible for this. There was very little precipitation during the growing season. The crop on the summer-fallowed land developed normally, while the crop following the substitute crops made a stunted development during the dry period but developed a more vigorous growth after showers started, which resulted in them being slightly later maturing.

Oats in rows have again proven unsatisfactory when cut as grain as a summer-fallow substitute crop. There was sufficient volunteer oats among the crop following oats in rows to lower the grade considerably. There was a much larger quantity of oats following grain in rows than when seeded in the regular way. Oats in rows might be used to advantage as a silage or green feed crop.

The reader's attention is drawn to the yields of dry matter per acre produced by the corn, sunflowers and oat green feed. It will be noticed that, when reduced to actual dry matter, the oat green feed out-yielded both the corn and sunflowers. Oat green feed unquestionably has a large place in our agriculture as a silage and fodder crop.

BARNYARD MANURE FOR WHEAT

This experiment was started to study the effect of different manurial treatments on the growth and development of the wheat crop. A three-year rotation of summer-fallow, wheat, wheat, is followed. In this work 24 plots of 3 groups of 8 plots each are used. Plots 1, 5 and 8 are checks. The manurial treatment given is indicated in the following table. The treatment in all other cases is similar.

BARNYARD MANURE FOR WHEAT

Plot No.	Manurial treatment	Yield per acre first year after fallow				Yield per acre second year after fallow			
		1925		Three year average		1925		Three year average	
		Bush.	Lb.	Bush.	Lb.	Bush.	Lb.	Bush.	Lb.
1	No manure—1st year stubble ploughed in autumn	21	15	18	53	30	.....	16	23
2	Apply 10 tons rotted manure on summer-fallow before ploughing	19	35	20	25	26	40	18	12
3	Apply 10 tons rotted manure on 1st year stubble before ploughing	21	15	21	32	31	15	17	47
4	Straw produced is returned to plot and ploughed under when ploughing summer-fallow and 1st year stubble	20	50	20	42	21	40	14	27
5	No manure, 1st year stubble ploughed in autumn	23	45	21	15	21	15	14	18
6	Top-dress with 10 tons rotted manure second year grain when crop is about 3 ins. high	30	.....	25	50	25	50	17	13
7	Apply 10 tons unrotted manure on 1st year stubble and fall-plough	21	40	23	12	28	45	18	53
8	No manure, first-year stubble ploughed in autumn	27	55	23	28	17	5	15	33

The information given in the table seems to indicate that there is little advantage to be gained by the application of barnyard manure. While its application has always increased the yields, it is doubtful if these yields are large enough to pay for the labour cost of application.

BARNYARD MANURE FOR SUNFLOWERS

This experiment was designed to study the effect of different manurial treatment on the yield and maturity of sunflowers. A three-year rotation, sunflowers, wheat and wheat, is followed. In this work 27 plots in 3 groups of 9 each are used. Plots 1, 4, and 9 are check plots.

BARNYARD MANURE FOR SUNFLOWERS

Plot No.	Manurial treatment	Yield of sunflowers per acre, dry matter		Yield of 1st-year wheat after sunflowers				Yield of 2nd-year wheat after sunflowers			
		1925	2-year average	1925		3-year average		1925		3-year average	
		Lb.	Lb.	Bush.	Lb.	Bush.	Lb.	Bush.	Lb.	Bush.	Lb.
1	No manure, plough 2nd-year wheat stubble in autumn for sunflowers	6,237	5,728	21	15	14	43	17	30	9	52
2	Apply 10 tons rotted manure on 2nd year wheat autumn and fall-plough for sunflowers	7,053	6,586	21	40	14	43	34	10	17	38
3	Apply 10 tons rotted manure in spring on 2nd-year stubble and spring-plough for sunflowers	6,936	5,925	33	45	20	33	28	10	17	5
4	No manure, plough 2nd-year wheat stubble in autumn for sunflowers	7,434	6,120	33	20	19	39	29	35	17	47
5	Apply 20 tons rotted manure in spring on 2nd-year wheat stubble and spring-plough for sunflowers	7,580	6,715	37	30	22	22	37	30	21	40
6	Apply 10 tons unrotted manure in spring on 2nd-year wheat stubble and spring-plough for sunflowers	7,312	6,815	37	55	23	20	39	10	21	48
7	Summer-fallowed, no manure	7,325	7,442	39	10	25	.....	Summer-fallow			
8	Summer-fallowed, 10 tons rotted manure applied before ploughing	10,154	9,082	39	35	23	20	Summer-fallow			
9	No manure, plough 2nd-year wheat stubble in autumn	6,285	6,005	32	30	22	47	30	.....	19	10

There appears to be little manurial effect on the sunflowers except where the manure is applied on the summer-fallow. It would seem as though the summer-fallow is an excellent preparation for sunflowers. On the other hand, it is a question whether this method of preparing for the crop would be profitable.

In considering the manurial effect on the succeeding crops, it will be noticed that this effect is carried over to the first succeeding crop, but that little is shown in the second crop of wheat following sunflowers. It will be noticed that the difference in the yield per acre produced by different plots in the range is slight. It is felt that any difference is within the range of experimental error and too much significance should not be attached to them.

BARNYARD MANURE FOR POTATOES

This experiment is designed to study the different manurial treatments on the yield of potatoes. The different treatments and resulting yields are given in the following table:—

MANURE FOR POTATOES

Plot No.	Manurial treatment	Yield per acre			
		1925		Three year average	
		Bush.	Lb.	Bush.	Lb.
1	Summer-fallowed—no manure	266	40	276	40
2	Apply 10 tons rotted manure on summer-fallow before ploughing	233	20	308	.....
3	Spring-ploughed oat stubble	250	.....	297	47
4	Apply 10 tons rotted manure on 2nd-year oat stubble before ploughing	283	20	317	20
5	Apply 10 tons rotted manure in furrows at planting time	350	.....	384	27

The results obtained in this experiment are somewhat surprising in that there appears to be little advantage in applying barnyard manure for potatoes except where it is applied directly in the furrow. The effect of the manure is shown in the succeeding crop of oats. The oats following potatoes grown on summer-fallowed land were the heaviest crop grown in the cultural plots. The plots of oats grown on land carrying a comparatively high manurial content from previous applications appeared to stand the dry weather much better than grain grown on plots which received no manure.

GREEN MANURE CROPS

The object of this experiment is to study the effect of green manuring crops on the yield and maturity of oats. A three-year rotation is followed of green manuring crops, oats, and oats. In this work 15 plots in 3 groups of 5 plots each are used. Plots 1 and 5 are checks.

GREEN MANURE CROPS

Plot No.	Treatment	Yield per acre of green manure crop		Yield per acre 1st-year oats				Yield per acre 2nd-year oats			
		1925	Two year average	1925		Three year average		1925		Three year average	
		Lb.	Lb.	Bush.	Lb.	Bush.	Lb.	Bush.	Lb.	Bush.	Lb.
1	Summer-fallow	.....	.....	52	7	60	10	42	22	40	32
2	Plough down sweet clover about June 21, and summer-fallow the remainder of the season	.....	.....	57	12	55	30	48	18	40	32
3	Harvest sweet clover hay, plough immediately, and work the remainder of the season	.....	2,235	52	32	54	6	44	40	36	18
4	Harvest western rye hay, plough immediately, and work the remainder of the season	.....	2,282	75	25	56	29	47	25	38	8
5	Summer-fallow	.....	.....	52	32	60	10	43	13	35	27

In studying these figures the 3-year averages are of greater value than yields produced in 1925. The figures presented in the table indicate that at present there is little to be gained by the use of green manure crops. Apparently cultural treatments that conserve moisture will produce larger yields than cultural treatments designed only to incorporate organic matter into the soil. When the organic matter of our soils is more depleted it is possible that there will be better returns from the use of green manure crops.

There was such an unfavourable year in 1924 for young grass and clover seedlings that the stand of these was so poor that they were unable to compete with the weeds in 1925, hence no yields were recorded.

DATE OF SEEDING FALL RYE

The object of this experiment is to ascertain the date of seeding fall rye that will result in the largest yield per acre. A three-year rotation of summer-fallow, fall rye, and oats, is followed. In this experiment 27 plots in 3 groups of 9 plots each are used. Plots seeded August 15 are the checks.

DATE OF SEEDING FALL RYE

Date of seeding	Yield per acre			
	1925		Three-year average	
	Bush.	Lb.	Bush.	Lb.
August 15	29	36	18	12
July 1	24	6	12	11
July 15	27	13	16	46
August 1	30	55	21	44
August 15	29	51	19	11
September 1	23	37	29	34
September 15	30	30	29	13
October 1	26	54	9	.....
August 15	33	27	20	38

The table indicates that it is a good practice to seed fall rye around September 1. Seeding too early results in a very heavy growth before the ground freezes up, with the result that the crop suffers considerable winter-injury. The fall rye seeded between August 15 and September 15 seems to develop the right amount of top to winter well. The practice of seeding rye too early cannot be recommended.

PLACE IN ROTATION TO SEED FALL RYE

This experiment was designed to study the effect of seeding fall rye in combination with and following other crops, as compared with seeding in the regular way. In this experiment 46 plots are used. Plots 1, 5, 9 and 13 are checks.

PLACE IN ROTATION TO SEED FALL RYE

Plot No.	Treatment first year	Yield per acre 1st-year crop				Yield per acre 2nd-year crop fall rye				Yield per acre 3rd-year crop, oats			
		1925		Three year average		1925		Three year average		1925		Three year average	
		Bush.	Lb.	Bush.	Lb.	Bush.	Lb.	Bush.	Lb.	Bush.	Lb.	Bush.	Lb.
1	Summer-fallow, fall rye seeded August 15	.....	.....	.....	.....	32	8	16	29	48	18	48	1
2	Wheat, fall rye seeded with wheat in spring	13	7	17	59	25	12	14	53	.....	.....	.....	.....
3	Wheat, fall rye seeded on disked wheat stubble	20	32	24	4	29	.....	13	14	.....	.....	.....	.....
4	Barley, fall rye seeded with barley in spring	16	32	22	36	25	13	9	34	.....	.....	.....	.....
5	Summer-fallow, fall rye ssedsd August 15	.....	.....	.....	.....	36	4	17	38	50	25	45	28
6	Barley, fall rye sesded on disksd barley stubble	20	15	25	42	34	46	17	31	.....	.....	.....	.....
7	Barley, fall rye seeded on fall-ploughed barley stubble	30	10	31	45	34	21	16	9	.....	.....	.....	.....
8	Oats, fall rye seeded with oats in spring	40	2	51	20	22	43	13	14	.....	.....	.....	.....
9	Summer-fallow, fall rye seeded August 15	.....	.....	.....	.....	33	27	19	14	53	23	48	10
10	Oats, fall rye seeded on disked oat stubble	53	23	74	9	22	43	14	8	.....	.....	.....	.....
		Lb.		Lb.									
11	Oats for green feed seeded June 21, fall rye sesded with oats. Land spring-ploughed before seeding oats	6,039		5,249		23	49	15	6	55	5	48	9
12	Sunflowers, fall rye seeded between rows before last cultivation	5,465		5,091		37	53	19	44	.....	.....	.....	.....
13	Summer-fallow, fall rye seeded August 15	.....		.....		25	37	23	51	54	14	52	7
14	Oat green feed, fall rye seeded when oats about 4 ins. high	4,800		5,591		17	48	15	53	.....	.....	.....	.....
15	Western rye hay, fall rye seeded on early fall-ploughed sod	1,843		958		22	18	12	45	.....	.....	.....	.....

Fall rye made the best growth last season that it has since the above experiment was started, hence the 1925 results are what one may expect in a good year, while the three-year average yields are more indicative of what one may expect over a series of years in which favourable and unfavourable years are included.

Fall rye does not work in well in a rotation where wheat precedes the fall rye. It will be noticed that where fall rye is seeded with the wheat in the spring it acts as a weed and reduces the yield to some extent. Seeding on disked wheat stubble is seldom practical in this district as the wheat is seldom off the land in time to permit the fall rye being seeded early enough to allow it to make sufficient growth to winter well.

Barley is a better crop than wheat to precede fall rye in the rotation. As a rule it matures a little earlier and the chances are greater of getting the crop off in the fall in time for fall rye seeding. When the rye is seeded with the barley in the spring, the yield of the barley is materially reduced as in the case of wheat. Ploughed barley stubble has an advantage over disked barley stubble in a wet fall. In a dry fall with limited showers the reverse is the case. The three-year average shows a slight advantage for the disked barley stubble. Taking one year with another the expense of ploughing the barley stubble is not justified.

Oats for grain or green feed is not a suitable crop to precede fall rye in the rotation, as the yields of the fall rye are lower than where the rye follows the wheat or barley. The statements concerning the combination of fall rye with wheat and barley hold true for the oat crop as well.

Two combinations of oats and fall rye, not included in the above experiment but in use on other fields at the Station that have given very satisfactory results, are as follows: an annual pasture of 2 bushels oats and 1 bushel fall

rye has been our most dependable pasture. This mixture gives an excellent pasture during the season in which it is seeded while the fall rye, in a favourable winter like 1924 and 1925, will come through the winter and make an excellent crop the following year. The second practice is the use of oats for silage as a preparation for fall rye. Where the oats are used as silage they are removed from the land in plenty of time to permit the fall rye being seeded early enough to make a vigorous start before winter.

Seeding fall rye between rows of sunflowers before last cultivation has never been a pronounced success where the corn-binder has been used to harvest the crop. The traction exerted by the main wheel of this machine is usually sufficient to injure seriously most of the young rye plants. Last season the crop was cut by hand and an excellent crop of rye, as indicated by the 1925 yields, resulted. The procedure of this part of the experiment is being changed and the winter rye is being seeded after the sunflowers are ensiled. This usually takes place about September 1, hence sufficient time is left to develop a stand of fall rye before freeze-up.

The advisability of seeding fall rye on sod that has produced a crop of hay during the current season, and has been ploughed after harvest for the fall rye seed-bed, appears to depend to a large extent on the amount of moisture in the ground and the amount of precipitation. Very poor results will be obtained in a dry season, while reasonably good results will be had in wet years.

DATES OF SEEDING CORN AND SUNFLOWERS

This experiment was started to determine the date on which sunflowers and corn should be planted to obtain the largest tonnage of digestible dry matter per acre. Commencing as early as possible in the spring, six seedings are made at one-week intervals. A three-year rotation, sunflowers and corn, wheat, and oats, is followed:—

DATES FOR SEEDING CORN AND SUNFLOWERS

Plot No.	Dates of Seeding	Yield of dry matter per acre	
		1925	Three year average
	Corn	Lb.	Lb.
1	May 5	1,130	1,908
2	May 13	1,538	2,132
3	May 20	1,517	2,301
4	May 27	1,184	2,312
5	June 4	1,079	2,285
6	June 12	1,108	2,160
	Sunflowers		
1	May 5	5,017	4,759
2	May 13	4,598	4,275
3	May 20	4,113	3,806
4	May 27	4,756	3,803
5	June 4	5,890	4,512
6	June 12	5,492	3,714

The green weight per acre is not given in the above table as it was felt that the yield of dry matter per acre was a more accurate indication of the comparative value of the different dates of seeding. These figures indicate that the best time to seed corn is between May 20 and May 27, while sunflowers should be planted as early in the spring as possible.

RATES OF SEEDING GRASSES AND LEGUMES

This experiment was designed to determine the rate of seeding that will give the most satisfactory returns for the different grasses and clovers commonly grown in this district. Alfalfa, sweet clover, timothy, western rye grass and brome are the different legumes and grasses used in the experiment. A four-year rotation of summer-fallow, wheat, hay, and hay is followed.

RATES OF SEEDING GRASSES AND LEGUMES

Crop and rate of seeding	Yield per acre 1924 seeding	Yield per acre 1923 seeding
	Lb.	Lb.
Alfalfa, 5 pounds per acre	3,160	2,948
Alfalfa, 10 pounds per acre	2,928	3,614
Alfalfa, 15 pounds per acre	2,869	4,343
Sweet clover, 5 pounds per acre	2,781	.....
Sweet clover, 10 pounds per acre	2,541	.....
Sweet clover, 15 pounds per acre	2,533	.....
Timothy, 2 pounds per acre	2,664	2,867
Timothy, 5 pounds per acre	2,129	4,401
Timothy, 10 pounds per acre	2,218	3,970
Western rye, 5 pounds per acre	1,965	2,518
Western rye, 10 pounds per acre	2,413	3,335
Western rye, 15 pounds per acre	2,004	2,698
Brome, 5 pounds per acre	1,472	3,292
Brome, 10 pounds per acre	2,762	3,992
Brome, 15 pounds per acre	3,097	3,122

The table provides some interesting figures in connection with the response of the different crops to the rate of seeding. The different rates of seeding alfalfa appear to have little effect on the yields the first season. It is felt, however, that the volunteer growth of the nurse-crop is partly responsible for the similarity of yields. The advantage of the heavier seeding is shown in the second-year crop. The advantages of the heavier seeding are over-emphasized by these figures, as there was a rather poor germination of seed in 1923 and these figures do not represent what one could expect in a year favourable for uniform and even germination. Probably 10 pounds per acre would be a satisfactory amount to use.

Sweet clover is not a successful crop at this Station. Each winter results in a large amount of winter-killing. While excellent stands are usually obtained, they are always very imperfect in the spring, with the result that volunteer grain from the nurse-crop equalizes the differences in the different rates of seeding.

It would appear as though five pounds of timothy per acre was the most profitable amount of seed to use. Thicker seeding than this gives a sod-bound effect the first year, while in addition to this the thicker seeding shows the effect of dry weather much more quickly than the thinner seeding. The very thin seeding results in more weeds and volunteer grain in the hay crop.

Ten pounds of western rye grass per acre appears to be the most suitable rate of seeding. The thicker seeding gave a little finer hay but not quite as large yields in the dry years.

Brome, unlike timothy and rye grass, which are bunch grasses, has creeping root-stalks and makes a rather slow growth the first season. For this reason, the thicker seeding has given best results the first year, while the thinner seeding

thickens up by the second year, and there is little difference in the yield or in the appearance of the stand.

ADDITIONAL CULTURAL EXPERIMENTS

A number of experiments covering numerous subjects on which insufficient data are available for publication are also under way. These are "Breaking Sod from Cultivated Grasses," "Methods of Seeding Grass and Legumes", "Thinning Mangels to Different Distances" and "Thinning Sunflowers to Different Distances". These experiments have been under way for three years, but any comparisons brought out in the experiments were not considered to be of sufficient significance to warrant their publication.

HORTICULTURE

Experiments in connection with fruits, vegetables and ornamental plants are reported under this division.

VEGETABLES

ASPARAGUS.—Eclipse and Palmetto varieties have been under test for several years. A new plantation has been started with Giant French and Perfection varieties added.

BEANS.—Fourteen varieties of beans were tested last season. They were seeded on May 25 and were ready for use on the dates given in the following table:—

BEANS—VARIETY TEST

Variety	Date ready for use	Weight from 30-foot row		Remarks
		Lb.	oz.	
Challenge Black Wax	Aug. 19	24	10	Short, soon goes stringy.
Round Pod Kidney Wax	" 19	22	9	Good, very tender.
Sutton Prize Winner	" 21	22	8	Very good, large pole bean, grown as dwarf by pinching back.
Sutton Premier	" 19	24	2	Fine, very early.
Jones White	" 19	21	11	Good yellow variety, tender.
Carter Canadian Wonder	" 19	21	8	Long and tender green.
Stringless Green Pod	" 19	21	3	Short, goes stringy in dry weather.
Painted Lady	" 21	18	8	Good pole bean, pinched back and grown dwarf.
Davis White Wax	" 19	17	4	Good, long yellow bean.
Refugee or 1000 to 1	" 19	17	2	Fine, almost white.
Sutton Best of All	" 21	15	2	Good pole bean, grown as dwarf.
Yellow Eye Yellow Pod	" 19	14	10	Small, green, not very good.
No. 1 White Pole	" 27	13	1	Very late, not so good as other runner beans.
Lady Washington	" 19	4	15	Light cropper.

BEETS.—Nine varieties of beets were tested in 1925. The seed was sown on April 21 and the beets were harvested on October 2. The Detroit Dark Red, Eclipse and Crosby Egyptian were leaders in respect to shape and quality, while Half Long Red has proven the best keeper.

CABBAGE.—Twenty-one varieties of cabbage were tested in 1925. The seed was sown two weeks earlier than usual, and the first cutting was made from Sutton Earliest on July 28. The results obtained were as follows:—

CABBAGE—VARIETY TEST

Variety	Weight of 10 heads	Remarks
	lb.	
Copenhagen Market	80	One of the very best early and keeps well.
Dala	55	Late variety, solid heads.
Early Paris Market	55	Large early variety.
Solid Emperor	53	Late variety, good keeper.
S. B. Novelty	48	New variety, solid heads.
Danish Roundhead	47	Good winter variety, solid.
Danish Ballhead	47	Large, solid heads, late.
Golden Acre	45	Very early, large, flat, solid heads.
Fottler Inproved Brunswick	44	Very large variety, recommended.
Marblehead Mammoth	43	Inclined to split in wet weather.
Kildonan	40	Good variety.
Early Jersey Wakefield	40	Very early, conical shape, does not winter well.
Sutton Earliest	38	Earliest of all varieties, conical shape.
Drumhead Savoy	38	Early leaf variety, good flavour.
Early Winnigstadt	37	Conical, good keeper, very solid heads.
Succession	35	Splits in wet weather.
Extra Amager Danish Ballhead	35	Large heads, good variety.
Flat Swedish	31	Does not thrive in dry weather.
James Novelty	28	Did not mature.
Ballhead Short Stem	27	Did not mature.
Ballhead Middle Stem	26	Did not mature.

CAULIFLOWER.—Two varieties, Snowball and Dwarf Erfurt, were grown. They gave excellent results considering the unusual season.

CARROTS.—Ten varieties of carrots were seeded on April 21. All the varieties were clean and of good type. There was very little difference in the time the different varieties were ready for use. The results were as follows:—

CARROTS—VARIETY TEST

Variety	Weight from 30-foot row	Remarks
	lb.	
Chantenay, MacDonald	69	Good quality and tender.
Chantenay, Lacombe	67	Selected seed, tender and good colour.
Nantes Half Long	64	Very good shape, one of the best.
Sutton Champion	60	Excellent variety, very early, good shape.
Shorthorn	57	Early, inclined to crack.
Chantenay O-6049	57	Good variety, good colour.
Oxheart	55	Rather rough, inclined to crack.
Golden Ball	52	Small, early variety, too small for winter use.
Red Saint Valery	51	Good colour and tender.
Improved Danvers	49	Medium, not very good colour.

CELERY.—Seventeen varieties of celery were tested in 1925. The seed was sown in the greenhouse on April 8, plants were later transplanted into flats, and were set in the open on June 8 in rows 4 feet apart, with the plants spaced 6 inches apart in the row. The results were as follows:—

VARIETY TESTS WITH CELERY

Variety	Weight from 30-foot row	Remarks
	lb.	
Sutton White Gem	73	Very fine, large, white heads.
Major Black	55	Pink variety, very crisp, fine flavour.
Easy Blanching	48	Good blanching variety, short heads.
Golden Self-blanching	47	Good blanching, colour light yellow, crisp.
Paris Rose Ribbed	46	White variety, pale pink ribs.
Vick Self Blanching	44	Good market variety.
Self Blanching, MacDonald	43	Rather tough eating.
Golden Self Blanching	37	Good blanching, colour light yellow crisp.
Veitch Early Rose	37	Very pale pink in colour, excellent eating.
Golden Self Blanching	37	Good blanching, colour light yellow, crisp.
Winter Queen	37	Rather coarse variety.
Fordhook	35	Slow growing.
French Success	28	Small heads.
White Plume	26	Good colour, slow growing.
Evans Triumph	25	Poor grower.
Celeric	20	Root variety.

CORN.—Fourteen varieties of corn were tested in 1925. They were seeded on May 25 in hills 3 feet apart each way. Two rows of each variety were seeded. One row of each variety had the suckers removed, and as usual was much earlier than the row which grew in the natural way. The results obtained are presented in the following table:—

VARIETY TESTS WITH CORN

Variety	Date ready for use	Weight edible ears on 6 hills	Remarks
		lb. oz.	
60 Day Make Good	Sept. 9	28 0	Good cobs, well matured.
Nuetta	" 9	25 8	Tender, fine flavour, sweet.
Golden Bantam, Graham	" 21	21 8	Good quality, large cobs.
Paramount	Aug. 15	21 0	Very early, good table variety.
Assiniboine	Sept. 21	19 0	Fairly good quality.
Early Dakota	" 21	17 8	Tender, good flavour.
Burbank Novelty	" 21	16 0	Did not mature very well, too late.
Early Fordhook	" 21	15 8	Fair variety, rather late.
Early Malcolm	" 21	16 0	Good quality.
Early Mayflower	" 21	15 8	Fair variety, rather late.
Golden Bantam, MacDonald	" 21	10 0	Did not mature.
Banting	Aug. 18	12 8	Good, very early.
Pickaninny	" 20	10 0	Good, early, cobs rather small.
Golden Justice	Sept. 21	9 0	Late, did not mature.

It will be noted that Paramount, a new variety, is much earlier than any of the others. This variety was developed north of the 54th parallel of latitude, approximately 100 miles northeast of Edmonton. It is decidedly the earliest variety tested. Only those varieties which have developed edible ears by September 1 should be considered as suitable for this district.

LETTUCE.—Seventeen varieties of lettuce were seeded in rows 15 inches apart and were thinned to 6 inches apart in the row. The following table summarizes the value of the different varieties:—

VARIETY TESTS WITH LETTUCE

Variety	Type	Weight of 10 heads	Remarks
		lb.	
Black Seeded Simpson (Ewing)	Cabbage	9	Fairly good quality.
Trianon Cos	Cos	9	Large, crisp variety.
Black Seeded Simpson	Cabbage	9	Fairly good variety.
Early Curled Simpson	Garnishing	9	More for garnishing, loose leaf.
Improved Hanson	Loose leaf	8	Loose leaf, medium.
Paris White Cos	Cos	8	Large, crisp variety.
Crisp as Ice	Cabbage	8	Good flavour, crisp, fine.
Iceberg	Cabbage	8	Good flavour, crisp, fine.
Big Boston	Garnishing	7	Large heads, curly, useful for garnishing.
Salamander	Cabbage	7	Fairly good quality.
Black Seeded Simpson (Harris)	Cabbage	7	Fairly good quality.
All Seasons	Cabbage	7	Good flavour, crisp, fine leaf.
New York	Cabbage	7	Loose medium.
Tom Thumb	Cabbage	6	Good flavour, crisp, fine, does not bolt.
Ideal	Cabbage	6	Not so good as Tom Thumb.
Grand Rapids	Garnishing	6	Very early, useful for garnishing.
Early Paris Market	Cabbage	6	Crisp heads, not very hard.

PUMPKIN, MARROW AND SQUASH.—The pumpkins were frozen before maturing, but the marrows were exceptionally good, one hill of Sutton Long Green producing 89 pounds, English Vegetable Marrow 72 pounds, Long White Bush 68 pounds, Table Dainty 54 pounds. The Long White Bush is one of the most dependable.

PARSLEY.—Three varieties, Moss Curled, Triple Curled and XXX were tested. They were all ready for use by July 5, and all appeared to be satisfactory varieties.

PARSNIP.—Two different strains of Hollow Crown parsnips were tested. As a result of the dry weather during the early part of the season the yields produced by the two strains were small and indicated but little difference in the two strains.

PEA.—Thirty varieties of peas were tested last season. As a result of the very dry season and some cutworm damage the yields were low and the results not as dependable as they might be; hence, the 1925 yields are being omitted. American Wonder and Gregory Surprise are excellent early varieties. Gradus is a dependable midseason variety, while Lincoln and Stratagem are dependable late varieties.

POTATO.—Thirty-four varieties of potatoes were included in the variety tests last season. The seed of these varieties was cut to average exactly two ounces per set, while the sets were spaced 14 inches apart in the row. The rows were spaced 30 inches apart. The potatoes were planted on May 28, and were dug on October 2.

Variety	Yield per acre	
	Bush	lb.
Ash Leaf Kidney	520	..
American Wonder	481	..
Blue McIntyre	273	..
Burnaby Mammoth	450	40
Carter Early Favourite	338	..
Cole	444	10
Country Gentleman	463	40
Duchess of Norfolk	368	20
Duke of York	290	20
Early Hebron	407	20
Early Norther	407	20
Early Ohio	175	30
Early Bovee	344	30
Early Vermont	338	..
Empire State	387	50
Epicure	340	10
Extra Early Eureka	316	20
Everitt	425	45
Gold Coin	400	50
Gold Nugget	341	15
Grant Seedling	346	40
Green Mountain	407	25
Houlton Rose	397	35
Irish Cobbler	299	..
King Edward VII	322	35
McDonald Russet	279	30
Netted Gem (Invermere)	321	45
Peach Blow	250	15
Pioneer Pride	419	15
Rural Russet (Rickett)	314	20
Rural Russet (Invermere)	275	10
Six Weeks	419	45
Table Talk	287	..
Wee MacGregor	374	50

The Station grows a considerable quantity of potatoes for distribution as seed. This distribution has been limited to the three following varieties: Early Ohio, a pink potato, the earliest maturing variety tested at the Station; Gold Nugget, an early maturing white potato that matures about the same time as Irish Cobbler but is smoother and a heavier yielder, and is being distributed in place of the Irish Cobbler; Gold Coin, a medium maturing, smooth, oval, white potato, which is recommended for the main crop.

A number of potato varieties are being eliminated from our variety tests. They have been grown for a number of years and have not shown sufficient merit to justify being carried. Blue McIntyre, a mottled blue, has not a suitable colour, is too late maturing and is a low yielder; Burnaby Mammoth, while a heavy yielder, is too late maturing and is a type and colour not suited for the market; Cole, another heavy yielding sort, is too late maturing and is a low yielder and shows a wide range in types; Duchess of Norfolk, a very smooth, round white sort, is too late for this district; Duke of York, a very uniform, round white potato, gives too low yields to warrant carrying it longer; Epicure, a round white sort, has nothing particular to recommend it; King Edward VII, a white potato with pink eyes, is too late maturing; McDonald Russet is not of true netted gem type which it resembles, and has no particular merits.

Potatoes of the Rural Russet type are possibly our most promising new varieties. Varieties of the Netted Gem type appear to be too late for the district.

PLANTING WHOLE OR CUT POTATOES,

Treatment	Per cent Marketable	Yield per acre
		bush. lb.
Large whole potatoes planted 1 foot apart	80·0	435 30
Large whole potatoes planted 2 feet apart	82·5	325 ..
Large whole potatoes planted 3 feet apart	75·0	238 20
Medium whole potatoes planted 1 foot apart	77·5	355 20
Medium whole potatoes planted 2 feet apart	75·0	255 40
Small marketable potatoes planted 1 foot apart	65·0	171 10
Medium potatoes cut in two, planted 1 foot apart	75·0	214 30
Medium potatoes, 2 eyes per set, without seed ends, planted 1 foot apart	72·5	225 20
Medium potatoes, 1 eye per set, without seed ends, planted 1 foot apart	72·5	212 20
Medium seed ends planted 1 foot apart	87·5	357 30

This experiment indicates that the larger the amount of seed used the larger the yield per acre of marketable tubers.

PLANTING SETS OF VARYING SIZES WITH ONE EYE PER SET

Size of Set	Per cent Marketable	Yield per acre
		bush. lb.
½ ounce	82·5	175 30
1 ounce	85·0	231 50
2 ounces	75·0	309 50
3 ounces	77·5	320 40

In this experiment the distance between the rows and the distance between the sets in the row were all the same, the only variation in the treatment being in the size of the set used. It would appear as though the 2-ounce set were the most economical to use.

PLANTING SETS OF DIFFERENT SIZES AT DIFFERENT DISTANCES APART

Size of Set	Distance apart in row	Percentage marketable	Yield per acre
	inches		bush. lb.
1 ounce	12	90·0	320 40
1 "	18	85·0	288 10
1 "	24	80·0	260 ..
2 "	12	77·5	333 40
2 "	18	77·5	296 50
2 "	24	80·0	296 50
3 "	12	82·5	407 20
3 "	18	77·5	379 10
3 "	24	85·0	333 40

This experiment indicates that the larger the set and the closer in the row the sets are spaced the higher the yield of potatoes will be.

PLANTING SETS OF EQUAL SIZE WITH A VARYING NUMBER OF EYES

Number of eyes per set	Percentage marketable	Yield per acre
		bush. lb.
1 eye per set	80	348 50
2 eyes per set	80	381 20
3 eyes per set	80	374 50
4 eyes per set	85	470 10

The data obtained in this experiment indicate that other factors being equal, there is some advantage to be obtained by using sets with a large number of eyes.

SETS FROM DIFFERENT PARTS OF THE POTATO

Portion of potato from which set was taken	Percentage marketable	Yield per acre	
		bush.	lb.
From stem end	87·5	322	..
From seed end	80·0	330	40
From middle portion	90·0	307	40

This experiment indicates that the portion of the potato from which the sets are cut has little influence on the yield of tubers.

WHOLE VS. CUT POTATO SETS

Number of sets per hill	Percentage marketable	Yield per acre	
		bush.	lb.
One whole potato	77·5	409	30
Two half potatoes	80·0	411	40
Four quarter potatoes	80·0	392	10

It would appear that it makes little difference whether one cuts potato seed or not.

PLANTING AT DIFFERENT TIMES AFTER CUTTING

Time of Planting	Percentage marketable	Yield per acre	
		bush.	lb.
Cut and planted on the same day	80·0	403	..
Planted seven days after cutting	82·5	325	..

From the above data it would appear advisable to plant the tubers as soon after cutting as possible.

PLANTING POTATOES AT VARYING DEPTHS

Depth of planting	Percentage marketable	Yield per acre	
		bush.	lb.
Planted 3 inches deep	82·5	405	10
Planted 5 inches deep	77·5	385	40
Planted 7 inches deep	77·5	342	20

There appears to be no advantage in planting potatoes too deeply. Although the difference in yields produced by the different depths of planting is not very marked, the shallower planting is not as advantageous as the figures would indicate. The three-inch planting produces a large number of sunburned potatoes. Doubtless the five-inch planting would be best under all circumstances.

POTATO SUMMARY.—The foregoing experiments indicate that a potato-grower should use potato sets of either whole or cut potatoes from two to three ounces in weight. These should be planted in drills five inches deep and spaced from twelve to eighteen inches apart in the drill.

Experience gained in connection with the production of certified seed indicate that it is unsafe to use small potatoes for seed as there is always the possibility that these are from hills affected with one of the numerous diseases the potato is heir to. All the seed used in the above experiments was from clean, healthy stock.

TOMATOES.—Thirty strains of tomatoes were tested in 1925. The seed was sown in flats on April 8, transplanted, and finally planted in the open on June 3 in rows 3 feet apart, the plants being spaced 1 foot apart in the row. The results obtained were as follows:—

VARIETY TESTS WITH TOMATOES

Variety	Source	Yield from 30-ft. row				Remarks
		Ripe		Green		
		lb.	oz.	lb.	oz.	
Bolgiano	Bolgiano	1	5	50	5	Smooth fruit, very heavy cropper.
First of All	Lacombe	None		49	8	Heavy cropper, does not ripen early.
North Dakota	Wedge	None		48	8	Good smooth variety, large fruit.
Earliana	Vicks	1	0	48	0	Rather crinkly, large bunches fruit.
Wayahead	Bruce	1	0	42	0	Good colour, smooth.
Earliana	Burpee	1	14	41	14	Crinkley, large bunch fruit.
Alacrity	Lacombe	1	0	41	0	Not very smooth, heavy cropper.
Bonny Best	Stokes	None		40	15	Large, smooth variety, good colour.
Alacrity	Lacombe	1	6	40	6	Not very smooth, heavy cropper.
Jewel	Chalks	None		39	4	Good, smooth variety, not very early.
I.X.L. Extra Early	Rennie	None		37	8	Good new variety, rather late maturing.
Bonny Best	Lacombe	1	7	37	7	Large, smooth variety, uniform in shape
Sutton Best of All	Lacombe	1	6	37	4	Rather small fruit, good colour, very smooth.
Sutton Open Air	Lacombe	3	2	36	2	Earliest of all varieties by about 10 days.
Early Self Pruning	Burpee	1	7	34	15	Good variety, large fruit.
Matchless	Burpee	None		34	8	Late maturing.
Ponderosa	Lacombe	None		33	0	The largest of all, late maturing.
Sutton Golden Queen	Lacombe	1	2	31	10	Good, yellow variety.
Earliest of All	Steele Briggs	0	12	30	12	Smooth, good colour.
Mrs. Martin	Vulcan	2	14	28	14	Second earliest, very good variety, smooth.
Daniel Oper Air	Lacombe	1	4	28	2	Very small, very smooth.
Jewel	Carter	None		24	8	Medium size, good colour.
Favourite	Livingston	None		33	4	Late variety, smooth.
Rosy Morn	Livingston	None		23	3	Does not set well. late.
Livingston	Livingston	None		21	8	Does not mature, blooms do not set.
Pink	Ottawa	None		18	8	Very good flavour, colour pink.
Corless	Livingston	None		16	8	Not recommended.
Early Prosperity	Buckles	None		17	0	Poor cropper, fruit did not ripen.
Yellow Giant	Rennie	None		11	8	Yellow variety, large fruit, small bushes.
Yellow Plum	Rennie	None		10	0	Plum shape, ripens well after picking.

The Lacombe selection of Sutton Open Air and a selection developed by Mrs. Martin of Vulcan, Alberta, have proven the earliest of the varieties and strains under test. Other good varieties are Alacrity, Earliana and Bonny Best.

PRUNING TOMATOES.—Tomatoes were pruned to 1, 2 and 3 clusters of fruit on a single stem. Plants pruned to a single cluster ripened much earlier than the others, but those with 3 clusters produced the heaviest total yield of both ripe and green fruit.

SALSIFY.—Two varieties of salsify were tested. A 30-foot row of Long White produced 22 pounds, while Mammoth Sandwich Island produced 20 pounds.

KOHL RABI.—Two varieties of Kohl Rabi were tested. A 30-foot row of White Vienna produced 82 pounds, while Purple Vienna produced 43 pounds.

RADISH.—Of eleven varieties tested, French Breakfast and White Icicle proved most satisfactory.

RHUBARB.—The new variety, Ruby, developed by the Dominion Horticulturist of the Central Experimental Farm, Ottawa, is proving a valuable acquisition. It has a fine flavour and a lovely strawberry colour, but does not yield quite as much as some varieties under test which show less quality. Eleven varieties under test in the new plantation produced stalks ready for table use almost as soon as the shipments began to arrive from British Columbia.

BUSH FRUITS

The bush fruits produced exceptionally good yields last season. While the raspberries might have given higher yields, the currants and gooseberry bushes were carrying maximum loads of fruit. Strawberries were not a very successful crop. A young plantation was started in 1924 but quite a number of the plants winter-killed. This, together with the very dry weather which prevailed during the fruiting season, resulted in undependable comparative yields from the different varieties.

RASPBERRIES

Yields from 6 bushes for the years 1923, 1924 and 1925

Variety	1923		1924		1925		Three-year average	
	lb.	oz.	lb.	oz.	lb.	oz.	lb.	oz.
Sunbeam	26	0	8	13	25	0	19	16
Chegwin	7	13	4	3	38	8	16	13
Herbert	3	8	8	8	28	8	12	8
Cuthbert	1	9	6	4	18	2	8	10
Sarah	1	14	0	11	15	8	6	0
Early King	15	0	..	..	..	..	5	0
Shaffers Colossal	0	12	1	1	7	15	3	4
Marlboro	0	14	..	..	..	..	0	5

It is possible that the 1925 results are more representative of the true value of the different varieties than the three-year average for the reason that the yields produced in 1923 and '24 were from young stock growing in abnormal seasons.

The Sunbeam produces small hard fruit of an unattractive colour.

The Chegwin is very prolific, produces fruit of good flavour and colour, but the fruit drops easily.

The Herbert produces large fruit of good colour and flavour. This is our most satisfactory variety.

The Cuthbert produces very large fruit of good flavour and colour, but is not a heavy yielder.

The Sarah produces a late crop of dark, purple, very sweet fruit.

The Shaffers Colossal produces a late crop of dark coloured fruit.

GOOSEBERRIES

Yields from six bushes for the years 1922, 1923 and 1925

Variety	1922		1923		1925		Average	
	lb.	oz.	lb.	oz.	lb.	oz.	lb.	oz.
Houghton	14	0	36	0	15	0	21	11
Oregon Champion	5	12	32	7	10	0	16	6
Silvia	9	0	20	0	10	0	13	0
Carrie	6	2	18	5	2	3	8	14
Pearl	9	0	7	0	8	3	8	3

The late spring frost of 1924 did so much damage that it was considered the yields produced did not represent the true value of the varieties.

The Houghton and Silvia are very dependable varieties. The Duncan, which has been tested for a short period only, is one of the most promising varieties.

BLACK CURRANTS

Variety	1923		1925		Average	
	lb.	oz.	lb.	oz.	lb.	oz.
Kerry	18	0	35	10	26	13
Eagle	23	14	32	6	28	2
Magnus	26	0	25	4	25	12
Ogden	21	11	19	10	20	11
Clipper	22	8	18	2	20	5
Beauty	12	12	25	6	19	1
Collins	25	4	11	10	18	7
Eclipse	14	4	16	10	15	7
Saunders	18	0	13	10	15	13
Bang Up	18	0	11	0	14	8
Climax	17	8	8	9	13	1
Black Naples	12	0	13	8	12	12
Topsy	9	0	15	10	12	5
Victoria	12	0	12	0	12	0
Buddenburg	22	8	..	..	11	4

The late spring frost of 1924 destroyed most of the fruit on the black currants. The fruit was just past the blossom stage when the frost occurred. In most cases not over one or two fruits per cluster were living after this frost.

It is very apparent that there is a wide range of selection in black currants. The Climax, Magnus, Clipper, Kerry are dependable varieties.

RED AND WHITE CURRANTS

Yields from six bushes for the years 1922, 1923 and 1925

Variety	1922		1923		1925		Three-year average	
	lb.	oz.	lb.	oz.	lb.	oz.	lb.	oz.
Rankins Red	21	0	29	0	13	1	21	0
Raby Castle	20	0	22	2	18	8	20	3
Pomona	27	8	18	1	11	2	18	14
Victoria	17	12	21	9	17	0	18	12
Holland	12	4	12	1	26	12	17	0
Red Dutch	25	8	19	4	6	0	16	15
Greenfield	15	0	16	0	16	0	15	11
Red Grape	12	0	24	0	6	11	14	4
Cumberland	12	1	8	3	14	2	11	7
Prince Albert	8	0	11	12	11	0	10	4
Champagne	4	7	13	5	8	0	8	9
Red Cross	2	15	14	2	6	0	7	11
Perfection	4	0	5	0	11	4	6	12
Large White	7	5	4	2	7	8	6	2
Wilder	4	5	12	0	2	3	6	3
White Grape	6	6	3	4	8	0	5	14
White Cherry	6	6	4	2	5	0	5	3

Late spring frosts in 1924 destroyed the young fruit just as it was setting.

Rankins Red, Pomona, Victoria and Red Grape are dependable red varieties, while White Grape and White Cherry are good white varieties.

CEREALS

The past season was very unusual in that the first of the season was very dry. This dry weather continued until the last week of July. Cereals which were not seeded on summer-fallowed land made a very poor showing. Fortunately most of the cereal tests were seeded on land which contained sufficient moisture to carry them over this critical period.

In addition to the regular variety tests, considerable work was conducted in connection with the isolation of pure lines, the development of previous selections, as well as natural and artificial crosses, the introduction of new varieties, the testing of varieties in rod-row plots, and the production of Elite Stock seed. The following table gives in summary form the number of varieties or strains included in the different phases of the cereal work:—

SUMMARY OF ACTIVITIES IN CEREAL WORK

Nature of work	Number of varieties or strains included								
	Wheat	Oats	Barley	Peas	Flax	Buck-wheat	Winter wheat	Winter rye	Beans
Selections grown in head rows	252	241	227	50	.....	.....	.....	.....	3
Small increases plots (increasing surviving selections)	56	63	31	.....	.....	.....	.....	.....	.....
New varieties introduced	54	54	13	19	.....	.....	5	.....	3
Varieties tested in rod-row plots	53	32	29	18	.....	.....	.....	.....	.....
Varieties tested in large plots	23	18	17	.....	3	2	5	1	.....
Varieties increased for distribution	3	1	1	2	.....	.....	.....	1	.....

The varieties tested in large plots were also tested in rod-row plots; hence the number of varieties grown in 1925 were 107 wheats, 86 oats, 42 barleys and 37 peas. This does not include the numerous strains and selections grown in head and rod rows.

NOTE.—All the work in connection with variety testing, improvement by selection or cross-breeding, as well as the development of Elite Stock seed, comes under this division. The cultural experiments with cereals is reported under the Field Husbandry section of this report.

VARIETY TESTS WITH SPRING WHEAT

In this experiment 23 varieties of wheat were tested in duplicate one-fortieth-acre plots. The plots were seeded on April 30 on land that had been well summer-fallowed. The results obtained are presented in the following table:—

VARIETY TESTS WITH SPRING WHEAT

Variety	Date of maturing	Number of days maturing	Length of straw in inches	Strength of straw scale of 10	Yield of grain per acre	
					Bush.	Lb.
Crown Ottawa 353	Aug. 12	104	30·5	10·0	35	5·0
Duchess Ottawa 933	" 10	102	32·5	10·0	41	2·5
Early Red Fife Ottawa 16	" 28	120	37·0	10	39	5·0
Early Triumph	" 20	112	36·0	10	45	25·0
Garnet Ottawa 652	" 10	102	31·5	10	42	
Hard Federation C.I. 4733	" 18	110	28	10	47	30·0
Huron Ottawa 3	" 18	110	34	10	38	20
Kota	" 24	116	43	5·5	46	40
Kitchener	" 28	120	41	10	56	
Major Ottawa 522	" 20	112	41·5	7·5	46	27
Marquis Ottawa 15	" 28	120	40·5	9·5	55	52
Marquis 10B	" 24	116	39·5	9·5	51	15
Marquis Dom. Chemist	" 28	120	41	9	57	30
Master Ottawa 520	" 11	103	38	10	33	45
Pioneer Ottawa 195	" 20	112	36	8·5	39	20
Prelude Ottawa 135	" 8	100	35	9·5	31	15
Producer Ottawa 197	" 21	113	38	9	49	20
Quality	" 20	112	34·5	10	42	55
Renfrew	" 30	122	40	10	41	5
Reward Ottawa 928	" 16	108	34·5	10	35	35
Ruby Ottawa 623	" 14	106	36	10	29	10
Supreme	" 20	112	37·5	10	47	5

The list includes some new varieties with which the reader is doubtless not familiar.

Hard Federation C I 4733 is a bald, brown-chaffed variety distributed by the Cereal Investigation Branch of the United States Department of Agriculture. It has rather short straw and short heads, and is not a promising-looking crop in the field. The grain is rather light in colour and would not grade as high as Marquis or Ruby. There appears to be no justification for growing this variety in preference to our standard sorts.

Kota is an awned variety with smooth white chaff and red kernels. It has been used extensively in the eastern prairies because of its supposedly rust-resistant qualities. As we have little or no rust in central Alberta this factor is not worthy of consideration. This variety appears to stand up well under dry conditions, but appears to have no other characteristics to recommend it over standard sorts for this district.

Quality is an awnless, smooth-chaffed variety with white semi-hard kernels. It is a variety developed by Luther Burbank. Because of its colour, its production is hardly to be recommended at present.

Renfrew is a new variety developd by and distributed from the University of Alberta, Edmonton, Alberta. It is one of the latest-maturing varieties tested in 1925. For this reason it is of doubtful value for central and northern Alberta.

The reader is referred to the two publications "Best Varieties of Grain" by Dr. Chas. E. Saunders, and "New Varieties and Selections of Grain" by the same author; for additional information concerning the description and parentage of the other varieties mentioned in the preceding table. These may be obtained free of charge from the Publications Branch, Department of Agriculture, Ottawa.

With the production of so many new varieties, many grain-growers are at a loss to know which variety to grow. They should bear in mind that there is no one variety that is the best for all conditions of soil and climate. Wheats which do well at Lacombe might not give the best results at some other place where the soil and amount of available moisture differs, and vice versa. The writer believes that Marquis, Ruby or Garnet will meet conditions that obtain on most farms better than any other varieties. Marquis is probably the best variety for the average soil of central Alberta where early fall frosts do not cause damage to the crop. Ruby and Garnet mature in approximately the same number of days. They have a place in our cropping system where early fall frosts lower the grades of such varieties as Marquis. The writer believes that these early-maturing sorts should be used to a greater extent than they are at present. It is hard to estimate the per cent of wheat that has been cut while quite green, which has naturally resulted in the grade being lowered from two to three grades. It is quite obvious that a lower-yielding sort, if fully matured, would produce a more profitable crop under such conditions. At present the amount of Garnet seed wheat is limited, but when there is an abundant supply available it doubtless will replace Ruby.

Early Red Fife, Early Triumph, Supreme and Kitchener also give a good account of themselves under favourable conditions.

VARIETY TESTS WITH OATS

Eighteen varieties of oats were tested in 1925 in duplicate plots. These were seeded on May 1 on land which was well summer-fallowed the previous year. The results obtained were as follows:—

VARIETY TESTS WITH OATS

Variety	Date of maturing	Number of days maturing	Length of straw in inches	Strength of straw scale of 10	Yield of grain per acre	
					Bush.	Lb.
Alaska	July 31	92	40·0	10	76	16
Banner Ottawa 49	Aug. 15	107	42·0	10	102	7
Banner, Sask. 144	" 15	107	42	10	101	1
Banner, Waugh	" 15	107	42	10	100	25
Banner, Dixon	" 18	110	49	10	87	2
Banner, McDonald	" 15	107	41·5	10	105	30
Banner, Dow	" 16	108	42	10	105	30
Daubeney Ottawa 47	" 1	93	37	10	74	9
Gold Rain	" 15	107	41·5	10	94	4
Irish Victor	" 15	107	39·5	10	83	3
Laurel, Ottawa 477	" 8	100	40	10	42	34
Leader	" 17	109	40	10	89	9
Legacy, Ottawa 678	" 17	109	39·5	10	89	9
Liberty, Ottawa 480	" 4	96	40	10	53	23
Longfellow, Ottawa 478	" 10	102	41	10	81	21
O.A.C. No. 3	" 1	93	38	10	76	26
Tartar King	" 11	103	38·5	10	65	15
Victory	" 15	107	41	10	94	4

The outstanding feature of these tests is the fact that of five Banner strains tested, all exceed 100 bushels per acre. Banner, Dixon, which yielded only 87 bushels per acre is not a true Banner, although reported under that name. It is quite different in type from the other strains. It would seem as though Banner is unquestionably the outstanding variety for commercial grain.

It will be noted that Victory is also one of the heavy-yielding sorts. This variety would be second choice to Banner.

Alaska, an early-maturing sort, is recommended where an early-maturing oat is desired. The grain of this variety compares favourably in quality and weight per bushel with the standard varieties.

VARIETY TESTS WITH BARLEY

Seventeen varieties of Barley were tested in 1925. They were seeded on May 2 in duplicate plots on land which was well summer-fallowed the previous season. The results obtained were as follows:—

VARIETY TESTS WITH BARLEY

Variety	Date of maturing	Number of days maturing	Length of straw in inches	Strength of straw scale of 10	Yield of grain per acre	
					Bush.	Lb.
Barks Excelsior	Aug. 20	110	23·0	10·0	34	7·0
Bearer Ottawa 475	" 12	102	33·0	10·0	51	33·0
Canadian Thorpe	" 16	106	28·5	10·0	41	7·0
Chinese, Ottawa 60	" 5	95	27·5	9·0	41	19·5
Duckbill, Ottawa 57	" 18	108	24·0	9·5	30	45·0
Feeder, Ottawa 561	" 2	92	38·5	10·0	27	4
Fenil, Ottawa 670	" 3	93	36·0	10	19	36
Gold	" 16	106	22	9	20	46
Himalayan Ottawa 59	" 1	90	31	9	34	21
Junior Ottawa 471	" 1	90	33	9	38	47
Manchurian Ottawa 50	" 5	95	32	10	34	21
O.A.C. No. 21	" 5	95	30·5	9	35	5
Stella Ottawa 58	" 4	94	30	10	34	3
Success	July 28	87	33	10	35	5
Trebi	Aug. 3	93	28·5	9	52	4
465—C	July 31	90	34	10	26	54
574—B	Aug. 4	94	33	10	29	51

It is hard to understand the behaviour of varieties such as Manchurian and O.A.C. No. 21 as indicated by the table. The fact that the season of 1925 appeared to be an unfavourable one for the barley crop may give some light on the subject. Apparently some varieties which stood up well in normal seasons made a poorer showing in 1925.

Bearer, Ottawa 475 has been a consistently heavy-yielding sort, although it did not stand up so well in 1923 and 1924. It is doubtless worthy of a place among the best producers. As yet no seed of this variety is available for distribution.

Trebi, the heaviest-yielding sort tested in 1925, is anything but an ideal barley. The grain is usually light in weight per bushel and not suitable for anything but feed. The straw is short and is not as strong as desirable. Although a heavy-yielding variety, the writer hestitates to recommend this sort in this district at least.

VARIETY TESTS WITH PEAS

Eighteen varieties of peas were tested in 1925. Each variety was seeded in quadruplicate plots. Each plot consisted of 5 rod-rows with a three-foot path between plots. As this is the first year the pea varieties have been tested in this manner it was considered inadvisable to publish this year's results.

Early Blue, a small blue pea which matured in 100 days, was the heaviest yielder, followed by McKay, Ottawa 25.

Prussian Blue, another small blue pea, was the latest maturing and produced the most luxuriant growth. This variety would doubtless be one of the most suitable variety for the production of oat-pea hay or greenfeed.

Chancellor, Ottawa 26, Golden Vine, Sask. 625, and O.A.C. No. 181, are among the varieties considered most suitabe for the district.

Alaska was the earliest-maturing sort tested. This variety, along with Surprise and Horesford, are varieties used for canning purposes in Ontario. They were tested last season with the object of ascertaining whether they would mature in our short growing season thus making possible the developing of a seed trade with other provinces. The Alaska matured in 95 days, the Surprise in 102 and the Horseford in 103. There appears to be no doubt but that Alaska at least will mature in our climate.

VARIETY TESTS WITH WINTER WHEAT

Five varieties of winter wheat were tested in 1925. They were seeded on September 4, 1924, on land that had been well summer-fallowed, but did not make as much growth as they should to winter in good condition. It would seem as though winter wheat should be seeded about two weeks earlier than the date when sown this year. These wheats were seeded in duplicate one-fortieth-acre plots. The results obtained are presented in the following table:—

WINTER WHEAT

Name of Variety	Average length of straw	Strength of straw on scale of 10 points.	Percentage winter killed	Yield per acre	
	inches			Bush.	Lb.
Kharkov, C.I. 1583	30	8·0	12	33	50
Kharkov, Mont. 36	30	8·5	10	36	5
Turkey Red	30	9·0	22	36	20
Kanred	30	9·0	37	28	
Alta Red	30	9·0	30	26	40

The winter wheats all appeared to ripen at the same time and were cut on August 15, or about the same time as the early-maturing spring wheats.

It is felt that the difference in the hardiness of the different varieties as indicated in the table is due more to the particular location of the plot rather han to inherent hardiness.

The yield of these winter wheats, where winter-injury was not a serious factor, compared favourably with winter rye and spring wheat. There appears to be a possibility that the hardier strains of winter wheat may eventually find a place in our agriculture, although at present, this crop seems too risky for a grain-grower to go very extensively into its cultivation.

VARIETY TESTS WITH WINTER RYE

One variety of winter rye was grown last year. It was seeded on the same day and under the same conditions as the winter wheats. It produced a yield of 33 bushels 50 pounds per acre.

VARIETY TESTS WITH FLAX

Three varieties of flax (Novelty, Premost, and Common) were tested in single one-fortieth-acre plots. They were seeded on May 30 and were left uncut until all further growth was checked by frost. The Premost showed the greatest maturity, but the plots all gave the same yield of threshed grain.

These plots were seeded under ideal conditions, but as a result of immaturity yielded only at the rate of 5 bushels and 12 pounds per acre. There is little doubt that flax is not a safe crop for this district as the Station has never produced a fully matured crop.

VARIETY TESTS WITH BUCKWHEAT

Two varieties of buckwheat, Japanese and Common, were tested. They were seeded on May 30 and were left uncut until badly frozen when they were both nearly fully mature. The Japanese produced at the rate of 1,050 pounds threshed grain per acre, while the Common produced at the rate of 1,600 pounds per acre. Buckwheat is a crop of doubtful value for central Alberta.

FORAGE CROPS

Experimental work with forage crops during 1925 covered variety tests with grasses, legumes, miscellaneous annual hays, millets, sunflowers, corn and roots. The past series of rigorous winters have emphasized the importance of suitable varieties and suitable classes of crops. All varieties of red clover, alsike clover and biennial sweet clover were completely winter-killed during the past winter except in low pockets where they received special protection. The grasses and alfalfa all came through the winter in excellent condition and gave a heavier cutting than in 1924. Sunflowers were an excellent crop, corn was fair, while roots were decidedly above the average.

VARIETY TESTS WITH ALFALFA

In this experiment the different varieties and strains of alfalfa are tested under uniform conditions. The difference in yield is considered to be largely the result of the difference in winter hardiness of the different varieties. They were all seeded at 20 pounds per acre in duplicate plots. The plots seeded in 1923 were sown on June 30 and made an excellent stand the same season; those seeded in 1924 were not seeded until August and did not make sufficient growth to winter well. The yields from these seedings are presented in the following table:—

VARIETY TESTS WITH ALFALFA—SOWN IN 1923

Variety	Source	First Cutting		Second Cutting		Total green yield per acre		Total dry matter per acre	
		Percentage dry matter	Green yield per acre	Percentage dry matter	Green yield per acre				
			ton lb.		ton lb.	ton	lb.	ton	lb.
Alfalfa, Grimm	Northern Seed Growers Association	29·05	4 140	26·85	2 370	6	410	1	1,059
Alfalfa, Grimm	C. P. R.	25·16	3 1,800	26·12	1 1,470	5	1,270	1	335
Alfalfa (Ontario)	McCannus	26·74	3 1,370	27·05	1 1,480	5	850	1	912
Alfalfa, Grimm	A. B. Lyman	26·68	4 560	25·95	1 1,730	6	290	1	1,244
Alfalfa, Baltic	Dakota Imp. Seed Co.	29·74	4 1,200	27·83	1 1,160	6	360	1	1,615
Alfalfa, Turkestan	Steele Briggs	29·35	3 480	26·06	1 1,160	4	1,640	1	725
Alfalfa, Variegated	Ontario grown	29·05	2 180	23·29	1 1,400	3	1,580	1	6
Alfalfa, Shoobut	S. Argentine	27·35	0 400	25·78	0 1,110	0	1,510	0	395

VARIETY TESTS WITH ALFALFA—SOWN IN 1924

Variety	Source	First Cutting		Second Cutting		Total green yield per acre		Total dry matter per acre	
		Percentage dry matter	Green yield per acre	Percentage dry matter	Green yield per acre				
			ton lb.		ton lb.	ton	lb.	ton	lb.
Alfalfa, Grimm	University of Alberta	31·59	1 1,780	21·68	2 710	4	490	0	1,815
Alfalfa, Grimm	A. B. Lyman	31·64	1 700	19·73	2 80	3	780	0	1,659
Alfalfa, Baltic	Dakota Improved Seed Co.	30·95	1 1,868	18·36	2 280	4	148	0	1,982
Alfalfa, Cossack	Dakota Improved Seed Co.	30·76	2 580	19·14	1 1,640	4	220	1	105
Alfalfa, Grimm	Alberta Seed Growers Association	31·88	2 240	20·02	2 220	4	460	1	196
Alfalfa, Cossack	Paramount Alfalfa Farm	33·05	2 770	21·48	1 1,940	4	710	1	422
Alfalfa, Medicago (Falcata)	Paramount Alfalfa Farm	31·35	1 1,270	26·56	0 760	2	30	0	1,227
Alfalfa, Turkestan	Steele Briggs	32·90	1 1,870	19·82	1 1,820	3	1,690	0	1,930
Alfalfa, Shoobut	S. Argentine	32·62	1 460	20·41	1 1,840	2	1,300	0	1,586

The reader's attention is directed to Shoobut alfalfa, a variety which has been imported by unscrupulous seed firms and used for adulterating northern-grown seed or sold under different names. Its seed is excellent in appearance, and one might easily be persuaded to purchase it in preference to that grown in northern districts. The resulting crop is very disappointing as each successive winter leaves a smaller number of living plants in the plot in the spring.

All the other varieties listed in the table are from northern-grown seed. The yields as presented do not show a true comparison of value of the different varieties and strains. Those produced in Eastern Canada or the Northern States show a greater tendency to thin out than the plots grown from seed produced within the province or under similar conditions.

The principal point brought out by the test is that alfalfa can be successfully grown in central Alberta if suitable varieties or strains are used, and that a grower is taking a great risk who uses seed of unknown origin or seed produced in a district with milder climatic conditions than those which obtain in central Alberta.

VARIETY TESTS WITH GRASSES

The grasses are grouped in the following table to facilitate comparisons between the different grasses as well as the different varieties of the same grass. The 1923 seeding was made on June 30 and the 1924 seeding was made on August 2. In both cases duplicate plots were seeded on land that had been well summer-fallowed, made an excellent showing, and came through the winter without any apparent winter injury. The yields produced in 1925 are presented in the following table:—

VARIETY TESTS WITH BROME, TIMOTHY, WESTERN RYE AND KENTUCKY BLUE GRASS

Sown in 1923

Grass	Percentage dry matter	Total green yield per acre for 1925		Total yield dry matter per acre for 1925	
		Ton	Lb.	Ton	Lb.
Brome, commercial	30·68	5	1,400	1	1,497
Timothy, "Boon"	46·58	2	1,430	1	529
Timothy, commercial	42·82	2	1,020	1	119
Timothy, Ohio commercial	41·89	2	1,270	1	207
Timothy, Ohio 3937 (Huron)	43·94	2	1,970	1	683
Western rye grass, "Grazer"	46·92	4	380	1	1,931
Western rye grass, commercial	48·97	3	1,950	1	1,893

Sown in 1924

Brome, commercial	30·65	5	1,620	1	1,561
Timothy, Ohio commercial	50·53	3	1,500	1	1,789
Timothy, "Boon"	47·80	4	300	1	1,967
Timothy, commercial	48·73	4	130	1	1,961
Western rye grass, "Grazer"	47·02	4	1,470	2	452
Western rye grass, commercial	49·12	4	1,020	2	1,430
Kentucky blue grass, commercial	35·28	4	320	1	935

It will be noticed in both the 1923 and 1924 seeding that the western rye grass outyields the other grasses in total yield of dry matter per acre. There is little doubt that western rye grass is the most suitable hay grass we have.

The "Grazer" western rye grass, a variety developed by the Forage Crop Division of the Central Experimental Farm, Ottawa, appears to be justifying the trouble taken in its development, as it outyielded the Commercial variety in both cases.

Timothys made a much better showing in 1925 than in 1924. Last season the timothys produced a much lighter crop than either the brome or western rye grass. Apparently the season of 1925 was unfavourable for brome, as the yield of dry matter per acre does not materially exceed the average yield per acre of the timothy plots.

RATE OF SEEDING OATS FOR GREEN FEED

In this experiment the oats were seeded on May 29, and were cut on September 2. When cut they were in the medium to late dough stage. The results obtained were as follows:—

RATE OF SEEDING OATS FOR GREEN FEED

Rate of seeding	Percentage dry matter at time of harvest	Yield per acre green weight		Yield per acre dry matter	
		Ton	Lb.	Ton	Lb.
1 bushel per acre	30·66	8	640	2	1,108
2 bushels per acre	35·84	7	400	2	1,160
3 bushels per acre	34·54	7	1,888	2	796
4 bushels per acre	29·69	7	1,680	2	655

It would seem as though the rate of seeding had little influence on the yield of dry matter per acre. For this reason it would seem inadvisable to seed oats for green feed too thickly. On the other hand, oats for green feed seeded too thinly result in a crop of very coarse feed that is not as well relished by live stock as the finer feed, resulting from the thicker seeding. When the question is considered from all angles, three bushels per acre is doubtless the most satisfactory rate of seeding for varieties such as the Banner. Green oat bundles from the thinner seeding would doubtless be satisfactory for ensilage purposes.

DATE OF CUTTING OATS FOR GREENFEED

This experiment was designed to ascertain the stage of maturity at which oats should be cut to make the most satisfactory green feed. In this experiment Banner oats were seeded on May 29, and the first cutting was made when the oats were in full bloom on July 29. The succeeding cuttings were made at one-week intervals. As a result of an unusual amount of wet weather during the harvesting period, a greater length of time than usual was required for the crop to advance from full bloom to complete maturity. The results obtained were as follows:—

DATE OF CUTTING OATS FOR GREEN FEED

Description of plot	Stage of maturity	Percentage dry matter at time of harvest	Yield per acre green weight		Yield per acre dry matter	
			Ton	Lb.	Ton	Lb.
1st cutting	Full bloom	22·17	8	960	1	1,750
2nd cutting	Milk	25·88	9	688	2	836
3rd cutting	Early dough	27·68	11	1,040	3	377
4th cutting	Medium dough	29·98	10	96	3	14
5th cutting	Late dough to 10% ripe	40·72	9	1,200	3	1,818
6th cutting	75% of grain ripe	40·00	9	1,840	3	1,936

It will be noticed that there is a gradual increase in the weight up to the early dough stage after which there is little if any increase in the yield of dry matter per acre, while there is an actual decrease in the green weight yield per acre. While there is no doubt that the yield of grain per acre increases after the dough stage is reached, this doubtless results in a decrease in the feed value and palatability of the straw. For these reasons it would seem advisable to cut oats for green feed between the early and medium dough stage.

VARIETY TESTS WITH OATS AND BARLEY FOR HAY

This experiment was conducted to ascertain the comparative value of the different varieties of oats and beardless barleys for the production of green feed. Twenty-eight varieties of oats and sixteen varieties of barley were tested. Climatic conditions exerted such an influence on the development of the crop that it was deemed inadvisable to publish the results. The early part of the growing period was so dry that varieties located on certain portions of the land devoted to this experiment were so badly withered that they were unable to recover when the rains started later in the season.

MISCELLANEOUS ANNUAL HAY CROPS

In this experiment a number of miscellaneous crops are treated as annuals and seeded alone or in combination for the production of dry hay or fodder. They were seeded on June 1 on stubble land and were all harvested on August 28 when the frost-tender crops in the mixtures were showing frost injury. The results obtained were as follows:—

MISCELLANEOUS ANNUAL HAY CROP

Crops and varieties used	Rate of seeding			Percentage dry matter at time of harvest	Yield per acre green Weight		Yield per acre dry matter	
	Lb.	Lb.	Lb.		Ton	Lb.	Ton	Lb.
Banner oats	102	.....	.....	33·20	5	1,780	1	1,910
Early White peas with Banner oats	68	45	.....	28·81	5	240	1	941
Chancellor peas with Banner oats	60	68	.....	29·30	6	560	1	1,677
Early White peas, vetch with Banner oats	45	15	68	28·32	5	640	1	1,013
Vetch with Banner oats	30	68	.....	30·37	6	200	1	1,705
Biennial sweet clover with Banner oats	20	34	.....	28·32	5	1,200	1	1,171
Japanese millet with Banner oats	17	34	.....	23·73	8	920	1	1,800
Vetch	60	.....	.....	22·46	3	500	–	1,459
Early White peas	120	.....	.....	23·24	6	1,360	1	1,104
Teff grass	8	.....	.....	34·18	2	1,840	–	1,996
Sudan grass	20	.....	.....	22·75	4	1,200	1	93
Hubam annual sweet clover	20	.....	.....	16·99	5	1,620	–	1,974

Banner oats seeded alone made an excellent showing. There is little doubt that this crop should be considered as the main annual hay crop.

The oat-millet mixture appeared to be the most promising of the miscellaneous annual hay mixtures, producing an excellent appearing fodder. The Japanese variety of millet used in this mixture appeared to be too late in maturing for the Banner oats to constitute an ideal mixture. An added disadvantage in growing these two crops in combination was that the millet suffered 20 per cent frost damage on August 23, while the oats were uninjured.

The oat, pea and vetch mixture did not prove very satisfactory. It is believed that the very dry weather which obtained during the earlier part of the season

was largely responsible for this. The peas and vetch in the mixture were too short to harvest readily and appeared to act as weeds. Similar statements apply where Chancellor and Early White peas were seeded with oats and where a mixture of vetch and oats were used with the peas omitted from the mixture. In all these mixtures the peas and vetch were very short, being less than one-half the height of the oats.

In the oat and sweet clover mixture, the sweet clover did not make sufficient growth to harvest with the binder. This mixture has given better results in years with more moisture available.

The peas and vetch, where seeded alone, did not make satisfactory hay crops as they did not control the weeds and were an eye-sore all summer. They were an excellent object lesson on what one should not grow as an annual hay.

The Teff grass and Sudan grass did not make a very satisfactory crop. In fact the results indicated that one would not be justified in seeding them except under more favourable conditions as to moisture. Under more moist conditions the Teff grass has proven one of our most promising annuals.

The Hubam annual sweet clover made a rather patchy growth and was not nearly as satisfactory as usual when more moisture was available.

A number of crops not listed in the table were tested as annual hays. These were biennial white flowered sweet clover, alfalfa, red clover, timothy and western rye grass. Previous experiments indicated that these crops, when seeded under favourable conditions, will give a reasonably heavy cutting of hay the same year they are seeded. The past season's results, however, clearly showed that these crops should not be used as annual hays unless one is reasonably sure that there will be an average amount of moisture available during the growing season. Like the vetch and peas, they were unable to compete with the weeds under dry conditions.

VARIETY TESTS WITH MILLETS

The plots belonging to this experiment were seeded on June 1 on land which was thoroughly summer-fallowed the previous year. The rate of seeding was 20 pounds per acre in all cases. They were harvested on August 29 when different varieties showed varying degrees of frost injury. The results obtained were as follows:—

MILLETS

Variety	Percentage dry matter at time of harvest	Yield per acre green weight		Yield per acre dry matter	
		Ton	Lb.	Ton	Lb.
Siberian	20·60	10	1,280	2	383
Golden	16·89	9	320	1	1,094
Hog	18·07	7	80	1	544
Hungarian	22·27	9	1,800	2	409
Japanese	15·82	10	1,760	1	1,442
Early Fortune	17·77	4	1,460	–	1,671
Common	22·27	7	1,320	1	1,411

It will be noticed that the Japanese millet produced the highest tonnage of green weight per acre but that the Siberian and the Hungarian varieties produced a heavier yield of dry matter per acre. The two latter varieties are earlier maturing sorts and for this reason had a higher dry-matter content. Had the growing season been longer and the Japanese variety attained greater maturity results would doubtless have been more in favour of the Japanese variety.

In considering the millet crop as a whole it is doubtful if it would be advisable for farmers of central Alberta to go into the extensive production of this crop. At best it is a risky crop as it is very susceptible to frost injury. In checking over the meteorological records of the Station it will be noticed that early June and late August frosts are the rule rather than the exception; hence, any crop as susceptible to frost injury as the millets is of questionable importance with such a short frost-free period.

VARIETY TESTS WITH SUNFLOWERS

In this experiment eight varieties of sunflowers were seeded in quadruplicate plots on May 29 and harvested on September 9. They came up uniformly and made an excellent stand. The results obtained were as follows:—

VARIETY TESTS WITH SUNFLOWERS

Variety	Source	Height in inches	Date 50% in bloom	Stage of maturity at harvest	Average yield per acre			
					Green weight		Dry weight	
					Ton	Lb.	Ton	Lb.
Russian Giant	Disco	100		No flowers appearing	31	1,440	2	1,887
Ottawa No. 76	Central Exp. Farm	75	Aug. 16	Seeds 90% ripe	20	274	2	163
Mennonite	Rosthern Exp. Farm	40	Aug. 3	Seeds 100% ripe	12	1,792	1	1,600
Manteca	C.P.R.	71	Aug. 21	100% in bloom	22	772	1	1,359
Mammoth Russian	C.P.R.	75	Aug. 18	100% in bloom	20	1,535	2	664
Mixed	C.P.R.	60	Aug. 16	Seeds 90% ripe	21	1,355	2	124
Manchurian	C.P.R.	45	Aug. 8	Seeds 50% ripe	17	372	2	430
Black	C.P.R.	50	Aug. 16	Seeds 95% ripe	18	1,076	2	200

It will be noted that the Russian Giant was the tallest and the heaviest producer of both green and dry weight. It was also the most immature of the varieties. Had the growing season been sufficiently long for the crop to mature the yields would have been even more in its favour. Until newer and better varieties are developed this is doubtless the best variety to use for ensilage purposes.

The date at which 50 per cent of the plants were in bloom gives an idea of the comparative maturity of the different varieties.

A considerable amount of selection work is being conducted with sunflowers. While nothing outstanding has been isolated as yet, some very promising lines are being developed. The different strains being worked with show a wide range in type and maturity. The number of strains is being gradually reduced by a process of natural selection as only the early-maturing sorts produce seed in this district.

VARIETY AND STRAIN TESTS WITH CORN

In this experiment 33 varieties and strains of corn were seeded in quadruplicate plots. They were seeded on May 19 and were harvested on August 27. The date of tasselling and silking gives an idea of the comparative maturity of the different sorts. The height, maturity and yield of green fodder and dry matter is given in the following table:—

Variety	Source	Height in inches	Average maturity		Average yield per acre			
			Date of tasselling	Date of silking	Green fodder		Dry matter	
					ton	lb.	ton	lb.
Canada Yellow Flint	Dupey & Ferguson	45	Aug. 10	Aug. 27	12	1,360	1	1,294
Leaming	J. O. Duke	51	Aug. 27		12	946	1	279
Western Red or Smoky Dent	Wm. Rennie	52	Aug. 27		13	494	1	715
Golden Glow	J. O. Duke	54	Aug. 27		13	1,364	1	1,045
Wisconsin No. 7	J. O. Duke	50	Aug. 27		12	1,584	1	1,246
Northwestern Dent	Disco	48	Aug. 20		13	458	1	112
Compton's Early	J. O. Duke	46			14	798	1	1,234
Longfellow	J. O. Duke	50	Aug. 27		13	104	1	1,169
Longfellow	Disco	46	Aug. 27		12	1,636	1	1,304
Twitchell's Pride	Fredericton Exp. Farm	54	July 29	Aug. 18	12	1,480	1	886
North Dakota	Steele Briggs	44			13	1,144	1	434
Alta	Disco	48	Aug. 12	Aug. 27	10	1,112	1	379
Northwestern Dent, Nebraska grown	A. E. McKenzie	48	Aug. 27		12	115	1	1,060
Gehu, North Dakota grown	A. E. McKenzie	46	July 30	Aug. 18	13	130	1	1,042
Northwestern Dent, N.D. grown	A. E. McKenzie	49	Aug. 5	Aug. 27	11	295	1	1,196
Quebec No. 28	Dr. J. L. Todd	48	Aug. 27		11	1,615	1	304
Leaming	J. Parks	48	Aug. 27		13	1,612	1	171
Wisconsin No. 7	J. Parks	45			13	1,456	1	310
Amber Flint	A. J. Wimple	42	Aug. 18		10	852	1	118
Hybrid	A. J. Wimple	50	Aug. 27		13	650	1	1,633
Burr Leaming	G. S. Carter	48			13	650	1	966
Northwestern Dent	Brandon Exp. Farm	48	Aug. 4	Aug. 18	12	456	1	1,482
Falconer	Oscar Wills	46	Aug. 8	Aug. 18	13	0	1	1,351
Golden Glow	Wisconsin Exp. Association	51	Aug. 27		12	154	1	589
Cold Resistant	Wisconsin Exp. Association	54	Aug. 27		13	1,755	1	975
Yellow Dent	A. J. Wimple	46	Aug. 27		11	464	1	610
90 Day White Dent	Disco	46	Aug. 27		14	535	1	319
Howe's Alberta Flint	University of Alberta	32	July 22	Aug. 1	7	1,052	0	1,685
Wisconsin No. 7 X Howe's Alt. Flint	Experimental Farm, Harrow, Ont.	60	July 26	Aug. 18	12	310	1	516
Leaming X Assiniboine	Experimental Farm, Harrow, Ont.	64	Aug. 27	Aug. 27	10	1,060	1	261
Black Mexican Sugar	Ewing	34	Aug. 27		6	1,910	1	64
90 Day Kansas		38			6	90	0	1,558
Pride of Nishna	K. McDonald	44			6	220	0	1,336

It will be noticed that six varieties did not tassel out and less than 50 per cent of the varieties were showing the silk. It can readily be understood that these late-maturing varieties are not suited to the conditions which obtain in central Alberta. Only the earlier-maturing sorts should be grown in this district.

Northern-grown Gehu and Northwestern Dent are the two varieties grown for ensilage purposes by the Station. It will be noted that Northwestern Dent from seed grown at the Dominion Experimental Farm, Brandon, Manitoba. gave next to the highest yield of dry matter per acre, while the Gehu is one of the heavy-yielding sorts.

The reader's attention is directed to the varieties which did not tassel out. It will be noticed that the highest yielders of green fodder per acre are in this class, but that the highest yielders of dry matter per acre are in the class which attains greater maturity.

Hybrid corn from A. J. Wimple is one of the heaviest producers of green fodder and also produced the greatest tonnage of dry matter per acre. The Wisconsin No. 7 X Howe's Alberta Flint, from the Central Experimental Farm, is another hybrid corn which made a particularly good showing as a standing crop, and also stands well up in yield per acre. It was next in maturity to Howe's Alberta Flint. The Leaming X Assiniboine hybrid did not make as good a showing as the other two. The writer believes that the development of suitable hybrid corn will be a decided step in improving or developing suitable corn for this climate.

Cold Resistant, a selection of Golden Glow, developed at the University of Wisconsin, gave a heavy yield but seemed too late maturing for this district.

Twitchell's Pride from the Dominion Experimental Farm, Fredericton, N.B., was one of the most promising corns tested. It made a very strong growth throughout the season and appeared to be of the type most suited to the district.

Howe's Alberta Flint was the only variety tested to produce mature ears. Its yield of fodder per acre is too small to justify its production for silage purposes.

VARIETY TESTS WITH MANGELS

In this experiment thirty varieties of mangels are compared. They germinated well and made an excellent stand, but cutworms did considerable damage when they were about 4 inches high. The yields as presented are corrected for the blanks caused by cutworm damage; hence, the results as here given are subject to error as a result of this calculation. All the varieties were seeded in quadruplicate plots. They were planted on May 20 and harvested on October 5. The crop as a whole was excellent, as indicated by the yields given in the following table:—

VARIETY TESTS WITH MANGELS

Variety	Source	Percentage dry matter	Corrected yield per acre		Yield of dry matter per acre	
			ton	lb.	ton	lb.
Elvetham Mammoth	H. Hartmann	12·79	15	784	1	1,937
Eckendorfer Red	"	10·25	23	1,648	2	884
White Red Top Half Sugar	"	10·84	23	358	2	1,025
Ferritslev Barres	"	11·13	22	802	2	986
White Green Top Half Sugar	"	10·84	18	478	1	1,954
Rosted Barres	"	8·59	25	1,996	2	466
Taaroje Barres	"	10·84	22	1,084	2	887
Stryno Barres	"	11·13	18	36	2	47
Eckendorfer Yellow	"	8·98	21	224	1	1,792
Svalof Original Alfa	Gen. Swedish Seed Co.	11·13	22	564	2	960
Yellow Eckendorfer	"	9·18	17	138	1	1,139
Red Eckendorfer	"	12·21	20	1,756	2	1,098
Barres Half Long	"	9·96	20	1,410	2	124
Barres Oval	"	9·77	22	772	2	374
Svalof Original Rubra	"	13·57	21	1,888	2	1,956
Yellow Intermediate	Central Ex. Farm	9·96	20	846	2	69
Giant Yellow Intermediate	Steele Briggs	10·74	20	1,964	2	507
Prize Mammoth Long Red	"	11·56	20	1,886	2	841
Golden Fleshed Tankard	"	10·84	22	694	2	844
Giant White Sugar	"	11·91	25	414	3	4
Giant White Feeding Sugar	"	8·40	32	1,806	2	1,538
Royal Giant Sugar Beet	"	11·33	23	1,844	2	1,421
Yellow Globe	"	11·72	26	1,066	3	219
Danish Sludstrup	Wm. Ewing	13·57	21	1,436	2	1,894
Golden Tankard	"	8·89	26	550	2	672
Danish Sludstrup	K. McDonald	10·55	26	286	2	1,516
Giant Long Red	A. E. McKenzie	10·94	21	1,726	2	784
Golden Tankard	"	12·11	24	104	2	1,825
Yellow Intermediate	"	9·08	24	932	2	439
Monarch Sugar	"	7·32	23	332	1	1,392

In view of the fact that the yields as presented are corrected for cutworm damage and that they represent only one year's experimentation, one hesitates to use them as a basis for making a recommendation. In a general way, varieties of the Intermediate, Tankard and Globe types have proven the most suitable for the district. The yields as presented will give the reader some idea of the yields of mangels possible in this district.

VARIETY TESTS WITH SUGAR BEETS

In this experiment eight varieties of sugar beets were tested in quadruplicate plots. They were planted on May 20 and harvested on October 6. The results obtained were as follows:—

VARIETY TESTS WITH SUGAR BEETS

Variety	Source	Per-centage dry matter	Total yield per acre		Yield of dry matter per acre		Analyses of Dominion Chemist	
							Sugar in juice	Co-efficient of purity
			ton	lb.	ton	lb.	%	
Dr. Bergman	Dominion Sugar Co.	17·56	10	1,072	1	1,700	.....	.....
Henning & Harving	"	19·63	13	1,062	2	1,312	12·31	72·09
Dippe	"	20·80	12	602	2	1,117	12·66	71·74
Rabbethge & Giesecke	"	19·43	12	645	2	788	12·47	72·21
Schreiber & Sons	"	19·73	13	657	2	1,259	11·95	69·10
Home Grown	"	18·16	12	537	2	456	12·31	69·55
Horning	"	16·99	13	1,710	2	708	12·70	73·45
Vilmorin's Imp. B	Vilmorin-Andrieux Co.	19·73	12	1,130	2	456	11·35	67·94

The analysis of the above sugar beets was made under the direction of Dr. Shutt, Dominion Chemist, Central Experimental Farm, Ottawa.

It is doubtful if the production of sugar beets in central Alberta should ever be considered as a commercial proposition. The roots do not appear to attain their full development and there is a corresponding low yield and low sugar content.

VARIETY TESTS WITH TURNIPS

In this experiment twenty varieties of turnips were tested in quadruplicate plots. The turnips made an excellent growth and were not affected by cutworms as were the mangels in an adjoining range. Although the yields produced are light as compared with those obtained in the principal turnip-growing districts of Canada, they are considered excellent for this district. The yields are presented in the following table:—

VARIETY TESTS WITH TURNIPS

Variety	Source	Percentage dry matter	Corrected yield per acre		Yield of dry matter per acre	
			ton	lb.	ton	lb.
Monarch	A. E. McKenzie	10·25	18	764	1	1,768
Northwestern	"	11·13	21	1,322	2	822
Superlative	"	8·59	17	1,364	1	1,038
Bangholm	"	10·94	19	1,234	2	292
Kangaroo	"	11·91	17	34	2	53
Breadstone	"	10·55	15	1,382	1	1,310
Shepherd's Golden Glow	H. Hartmann	9·86	17	736	1	1,425
Olsgaard Bangholm	"	8·79	18	426	1	1,203
Bangholm Swede	Halifax Seed Co	10·06	24	932	2	922
Bangholm	Wm. Ewing	9·67	17	1,464	1	1,429
Hartley's Bronze Top	J. A. Bruce & Co	10·94	13	962	1	950
Perfection	Dup. & Ferguson	9·86	22	890	2	426
Ditmar's	H. H. McNutt	8·01	18	1,830	1	1,030
Bangholm (Resistant)	Charlottetown E. F.	10·55	15	1,512	1	1,324
Bangholm	Gen. Swedish Co	10·06	18	894	1	1,711
Improved Yellow Swedish	"	9·18	22	1,110	1	1,957
Selected Westbury	Steele Briggs	10·45	21	822	2	475
Canadian Gem	"	8·59	15	654	1	622
Good Luck	"	9·28	16	1,670	1	1,124
Selected Purple Top	"	10·55	17	1,126	1	1,706

The Bangholm Swede from the Halifax Seed Company was the heaviest yielder and seemed to be the strongest and most vigorous grower of the varieties tested.

The production of turnips in central Alberta is handicapped to some extent by prevalence of the cabbage maggot. There was less damage from this source last year than usual.

VARIETY TESTS WITH CARROTS

Eleven varieties of carrots were included in this experiment. They were all seeded in quadruplicate plots on May 20 and were harvested on October 2. The yields produced were as follows:—

Variety and Source	Per cent dry matter	Average yield per acre	Average yield of dry matter per acre	General type
		ton lb.	lb.	
Half Long White—G. S. S. Co.	12·11	4 1,464	1,126	White Intermediate.
White Belgian—Dupuy & Ferguson	12·01	3 1,774	934	Long White.
James—H. McFayden	10·94	3 1,774	850	Red Intermediate.
Long White Belgian—Steele Briggs	11·33	4 1,152	1,037	Long White.
Long Red Surrey—Steele Briggs	12·40	3 682	828	Long Red.
Imp. Short White—Steele Briggs	10·74	4 1,646	1,025	White Intermediate.
White Belgian—H. Hartmann	11·23	4 1,074	1,019	Yellow Intermediate.
Danish Champion—H. Hartmann	11·62	3 1,904	918	" "
Danish Champion—C. E. F.	12·01	3 1,722	927	" "
Mammoth Half Long White—A. E. McKenzie	11·13	5 322	1,149	White Intermediate.
Long Orange Belgium—A. E. McKenzie.	10·84	4 476	919	Long Yellow.

Although seeded on well-prepared land, the carrots did not give as high yields as usual last season. The young plants appeared to make very little growth until the rainy weather started during the latter part of July. This was too late for them to make their usual tonnage.

Carrots of the intermediate type appeared to be the most satisfactory from every standpoint.

POULTRY

The year 1925 has been a successful one on the poultry plant at this Station. The success has not been due to extensive work but rather to a beginning of a more intensive study of some of the problems that have come up during recent years. For some years both White Wyandottes and Barred Rocks have been kept and during the past year it was decided to dispose of the Barred Rocks. During the summer, acting on the advice of the Dominion Poultry Husbandman, selections of chickens representing both breeds were sent to the Central Experimental Farm, Ottawa, to be examined for parasites. It was found that our flock is free of any infection of worms or parasites of any kind. In order to insure a continuance of this healthy condition, the poultry plant has been re-arranged so that there will be runs on both sides of the houses, thus providing the possibility of alternating the runs each year as a means of controlling parasites. The winter of 1924-1925 was one of the most severe in the history of the Station and had a detrimental effect on the egg production. Notwithstanding this handicap, the best individual record, 261 eggs, was 34 eggs higher than the best record made during the previous year.

A special effort is being made to find a means of improving the fertility, hatchability and viability in the White Wyandotte flock. All females are trap-nested and all chicks are pedigreed. This, together with the fertility and hatching records of the breeding stock and ancestry, will in time, it is hoped, supply some reliable data as to the cause, and the method to be adopted in order to improve upon present conditions.

The demand for breeding stock has been far beyond the supply and during the year, 27 males and 100 (Barred Rock) females were sold to local poultry-

men and farmers. All were from trap-nested stock and the majority of the females had trap-nest records.

Two White Wyandotte cockerels were purchased during the year, one from a breeder in British Columbia and the other from an Ontario breeder.

As shown in poultry table 1 the total eggs set was 3,006 and of this total only 27.38 per cent hatched; however this is a slight improvement over the hatching results of 1924 as out of a total of 2,827 eggs set only 26.57 per cent hatched. A very noticeable difference in the percentage of fertile eggs is noted between the 1925 results as compared with those of 1924, being 39.7 in the former case and 52.77 in the latter. Respecting the total eggs required for each chick hatched, table 1 shows that 3.65 were required for each chick while in 1924 an average of 3.76 eggs were required for each chick hatched.

Table 2 gives the hatching results obtained during the different months of the hatching season, showing the highest fertility in March and the best hatchability in June. Viability in the chicks was best in June, being 100 per cent, while the lowest was in April. The hatchability was also lowest in April.

Under table 4, the comparison of the two breeds of White Wyandottes and Barred Rocks brings out the fact that the Barred Rocks have higher fertility than the White Wyandottes. These results are quite in line with those of previous years. The Barred Rocks lead by a definite margin in both hatchability and viability.

The comparison of hatching results from hens and pullets under table 5 shows that pullets have the highest fertility, which is contrary to the results in 1924. The pullets lead in both hatchability and in viability of chicks.

A limited demand for baby chicks and eggs for hatching was met by the sale of 164 baby chicks; 100 White Wyandottes and 64 Barred Rocks—and thirty settings of eggs for hatching. In the sale of eggs not more than two settings were sold to any one individual.

POULTRY TABLE 1—HATCHING SUMMARY FOR 1925

Farm	Total eggs set	Number fertile	Per cent fertile	Number of chicks	Per cent of total eggs hatched	Per cent of fertile eggs hatched	Number of chicks alive when wing banded	Per cent chicks hatched alive when wing banded	Total eggs required for 1 chick hatched	Total fertile eggs for 1 chick hatched	Total eggs required for 1 chick when wing banded
Lacombe	3,006	2,073	68·96	823	27·38	39·7	452	68·59	3·65	2·52	5·33

POULTRY TABLE 2—HATCHING RESULTS FOR SETTINGS BY THE MONTH, 1925

Time set	Total eggs set	Number fertile	Per cent fertile	Number of chicks	Per cent of total eggs hatched	Per cent of fertile eggs hatched	Number of chicks alive when wing banded	Per cent chicks hatched alive when wing banded	Total eggs required for 1 chick hatched	Total fertile eggs for 1 chick hatched	Total eggs required for 1 chick when wing banded
March	647	503	78·68	202	32·76	40·1	180	89·1	3·2	2·49	3·59
April	1,105	777	65·02	258	22·43	33·2	181	70·1	4·63	3·01	6·60
May	711	496	69·76	215	30·23	43·34	143	94·6	3·30	2·36	2·44
June	543	297	54·69	148	27·25	49·83	48	100·0	3·67	2·00	5·75

POULTRY TABLE 3—HATCHING RESULTS FROM THE VARIOUS BREEDS

Varieties	Total eggs set	Number fertile	Per cent fertile	Number of chicks	Per cent of total eggs hatched	Per cent of fertile eggs hatched	Number of chicks alive when wing banded	Per cent chicks hatched alive when wing banded	Total eggs required for 1 chick hatched	Total fertile eggs for 1 chick hatched	Total eggs required for 1 chick when wing banded
White Wyandottes	2,276	1,446	63·53	547	24·03	37·82	263	63·68	4·16	2·64	6·9
Barred Rocks	730	627	85·89	276	37·80	44·00	189	76·83	2·64	2·27	3·44

POULTRY TABLE 4—HATCHING RESULTS FROM HENS AND PULLETS

Ages	Total eggs set	Number fertile	Per cent fertile	Number of chicks	Per cent of total eggs hatched	Per cent of fertile eggs hatched	Number of chicks alive when wing banded	Per cent chicks hatched alive when wing banded	Total eggs required for 1 chick hatched	Total fertile eggs for 1 chick hatched	Total eggs required for 1 chick when wing banded
Hens	1,656	1,084	65·45	406	24·5	37·45	201	62·03	4·08	2·67	6·57
Pullets	1,350	989	73·25	417	30·8	42·16	251	74·92	5·37	3·94	3·62

COMMERCIAL VS. HOME-MIXED MASH

The object was to determine whether or not the home-mixed dry mash would give as good or better results than the commercial mash. The results are as follows:—

POULTRY TABLE 5—COMMERCIAL MASH VS. HOME-MIXED

Feed under test	Number of birds	Mash	Cost	Grain	Cost	Grit	Cost	Green feed	Cost	Total eggs laid	Cost per dozen
		lb.	$	lb.	$	lb.	$	lb.	$		cts.
Commercial mash	8	209	5 96	273	6 55	4½	0 03	180	1 80	500	34·4
Home-mixed mash	8	160	3 36	283	6 79	3½	0 02	180	1 80	524	27·4

The commercial mash used was "Ogilvie's Laying Mash" and the home-mixed mash was made up as follows: oat chop 200 pounds, shorts 100 pounds, barley chop 100 pounds, wheat bran 50 pounds, beef scrap 15 pounds and charcoal 3 per cent. Both mashes were kept in hoppers before the hens at all times. The preceding table shows that the home-mixed mash produced a total of 24 more eggs on less pounds than did the commercial. The cost per dozen of eggs produced is decidedly in favour of the home-mixed mash. The general health of the birds in both pens was good, notwithstanding a mortality of two birds in the commercial-mash pen. (Project P. 79.)

CORN VS. BARLEY

The object was to determine if the home-grown barley which every farm produces would produce eggs as cheaply as the high-priced corn for which the farmer and poultryman of central Alberta must pay ready cash. The results are as shown in poultry table 6.

POULTRY TABLE 6—CORN VS. BARLEY

Feed under test	Number of birds	Mash	Cost	Grain	Cost	Grit	Cost	Green feed	Cost	Total eggs laid	Cost per dozen
		lb.	$	lb.	$	lb.	$	lb.	$		cts.
Cracked corn	8	150	3 15	308	9 55	6½	0 05	180	1 80	442	40·0
Barley	8	126¾	2 66	353	5 15	4	0 03	180	1 80	494	24·0

A home-mixed mash was always before the hens in hoppers, and from the preceding table it will be seen that the barley-fed pen consumed less mash and more grain (barley) than the corn-fed pen and produced more eggs which would indicate that if the farmer or poultryman has a supply of good quality barley, it will not be necessary to purchase high-priced cracked corn for egg production. It was found, however, that the corn-fed pen led in egg production during the months of December and January by 25 and 8 eggs respectively. The general health and condition of all birds in both pens was good throughout the test. (Project P. 78.)

COMMERCIAL VS. HOME-MIXED SCRATCH GRAIN

This trial was conducted for the purpose of determining if home-mixed scratch grains would give as good as or better results than the commercially mixed scratch grains. The results are shown in table 7.

POULTRY TABLE 7—COMMERCIAL VS. HOME-MIXED GRAIN

Feed under test	Number of birds	Grain	Cost	Mash	Cost	Green feed	Cost	Grit	Cost	Number of eggs laid	Cost per dozen
		lb.	$	lb.	$	lb.	$	lb.	$		cts.
Commercial grain	8	260	7 41	160	3 36	180	1 80	4	0 03	383	39·5
Home-mixed grain	8	271	6 50	162¾	3 41	180	1 80	3½	0 03	537	26·2

The commercial grain used was "Ogilvie's Scratch Grain" and the home-mixed grain consisted of 100 pounds wheat to 50 pounds cracked corn. While the amounts of feeds consumed by each pen are practically equal, yet the number of eggs produced is decidedly in favour of the home-mixed grain, being 537 eggs against 383 eggs from the pen receiving commercial scratch grain. The cost of egg production is correspondingly lower in the pen receiving the home-mixed grains.

There was a mortality of two birds in the pen fed commercial grain and three birds were broody in the pen fed the home-mixed grain. (Project P. 76.)

SKIM-MILK VS. BEEF SCRAP VS. BUFFALO MEAT

Feed under test	Number of birds	Grain	Cost	Mash	Cost	Grit	Cost	Green feed	Cost	Number of eggs laid	Cost per dozen	Milk	Cost
		lb.	$	lb.	$	lb.	$	lb.	$		cts.	lb.	$
Skim-milk	8	271	3 79	139½	2 93	4	0 03	150	1 50	182	57·3	300	0 60
Beef scrap	8	286	6 86	169½	3 56	4½	0 03	150	1 50	251	57·2	Water	Nil
Buffalo meat	8	233	5 59	207	4 36	5	0 04	150	1 50	439	31·4	Water	Nil

SKIM-MILK, BEEF SCRAP, AND BUFFALO MEAT

The trial of these was conducted from January 1 to June 1, 1925. The buffalo meat was boiled and then let stand until cold, then it was put through a meat-grinder and mixed in the dry mash. Equal quantities of buffalo meat and beef scrap were used. The results were very much in favour of buffalo meat. No doubt if the beef scrap used was in the same form as the buffalo meat, the results would be more equal. Two pullets moulted, one had roup and two died in the skim-milk pen. One pullet died, and one was broody in the beef scrap pen. One pullet died and one was broody in the buffalo meat pen. The deaths were caused by ruptured egg-organs. (Project P.83.)

BUTTERMILK VS. BEEF SCRAP

Feed under test	Number of birds	Grain	Cost	Mash	Cost	Grit	Cost	Green feed	Cost	Milk	Cost	Number of eggs laid	Cost per doz.
		lb.	$	lb.	$	lb.	$	lb.	$	lb.	$		cts.
Buttermilk	8	238	5 71	139	2 92	4½	0 03	180	1 80	360	0 54	358	36·7
Beef scrap	8	327	7 85	196¼	4 13	5	0 04	180	1 80	Water	Nil	268	61·9

BUTTERMILK VS. BEEF SCRAP

The results of the experiment on buttermilk vs. beef scrap are in favour of buttermilk. Mortality in the beef scrap pen was one pullet, and one was broody; and in the buttermilk pen, two pullets died, one was sick with roup and one was broody. (Project P. 84.)

COMPARISON OF FEED YEAST VS. COD-LIVER OIL

To determine the effect of cod-liver oil and yeast on the growth of chicks, a test was conducted during the summer of 1925 involving three lots with twelve chicks in each lot. One lot was fed cod-liver oil, one lot yeast, and a third lot received a mixture of cod-liver oil and yeast. The supplementary feeds were, of course, fed in addition to the regular grain ration which was the same in all lots. The test was conducted for thirty days and equal amounts of grain was consumed by all lots.

The gains made by the different lots during the thirty day period are as follows:—

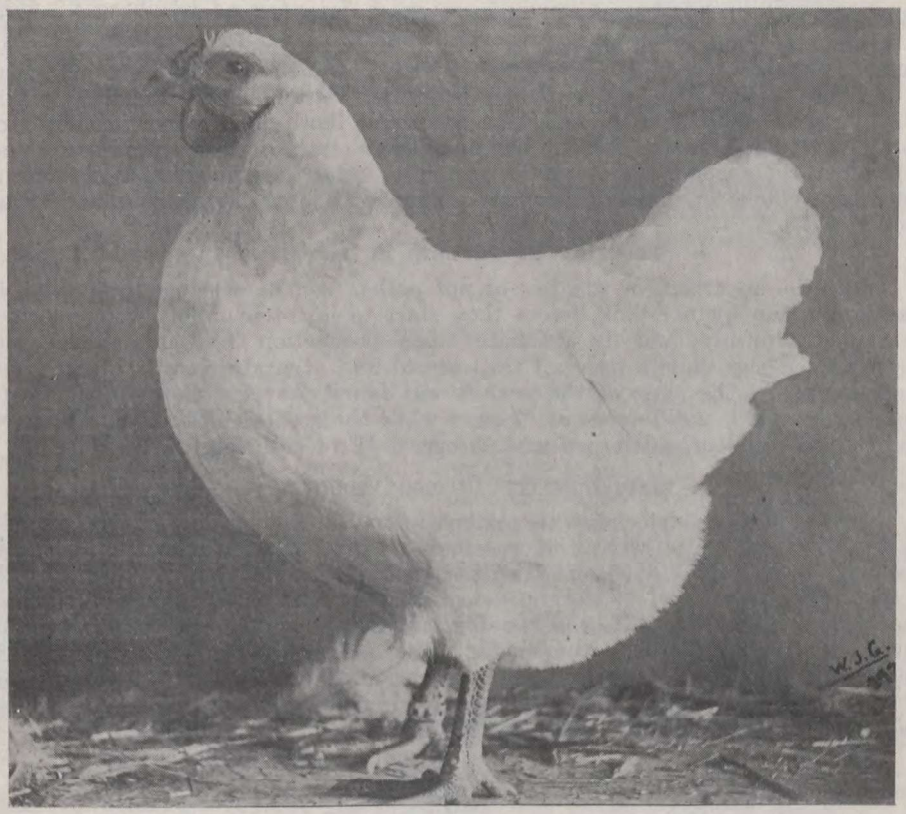
Pen and supplementary feed	Total gain		Largest individual gain	
	lb.	oz.	lb.	oz.
1. Yeast	12	13	1	7
2. Cod-liver oil	12	8½	1	6½
3. Oil and yeast	11	8	1	2½

It will be noted that in this test the lot receiving the yeast made both the largest total gain and the largest individual gain. It would seem that either the yeast or oil alone gives better results than when used in combination.

BREEDING

Hens and pullets are trap-nested, and chicks hatched are pedigreed, this being the second season of such work at this Station.

The two best males in the plant, H54 and H57 have sired the largest number of the highest producers, while a half-brother of H54 sired the best pullet I 75 with a record of 261 eggs averaging 26 ounces to the dozen. Unfortunately, this male bird died during the year. The dams' records of No. H54 and H57 are 270 and 288 eggs respectively, and a full sister of H54 has a record of 305 eggs. We are holding cockerels from our best producers mated to these males for our pedigree breeding work.



One of the good white Wyandotte pullets developed at the Lacombe Experimental Station during the season of 1925. She was hatched April 25 and laid her first egg October 16, at the age of 174 days. She laid 5 eggs in October, 12 in November, and 18 in December. Her dam's record was 181 eggs and her grand dam's record 288 eggs in one year.

PEDIGREE BREEDING

All breeding stock are mated to the best males that it is possible to obtain. The breeding hens are all trap-nested and every egg that each individual hen lays that is suitable for hatching is marked with the hen's number and put in the incubator. On the 18th day of incubation, all the eggs are sorted and each hen's eggs are put in a small cheesecloth, or mosquito-netting bag, and

on the 22nd day all chicks hatched are leg-banded with a small band which is numbered, and the number is placed opposite the dam's and sire's numbers in the pedigree hatching book. It is possible in breeding poultry this way to ascertain the results from each male and female mated. As the years go on, by using always best producers, males and females, that have the vitality and vigour to stand the cold winters, that are true to the standard of the breed, that are prepotent in transmitting these qualities to their progeny as well as the qualities of good hatchability of eggs and livability of chicks, it is possible to have a strain of poultry which is a credit to the poultry industry. (Project P. 56.)

BREEDING FOR FERTILITY, HATCHABILITY AND LIVABILITY

There seems to be a lack of high fertility, hatchability and viability in the White Wyandotte. It has been found at this Station that some birds give good fertility and poor hatchability. Others give poor fertility, with such eggs as are fertile hatching well. An occasional bird is found which never lays a fertile egg even when mated to several different males. There are lastly, some females that lay all fertile eggs that hatch well; and it is from these that it is hoped to improve the reproduction of the Station flock. Records at this Station show that some of the high-producers, both males and females, are short lived; do not come through the first year's strain of heavy production and reproduce the second year; and occasionally, heavy producers that do reproduce give chicks of poor vitality and pullets with poor laying records. (Project P. 111.)

SELECTION OF PULLETS BY HANDLING

In order to ascertain whether or not pullets can be selected for profitable egg-production by handling before they start to lay, ten pullets were selected, examined carefully, and the estimated egg production for her pullet year recorded. These pullets were all trap-nested and accurate records of eggs laid were kept. At the close of the year it was found that the closest estimate to actual record was a difference of 17 eggs, while the greatest discrepancy between the estimate and actual record was 65 eggs. (Project P. 52.)

INDIVIDUALITY IN EGG PRODUCTION

In an effort to determine the extent to which high or low egg production is an individual characteristic, it was found in the 1924-1925 work that pullets from males Nos. H54, H55 and H57, whose dams had 288- and 270-egg records respectively, were good producers under different feed tests, while pullets from males Nos. H30 and H31 whose dams had 200- and 222-egg records respectively, were poor producers under the same conditions. Judging from this it seems that high or low production is influenced more by the individuality of the sire than the pullets themselves, as the dams of each lot of pullets had the same range of production. (Project P. 59.)

BEES

The year 1925 was very unsatisfactory for apiculture. The winter of 1924-1925 was extremely long and severe and the bees wintered badly. May and June, the time when the bees are increasing rapidly in numbers, were favourable, but July and August, the months of heaviest honey storage, were very dry and hot, flowers did not open properly and secreted little nectar. September was so cold and wet that the bees were unable to work at all.

WINTER PROTECTION

Thirty-five colonies were placed in winter quarters, four were packed in double wintering cases with six inches of straw packing. Four were packed in

Kootenay cases placed together and covered with straw; three were packed in a quadruple wintering case; twenty-two were placed in the cellar under the bee-house and two were placed in the office basement. As a result of severe climatic conditions and the lack of quality in the stores, the mortality was very high. In the double wintering cases, two colonies survived; only four of those in the cellar were alive in the spring. The unusual conditions which prevailed rendered any experimental results negative.

HONEY YIELDS, SUMMER PROTECTION AND INCREASE

Colonies 1 and 2 which were wintered in double wintering cases and were placed in Kootenay cases during the summer, produced 69 and 20 pounds of honey, respectively; colonies 7 and 8, which were wintered in the office cellar, produced 20 and 75 pounds respectively; colonies 9 and 10, which were wintered in the bee-house cellar and which received no protection during the summer, produced 20 and 35 pounds of honey. Five 3-pound packages of bees received on May 12 produced an average of 36.5 pounds of honey each. Four 2-pound packages received on June 16 did not produce any surplus honey.

The dry, hot summer with almost no honey coming in was very unfavourable for making increases; hence no increases were made from our own stock.

RE-QUEENING

Twelve queens bred by the Bee Division of the Central Experimental Farm, Ottawa, Ontario, were received on August 15 and were used to re-queen after the main honey-flow was over. No queens of our own breeding were used for this purpose.

EXTENSION WORK

Aberdeen-Angus and Holstein cattle were exhibited at Calgary and Edmonton Exhibitions and an exhibit of five wether lambs of each of the six breeds under experiment at the Station formed an interesting educational exhibit at the Edmonton Spring Show. An exhibit containing material on gardening, grain and forage crops, poultry and bees was taken to summer fairs on the Edmonton-Lloydminster line. This exhibit was in charge of one of the Station assistants who was able to give much valuable information on all of these subjects. A large educational exhibit was made at the Lacombe Summer Fair. This exhibit included horses, cattle, swine and poultry, bees, horticulture and field crops. This exhibit gave an opportunity for members of the staff to discuss these subjects with farmers from a very wide area, and numerous requests were received from other Fair Associations for a similar exhibit. These requests, unfortunately, it is not possible to fulfill on account of transportation difficulty.

Members of the staff judged live stock, poultry, horticulture, grains and grasses at twelve fairs in central Alberta.

Special "Field Days" were held on forage crops, cereal crops and bees. Rains unfortunately reduced the attendance but several hundred people were present. At times other than special field days, somewhat over 1,200 farmers visited the Station singly and in small parties.

During the year members of the staff addressed twenty-nine farmers' meetings. Numerous articles were prepared for "Seasonable Hints," the daily papers and agricultural journals. Somewhat over 7,000 letters were mailed giving replies to questions in connection with farming in central Alberta.

OTTAWA: Printed by F. A. ACLAND, Printer to the King's Most Excellent Majesty, 1926.