DOMINION OF CANADA

DEPARTMENT OF AGRICULTURE

DOMINION EXPERIMENTAL FARMS

EXPERIMENTAL FARM

INDIAN HEAD, SASK.

REPORT OF THE SUPERINTENDENT

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

FOR THE YEAR 1925

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DOMINION EXPERIMENTAL FARM, INDIAN HEAD, SASK.

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SEASONAL NOTES

Spring opened moderately early. Work on the land commenced April 13, and wheat-seeding commenced April 14. The soil was in good condition and readily insured a uniform germination and stand. The weather continued fine, permitting seeding operations to be finished without delay. The lack of moisture during May, however, materially reduced hay and pasture crops.

The Experimental Farm commenced harvesting O.A.C. 21 barley on August 3. Threshing operations on the Farm commenced August 14. With the exception of a few late plots, threshing was completed early in September. Generally speaking, the crops throughout the district were very good.

Heavy rains in September and October delayed threshing operations and made the hauling of grain almost impossible.

METEOROLOGICAL RECORD—1925

Month	Temperature F.					Precipitation			Total sunshine	Evaporation
	Highest	Date	Lowest	Date	Mean	Rainfall	Snowfall	Total		
						Inches	Inches	Inches	Hours	Inches
January	40	23	−30	14	3·0	.....	18·0	1·80	33·2	.....
February	41	5	−35	1	6·50	.....	11·75	1·18	59·1	.....
March	53	30	−25	1	19·45	.....	28·0	2·80	121·6	.....
April	70	10	21	16	42·23	0·39	6·0	0·99	189·2	0·37
May	92	21	17	16	51·81	0·41	.....	0·41	253·9	1·22
June	84	21	36	3 & 7	57·50	3·47	.....	3·47	185·1	3·39
July	99	14	34	30	63·55	0·60	.....	0·60	288·8	5·17
August	97	3	35	20	63·90	0·46	.....	0·46	261·4	4·19
September	89	2	28	30	51·56	2·16	10·0	3·16	136·5	3·50
October	50	11	− 2	29	28·84	0·56	7·2	1·28	84·6	2·36
November	50	20	− 7	7	24·23	0·46	0·75	0·54	65·0	.....
December	45	7	−21	26	14·48	.....	1·25	0·13	11·5	.....
						8·51	82·77	16·82	1,689·9	20·21

ANIMAL HUSBANDRY

HORSES

The horses on the Experimental Farm are pure-bred Clydesdales and Clydesdale grades. They are maintained for work and breeding purposes. There were thirty-six horses on hand at the close of the calendar year, as follows: seventeen pure-bred Clydesdale mares, five grade work-horses, two two-year-old fillies, six yearlings, four foals and one Hackney driver.

Progress with the development of the breeding stud has been reported from time to time. For a number of years the Experimental Farm has been a successful exhibitor of home-bred animals at many of the larger exhibitions. During

the past year, horses were exhibited at the Brandon Winter Fair, Regina Winter Fair, and the Regina Summer Exhibition, winning a championship and gold medal for brood mare, several firsts and other prizes for young horses.

A great deal of the success in breeding Clydesdales is due to the good stallions annually hired by the Indian Head Horse Breeders, of which club this Farm is a member.

In addition to the breeding work, such practical items as the cost of carrying work horses, cost of wintering idle horses, cost of wintering horses doing light work, and the cost of rearing foals, yearlings and two-year-olds receive attention. These cost figures are somewhat interesting, in that they show the trend of feed prices for the past ten years. During 1915-16, feed prices were little more than normal, and the average cost of carrying work horses for twelve months was $83.75. However, by 1917-18, due to war conditions, feed prices advanced considerably, increasing the average cost of maintaining work horses to $131.38, while in 1925 the average cost of carrying work horses again fell to $74.16.

There is an apparent need for more extensive experimental work with feeds. However, horses do not lend themselves as readily to experimental feeding work as other classes of live stock, and this has resulted in less experimental feeding with this class of stock than with others. In the meantime at Indian Head, experimental work is confined to cost studies, breeding and development of draught horses, and the control of navel- or joint-ill.

The following will give some idea regarding the comparative cost of handling horses:—

Cost of Wintering Work Horses from December 1, 1924 to March 31, 1925

Four horses on experiment. 121 days on experiment.

Feed consumed—		
9,300 pounds straw at $2 per ton	$	9 30
960 pounds bran at $20 per ton		9 60
7,160 pounds oats at $20 per ton		71 60
Total feed cost	$	90 50
Average feed cost per horse per day	c	18·7

Feed Cost of Wintering Work Horses in Corral from December 1, 1924 to March 31, 1925

Five horses on experiment. 121 days on experiment.

Feed consumed—		
9,000 pounds straw at $2 per ton	$	9 00
1,200 pounds bran at $20 per ton		12 00
5,400 pounds oats at $20 per pound		54 00
Total feed cost	$	75 00
Average feed cost per horse per day	c	12·4

Feed Cost of Wintering Brood Mares from December 1, 1924 to March 31, 1925

Six horses on experiment. 121 days on experiment.

Feed consumed—		
10,800 pounds straw at $2 per ton	$	10 80
1,440 pounds bran at $20 per ton		14 40
4,320 pounds oats at $20 per ton		43 20
Total feed cost	$	68 40
Average feed cost per horse per day	c	9·0

Feed Cost of Wintering Two-year-olds from December 1, 1924 to March 31, 1925

Three horses on experiment. 121 days on experiment.

Feed consumed—		
5,400 pounds straw at $2 per ton	$	5 40
720 pounds bran at $20 per ton		7 20
3,240 pounds oats at $20 per ton		32 40
Total feed cost		45 00
Average feed cost per horse per day	c	12·4

FEED COST OF WINTERING YEARLINGS FROM DECEMBER 1, 1924 TO MARCH 31, 1925.

Two horses on experiment. 121 days on experiment.		
Feed consumed—		
3,600 pounds straw at $2 per ton	$	3 60
440 pounds bran at $20 per ton		4 40
2,160 pounds oats at $20 per ton		21 60
Total feed cost	$	29 60
Average feed cost per horse per day	$	12·2

FEED COST OF RAISING FOALS FROM WEANING TO ONE YEAR. OCTOBER 1, 1924, to May 31, 1925.

Four foals on experiment. 243 days on experiment.		
Feed consumed—		
9,288 pounds hay at $10 per ton	$	46 44
1,240 pounds straw at $2 per ton		1 24
600 pounds bran at $20 per ton		6 00
6,396 pounds oats at $20 per ton		63 96
Total feed cost	$	117 64
Average feed cost per foal per day	c	12·1

In addition to the cost of wintering horses of various ages, there is appended the average yearly feed cost of maintaining and developing horses of different ages, from October 1, 1924 to September 31, 1925.

Average feed cost of maintaining 5 brood mares	$	42 79
Average feed cost of maintaining 10 work horses		74 16
Average feed cost of maintaining 3 three-year-old fillies		65 37
Average feed cost of maintaining 2 two-year-old fillies		35 94
Average feed cost of maintaining 5 yearlings		37 49
Feed cost of raising a yearling stallion		60 14
Feed cost of raising a two-year-old stallion		78 56

Except for the latter two items these feed costs are for one year only and not the average costs for a number of years.

From the foregoing figures, a variation in feed costs will be observed. It is the aim to feed and develop the yearlings. Growth and development in draft horses is essential in the early stages of life. The young stallions are kept in high fit for sale or exhibition which accounts for the high cost of maintenance.

TREATMENT FOR NAVEL-ILL

The results of five years' work appeared in the 1924 report. Summarizing the results of these experiments, which cannot be regarded as conclusive, foals from treated mares and foals vaccinated at birth were strong and vigorous, with two exceptions, the progeny of one mare. These were mild cases. However, recovery was so slow that they were later destroyed. In the case of untreated mares, having their foals vaccinated at birth, the loss was approximately fifty per cent. It is, therefore, advisable to inoculate the mares previous to foaling. This method has a tendency to render the foetus immune from the invasion of joint-ill germs. The use of vaccine is not a positive preventative against joint-ill in all foals. However, it is noted that when vaccine is used, together with cleanliness and good care, the percentage of live foals is increased. The experiment for the control of navel-ill is being continued. The brood mares are fed potassium iodide, vaccinated previous to foaling, and every precaution taken to ensure healthy foals.

CATTLE

BREEDING CATTLE—SHORTHORNS

Many inquiries are received for breeding stock, and as a consequence, the surplus is readily sold at fairly remunerative prices. The Soldier Settlement Board, Prince Albert, Sask., purchased eight cows and heifers for distribution amongst their settlers. Four females were sold through the Saskatchewan Cattle Breeders at good prices. The original foundation animals of the Shorthorn herd were of dual-purpose breeding. Bulls combining beef- and milk-production were purchased and used with good success in developing the dual-purpose type. The progeny of these bulls showed marked improvement over their dams in beef and milk-production. Rigid selection is practised, and sires of the very best blood lines that can be obtained are used for breeding purposes.

SHORTHORN MILK-RECORDS

Name of Cow	Date of birth	Date of calving	Days in lactation period	Total milk production	Average per cent fat in milk	Value of milk produced	Total cost of feed	Profit on product
				lbs.		$	$	$
Indian Head Mayflower	Mar. 29, 1919	June 30, 1924	314	5,105·7	4·07	72·51	37·20	35·31
Prairie Red Rose 15th	April 8, 1919	June 6, 1924	324	4,006·0	.....	54·72	40·62	14·10
Prairie Red Rose 18th	Mar. 6, 1921	Jan. 21, 1924	352	3,997·3	3·9	47·77	34·46	13·31
Total			990	13,109·0	7·97	175·00	112·28	62·72
Average			330	4,369·6	.....	58·33	37·42	20·91

COST OF RAISING SHORTHORN HEIFERS

Production costs are always interesting to the live stock farmer and breeder. It is apparent, from our records, that yearlings are more costly to raise than two-year-olds and three-year-olds. This is due, in a large measure, to the milk consumed as well as other highly expensive concentrates during the early part of their development. When the calves are thrifty and well grown, the cost of production of two-year-olds and three-year-olds is comparatively reduced. The following average figures give the comparative cost of the different ages.

Average feed cost of raising calves to yearlings	$65 57
Average feed cost of raising yearlings to two-year-old	25 17
Average feed cost of raising two-year-old to three-year-old	20 44

CORN SILAGE VS. SUNFLOWER SILAGE FOR GROWING HEIFERS

The corn vs. sunflower silage experiment with growing heifers was continued during the winter of 1924-25. Heifers of suitable age and weight were used. The conclusions were the same as in former years; namely, that it would appear that corn and sunflower silage are about equal in feeding value for growing heifers. On the other hand, it was noted that the corn-fed heifers were thriftier in appearance and more mellow to the touch as compared with the dry appearance of the sunflower-fed lot.

COMMERCIAL STEER-FEEDING

Owing to the shortage of feed on the Farm during the season of 1924, steer-feeding experiments were discontinued. Meantime, however, a car-load is being fed as a commercial proposition, the result of which will be published in the 1926 report.

DAIRY CATTLE—AYRSHIRES

The newly established herd of Ayrshires consists of six females and one stock bull. The selections were made from Ayrshire breeders in the vicinity of Howick and Huntingdon, Quebec. The herd bull, "Hobsland Speculator", is an outstanding animal with superior breeding and production behind him. The most outstanding female in the herd is "Tullochgorum Dorothy," a two-year-old showing splendid Ayrshire type and conformation. This heifer dropped a splendid heifer calf, sired by "Ottawa Lord Kyle 9th." During October, she produced 1,189 pounds of milk, or an average of 44 pounds per day for twenty-seven days, and during November, her production totalled 1,663.6 pounds, or an average of 55.4 pounds per day. Another outstanding matron in the herd is "Burnside Nell", with three official records of approximately 10,000 pounds. Three of the cows have completed their lactation periods and records are herewith appended.

AYRSHIRE MILK-RECORDS

Name of Cow	Date of birth	Date of calving	Days in lactation period	Total milk production	Average per cent fat in milk
				lbs.	
Bessie Lee 3rd	April 7, 1919	Nov. 9, 1924	363	10,741	4·0
Queen of Brackley	Dec. 1, 1919	Nov. 29, 1924	352	9,154	4·7
Burnside Nell	" 4, 1918	Mar. 19, 1925	287	8,645	3·9
Average production				9,513	4·2

Further, concerning the use of sunflower ensilage, it was apparent this fall when the dairy cows were fed sunflower ensilage for one week that there was a marked decrease in milk-production. However, when corn ensilage was substituted the milk-flow returned to normal.

SHEEP

The flock has been further reduced this year, leaving a total of forty-six head, as follows: thirty-one pure-bred breeding ewes, fourteen pure-bred ewe lambs and one pure-bred imported ram. Steady progress continues with the building up of the breeding flock. Imported rams have been used with good success during the past few years, improving size and vigour of ewes as well as the density and quality of wool. During the year, a total of forty-four lambs were born, as follows: thirty-one pure-breds and thirteen grades. Ram lambs, suitable for breeding purposes, were sold to farmers in the district, while the ewe lambs were retained to keep up the standard of the flock.

EARLY VS. MEDIUM VS. LATE LAMBS

In order to gain some information on the comparative selling price of lambs of the various ages, namely: early, medium and late, a number of ewes were bred to get the comparative results. The first lot of early lambs were sold July 11 at 12 cents per pound; the second lot were disposed of August 14 at 10½ cents per pound; the remaining lambs were put in the feed-lot and sold October 23 at 9½ cents per pound.

It is apparent, from observations during the past few years, that the early lambs are the most profitable, and it will be noted that, as the season advances and a greater supply of lambs becomes available, the price decreases accordingly.

FINISHING MARKET LAMBS

The balance of the lambs, ten in number, were placed in the feed-lot and finished for market. These lambs were fed all the ensilage they would clean up, together with a ration of rolled oats. It will be observed from the following table that the lambs were not fed any hay, silage substituting as a roughage and also supplying the succulence. The lambs made reasonable gains, leaving a good margin of profit over cost of feed.

FINISHING MARKET LAMBS

Number of lambs on experiment		10
Number of days on experiment		38
Initial weight of lambs	lbs.	610
Final weight of lambs	lbs.	740
Total gain on feed	lbs.	130
Average daily gain	lbs.	0·34
Amount silage consumed at $4 per ton	lbs.	500
	$	1 00
Amount oats consumed at 1½c. per pound	lbs.	555
	$	8 33
Total cost of feed consumed	$	9 33
Cost per pound gain	c.	7·17
Value of gain at 9½c. per pound	$	12 35
Profit over cost of feed	$	3 02

SWINE

The number of pigs on hand at the end of the calendar year was as follows: eleven Yorkshire sows; two Yorkshire boars; one Berkshire boar; thirty early-fall pigs and fourteen late-fall pigs.

During the year, four Yorkshire sows and one Yorkshire boar of bacon-type were added to the swine herd. In addition, five young gilts were retained for breeding purposes.

Thirty fall pigs were carried over from the previous year and used for experimental feeding. While the cost of production may be higher with fall litters as compared with the cost of producing spring litters, the pigs are ready to market at a time in the spring when prices are generally high. In the fall of 1924, the price ranged from $7.50 to $9 per hundred weight, as compared with $10.90 and $11.65 the following spring. Therefore, it is seen that the increased spring price per pound balanced the cheaper summer and fall cost of production, thereby making the winter feeding of fall pigs in 1924-25 a profitable business.

The results of the winter feeding of five lots are appended herewith.

COMPARISON OF COARSE GRAIN MIXTURES FOR FINISHING HOGS

		Lot 1	Lot 2	Lot 3	Lot 4	Lot 5
		Barley, shorts and tankage	Oats, shorts and tankage	Rye, shorts and tankage	Barley, shorts, charcoal and tankage	Barley, shorts and tankage
Number of pigs on experiment		7	6	6	6	5
Number of days on experiment		62	62	62	123	123
Initial weight of pigs	lbs.	960	720	715	268	213
Final weight of pigs	"	1,650	1,220	1,220	1,205	1,050
Total gain during experiment	"	690	500	505	937	837
Average daily gain during experiment	"	1·59	1·35	1·35	1·36	1·27
Amount barley consumed at 1·75c. per lb	"	1,311	.....	.....	1,051	876
	$	22·94	.....	.....	18·41	15·33
Amount shorts consumed at 1·35c. per lb	lbs.	663	550	550	1,599	1,234
	$	8.95	7.42	7.42	21.59	16.66
Amount oats consumed at 1·5c. per lb	lbs.	.....	1,108	.....	.....	.....
	$	.....	16.62	.....	.....	.....
Amount rye consumed at 2c. per lb.	lbs.	.....	.....	1,108	.....	.....
	$	.....	.....	22.16	.....	.....
Amount tankage consumed at 3·25c. per lb	lbs.	202	162	162	244	233
	$	6.57	5.27	5.27	7.93	7.57
Amount charcoal consumed at 4·50c. per lb	lbs.	.....	.....	.....	17	.....
	c.	.....	.....	.....	76·5	.....
Total cost of feed consumed	$	38.46	29.31	29.31	48.70	39.56
Cost per pound gain	c.	5·57	5·86	5·80	5·2	4·7
Value of gain at $10.90 per cwt	$	75.21	54.50	55.05	.....	.....
Value of gain at $11.65 per cwt	$	.....	.....	.....	109.16	97.51
Profit or loss over cost of feed	$	36.75	25.19	25.74	61.46	57.95

The comparison of oats, barley or rye as constituent parts of the meal ration for finishing, resulted in the barley-fed lot making the greatest gains, the most economical gains and the greatest profit, while oats and rye made a relatively poor second with practically identical gains and profits.

Lots 4 and 5 comprised younger pigs, these having an initial weight of 44.6 and 42.6 pounds, respectively. Both these lots were given a meal ration of barley, shorts, and tankage, while in addition lot 4 was fed 17 pounds of charcoal. This lot made the most rapid gains but lost out in economy of gains and profit, the cost of gains being 5.2 cents as compared to 4.7 cents, and the profit $10.28 per pig as compared to $11.59.

COMPARISON OF PASTURES FOR GROWING HOGS

Oat, barley and millet pastures were compared for the use of growing pigs. The pigs were divided into three lots of seven each. Lots I and II, on oats and barley, respectively, made identical gains at the same cost and also made considerably better gains than lot III, on millet, the pigs in which were younger and less thrifty in appearance. All pigs used in the experiment had previously pastured on rape.

COMPARISON OF PASTURE FOR GROWING PIGS—1925

On pasture August 3 to September 16

—		Lot I Oats	Lot II Barley	Lot III Millet
Area	acres	½	½	½
Number of pigs on experiment		7	7	7
Number of days on experiment		44	44	44
Initial weight of pigs	lbs.	715	705	468
Final weight of pigs	"	1,130	1,120	825
Total gain during experiment	"	415	415	357
Average daily gain during experiment	"	1·34	1·34	1·16
Amount barley consumed at 1·75c. per lb	"	220	220	158
	$	3.85	3.85	2.78
Amount shorts consumed at 1·35c. per lb	lbs.	147	147	98
	$	1.98	1.98	1.32
Amount oats consumed at 1·5c. per lb	lbs.	536	536	447
	$	8.04	8.04	6.70
Amount rye consumed at 2c. per lb	lbs.	196	196	66
	$	3.92	3.92	1.32
Amount skim-milk consumed at 30c. per cwt	lbs.	1,684	1,684	2,000
	$	5.05	5.05	6.00
Total cost of feed consumed	$	22.84	22.84	18.12
Cost per pound gain	c.	5·5	5·5	5·0
Value of gain at 10c. per pound	$	41.50	41.50	35.70
Profit or loss over cost of feed	$	18.66	18.66	17.58

COMPARISON OF COARSE GRAINS FED WITH TANKAGE

Following the conclusion of the pasture experiment, the pigs were housed in the main piggery, divided into three lots and fed coarse grain rations as outlined in the following table. All pigs were on pasture forty-four days. Lots I and II required twenty-nine days in the finishing-pen as compared with sixty-one days for lot III.

FINISHING MARKET HOGS—FALL, 1925

—		Lot I ⅔ oats, ⅓ barley, tankage	Lot II ⅔ barley, ⅓ oats, tankage	Lot III ⅓ barley, ⅓ oats, ⅓ rye, tankage
Number of pigs on experiment		7	7	7
Number of days on experiment		29	29	61
Initial weight of pigs	lbs.	1,135	1,130	840
Final weight of pigs	"	1,485	1,450	1,470
Total gain on experiment	"	350	320	630
Average daily gain	"	1·71	1·57	1·47
Amount barley consumed at 1·75c. per lb	"	334	662	599
	$	5·85	11·59	10.48
Amount oats consumed at 1·5c. per lb	lbs.	662	334	599
	$	9.93	5.01	8.98
Amount rye consumed at 2c. per lb	lbs.	.....	.....	599
	$	.....	.....	11.98
Amount tankage consumed at 3·25c. per lb	lbs.	110	110	188
	$	3.58	3.58	6.11
Total cost of grain consumed	$	19.36	20.18	37.55
Cost per pound gain	c.	5·53	6·29	5·96
Value of gain at 10·5c. per lb	$	36.75	33.60	66.15
Profit or loss over cost of feed	$	17.39	13.42	28.60

At the conclusion of the feeding experiment, the pigs were graded by the superintendent and the local butcher. Fifty per cent of the pigs in lots I and II graded select, while lot III graded no selects.

These pigs were Yorkshires and the progeny of bacon-type sires and dams. They averaged, respectively, 162.14 pounds, 161.43 pounds and 120 pounds at the commencement of the finishing period. This would indicate that from 150 pounds to 160 pounds is about the proper weight to place in feeding pens to finish. In the case of lot III, the pigs weighed 120 pounds and were apparently fed too long on concentrates for the production of pigs of bacon-type.

FALL PIGS

During the year, six sows were bred to farrow August, September and October for early- and late-fall litters. Information relating to these litters is appended.

Breed of Sow	Date farrowed	Number of pigs in litter	Average weight December 30, 1925
			lbs.
Yorkshire	Aug. 26....	5	124
Yorkshire	" 30....	8	104·16
Yorkshire	Sept. 2....	11	88·57
Berkshire	" 4....	8	80·83
Yorkshire	Oct. 8....	11	38·63
Yorkshire	" 30....	8	Died during nursing period

The early farrowed litters had the advantage of running on pasture with their dams during the nursing period, while the later farrowed pigs did not receive any kind of pasture or green-feed supplement, and, at the same time, were confined to the pens. Pigs farrowed in August and early September made more rapid gains and growth and, therefore, are able to withstand the colder weather much better than the later farrowed pigs.

The later farrowed pigs, although well nourished and thrifty while nursing, after weaning, as the weather became colder, huddled together in the pen and did not take exercise, and, as a result, became unthrifty in appearance. The last litter of the season, which was farrowed October 30, did not make any apparent progress, and the pigs died one after another until the entire litter was gone.

From the foregoing results, it will be observed that success with fall pigs depends on date of farrowing, care, feeding and management.

FIELD HUSBANDRY

CULTURAL PROJECTS

Experimental work in cultural methods is carried on from year to year to secure information regarding summer-fallow substitutes, sweet clover, fall rye, treatment of soils for different crops, sunflowers, corn, and other investigational work in connection with western agriculture. Cultural experiments have been carried on for many years and results reported regularly in the annual report. In 1921, however, the original projects, which commenced in 1912, were modified and remodelled to secure further information in relation to cultural problems.

The following cultural experiments are under way. However, owing to the short duration of these experiments, results cannot be regarded as conclusive:—

F 144—Summer-fallow treatment.
F 145—Summer-fallow substitutes.
F 146—Stubble treatment.
F 147—Breaking sod from cultivated grasses and clovers.
F 153—Place in rotation to seed fall rye.
F 156—Dates of seeding sunflowers.
F 157—Dates of seeding fall rye.
F 166—Rates of seeding grasses and clovers.
F 169—Methods of seeding grass and clover mixtures.
F 179—Cultivation and intertillage of sunflowers.
F 193—Commercial fertilizers for field crops.
F 194—Green manure crops.

SUMMER-FALLOW TREATMENT.—Experimental work with the treatment of summer-fallow has not been carried on for a sufficient length of time to give any definite benefits that might be the result of treatments given. It is apparent, however, to ensure success the work must be done early with frequent cultivation during the year to control weeds and conserve moisture. The results this year indicate that June ploughing, with the necessary cultivation thereafter, is the most satisfactory. Fall disking and frequent cultivation of the summer-fallow shows promise as a treatment. Cultivation with the duck-foot cultivator also shows promise as a treatment of the fallow.

SUMMER-FALLOW SUBSTITUTES.—The most significant feature of this experiment is the effect of sunflowers upon the subsequent crop. In dry seasons, where grain is grown in triple rows, the subsequent wheat crop does not make the same luxuriant growth, resulting in a lack of uniformity of stand, ripening and grade.

STUBBLE TREATMENT (WHEAT).—The results of this experiment vary from year to year, depending, to some extent, upon weather conditions at the time work is being done. The results for the past season indicate fall ploughing is the best system of handling stubble. In this case, the fall ploughing was done quite early and the land had the benefit of copious fall rains, which, doubtless, influenced the past season's results. Stubble-burning in the spring, with and without cultivation, gave equal results. The results in the test with oat stubble are somewhat similar to those for wheat.

BREAKING SOD.—The experiment dealing with the different methods of breaking sod from grasses and clovers has not completed the cycle of rotation. Therefore, no data are available.

PLACE IN ROTATION TO SEED FALL RYE.—Fall rye is gradually gaining in popularity as a grain crop in Saskatchewan, particularly in districts where the soil is light and inclined to be sandy, as it affords invaluable protection against drifting and is in possession of the land at the time of the high winds of spring. Fall rye, when seeded in June or early July, may be pastured both in fall and spring. It is particularly recommended as a spring pasture, as it will be far enough ahead to be pastured weeks before there is any sign of other pasture. However, if a grain crop is to be harvested it should not be pastured too late in spring, otherwise ripening will be delayed and bring the rye crop in at the same time as the other grain crops on the farm.

The results of the past season's test would indicate that the seeding of fall rye on disked wheat or oat stubble is the most profitable method of growing this crop. The yields this year on wheat and oat stubble, sown August 25, 1924 are 48.21 bushels and 50.71 bushels per acre, respectively.

DATES OF SEEDING FALL RYE.—From continued tests with the different dates of seeding fall rye, it is clearly indicated that there is no advantage gained in seeding fall rye before the second week in August. Further, seeding should not be delayed until late September.

DATES OF SEEDING SUNFLOWERS.—The sunflower area is gradually increasing, and it makes an excellent silage for live stock. However, sunflowers are not recommended where corn can be grown successfully, due, in a large measure, to its subsequent effect on the crops that follow.

The results of this year's test are not comparable, due to the serious damage by cutworms, necessitating the reseeding of a number of plots. However, according to former observations, seedings from May 1 to May 15 are most satisfactory.

RATES OF SEEDING TO GRASSES AND CLOVERS.—Western rye grass, brome grass, alfalfa and sweet clover are seeded at five, ten and fifteen pounds per acre. These seedings are made on fallow land, with wheat as a nurse-crop, and are allowed to remain in hay for three years, with the exception of sweet clover.

It will be necessary to carry on these experiments for a series of years before conclusive data can be obtained.

METHODS OF SEEDING DOWN.—The purpose of this test is to obtain information regarding the best crops with which to seed down grasses and clovers. Such crops as wheat, oats, barley, fall rye and green feed oats are under observation, as well as seeding alone without any kind of crop. Mixture used: alfalfa, 10 pounds per acre; western rye grass, 8 pounds per acre.

The following observations have been made from time to time:—

1. No catch was obtained from seeding down with fall rye in the fall.
2. The yield on plot seeded alone, without nurse-crop, was not heavy enough to omit a nurse-crop being used.

CULTURAL METHODS FOR SUNFLOWERS.—Owing to damage by cutworms to the sunflower plot, the results for the year are not comparable, as many of the plots had to be reseeded.

APPLICATION OF BARNYARD MANURE (WHEAT AND CORN).—The experiment has not been in operation a sufficient length of time to make any deductions on the results from barnyard manure. However, in view of the fact that many farmers are gradually working into mixed farming, information on the time and method of its application should prove of value. At this Farm, the application and incorporation of well-rotted manure into the land has beneficial results on subsequent crops.

COMMERCIAL FERTILIZERS.—The application of commercial fertilizers shows no great improvement in yield, and in no case has the increase warranted the expense incurred by its application.

ROTATIONS

Investigations have been carried on at this Farm for a period of years for the purpose of determining suitable rotations from the standpoint of profit and maintenance of soil-fertility. Four rotations are under way, designed to meet the requirements of the grain and diversified farmer. Continuous grain-growing encourages weeds, soil-drifting, lack of permanency and depletes soil-fertility. On the other hand, diversified farming produces a variety of crops for the maintenance of live stock, insures against losses and provides for the utilization of labour and equipment.

Rotations under test are as follows:—

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

The inauguration of a system of crop-rotations presents an opportunity for the keeping of cost data in the production of farm crops. Records have been

kept of all the items of expense and returns since the rotations were established in 1912. The cost of crop-production on the various rotations appears on the tabulated summary of values, etc.

A mixture of alfalfa and western rye grass, which is well adapted to our climatic conditions, is used in all rotation work. Under normal weather conditions, it produces an abundance of hay and pasture.

ROTATION "C"

The crop-sequence in this rotation is wheat, wheat, fallow, and has grown grain continuously since 1912. Conditions have made it possible almost every year to have the stubble ploughed early in the fall in preparation for the crop the following spring. In the summary of yields, value, profit and loss, which is appended herewith, it will be noted that the crop on stubble averaged 25.1 bushels and the crop on fallow 29.2 bushels per acre. The comparative cost per bushel of these crops is 71 cents and 67 cents, respectively.

ROTATION "C"—SUMMARY OF COST OF PRODUCTION

Crop	Yield per Acre		Value of crop per acre, 1925	Cost of production per acre, 1925	Cost of production per bushel, 1925	Profit or Loss per Acre	
	1925	Average five years				1925	Average five years
	bush.	bush.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.
Wheat	25·1	20·3	28 87	17 87	0 71	11 00	3 56
Fallow	.....	.....	.....	.....	.....	.....	−10 98
Wheat	29·2	26·0	33 58	19 59	0 67	13 99	7 04

ROTATION "J"

Rotation "J" has been changed from time to time to meet the requirements of the diversified farmer, and, at the same time, eliminate the bare fallow. The crop sequence in this rotation is as follows: wheat, oats, corn, wheat and seeded down, hay, hay.

Considerable damage was experienced with cutworms on the corn and oat block. Both areas had to be reseeded. The oats were cut and handled as green feed, while the corn crop was late and touched with frost on July 29, resulting in a deficit on the year's operations.

ROTATION "J"—SUMMARY OF COST OF PRODUCTION

Crop	Yield per acre		Value of crop per acre, 1925	Cost of production per acre, 1925	Cost of production per bushel or ton, 1925	Profit or Loss per Acre	
	1925	Average three years				1925	Average three years
	bush.	bush.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.
Wheat	30·2	17·4	34 73	21 11	0 70	13 62	−0 50
	tons	tons					
Oats—green feed	2·45	.....	19 60	17 72	7 23	1 88	.....
Corn	2·62	5·17	10 48	23 66	9 03	−13 18	−11 95
	bush.	bush.					
Wheat—seeded down	31·4	26·8	36 11	15 85	0 50	20 26	12 64
	tons	tons					
Hay	1·35	1·70	16 20	12 11	8 97	4 09	2 89
Hay	1·52	1·84	18 24	11 05	7 27	7 19	5 65

ROTATION "P"

Rotation "P" is of eight years' duration, and almost ideal for the diversified farmer. It permits the growing of wheat as a cash-crop, coarse grains for the feeding of live stock, corn for ensilage and hay for roughage. It will be noted that the rotation contains four hay crops. If pasture is desirable, the seventh and part of the eighth, before breaking, could be used for pasture purposes.

The lack of precipitation during the month of May resulted in the low yield per acre of hay of 1.08 tons. The corn crop suffered slightly from cutworms and frost.

ROTATION "P"—SUMMARY OF COST OF PRODUCTION

Crop	Yield per Acre		Value of crop per acre, 1925	Cost of production per acre, 1925	Cost of production per bushel or ton, 1925	Profit or Loss per Acre	
	1925	Average five years				1925	Average five years
	tons	tons	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.
Hay	1·45	1·83	17 40	10 10	6 97	7 30	7 19
Hay	0·63	1·78	7 56	8 74	13 87	−1 18	5 66
Hay—break	0·81	1·48	9 72	8 96	11 06	0 76	2 78
	bush.	bush.					
Wheat	24·8	25·3	28 52	23 42	0 94	5 10	6 89
Oats	41·9	40·7	19 60	17 98	0 43	1 62	0 48
	tons	tons					
Corn	4·41	6·18	17 64	29 04	6 59	−11 40	−9 35
	bush.	bush.					
Barley—seeded down	35·4	29·2	21 10	16 03	0 46	5 07	1 93
	tons	tons					
Hay	1·43	2·08	17 16	10 23	7 15	6 93	9 08

ROTATION "R"

This is a nine-year rotation, in operation since 1912, with the following crop sequence: wheat, oats, fallow, wheat, oats and seeded down, hay, hay, hay and break, corn. This rotation is especially designed for the maintenance of live stock.

The corn crop suffered slightly from cutworms but not from frost as in the case of rotations "J" and "P".

ROTATION "R"—SUMMARY OF COST OF PRODUCTION

Crop	Yield per Acre		Value of crop per acre, 1925	Cost of production per acre, 1925	Cost of production per bushel or ton, 1925	Profit or Loss per Acre	
	1925	Average five years				1925	Average five years
	bush.	bush.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.
Oats—seeded down	42·4	46·8	31 36	18 51	0 44	12 85	2 35
	tons	tons					
Hay	0·88	1·77	10 56	9 42	10 70	1 14	9 38
Hay	1·00	1·96	12 00	9 71	9 71	2 29	11 08
Hay—break	0·91	1·71	10 92	15 90	17 47	−4 98	5 55
Corn	7·63	9·64	30 52	35 20	4 61	−4 68	1 15
	bush.	bush.					
Wheat	29·1	28·4	33 47	14 22	0 49	19 25	13 46
Oats	30·2	53·4	14 14	15 92	0 53	−1 78	2 30
Fallow							−11 44
Wheat	39·0	36·1	44 85	22 75	0 58	22 10	15 87

FIELD CROPS

Three outstanding varieties of wheat, namely: Marquis, Garnet and Reward, were tested under field conditions. The results are appended herewith.

FIELD CROPS—WHEAT

Variety	Area	Date of seeding	Date ripe	Days to mature	Yield per acre	Weight per bushel
	acres				bush.	lbs.
Marquis	5	April 17	Aug. 7	112	21·33	58
Garnet	5	April 18	Aug. 4	108	20·70	55
Reward	5	April 18	Aug. 5	109	18·93	57

FIELD CROPS—PEAS

Variety	Area	Date of seeding	Date ripe	Days to mature	Yield per acre
	acres				bush.
Chancellor	3	April 20	Aug. 15	120	26·70
MacKay	2	April 20	Aug. 20	125	20·70

HORTICULTURE

Precipitation during the winter of 1924-25 was about the average, but the spring was backward. Killing frosts were experienced as late as May 26, and fruit blossoms escaped injury by virtue of growth being delayed.

Losses from winter-killing were slight, only a few cross-bred apples and plums suffering injury from this cause. Ornamental trees, shrubs, perennial flowers and crab apples survived the winter in good shape.

Seeding of vegetables outdoors commenced early in May, but a prolonged period of dry weather inhibited normal germination. Moisture was plentiful in June, but extremely hot, dry weather in July arrested development of cool-season crops. On the other hand, warm-season crops flourished bringing satisfactory returns both from the standpoint of quality and quantity.

The application of water to flower-beds and borders was found to be necessary to insure a satisfactory showing. Fruit trees did not appear to suffer from water-shortage, heavy crops were harvested, and terminal growth ceased early in August.

Diseases noted were plum-pocket and silver leaf on fruit trees and various rusts on ornamental trees. Scab-control measures were found necessary for the potato. Insects of an injurious nature were cutworms, cabbage-worm, onion-maggot, aphis, larch sawfly, tent caterpillar, potato beetle, flea beetle, thrip, red turnip-beetle and black snout rose-beetle.

Details of control measures cannot be published in this report, but this information is available at the office of the Experimental Farm, Indian Head.

VEGETABLES

ASPARAGUS—VARIETY TEST.—Good growth was made by the plants set out in 1924. The Palmetto variety was used and no evidence of rust was noted. Cutting on the old bed commenced May 11. The quality of asparagus was good and the earliness of this vegetable makes it valuable for all gardens.

BEANS—VARIETY TEST.—In this test one pole variety and thirteen dwarf varieties and strains were included. No green beans were picked during the summer, yields being taken from the ripe beans harvested. Seed of each variety or strain was sown in 35-foot rows on June 2, but growth was only fairly satisfactory owing to drought. Frost on September 11 prevented further development and destroyed unripe pods. The following varieties, which may be considered too late for this district, were totally destroyed: Hodson Long pod, Giant Stringless Green Pod, No. 1 Pole Bean 0-3209, and Hodson Long Pod 0-6904. Earliest varieties were Interloper Challenge Black Wax 0-6876 and Davis White Wax 0-6903. In order of yield, the varieties tested were as follows: Interloper Challenge Black Wax, Davis White Wax, Round Pod Kidney Wax 0-6875, Masterpiece (Sutton), Stringless Green Pod, Masterpiece (Vaughan), Yellow Eye, Round Pod Kidney (McDonald), and Pencil Pod Black Wax.

BEANS—PLANTING DISTANCES.—Planting beans at two, four and six inches apart in the rows was continued in 1925, using, as heretofore, the two varieties, Round Pod Kidney Wax and Stringless Green Pod. From both varieties greatest yields were obtained where the planting distance was two inches. The yields from the rows planted at four inches were intermediate, while yields from rows at six inches apart were one-half those from rows at two inches apart. Last year's results were exactly the reverse of those obtained this year.

TABLE BEETS—VARIETY TEST.—Four well-known varieties were tested. Germination was slow and irregular with this crop, the seed being in the ground more than a month before sprouting. Eclipse was first ready for use. This variety also gave the highest total yield, followed in order by Crosby Egyptian, Black Red Ball and Detroit Dark Red. Owing to the rain in the beginning of September, many roots commenced second growth and, in many cases, cracked. Yields of marketable beets placed the varieties in the following order: Detroit Dark Red, Black Red Ball, Crosby Egyptian and Eclipse.

TABLE BEETS—DATES OF PLANTING.—In this experiment the variety Detroit Dark Red was used. Six sowings, of 35-foot rows each, were made at ten-day intervals commencing May 5. Seed of the first three sowings germinated on June 10, so that the results of this test cannot be considered conclusive. The sixth sowing, made on June 25, failed to develop plants large enough to harvest.

TABLE BEETS—DATES OF PLANTING

Date Sown	Total yield	Per cent marketable
	lbs.	
May 5	58	48·3
" 15	69	33·4
" 25	110	20·0
June 4	73	28·8
" 15	39	64·2
" 25	0	.....

The irregularity and variation in the number of marketable beets was due to the presence of abnormally large and cracked roots in the earliest sown lots, following rains early in September.

BRUSSELS SPROUTS—VARIETY TEST.—Two varieties were tested. Seed of Improved Dwarf and Paris Market was sown under glass on May 6 and plants were set in the garden on June 12. No sprouts developed on either variety.

CABBAGE—VARIETY TEST.—An extensive test of twenty varieties, including two Savoy and four red cabbages, was made. Seed was sown in flats under glass on May 6, plants were pricked out on May 23 and planted in the garden on

June 5. Twenty-five plants of each variety were set out. Of the varieties tested, Golden Acre, a comparatively new variety of the Copenhagen Market type, was considered the best early. The heads were small, round and compact. It matured as early as Early Jersey Wakefield. It is more attractive than the latter, and a smaller per cent of stem is present in the head. Early Paris Market is recommended for a second early variety. All Head Early and Succession, flat cabbages, did not show up well in 1925. Glory of Enkhuizen gave the highest yields for twelve average heads. This variety seems well adapted to prevailing climatic and soil conditions, and stood up well during hot, dry weather. Danish Ballhead, Danish Roundhead and Copenhagen Market also gave very satisfactory yields and can be recommended for late crop and winter-keeping varieties.

Of the two savoy varieties tested, Chester Savoy excelled. This variety was about two weeks earlier than Drumhead Savoy, and also developed larger heads.

For pickling cabbages, Haco and Dutch Red gave the most satisfactory yields, and were ready for use on September 4.

CABBAGE—DATE OF SOWING FOR STORAGE.—A comparison was made between sowing directly in the garden and setting in the garden plants started under glass. Copenhagen Market and Extra Amager Danish Ballhead were the varieties used. Plants from seed of both varieties, sown under glass on May 6, were planted in the garden on June 5. Sowings outdoors were made on May 5, 15 and 25, and the plants thinned out till they were eighteen inches apart in the rows.

Owing to the drought in May, seed of all sowings germinated from June 8 to 10 and yields from all outside sowings were disappointing. The experiment will be continued, but it would seem an advisable and safe practice to grow cabbage from seed started with artificial heat.

CAULIFLOWER—VARIETY TEST.—Two varieties were tested. These were sown and planted out as were the cabbage varieties. Owing to the drought, only a small percentage developed good heads. Dwarf Erfurt rated higher than Early Snowball from the season's results.

CARROTS—VARIETY TEST.—This test included four varieties, and an Ottawa strain of Chantenay. Due to unfavourable moisture conditions, seed sown on May 5 failed to germinate until June 10 to 13. Yields, however, were satisfactory and placed the varieties in the following order: Red St. Valery, Nantes Half Long, Chantenay, Oxheart and Chantenay 0-3423. All varieties were of good quality, although the extreme length of Red St. Valery is perhaps not desirable for domestic purposes.

CARROTS—DATES OF PLANTING.—As with beets, six sowings were made at ten-day intervals commencing May 5. The variety, Chantenay, was used. Germination of the first five five sowings took place ten days apart. Yields placed the sowings in the following order: 3, 5, 4, 2 and 1, indicating a loss of germinability or from death of young seedlings in the earliest sowings. The yield from the sixth sowing on June 25 was 4 pounds as compared with 55 pounds from the same length of row from the third sowing.

CELERY—VARIETY TEST.—The results from this experiment where six varieties were tested were not conclusive. Although seed was sown under glass on April 1 and transplanting done on dates between the end of April and the middle of May, it seemed inadvisable, owing to the dry condition of the soil, to set the plants in the garden before July 17. Good growth was made till September 11 when development was checked by slight frost.

Highest-yielding varieties were New Golden and Golden Plume, which produced firm, compact stalks of excellent quality. Next in order were Paris Golden Yellow, Golden Self Blanching and White Plume. No late varieties were tested.

CELERY—METHOD OF BLANCHING.—As in former years, planting in a trench and earthing the plants with soil as growth proceeded was found to give the best results both from the standpoint of yield and quality of celery produced. Golden Self Blanching was the variety used.

CHARD—VARIETY TEST.—Where conditions most favourable for the growth of spinach do not exist, this vegetable is a valuable substitute. Both varieties tested made good growth and developed large plants. Fordhook Giant produced nice white stalks of excellent quality and was considered superior to the variety, Silver Leaf.

TABLE CORN—VARIETY TEST.—From one year's trial Alpha and Banting, two novelty dwarf varieties, gave promise of being valuable on the prairies. They are early and yield well. Ripening about the same time were Gehu, Assiniboine and Nuetta, but producing much larger ears. The second early varieties were Early Mayflower, Malakoff, Pocahontas, Whipple Yellow, Early Fordhook, Golden Bantam and Burbank. Late varieties were Extra Early Cory, Earliest Catawba, Early Adams and Improved Early Dakota. A number of Hungarian sweet corns were tested, but all proved too late to ripen ears.

TABLE CORN—SUCKERS REMOVED AND REMAINING.—Golden Bantam and Early Malcolm were the varieties used in this experiment. On one row of each, 50 feet long, the suckers were allowed to grow, while from the other row they weer kept cut off throughout the growing period. From the results, no definite conclusions or statements can be made.

CITRON—VARIETY TEST.—The yields from two plants of two varieties, Red Seeded and Green or Colorado, harvested on September 17, were similar. Dry, warm weather favoured the development of this crop and Colorado citron was fit for use on September 4, two weeks earlier than Red Seeded. Colorado, Ottawa strain, produced only one-half the crop obtained from the other two varieties tested.

CUCUMBERS—VARIETY TEST.—The season was favourable for cucumbers, and the yields obtained from eight varieties sown in the garden on June 2 were satisfactory. They were grown in rows six feet apart, individual plants being two feet apart in the rows. Based on the crop harvested from 35-foot rows, Giant Pera, which yielded 37.5 pounds, was the leading variety. This variety was also ready for use on August 10, a week earlier than any of the others. Early White Spine yielded 36.5 pounds, while the standing of the remaining varieties was in the following order: Improved Long Green, Arlington White Spine, David Perfect, XXX Table, Early Russian and The Vaughan.

EGG PLANT—VARIETY TEST.—Only one variety, Extra Early Dwarf, was tested. Sown on April 1 and planted in the garden June 12, the first fruit which formed measured 3 inches by 2·5 inches on August 14. Harvesting began on September 4 and 4.5 pounds were gathered from twenty-five plants on September 17 after growth had been checked by frost on September 11.

KALE OR BORECOLE—VARIETY TEST.—Tall Green Curled and Dwarf Green Curled were grown. These were started under glass and planted in the garden as were the cabbage varieties. From the standpoint of yield, Tall Green Curled excelled, but Dwarf Green Curled was of better quality and more crinkled.

Seed of Curled Kale sown in the garden on May 4 made fair growth, but, owing to the dry weather, the plants did not attain half the size of those started under glass and planted out.

LETTUCE—VARIETY TEST.—Lettuce requires cool conditions for best development. A prolonged period of dry, hot weather followed delayed germination, with the result that growth of this crop was unsatisfactory.

LEAF LETTUCE.—Strains of Grand Rapids were considered ready for use a few days earlier than Early Curled Simpson and the Black Seeded Simpson strains. Grand Rapids likewise developed seed-stalks about seven days earlier than the other varieties.

HEAD LETTUCE—BUTTER TYPE.—The variety, All Heart, produced fairly good heads and withstood the hot weather better than Crisp as Ice or Salamander. The last-named variety made a poor showing.

HEAD LETTUCE—ICEBERG TYPE.—Owing to the dry weather, no firm heads formed on either Crystal Head or Iceberg.

MUSKMELON—VARIETY TEST.—Seed of three varieties was sown under glass on May 6 and transplanted into a hotbed on June 23. Montreal was the first to bloom, and, though a number of fair-sized fruit developed, none ripened. Page Early showed fair adaptability, while Tip Top was an unsatisfactory variety.

ONIONS—VARIETY TEST.—Onion-maggots again interfered with the development of this crop and prevented a uniform stand being obtained. Spraying with a 1-1000 solution of corrosive sublimate seemed to check the ravages of the maggots.

All seed was sown in the garden on May 4, but none germinated till after the first week of June. Thus the cool weather of spring, essential for profitable onion-production, had passed, and yields from all varieties were unsatisfactory.

Three Strains of White Barletta and one of Mammoth Silver King were the pickling-onions tested. The former were ripe on August 3, about two weeks earlier than the latter. The yield from the latter, however, was about double that of the former from the same length of row.

Notes were taken September 4 on varieties grown for dry bulbs, as follows: Prizetaker and Ailsa Craig, good type of growth, small tops and nice bulbs. Extra Early Flat, good. Southport Yellow Globe and Southport White Globe, more desirable than Southport Red Globe and Yellow Globe Danvers. Yellow Globe Danvers, Ottawa strain, better than commercial strain. Large Red Wethersfield inclined to be late and many "thick necks."

PARSLEY—VARIETY TEST.—From the showing of the two varieties sown in the garden May 4, it would seem advisable to sow the seed of this crop under glass early in spring and transplant to the garden. Moss Curled and Triple Curled were tested, but development was slow and yields poor owing to the dry weather.

PARSNIP—VARIETY TEST.—Despite the drought of the summer, all varieties outyielded the 1924 figures. Hollow Crown gave the highest total and marketable yields, followed by Cooper Champion, XXX Guernsey and Hollow Crown 0-6048 strain. Plants were thinned to three inches apart in rows eighteen inches apart.

PARSNIP—DATES OF PLANTING.—Hollow Crown was tested in six sowings at ten-day intervals, commencing May 5. With this crop, the first five sowings germinated twelve days apart and the first three germinated on June 16. The third sowing gave the highest yield, followed in order by the second, fourth, first and fifth, while the sixth sowing produced no crop. From these results, the conclusion that the parsnip requires a long season for satisfactory development is supported.

PEAS—VARIETY TEST.—Twenty-one varieties and strains were included in the variety trial. Perhaps for no other crop were conditions for growth in the early spring so unsatisfactory. Seed was sown in the garden May 5, but germination was very irregular and was not complete till after the rains at the end of June.

No green peas were picked, the yields of dry peas being taken when the vines had ripened. Dwarf varieties developed more satisfactorily than tall varieties, Laxtonian, Little Marvel, Sutton Excelsior and McLean Advancer excelling Thomas Laxton and Alaska as early varieties. The best late varieties were Stratagem, Senator, Danby Stratagem, Lincoln and Admiral Beatty.

PEAS—PLANTING DISTANCES.—Seed of three varieties, Thomas Laxton, English Wonder and Stratagem, was sown May 5 in rows thirty-five feet long, at one, two and three inches apart in the rows, respectively. No green peas were picked, yields being taken when the vines had ripened. Results were irregular, and this experiment will be continued in order to obtain more definite information. The order of yield for each variety was as follows:—

PEAS—PLANTING DISTANCES

Variety	Yield		
	Highest	Medium	Lowest
	Distance apart inches	Distance apart inches	Distance apart inches
Thomas Laxton	1	3	2
English Wonder	3	1*	2*
Stratagem	2	3	1

*Yield from 1 in. and 2 in. distances was equal.

PEPPER—VARIETY TEST.—The season was favourable for peppers. Five varieties were tested. Seed was sown under glass on April 1, and thirty-five plants of each variety were planted in the garden on June 12. Harris Earliest was the only variety which ripened before the frost on September 11. Squash or Tomato gave the heaviest yield of green peppers, followed by Golden Dawn and Neapolitan. Red Chili and Long Red Cayenne set heavy crops, but were destroyed by frost before ripening.

PUMPKIN—VARIETY TEST.—Three varieties were tested. Seed of each variety was sown under glass on May 5, and plants transplanted to the garden on June 17 when danger of frost was over. Connecticut Field was the first to bloom, followed in order by Small Sugar and Quaker Pie. No fruits of the last named variety ripened. Connecticut Field was the outstanding cropper, giving a yield of 113 pounds from two plants.

POTATOES—VARIETY TEST.—This experiment was conducted as in previous years, but included only twenty-four varieties in 1925. Sixty-six sets of each variety were planted fourteen inches apart in rows thirty inches apart on May 14. The land was spring-ploughed, and no manure was added. The patch was sprayed twice to control the potato beetle, arsenate of lead (2 pounds to 50 gallons of water) being the insecticide and strength used. Considering the dry weather during the growing season, the quality of potatoes harvested on September 10, 16 and 28 was good and the yields satisfactory.

POTATOES—VARIETY TEST

Variety	Yield per Acre					
	Marketable five-year average (1921–1925)		Marketable 1925		Unmarketable 1925	
	bush.	lb.	bush.	lb.	bush.	lb.
*Gold Coin	444	23	568	46	22	36
New London	418	07	587	36	56	30
Houlton Rose	378	02	482	08	60	16
*Seedling (R. Day)	348	52	342	46	46	34
†Empire State	339	44	632	48	56	30
Late Puritan	336	41	403	02	33	54
‡Golden Russet	336	23	342	46	67	48
Green Mountain	335	52	534	52	71	34
Early Bovee	332	51	512	16	60	16
Morgan Seedling	329	19	565	00	67	48
Wee MacGregor	324	48	274	58	7	32
Table Talk	321	10	440	42	60	16
†King Seedling	316	37	252	22	30	08
King George V	316	27	354	04	71	34
†Early Ohio (selected)	315	42	436	56	69	41
Rawling Kidney	315	14	444	28	33	54
Bermuda Early	308	19	346	32	30	08
*Seedling (Mrs. Mercer)	307	26	248	36	32	01
*Early Ohio	300	23	307	10	14	08
Manitoba Wonder	286	50	323	56	37	40
Dalmeny Beauty	225	18	226	00	22	36
Everitt	225	15	226	00	22	36
Early Norther	207	32	101	42	7	32
Gold Nugget	191	20	82	52	9	25

†4-year average. *3-year average. ‡2-year average.

With a few exceptions, the high yielding varieties in 1925 have given the greatest yields over a period of years. Since all were grown under similar conditions of soil and moisture, one probable significance of the above results is that varieties differ in their tendencies to "run out."

POTATOES—DATES OF PLANTING.—The year 1925 was the third season in which this experiement had been conducted. Sixty-six sets each of two varieties, Early Ohio and Irish Cobbler, were planted at two-week intervals, commencing May 14. Sets were spaced fourteen inches apart in rows thirty inches apart. The following table gives the results obtained over a period of years and in 1925.

POTATOES—DATES OF PLANTING

Variety	Range of dates planted	Yield per Acre					
		Average of 3 years 1923–1925				1925	
		Marketable		Unmarketable		Marketable	Unmarketable
		bush.	lbs.	bush.	lbs.	bush. lbs.	bush. lbs.
Early Ohio	*May 14–May 23	390	27	23	09	399 57	7 33
"	*May 28–June 6	352	35	36	21	369 46	22 38
"	*June 11–June 20	301	44	45	04	305 38	33 58
"	*June 25–July 4	197	06	51	29	313 10	45 17
"	*July 9–July 18	40	15	42	46	105 39	45 17
Irish Cobbler	*May 14–May 23	333	33	26	08	309 24	15 06
"	*May 28–June 6	344	45	33	48	286 46	33 58
"	*June 11–June 20	256	27	31	27	271 40	30 11
"	*June 25–July 4	140	55	46	26	166 01	37 44
"	*July 9–July 18	85	07	41	37	105 39	60 22

*Figures on left are dates on which planting was done in 1925.

From these results, the statement that for profitable and satisfactory yields in southern Saskatchewan, potatoes should be planted not later than June 15, seems warranted. On the average, there is a considerable decrease in the amount of marketable potatoes harvested from later plantings, with a corresponding increase in the amount of unmarketable potatoes harvested.

POTATOES—COST OF PRODUCTION.—Areas of one-half acre each of Early Ohio and Irish Cobbler were grown in 1925. A walking-plough was used for opening the furrows and covering the sets, which were planted on May 15 and 16. The potatoes were harvested on October 12, a modern digger being employed. Yields were below average, owing to the drought, and the quality of tubers only fair.

Preparation of soil and planting, costs of seed, spraying, cultivating, harvesting and rent of land were considered in estimating the cost of production for both varieties. Early Ohio yielded at the rate of 132 bushels per acre, at a cost of 43.03 cents per bushel, while Irish Cobbler yielded at the rate of 109.5 bushels per acre, at a cost of 52.07 cents per bushel.

The most expensive item in connection with this experiment was the preparation of the land. This was a new piece of land, and many tree-roots and stumps had to be removed prior to planting. Despite the high cost of production, this crop is a profitable one at current market prices.

POTATOES—SPROUTING SEED.—The varieties Early Ohio and Irish Cobbler were used as in previous years. Sets were planted on May 14. The sprouted potatoes had been exposed to subdued light for six weeks and strong sprouts had developed at the time of planting. The row of sprouted Irish Cobbler was harvested on September 10, the remainder on September 16.

POTATOES—SPROUTING SEED

Variety	Yield per Acre							
	Average of 3 years 1923–1925				1925			
	Marketable		Unmarketable		Marketable		Unmarketable	
	bush.	lbs.	bush.	lbs.	bush.	lbs.	bush.	lbs.
Early Ohio (sprouted)	357	46	52	14	410	58	24	30
Early Ohio (unsprouted)	364	01	42	54	437	22	26	23
Irish Cobbler (sprouted)	404	18	65	54	429	49	52	47
Irish Cobbler (unsprouted)	307	29	35	12	328	01	22	37

The average results over a period of years are in accord with those obtained in 1925, viz., that sprouting the tubers before planting is less desirable for the variety Early Ohio than it is for the Irish Cobbler variety. It was observed also in 1925 that the tops of the unsprouted Early Ohios were more vigorous than those of the sprouted Early Ohios. No difference was noted between the top of the two lots of Irish Cobbler.

RADISH—VARIETY TEST.—Of the ten varieties and strains tested, Scarlet Turnip White Tip, Improved French Breakfast, Twenty-Day and Round Scarlet Oval were first ready for use. Despite the drought, these were of fair quality and relatively free from maggots. Scarlet Round White Tip, Early Scarlet Globe and Chartier were the second earliest. Summer radishes were White Icicle and White Strasburg, both of which were of good quality.

SALSIFY—VARIETY TEST.—Mammoth Sandwich Island and Long White were the varieties in this test. The former outyielded the latter twofold, producing roots which were longer, larger and less branching.

SQUASH—VARIETY TEST.—From the standpoint of total yield, the variety, English Vegetable Marrow, was outstanding. The rating of the other varieties tested was in the following order: Hubbard, Delicious, Golden Hubbard, Long White Bush and Kitchenette. Perfect Gem and Table Queen, novelties, set fruit rather late and require further testing under conditions obtaining at Indian Head.

TOMATOES—VARIETY TEST.—An extensive test of twenty-seven varieties and strains was conducted in 1925. Seed was sown under glass on April 1, transplanting into pots was done on April 20, and five plants of each variety set out in the garden, four feet apart each way, some on June 11 and the remainder on June 15. A few of the plants were in bloom at the time of planting, and, with conditions favourable for the growth of this crop, fruit development began early. Plants were trained to one stem and tied to stakes. Terminal growth was stopped after the differentiation of the fifth truss of blossoms. The most important details of this experiment are given in the table which follows:—

TOMATOES—TEST OF VARIETIES

Variety	Source of seed	First ripe fruit	Weight of ripe fruit	Weight of green fruit	Total yield for 5 plants
			lbs. ozs.	lbs. ozs.	lbs. ozs.
North Dakota Earliana	Wedge	Aug. 6	15 1·75	18 0	33 1·75
Bolgiano	Bolgiano	" 6	14 7·5	14 0	28 7·5
Abbotsford Argo	Horn	" 10	13 3·75	8 0	21 3·75
Sparks Earliana	Ewing	" 13	13 2·5	14 0	27 2·5
IXL Extra Early	Rennie	" 4	12 13·75	12 0	24 13·75
Alacrity x Earlibell	O-5455	July 31	12 12·75	8 0	20 12·75
Alacrity x Hipper	O-5458	Aug. 8	12 8·75	7 0	19 8·75
First and Best	Bruce	" 10	10 10·5	11 0	21 10·5
Alacrity	O-5468	July 31	10 4·25	8 0	18 4·25
Sparks Earliana	McDonald	Aug. 10	8 7·5	12 0	20 7·5
Danish Export	Wiboltt	" 6	8 6·5	6 0	14 6·5
Wayahead	Bruce	" 6	8 5·75	8 0	16 5·75
Burbank	Bruce	" 22	8 3·0	13 0	21 3·0
Earliana Grade 2	Langdon	" 6	8 3·0	10 0	18 3·0
John Baer	Steele, Briggs	" 25	7 5·0	17 0	24 5·0
Pink No. 1	O-5463	" 10	6 12·25	7 0	13 12·25
Monumental	Bolgiano	" 10	6 6·5	16 0	22 6·5
The Burbank	Burbank	" 6	6 4·0	12 0	18 4·0
Prosperity	Patmore	" 10	6 4·0	11 0	17 4·0
Manyfold	Livingston	" 22	5 11·25	16 0	21 11·25
Santa Rosa	Burbank	Sept. 9	5 8·0	18 0	23 8·0
Bonny Best	Stakes	Aug. 22	4 12·5	15 0	19 12·5
Chalk Early Jewel	Steele, Briggs	Sept. 1	4 2·0	16 0	20 2·0
San Jose Canner	Morse	" 9	3 3·0	13 0	16 3·0
Magnus	Livingston	Aug. 22	2 0·0	10 0	12 0·0
Favorite	Livingston	" 29	1 2·0	9 0	10 2·0
Beauty	Livingston	" 25	0 15·0	5 0	5 15·0

TOMATOES—METHOD OF TRAINING.—The results of this experiment, in which Alacrity and Bonny Best were the varieties used, are given in tabular form.

TOMATOES—METHOD OF TRAINING

Variety	Treatment	First ripe fruit	Weight of ripe fruit	Weight of green fruit	Total yield from 17 plants
			lbs.	lbs.	lbs.
Bonny Best	Stopped at first truss	Aug. 14	12·515	7·593	20·108
"	Stopped at second truss	" 19	23·909	21·655	45·564
"	Stopped at third truss	" 17	22·498	38·375	60·873
"	Not stopped	" 19	20·000	33·156	53·156
Alacrity	Stopped at first truss	" 14	17·781	7·781	25·562
"	Stopped at second truss	" 17	29·406	22·093	51·499
"	Stopped at third truss	" 14	26·998	31·375	58·373
"	Not stopped	" 17	27·187	39·313	66·500

These results are in accord with those obtained in previous years from this experiment, (1) that total yield is reduced according to the severity of the pruning; (2) that fruit ripened earlier on plants "stopped" at the first truss; (3) that the vigour of the plants was in inverse ratio to the amount of pruning given.

TURNIP—VARIETY TEST.—Extra Early Purple Milan was the earliest of the three varieties tested. Red Top Strap Leaf was a few days later and this variety was also severely attacked by root-maggots. Golden Ball, a late variety of excellent quality, outyielded the other varieties and escaped injury by maggots. No rutabagas were tested, but the Golden Ball variety is a good keeper.

WATERMELON—VARIETY TEST.—Peerless or Ice Cream and Harris Earliest were tested, but only a few fruits set on the former, none of which ripened. Seed was sown under glass on May 6, and the plants set out in the garden on June 17.

FRUITS

APPLES

The greatest crop of crab apples in the history of the Experimental Farm was harvested in 1925. Yields of individual trees were: Jewel, 270 pounds; Prince, 252 pounds; Alberta, 141 pounds; Eve, 173 pounds. Transcendent, Pioneer, Silvia and Manitou also yielded fairly well. Tony failed to ripen before the advent of frost and snow early in October.

CHARLES X TETOFSKY
A cross-bred apple which promises to be of value on the prairies

Of the newer cross-bred apples planted in 1916, the following bore satisfactory crops of fruit two inches or more in diameter: Charles x Tetofsky, Dean x McIntosh, Piotosh, Jewel x Rideau and Northern Queen x August. The last-named variety is of poor quality and a poor keeper. Dean x McIntosh had not ripened before killing frosts were experienced.

Five seedling trees of standard varieties fruited. Of these, a Beautiful Arcade seedling, one of Patten Greening, and one of Anisim produced larger

fruit than any of the cross-bred apples and of better quality and texture. These trees are perfectly hardy and are considered worthy of propagation for the Prairie Provinces.

A number of one-year-old grafted hardy Russian apples were planted in the spring of 1925. Most of these made satisfactory growth during the summer. One tree of each variety has been mulched with manure in order to test the adaptability of this practice to prevent winter injury while trees are still small.

PLUMS

Only one variety suffered from winter-killing in the winter of 1924-25. This was Eyami, represented by three trees which were planted in 1908. These trees bore heavily in 1924, and no doubt were in a state of low vitality at the beginning of winter.

No damage was done by late spring frosts to blossoms or blossom-buds. The soil in the plum orchard is a clay loam and clean cultivation is practised. Despite the dry season, all trees ripened their fruit. The Assiniboine and Wakepa were the best of the named varieties. Some of the native seedlings outyielded the named varieties, however, and produced fruit of even better quality.

A few thousand pits were planted in September. Some of these will be used for propagation of leading varieties, while plants from the best plums will be allowed to grow and develop in the hope that more valuable plums than we now have will be obtained.

STRAWBERRIES

Owing to its location being unsatisfactory, the strawberry plantation which was set out in 1924 was discarded in the spring of 1925 and another was established. The everbearing variety, Progressive, and the June-bearing variety, Senator Dunlap, were used in the plantation. They were set out in May, but the plants made weak growth throughout the dry summer and only a few produced runners. Following rains in August and September, these became fairly well established and a good crop of fruit is expected in 1926. The plantation was given a winter covering of six inches of straw on November 12. It is intended to add a few more varieties for trial and some selection and breeding work will also be conducted.

RASPBERRIES

Little success can be reported from the raspberry plantation during the past year. While there was little evidence of winter-killing in any of the six varieties being tested, the drought of the summer and the presence of mites on the leaves of bearing canes preventing the setting and development of any quantity of fruit.

This plantation is to be abandoned and a new one established in 1926, when a more extensive variety test will be conducted. The varieties that have proven most satisfactory are Herbert, Ohta, Marlboro, Early King and Sunbeam. Wild White, a native yellow fruiting variety, gives promise of being valuable for breeding work.

GOOSEBERRIES

All varieties came through the winter without injury, and bloomed profusely in spring. Owing to the drought, however, the set of fruit was so small that no berries were picked. From observations and past results, Smith Improved and Carrie are judged the best of the varieties tested. As soon as a new plantation can be established the present one will be discarded, owing to the unhealthy state of the bushes.

RED AND WHITE CURRANTS

The past season did not favour the development of fruit on red and white currant bushes. Associated with the drought was the low vigour of the bushes,

owing to the age of the plantation. A new plantation, which will include all the varieties under test at present as well as the most promising new varieties, is to be set out next spring. An experiment was begun this year to find out the most profitable way to winter-over currant cuttings, whereby a maximum " catch " can be obtained the following spring.

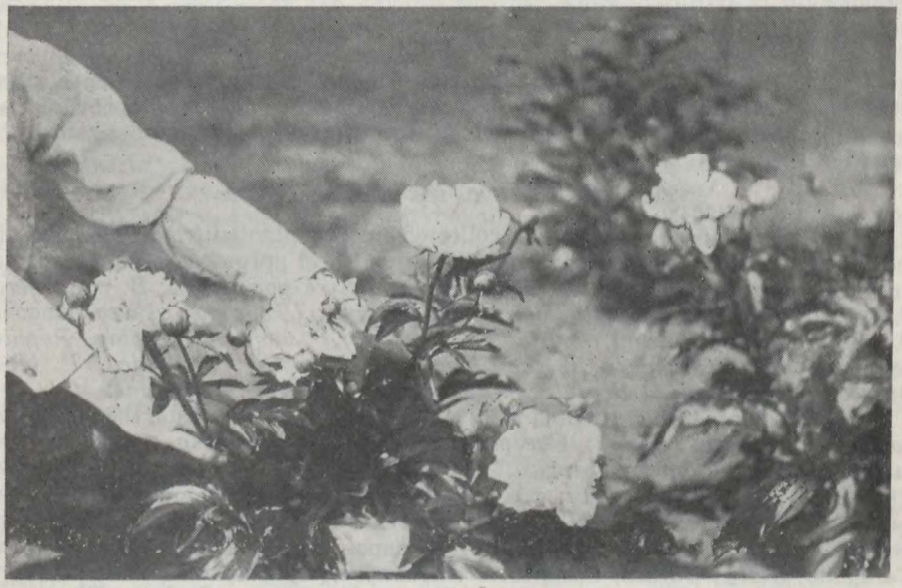
BLACK CURRANTS

Results from the black currants were also unsatisfactory. The vigour of bushes was low and the dry summer created conditions that led to crop failure. No fruit was picked, but bushes of all varieties made strong and healthy growth, which provided suitable material for cuttings and the procuring of new bushes. The present plantation will be discarded as soon as a new one is established.

FLORICULTURE

ANNUALS

Only a limited number of annual flowers were grown. Sweet peas sown on April 9 were repeatedly cut off by cutworms until only a few plants remained. Asters were grown in a cold frame throughout the season for experimental pur-



DUCHESS DE NEMOURS
One of the best white pæonies. Note size of blooms.

poses in the control of " yellows". The disease, however, did not become manifest, which indicated that the organism of this disease is not present in fresh soil. Sterilizing the soil is a suggested method of controlling this disease, but it has been proven that leafhoppers carry it.

The following annual flowers, planted in solid beds by varieties, made a beautiful showing throughout the summer: antirrhinum, phlox Drummondii, stock, tagetes and verbena. Frost on October 5 ended the season of growth and bloom for the above. Less hardy, but equally valuable for decoration, were balsam, calendula, marigold (French and African), nasturtium, nemesia and

petunia (single and double). Double cactus dahlias, sown on April 27 and planted out on June 17, began to bloom on August 22. All plants had developed large roots when killed back by frost on September 29.

PERENNIALS

The brightest feature of the garden was the pæony display. A wealth of colour and shade of blooms was provided by varieties of this perennial flower from June 26 to July 24. Eighty varieties are now being grown, representing colours varying from white to deep scarlet. Names of outstanding varieties will be given on request.

Irises, planted in 1923, gave colour and radiance to the flower border from June 20 to July 14. Like pæonies, these survive the winters if given a light covering of strawy manure in the fall.

Owing to lack of moisture, growth of the perennial border, replanted in the fall of 1924, was not as satisfactory as expected. A good showing, however, was made by many of the following perennials, which can be recommended: aconitum, aquilegia, campanuala, centaurea, chrysanthemum, *Clematis recta,* dianthus delphinium, dicentra, dictamnus, gypsophila, helianthus, holloyhock, hemerocallis, hesperis, Iceland poppy, Japanese and German iris, lychnis, *Lilium elegans,* pansies, papaver, phalaris, phlox, pyrethrum, sweet william, thalictrum and veronica.

BULBS

Tulips, planted in the fall of 1924, were infested with a maggot which interfered with their development in spring. As soon as the cause was discovered, all the bulbs were pulled up and burned as a precautionary measure against the spread of the pest.

TREES, ORNAMENTAL HEDGES AND SHRUBS

From growth and hardiness data collected on trees planted from 1906 onwards, the following are considered adaptable for ornamental purposes: *Abies balsamea; Acer negundo; A. tataricum; A. dasycarpum; Betula populifolia; B. papyrifera; B. pumila; Fraxinus pennsylvanica; Larix pendula; L. europœa; Picea pungens; P. alba; P. excelsa; Pinus cembra; P. sylvestris; P. montana Mughus; Populus deltoides; P. petrowskiana; P. certinensis; P. Wobstii; P. sibirica; P. alba; Quercus macrocarpa; Q. dentata; Tilia americana; Ulmus americana.*

Of the sample hedges planted in 1924, the following have made the most compact and strongest growth: *Caragana arborescens, Caragana pygmaea, Acer tatarica ginnala, Lonicera tatarica, Syringa vulgaris, S. villosa* and *Picea alba.*

A complete list of hardy ornamental shrubs cannot be included here, but species and varieties of the following genera are represented as making satisfactory growth and being valuable in landscape designs: *Amelanchier, Berberis, Caragana, Celtis, Cornus, Cotoneaster, Cratœgus, Cytisus, Juniperus, Lonicera, Potentilla, Pyrus, Ribes, Rosa, Salix, Shepherdia, Spirœa, Syringa, Thuja* and *Viburnum.*

ROSES

Roses continue to attract much attention. None suffered from winter-killing during the past year, but the hot, dry weather interfered with the blossoming of early varieties. Buds formed in abundance, but the fate of a large proportion of them was to become "mummified" and remain unopened. The black snout rose beetle caused considerable damage by perforating the buds before they had fully developed.

Varieties of roses recommended are Mrs. John Laing, Madam Geo. Bruant, F. J. Grootendorst, Frau Karl Druscki, Hanska and *Rosa Rugosa.*

CEREALS

The results quoted herewith were obtained from one-fortieth-acre plots sown with a disk-drill in all cases. At harvest time, the two outside rows together with about one foot was removed from each end. This trimming, while done primarily to eliminate the different effects of outside cultivation on varieties, served to remove immature kernels and to leave an area ($\frac{1}{50}$ acre) which was more representative of field conditions.

Results from rod-row plots are not recorded here. These provide a basis for the preliminary study of varieties, selections and crosses.

The past season gave promise of very high yields for the first two months after seeding. The continuous hot and dry weather of July and August, however, cut wheat yields probably by one-third. The crops of oats and barley were the greatest sufferers. The character of the season lent itself to the bringing out of distinct colorations in stray and chaff.

WHEAT

Excellent stands of spring wheat were obtained and the crop proceeded normally until checked by the adverse weather which occurred in midsummer. Rust or other diseases did not affect the crop. The dry season served to produce stronger straw than in a normal season. The grain was of good quality, but there was a higher percentage of small kernels than is usually the case. Except for the latter part of the threshing season, the grain finished well in the stook.

In view of the interest now manifested in Garnet wheat, it is significant that this variety heads the list of both summer-fallow and stubble-tests for 1925; Marquis in fact commands but a slight margin over Garnet for the six-year average. Winter wheats did not survive the winter of 1924-25. Results from one-fortieth-acre plots for common spring and durum wheats are listed in the tables.

TEST OF VARIETIES OR STRAINS—WHEAT ON FALLOW

Date of Sowing, April 21

Name of Variety	Date of ripening	Number of days maturing	Average length of straw including head	Strength of straw on a scale of 10 points	Yield of grain per acre, 1925		Yield per acre—Six-year average*	
			inches		bush.	lb.	bush.	lb.
Garnet O. 652	Aug. 6	107	43	8·5	48	45	37	53
Red Bobs	" 11	112	45	7·0	47	05	..	..
Marquis O. 15	" 14	115	44	8·0	45	50	38	08
Kitchener	" 17	118	40	8·0	44	35	36	51
Duchess O. 933	" 6	107	40	5·0	43	20	..	..
Golden	" 13	114	43	8·0	43	20	..	..
Reward O. 928	" 4	105	43	9·0	41	52	..	..
Red Fife O. 17	" 21	122	39	9·0	41	15	31	23
Parker's Selection	" 13	114	45	8·0	40	25	..	..
Ceres	" 10	111	45	7·5	40	25	..	..
Supreme	" 13	114	44	8·5	39	35	..	..
Brownie O. 491	" 11	112	44	8·5	39	10	..	..
Kota	" 13	114	43	7·5	37	55	..	..
Orchard's Selection	" 20	121	38	8·5	34	10	..	..

TEST OF VARIETIES OR STRAINS—WHEAT ON STUBBLE

Date of Sowing, April 21

Name of Variety	Date of ripening	Number of days maturing	Average length of straw including head	Strength of straw on a scale of 10 points	Yield of grain per acre, 1925	Yield per acre—Six-year average*
			inches		bush. lb.	bush. lb.
Garnet O. 652	Aug. 6	107	35·0	8·0	22 05	.. ..
Orchard's Selection	" 20	121	32·0	9·75	22 05	.. ..
Duchess, O. 933	" 6	107	34·5	7·0	21 40	.. ..
Red Bobs	" 11	112	32·5	8·5	21 40	22 51
Supreme	" 11	112	32·5	9·0	20 ..	.. ..
Marquis, O. 15	" 14	115	33·5	9·0	19 10	24 51
Kota	" 13	114	36·0	8·0	19 10	.. ..
Red Fife, O. 17	" 20	121	31·0	9·75	18 45	24 47
Kitchener	" 17	118	35·0	9·75	18 45	.. ..
Brownie, O. 491	" 10	111	38·5	8·5	17 30	.. ..
Golden	" 16	117	35·0	9·0	17 05	.. ..
Reward, O. 928	" 4	105	34·0	9·5	16 40	.. ..
Parker's Selection	" 13	114	31·0	9·0	16 40	.. ..
Ceres	" 14	115	32·0	9·0	16 40	.. ..

*This period includes the years 1919 to 1925 inclusive with the exception of 1924 when hail damaged the earlier maturing varieties much more severely than it did the later ones, thereby making it impossible to make fair comparisons.

TEST OF VARIETIES OR STRAINS—DURUM WHEAT ON FALLOW

Date of Sowing, April 21

Name of Variety	Date of ripening	Number of days maturing	Average length of straw including head	Strength of straw on a scale of 10 points	Yield of grain per acre, 1925
			inches		bush. lb.
Monad	Aug. 20	121	36	6·5	41 40
Acme	" 20	121	31	5·0	41 40
Mindum	" 17	118	40	9·0	39 25
Kubanka, O. 37	" 20	121	42	7·0	37 05
Kahla	" 20	121	40	7·5	33 45

TEST OF VARIETIES OR STRAINS—DURUM WHEAT ON STUBBLE

Date of Sowing, April 21

Name of Variety	Date of ripening	Number of days maturing	Average length of straw including head	Strength of straw on a scale of 10 points	Yield of grain per acre, 1925
			inches		bush. lb.
Kubanka, O. 37	Aug. 20	121	35·0	8·75	22 05
Acme	" 19	120	33·5	8·0	17 30
Monad	" 19	120	29·0	8·5	17 05
Mindum	" 20	121	32·0	8·75	14 35
Kahla	" 19	120	34·0	9·0	13 45

OATS

Oat yields for the past season were far below normal. The crop did not develop uniformly, but produced strong, clean straw. A lack of quality was very noticeable in the threshed product. The six-year-average column is a good indication of the relative yielding ability of the varieties listed.

TEST OF VARIETIES OR STRAINS—OATS ON FALLOW

Date of Sowing, May 6

Name of Variety	Date of ripening	Number of days maturing	Average length of straw including head	Strength of straw on a scale of 10 points	Yield of grain per acre, 1925		Yield per acre—Six-year average	
			inches		bush.	lb.	bush.	lb.
Progress No. 6	Aug. 20	106	40	8·0	69	29	..	..
Banner, O. 49	" 17	103	39	9·75	66	06	89	15
Gold Rain	" 17	103	40	9·75	66	06	87	10
Victory	" 17	103	38	9·5	66	06	86	15
Alaska	" 2	88	39	8·0	62	17	..	..
Gerlach	" 20	106	36	9·0	61	01	..	..
Leader	" 19	105	35	8·5	58	03	82	20
Longfellow, O. 478	" 13	99	34	8·5	52	07	..	..
Laurel, O. 477	" 6	92	31	8·0	45	20	..	..

TEST OF VARIETIES OR STRAINS—OATS ON STUBBLE

Date of Sowing, May 6

Name of Variety	Date of ripening	Number of days maturing	Average length of straw including head	Strength of straw on a scale of 10 points	Yield of grain per acre, 1925		Yield per acre—Six-year average	
			inches		bush.	lb.	bush.	lb.
Victory	Aug. 21	107	37	9·0	54	10	59	07
Gerlach	" 21	107	35	8·5	51	16	..	..
Gold Rain	" 21	107	37	9·0	43	13	64	11
Alaska	" 7	93	32	8·0	41	06	..	..
Progress No. 6	" 31	117	36	8·5	39	24	..	..
Banner, O. 49	" 21	107	36	9·0	38	33	64	14
Leader	" 21	107	35	8·5	38	08	..	..
Longfellow, O. 478	" 21	107	33	8·5	36	01	..	..
Laurel, O. 477	" 7	93	30	8·0	33	28	..	..

BARLEY

There was a lack of vigour in the barleys in 1925. The crop got away to a poor start and was in this condition when the hot weather came. The late varieties were particularly hard hit. The grain lacked filling, with a consequent low weight per bushel.

TEST OF VARIETIES OR STRAINS—BARLEY OR FALLOW

Date of Sowing—May 6

Nane of Variety	Date of ripening	Number of days maturing	Average length of straw including head	Strength of straw on a scale of 10 points	Yield of grain per acre 1925		Yield per acre—six-year average	
			inches		bush.	lb.	bush.	lb.
O. A. C. 21	Aug. 7	93	33	8	41	34	51	34
Junior O. 471	July 28	83	28	7	41	07	45	41
Chinese O. 60	Aug. 7	93	34	8	40	30	..	..
Himalayan O. 59	July 28	83	28	7	40	05	..	..
Feeder O. 56	Aug. 1	87	40	8	36	03	..	..
Bearer O. 475	Aug. 15	101	31	7	32	39	55	18
Duckbill O. 57	Aug. 20	106	24	10	24	08	48	29

TEST OF VARIETIES OR STRAINS—BARLEY OR STUBBLE

Date of Sowing—May 6

Name of Variety	Date of ripening	Number of days maturing	Average length of straw including head	Strength of straw on a scale of 10 points	Yield of grain per acre 1925		Yield per acre—six-year average	
			inches		bush.	lb.	bush.	lb.
Bearer	Aug. 31	117	30	8·5	35	20	40	47
Himalayan O. 59	" 3	89	26	8·5	31	12	..	..
Chinese O. 60	" 21	107	29	9·0	27	29	..	..
Junior O. 471	" 3	89	28	8·5	27	04	30	37
Feeder O. 56	" 7	93	29	8·5	25	..	..	..
O. A. C. 21	" 21	107	28	9·0	22	19	30	47
Duckbill O. 57	" 31	117	29	9·0	19	28	32	16

PEAS

Not affected so greatly as other cereals by an abnormal season, the pea varieties produced good yields in most cases. Results are summarized in the accompanying tables.

TEST OF VARIETIES OR STRAINS—PEAS ON FALLOW

Date of Sowing—April 22

Name of Variety	Date of ripening	Number of days maturing	Average length of vine	Yield per acre		Average yield per acre—six years	
			inches	bush.	lb.	bush.	lb.
Golden Vine	Aug. 12	112	39	42	05	29	41
Champlain O. 32	" 12	112	30	42	05	24	40
Chancellor O. 26	" 4	104	34	39	08	..	..
MacKay O. 25	" 15	115	37	37	50	30	58
Arthur O. 18	" 12	112	36	29	34	30	40
Cartier O. 19	" 15	115	34	20	..	28	25

TEST OF VARIETIES OF STRAINS—PEAS ON STUBBLE
Date of Sowing—April 22

Name of Variety	Date of ripening	Number of days maturing	Average length of vine	Yield per acre	Average yield per acre—six years
			inches	bush. lb.	bush. lb.
Golden Vine	Aug. 5	105	33	25 ..	27 ..
MacKay O. 25	" 13	113	29	21 48	28 23
Chancellor O. 26	July 31	100	32	20 ..	.. ..
Arthur O. 18	Aug. 6	106	32	16 15	24 08
Champlain O. 32	" 10	110	29	8 45	24 13
Cartier O. 19	" 13	113	26	7 05	.. ..

FLAX

Seasonal conditions produced a flax crop which had a poor appearance in the field. The yields produced in 1925 were in the same order as the six-year average.

TEST OF VARIETIES OR STRAINS—FLAX
Date of Sowing—May 6

Name of Variety	Date of ripening	Number of days maturing	Average length of straw	Strength of straw on a scale of 10 points	Yield per acre 1925	Yield per acre—six-year average
			inches		bush. lb.	bush. lb.
Crown	Aug. 21	107	16	9	12 28	.. ..
Novelty	" 21	107	17	9	11 24	16 47
Premost	" 13	99	18	9	8 52	13 33
Longstem	" 21	107	21	9	7 32	12 14

WHEAT AND FLAX IN COMBINATION

Tests of Marquis wheat and Premost flax as a combination crop for grain were conducted during the past season. The gross returns per acre have been calculated on a basis of the average price received at this point for the month of November. A test for one year is not a basis for safe conclusion. These interesting results are recorded in the table following:—

WHEAT AND FLAX IN COMBINATION
Date of Sowing—May 8

Rate of Seeding	Yield per Acre		Gross returns per acre
	Wheat	Flax	
	bush. lb.	bush. lb.	$
Wheat, 15 lbs., flax, 28 lbs.	17 30	6 42	36·95
" 15 " " 42 "	15 50	5 34	33·41
" 30 " " 28 "	16 40	8 ..	37·94
" 30 " " 42 "	20 ..	6 18	39·06
" 45 " " 28 "	25 ..	3 48	40·21
" 45 " " 42 "	28 20	4 06	44·92
" 60 " " 28 "	28 20	4 14	45·24
" 60 " " 42 "	30 ..	3 32	45·95
" 75 " " 28 "	34 10	2 44	48·53
" 75 " " 42 "	32 30	3 17	47·96
" 90 " " 28 "	37 30	2 07	52·34
" 90 " " 42 "	33 45	3 03	48·71
" 120 " " 0 "	38 20	.. ..	48·87
" 0 " " 28 "	.. ..	9 14	20·82
" 0 " " 42 "	.. ..	18 17	28·45

FORAGE CROPS

With an increasing demand for information concerning the performance of forage crops in the Prairie Provinces, the hardiness, purity, type, yields and general suitability of varieties, as recorded in the following tests, are especially important at this time to the farmers of Western Canada. Unfortunately, the character of our seasons limits the crops we shall grow to those that are capable of producing economic returns with limited rainfall. The fluctuations in our seasons make the choice even more limited.

The season of 1925 was in many respects very disappointing. The character of the winter, producing percentages of winter-killing far above the average, was not altogether a disadvantage. The absence of spring rains stunted all biennial and perennial forage crops. The early summer rains did not overcome this set-back. Following this was a period of intensified hot, dry weather, which resulted in low yields.

PERMANENT HAY AND PASTURE CROPS

In 1922 a series of grasses was seeded alone and in combination with certain legumes. Nine grasses were sown alone, with white sweet clover, yellow sweet clover and alfalfa. The average results for three years are interesting.

The lowest yields were obtained when the grasses had been sown alone. The addition of sweet clover produced the highest yield in the first-crop year, but much less the following years because of the absence of the sweet clover. These grasses produced higher yields the second and third years where sweet clover was used than when seeded alone. There was a higher yield following yellow-blossom sweet clover, probably because of the more rapid decaying of its roots due to their smaller size. This is offset by a higher yield in the first-crop season with white sweet clover. Although it appears that a grass sown with white sweet clover is best in this series, it must be remembered that the combination with alfalfa produces a profitable hay crop every year. The use of alfalfa and western rye grass as a hay mixture is a good agricultural practice under our conditions.

GRASSES SEEDED ALONE AND IN COMBINATION

Three-Year Average—1923-1925

Rate of Seeding	Total Yield per Acre					
	Green weight		Hay		Dry matter	
	tons	lb.	tons	lb.	tons	lb.
White sweet clover, 10 lbs., western rye, 8 lbs.	9	580	3	340	2	1,760
White sweet clover, 10 lbs., brome, 8 lbs.	9	1,140	3	80	2	1,500
White sweet clover, 10 lbs., Canada blue, 12 lbs.	9	40	2	1,760	2	1,240
Yellow sweet clover, 10 lbs., brome, 8 lbs.	8	800	2	1,620	2	1,140
Alfalfa, 10 lbs., western rye, 8 lbs.	6	1,760	2	1,640	2	1,080
White sweet clover, 10 lbs., red top, 12 lbs.	8	1,960	2	1,460	2	940
Alfalfa, 10 lbs., timothy, 8 lbs.	7	220	2	1,280	2	920
White sweet clover, 10 lbs., Kentucky blue, 12 lbs.	8	940	2	1,280	2	720
Yellow sweet clover, 10 lbs., western rye, 8 lbs.	8	660	2	1,000	2	640
White sweet clover, 10 lbs., meadow fescue, 15 lbs.	8	1,000	2	1,040	2	560
Alfalfa, 10 lbs., brome, 8 lbs.	6	1,840	2	1,000	2	560
White sweet clover, 10 lbs., timothy, 8 lbs.	8	1,380	2	980	2	500
White sweet clover, 10 lbs., tall oat, 15 lbs.	8	260	2	880	2	440
Alfalfa, 10 lbs., red top, 12 lbs.	7	660	2	780	2	420
Yellow sweet clover, 10 lbs., Canada blue, 12 lbs.	5	1,510	2	60	2	230
Alfalfa, 10 lbs., tall oat, 15 lbs.	7	200	2	640	2	280
White sweet clover, 10 lbs., orchard, 15 lbs.	8	1,040	2	640	2	280
Yellow sweet clover, 10 lbs., red top, 12 lbs.	6	560	2	560	2	180
Alfalfa, 10 lbs., Kentucky blue, 12 lbs.	6	1,580	2	180	1	1,900

GRASSES SEEED ALONE AND IN COMBINATION—*Concluded*

Rate of Seeding	Total Yield per acre					
	Green weight		Hay		Dry Matter	
	tons	lb.	tons	lb.	tons	lb.
Yellow sweet clover, 10 lbs., meadow fescue, 15 lbs	7	120	2	240	1	1,860
Yellow sweet clover, 10 lbs., orchard, 15 lbs	6	200	2	260	1	1,820
Yellow sweet clover, 10 lbs., timothy, 8 lbs	5	1,120	2	100	1	1,680
Yellow sweet clover, 10 lbs., Kentucky blue, 12 lbs	5	1,020	2	60	1	1,680
Western rye, 15 lbs	4	266	2	160	1	1,680
Brome, 15 lbs	4	....	1	1,760	1	1,420
Yellow sweet clover, 10 lbs., tall oat, 15 lbs	5	860	2	....	1	1,600
Alfalfa, 10 lbs., orchard, 15 lbs	7	520	2	320	1	1,380
Alfalfa, 10 lbs., meadow fescue, 15 lbs	6	1,380	2	420	1	1,340
Alfalfa, 10 lbs., Canada blue, 12 lbs	7	140	2	300	1	1,340
Red top, 24 lbs	4	960	1	1,520	1	1,160
Canada blue, 24 lbs	3	1,340	1	840	1	580
Tall oat, 30 lbs	3	834	1	600	1	360
Timothy, 15 lbs	3	546	1	60	1	356
Meadow fescue, 30 lbs	3	642	1	260	1	60
Kentucky blue, 24 lbs	2	946	1	....	0	1,800
Orchard, 30 lbs	2	400	0	1,640	0	1,440

ALFALFA AND WESTERN RYE GRASS

It is evident that alfalfa and western rye grass is a good hay mixture. The question naturally arises, what is the most economical and profitable combination of these to sow. The following table presents results from thirteen rates. A relatively high amount of alfalfa would appear to be productive of highest yields. The cost of the seed is, of course, one of the governing factors. It is well known that hardy alfalfa seed is an expensive commodity compared with that of western rye grass. A rate of six pounds of alfalfa and eight pounds of western rye grass per acre (or even four and eight) is a satisfactory rate in the light of the subjoined table.

ALFALFA AND WESTERN RYE GRASS

Three-Year Average—1923-1925

Mixture	Total Yield per Acre					
	Green weight		Hay		Dry matter	
	tons	lb.	tons	lb.	tons	lb.
Alfalfa, 14 lbs., western rye, 8 lbs	7	1,240	2	1,380	2	840
Alfalfa, 10 lbs., western rye, 8 lbs	6	1,160	2	1,220	2	700
Alfalfa, 10 lbs., western rye, 2 lbs	6	1,260	2	1,200	2	680
Alfalfa, 6 lbs., western rye, 8 lbs	6	480	2	1,100	2	640
Alfalfa, 16 lbs., western rye, 8 lbs	7	920	2	1,120	2	580
Alfalfa, 10 lbs., western rye, 14 lbs	6	900	2	1,060	2	580
Alfalfa, 10 lbs., western rye, 10 lbs	6	1,240	2	1,120	2	580
Alfalfa, 10 lbs., western rye, 6 lbs	6	560	2	140	2	560
Alfalfa, 12 lbs., western rye, 8 lbs	6	1,880	2	1,040	2	520
Alfalfa, 4 lbs., western rye, 8 lbs	5	1,860	2	980	2	520
Alfalfa, 8 lbs., western rye, 8 lbs	6	720	2	1,000	2	300
Alfalfa, 10 lbs., western rye, 4 lbs	6	1,100	2	1,080	2	300
Alfalfa, 10 lbs., western rye, 12 lbs	6	700	2	900	1	1,800

ALFALFA AND BROME GRASS

Brome grass is a close rival as a substitute for western rye grass in a mixture with alfalfa. Similar tests to that just described have also been conducted with alfalfa and brome. In general, the results are similar. After the first crop there is an increasing tendency of the brome to choke out the alfalfa. The advocates of this combination are few, and those persons who are about to choose between them are well advised to use the combination of alfalfa and western rye.

ALFALFA AND BROME GRASS

Three-year Average, 1923-1925

Mixture	Total Yield per Acre					
	Green weight		Hay		Dry matter	
	tons	lb.	tons	lb.	tons	lb.
Alfalfa, 16 lbs., brome, 8 lbs.	7	200	2	1,660	2	800
" 8 " " 8 "	6	1,320	2	1,300	2	780
" 10 " " 14 "	6	1,340	2	1,280	2	700
" 14 " " 8 "	6	1,180	2	1,040	2	600
" 12 " " 8 "	6	1,100	2	1,080	2	570
" 10 " " 4 "	6	1,200	2	940	2	540
" 4 " " 8 "	6	1,080	2	1,000	2	520
" 10 " " 6 "	6	1,340	2	940	2	520
" 10 " " 8 "	6	680	2	980	2	500
" 6 " " 8 "	6	1,240	2	1,040	2	500
" 10 " " 10 "	6	1,000	2	1,000	2	480
" 10 " " 2 "	6	1,660	2	900	2	340
" 10 " " 12 "	6	1,280	2	880	2	220

ALFALFA VARIETIES

Tests of alfalfa varieties offered for sale reveal several points to be considered by the prospective purchaser. Hardiness is the most important consideration. This factor has a direct relation to the yield. Grimm alfalfa seed produced under conditions similar to those where it is to be sown makes a safe buy. These facts are more clearly demonstrated in the accompanying table of alfalfa varieties or strains, showing source of seed, percentage winter-killing and yields.

ALFALFA VARIETIES

Variety	Source of seed	Per cent winter-killing	Total Yield per Acre					
			Green weight		Hay		Dry matter	
			tons	lb.	tons	lb.	tons	lb.
Sask. 451	University of Saskatchewan, Saskatoon, Sask.	21·25	11	1,200	3	900	2	1,800
Grimm No. 1	Steele, Briggs, Regina, Sask.	29·4	11	1,400	3	900	2	1,800
Grimm	A. B. Lyman, Excelsior, Minn, U.S.A.	27·75	10	600	2	1,800	2	1,180
Cossack	Paramount Alfalfa Farm, Rife, Alberta	35·6	10	1,400	2	1,640	2	1,040
Wisconsin Hardy 892	University of Wisconsin, Madison, Wis., U.S.A.	45·5	9	....	2	820	2	400
Siberian Yellow Flowered.	Paramount Alfalfa Farm, Rife, Alberta	12·2	8	1,000	2	540	2	60
Turkestan	Steele, Briggs, Toronto, Ont.	47·4	7	1,800	2	140	1	1,700
Siberian Yellow Flowered.	Central Experimental Farm, Ottawa, Ont.	7·2	7	1,800	2	80	1	1,640
MacCannus	R. McCannus, Ontario	59·9	7	200	1	1,800	1	1,400
Cossack	Dakota Improved Seed Co., Mitchell, South Dakota, U.S.A.	49·7	7	600	1	1,780	1	1,380
Malton	Peel County Alfalfa Growers' Ass'n., Brampton, Ont.	71·3	5	1,200	1	1,120	1	780
Variegated	Steele, Briggs, Toronto, Ont.	75·5	4	1,000	1	440	1	180
Grimm	Ontario Agricultural College, Guelph, Ont.	80·1	3	800	0	1,820	0	1,620
Shoobut	From South Argentine—R. Elliot & Sons, 15 Whitehall Street, New York City	96·8	0	1,860	0	520	0	460

DEPTH TO SEED ALFALFA

The question of the depth to seed alfalfa is often asked. An effort has been made to solve this problem. The yields with different nurse-crops and varying depths do not indicate any outstanding course to follow. Field observation favours the shallow seeding, but more work must be done before definite conclusions can be drawn concerning the best depth to sow alfalfa under conditions at Indian Head.

DEPTH OF SEEDING ALFALFA

Treatment	Total Yield per Acre					
	Green weight		Hay		Dry matter	
	tons	lb.	tons	lb.	tons	lb.
Seeded with wheat	10	150	2	1,960	2	1,320
Seeded alone on surface	9	160	2	1,840	2	1,200
Seeded alone, 2 inches deep	9	500	2	1,780	2	1,160
Seeded alone, 3 inches deep	9	200	2	1,680	2	1,080
Seeded alone, 1 inch deep	7	1,700	2	880	2	360
Seeded with oats, 3 inches deep	7	50	2	600	2	100
Seeded with barley on surface	7	250	2	520	2	40
Seeded with oats, 2 inches deep	6	1,940	2	380	1	1,920
Seeded with oats on surface	6	1,320	2	360	1	1,900
Seeded with oats, 4 inches deep	6	1,050	2	240	1	1,780
Seeded with oats, 1 inch deep	6	700	2	100	1	1,660

WESTERN RYE GRASS FOR HAY

A number of strains of native rye grass have been collected, numbered and tested as to factors which determine their suitability. All are hardy. They differ in colour, maturity and certain minute characters. The yields are given in the accompanying table.

WESTERN RYE GRASS FOR HAY

No.	Height when cut	Total Yield per Acre					
		Green weight		Hay		Dry matter	
	inches	tons	lb.	tons	lb.	tons	lb.
4	37·0	6	....	2	1,840	2	1,300
97	37·0	5	900	2	1,600	2	1,000
10	36·0	5	1,000	2	1,560	2	960
118	34·5	5	100	2	1,280	2	720
19	37·5	5	200	2	1,220	2	660
91	37·0	4	1,800	2	1,200	2	640
89	33·0	4	1,800	2	1,160	2	600
95	36·5	4	1,800	2	1,040	2	500
79	33·0	5	200	2	1,000	2	460
74	34·0	4	1,200	2	820	2	300
13	40·5	4	1,200	2	740	2	240
55	37·5	4	500	2	140	1	1,700
116	36·0	3	1,900	1	1,740	1	1,340

WESTERN RYE GRASS FOR SEED

Unfortunately, it was found impossible to test strains for seed-production under uniform conditions. The percentage stand and kind of soil are given in the table following in order that the reader may be in a position to more intelligently interpret these results. The possibilities of rye grass seed-production is

demonstrated. The plots ranged around one-eight of an acre. Seed was sown in rows thirty inches apart. The table should be studied in conjunction with the rye grass yields of hay just given. It is noteworthy that No. 4 heads the lists in yield of hay and seed-production.

WESTERN RYE GRASS FOR SEED

No.	Estimated per cent stand	Kind of soil	Yield of seed per acre
			lb.
4	85	Heavy clay loam	1,522
10	85	Heavy clay loam	1,481
116	70	Clay loam	1,085
91	60	Medium loam	1,056
79	70	Clay loam	1,053
19	65	Clay loam	976
74	60	Medium loam	844
95	50	Heavy clay loam	831
55	70	Heavy clay loam	748
118	60	Medium loam	732
97	70	Clay loam	683
13	80	Clay loam	497
89	25	Medium loam	354
80	10	Medium loam	72

ANNUAL HAY CROPS

GRAIN VARIETIES

Apart from native hay, the prairies depend on annual hays for the bulk of forage produced. Oats are used in most cases for this purpose. Oats combined with barley produce a higher yield. The combination of peas and oats produces a greater yield of more palatable hay with a greater feeding value. There is need for further work in the use of grain varieties for hay, but the following results are an indication of their possibilities.

ANNUAL HAY CROPS—GRAIN VARIETIES

Rate of seeding	Height	Total Yield per Acre					
		Green weight		Hay		Dry matter	
	inches	tons	lb.	tons	lb.	tons	lb.
Oats, 1 bush., barley, 1 bush	41·5	10	200	3	800	2	1,420
Wheat, 2 bush	42·5	7	1,900	3	....	2	1,360
Peas (McKay), 1 bush., oats, 2 bush	45·0	11	600	2	1,960	2	1,320
Peas (Chancellor), ¾ bush., oats, 2 bush	45·0	10	1,050	2	1,850	2	1,220
Barley, 2 bush	37·0	8	300	2	880	2	360
Spring rye, 2 bush	55·5	6	900	2	600	2	100
Peas (MacKay), 1 bush., rye, 1½ bush	55·0	7	200	2	540	2	60
Oats, 2½ bush	38·0	6	800	1	1,340	1	980
Peas (McKay), 2 bush	21·0	8	250	1	1,180	1	840

LEGUMES FOR ANNUAL HAYS

There are a number of leguminous crops which, under our conditions, have a use as annual hays. In a dry season such as 1925, the grain varieties adapted for this purpose give much the higher yields. The quality of the hay is far superior in the case of the legumes, and the soil is left in better condition for the following crop, but they are only useful as emergency hay crops.

ANNUAL HAY CROPS—LEGUMES

Crop	Height	Total Yield per Acre					
		Green weight		Hay		Dry matter	
	inches	tons	lb.	tons	lb.	tons	lb.
Peas, 1 bush., vetches, 20 lb.	21·5	6	550	1	500	1	240
Peas, 1 bush., hubam sweet clover, 8 lb.	20·0	5	1,600	1	490	1	220
Hubam sweet clover, 8 lb., soy beans, ¼ bush.	30·0	4	400	1	340	1	100
Sand vetches	20·5	5	1,150	1	330	1	80
Soy beans	18·0	4	50	1	280	1	40
Vetches, 20 lb., hubam sweet clover, 8 lb.	18·0	5	200	1	184	0	1,950
MacKay peas	27·0	4	700	0	1,702	0	1,520
Common vetches	16·5	3	1,420	0	1,690	0	1,496
Hubam sweet clover	17·5	1	1,000	0	848	0	760

OTHER GRASSES FOR ANNUAL HAYS

The millets and sudan grass are mentioned as possibilities for use as annual hays for the prairies. These differ considerably in their yielding ability under our conditions. In the tests conducted in 1925, Siberian millet has a commanding lead over the others. Sudan grass was sown broadcast in this test, but more satisfactory results are obtained by sowing in rows.

ANNUAL HAY CROPS—OTHER GRASSES

Crop	Height	Total Yield per Acre					
		Green weight		Hay		Dry matter	
	inches	tons	lb.	tons	lb.	tons	lb.
Siberian millet	25·0	6	550	2	480	2	....
Common millet	26·0	4	500	1	590	1	300
Hog millet	20·5	4	....	1	430	1	170
Hungarian millet	24·0	3	350	1	150	0	1,820
Sudan grass	32·0	3	1,000	0	1,840	0	1,640
Japanese millet	16·5	3	....	0	1,640	0	1,486

THE STAGE TO CUT OATS FOR HAY

In view fo the wide use of oats as a hay crop, the question naturally arises: What stage should these be cut? This experiment deals with the cutting of seven varieties, sown at the same time, at three different stages. All varieties produced highest yields when cut in the dough-stage; considerable loss results if they are cut when in bloom. If this hay is desired for horses, the dough-stage is to be preferred, while the milk-stage will be found very suitable for milch cows.

OAT VARIETIES—CUT AT DIFFERENT STAGES FOR HAY

Variety	Stage cut	Total Yield per Acre					
		Green weight		Hay		Dry matter	
		tons	lb.	tons	lb.	tons	lb.
Banner	Dough	7	1,120	3	1,040	3	280
Leader	Dough	7	380	2	1,820	2	1,200
Laurel	Dough	7	1,320	2	1,800	2	1,160
Longfellow	Dough	6	1,520	2	1,750	2	1,050
Alaska	Dough	7	180	2	1,610	2	1,010
Victory	Dough	7	760	2	1,480	2	900
Gold Rain	Dough	8	280	2	680	2	160
Gold Rain	Milk	6	1,060	2	140	1	1,194
Laurel	Milk	6	180	2	80	1	1,640
Banner	Milk	6	1,360	1	1,780	1	1,380
Victory	Milk	6	1,680	1	1,660	1	1,260
Alaska	Milk	4	1,750	1	1,250	1	900
Longfellow	Milk	5	240	1	880	1	580
Leader	Milk	4	1,940	1	780	1	480
Laurel	Bloom	4	560	1	690	1	400
Victory	Bloom	4	1,680	1	320	1	74
Banner	Bloom	4	400	1	730	0	1,916
Alaska	Bloom	3	520	0	1,948	0	1,740
Gold Rain	Bloom	3	1,780	0	1,930	0	1,724
Longfellow	Bloom	3	720	0	1,740	0	1,550
Leader	Bloom	2	600	0	1,020	0	910

DATES OF SEEDING OATS FOR HAY

The results from seeding oats for hay on stubble-land, a week apart for each sowing from May 15 to July 17, are recorded in the following table. Late May and June seedings gave highest yields in 1925. These dates permitted a normal growth of the crop up to time of cutting, resulting in higher yields of hay and dry matter. The late seedings produced highest yields of green forage. The crop seeded on July 10 barely reached the milk stage, and the last seeding just came in bloom, which meant a high water-content for both.

DATES OF SEEDING OATS FOR HAY

Date of seeding	Date cut	Height	Total Yield per Acre					
			Green weight		Hay		Dry matter	
		inches	tons	lb.	tons	lb.	tons	lb.
June 19	Sept. 2	37·5	4	1,510	2	100	1	1,660
" 12	Aug. 31	33·5	3	1,980	1	1,600	1	1,210
May 22	" 10	35·5	4	375	1	1,280	1	930
June 5	" 21	36·0	3	1,600	1	1,270	1	920
" 26	Sept. 10	38·0	4	1,980	1	1,140	1	800
May 15	Aug. 8	33·5	4	420	1	860	1	560
July 3	Sept. 24	40·0	4	988	1	820	1	520
May 29	Aug. 15	31·0	3	1,200	1	790	1	490
July 10	Sept. 24	31·0	4	978	1	420	1	60
" 17	" 24	21·0	5	1,114	0	1,880	0	1,680

CORN VARIETIES

Twenty-three varieties or strains of corn were tested for ensilage in 1925. Seasonal conditions produced low yields and slow maturity. None of the varieties ripened. The quality of the crop was determined by the source of the seed. A striking example of this is shown in the case of the Northwestern Dent variety. Seed of this variety grown at Brandon, Manitoba, reached an early dough-stage, the same variety grown in South Dakota had cobs forming at time of harvest, while that grown in Nebraska was in the silk. This is the most important consideration in the purchase of ensilage seed corn for Saskatchewan.

CORN VARIETIES

Variety	Average height	Maturity at harvest	Yield per acre		Dry matter per acre	
	inches		tons	lb.	tons	lb.
Burr Leaming—Carter	63·0	Tassels green	11	840	1	1,420
Northwestern Dent—Disco	54·0	Cobs forming	9	1,640	1	1,080
Hybrid—Wimple	51·5	Silks green	9	1,100	1	1,060
Bailey—Duke	62·0	Silks green	9	1,340	1	1,040
90-Day White Dent—Disco	60·5	Cobs forming	8	740	1	980
Wisconsin No. 7—Parks	58·0	Silks green	8	1,060	1	940
Longfellow—Disco	56·0	Silks appearing	9	380	1	900
Northwestern Dent—Experimental Farm, Brandon	51·5	Early dough	8	960	1	880
Northwestern Dent—McKenzie	48·0	Early dough	8	600	1	860
Compton's early—Duke	56·0	Silks green	9	160	1	700
Northwestern Dent (Nebraska)—McKenzie	54·0	Silks green	8	340	1	640
Leaming—J. Parks	62·0	Silks green	8	340	1	620
Longfellow—Duke	53·0	Cobs forming	8	750	1	560
Minnesota 13—Haney	58·0	Cobs formed	7	720	1	520
Yellow Dent—Wimple	55·0	Silks green	7	1,780	1	420
Minnesota 13—Unsworth	57·0	Early milk	6	520	1	360
Golden Glow—Duke	60·0	Silks green	7	840	1	340
Wisconsin No. 7—Duke	60·0	Cobs forming	7	520	1	300
Leaming—Duke	57·0	Silks green	7	560	1	280
North Dakota—Steele, Briggs	51·0	Silks green	8	1,100	1	250
Quebec 28—Macdonald College	45·0	Early dough	6	1,180	1	180
White Cap Yellow Dent—Steele, Briggs	61·0	Cobs formed	6	1,540	1	140
Amber Flint—Wimple	44·0	Cobs formed	6	160	0	1,880

SUNFLOWER VARIETIES

Information of practical importance to the farmer concerning sunflower varieties under test is recorded in the accompanying table. The range in maturity at harvest time is the outstanding point to note. As with ensilage corn, the varieties which produce the highest yield in the dough-stage are the most suitable.

SUNFLOWER VARIETIES

Variety	Average height	Maturity at harvest	Yield per acre		Dry matter per acre	
	inches		tons	lb.	tons	lb.
Russian Giant—Disco	64	Flowering	12	1,373	2	1,400
Manchurian—C.P.R.	54	Firm dough	10	1,707	2	400
Mammoth Russian—McDonald	62	Flowering	9	1,565	2	40
Manteca—C.P.R.	49	Med. dough	9	1,311	1	1,[illegible]80
Mixed—C.P.R.	53	Firm dough	8	1,716	1	1,600
Mammoth Russian—C.P.R.	53	Firm dough	9	186	1	1,460
Manchurian—McKenzie	49	Early dough	7	1,173	1	1,440
Ottawa 76—C. E. F.	51	Firm dough	8	40	1	1,420
Black—C.P.R.	47	Med. dough	8	407	1	860
Mennonite—Rosthern	38	Ripe	6	1,830	1	800

FIELD ROOTS

Variety tests of mangels, swede turnips, carrots and sugar beets were conducted, as in previous years, during the past season. Becaue of the relatively low yield and high labour charges involved, the acreage devoted to these crops is not in proportion to their usefulness as a winter stock-feed. The past season produced yields of roots far below the average. Numerous varieties are for sale by western seed-houses. Notes supplied give information concerning type, colour and smoothness. These factors are of practical value in determining purity, shape and ease or difficulty of harvesting. Commercial names are not a true indication of these factors, as revealed by many years' tests. Information gathered from these tests enables us to classify these root into types as indicated by shape; such as, in the case of mangels, long, intermediate,

tankard, and globe. Future tests will be based on type rather than varieties. This will enable us to more clearly supply information as to which type is best adapted for our conditions. With this object in view, next year half the number of varieties now listed will be compared.

MANGEL VARIETIES

Variety	Source of Seed	Yield per acre	Dry matter per acre	Remarks
		tons lb.	tons lb.	
Giant Yellow Globe...	Steele, Briggs.....	9 1,600	1 580	100% globe. Skin yellowish. Flesh white with yellow rings. Smooth.
Long Red Giant.....	A. E. McKenzie.....	9 1,400	1 576	80% long. Red skin. Flesh white with red rings. Some prongy.
Rosted Barred.....	Hjalmar Hartmann, Copenhagen.	10 900	1 570	95% intermediate. Skin orange Flesh white with yellow rings. Smooth.
Royal Giant.....	Steele, Briggs.....	10 850	1 536	70% long. Skin rose. Flesh white. Smooth.
Giant White Feeding Sugar.	Steele, Briggs.....	9 1,650	1 356	60% long. Skin white. Flesh white. Smooth.
Barres Half Long.....	General Swedish Seed Co.	8 750	1 300	80% intermediate. Skin orange. Flesh white. Fairly smooth.
Elevatham Mammoth	Hjalmar Hartmann, Copenhagen.	8	1 260	70% intermediate. Skin carmine. Flesh white with rose rings. Very prongy.
Stryno Barres.....	" "	8 500	1 136	70% intermediate. Skin orange. Flesh white with yellow rings. Fairly smooth
White Green Top Half Sugar.	" "	8 400	1 80	80% intermediate. Skin white Flesh white. Fairly smooth. Easy to harvest.
Svalof Half Sugar Rose	General Swedish Seed Co.	7 450	1 20	70% intermediate. Skin light rose. Flesh white. Smooth.
White Red Top Half Sugar Rose.	Hjalmar Hartmann, Copenhagen.	7 1,050	0 1,986	90% intermediate. Skin rose. Flesh white. Somewhat prongy.
Svalof Half Sugar White.	General Swedish Seed Co.	7 1,450	0 1,930	60% intermediate. Skin white. Flesh white. Smooth. Easy to harvest.
Barres oval.....	" "	9 700	0 1,886	50% tankard. 50% intermediate. Skin orange. Flesh white with yellow rings. Fairly smooth.
Red Eckendorfer.....	" "	8 700	0 1,830	90% tankard. Skin red. Flesh white with some red rings. Fairly smooth.
Eckendorfer Red.....	Hjalmar Hartmann, Copenhagen.	9 1,960	0 1,770	80% tankage. Skin red. Flesh white. Fairly smooth.
Danish Sludstrup.....	Wm. Ewing.....	6 1,000	0 1,760	60% intermediate. Mixed in type and colour. Prongy.
Fjerritsler Barres.....	Hjalmar Hartmann, Copenhagen.	9 400	0 1,684	70% intermediate. Skin orange Flesh white. Fairly smooth.
Eckendorfer Yellow...	" "	8 400	0 1,680	95% tankard. Skin yellow. Flesh white. Easy to harvest.
Manitoba Giant Yellow.	A. E. McKenzie.....	7 150	0 1,620	80% intermediate. Skin yellow. Flesh white. with yellow rings. Fairly smooth.
Golden Tankard.....	J. A. Bruce.....	8 200	0 1,600	80% tankard. Skin dark rose. Flesh golden. Smooth. Very easy to harvest.
Yellow Eckendorfer...	General Swedish Seed Co.	7 1,700	0 1,580	95% tankard. Skin yellow. Flesh white. Smooth.
Yellow Intermediate..	Central Experimental Farm.	5 1,150	0 1,540	85% intermediate. Skin yellow to red. Flesh white with yellow rings. Roots small.
Giant Yellow Intermediate.	Steele, Briggs.....	6 1,750	0 1,530	60% intermediate. Mixed in type and colour. Prongy and hard to pull.
Taarojc Barres.....	Hjalmar Hartmann, Copenhagen.	7 50	0 1,306	80% tankard. Skin orange. Flesh white with yellow rings. Smooth.
Eclipse.....	A. E. McKenzie.....	6 150	0 1,196	70% tankard. Skin yellow Flesh white. Smooth.

SWEDE TURNIP VARIETIES

Variety	Source of Seed	Yield per acre	Dry matter per acre	Remarks
		tons lb.	tons lb.	
Olsgard Bangholm	Hjalmar Hartmann, Copenhagen.	9 1,300	1 400	70% oval. Tops purple. Prongs small. Fairly easy to harvest.
Ditmars	H. H. McNutt	9 1,400	1 300	90% globe. Tops bronze. Rough. Hard to harvest.
Bangholm	General Swedish Seed Co.	8 1,350	1 140	70% globe. Tops purple. Somewhat rough. Fairly hard to harvest.
Canadian Gem	Steele, Briggs	8 1,900	1 60	80% globe. Tops purple. Fairly smooth. Easy to harvest.
Bangholm	Experimental Station, Charlottetown.	8 800	1 50	70% oval. Bronze and purple tops present. Fairly smooth. Easy to harvest.
Good Luck	Steele, Briggs	8 1,750	1 40	60% oval. Tops purple. Prongy Very hard to harvest.
Northwestern	A. E. McKenzie	8 1,700	1 20	Mixed in type. Tops purple. Prongy. Hard to harvest.
Shepherd's Golden Globe.	Hjalmar Hartmann, Copenhagen.	8 1,100	1	70% globe. Tops bronze. Fairly smooth. Easy to harvest.
Kangaroo	A. E. McKenzie	8 1,150	0 1,960	70% oval. Tops bronze. Somewhat rough. Fairly easy to harvest.
Bangholm	"	8 450	0 1,954	60% oval. Tops purple. Prongy Long tap roots. Fairly hard to harvest.
Improved yellow	General Swedish Seed Co.	9 100	0 1,950	90% globe. Tops bronze. Some what rough. Fairly easy to harvest.
Hazard's Improved	Steele, Briggs	8 950	0 1,860	80% oval. Tops bronze. Somewhat rough. Fairly hard to harvest.
Monarch	A. E. McKenzie	8 600	0 1,850	60% oval. Tops purple. Somewhat rough. Pull fairly easily.
Superlative	"	7 1,000	0 1,640	80% oval. Tops purple. Roots prongy. Hard to harvest.

CARROT VARIETIES

Variety	Source of Seed	Yield per acre	Dry matter per acre	Remarks
		tons lb.	tons lb.	
Mammoth Half Long White.	A. E. McKenzie	14	1 1,560	Long. Rough. Prongy. Grow deep in ground.
Long Red Surrey	Steele, Briggs	12 600	1 1,146	Long. Red. Smooth. Grow deep in ground.
Half Long White	General Swedish Seed Co.	12 1,000	1 926	Fairly smooth. Grow below surface.
Large White Belgian	Steele, Briggs	13 600	1 860	Long. Twisted and bent in shape. Approximately one-quarter above ground.
James	Harris McFayden	12 1,200	1 640	Smooth. Somewhat short. Grow below surface.
Improved Short White	Steele, Briggs	13 1,200	1 634	Small. Short. Smooth. Grow deep in ground.
Danish Champion	Central Experimental Farm.	11	1 620	Intermediate in type. Yellow bronze in colour. Fairly smooth.
White Belgian	Dupuy & Ferguson	13	1 516	Long and twisted in shape. Differ in habit of growth.
Champion	Hjalmar Hartmann, Copenhagen.	12	1 364	Intermediate in type. Golden yellow. Fairly smooth. Grow deep.
White Belgian No. 9008	Trifolium, Denmark	10	1 344	Long. Some twisted. Grow deep in ground.
White Belgian	Hjalmar Hartmann, Copenhagen.	10	1 304	Long. Prongy. Twisted and bent in shape. Approximately one-third above ground.
Long Orange Belgian	A. E. McKenzie	8	1 200	Long. Twisted in shape. Break easily when pulled.

SUGAR BEET VARIETIES

Variety	Source of Seed	Yield per acre	Dry matter per acre	Percent sugar in juice	Coefficient of purity
		tons lb.	tons lb.		
Henning & Harving	Dominion Sugar Co	10 388	2 680	15·40	82·69
Home Grown	Dominion Sugar Co	10 185	2 600	16·62	89·48
Horning	Dominion Sugar Co	9 850	2 160	16·72	86·84
Rabbethge & Ciesecke	Dominion Sugar Co	9 416	2 120	16·81	90·06
Vilmorin's Improved B	Vilmorin Andrieux, Paris	8 852	1 1,520	16·03	86·78
Dr. Bergmann	Dominion Sugar Co	8 200	1 1,440	16·44	89·91
Schrieber & Son	Dominion Sugar Co	8 312	1 1,240	17·04	87·76
Dieppe	Dominion Sugar Co	7 125	1 1,120	17·10	93·46

POULTRY

The standardization of the flock of White Wyandottes and the breeding and selection for high production continue to be the chief aims of the poultry department. New blood has been introduced into the flock by the use of male birds from the Martin, Solly and Lacombe Experimental Station strains of White Wyandottes. These birds were mated to females of good type, free from disqualifications, and which were high producers in their pullet years. Results are very gratifying and early hatched chickens from the above matings give great promise of combining high production with type closely approaching "The Standard of Perfection." No pullets are available for distribution at the time of writing this report.

Considering the numerous inquiries and requests for White Wyandotte breeding stock received at the Experimental Farm, Indian Head, this breed of poultry continues to gain in popularity as a utility breed in Saskatchewan.

All hens are trap-nested, and the eggs from pedigreed or registered individuals in mating-pens are segregated. The identity of these eggs is retained, they are hatched in special chambers, and the chicks are leg-banded before being removed from the incubator. Chicks are later wing-banded, and, thus, the ancestry of each can at all times be accurately traced.

The size of the flock at the end of the year 1925 was two hundred and thirty hens, eighty pullets, twenty cocks and twenty cockerels.

COMPARISON OF MARCH, APRIL AND MAY HATCHES

This experiment has been conducted a number of years. Results have varied somewhat and for 1925 may be summarized as follows:—

1. From the standpoint of the number of eggs required for each chick hatched, April and May hatches were better than those in March.
2. For each chick wing-banded, fewer eggs were required in the May hatches than in those of the other two months.
3. The greatest per cent of fertile eggs was found in the April hatches.
4. The highest per cent of total eggs set was hatched during April.
5. Of chicks hatched, a greater per cent were alive when wing-banded from May hatches than from the others, indicating only the "survival of the fittest" in early hatches.

TYPES OF INCUBATORS COMPARED

Three types of incubators were in use during the hatching season, viz., Candee, Jewel Hot Air and Buckeye. The capacities of these incubators in no

way correspond, but the results obtained in 1925 were clean cut and fairly significant. They were as follows:—

1. Almost twenty-five per cent more eggs were required for each chick hatched in the Candee than in the other types of incubators.
2. Fertility in all cases was around 75 per cent.
3. Per cent total eggs hatched was about one-third less in the Candee than in the Jewel Hot Air and Buckeye makes.
4. Per cent fertile eggs hatched was about one-third less in the Candee than in the other makes.

It has been demonstrated that temperature and humidity play an important role in determining the success or failure of incubators. Plans are being made whereby the temperature and humidity of the Candee machine may be varied, especially at the beginning of the incubation period, in the hope that some definite information may be obtained.

DEVELOPMENT OF CHICKS

The greater vigour and earlier maturity of the chicks placed on alfalfa range early in the summer clearly demonstrated the desirability of early hatched chicks. If one is to keep poultry at a profit throughout the winter in Saskatchewan, no chicks should be hatched after May 15. Chicks hatched later than May 15 are so immature when winter comes that, no matter how well they are fed, they seldom begin to lay till the following March or April.

CRATE-FEEDING

The fattening of forty-four culls, ranging in weight from 2 pounds to 4.5 pounds, commenced on November 13. These were placed in crates and fed at the rate of one-third of a pound each per day of the following mash: oat flour, 250 pounds; barley meal, 200 pounds; shorts, 200 pounds; beef scrap, 40 pounds; bran, 30 pounds; oat chop, 30 pounds. The mash was fed wet, being mixed with an equal volume of water before feeding. Feeding was done at 7 a.m., 11 a.m., 2 p.m. and 5 p.m. each day during the entire period. Four pounds of grit were also consumed.

Results of Feeding Culls

Number of Birds	Days fed	Weight of all birds	Average weight of birds	Gain per bird during feeding period
		lb.	lb.	lb.
44	0	138·5	3·15	.....
41	14	255·0	6·21	3·06
40	22	246·0	6·15	3·00

Owing to mild weather when carcasses could not be frozen, and lack of immediate market for all of these birds, it was necessary to carry on the feeding longer than expected. The result of this was a slight loss in weight by the end of the twenty-second day of feeding.

The table, however, clearly illustrates the possibility of rapid gains in a comparatively short period of feeding, since the average weight was practically doubled in fourteen days. Cost of feed for the entire feeding period was approximately $6.55, while the value of fowls increased $21.50. This shows that the culls of the young flock can be turned into profit in a very short time.

Thirteen birds qualified for registration from the sixth Saskatchewan Egg-Laying Contest. This is a considerable improvement on previous contests, and indicates a growing interest in poultry improvement which promises well for the future of the poultry-industry in Saskatchewan. The fact that the birds that qualified for registration represented five distinct breeds clearly demonstrates that Saskatchewan is well adapted to poultry-raising.

All breeds are acceptable under the rules and regulations governing the contest. Copies of these can be obtained upon request at the Experimental Farm, Indian Head.

A complete report of the Sixth Saskatchewan Egg-Laying Contest will be found in the next bulletin to be published containing the results of all egg-laying contests conducted in Canada, issued by the Dominion Experimental Farms, Ottawa.

GENERAL

ENTOMOLOGY.—In conjunction with the Entomological Branch, a field laboratory has been established at the Farm for the purpose of gaining information on the ravages of the tent caterpillar, cutworms, etc. A full report will be found in the report of the Entomological Branch.

PLANT PATHOLOGY.—A series of experiments are being carried on in conjunction with the Division of Botany to determine the effect of stem-rust on different varieties of wheat, smut-control, and other related subjects. Results of observations and experiments are published by the Division of Botany.

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