DOMINION OF CANADA
DEPARTMENT OF AGRICULTURE
DOMINION EXPERIMENTAL FARMS

EXPERIMENTAL STATION

SWIFT CURRENT, SASK.

REPORT OF THE SUPERINTENDENT

J. G. TAGGART, B.S.A.

FOR THE YEAR 1926

Ornamental plantings at Swift Current; three years' growth.

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TABLE OF CONTENTS

DOMINION EXPERIMENTAL STATION, SWIFT CURRENT, SASK.

REPORT OF THE SUPERINTENDENT, J. G. TAGGART, B.S.A.

NOTES ON THE SEASON

The crop season of 1926 was the most unfavourable since 1920. There was a small carry-over of moisture from the autumn of 1925. The winter was mild and open with a light snowfall. From the opening of the spring until near the end of May there was practically no rain, but during this period high winds prevailed, causing considerable soil drifting. Near the end of May, some good rains fell, so that crop prospects were much improved, but both June and July rains were far below the average, while high temperatures prevailed almost throughout July. As a result of these conditions, hay and other forage crops were very poor. Wheat, as usual, suffered less from adverse conditions than did most other crops. Wheat harvest commenced on August 2, but owing to heavy rains around August 10 cutting was not finished until August 26. The early part of the threshing season was fine and dry. Threshing and silo-filling were finished early and all crops housed in good condition, excepting some wheat which had sprouted in the stook during the mid-August rains.

In late September and October, much delay was experienced by farmers in the district in getting their crops threshed. While the total rainfall during this time was not great, frequent showers kept grain too damp to thresh satisfactorily.

METEOROLOGICAL RECORD FOR SWIFT CURRENT, SASK., 1926

Month	Temperature			Precipitation	Evaporation	Sunshine	Wind
	High	Low	Mean	10 inches snow =1 inch rain			Total miles
	°F	°F	°F	inches	inches	hours	
January	42	−19	17·4	1·25	.....	106·3	
February	46	− 9	20·7	0·25	.....	110·8	
March	58	1	27·7	0·26	.....	219·4	
April	81	− 1	42·0	0·12	.....	239·4	
May	82	24	53·0	2·64	5·53	221·3	6,541
June	87	33	56·5	1·83	5·21	249·4	5,813
July	95	37	67·0	2·23	7·29	269·6	4,663
August	88	39	59·6	3·20	5·05	177·5	4,936
September	73	9	43·1	0·97	1·99	122·7	3,954
October	70	9	40·6	0·49	1·53	104·9	4,831
November	65	− 6	20·8	0·35	.....	69·8	.....
December	42	−29	11·6	0·17	.....	78·6	.....
Totals	.....	.....	.....	13·76	26·60	1,969·7	30,738

Last spring frost ..... May 31
First fall frost ..... September 11
Frost-free period ..... 102 days
Rainfall during April, May, June and July ..... 6·82 inches

DATES OF FARM OPERATIONS, 1926

	Began	Finished
Work on land (first and last dates)	April 10	Oct. 10
Seeding wheat	April 15	May 15
Seeding oats	May 8	May 19
Seeding sunflowers	May 22	May 22
Seeding corn	May 18	May 29
Seeding fall rye	Aug. 10	Aug. 18
Spring ploughing	April 16	May 1
Ploughing summer-fallow	May 27	June 21
Cutting hay	July 2	July 26
Cutting fall rye	July 17	July 21
Cutting wheat	Aug. 2	Aug. 26
Cutting oats	Aug. 12	Aug. 23
Operating combine	Aug. 24	Sept. 21
Cutting corn	Sept. 16	Sept. 27
Cutting sunflowers	Sept. 20	Sept. 20
Threshing	Sept. 2	Sept. 15
Fall ploughing	Oct. 2	Oct. 10

FIELD HUSBANDRY

The field husbandry work has followed closely along lines laid down in previous years. Another quarter-section of land has been rented, chiefly for the purpose of further testing the adaptability of the combined harvester-thresher to this part of Saskatchewan.

As was mentioned in the 1925 Report, field husbandry experiments are conducted under a variety of conditions, on both old and new land, on small plots and large fields. Under these circumstances the reader of this report should not attempt to compare yields obtained in experiments conducted under one set of conditions with those obtained under a different set of conditions.

SEVEN-YEAR ROTATION—9-ACRE FIELDS

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

Rotation Year	Crop	Yield per acre		Value of Crop 1926	Cost of Production 1926	Profit or loss per acre	
		1926	Average four years			1926	Average four years
		bush.	bush.	$ cts.	$ cts.	$ cts.	$ cts.
1	Corn	4·17	5·05	16 68	14 54	2 14	4 28
2	Wheat (grass seeded)	22·70	23·30	28 38	12 11	16 27	16 06
3	Hay (replaced by spring rye)	1·10	1·16	13 20	9 73	3 47	3 31
4	Hay	0·45	0·50	5 40	3 46	1 94	2 09
4(a)	Fallow (following hay)	.....	.....	.....	.....	.....	.....
5	Wheat	15·17	21·87	18 96	15 09	3 87	11 96
6	Fallow	.....	.....	.....	.....	.....	.....
7	Fall rye	30·93	26·11	24 74	18 87	5 87	4 18
	Average (for total area in rotation)	.....	.....	15 34	10 54	4 79	5 98

The corn in this rotation follows fall rye. The rye stubble was heavy enough for successful burning, and considerably less trouble was experienced with volunteer rye than in former years.

The wheat on field 2 was a good crop for the season. Owing to careful eradication of the weeds in the previous corn crop, there were few weeds in the wheat.

The hay on field 3 was very thin and weedy. The ground was spring ploughed and seeded to spring rye. The rye was cut for hay, the field double-disked and seeded to fall rye. The fall rye will be cut for hay early in 1927.

The second-year hay crop was very poor. After the hay was removed, in the last week of June, the sod was broken, disked, and fallowed for the remainder of the season. Field 5 was similarly treated last year, and this treatment accounts for the poor showing made by wheat on field 5. Wheat on summer-fallow on adjacent fields yielded from 20 to 25 bushels per acre. Apparently a yield of 0.55 tons of hay in 1925 reduced the yield of wheat in 1926 by 5 to 10 bushels per acre.

THREE-YEAR ROTATION—FALLOW: WHEAT: WHEAT

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

Rotation Year	Crop	Yield per acre		Value of Crop 1926	Cost of Production 1926	Profit or loss per acre	
		1926	Average four years			1926	Average four years
		bush.	bush.	$ cts.	$ cts.	$ cts.	$ cts.
1	Fallow						
2	Wheat	22·075	25·725	27 59	15·92	11·67	17·99
3	Wheat	8·540	16·510	10·68	13 16	−2 48	9 29
	Average, per acre			12 76	9 69	3 06	9 09

In this rotation the costs of fallowing are charged to both wheat crops; two-thirds of the costs to the crop succeeding the fallow and one-third to the other wheat crop. The second-year wheat crop was badly damaged by sawfly.

TWO-YEAR ROTATION—FALLOW: WHEAT

Summary of Yields, Value and Profits and Loss, per Acre

Rotation Year	Crop	Yield per acre		Value of Crop 1926	Cost of Production 1926	Profit or loss per acre	
		1926	Average four years			1926	Average four years
		bush.	bush.	$ cts.	$ cts.	$ cts.	$ cts.
1	Fallow						
2	Wheat	20·6	24·8	25·75	17·95	7·80	12·15
	Average per acre			12 88	8 98	3 90	6 08

This rotation has an area of 10 acres. The crop was remarkably free from weeds. The comparatively low yields are due to the fact that the soil is poorer than the average on the farm.

TWO-YEAR ROTATION—FALLOW: FALL RYE

Summary of Yields, Value and Profit and Loss, per Acre

Rotation Year	Crop	Yield per acre		Value of Crop 1926	Cost of Production 1926	Profit or loss per acre	
		1926	Average four years			1926	Average four years
		bush.	bush.	$ cts.	$ cts.	$ cts.	$ cts.
1	Fallow	.....	.....	.....	.....	.....	.....
2	Fall rye	29·0	25·1	23·20	18·32	4·88	3·66
	Average, per acre	.....	.....	11·60	9 16	2 44	1 83

The fall rye in this rotation was remarkably free from weeds. Two small patches which were winter-killed were a solid mass of Russian thistle, but no weeds could be found anywhere else.

SUMMER-FALLOW TREATMENTS FOR WHEAT PRODUCTION

Field	Crop	Fallow treatment	Yield, per acre	
			1926	Average three years
			bush.	bush.
1	Wheat	Fall ploughed, cultivated during fallow year	19·00	20·00
2	"	Fall disced, cultivated during fallow year	25·75	23·58
3	"	Cultivate only during fallow year	17·20	22·90
4	"	Cultivated till July 15, ploughed	21·50	24·83
5	"	Ploughed 6 inches deep June 15, cultivated as required	23·50	23·75
6	"	Sweet Clover ploughed June 15, cultivated	25·50	23·31

NOTE.—The average yield of second-year wheat in this rotation for three years is 14·51 bushels per acre.

This summer-fallow experiment covers an area of 36 acres. A three-year rotation of fallow, wheat, wheat is followed, each treatment covering an area of 2 acres. While the results of the fallow treatments on field areas do not harmonize in every particular with similar treatments in the plot experiments, it is nevertheless considered advisable to carry this important piece of work in both plots and fields for a number of years, so as to be sure that the final conclusions are dependable. So far, the results indicate that the complete destruction of the weeds in the fallow is much more important than the kind or amount of cultivation given to the soil.

SUMMER-FALLOW TREATMENTS FOR WHEAT PRODUCTION

1/50 acre Plots—triplicated

Treatment	Yield per acre	
		Two-year average
	bush.	bush.
1. Fall-plough, cultivate only during fallow year	19·57	20·50
2. Fall-disk, cultivate only during fallow year	20·75	20·90
3. Cultivate in spring after seeding and as required till July 15; plough, leave untilled	19·90	20·70
4. Plough 6 inches, June 10, cultivate as required	20·50	20·60
5. Cultivate only during fallow year	21·80	21·30
6. Seed with 2nd wheat crop 5 lb. sweet clover and treat as number 4	24·00	22·00
7. Burn stubble early spring; disk at once, plough June 10, cultivate as required	25·80	24·30
8. Early disk (before seeding), plough June 10 and cultivate as required	23·90	22·90
9. Plough June 10, 4 inches, cultivate as required	25·00	23·30
10. Plough June 10, 8 inches, cultivate as required	25·90	23·70
11. Plough June 10, 6 inches, sub-soil 4 inches and cultivate as required	24·20	22·60
12. Plough May 15, cultivate as required	25·20	23·00
13. Cultivate only both fallow and stubble crops	24·60	20·60

Very little difference could be observed in the weediness of the crops grown on the variously-treated fallow plots. In preparing the fallow in the preceding year some differences were noted in weed growth and general condition of the land. Plots which were burned in the spring showed the smallest amount of weeds at time of ploughing. Early working of the land also decreased the volume of weed growth at ploughing time. The catch of sweet clover on Plot 6 was thin, but plants that did survive had attained a height of 18 inches when they were ploughed under. Plots which were worked in the preceding fall produced lower yields this year than those that were left until spring. This was not the case last year, so definite conclusions cannot be drawn from this year's work.

YIELDS OF WHEAT FOLLOWING DIFFERENT STUBBLE TREATMENT.

Field	Crop	Stubble treatment	Yield per acre	
			1926	Average four years
			bush.	bush.
1	Wheat	Fall-ploughed, spring-harrowed; seeded; harrowed	12·00	18·51
2	"	Fall-disked, spring-ploughed, harrowed, seeded and harrowed	10·50	19·88
3	"	Spring-ploughed, harrowed, seeded, harrowed	12·50	20·55
4	"	(Previous crop cut by combine) spring-burned, seeded	11·16	18·04
5	"	(Previous crop cut by combine) spring-burned, disked, seeded	12·66	19·26
6	"	Spring-burned, disked, seeded and harrowed	10·50	19·56
7	"	Spring-burned, ploughed, harrowed, seeded, harrowed	13·83	21·65
8	"	Spring-disked, seeded and harrowed	10·66	17·37

NOTE.—The average yield of wheat on the summer-fallow of this rotation is 31·4 bushels per acre.

This experiment covers an area of 72 acres. A three-year rotation is followed. The summer-fallow treatment is uniform, all plots being ploughed early in June.

Plot 8 (spring-disked, seeded and harrowed) yielded a lower four-year average number of bushels than any other. In addition to this it was very weedy in 1925 and considerably worse in 1926.

The first-year wheat crop on plots 4 and 5 was cut by the combine. The stubble was ignited by means of a harrow drawn on the windward side. There was no stubble or weeds left when the fire had passed. The crops grown on these plots were outstandingly free from weeds and, notwithstanding that the yields are slightly lower than spring ploughing, the lower costs of operation make these plots more profitable than the spring-ploughed plots.

STUBBLE TREATMENTS FOR WHEAT PRODUCTION

1/50-acre Plots—Triplicated

Treatment	Percentage of weeds at harvest	1926	Four-year average
		Yield grain per acre	Yield grain per acre
		bush.	bush.
Fall-plough 4 inches, spring-harrow, seed, harrow	6	15·1	21·0
Fall-disk, spring-plough, harrow, seed, harrow	8	13·6	21·1
Spring-plough 4 inches, harrow, seed, harrow	6	14·9	20·4
Spring-burn stubble, disk, seed and harrow	3	15·9	21·3
Spring-burn, spring-plough 4 inches, harrow, seed, harrow	4	12·7	19·2
Spring-disk stubble, seed, harrow	8	12·7	19·8
Spring-burn stubble, seed (no treatment)	6	13·3	18·3
Seed in stubble without treatment	25	11·9	14·6
Spring-burn, plough 7 inches, harrow, seed, harrow	3	12·9	19·8
Spring-burn, plough 4 inches, subsoil 6 inches, harrow, seed, harrow	3	12·4	21·4
Fall-burn, spring-plough 4 inches, harrow, seed, harrow	3	13·3	21·3
Fall-burn, spring disk, seed, harrow	7	14·9	21·4
Spring-burn, cultivate, seed	3	12·0	19·8

While differences in yields of wheat following these various treatments have not been very marked, it has been observed that when a clean burn is obtained the crop is always reasonably free of weeds. When the wheat is seeded in the stubble without treatment, weeds are bad and the yield is relatively low. Ploughing does not seem to be necessary, provided some other effective means of controlling weeds is adopted.

YIELDS OF WHEAT ON PACKED AND UNPACKED LAND

Field	Crop	Treatment	Yield per acre	
			1926	Average four years
			bush.	bush.
A 1	Wheat	Fallow ploughed, cultipacked, cultivated as required, seeded and packed	26·50	28·08
A 2	Wheat	Fallow ploughed, no packing, cultivated as required, seeded and harrowed	25·50	26·86
A 3	Wheat	Fallow ploughed, surface packed, cultivated as required, seeded and packed	25·50	26·07
B 1	Wheat	Spring-ploughed, harrowed, cultipacked, seeded, packed	11·00	20·48
B 2	Wheat	Spring-ploughed, harrowed, seeded and harrowed	11·00	18·25
B 3	Wheat	Spring-ploughed, harrowed, surface packed, seeded, packed	13·50	18·67

This experiment covers an area of 18 acres. The summer-fallow crop was a remarkably good stand and free from weeds. The average yields shown in this table would indicate that the use of the surface packer has no effect on the

yield of wheat on either fallowed or spring-ploughed land, while the cultipacker appears to benefit both crops. However, the topography of the field on which this experiment is conducted might indicate that the higher yields on the cultipacked fields are due to soil differences rather than to the packer. The positions of the treatments in the field are being changed next year for the purpose of checking a possible error due to soil differences.

SUMMER-FALLOW SUBSTITUTES

1/50-acre Plots—Triplicated

Fallow substitute	1926 Yield per acre			Five-year average Yield per acre		
	Grain	Fodder, Green Weight	Fodder, Dry Weight	Grain	Fodder, Green Weight	Fodder, Dry Weight
	bush.	lb.	lb.	Bush.	lb.	lb.
Potatoes—Rows 42 inches by 18 inches	.....	4,678	.....	.....	9,509	.....
Sudan grass—Double rows	.....	Failed	.....	.....	5,906	.....
Sunflowers—Single rows	.....	14,500	2,490	.....	23,019	3,759
Corn—Single rows	.....	16,116	2,739	.....	15,772	3,080
Oats—Triple rows	17·6	.....	.....	40·8	.....	.....
Oats—Double rows	16·0	.....	.....	36·0	.....	.....
Oats—½ bushel per acre	8·8	.....	.....	36·9	.....	.....
Wheat—Double rows	5·4	.....	.....	11·0	.....	.....
Oats—2 bushels, for green feed	.....	4,866	1,533	.....	9,759	3,210
Barley—Double rows	13·0	.....	.....	19·0	.....	.....

Fallow-substitute crops are grown in a two-year rotation, alternating with wheat, so that the yields shown in the preceding table were produced on spring-ploughed stubble land. All plots were harrowed seven days after seeding to help destroy young weeds. During the summer, the plots were given three cultivations with the corn-cultivator, which was sufficient to keep weeds out of the space between rows. No hoeing was done; consequently, there was a considerable growth of Russian thistles in many of the rows.

WHEAT FOLLOWING FALLOW AND VARIOUS FALLOW SUBSTITUTES

1/50- acre Plots—Triplicated

Previous crop	Yield of previous crop			1926 crop			Four year average yield of wheat following fallow substitutes
	Fodder per acre green weight	Fodder per acre dry weight	Grain per acre	Condition of stand at harvest	Yield grain per acre	Weight per measured bushel	
	lb.	lb.	bush.		bush.	lb.	bush.
Potatoes—rows 42″ by 18″	7,233	.....	.....	Normal	18·1	60·6	21·8
Sudan grass—double rows	Failed	.....	.....	Thin	14·4	60·0	16·6
Sunflowers—hills 42″ by 42″	20,730	3,753	.....	Very thin	9·6	60·0	14·1
Fallow	.....	.....	.....	Thick	27·2	61·3	26·5
Corn—hills 42″ by 42″	10,766	2,806	.....	Normal	22·1	60·5	20·5
Oats—triple rows	.....	.....	46·7	Thin	10·8	59·3	15·4
Oats—double rows	.....	.....	41·1	Thin	10·2	60·0	13·1
Oats—½ bushel per acre	.....	.....	44·0	Very thin	7·8	59·0	10·9
Wheat—double rows	.....	.....	12·5	Very thin	13·2	59·0	16·9
Oats for green feed	.....	.....	.....	Thin	11·7	59·0	12·4
Barley—double rows	.....	.....	20·5	Thin	11·1	59·3	15·8

The stand of wheat following practically all of the row crops was thin and weedy. Judging by the yields of wheat in the following year, corn and potatoes are the only crops that can be considered as even partial substitutes for fallow. Even these crops reduce the yield of wheat by 5 or 6 bushels from those secured on fallow land. These results are in harmony with soil-moisture studies made at this Station, which indicate that the growth of any crop or plant on land which is being fallowed reduces the amount of moisture retained, with a consequent reduction in yield of the following crop. Moreover, wheat following substitutes is always more weedy than wheat on fallow, which means that under the substitute system the weed infestations will get progressively worse.

In studying the figures in the table it is important not only to compare wheat yields after substitutes with those after fallow but also to compare second-crop wheat in a three-year rotation with the crop after substitutes. On 70 plots located near the fallow-substitutes experiment the average yield of wheat on spring-ploughed stubble land, in a three-year rotation, has been 16.7 bushels. This is practically the same as the yield of wheat after double rows of wheat. On another block where wheat is grown continuously the average yield for five years is 8.6 bushels per acre. A comparison of yields of wheat grown in these various rotations is given in the following table:

YIELDS OF WHEAT IN DIFFERENT ROTATIONS

Rotation	Part of area in crop	Yield per acre	
		Cropped area	Total area of rotation
		bush.	bush.
Continuous wheat	all	8·6	8·6
Two-year—fallow substitute; wheat	all	13·8	13·8
Two-year—fallow; wheat	½	26·5	13·25
Three-year—Fallow; wheat; wheat	⅓	21·6	14·4

In deciding upon the rotation in which wheat shall be grown, the farmer must be guided by economic considerations as well as by yields per acre. The system of alternating fallow and wheat involves less work, keeps the land cleaner, provides a better distribution of labour, requires less seed and less twine, and permits work being done in better season than is the case where fallow substitutes are used. The three-year rotation of fallow; wheat; wheat has produced higher average yields over the whole area than any of the other methods. Whether this rotation should be abandoned in favour of the alternate crop and fallow system will depend upon many local factors, so that each farmer must make this decision for himself.

SEQUENCE OF CROPS

Preceding crop	1926 crop	Yield per acre 1926			Average yield for three years		
		Grain	Fodder, Green weight	Fodder, dry weight	Grain	Fodder, green weight	Fodder, dry weight
		bush.	lb.	lb.	bush.	lb.	lb.
Wheat	Wheat	15·0	.....	.....	14·1	.....	.....
Fallow	Wheat	25·0	.....	.....	23·1	.....	.....
Millet	Wheat	13·7	.....	.....	12·8	.....	.....
Corn	Wheat	21·2	.....	.....	18·6	.....	.....
Hubam	Wheat	5·0	.....	.....	8·5	.....	.....
Oats	Wheat	11·9	.....	.....	10·7	.....	.....
Wheat	Oats	18·0	.....	.....	22·2	.....	.....
Fallow	Oats	45·6	.....	.....	50·5	.....	.....
Millet	Oats	13·6	.....	.....	23·0	.....	.....
Corn	Oats	39·9	.....	.....	36·2	.....	.....
Hubam	Oats	6·2	.....	.....	16·2	.....	.....
Oats	Oats	11·8	.....	.....	17·8	.....	.....
Wheat	Millet	.....	10·100	4,073	.....	8,093	3,396
Fallow	Millet	.....	23,000	6,782	.....	13,500	4,878
Millet	Millet	.....	9,300	3,078	.....	6,583	2,148
Corn	Millet	.....	22,150	7,094	.....	13,050	3,530
Hubam	Millet	.....	7,550	2,727	.....	5,616	2,086
Oats	Millet	.....	13,250	4,295	.....	7,816	3,065
Wheat	Corn	.....	12,700	2,159	.....	11,598	2,309
Fallow	Corn	.....	19,800	3,366	.....	14,522	2,833
Millet	Corn	.....	16,000	2,720	.....	11,691	2,775
Corn	Corn	.....	14,500	2,465	.....	11,151	2,300
Hubam	Corn	.....	14,500	2,465	.....	10,992	2,360
Oats	Corn	.....	14,700	2,499	.....	10,426	2,072
Wheat	Hubam	.....	*Failure	Failure	.....	5,706	1,776
Fallow	Hubam	.....	"	"	.....	7,100	1,734
Millet	Hubam	.....	"	"	.....	2,950	888
Corn	Hubam	.....	"	"	.....	5,466	1,406
Hubam	Hubam	.....	"	"	.....	2,600	1,089
Oats	Hubam	.....	"	"	.....	3,416	1,036

* Failure—Crop sparse, polluted with Russian thistle—impossible to harvest.

The highest yields were obtained from all crops preceded by fallow; corn is next; wheat, about 3rd place; millet, 4th; oats, 5th; hubam or annual sweet clover, 6th. Hubam is very slow to grow during the early part of the growing season, and so makes a poor "weed-fighter." The low yields of various crops after the hubam clover are probably partly accounted for by the growth of weeds in the hubam.

RATES AND DATES OF SEEDING FALL RYE

Rate	Date sown	Date of ripening	Height at harvest	Yield of grain per acre	Average three years
			inches	bush.	bush.
¾ bush	July 15..	July 22..	37	35·11	27·67
1 "	" 15..	" 22..	35	32·51	26·38
1¼ "	" 15	" 22..	35	32·51	26·21
1½ "	" 15..	" 22..	38	31·76	27·51
1 "	Aug. 1..	" 24..	37	34·59	30·95
¾ "	" 15..	" 24..	40	34·47	31·52
1 "	" 15..	" 24..	40	33·55	32·08
1¼ "	" 15..	" 24..	38	30·20	32·93
1½ "	" 15..	" 24..	40	30·79	34·16
¾ "	Sept. 1..	" 27..	45	39·05	35·58
1 "	" 1..	" 25..	45	38·23	33·66
1¼ "	" 1..	" 25..	42	36·97	33·28
1½ "	" 1..	" 25..	40	34·29	33·72
1 "	" 15..	" 25..	44	34·38	29·52
1 "	Oct. 1..	" 27..	50	21·94	25·51

This experiment is conducted on summer-fallowed land in triplicate fiftieth-acre plots. While all rates and dates, excepting the October 1 seeding, have produced good yields, the lighter rates have tended to produce higher yields than the heavier rates. For good fallow land, a moderate rate of seeding about September 1 seems to be best.

PLACE IN ROTATION TO SEED FALL RYE

Preceding crop or treatment	Date ripe	Height at harvest	Yield of grain. Bushels per acre	
			1926	Three year average
		inches		
Fallow	July 22	41	35·2	30·7
Ploughed barley stubble	" 18	31	16·1	17·0
Ploughed sod	" 16	33	14·3	18·9
Wheat stubble	" 18	30	17·6	13·7
Fallow	" 22	42	33·4	31·2
With oats in spring	" 16	39	17·6	15·3
Sunflowers	" 27	36	* 9·7	14·3
Continuous fall rye	" 14	26	9·6	14·4
Fallow	" 22	38	32·2	31·3
Corn	" 27	41	* 18·6	21·8
Seed one month after seeding oats	" 18	36	16·3	12·3
Seed between rows of corn	" 18	32	15·5	19·9
Seed between rows of sunflowers	" 18	29	15·6	18·3

* Spring rye was substituted for fall rye due to the failure of the latter to germinate on account of late seeding.

Both fall and spring seasons were quite favourable for the rye crop. Little comment is required on these figures because the yields in most cases indicate the merits of the different methods of seeding the crop.

In general, any crop which occupies the land late in the season is a poor preparation for rye. If rye is to follow another crop, seeding should be done as soon as the preceding crop can be removed. In 1925, corn and sunflowers stood on the land later than usual, with the result that the rye seeding after these crops failed.

Seeding between rows of corn and similar crops is usually not a feasible plan; moreover, there is always a space left vacant by the removal of the row crop upon which weeds will grow.

Rye seeded with oats usually makes a poor stand and it also has the effect of reducing the yield of oats.

DATES OF PLANTING IMPROVED SQUAW CORN FOR GRAIN PRODUCTION

Date planted	Percent ripe at harvest	1926 yield per acre		2-year average yield per acre	
		Unripe cobs	Ripe cobs	Unripe cobs	Ripe cobs
		lb.	lb.	lb.	lb.
May 1	100	.....	2,975	.....	3,230
May 10	100	.....	3,612	.....	3,568
May 20	60	1,419	2,128	709	3,189
May 30	11	2,198	244	1,099	1,975
June 9	0	3,552	.....	1,776	1,932

All plantings were harvested on September 15, the first two being ripe at that time, the others only partly ripe. The squaw corn and similar sorts are the only ones that can be depended upon to ripen every year.

DATES OF PLANTING N.W. DENT CORN FOR FODDER PRODUCTION

Date planted	Height at harvest	Maturity at harvest	Yield per acre, 1926		Four-year average yield per acre	
			Green weight	Dry weight	Green weight	Dry weight
	inches		lb.	lb.	lb.	lb.
May 1	42	Dough	8,840	1,637	13,354	2,570
May 10	42	Dough	17,127	2,507	14,944	3,345
May 20	48	Late milk	16,957	3,675	16,034	3,317
May 30	52	Milk	14,197	2,711	15,487	2,629
June 9	56	Early milk	11,645	1,882	12,633	2,140

In some seasons, the early-planted corn has produced a heavier yield of better-matured corn than the later plantings, but this year the early plantings were slow to germinate and slow to grow in the early part of the season. The crop apparently did not recover from the adversity of the early season, with the result that later plantings produced much better yields.

CULTURAL TREATMENTS FOR CORN

Including method of preparing land, planting and subsequent tillage, 1/50-acre plots—triplicated

Land preparation	Method of planting	Subsequent tillage	Yield per acre	
			Green weight	Dry weight
			lb.	lb.
Fall-plough	Drill	Cultivate and hoe as required	18,886	3,210
Spring-plough	Drill	" "	18,750	3,187
Fall-plough	Check-row	" "	16,933	2,878
Spring-plough	Check-row	" "	17,866	3,040
Fall-plow and Spring-list	Lister	" "	12,066	2,051
Spring-plough	Drill	Let weeds grow, no cultivation, no hoeing	10,416	1,770
Spring-plough	Drill	Clip weeds with hoe, no cultivation	14,700	2,499
Spring-plough	Drill	Cultivate, do not hoe	15,216	2,586
Spring-plough	Drill	Cultivate weekly; hoe as required	18,966	3,224

Excepting where weeds were permitted to grow in the crop, the various methods of planting and cultivating the corn have produced about the same yields. Listed and drilled corn has been harder to keep clean than corn planted in check-rows. Where special machinery is available for cultivating the listed corn, it can be kept clean, but the cost of this machinery is too great except for a large area of corn.

DATES OF PLANTING SUNFLOWERS

Date planted	Height at harvest	Stage of maturity when cut	1926 yield per acre		Four-year average yield per acre	
			Green weight	Dry weight	Green weight	Dry weight
	inches		lb.	lb.	lb.	lb.
May 1	90	90% bloom	28,000	5,556	30,494	5,388
May 10	80	75% bloom	18,509	4,012	23,742	4,256
May 20	72	52% bloom	17,059	3,565	25,408	4,328
May 30	60	10% bloom	11,868	2,205	19,800	3,403
June 9	50	Budding	6,407	1,206	14,673	2,250

Despite the fact that early plantings seem to germinate unevenly, they generally outyield the later plantings. However, since ensilage crops must usually receive attention after grain crops have been seeded, it is worth noting that reasonably good crops can be grown when seeded as late as the end of May.

SUNFLOWERS IN HILLS AND ROWS AT VARIOUS SPACINGS

Method	Spacing plants per hill	Height when cut	Thickness of stems at harvest	Green weight per acre	Dry weight per acre	Three-year average yield per acre	
						Green weight	Dry weight
	inches	inches	inches	lb.	lb.	lb.	lb.
Rows 42 inches apart	3	48	½	14,526	2,964	23,101	4,786
	6	48	¾	10,467	2,128	17,916	4,335
	9	56	⅝	11,676	2,422	19,026	4,082
	12	58	1	12,421	2,279	17,485	3,509
	18	70	1¼	12,651	2,386	15,929	3,401
	Plants—						
Hills 42 inches by 42 inches	1	85	2¼	14,605	2,158	14,345	2,629
	2	72	1½	13,584	2,128	15,641	2,959
	3	65	1	13,280	1,893	15,654	3,161
	4	60	¾	11,895	1,808	16,325	3,325
	5	56	⅝	15,001	3,076	18,534	3,926

This experiment is conducted in a two-year rotation of wheat alternating with sunflowers. In general, the thicker plantings in both hills and rows have produced higher yields of dry matter than the thin plantings; moreover, when the spacing is fairly thick, the crop is more easily handled. In a dry season, however, the thick planting is more likely to fail because of insufficient moisture to support the large number of plants. The yield of wheat in the alternate year of the rotation has varied from 9 to 11 bushels per acre. The sunflowers so completely exhaust the soil-moisture supply that the wheat is wholly dependent upon the rainfall of its growing season.

PLACE IN ROTATION TO SEED GRASSES AND CLOVERS

Crop	Plot treatment	Weeds	Yield per acre cured hay, 10% moisture basis	
			1926	Four-year average
			lb.	lb.
Brome and w. rye	Seed with 1st-year wheat	Few	2,375	3,082
"	Seed between rows of corn	bad	Failed	Failed
"	Seed alone on fallow	Few	1,566	4,400
"	Seed alone on spring ploughing	Many	1,355	†1,754
"	Seed with 1st-year wheat	Few	1,833	2,989
"	Seed in spring on fall rye	*	Failed	2,531
"	Seed with 2nd-year wheat	Bad	Failed	†1,253
White sweet clover	Seed with 1st-year wheat	Many	3,165	4,095
Brome and w. rye	Seed with 1st-year wheat	Few	1,746	2,994
White sweet clover	Seed between rows of corn	Many	1,610	2,646
"	Seed alone on fallow	.....	2,319	3,028
"	Seed alone on spring ploughing	Bad	1,540	2,766
Brome and w. rye	Seed with 1st-year wheat	Few	2,005	2,597
White sweet clover	Seed in spring on fall rye	*	Failed	2,151
"	Seed with 2nd-year wheat	Many	2,485	†2,185
Brome and w. rye	Seed with 1st-year wheat	Few	2,089	2,532

*Clover killed out by thick stand of volunteer fall rye. †3-year average.

Variable results have been secured from experiments with grasses and clovers. In many cases, only partial stands are secured, so that accurate comparisons are impossible. In general, it is found that if grasses or clovers are seeded alone on spring ploughing or fallow a good stand is secured, but the growth of Russian thistles in the newly-seeded grass is such as to make it inadvisable to follow that method. If grass is seeded with a grain crop, the success of the grass is more doubtful, but the grain crop keeps the weeds in check and some revenue is obtained from the land that year. As a general farm practice seeding with a nurse-crop on either fallow or spring ploughing is to be preferred over seeding the grass alone.

DATES OF SEEDING WHITE SWEET CLOVER FOR HAY PRODUCTION

Date sown	1926 yield per acre		Two-year average yield per acre	
	Green weight	Dry weight	Green weight	Dry weight
	lb.	lb.	lb.	lb.
May 1	2,980	1,119	4,710	1,753
May 15	2,617	838	4,288	1,614
May 31	3,882	1,251	6,421	2,545
June 15	3,501	1,114	6,290	2,563
July 1	3,260	989	6,270	2,514

When sweet clover is sown alone on fallow or spring ploughing early in the season it will, in favourable years, make a sufficient growth to be cut for hay in the same season. If the rainfall is not more than the average the first-year growth of the early seeding is only sufficient to use the moisture available and reduce the yield next year. In such a year, the late seeding is better because some moisture is carried over for the use of the crop in the following year.

DATES OF PLANTING BROME AND WESTERN RYE AND ALFALFA MIXTURE FOR HAY PRODUCTION

1/100-acre plots—triplicated. Rate of seed per acre: Brome, 6 lb.; W. Rye, 6 lb.; Alfalfa, 5 lb.

Date sown	1926 crop, Yield per acre		Two-year average, yield per acre	
	Green weight	Dry weight	Green weight	Dry weight
	lb.	lb.	lb.	lb.
May 1	856	372	2,728	1,151
May 15	946	442	2,213	1,008
May 31	1,681	831	2,600	1,153
June 15	1,709	804	4,168	1,772
July 1	1,744	655	4,032	1,720

Early sowing in favourable years will result in sufficient grass for use as pasture in the fall of the year in which it is sown. However, there is a corresponding decrease in the yield of hay the following year. Maximum yields are secured when the seed is sown during the latter part of June.

SEEDING GRASSES AND LEGUMES WITH AND WITHOUT NURSE-CROPS

This experiment was begun in 1924 as a result of repeated failures to obtain good catches of grasses and legumes with a nurse-crop of wheat. The following nurse-crops were used:—

Wheat	Sown	45 lbs. per acre
Oats	"	50 " "
Barley	"	72 " "
Flax	"	25 " "
Spring rye (Hay)	"	45 " "

With each of the nurse-crops listed the following hay crops were seeded, besides being sown alone. The plots were replicated three times.

Brome	12 lbs. per acre
Western rye	12 " "
White sweet clover	10 " "
Alfalfa	10 " "
Meadow fescue	10 " "

Observations to date are that the best catches and the highest yields are always obtained when grasses and legumes are sown alone on fallow, but Russian thistles are always very thick in this seeding.

Sowings with flax gave the next highest yield; also with a considerable number of weeds.

Spring rye cut for hay has some merit as a nurse-crop, because it can be cut early in July, giving the grass or clover ample time to get established before winter. Wheat, barley and oats would appear to stand in the order named as nurse-crops for grasses and clover or alfalfa.

CROP PRODUCTION ON OLD, WEEDY LAND

The leased quarter-section of old land was cropped in accordance with the plans outlined in the 1925 Report. Briefly, the principal object in these experiments is to ascertain methods of crop production coincident with eradication of weeds. In addition to the work commenced last year, a three-year rotation of fallow, fall rye, and fall rye was laid down in the fall of 1925. All spring-sown crops made an excellent start, and, up to May 27, appeared to be in good condition. From this date onward, there was a very evident deterioration in all crops of wheat sown on summer-fallow. A great many plants died, and many more assumed a pale, wilted appearance. In every case it was noticed that the damage was greatest on fields that had been worked until fine and loose. On these plots, the headlands, which were packed by the horses turning about, and the drill wheel tracks, showed less damage than other parts of the fields. The vacant spaces in the wheat were speedily filled by a vigorous growth of stinkweed, which prevented the remaining wheat plants from stooling.

Plant pathologists were unanimous in defining the trouble as helminthosporium or root rot. It is reasonably certain that the poor crop obtained on this land in 1924 was due to the same cause and not entirely to weeds, as heretofore supposed. Crop conditions similar to the above were observed on several farms in the immediate neighbourhood.

Further experimental work on this problem in the direction of packing and heavier seeding is projected for 1927.

SEVEN-YEAR ROTATION—OLD, WEEDY LAND

Summary of Yields, Value and Profit and Loss, per Acre

Rotation year	Crop	Yield per acre		Value of crop 1926	Cost of production 1926	Profit or loss per acre	
		1926	Average two years			1926	Average two years
		bush. or tons	bush. or tons	$ cts.	$ cts.	$ cts.	$ cts.
1	Corn	1·50	1·53	6 00	11 97	−5 97	−5 82
2	Wheat (grass seeded)	15·50	15·56	19 38	10 88	8 50	9 00
3	Hay (yield in tons)	0·80	1·00	9 60	6 06	3 54	1 93
4	Fallow	.....	.....	.....	.....	.....	.....
5	Wheat	14·50	16·50	18 13	17 10	1 03	4 90
6	Fallow	.....	.....	.....	.....	.....	.....
7	Fall rye	27·88	26·56	22 30	18 29	4 01	3 24
	Average per acre	.....	.....	10 77	9 19	1 59	1 89

This rotation covers an area of 28 acres. The corn was very poor. Four cultivations and one hand hoeing were required to keep down weeds. The wheat fields were damaged by root rot, but wheat on summer-fallow suffered the greater damage. Hay was poor and weedy. There was a good stand of fall rye, with few weeds.

THREE-YEAR ROTATION—OLD, WEEDY LAND

Summary of Yields, Value and Profit and Loss, per Acre

Rotation year	Crop	Yield per acre		Value of crop 1926	Cost of production 1926	Profit or loss per acre 1926
		1926	Average – years			
		bush.	bush.	$ cts.	$ cts.	$ cts.
1	Fallow	.....	.....	.....	.....	.....
2	Fall rye	28 50	.....	22 80	16 11	6 69
3	Fall rye	15·75	.....	12 60	11 47	1 13
	Average per acre	.....	.....	11 80	9 19	2 61

Both rye crops were remarkably free from weeds. Early in the season, there was a heavy growth of stinkweed in both crops, but the rye was able to make a rapid growth and choke out practically all the weeds. A few small patches of the second-year crop were winter-killed. Stinkweed grew profusely on these areas. There was no evidence of root rot. The average return of $2.61 per acre covers all three years of the rotation. Wheat grown in a three-year rotation on an adjoining field yielded 12.25 bushels on fallow and 8 bushels on spring ploughing. These crops were weedy and damaged by root rot. Over the three years of the rotation, there was an average loss of $1 per acre on the wheat—wheat—fallow rotation. The better return from the rye—rye—fallow rotation is accounted for by the fact that the wheat was seriously damaged by root rot, while the rye not only escaped damage from this cause but was able to compete successfully with the stinkweed.

FALLOW TREATMENTS—OLD, WEEDY LAND

Field	Crop	Treatment	Yield per acre	
			1926	Average two years
			bush.	bush.
A- 6	Wheat	Ploughed before June 15, cultivated as required	8·75	15·50
A- 7	"	Cultivated only during fallow year	13·25	17·88
A- 8	"	Ploughed, harrowed, oats seeded in triple rows 42", cultivated in 1926	11·25	15·50

NOTE.—The second-year wheat of this rotation yielded an average of 6·75 bushels per acre

Field 2 was not ploughed in the summer-fallow year. Field 3 was ploughed early in 1925 and a crop of oats in rows was grown. The soil on these fields was considerably firmer than that on Field 1, which was ploughed early in June. The latter field suffered a greater amount of damage from root rot.

It must not be assumed that a firm seed-bed alone will avoid damage from root rot. There are other factors such as shallow and heavy seeding combined with climatic conditions that insure early germination and vigorous growth which may be more efficient in overcoming root rot.

STUBBLE TREATMENTS—OLD, WEEDY LAND

Field	Crop	Treatment	Yield per acre	
			1926	Average two years
			bush.	bush.
B-1	Wheat	Spring-ploughed, harrowed, seeded and harrowed	6·25	10·88
B-2	"	Spring-disked, seeded and harrowed	8·00	12·00
B-3	"	Spring-burned (burner) disked, seeded, harrowed	7·50	12·63
B-4	"	Spring-burned (harrow) disked, seeded and harrowed	10·00	13·25
B-5	"	Spring-burned (harrow) disked, cultivated 15 days, seeded, harrowed	7·75	10·25

NOTE.—The fallow crop of this rotation yielded an average of 8·7 bushels per acre. All plots were badly infested by helminthosporium.

The unburned fields suffered more damage from sawfly than did the others. All were badly infested by stinkweed.

DEFERRED CULTIVATION AND SEEDING—OLD, WEEDY LAND

Field	Crop	Treatment	Yield per acre	
			1926	Average two years
			bush.	bush.
A- 9	Oats	Cultivate April 17; cultivate May 14; 2·5 bushels oats seeded	15·75	25·88
A-10	Wheat	Cultivate April 17; cultivate May 14; 1 bushel wheat seeded	9·75	15·00
A-11	Wheat	Cultivate April 17; cultivate May 14; 1·5 bushels wheat seeded	12·25	17·25
B- 9	Oats	Spring ploughed April 24; cultivated May 14; 2·5 bushels oats seeded	10·25	17·38
B-10	Wheat	Spring ploughed April 24; cultivated May 14; 1 bushel wheat seeded	8·25	7·38
B-11	Wheat	Spring ploughed April 24; cultivated May 14; 1·5 bushels wheat seeded	8·00	10 00

The second cultivation following the first after an interval of 27 days had no apparent effect on oats. Both first and second-year crops were poor and extremely weedy.

The summer-fallow wheat plots were damaged by root rot, but the heavily seeded plot outyielded the other by 2½ bushels per acre. A sufficient number of plants were destroyed by this disease to make it difficult to determine whether or not deferred cultivation has any effect in destroying weeds. The second-year wheat crops which were cultivated and seeded late were noticeably cleaner than similar crops which were seeded immediately after spring ploughing.

HARROWING GROWING GRAIN CROPS—OLD, WEEDY LAND

Field	Crop	Treatment	Yield per acre	
			1926	Average two years
			bush.	bush.
A–12	Wheat	Cultivated fallow; 1·5 bushels seeded; harrowed before crop is up	13·00	17·38
A–13	"	Cultivated; 1·5 bushels seeded; harrowed when crop was 4" high	12·75	19·50
A–14	"	Cultivated; 1·5 bushels seeded; harrowed immediately	13·25	19·63
B–12	"	Spring-ploughed stubble; 1·5 bushels seeded; harrowed before crop is up	6·50	10·25
B–13	"	Spring-ploughed; 1·5 bushels seeded; harrowed when crop was 4" high	7·25	10·88
B–14	"	Spring-ploughed; 1·5 bushels seeded; harrowed immediately	6·25	8·88

The yields on these plots are fairly uniform, and the summer-fallow crops are high when compared with similar areas which were not seeded so heavily, apart from the rate of seeding there was no factor to account for the difference in yield. Root rot was present in these fields, but apparently there was a greater number of plants left undamaged than was the case in fields of lighter seeding. The harrowing did not lower the yields to a significant extent, and did destroy a considerable number of weeds.

TESTS OF FARM IMPLEMENTS

SEED-DRILLS

A comparison was made of the efficiency of four types of seed-drills: single disk, double disk, hoe, and cultivator drills. The cultivator drill is equipped with large duck-feet, and the grain runs are so arranged that the seeds are broadcast in the furrows opened by the duck-feet.

Between the first three types there was little discernible difference. The hoe drill showed a tendency to plug up in spring ploughing, but on clean fallow it worked very well.

The cultivator drill has two or more rows of duck-feet similar to the arrangement of the feet on the duckfoot cultivator. The first row of feet ridged the soil in heavy ridges and scattered the seed between the ridges. The second row split the ridges and created a second series of ridges beneath which the seed dropped from the front row was buried from one to six inches deep. A considerable portion of the seed dropped by the second row of feet was left exposed in the bottom of the furrows. This made cross-harrowing necessary. The draft of the machine was considerably heavier than that of the ordinary drill. While the cultivator drill undoubtedly destroyed a great many small weeds at the time of sowing, its greater draft and more difficult manipulation combined with unequal distribution of seed and extreme variation in depths of seeding lead to the conclusion that it should not take the place of the standard types of seed-drill.

STUBBLE-BURNERS

Previous reports emphasized the fact that oil-burning stubble-burners can burn stubble and weeds effectively, but that the cost is prohibitive. It is true that a running burn can sometimes be obtained which makes the acre-cost of

Tests of stubble-burners. A machine in operation at Swift Current.

Another view of the stubble-burner in operation.

burning very low, but a running burn can only be obtained in heavy stubble, which usually contains few weeds. Weedy stubble is almost always short and thin, and fire will not run in such stubble. Covering the whole area is the only manner in which all the weeds can be burned.

A straw-burning stubble-burner was tested in May. This machine is drawn behind a rack from which straw is fed into a wide firebox. The firebox is made

of sheet iron and is equipped with parallel grate-bars which slide over the stubble. A small gas engine is belted to a fan supplying a draft of air which blows the fire into the stubble.

Covering all the ground, the 14-foot machine will burn from 2 to 3 acres an hour. Three men and four horses are required to keep the machine operating steadily. Gasoline costs about 3 cents an acre, and the labour of men and horses from 40 to 60 cents an acre.

The machine in its present condition is somewhat unwieldy and is a heavy load for two horses. We are not prepared to recommend it unconditionally, but it is the most economical stubble-burner so far tested. Further trials of this machine will be made next spring.

THE COMBINE

A quarter-section of land, cropped for twenty years, was leased this year for experimental work with the combine. The three-year rotation of wheat-wheat-summer-fallow was followed. The experiments are as follows:—

1. To determine the stage of maturity at which to cut wheat with the combine.
2. To compare the losses of wheat by harvesting with the combine and the binder.
3. To determine the latest practicable data of harvesting with the combine.
4. To determine the practicability of harvesting flax with the combine.

The summer-fallow crop was injured by root rot and a considerable growth of weeds resulted. The second year wheat was very thin and weedy, and was badly cut down by sawfly. Seventy per cent of the wheat heads were bent over or broken off in certain areas. There was a matted undergrowth of stinkweed and Russian thistle as well as a considerable quantity of taller weeds such as pigweed and mustard. Altogether, the conditions were more unfavourable to the successful operation of the combine than anything encountered in previous years.

The combine was first used on August 24 on a field of Garnet wheat. The moisture content of the threshed grain was 18 per cent, so the cutting was deferred for two days, when the moisture content had fallen to 14.5 per cent. A portion of the grain from this field cut by the binder on August 4 and threshed on September 2 sprouted in the stook, owing to the rains which fell between August 8 and August 20. The combine-cut wheat, however, was hard and of good colour, grading No. 1.

The first cutting of Marquis wheat with the combine was made on September 8, thirteen days after the binder was used on a portion of the same field.

In an attempt to pick up grain which had been cut down by the sawfly larvae the combine guards were equipped with extension lifting guards spaced 6 inches apart. The fallen grain, however, showed a tendency to accumulate in tufts on the points of the lifting guards instead of passing back to the table. This difficulty was overcome by equipping the reel slats with small fingers set at right angles to the slat and so placed that they passed between the extension guards. By this device, practically all of the fallen wheat was saved. Unfortunately, there was a large number of green Russian thistles in parts of the field, and the presence of the shredded and juicy stalks made grain cleaning very difficult. The presence of a large amount of sawfly-cut wheat on ground infested with green weeds constitutes the most difficult problem for the combine.

COMPARISON OF BINDER AND SEPARATOR LOSSES WITH COMBINE LOSSES

This experiment was carried out under extreme conditions in regard to lightness of yield, sawfly, and weeds.

The binder was equipped with a canvas suspended beneath the binder-head and the sheaf-carrier, which caught all unbound heads and all grain shelled by these parts of the binder. The sheaves were dumped and stooked on a canvas placed on the ground. A rectangle 3 feet 4 inches square (.0025 acre) was placed on the ground behind the knife, and an actual count made of all the kernels found within the rectangle. This was repeated ten times for each stook cut, and five stooks were cut—three on first-year wheat and two on second-year wheat, The rectangle was used behind the combine to ascertain the losses at that point. All straw, chaff and grain coming over the screens at the rear of the combine was collected on definite areas. The following tables give the actual results obtained in bushels per acre:—

LOSSES OF WHEAT IN BUSHELS PER ACRE, CROP CUT WITH BINDER, THRESHED FROM STOOK

Field	At carrier	At stook	On rack	At feeder	In separator	Left on ground	Total loss per acre	Net yield per acre	Percentage loss
	bush.	bush.	bush.	bush.	bush.	bush.	bush.	bush.	
Fallow 1	0·4947	0·5440	0·1320	0·1312	0·1040	1·660	3·0659	19·50	13·58
Fallow 2	0·2250	0·5536	0·1665	0·0692	0·1040	1·560	2·6783	15·25	14·95
Fallow 3	0·3470	0·5780	0·2104	0·1445	0·1040	0·571	1·9549	12·50	13·53
Stubble 1	0·3860	0·0490	0·0600	0·0536	0·1040	2·500	3·1526	3·44	47·84
Stubble 2	0·4100	0·0440	0·1260	0·0450	0·1040	1·040	1·7690	4·92	26·45
Averages									
Fallow	0·3556	0·5585	0·1696	0·1150	0·1040	1·264	2·5660	15·75	14·02
Stubble	0·3980	0·0470	0·0930	0·0493	0·1040	1·770	2·4600	4·18	37·20

LOSSES OF WHEAT IN BUSHELS PER ACRE, CROP HARVESTED WITH COMBINE

Field	At end gate	Left on ground	Total loss per acre	Net yield per acre	Percentage loss
	bush.	bush.	bush.	bush.	
Fallow	0·2985	2·1460	2·4400	16·360	13·00
"	0·1864	2·9860	3·1724	17·600	15·28
Stubble	0·1920	4·1756	4·3676	6·550	40·00
"	0·1680	3·0620	3·2200	6·380	33·54
Averages					
Fallow	0·2424	2·5660	2·8060	16·980	14·14
Stubble	0·1800	3·6188	3·7900	6·465	36·75

There is very little difference in the amounts of grain lost by either method of harvesting, but it must be remembered that the conditions were very unfavourable to the economical operation of the combine. A casual observation before harvesting would indicate the impossibility of saving more than 50 per cent of the crop.

A portion of the field was left standing, and cut in three-acre lots at ten-day intervals. The last cutting was made on September 21. No increase of loss from shelling was found.

A field of flax was harvested by the combine on October 5. The crop was extremely weedy, large patches of the flax being completely hidden by solid masses of Russian thistle and mustard. These weeds were frost-killed and partly dried. The presence here of large masses of weeds made operation very slow and expensive. It is doubtful if the binder could have cut such a crop.

Twenty-four owners of combines in southwestern Saskatchewan report starting to cut wheat from August 9 to September 8, and closing dates from September 14 to Ocotber 23. The average starting date was August 24, and the average closing date October 3. The average number of days between commencement and finish was 34, exclusive of Sundays. The average number of days lost by reason of rain and snow was 14, leaving an average of 20 working days.

In 1922, the first season in which the combine was operated on this Station, there was no rain from September 11 to October 5. Light showers fell on October 5, 12 15, and 29. In a period of 41 combine days no more than six days were lost on account of bad weather.

In 1923, there were three light showers between September 3 and October 16, leaving 34 working days out of 37.

There were 26 "combine days" in 1924 between September 1 and October 12.

In 1925, there were 22 "combine days" between September 1 and October 12.

CONCLUSIONS FROM EXPERIMENTS

1. It is a waste of effort to harvest with the combine before the grain is completely dried. Any advantage in earliness of starting is offset by the labour involved in drying the grain and by the possibility of having the grain graded tough.

2. Under very unfavourable harvesting conditions, the combine saved slightly more grain than did the binder and separator. In ordinary seasons, when the crop stands up and is reasonably free from tall weeds, the loss of wheat harvested with the combine may be as low as four to six per cent of the total crop. It is rarely possible to harvest with binder and separator with as small a loss as with the combine.

3. It appears safe to assume a working period for the combine of 21 to 30 working days each season.

The combine has now been operated on this Station for the last five years, and complete information on the results of the experiments conducted each year will be found in past annual reports.

CEREALS

Cereal investigations have been continued and extended along lines laid down in previous years. The chief extension in the work this year has been the preliminary testing of several hundred hybrids and selections of the common cereals. This work cannot be expected to yield results of any value for some years, but the promising appearance of some hybrids and selections fully justifies the continuance of this work.

In the rod-row investigations a considerable improvement in technic has been effected through the use of several small machines specially designed and constructed for this work. The use of these machines greatly reduced the amount of hand labour required and increased the accuracy of the operations.

COMMON SPRING WHEAT—TEST OF VARIETIES AND STRAINS, 1926

1/50-acre Plots—Triplicated. Sown on Fallow April 20

Variety	Number of days maturing	Height at harvest	Yield grain per acre	Weight per measured bushel at separator
		inches	bush.	lb.
Producer O–197	103	36	37·49	60·2
Kitchener	106	35	33·04	60·3
Red Bobs Supreme	103	33	32·63	61·5
Garnet O–652	98	36	31·11	61·0
Marquis O–15	105	35	31·03	62·0
Golden	105	33	31·41	62·0
Red Bobs Early Triumph	102	34	29·99	60·0
Ruby O–623	100	37	29·78	61·5
Reward O–928	102	36	29·52	63·0
Kota	107	36	29·30	62·5
Early Red Fife O–16	106	35	28·46	59·6
Brownie O–491	104	37	26·10	61·0

This table presents detailed information concerning common spring wheat varieties grown on the fiftieth-acre test plots in 1926. It will be noticed that there is less than the usual difference in date of ripening between the earlier and later varieties. This is due to the fact that very hot, dry weather prevailed during the latter part of the ripening period, thus forcing all varieties to ripen prematurely. The standing of the varieties in the matter of yield is not the same as it has been in previous years. An examination of data in the next table, where averages of several years are given, gives a better indication of the yielding ability of the different varieties.

SPRING WHEAT—VARIETIES AND STRAINS

Comparative Yields for a Number of Years

Variety	Yield of grain, bushels per acre							Comparative yield in per centage of Marquis for same years
	1922	1923	1924	1925	1926	Average for years grown	Average for Marquis for same years	
Producer O–197	.....	.....	.....	26·44	37·49	31·96	27·18	117·5
Acme	.....	.....	19·76	26·09	33·47	26·44	24·30	108·8
Kitchener	38·00	22·60	19·92	27·98	33·04	28·30	26·48	106·8
Kubanka O–37	37·33	26·00	19·78	24·51	33·18	28·16	26·48	106·3
Garnet O–652	.....	.....	.....	26·53	31·11	28·82	27·18	106·0
Supreme	32·00	26·00	18·25	26·79	32·63	27·13	26·48	102·4
Marquis O–15	32·00	27·50	18·55	23·33	31·03	26·48	26·48	100·0
Ruby O–623	31·33	25·70	19·52	23·59	29·78	25·98	26·48	98·1
Golden	.....	.....	16·58	23·39	30·41	23·46	24·30	96·5
Early Red Fife O–16	30·66	22·30	18·57	27·21	28·46	25·44	26·48	96·0
Reward O–928	.....	.....	.....	22·01	29·52	25·76	27·18	94·7
Kota	.....	25·40	15·79	22·56	29·30	23·26	25·10	92·6
Early Triumph	27·33	21·13	20·41	23·33	29·99	24·47	26·48	92·4
Brownie O–491	.....	.....	.....	21·73	26·10	23·91	27·18	86·9

In this table, Kubanka and Acme, though both Durum wheats, are included with the common wheats to permit of comparisons being made. In studying these yield data, differences in quality and consequent differences in price must be kept in mind. While Durum wheats sometimes equal, or even exceed, Marquis in price, the average of the latter is usually somewhat higher. Producer

is a high yielder, but the quality is relatively low. Kitchener resembles Producer in yield and Quality. Garnet, Supreme, Marquis, Ruby all produce grain of good quality, Garnet being the earliest of the four. Reward is a comparatively new variety of very high quality. The seed is usually large and plump. Some preliminary studies of this variety seem to indicate that it should be seeded at a heavier rate than Marquis.

DURUM WHEAT—TEST OF VARIETIES OR STRAINS

1/50-acre Plots—Triplicated—Sown on Fallow April 20

Variety	Number of days maturing	Height at harvest	Yield grain per acre	Weight per measured bushel at separator
		inch	bush.	lb.
Acme	107	36	33·47	61·3
Kubanka 0-37	107	37	33·18	61·8

Durum wheats are very little grown in southwestern Saskatchewan. The two varieties here listed are carried in the test plots so that comparisons may be made with the common wheat varieties.

WINTER WHEAT—TEST OF VARIETIES AND STRAINS

1/50-acre Plots—Duplicated—Sown on Fallow Aug. 14, 1925. Date harvested, July 28

Variety	Height at harvest	Yield grain per acre	Weight per measured bushel at separator
	inches	bush.	lb.
Alberta Red	32·5	38·74	61·5
Belgolina	34·0	37·08	61·0
Kanmont No. 7	32·5	36·87	61·5
Kanred Mont. No. 2	33·0	35·08	62·0
Broatch	38·0	34·58	62·0
Montana No. 36	33·0	31·87	61·7

Winter wheat varieties have produced very good yields in three years out of five. In the other two years all varieties were almost completely winter-killed. In 1925, winter wheats were seeded early (August 4) and they all went into the winter in a strong, well-established condition. The winter was mild and open, but little freezing and thawing occurred in the spring after the wheat began to grow.

OATS—TEST OF VARIETIES AND STRAINS
1/100-acre Plots—Triplicated—Sown on Fallow May 6

Variety	Number of days maturing	Height at harvest	Yield grain per acre	Weight per measured bushel at separator
		inches	bush.	lb.
Longfellow 0·478	91	36	55·38	36·3
Gerlach	92	36	53·43	35·8
Banner 0·49	92	38	52·20	32·7
Gold Rain	91	38	51·46	42·6
Banner 0·49	92	40	51·10	32·7
Leader	93	36	50·97	35·3
O.A.C. No. 72	90	40	50·24	35·3
Laurel 0·477	87	36	47·05	50·0
Victory	93	36	44·60	39·0
Abundance	92	36	39·46	37·6
Daubeney 0·47	81	30	37·00	35·0
Cole	81	32	35·29	35·1
Alaska	81	36	34·99	36·1
Liberty 0·480	82	36	33·33	46·2

OATS—TEST OF VARIETIES AND STRAINS
Grown on Fall-ploughed Oat Stubble
1/100-acre Plots—Triplicated—Sown May 6

Variety	Height at harvest	Yield grain per acre	Weight per measured bushel at separator
	inches	bush.	lb.
Cole	29	27·93	35·1
Daubeney O. 47	26	22·79	35·6
Liberty O. 480	27	18·62	45·5
Longfellow O. 478	25	16·66	31·8
Victory	25	15·45	22·8
Alaska	25	15·19	32·8
Banner O. 49	23	13·72	26·3
Leader	23	13·47	28·8
O.A.C. No. 72	26	12·24	26·1
Gerlach	23	10·04	23·8
Abundance	24	9·61	19·3
Banner O. 49	23	9·15	26·3
Gold Rain	22	8·57	29·5
Laurel O. 477	20	7·59	47·1

OATS—VARIETIES AND STRAINS
Comparative Yields for a Number of Years

Variety	Yield of grain, bushels per acre							Comparative yields in percentage of Banner for same years
	1922	1923	1924	1925	1926	Average for years grown	Average for Banner for same years	
Gerlach	.....	68·5	51·8	61·7	53·43	58·8	52·7	111·5
Victory	.....	55·0	59·5	56·5	44·60	53·9	52·7	102·2
Gold Rain	70·6	53·5	52·3	63·4	51·4	58·2	57·1	101·9
Banner O. 49	74·8	60·3	33·8	65·2	51·6	57·1	57·1	100·0
Leader	63·5	63·9	.....	63·0	50·9	62·5	62·9	99·5
O.A.C. No. 72	71·6	58·8	43·3	58·6	50·2	56·5	57·1	98·9
Longfellow O. 478	.....	.....	32·2	52·1	55·4	46·6	50·2	91·6
O.A.C. No. 3	51·6	55·7	47·0	.....	.....	51·4	56·3	91·4
Abundance	.....	44·3	42·7	55·9	59·4	45·6	52·7	86·5
Daubeney O. 47	68·0	50·4	42·2	48·0	37·0	49·1	57·1	85·9
Cole	.....	.....	45·0	44·4	35·9	41·7	50·2	83·0
Laurel O. 477	.....	.....	.....	36·7	47·0	41·8	58·4	71·5
Liberty O. 480	48·0	42·5	.....	19·6	33·3	35·8	62·9	56·9

Some apparent contradictions will be observed in the preceding tables; for example, Cole and some of the other early varieties of oats appear near the top of the list when grown on second-crop land, but when grown on fallow the early varieties are near the bottom. This is probably due to the early exhaustion of the moisture from the second-crop land, forcing all varieties to premature ripening. This would cut off the yield of the late varieties to a greater extent than it would the earlier ones. Longfellow, which stands at the top of the list on fallow in 1926, was low in 1924 and 1925, because in those years the seed did not produce a normal stand. Over a period of years, Gerlach has produced the highest yield, with Banner, Victory, Gold Rain, Leader and O.A.C. No. 72 running about even.

BARLEY GROWN ON FALLOW—TEST OF VARIETIES AND STRAINS

1/100-acre Plots—Triplicated—Sown May 7

Variety	Number of days maturing	Height at harvest	Yield grain per acre	Weight per measured bushel at separator
		inches	bush.	lb.
Hannchen	88	28	46·87	51·3
Trebi	88	30	45·66	45·8
Albert O. 54	82	31	40·10	47·3
O.A.C. No. 21 (Sask.)	82	30	37·84	50·5
Gold	91	26	34·20	51·2
Guymayle (Hulless)	91	27	34·02	60·6
Charlottetown No. 80	89	29	33·68	50·2
Junior O. 471	86	32	32·11	51·6
O.A.C. No. 21	88	31	30·37	46·3
Chinese O. 61	90	30	29·86	51·3
Bearer O. 475	91	32	29·51	46·2
Feeder O. 561	77	33	26·56	47·5
Duckbill O. 57	87	26	26·04	47·8
Bark's	92	26	19·44	40·0

BARLEY—TEST OF VARIETIES AND STRAINS

Grown on Fall-ploughed Barley Stubble

1/100-acre Plots—Triplicated—Sown May 7

Variety	Height at harvest	Yield grain per acre	Weight per measured bushel at separator
	inches	bush.	lb.
Trebi	20	22·39	40·8
Albert O. 54	24	18·05	45·2
Hannchen	19	14·58	48·2
O.A.C. 21 (Sask.)	21	14·05	45·2
O.A.C. 21	19	12·32	43·2
Feeder O. 561	20	10·56	44·5
Bearer O. 475	18	10·24	43·0
Chinese O. 61	20	09·72	44·8
Guymayle	20	09·19	58·3
Junior O. 471	18	08·85	45·3
Charlottetown 80	17	07·46	50·3
Gold	17	06·93	52·3
Bark's	15	04·80	44·0
Duckbill O. 57	16	04·51	49·5

BARLEY—TEST OF VARIETIES OR STRAINS
Comparative Yields for a Number of Years

Variety	Yield of grain, bushels per acre						Comparative yields in percentage of O.A.C. 21 for same years
	1922	1924	1925	1926	Average for years grown	Average of O.A.C. 21 for same years	
Trebi	63·3	33·4	36·9	45·7	44·8	37·6	119·1
Hannchen	62·5	23·7	44·5	46·8	44·4	37·6	118·1
Charlottetown 80	.....	31·6	39·3	33·7	34·8	33·6	103·8
Gold	.....	.....	.....	34·2	34·2	34·1	100·2
O.A.C. 21	48·7	32·3	34·3	34·1	37·6	37·6	100·0
Duckbill O. 57	56·7	17·4	38·2	26·0	34·6	37·6	92·0
O.A.C. 21 (Sask.)	.....	23·4	31·0	37·8	30·7	33·5	91·6
Bearer O. 475	.....	21·5	39·6	29·5	30·3	33·5	90·3
Chinese O. 60	48·3	22·6	32·5	29·8	33·3	37·6	88·6
Junior O. 471	.....	20·8	34·8	32·1	29·2	33·5	87·1
Bark's	61·7	15·1	33·8	19·4	32·3	37·6	85·9
Guymayle	.....	12·2	26·9	34·0	24·4	33·5	72·6
Albert O. 54	31·2	15·0	26·1	40·1	26·6	37·6	70·7
Feeder O. 561	.....	17·1	17·5	26·6	20·2	33·5	60·2

NOTE.—Barley plots destroyed by hail in 1923.

Mackay—A useful field pea.

FALL RYE—TEST OF VARIETIES SOWN ON FALLOW AUGUST 12, 1925
1/50-acre Plots

Variety	Yield of grain, bushels per acre			
	1924	1925	1926	Average for three years
Dakold—Sask. No. 295	43·9	23·7	45·9	37·9
Rosen—Sask. No. 299	41·3	26·7	44·9	37·6
Dakold No. 959	46·6	21·5	43·1	37·9
Advance No. 668	42·9	25·8	41·8	36·8
Common	*	25·6	47·7	36·6
Swedish—Sask. No. 669	44·1	21·1	38·8	34·6

*Not grown.

Fall rye varieties yielded exceptionally well this year. All varieties made good growth in the fall of 1925 and went into the winter in strong condition. While some varieties, particularly Rosen, are subject to winter killing, all came through without any winter injury. Filling was finished before the beginning of hot, dry weather in the later part of July.

There was no sawfly or other insect or disease injury.

FLAX—TEST OF VARIETIES OR STRAINS
Comparative Yields for a Number of Years

Variety	Yield grain, bushels per acre				
	1923	1924	1925	1926	Four-year average
Common	19·3	15·4	14·5	15·0	16·5
Novelty O. 53	16·5	16·7	14·0	14·9	15·5
Premost	16·5	14·3	12·7	14·5	14·5
Crown	14·8	16·8	12·4	13·7	14·4

All flax varieties have produced satisfactory average yields, though "Common" has been slightly better than the others. The flax varieties have always been grown on corn land. The crops have been free from weeds and no wilt or other disease has been observed.

WHEAT AND FLAX—COMBINATION CROP SOWN ON FALLOW
1/50-acre plots—Triplicated

Crop	Rate seeded per acre		Length of straw		Yield of grain per acre	
	Wheat	Flax	Wheat	Flax	Wheat	Flax
	lb.	lb.	inches	inches	bush.	bush.
Wheat alone	70	.....	36	.....	26·4	.....
Flax alone	.....	30	.....	17	.....	6·7
Wheat and flax	50	10	36	12	21·6	0·9
Wheat and flax	35	15	36	12	21·3	1·0
Wheat and flax	25	20	36	12	20·8	1·4

Apparently, under conditions prevailing at Swift Current, nothing is gained by attempting to grow flax with wheat. The amount of flax obtained from the combination crop would not compensate for the loss of yield in the wheat and the extra cost of separating the flax from the wheat; moreover, light sowing of wheat permits a heavy growth of Russian thistle in every case. The only advantage of growing flax with wheat is when serious damage has been done to the wheat by insects or disease after planting.

FIELD PEAS—TEST OF VARIETIES OR STRAINS
Comparative Yields for a number of Years

Variety	1923	1924	1925	1926
Mackay O. 25	32·9	*	*	26·4
Golden Vine	13·0	31·4	29·1	25·8
Carleton	28·3	44·4	31·4	25·3
Arthur O. 18	*	41·9	25·1	20·8
Canadian Field	17·0	36·7	24·5	20·4
Golden Vine (Sask. 625)	18·5	42·2	26·2	19·6
Chancellor O. 26	19·2	*	26·2	17·9

*Not grown.

Like most other crops, the pea varieties were affected adversely by the hot, dry weather of late July, 1926. The Mackay O-25, which was the highest yielder this year as well as in 1923, is a hybrid variety. The parents are Mummy and Blackeyed Marrowfat. The flowers are white, and the seed is large, dark yellow in colour, with a black "eye." This variety is later than some of the others, but is usually very productive.

FORAGE CROPS

Tests of varieties and strains of a considerable number of forage crops have been continued in accordance with plans of previous years. With the exception of corn, all annual forage crops under test are much more dependable in yield when grown on fallow. So far, very few forage crops have been found to equal oats in yield and general usefulness. For late sowing where some other crop has failed, spring rye has been found to be a fairly productive hay crop.

Yields of biennial and perennial hay crops, such as sweet clover, alfalfa and the different grasses have been extremely variable. This is probably the greatest objection to crops of this class. In the season when feed crops are most urgently needed the grasses and legumes are most likely to fail. Annual hay crops are much more certain to grow and produce some hay even in the adverse year.

CORN—TEST OF VARIETIES FOR FODDER PRODUCTION

Variety	Source	Height at Harvest	Stage of Maturity at Harvest	Yield per acre	
				Green weight	Dry weight
		inches		lb.	lb.
Longfellow	J. O. Duke	66	Milk	20,230	3,406
Twitchell's Pride	Exp. Stn., Fredericton, N.B.	42	Late milk	18,530	3,340
Longfellow	Dakota Improved Seed Co.	66	Forming	22,440	3,143
Yellow Dent	A. Wimple	60	Silk	18,530	3,040
Quebec No. 28	Macdonald College	48	Dough	19,040	2,895
Compton's Early	I. O. Duke	66	Milk	22,440	2,827
Leaming	J. O. Duke	72	Tassel	18,360	2,770
Amber Flint	A. Wimple	42	Late milk	18,190	2,637
90-day White Dent	Dakota Improved Seed Co.	63	Early milk	14,790	2,628
Howes' Flint x Wisconsin No. 7	E. F. Harrow	52	Milk	14,280	2,537
Yellow Pride	Dakota Improved Seed Co.	54	Milk	16,490	2,519
Wisconsin No. 7	I. O Duke	80	Silk	16,320	2,350
Bailey	J. O. Duke	63	Silk	13,600	2,165
Golden Glow	J. O. Duke	75	Milk	12,580	1,632
*Quebec 28	Dr. Todd	45	Late dough	8,670	1,277

*Per cent germination less than 40%.

In the normal seasons, early-maturing corn usually outyields late-maturing corn when comparing actual dry weights. This year, the season did not favour the maturing of even the earliest varieties to any considerable degree, so that there was not any great difference observed when comparing the dry matter percentages, which average about 16 per cent.

CORN—TEST OF VARIETIES AND STRAINS FOR PRODUCTION OF GRAIN

Twenty-one selections in all from varieties such as N.W. Dent, Minnesota No. 13, Quebec No. 28, Gehu, North Dakota White Flint, Improved Squaw, Burleigh County Mixed, were under test. Many of these ripened 100 per cent

ears. Weights of ripe cobs indicated yields from 20 to 30 bushels per acre. Many of the selections were dwarfed in growth. It has been observed that selection for earliness consistently results in decrease in height of plant. Even with yields of 20 to 30 bushels per acre it is not an economical practice to attempt to harvest and use this corn for feed. The only way in which it can be profitably utilized is to pasture it off with live stock such as hogs or sheep.

YIELDS OF FODDER CORN PLANTED IN HILLS AND IN ROWS

Variety	Method	Spacing or plants per hill	Height when cut	1926 Yield		Three-year Average yield	
				Green weight	Dry weight	Green weight	Dry weight
		inches	inches	lb.	lb.	lb.	lb.
N. W. Dent	Rows 42" apart	3	36	12,498	2,966	13,393	2,802
		6	38	10,130	2,068	13,811	2,803
		9	40	8,284	1,503	14,246	2,896
		12	40	8,686	2,162	14,696	3,366
		18	42	9,431	1,851	14,210	2,428
		plants					
	Hills 42" x 42"	1	56	9,259	1,880	12,270	2,494
		2	56	10,721	1,999	13,980	2,695
		3	52	10,836	1,925	13,034	2,685
		4	42	17,314	3,277	16,696	3,103
		5	36	18,518	2,585	15,570	3,079
		inches					
N. D. White Flint	Rows 42" apart	3	30	14,104	2,278	13,978	2,475
		6	33	16,340	2,529	15,760	3,200
		9	36	15,021	2,427	15,415	3,118
		12	40	14,190	2,512	14,608	3,082
		18	42	12,555	2,164	13,595	2,728
		plants					
	Hills 42" x 42"	1	36	10,950	2,416	12,010	2,443
		2	33	11,896	2,171	13,171	2,911
		3	39	14,075	3,003	15,129	3,145
		4	42	17,940	3,957	16,634	3,519
		5	36	15,451	2,994	13,914	2,995

The thinner plantings of corn generally show a greater development of ear and a higher percentage of dry matter, but when the planting is too thin the total yield of dry matter declines. The differences between thick and thin plantings are less than might be expected. This is doubtless due to the fact that the smaller number of plants is capable of using practically all the available water and thus making a greater growth individually.

SUNFLOWERS—TEST OF VARIETIES

Variety	Source of Seed	Per cent stand	Date of blossoming	Height at harvest	Yield per acre	
					Green weight	Dry weight
				inches	lb.	lb.
Mammoth Russian	K. McDonald	85	Sept. 1	80	35,700	7,000
Russian Giant	Dakota Imp. Seed Co	95	Aug. 8	80	31,110	5,702
Ottawa No. 76	C. E. F	85	" 3	60	27,540	5,593
Mennonite	Rosthern Exp. Station	90	July 28	42	25,840	5,563
Manchurian	C. P. R	92	Aug. 7	54	20,740	3,241
Mixed	C. P. R	90	" 4	50	19,550	3,073
Manteca	C. P. R	100	" 9	54	22,610	3,068
Black	C. P. R	90	" 6	50	16,660	2,553

NOTE.—Sunflowers in this test are all grown on fallow land. Yields from sunflowers that are preceded by another crop are very much lower, as indicated in other experiments reported.

ANNUAL HAY CROP—VARIETY TEST

Variety	Height at harvest	Stage when cut	Yield per acre	
			Green weight	Dry weight
	inches		lb.	lb.
Spring rye	32	Past bloom	8,510	2,981
Oats and peas	28	Past bloom	8,875	2,773
Oats	28	Past bloom	8,950	3,271
Peas	30	Pods well formed	9,016	2,562
Early Amber sugar cane	33	Heading	8,666	2,235
Sudan grass	48	Blossom	8,753	3,682
Teff grass	18			
Hungarian millet	30	90 per cent headed	12,982	4,578
Hog millet	42	Seeds well formed	12,333	3,926
Siberian millet	28	10 per cent headed	14,000	4,737
Common millet	20	Blossom	10,666	3,547

These varieties of annual hay crops were sown on fallow land June 1. The millet varieties, though producing the highest yields, were the slowest to germinate. In a cool season such as was experienced this year, early growth is so slow that weeds soon become a serious competitor and render harvesting operations difficult. Where weeds are a serious factor, spring rye, oats, or oats and peas are the best to grow, and, further, the seeds of these are less expensive and more easily obtained. Sudan grass, Early Amber sugar cane, and various kinds of millets were sown also on other plots for comparison of seed yields. Hog millet, which is the earliest of these, however, produced very little seed.

RATES AND DATES OF SOWING HUNGARIAN MILLET

Rate sown, per acre	Date sown	Stand	Height at harvest	Green weight per acre	Dry weight per acre
lb.			inches	lb.	lb.
5	May 20	Normal	26	5,417	1,915
15	" 20	Thick	26	5,400	1,847
25	" 20	Thick	25	3,952	1,517
5	June 3	Normal	28	6,366	2,026
15	" 3	Thick	26	5,333	1,816
25	" 3	Thick	24	4,800	1,487
5	" 15	Normal	28	5,600	1,718
15	" 15	Thick	28	5,800	1,604
25	" 15	Thick	26	5,866	1,731

There seems to be no advantage in seeding millet early; in fact, somewhat better yields are secured from moderately late seeding. Due to its slow growth when the weather is cool, the early seeded crop permits Russian thistles to get well established. The presence of this weed has a very adverse effect on the yield of millet. If millet is to be used as a hay crop, it should be sown late, or possibly as a catch crop where some other crop has failed.

ALFALFA—TEST OF VARIETIES

Sown alone on Fallow, 1925. 1st year Hay Crop

Variety	Source of seed	Height when cut	Yield per acre	
			Green weight	Dry weight
		inches	lb.	lb.
Grimm	A. B. Lyman	18	5,550	2,040
Grimm	Grimm Alfalfa Seed Association	18	4,500	1,705
Grimm No. 666	University of Sask	18	4,050	1,543
Cossack	Paramount Alfalfa Farm	18	4,050	1,523
Turkestan	Steele Briggs	18	4,600	1,456
Cossack	Dakota Improved Seed Co	18	3,850	1,326
Baltic	Dakota Improved Seed Co	18	2,550	1,009

ALFALFA—TEST OF VARIETIES

Sown on Fallow, 1924. Second year Hay Crop

Variety	Height at harvest	Yield per acre	
		Green weight	Dry weight
	inches	lb.	lb.
Grimm (Commercial)	15	1,587	426
Grimm (Lyman)	10	800	258
Baltic (Commercial)	10	887	303
Variegated (Commercial)	.....	Winter killed	
Turkestan (Commercial)	.....	Winter killed	
Cossack (Commercial)	.....	Thin, weedy	
Cossack (Paramount Alfalfa Farm)	.....	Thin, weedy	

Grimm alfalfa has consistently proved to be the hardiest of the alfalfa varieties as well as the highest yielder. As the season was relatively dry compared with former years, yields of first-year hay crops are only fair, and the second-year hay crops are very poor.

SWEET CLOVER—TEST OF VARIETIES

Sown alone on Fallow, 1925

Variety	Height when cut	Yield per acre	
		Green weight	Dry weight
	inches	lb.	lb.
Dwarf	36	11,350	3,594
Grundy County	32	10,000	3,149
Zouave	33	10,500	3,131
White	30	9,350	3,047
Maccor	33	10,350	2,936
Arctic	30	8,700	2,654
Yellow	16	6,900	2,333

Dwarf sweet clover has only been tested at this Station two years and each year has given the highest yields, and is regarded as a very promising sort.

MISCELLANEOUS LEGUMES

White Dutch clover, alsike clover, sainfoin, *Medicago falcata* (yellow-blossom alfalfa) and Altaswede are included in this test. Very sparse, weedy stands were obtained of the first two, so that no reliable yields could be given. It has been difficult to obtain good stands of sainfoin during the past three years. Once established, it is claimed to be very drought-resistant; however, no good results from sainfoin have been obtained here yet. *M. falcata* gave exceptionally high yields as a first-year hay crop in 1924, and good yields as a second-year hay crop in 1925. This year's crop, however, was completely winter-killed. Altaswede gave a green yield of 3,700 pounds and a dry yield of 941 pounds.

MISCELLANEOUS GRASSES—VARIETY TEST

Timothy, red top, Canada blue grass, Kentucky blue grass, orchard grass, meadow fescue, perennial rye grass, "Grazier" western rye grass, western rye grass, brome grass, and tall oat grass were used in this experiment. All were

sown without a nurse-crop on well-prepared fallow land. The highest yield from the first-year hay crop was secured from western rye grass, which produced 1,050 pounds of well-cured hay per acre; "Grazier" western rye yielded 1,000 pounds per acre; and brome grass, 825 pounds per acre. The remainder of those listed yielded far less. The low yield may be attributed to the relatively dry growing season. In 1925, much more favourable yields were obtained. Western rye in that season again producing the highest yield, being 4,203 pounds per acre, and brome, the second highest grass, yielding 3,887 pounds per acre.

ROOTS—VARIETY TEST FOR YIELD

Variety	Percentage stand	Yield per acre	
		Green weight	Dry weight
		lb.	lb.
Mangels—			
Fjerritslev Barres	90	10,080	1,121
Giant Yellow Globe	85	7,920	1,005
Rosted Barres	78	7,920	982
Yellow Eckendorffer	78	8,400	943
Red Eckendorffer	87	8,400	934
Red Tankard	48	3,600	435
Carrots—			
Large White Vosges	72	6,960	679
Mammoth	66	3,960	429
White Intermediate	61	3,840	348
Danish Champion	55	3,000	316
Long Orange Belgian	55	1,800	207
Turnips—			
Invictus Bronze Top	99	8,160	1,163
Monarch or Elephant	97	6,960	909
Selected Purple Top	93	6,240	853
Hazard's Improved	97	6,240	798
Halewood's Bronze Top	96	6,000	738
Hall's Westbury	100	5,280	685
Sugar Beets—			
Shriber & Sons	90	5,832	1,372
Horning	95	5,880	1,355
Dippe	93	5,352	1,228

These were grown on spring-ploughed wheat stubble land. The experiment is laid down in a two-year rotation, roots alternating with wheat. The season was much too dry to favour a root crop this year.

YIELDS OF ROOTS WHEN VARIOUSLY SPACED IN ROW
All Rows 30 inches Apart

Variety	Spacing in row	Per cent stand	Yield per acre	
			Green weight	Dry weight
	inches		lb.	lb.
Carrots—				
Danish Champion	3	90	14,160	1,479
"	6	87	11,040	1,088
"	9	93	8,160	764
Turnips—				
Monarch	6	98	20,400	2,609
"	12	97	18,000	2,021
"	18	98	13,200	1,366
Mangels—				
Giant Yellow Globe	12	88	10,560	1,432
"	18	83	10,800	1,434
"	24	73	7,440	755
Sugar Beets—				
Horning	12	89	7,080	1,430
"	18	88	5,352	967
"	24	78	5,568	1,081

Since yields of roots have been uniformly poor for three years when thinned to ordinary distances, an experiment has been started to learn whether wider spacing would produce larger yields by providing more space and more water for each plant. This has not been the case this year; the wide spacings in nearly all cases producing the lowest yields. This experiment was conducted on corn land, while the variety tests are carried out on wheat stubble land. This accounts for differences in yields in the two experiments.

ANIMAL HUSBANDRY

CATTLE

The Shorthorn herd has been maintained at approximately the same number as last year. During the year the following sales were made from the herd: five young bulls for breeding purposes, three young females; one animal was sold for beef.

Of the Holstein females brought from Ottawa in 1925, all have either produced calves or have been bred to freshen by the spring of 1927. A few of the cows have completed lactation periods during the year 1926. In the following table, records of feed consumed and milk produced by these cows are given:—

DAIRY CATTLE, PRODUCTION AND FEED RECORD

Cow	Days in milk	Milk produced	Cost of feed and pasture	Value of milk	Profit over feed
		lb.	$ cts.	$ cts.	$ cts.
Grade Shorthorn	350	12,525·8	100 17	187 89	87 72
Diamond A-2 (Grade Holstein)	312	12,534·9	108 44	188 02	79 58
Biddy "C" (Grade Holstein)	226	8,779·8	92 08	131 69	39 61

The following scale of values is used in determining feed costs: Ensilage, $3 per ton; hay, 10 per ton; grain, 1½c per pound; pasture, $10 per year. A value of $1.50 per 100 pounds is allowed for the milk. This is based on the prevailing price for butterfat at the creameries during the year. A much higher price could be obtained by a few people for small quantities of milk and table cream, but the price for churning cream is the price received by the great majority of farmers.

It should be noted that in the tabulation no allowance is made for interest and depreciation on the investment in cattle and buildings. No charge is made for bull service, and no charge is made for the labour of milking and caring for the cows. The cost of these items will vary, depending upon the number of cows kept, the value of the buildings, and other factors, so that it is difficult to charge any definite amount against each animal in a small herd. With a herd containing an average of ten milking cows, charges for interest, depreciation, housing and labour would amount to from thirty to forty per cent of the total cost.

STEER FEEDING

On November 17, 1925, twenty-two two-year-old grade Hereford steers were purchased from W. Puffer, Lacombe, Alta. As in previous years, the steers were fed in an open corral with a straw shelter at the north end which provided sufficient room to permit all steers to lie down. The ration consisted of corn and sunflower ensilage, oat straw, and chop consisting of two parts oats, one part barley, and one part wheat screenings, by weight.

On March 17, three steers were sold locally and nineteen were shipped to Glasgow, via Saint John, with other Experimental Farm cattle. The following table gives details of costs and returns:—

22 steers, 1,036 lb. per head, 22,790 lb., at 5c	$1,139 50	
Freight charges, Lacombe to Swift Current	79 20	
Cost at Swift Current		$1,218 70
Winter feed, December 1 to March 17—		
60¼ tons ensilage at $3	$ 180 75	
10 tons oat straw at $3	30 00	
23,480 lbs. grain at 1½c	352 20	
Cost of feed		$ 562 95
All costs, Swift Current to Glasgow, 19 steers at $53.95		1,025 05
Total costs from buying to selling		$2,806 60
Returns—		
3 steers sold locally	$ 201 12	
19 steers sold at Glasgow	2,478 35	
	$2,679 47	

Loss—$127.13, or $5.78 per head.

The financial loss on the steers was not due to any failure of the steers to make adequate gains for feed consumed. Between December 1 and March 17, the steers that went overseas gained nearly 300 pounds per head, but between March 17, when they were shipped, and April 17, when they were sold at Glasgow, the loss in weight amounted to 172 pounds per head. Moreover, reports indicate that at the time of the sale the market was particularly depressed by rivalry between United States and Argentine chilled meat interests.

SWINE

The Tamworth breeding herd has been increased so that there are now eight sows and a boar, and six barrows which will soon be ready for market. During the year the following have been sold for breeding purposes: three boars, five sows. Eeight barrows and off-type sows have been sold for pork. During the winter, four more bred sows will be offered for sale.

HORTICULTURE

VEGETABLES

BEANS—DISTANCE OF PLANTING

Variety	Distance sown apart in rows	Date ready for use	Yield string beans per 30-foot row
	inches		lb. ozs.
Round Pot Kidney Wax	2	July 23	11 1
"	4	" 23	9 15
"	6	" 23	5 3
Stringless Green Pod	2	" 23	11 11
"	4	" 23	5 7
"	6	" 23	5 3

The accuracy of this test was to some extent affected by wind damage. Under such weather conditions, the results would indicate thicker planting is safe to ensure the highest yield of pods.

VARIETY TEST.—Twenty varieties were planted on May 12. Nearly all were well above ground 12 days after planting. Many of the varieties suffered through wind damage early in the season. Hodson Long Pod Wax produced 10 pounds 10 ounces of pods per 30-foot row, which was the highest yield of the yellow-pod sorts; Will Bountiful was the best yielder of the green pod varieties, producing 9 pounds 13 ounces per 30-foot row.

BEETS—DIFFERENT DATES OF SEEDING

Variety	Date sown	Date ready for use	Yield per 30-foot row	Remarks
			lb.	
Detroit Dark Red	April 19	July 8	18	Damaged by winds early in spring.
"	" 29	" 15	19	"
"	May 8	" 15	24	"
"	" 19	" 25	41	Suitable for winter storage.
"	" 29	" 25	33	Many small; suitable for storage.

BORECOLE OR KALE—VARIETY EXPERIMENT

Two varieties, Dwarf Green Scotch Curled and Tall Scotch Curled, were sown May 22. The Tall Scotch variety produced a greater abundance of leaves, but not of as good quality as the Dwarf Scotch variety, which were finer and more convoluted than the first mentioned. The leaves of both varieties were remarkably free from damage usually caused by insects or disease. Kale is a vegetable that deserves wider use.

BRUSSELS SPROUTS—VARIETY TEST

Improved Dwarf and Paris Market varieties were started in the greenhouse in March, but failed to produce sprouts of an edible size. This is also the experience of two previous years. The seasons have been too short for the varieties so far tested.

CABBAGE

CABBAGE—DIFFERENT DATES OF SEEDING FOR WINTER STORAGE PURPOSES

Variety	Date of sowing	Date of Germination	Ready for use	Average weight per head	Remarks
				lb. oz.	
Ex. Amager Danish Ballhead	April 19	.....	.....	.....	Blown out—failure.
	" 29	May 7	Sept. 1	5 0	Firm heads—good for storage
	May 8	May 16	" 1	3 0	Fairly solid.
	" 19	" 25	" 1	1 8	Too small.
	" 29	June 7	.....	.....	Not headed.
Copenhagen Market	April 19	.....	.....	.....	Blown out—failure.
	" 29	May 16	Aug. 12	4 12	Many split.
	May 8	" 18	" 16	4 4	Many split.
	" 19	" 25	Sept. 1	3 8	Good for storage.
	" 29	June 8	" 1	2 12	Firm, but small.

CABBAGE—VARIETY TEST

Variety	Source of seed	Date ready for use	Average weight per head	
			lb.	oz.
Kildonan	C.E.F	Aug. 20	11	11
Brandon Market	McKenzie	July 28	10	0
Summer Ballhead	Harris	Aug. 12	9	5
Danish Roundhead	C.E.F	" 26	8	8
Glory of Enkhuizen	Rennie	" 4	8	4
Early Winnigstadt	C.E.F	" 12	8	3
Ex. Am. Danish Ballhead 0-3422	C.E.F	" 26	7	11
Improved American Savoy	Farquhar	" 20	7	10
Northern Favourite	McKenzie	" 26	7	8
Danish Ballhead	Lethbridge Exp. Station	" 26	7	8
Danish Ballhead (Intermediate stem)	C.E.F	" 26	7	8
Early Summer	C.E.F	" 10	7	8
Danish Ballhead	Rennie	" 26	7	7
Succession	Ewing	" 4	7	3
Danish Ballhead	C.E.F	" 26	6	10
Danish Ballhead (short stem)	Harris	" 26	6	0
Mammoth Red Rock	Steele, Briggs	" 20	5	5
Early Paris Market	McDonald	" 1	3	13
Copenhagen Market	Graham	July 20	3	13
Babyhead	C.E.F	" 20	3	4
Selected Jersey Wakefield	McDonald	" 20	2	6

Twenty varieties were sown in flats in the greenhouse March 29, pricked out on April 16, and planted in the open on May 14. All the varieties did well, with the exception of Early Paris Market, which was handicapped by being planted in poor ground. The early varieties were badly attacked by cabbage worms. Though the season was relatively dry, many exceptionally large heads were grown. The largest of the Kildonan variety weighed 18 pounds 1 ounce; of the Glory of Enkhuizen variety, 15 pounds 3 ounces; of the Summer Ballhead variety, 11 pounds 8 ounces. The test was conducted on fallow land. The best early varieties this season were: Copenhagen Market, Selected Jersey Wakefield, and Babyhead, a splendid, small, firm cabbage. The best medium early were: Brandon Market, Succession, Glory of Enkhuizen. The best late varieties were: Kildonan, Danish, Ballhead, and Improved American Savoy.

CARROTS

CARROTS—DIFFERENT DATES OF SEEDING

Date sown	Date of germination	Ready for use	Average yield per 30-foot row	
			lb.	oz.
April 19	May 10	July 15	17	8
" 29	" 16	" 15	20	4
May 8	" 20	" 20	22	8
" 19	" 28	Aug. 1	27	0
" 29	June 10	" 1	13	8

DATES OF SEEDING.—All rows were harvested September 3. There was not any great difference in size of roots from the first four sowings. The last sowing produced smaller carrots, but of good size for storage purposes.

TEST OF VARIETIES.—A sufficient number of plants of the six varieties planted survived the high spring winds to indicate by appearance in shape and size that the Chantenay was a good long type; half long, Scarlet Nantes, a good medium size; and Guerande or Oxheart, a good short variety.

CAULIFLOWER—VARIETY TEST

The following varieties were sown in the greenhouse on March 29: Henderson Snowball, Extra Early Dwarf Erfurt, and Veitch Autumn Giant. These were planted out April 16, but many had to be replaced because of cutworm damage. The heads obtained were generally small, coarse and open. The Extra Early Dwarf Erfurt was the earliest variety. Some excellent late heads were secured from the Veitch Autumn Giant variety.

CELERY

CELERY—BLANCHING EXPERIMENT

Method of Planting	Method of blanching	Ready for use	Height of plant	Height of blanch	Average weight per head
			inches	inches	lb. oz.
Grown on level, bed 6 feet square, plants spaced 6" by 6"	Earth covering	Sept. 1	18	8	0 11
Grown on level, 15-foot single rows, plants six inches apart	Earth covering	Aug. 20	17	8	1 5
Grown on level, single row	12-inch boards	Sept. 17	16	7	0 10
Grown on level, double rows, 6" apart, and plants spaced 6" apart in row	Building paper	Sept. 17	18	7	0 14
Grown in trench 6" deep, single row	Earth covering	Aug. 20	20	12	1 4
Grown in trench, double row	Earth covering	Aug. 20	21	14	0 15

BLANCHING.—Earth covering produced stems of whiter blanch than other methods in the test. Where plants were grown in trenches, these were blanched considerably more towards the leaf than those grown on the level. Earth-blanched plants were slightly affected by rust; plants blanched otherwise were free from this disease.

CELERY—VARIETY EXPERIMENT

Variety	Source of seed	Ready for use	Height of plant	Weight per head
			inches	lb. oz.
Emperor	Vaughan	Sept. 1	22	1 6
Garrahan Easy Blanching	Graham	" 19	22	1 3
Wonderful	Ferry	" 13	21	0 15
Golden Self Blanching	McDonald	" 1	21	0 12
White Plume	Graham	" 7	23	0 12
Golden Self Blanching	Stokes	" 1	21	0 12
Paris Golden Yellow	Steele, Briggs	" 9	22	0 11
Paris Golden Yellow	Dupuy and Ferguson	" 9	21	0 11
Burpee Fordhook Novelty	Burpee	" 9	21	0 10
Golden Self Blanching O-3410	C.E.F.	" 1	18	0 10
Evans Triumph	Dupuy & Ferguson			Failed to germinate

VARIETIES.—Evans Triumph and Emperor were sown April 9; Golden Self Blanching, 0-340, was sown April 16; the remaining varieties in the test were sown March 29. All were planted out June 19 in trenches one foot wide and one foot deep with about six inches of well-rotted manure in the bottom. Earth covering was used for blanching. Emperor has been tested at this Station for the first time, and appears to be a very promising variety.

CORN—SUCKERING EXPERIMENT

Golden Bantam and Early Malcolm were used in this test. Removal of suckers had no advantageous effect on yield or size of cobs or degree of earliness of maturity.

LETTUCE—VARIETY EXPERIMENT

Seventeen varieties were sown in the open on April 29, but a severe wind on May 30 ruined the crop for experimental purposes. Eight varieties of head lettuce were sown in flats in the greenhouse April 1; these were planted out in the open May 14. Constant whipping of the leaves by strong winds checked the growth considerably. Tom Thumb, though a very small-headed variety, produced the best heads.

ONION—VARIETY EXPERIMENT

Due to the poor results of previous seasons, two methods were used this year in an effort to obtain better results. The first method was to sow the seed in drills in the open and thin in the ordinary way. The second method was to sow early in the spring in flat boxes under greenhouse conditions and transplant when a growth of about six inches had been obtained. There appeared to be no great difference in progress of growth between the two methods up to August 1. There were fewer casualties from high winds, however, among transplanted rows. Yellow Globe Danvers and Large Flat Red Wethersfield were among the best varieties of the test.

PARSNIP

DATES OF SEEDING.—Seed of Hollow Crown parsnips was sown at intervals of 10 days, commencing April 19 and ending May 29. The best yield of smooth, well-shaped and good-sized roots were obtained from seed planted May 19.

TEST OF VARIETIES.—Three varieties, representing long and half-long types, were tested for the first time this year. Damage by winds prevents any recommendations being made.

PEAS

DISTANCES OF PLANTING.—Seeds of English Wonder, Thos. Laxton, and Stratagem varieties were planted in rows 42 inches apart with plants spaced one inch, two inches, and three inches apart in the row. The thickest seeding of each of the three varieties mentioned produced the highest yields. The yields became lower as the spacing between plants increased.

VARIETIES.—Best early varieties: Lincoln Invermere and English Wonder; best medium early: Gradus X American Wonder; best late: Stratagem and Carter Daisy X Stratagem.

PEAS—TEST OF VARIETIES

Variety	Source of seed	Per cent germination	Ready for use	Yield peas and pods per 30-foot row	
				lb.	oz.
Lincoln Invermere	C.E.F.	90	July 12	6	11
Gregory Surprise X English Wonder	C.E.F.—O-6471-3	90	" 14	5	13
Gradus X American Wonder	O-8622	90	" 14	7	2
English Wonder	C.E.F.—O-8622	90	" 10	6	7
Thomas Laxton	McDonald	90	" 10	2	13
Extra Early Pedigree	C.E.F.	60	" 12	2	9
Stratagem	C.E.F.	55	" 28	4	13
Carter Daisy X Stratagem	A. C. Budd	55	" 28	10	6

POTATOES

Potatoes—Different Dates of Planting

Variety	Date planted	Ready for use	Per cent not marketable	Yield per 30-foot row of 13 hills	
				lb.	oz.
Early Ohio	April 29	Aug. 1	2	22	1
	May 13	" 7	4	20	0
	" 27	" 15	6	21	7
Duke of York	April 29	" 3	0	40	0
	May 13	" 10	0	31	4
	" 27	" 17	0	25	6

Potatoes—Sprouting Experiment

Variety	Date set to sprout	Date planted	Ready for use	Yield per 30-foot row of 13 hills
				lb.
Early Ohio	April 1	May 13	July 15	26
Duke of York	" 1	" 13	" 22	42
Irish Cobbler	" 1	" 13	" 15	55

Sprouting.—Six weeks prior to planting, medium-sized tubers of three varieties were placed in shallow boxes, exposed to light, and held at a temperature of approximately 50° F. When these tubers were planted they had green sprouts about one-half inch in length. The tubers which had been sprouted before planting produced an earlier and heavier crop than did tubers which had not been sprouted before planting.

Potatoes—Variety Test

Variety	1926 crop Average yield		Average yield for 4 years
	Per 70-ft. row	Per acre	Per acre
	lb.	bush.	bush.
American Wonder	80	276	363
Epicure	94	324	363
Ashleaf Kidney	80	295	351
Houghton Rose	90	310	340
Burnaby Mammoth	78	269	333
Wee MacGregor	70	243	322
Extra Early Eureka	80	276	315
Carter Favorite	74	255	313
Irish Cobbler	83	286	311
Duchess of Norfolk	54	186	292
King Edward	78	269	286
Country Gentleman	72	248	282
Early Ohio	50	172	235
Snyder Early	58	200	*200
Gold Coin	55	190	*190
Netted Gem	45	155	*155
Bluecup	37	129	*129

* Grown in 1926 only.

VARIETIES.—The higher-yielding varieties in the test are generally larger and of rougher type. Houghton Rose is the highest yielder this year, but has been found to possess inferior cooking qualities. This is true of American Wonder also. Epicure is a medium-early variety which requires a much longer period for cooking, and is generally not very mealy. Irish Cobbler, though not the highest-yielding variety, and possessing fairly deep eyes, surpasses all the other varieties in the test in being the quickest cooker, with the excellent quality of mealiness and whiteness when ready for the table.

RADISH—VARIETY EXPERIMENT

Ten varieties were sown April 29. All came through the ground May 6. Damage by wind was slight. Icicle, a white variety, is easily the best in flavour; the next in order of merit are French Breakfast; Non Plus Ultra, and Vaughan 20-Day.

SQUASH, PUMPKIN—TEST OF VARIETIES

All the vines made very slow progress in the spring, but after July growth was rapid and an abundance of foliage was produced as well as a fair amount of fruit set. The squash varieties were the best.

SQUASH.—Five varieties or strains tested. Golden Hubbard and Long White Bush varieties are recommended.

PUMPKIN.—Six varieties or strains tested. Small Sugar variety recommended.

TOMATOES

METHODS OF PRUNING.—As in previous tests, pruning of tomato vines resulted in decreased yields of both green and ripe tomatoes. On September 10, a frost of four degrees did serious damage to the tomatoes on pruned vines, while those on unpruned vines, being protected by the foliage, were not damaged. Moreover, the tomatoes on unpruned vines showed very little tendency to split as they ripened. This trouble was much more prevalent when the plants had been pruned.

TOMATOES—VARIETY EXPERIMENT

Variety	Source of Seed	Date sown	Ready for use	Yield fruit per 30-foot row of 16 plants						Remarks
				Green and ripe		Green		Ripe		
				lb.	oz.	lb.	oz.	lb.	oz.	
Pink No. 2-O-6569	C.E.F.	April 6	Aug. 26	40	6	26	2	14	4	Good size and shape.
Sparks Earliana	C.E.F.	Mar. 19	" 26	57	6	45	0	12	6	Large, fair shape, cracked.
First and Best	Home grown	April 6	" 26	43	1	31	8	11	9	Fairly large, good shape.
Marglobe	Stokes	Mar. 19	" 26	32	6	22	0	10	6	Extra large, cracked badly.
Abbotsford Argo	A. H. Horn	April 6	" 26	29	3	20	0	9	3	Smooth, good shape, small.
Avon Early	Dreer	Mar. 19	" 24	48	2	40	0	8	2	
Avon Early	Ferry	" 19	" 28	53	12	46	0	7	12	
Danish Export	Wibolt	" 19	" 24	30	0	23	8	7	2	Small, good shape.
Bolgiana	Bolgiana	" 19	" 26	39	5	32	4	7	1	
Rosy Morn	Home grown	April 6	" 26	36	4	29	3	7	1	Very large.
Alacrity X Hipper O-6568	C.E.F.	" 6	" 28	43	9	37	0	6	9	Medium, fair shape.
Abbotsford Argo	Home grown	" 6	" 26	32	15	26	8	6	7	Smooth, good shape, small.
Pink No. 1-O-6574	C.E.F.	" 6	" 28	27	14	21	8	6	6	Many poor shape.
North Dakota Earliana	Home grown	" 6	" 28	45	7	40	0	5	7	Large.
IXL Early	Rennie	Mar. 19	" 28	54	14	50	0	4	14	

VARIETIES.—The variation in date of planting was due to late arrival of some of the seed. If any quantity of ripe fruit is expected, even from the earliest varieties, planting should be early, so as to have a well-developed plant to go outside as soon as frost danger is past.

TURNIPS—VARIETY EXPERIMENT

Four varieties were sown April 29 and all were ready for use July 15. For shape, size and quality, Extra Early Purple Top Milan is recommended.

RHUBARB—DEVELOPMENT FROM SEED

Ruby No. 45 is used for this test. Seed planted in 1924 produced an abundance of excellent stems, generally fine and of deep-red colour. A number of plants were infected by a disease which caused the leaves to rot off at the base. A selection of plants particularly free from this disease, and having also the qualities of vigour of growth and good colour of stem, was made, and the roots of these will be divided for propagation. Plants from seed sown in 1925 died after transplanting. Seed sown this year made slow growth early in the season, chiefly due to drought conditions. Rains in August favoured growth of the seedlings, so that good strong plants were produced by fall.

FRUITS AND ORNAMENTALS

TREES FOR WIND-BREAKS

Practically all trees planted in previous years have made good growth. Very little winter killing or other injury has been observed. Since 1923, Russian poplars have attained a height of from 10 to 15 feet. Caragana hedges planted in 1922 are now from four to six feet high, with a dense growth of foliage. Elm, Ash, Maple, Pine and Spruce are all making good progress. Some additional wind-break planting was done this year to provide protection for the poultry plant and the orchard.

FLOWERING SHRUBS

Flowering shrubs planted in 1923 and 1924 have practically all lived and many of them bloomed this year. The following table gives some information as to dates of blooming and winter hardiness of the most important flowering shrubs.

FLOWERING SHRUBS, DATES OF BLOOMING AND AMOUNT OF WINTER KILLING

Shrup	Winter-Killing	Began to Bloom	Bloom Over
Ginnalian Maple	Slight	June 1	June 20
Siberian Pea Tree	None	May 5	" 1
Woody Caragana	None	" 5	" 1
Dwarf Caragana	None	" 20	" 20
Common Lilac	None	" 19	" 1
Josika's Lilac	None	June 1	" 10
Villosa Lilac	None	" 3	" 28
Halimondendron	None	" 24	July 20
Van Houtte's Spiraea	None	" 1	" 10
Sorbus-leaved Spiraea	None	" 28	Aug. 15
Spiraea arguta	None	May 12	May 30
Tartarian Honeysuckle	None	" 20	June 20
Albert Regel's Honeysuckle	None	" 24	" 20
Japanese Rose	None	June 12	Sept. 10
Rosa rubrifolia	None	" 10	July 10
Russian Olive	Slight		
Shrubby Cinquefoil	None	May 20	Sept. 10
Missouri Currant	None	" 12	June 10
Siberian Dogwood	Slight	" 25	July 1

TREE FRUITS

A small orchard has been established with 130 young trees representing 32 varieties of standard and crab apples, and 59 trees which include 11 varieties of plums and cherries. With the exception of a very small number, both apple and plum trees have become well rooted and have made good progress during the growing season. All trees have been protected from damage by rabbits during the winter by a loose wrapping of tar paper. The orchard is also surrounded by a shelter belt of caragana and a double row of three-year-old Russian poplar.

SMALL FRUITS

A test was begun this year of four varieties of gooseberries, twenty varieties of currants, eight varieties of raspberries, and four varieties of strawberries. Only a very few failed to grow after planting. All were mulched with straw for winter protection.

HERBACEOUS PERENNIALS

Many perennials started from seed in 1925 made excellent showings this year. Among the best were: Pansy, Dianthus, Iceland Poppy, Eschscholtzia (Californian poppy), Antirrhinum (snap dragon) Pyrethrum, Delphinium, Hollyhock, and *Linum sibiricum*. Seed of 50 varieties of perennials was planted again this year, and the best plants of these will be transplanted to the borders of the grounds.

Twelve varieties of paeonies which were planted in 1925 made a good showing this year, though the flowering season was short. Thirty more roots, representing ten varieties, were planted this year.

PERENNIALS—WINTER HARDINESS AND PERIOD OF BLOOM

Name	Winter-Killing	Bloom Began	Bloom Over
Digitalis	100%		
Coreopsis grandiflora	Few	July 6	Aug. 1
Pansy	Nil	May 10	Nov. 1
Pinks	Nil	June 8	Aug. 18
Campanula	Few	July 3	Aug. 25
Iceland poppy	Nil	May 22	July 3
Aquilegia	Nil	June 1	July 6
Eschscholtzia	Nil	July 1	Aug. 20
Antirrhinum (mixed)	Nil	Aug. 1	Oct. 15
Gaillardia	Nil	July 30	Sept. 15
Pyrethrum	Nil	June 3	July 8
Achillea	Nil	June 28	Sept. 1
Linum sibiricum	Nil	May 24	July 24
Oriental poppy	Nil	June 17	July 3
Delphinium	Nil	June 28	Sept. 11
Hollyhock	Nil	July 9	Sept. 11

TULIPS—VARIETY TEST

The tulip seems adaptable to prairie conditions. Bulbs that were planted out in 1924 made a fairly good showing again this year. The larger blooms, however, were grown from bulbs planted in October, 1925. Of the early double varieties, Couronne d'Or and Murillo made the best showing. Of the 34 single early varieties, nearly all made a good showing; Crimson King and Lady Boreel (white) deserve special mention. Bouton d'Or and Picotee were among the best of the eight varieties in the May-flowering class. As a class, the Darwin tulips made the most attractive showing. There were 21 varieties of this class under test, and the best of these were as follows: Rev. Ewbank (mauve, white-

tinted), La Candeur (white), Prof. Rauwenhoff (dark pink), and Isis (scarlet).

Cultural methods used were as follows: The bulbs were planted five to six inches deep about the middle of October and spaced six inches apart each way in well-prepared beds. After several frosts had occurred, a six-inch layer of well-rotted manure was used to cover the beds. This prevented early thawing and freezing in the spring. This covering was not removed until about the middle of April, when a continuous growing season free of severe frosts seemed assured.

BIENNIALS—TEST OF VARIETIES

Of the seven varieties tested, the following are recommended: *Dianthus heddewigii;* Honesty, purple; *Anchusa italica;* and Sweet William.

SWEET PEAS—TEST OF VARIETIES

Sixty-six varieties or strains were planted on May 20. The season being unusually cool during the spring and early summer made the early growth slow. The first blooms appeared about July 10. The early blooms were few and small, probably due to the dry, hot weather prevailing at that time. Water was applied two or three times after this, and, with the rains and cooler weather of the latter part of August, a great wealth of large blooms resulted. Blooms numbering from three to four, on lengthy, strong stems, were numerous. The abundance of bloom continued till September 15, when nine degrees of frost occurred. Previous to this, all the varieties had withstood several lighter frosts.

POULTRY

The flock of Barred Rock poultry now consists of over 200 laying hens and pullets.

Early in the year, hatching eggs were secured from the Experimental Farms at Morden and Brandon, Manitoba, and Lethbridge, Alberta. Three incubators with a total capacity of 700 eggs were used for hatching. The average fertility was 75·9 per cent, and a total of 650 chicks were hatched. Coal-heated brooders in small colony houses were used in rearing the chicks. Due to the prevalence of high winds and the exposed positions of the brooder houses, some difficulty was experienced in maintaining reasonably uniform temperatures in the brooding pens. However, a good percentage of the chicks was raised to maturity.

Out of the total hatch, there were finally selected 150 pullets and 50 cockerels. The balance were sold, either dressed or alive, for table use. Of the 50 cockerels, 30 have been sold to farmers for use in breeding pens, and 20 have been retained for use in our own breeding pens next spring.

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