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 1924

Sweet clover hay, cut with a binder. Yield two and one-half tons per acre.

Printed by authority of the Hon. W. R. Motherwell, Minister of Agriculture, Ottawa, 1925

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EXPERIMENTAL STATION, SWIFT CURRENT, SASK.

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NOTES ON THE SEASON

The winter of 1924 was comparatively mild and open with an unusually light snowfall. It was generally expected that due to the lack of snow the spring would open early. On the contrary, however, the spring work was delayed by a cold April, so that seeding did not begin until April 21. After that date seeding proceeded rapidly and was finished in good time.

May, June, and early July were cool and damp with occasional frosts until June 4, when the last frost was recorded. Contrary to the general impression, the rainfall for this period was below the average. Grain and hay crops made fair progress until the middle of July. Between July 15 and 20 the weather turned suddenly hot with strong, hot winds prevailing from the southwest. Owing to the dry fall of 1923 and only a moderate spring rainfall, the moisture reserve in the soil was low, with the result that all crops, with the exception of corn and wheat on fallow, suffered considerable damage. Fortunately the hot weather did not last long. Toward the end of July there was a fair amount of rain and the August precipitation was slightly above the average. Due to the slow growth in the early part of the season, many crops were still in a stage to take advantage of the early August rains, with the result that small grains "filled" well and there was a good, though late, harvest. The peculiar season seemed to have less of an adverse effect on wheat than on most other crops.

The early part of the harvesting season had fairly favourable weather. In late September and early October heavy rains seriously delayed threshing and injured the quality of the wheat. The October rainfall of 3.16 inches was the highest recorded for that month since records were first kept in 1886. Most of this rain fell in one storm on the 11th and 12th. The heavy rains allowed a considerable amount of fall ploughing to be done.

METEOROLOGICAL RECORD FOR SWIFT CURRENT, SASK., 1924.

Month	Temperature		Precipitation	Evaporation	Sunshine	Wind
	High	Low	10" snow = 1" rain			Total Miles
	Deg. F.	Deg. F.	Inches	Inches	Hours	
January	47·5	−40	1·05	—	95·3	—
February	48	−23	0·55	—	125·5	—
March	39	− 2·5	0·53	—	124·6	—
April	60	12	0·15	—	144·9	—
May	75	23	2·73	4·757	201·6	5776
June	78	31	2·51	4·913	170·2	4799
July	91	40	2·06	5·955	224·8	4851
August	86	36	2·32	4·790	220·8	4836
September	85	20	0·68	4·710	196·0	5156
October	76	15	3·16	2·060	189·0	6008
November	52	−16	0·55	—	84·1	—
December	48	−39	1·40	—	35·0	—
Totals			17·69	27·185	1811·8	31426

Last spring frost.....June 4th.
First fall frost.....September 12th.
Frost-free period.....100 days.
Rainfall during April, May, June, July..7·45 inches.

DATES OF FARM OPERATIONS, 1924.

—	Began	Finished
Work on land (first and last dates)	April 15	October 29
Seeding wheat	April 21	May 2
Seeding oats	May 3	May 16
Seeding barley	May 23	May 29
Seeding sunflowers	May 17	May 19
Seeding corn	May 28	June 3
Seeding flax	May 29	May 30
Seeding fall rye	August 23	August 25
Spring ploughing	April 15	April 28
Ploughing summer-fallow	May 9	June 5
Breaking prairie sod	June 6	June 12
Cutting fall rye	August 11	August 15
Cutting wheat	August 27	September 3
Cutting oats	August 18	September 5
Cutting barley	September 5	September 6
Cutting flax	September 5	September 5
Operating Combine	September 6	September 10
Cutting corn	September 12	September 18
Cutting sunflowers	September 10	September 12
Threshing	August 22	October 18
Fall ploughing	October 13	October 29

ANIMAL HUSBANDRY

HORSES

The total number of horses is now nineteen, of which number fifteen are effective work horses, two are colts two and three years old, and two are geldings that have outlived their period of usefulness and consequently will be disposed of at the first opportunity.

Records of the cost of maintaining these horses during both summer and winter are being kept, but owing to the wide variations in cost of feed from year to year it is thought advisable not to publish any data until an average of several years can be obtained. Early in 1924 feed costs for both grain and roughage were very low. Toward the end of the season there was a marked increase in the value of coarse grains and hay, so it seems certain the cost of feeding horses during the spring and summer of 1925 will be materially higher.

WINTERING WORK HORSES

As usual, at the conclusion of fall work, the horses were turned into the stubble fields, where they obtained their living for nearly two months. Due to the lighter growth of straw this season all crops were cut close, leaving little waste for stock to pick up. Winter also set in earlier than usual with severe cold and heavy snow storms, making it necessary to begin feeding horses by mid-December. The horses are now being fed corn-fodder and oat-straw in a corral and shelter formerly used for steer-feeding. After being turned out the horses are not stabled again until spring work begins.

CATTLE

The herd of Shorthorn cattle now numbers two bulls, eleven cows, four heifers, and four calves. During the year three bull calves were sold at prices ranging from $25 to $40 each. Two calves and one cow were sold for beef.

Without making a detailed statement of costs and returns, it might be mentioned that the five cows that finished their last lactation periods toward the end of 1924 produced the following quantities of milk: (1) 11,042 lbs. (2) 6,342 lbs. (3) 4,354 lbs. (4) 2,481 lbs. and (5) 2,310 lbs. Costs of feed and

pasture for these cows varied from fifty to seventy-four dollars each. The first three cows paid for their feed at current values, and in addition showed a fair margin to cover labour and housing costs. Cows numbered (4) and (5), owing to their small production of milk, did not prove profitable from a milk production point of view, but they are being held as breeders, their progeny to be used for feeding purposes.

Some of the steers fed at Swift Current 1923-24—showing feeding corral and rough straw shelter.

STEER FEEDING EXPERIMENT

Forty head of Hereford steers were purchased in November, 1923. The steers ran on the stubble fields until December 1st, when they were put into feeding corrals. From December to June the feeding ration consisted of corn ensilage, oat straw, and chop consisting of equal parts by weight of oats, barley, rye, cracked and shrunken wheat. At the beginning of the feeding period, each steer was fed daily 25 pounds of corn ensilage, 4 pounds of chop, and as much straw as they would eat. The ensilage was so increased that within a month each steer received 40 pounds a day. After two months' of heavy ensilage feeding, the amount was again reduced so that before the end of the period each steer was receiving 30 pounds a day. The grain ration was gradually increased until a month before the end of the period each steer received 13 pounds a day. This rate was maintained until the steers were sold. The steers did not at any time consume a very large amount of straw and no record was kept of the amount used.

The following summary shows weights, gains, feed consumption, costs and selling value.

FEEDING STEERS

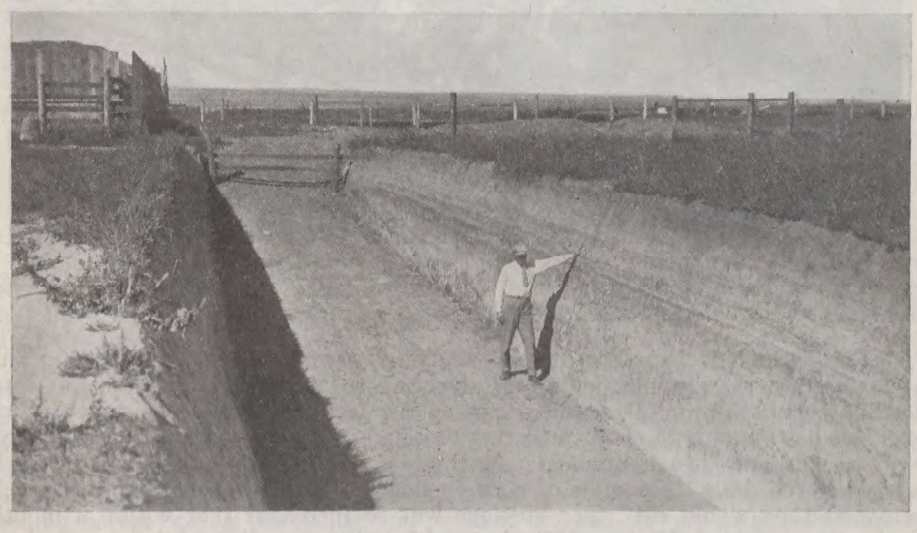
Average initial weight per steer, 822·5 lbs.		
Initial weight of 40 steers, 32,900 lbs. at 5 c		$ 1,645 00
124 tons ensilage consumed at $2.75 per ton		341 00
68,400 lbs. chop consumed at 1 c		684 00
Total cost of steers and feed		$ 2,670 00
Average gain per steer, 278·5 lbs.		
Gain in weight of 40 steers	11,140 lbs.	
Original weight	32,900 lbs.	
Selling weight	44,040 lbs.	
44,040 lbs. at $6.10 per cwt		$ 2,686 44

SWINE

Until November, 1924, no swine had been kept at the Station. During that month, the Dominion Animal Husbandman purchased for us from the Ontario Agricultural College one Tamworth boar and three young Tamworth sows. These are all of good bacon type, and it is the intention to build up a fair-sized herd of Tamworths of as good bacon type as can be developed.

FIELD HUSBANDRY

Both plots and fields are used for field husbandry experiments. While most lines of experimental work can be conducted with greater accuracy and under closer observation on plots than on fields, it is obvious that such work as cost of production studies and farm rotations must be carried out on the larger areas. At this Station, in addition to the two lines of work on fields and



Trench silo ready for filling.

on plots, certain of the cultural experiments, such as Fallow and Stubble Treatments for Wheat, are carried out on both plots and fields. In all cases the comments on the experiments will indicate whether data are from plots or fields.

A number of experiments on soil moisture are also being conducted under controlled and laboratory conditions. Details of the experiments will be found in the report of the Dominion Field Husbandman.

PRODUCTION COSTS OF, AND RETURNS FROM, CROPS IN ROTATIONS AND UNDER VARIOUS CULTURAL SYSTEMS

COST OF PRODUCTION STUDIES

In all field experiments careful record is kept of the cost of producing the crops in rotations and under different cultural treatments. In the section of the report in which the rotation and cultural treatment data are presented there

will also be found cost of production figures. In most cases these data are summarized into a bare statement of the cost per acre. In the case of wheat on fallow in the seven-year rotation a detailed statement is given to show the method of arriving at costs of production. In practically all cases the yield per acre is the most important factor in determining the cost of producing a bushel or other crop unit.

DETAILED STATEMENT, COST OF PRODUCING WHEAT ON FALLOW FIELD 5, SEVEN-YEAR ROTATION

(Area of field—9 acres)

Items of Cost:	
Rent of land, 9 acres for 2 yrs. at $2.40 per acre	$ 43 20
Use of machinery, 9 acres for 2 yrs. at $1 per acre	18 00
Ploughing, 1923, man and 6 horses, 18 hrs. at 90 cents	16 20
Cultivating twice, 1923, man and 6 horses, 11 hrs. at 90 cents	9 90
Seeding, man and 4 horses, 4½ hrs. at 70 cents	3 15
Harrowing, man and 4 horses, 3 hrs. at 70 cents	2 10
Cutting, man and 4 horses, 5 hrs. at 70 cents	3 50
Stooking, man, 10 hrs. at 30 cents	3 00
Threshing, 251 bu. at 15 cents	37 65
Twine, 30 lbs. at 16 cents	4 80
Seed, 11 bu. at 90 cents	9 90
Total cost	$ 151 40
Value of crop, 251 bu. at $1.40	$ 351 40
Cost per acre	16 82
Cost per bushel	0·603

ROTATION SUMMARIES

SEVEN-YEAR ROTATION—9 ACRE FIELDS

Summary of yields, value and profit and loss, per acre

Crop	Yield 1924	Value	Cost of Production	Profit
		$	$	$
1. Corn	5·16 tons	18 06	15 56	2 50
2. Wheat (grass seeded)	26 bushels	36 40	10 73	25 67
3. Hay	1 ton	10 00	5 28	4 72
4. Fallow				
5. Wheat	28 bushels	39 04	16 81	22 23
6. Fallow (fall rye seeded)				
7. Fall rye	33 bushels	33 00	17 32	15 68
Average (for total area in rotation)		19 50	9 38	10 12

Field 1. Corn was grown on land which produced a crop of fall rye in 1923. The rye had been badly damaged by hail and as a consequence the stubble was heavily seeded with rye and weed seeds. It was necessary to burn the stubble and then disk it, previous to spring ploughing, in order to have the land reasonably clean. Even then there was a considerable growth of rye which could not be entirely eradicated without hand hoeing. These items have added materially to the cost of production of corn.

Field 2. The wheat on this field was seeded on corn stubble, following double disking. One-third of the area was seeded with sweet clover at the same time, one-third with brome grass, and one-third with Western rye.

Field 3. The hay crop in this field consisted of sweet clover, brome grass and Western rye, in equal areas, which had been seeded in 1923, using wheat as a nurse crop. Sweet clover gave a fair yield, while brome was poor and Western rye was very poor.

Fields 5 and 7. The costs of fallowing these fields in 1923 have been charged to the 1924 crops.

TWO-YEAR ROTATION—FALLOW, FALL RYE
Summary of yields, value and profit and loss (per acre)

Crop	Yield, 1924	Value	Cost of production	Profit
	Bush.	$	$	$
Fall rye	32	32 00	17 21	14 79
Fallow (cost charged to succeeding crop of rye)				
Average (for total area in rotation)				7 40

The fall rye and fallow rotation covers an area of 14 acres, divided equally between cropped land and fallow. The average return per acre over the fourteen acres is $7.40.

THREE-YEAR ROTATION—FALLOW, WHEAT, WHEAT
Summary of yields, value and profit and loss (per acre)

Crop	Yield, 1924	Value	Cost of production	Profit
	Bush.	$	$	$
Wheat	34·6	48 44	18 86	29 58
Wheat	27·5	38 50	13 22	25 28
Fallow (charged to succeeding crop)				
Average (for total area of rotation)		28 98	10 69	18 29

The three-year rotation (wheat, wheat, fallow) covers an area of 18 acres. The costs of fallowing field one in 1923 are charged to the wheat crop of 1924. The rotation shows an average profit of $18.29 per acre over the whole area.

THREE-YEAR ROTATION—FALLOW, WHEAT, OATS
Summary of yields, value and profit and loss (per acre)

Crop	Yield, 1924	Value	Cost of production	Profit
	Bush.	$	$	$
Wheat	27¼	38 15	16 41	21 74
Oats	38	19 00	9 40	9 60
Fallow (cost charged to succeeding crop)				
Average (for total area of rotation)		19 05	8 60	10 45

The three-year rotation (wheat, oats, fallow) was grown on an area of 36 acres. The costs of fallowing in 1923 are charged to the 1924 wheat crop. The average profit per acre, over the 36 acres, is $10.45.

TWO-YEAR ROTATION—FALLOW, WHEAT
Summary of yields, value and profit and loss (per acre)

Crop	Yield, 1924	Value	Cost of production	Profit
	Bush.	$	$	$
Wheat	33	46 20	18 21	27 99
Fallow (cost charged to succeeding crop of wheat)				
Average (for total area of rotation)				14 00

The two-year rotation (wheat and fallow) has an area of 10 acres, which are divided equally between cropped land and fallow. The average profit per acre over the whole area is $14.

SUMMARIES OF CULTURAL SYSTEMS

YIELDS AND COSTS OF PRODUCTION OF WHEAT ON PACKED AND UNPACKED LAND

Treatment	Packer used	Yield	Value per acre	Cost per acre	Profit per acre
		Bu.	$ cts.	$ cts.	$ cts.
Spring-ploughed, harrowed, packed, seeded and packed	Cultipacker	29·5	41 30	13 85	27 45
Spring-ploughed, harrowed and seeded	No packer	27·5	38 50	12 68	25 82
Spring-ploughed, harrowed, packed, seeded and packed	Surface packer	25·5	35 70	13 13	22 57
Fallow harrowed and packed after ploughing, cultivated, seeded and packed	Cultipacker	36·0	50 40	19 35	31 05
Fallow harrowed after ploughing, cultivated and seeded	No packer	34·0	47 60	18 18	29 42
Fallow harrowed and packed after ploughing, cultivated, seeded and packed	Surface packer	34·0	47 60	19 05	28 55

This experiment is conducted on an area of 18 acres, in a three-year rotation of fallow, wheat, wheat. Each field of the rotation is divided into three plots; two are packed and one not packed. Apart from the use of the packers, all fields, both fallow and stubble, are given uniform standard treatments.

YIELDS AND COSTS OF PRODUCTION OF WHEAT FOLLOWING DIFFERENT STUBBLE TREATMENTS

Field	Crop	Stubble Treatment	Yield per acre	Value	Cost of product'n	Profit
			Bu.	$ cts.	$ cts.	$ cts.
1	Wheat	Fall-ploughed, spring-harrowed, seeded and harrowed	26·3	36 82	12 28	24 54
2	Wheat	Fall-disked, spring-ploughed, harrowed, seeded and harrowed	33·3	46 62	14 27	32 35
3	Wheat	Spring-ploughed, harrowed, seeded and harrowed	30·0	42 00	12 84	29 16
4	Wheat	Spring-burned, ploughed, harrowed, seeded and harrowed	33·16	46 42	13 21	33 21
5	Wheat	Spring-burned, disked, seeded and harrowed	31·8	44 52	11 58	32 94
6	Wheat	Spring-disked, seeded and harrowed	27·0	37 80	10 95	26 85
7	Wheat	Preceding crop cut by Combine, spring-burned and seeded	23·7	33 18	9 81	23 37
8	Wheat	Preceding crop cut by Combine, spring-burned, disked and seeded	26·3	36 82	10 90	25 92

This experiment covers a total area of 72 acres, exclusive of roads and divisions. A three-year rotation of fallow, wheat, wheat, is followed. A uniform standard treatment is given in the fallow year, while the second-crop land is divided into eight plots of three acres each, which are given the treatments indicated in the table.

In comparing yields from these fields with those from other rotations it should be borne in mind that the best land on the Farm is used in this experiment.

YIELDS AND COSTS OF PRODUCTION OF WHEAT

Following Different Fallow Treatments

Field	Crop	Fallow Treatment	Yield per acre	Value	Cost of Production	Profit
			Bush.	$	$	$
1	Wheat..	Fall-ploughed, cultivated only during fallow year	21·0	29 40	26 14	13 26
2	" ..	Fall-disked, cultivated only during fallow year	23·75	33 25	15 29	17 96
3	" ..	Cultivated only during fallow year	30·5	42 70	15 77	26 93
4	" ..	Cultivated till July 15, ploughed	32·0	44 80	17 12	27 68
5	" ..	Ploughed 6 inches before June 15, cultivated as required	27·25	38 15	16 41	21 74
6	" ..	Ploughed 6 inches before June 15, cultivated as required. (Previous crop seeded with sweet clover 10 lbs. per acre)	25·0	35 00	16 07	18 93

This experiment is conducted in a three-year rotation on a total area of 36 acres. Each field of the rotation is subdivided into six plots of two acres each. In the fallow year each of the two-acre plots receives the treatment indicated in the preceding table. The purpose of the experiment is to determine the influence of various treatments on yields of wheat, cost of production, and the effectiveness of the treatments in controlling weeds.

CULTURAL TESTS

STUBBLE TREATMENTS FOR WHEAT PRODUCTION

Treatment	Freedom from weeds on Sept. 15th	Height of crop when cut	Yield per acre
	100 points	Inches	Bush.
Fall-plough 4 inches, spring-harrow, seed, harrow	48	36	37·58
Fall-disc, spring-plough, harrow, seed, harrow	54	35	35·29
Spring-plough 4 inches, harrow, seed, harrow	56	33	34·41
Spring-burn stubble, disk, seed, harrow	96	32	35·72
Burn stubble, spring-plough 4 inches, harrow, seed, harrow	74	33	32·49
Spring-disk stubble, seed, harrow	48	32	35·74
Spring-burn stubble, seed (no treatment)	66	34	33·66
Seed in stubble without treatment	18	31	26·57
Spring-burn, plough 7 inches, harrow, seed, harrow	72	31	35·15
Spring-burn, plough 4 inches, subsoil 6 inches, harrow, seed, harrow	76	31	36·61
Fall-burn, spring-plough 4 inches, harrow, seed, harrow	76	31	35·37
Fall-burn, spring-disc, seed, harrow	78	32	34·92
Spring-burn, cultivate, seed	60	31	34·78

This experiment is laid down on $\frac{1}{50}$-acre plots triplicated in a three-year rotation of fallow, wheat, wheat. During the fallow year and for the first wheat crop all plots receive a uniform standard treatment. For the second wheat crop the different plots receive the various treatments indicated in the accompanying table. For this crop all other conditions, such as variety, rate and date of seeding, are kept as nearly uniform as possible. Careful observations are made of the effect of the different treatments on the growth of weeds. An effort is being made to give a quantitative statement of weed growth by using the figure 100 to indicate practical freedom from weeds. Since the yields given are for one year only, no comment need be made on the outcome of the experiment, nor should any definite conclusions be drawn as to the relative merits of the treatments.

CONTINUOUS WHEAT

Crop*	Date mature	Height at harvest	Grain per acre
Marquis Wheat		Inches	Bush.
Sown continuously on disked stubble	Aug. 22	24	10·41
Sown continuously on spring ploughing	Aug. 22	24	11·97

*NOTE.—Sown May 17th on 1/50-acre plots in duplicate; ripened Aug. 22nd.

On July 23 wheat sown on disked stubble was 20 inches high, badly tip-burned, thin, and very weedy (chiefly Russian thistle). Wheat sown on spring ploughed wheat stubble was 25 inches high, slightly tip-burned, gave prospects for a fair crop. Few Russian thistles.

TWO-YEAR ROTATION—WHEAT—FALLOW

Crop*	Date mature	Height at harvest	Grain per acre
		Inches	Bush.
Wheat	Aug. 28	32	29·15

*NOTE.—Sown May 17th on 1/50-acre plots, duplicated; ripened Aug. 28th.

On July 23 wheat sown on fallow was 28 inches high; no tip-burning; free of weeds except a few Russian thistles.

WHEAT FOLLOWING FALLOW AND VARIOUS FALLOW SUBSTITUTES

Crop 1924	Previous Crop	Yield of previous crop			1924 crop		Remarks
		Fodder per acre Green Weight	Fodder per acre Dry Weight	Grain per acre	Height at harvest	Grain per acre	
		lbs	lbs	bush.	inches	bush.	
Wheat	Potatoes, Rows 42" x 18".	15666	.....	.....	30	30·40	2% tip-burn'd
"	Sudan grass, doub. rows.	9413	2374	.....	27	25·34	25% "
"	Sunflowers, sing. rows...	33400	4524	.....	23	14·99	35% "
"	Fallow	.....	.....	.....	34	36·24	.....
"	Corn, single rows	18800	3365	.....	30	29·22	.....
"	Oats, triple rows	.....	.....	53·2	25	19·53	20% tip-burn'd
"	Oats, double rows	.....	.....	47·5	27	24·78	5% "
"	Oats, ½ bush. per acre	.....	.....	60·6	24	16·38	20% "
"	Wheat, double rows	.....	.....	8·3	33	33·53	.....
"	Oats for green feed	13953	.....	.....	24	17·49	40% tip-burn'd
"	Barley, double rows	.....	.....	9·3	28	27·28	40% "

This project is carried out on 1/50-acre plots triplicated, in a two-year rotation of fallow or fallow substitute alternating with wheat. Yields of both fallow substitutes and wheat following them are kept. Records are kept of the amount and kind of cultivation given under each treatment and observations are made as to the weed growth on each plot. In comparing the 1924 wheat yields from the various plots, the reader should at the same time note the yield of the preceding crop. Between the 15th and 20th of July, 1924, it was observed that the wheat on practically all plots which had produced a heavy yield of any crop in 1923 showed obvious signs of damage from drought. One objection to

some of the fallow substitutes, particularly barley and oats, is the fact that these crops volunteer in the subsequent wheat crop, much to the detriment of the quality of the latter.

SEQUENCE OF CROPS

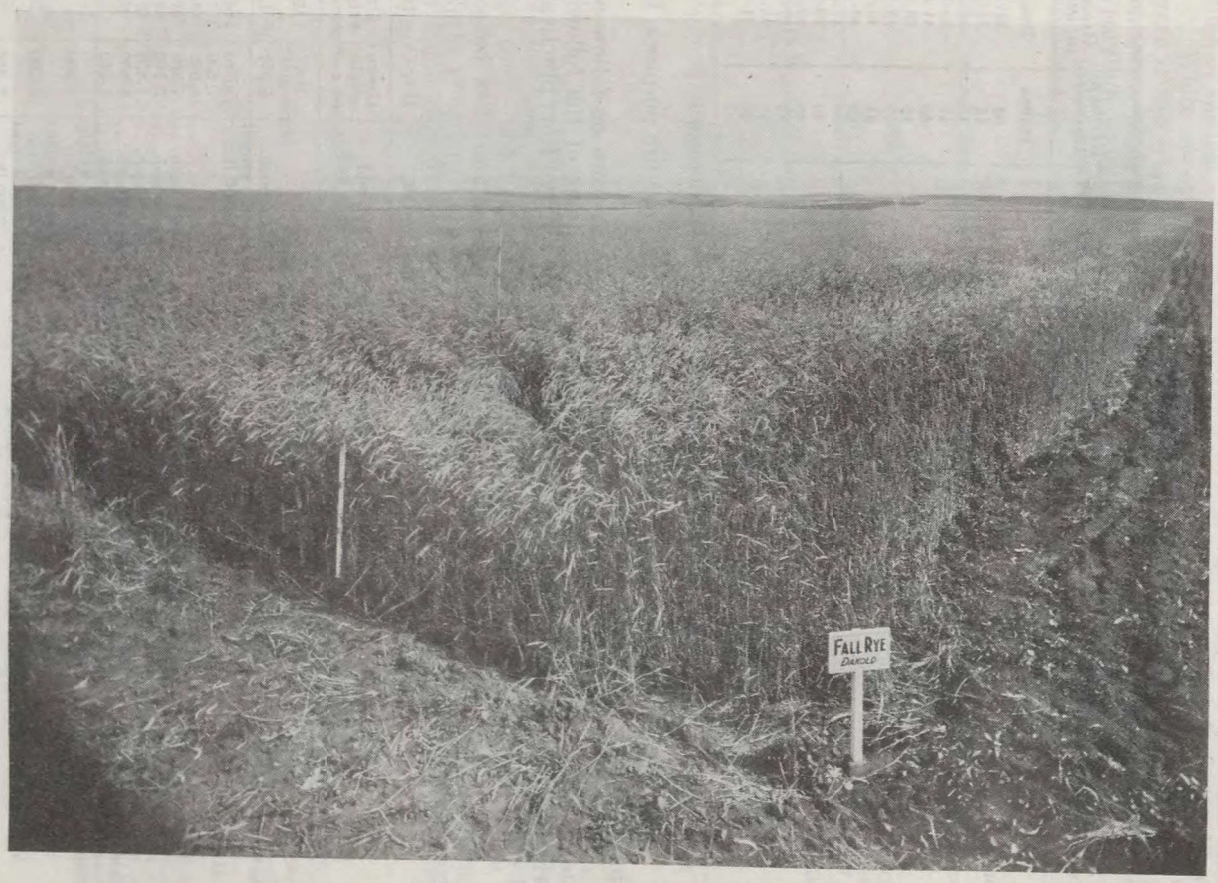
1924 Crop	Preceding Crop	Fodder Crop, 1924			Grain Crop, 1924	
		Height	Green Weight	Dry Weight	Height	Yield per acre
		inches	lbs	lbs	inches	bush.
Oats	Wheat				27	11·39
Oats	Fallow				37	68·73
Oats	Millet				30	27·56
Oats	Corn				31	36·03
Oats	Hubam				28	16·91
Oats	Oats				24	14·70
Hubam	Wheat	40	7900	2743		
Hubam	Fallow	40	11600	2153		
Hubam	Millet	40	4450	1584		
Hubam	Corn	40	7000	1705		
Hubam	Hubam	40	3250	817		
Hubam	Oats	40	3750	1201		
Corn	Wheat	58	11094	2019		
Corn	Fallow	51	11868	2159		
Corn	Millet	53	9374	1706		
Corn	Corn	52	9804	2150		
Corn	Hubam	54	10320	1878		
Corn	Oats	52	6278	1142		
Millet	Wheat	18	7350	3059		
Millet	Fallow	18	10150	4515		
Millet	Millet	18	5050	1628		
Millet	Corn	18	9500	3912		
Millet	Hubam	18	6200	2587		
Millet	Oats	18	4200	2021		
Wheat	Wheat				24	11·45
Wheat	Fallow				32	30·83
Wheat	Millet				20	13·12
Wheat	Corn				28	23·33
Wheat	Hubam				20	9·16
Wheat	Oats				18	7·9

This experiment is carried out on duplicate $\frac{1}{50}$-acre plots. The table is arranged to show relative yields of various crops sown on fallow as compared with the same crops grown on land which had produced either grain, corn, clover, or an annual hay crop the year previous. It will be noticed that in every case the crops grown on fallow have produced the heaviest yields.

PLACE IN ROTATION TO SEED FALL RYE

1/50-acre plots. Now triplicated

Rotation	Cultural Method	Date Ripe	Height when cut	Yield Fall Rye per acre
			Inches	Bus.
Oats, fallow, fall rye	Seed on fallow	July 28	47	35·71
Fallow, barley, fall rye	Seed on ploughed barley stubble	Aug. 2	46	20·08
Fallow and seed down, hay and break, fall rye	Seed on ploughed sod	July 24	45	20·53
Fallow, wheat, fall rye	Seed on wheat stubble	Aug. 14	42	10·26
Oats, fallow, fall rye	Seed on fallow	July 28	47	42·85
Fallow, oats and fall rye seeded together, fall rye	Seed with oats	Aug. 2	51	17·41
Oats, sunflowers, fall rye	Seed after sunflowers cut	Aug. 14	46	16·96
Oats, fallow, fall rye	Seed on fallow	July 28	47	42·85
Oats, corn, fall rye	Seed after corn cut	Aug. 14	43	32·58
Oats, oats and fall rye seeded one month later, fall rye	Seed fall rye one month after oats sown	Aug. 14	41	8·48
Oats, corn, fall rye	Seed between rows of corn	Aug. 14	43	30·35
Oats, sunflowers, fall rye	Seed between rows of sunflowers	Aug. 14	45	24·55



Fall rye on fallow. Yield, 33 bushels per acre.

Like most other crops grown on fallow this year, fall rye has given considerably larger yields as compared with fall rye sown with or after another crop. Fall rye grown on fallow was very free of weeds. Fall rye seeded on wheat stubble was very weedy, being the worst of the series in this respect as well as lowest in yield of grain.

RATES AND DATES OF SEEDING FALL RYE

Rate sown. Bus. per acre	Date sown 1923	Date of Ripening	Height at Harvest	Yield of Grain per acre
			Inches	Bus.
1 Bushel	Sept. 15th	Aug. 3rd	50	34·33
1 "	Aug. 1st	" 2nd	45	34·30
¾ "	" 15th	" 2nd	45	35·41
1 "	" 15th	" 3rd	47	39·57
1¼ "	" 15th	" 2nd	45	41·51
1½ "	" 15th	" 2nd	45	38·24
¾ "	Sept. 1st	" 3rd	49	45·53
1 "	" 1st	" 3rd	51	43·12
1¼ "	" 1st	" 3rd	49	46·57
1½ "	" 1st	" 3rd	48	47·31
1 "	Oct. 1st	" 7th	49	30·20
¾ "	July 15th	" 1st	46	29·30
1 "	" 15th	" 1st	43	27·97
1¼ "	" 15th	" 1st	43	25·74
1½ "	" 15th	" 1st	46	31·66

NOTE.—Sown on 1/50 acre plots, triplicated—two-year rotation—Fall rye and fallow.

All earliest sowings produced excellent growth for fall pasture purposes, but apparently at the expense of yield of grain.

The fall of 1923 was fairly dry, but the fall rye being sown on fallow was able to stand the condition. Favourable moisture conditions of the following spring and remainder of the season produced a good crop of rye from practically all rates and dates of seeding.

PLACE IN ROTATION TO SEED GRASSES AND LEGUMES

Hay Crop	Method used	Nurse Crop 1923		Hay Crop 1924	
		Kind	Yield per acre	Green weight per acre	Dry weight per acre
				lbs	lbs
Brome and Western rye	Seed with 1st year wheat	Wheat	24·16 bush.	4,850	1,892
" "	Seed between rows of corn	Corn	Green weight 15,800 lbs.	Failed	Failed
" "	Seed alone on fallow	None		7,550	3,104
" "	Seed alone on spring ploughing	None		4,950	2,089
" "	Seed with 1st year wheat	Wheat	24·33 bush.	4,850	1,732
" "	Seed in spring on fall rye	Fall rye	8·9 bush.	7,200	2,548
" "	Seed with 2nd year wheat	Wheat	12·83 bush.	4,850	2,139
White sweet clover	Seed with 1st year wheat	Wheat	25·16 bush.	9,850	2,667
Brome and Western rye	Seed with 1st year wheat	Wheat	27·49 bush.	5,550	2,258
White sweet clover	Seed between rows of corn	Corn	Green weight 15,800 lbs.	1,000	233
" "	Seed alone on fallow	None	Green weight 18,680 lbs.	8,700	2,384
" "	Seed alone on spring-ploughing	None	Green weight 7,800 lbs.	7,350	2,095
Brome and Western rye	Seed with 1st year wheat	Wheat	23·83 bush.	5,700	2,229
White sweet clover	Seed in spring on fallow	Fall rye	7·3 bush.	13,350	3,312
" "	Seed with 2nd year wheat	Wheat	10·83 bush.	8,050	2,254
Brome and Western rye	Seed with 1st year wheat	Wheat	24·83 bush.	4,550	1,663

Grasses and legumes sown with nurse crops in 1923 have generally given better yields of hay than those sown with nurse crops in the previous year.

Brome and Western rye sown between rows of corn has failed for the second time. Another experiment is now under way to determine the proper time of sowing.

White sweet clover sown alone on fallow gave excellent yields the same year it was sown. Smaller yields were obtained from white sweet clover sown on spring-ploughed wheat-stubble.

Both white sweet clover and a mixture of Brome and Western rye grown with fall rye gave excellent yields of hay, but it will be observed that the nurse crop was thin and the yield of grain light.

DATES OF SEEDING CORN

Variety	Date Sown	Average of Quadruplicates				
		Date Emerged	Height	Stage Cut	Green weight per acre	Dry weight per acre
			Inches		lbs.	lbs.
North Western Dent	May 1	May 24	50	Dough	13,717	2,881
" "	" 10	" 26	52	Dough	14,534	2,499
" "	" 20	June 2	52	Late milk	16,684	3,063
" "	" 30	" 10	53	Milk	16,053	2,753
" "	June 9	" 19	50	Early milk	13,631	2,502
Improved Squaw	May 1	May 24	32	42% ripe	5,203	1,268
" "	" 10	" 26	32	29% ripe	6,234	1,481
" "	" 20	June 2	32	28% ripe	6,364	1,463
" "	" 30	" 10	35	9% ripe	8,557	1,840
" "	June 9	" 19	35	Dough	8,231	1,461

The dates of seeding project with corn was carried out in quadruplicate rows 72½ feet long; 42 inches apart with plants spaced at intervals of ten inches in the row. The first seeding required twenty-three days to emerge, while the second and third seedings required only sixteen days. The third seeding of North Western Dent produced the largest yield of fodder, while the first seeding of squaw corn gave the largest percentage of ripe ears.

DATES OF PLANTING SUNFLOWERS

Date sown	Date emerged	Height at harvest	Stage when cut	Green weight per acre	Dry weight per acre
		Inches		Lbs.	Lbs.
May 3	May 20	80	Late bloom	29,541	5,648
May 10	May 22	78	Late bloom	25,714	4,292
May 20	June 2	77	Early bloom	23,306	4,113
May 30	June 10	74	Early bloom	21,070	3,969
June 9	June 19	60	Budding	14,233	2,596

The dates for seeding sunflowers project is carried out in quadruplicate rows 72½ feet long, 42 inches apart, with plants spaced at intervals of ten inches in the row. While the early seedings lead all later ones throughout the season and in final yield, the difference was more marked during June and early July. This period was cool and damp, and favoured the growth of this crop.

The heaviest yield was secured from sunflowers planted the first of May.

TESTS OF FARM MACHINERY

THE STUBBLE-BURNER

Investigation of the use of the stubble-burner was continued in both the spring and the fall seasons of 1924. The report on the stubble-burner for 1923 was quite complete, and, in view of the fact that results in 1924 were very similar to those of 1923, it will be unnecessary to repeat what has been previously reported.

In addition to making general observations on the use of the machine, an effort was made during the past season to get some information on the effect of the burner on seeds which were lying on or immediately under the surface of the ground.

In January our machine was returned to the manufacturer (The Canadian Farm Implement Company of Medicine Hat) for the purpose of replacing some parts upon which improvements have been made since the first machines were built.

Early in the spring (as soon as stubble was fit to burn) the burner was used on a weedy stubble-field on which wheat had been grown in the previous year. The weeds consisted of Russian Thistle, Tumbling Mustard, Wild Buckwheat, and French weed. There was also some wheat shelled from the previous crop lying on the ground. After the burner had passed, charred seeds were collected and subjected to a germination test. It was found that of the seeds collected about 80 per cent had been killed by the fire. The large seeds were more readily killed than the small ones. Thermometers were placed in the path of the burner and covered with soil, from a quarter of an inch to an inch in depth. It was found that the temperatures rose only from one to three degrees.

In October another test was made on a field of the same type. On this occasion two different burners were used. The second one was loaned for the

Stubble-burner at work.

purpose by the Western Implement Company of Regina. Records of fuel consumption and acres covered per hour were kept. In addition, twenty samples of soil before burning and twenty after burning were taken on the land covered by each burner. The soil was sampled on square-foot areas and as nearly as possible to a depth of one-half inch. The burned and unburned samples were taken as close together as possible and each series of twenty covered at regular intervals a distance of a sixth of a mile. This system of sampling was adopted to make the work accurate and representative. The samples were dried, each was thoroughly mixed and the same quantity weighed out from each. Germination tests were then made of the weighed samples. Not knowing the amount of seeds in the soil we made an error, in that the samples were too large, containing so many seeds that an accurate and complete count was impossible. However, some of the worst and some of the best samples were counted and the whole eighty were looked over carefully. In those that were counted the number of seeds which grew varied from 150 to 1,440 per square foot to a depth of half an inch. Only one difference could be observed between burned and unburned samples, and that was that the burned samples showed practically no viable

wheat kernels, while the unburned samples showed from none to five viable wheat kernels per square foot. As to the growth of French weed (the chief weed on the land) there was no observable difference between the burned and the unburned, nor was there any difference between the two machines in respect to the number of seeds which grew after burning. This test has convinced us that seeds which are even slightly covered with soil are not injured by the burning of the stubble above them.

As to fuel consumption it was found that the Regina machine burned approximately five gallons of fuel oil per acre, and the Medicine Hat machine used over nine gallons per acre. The former worked under a pressure of 15 pounds per square inch, and the latter under about 150 pounds per square inch. The Regina machine covered slightly over, and the Medicine Hat machine slightly under, two acres per hour. It should be pointed out that burning conditions were not favourable and all the land was covered by the burners, so that the fuel consumption was probably as high as it ever would be under any circumstances where burning should be attempted.

Both machines made a clean job of burning stubble and trash where the fire would not run a foot beyond the path of the burner.

Summing up our experience with stubble-burners, we would mention the following for the consideration of the farmer who contemplates the purchase of one of these machines:—

1. The machine is costly to buy ($250 to $300).

2. Where all the land must be covered it is costly to operate (four to nine gallons of oil, costing $1 to $2.25 per acre).

3. The burner will not destroy seeds, insect eggs or larvæ which are covered by even a small amount of soil.

4. The best the burner will do is to burn trash and stubble from the surface so that the land can be surface-worked without ploughing.

5. Where burning conditions are good, the cost of operating per acre may be reduced to a low point, but as burning conditions improve it becomes easier to burn by some means other than the stubble-burner.

THE COMBINE

In 1924 the Massey-Harris combine harvested 100 acres of Marquis wheat, 60 acres of which were on fallow and the remainder second-year wheat. The crops varied from a clean crop yielding 33·6 bushels per acre to a very weedy, light yield of 11·5 bushels per acre. The machine worked well throughout, there being very few delays owing to mechanical troubles. In the poorer crops the ripe weed seeds were separated from the grain. However, owing to late rains, there was a considerable quantity of green weeds in the ripe crop, and a portion of green weeds appeared with the threshed grain, giving it a dirty and tough appearance. In the bin the green seeds dried up and the grain had the normal appearance of wheat containing a percentage of weed seed. Harvesting with the combine was ten days later than with the binder.

The following shows the cost of harvesting wheat with the combine:—

(Area of field—6 acres.)

Interest, depreciation and repairs, 6 acres at $1.15 per acre	$ 6 90
Man and 8 horses, 2 hours at $1.10	2 20
Operator, 2 hours at $1	2 00
Man and 2 horses hauling grain, 2 hours at 50 cents	1 00
Gasoline, 6 gals. at 30 cents	1 80
Grease, oil, etc.	35
Total for 6 acres	$ 14 25

Yield for 6 acres, 201·6 bushels.
Yield per acre, 33·6 bushels.
Cost per acre, $2.39.
Cost per bushel, 7 cents.

Owing to the high yield, the cost per bushel is low. In the case of a crop yielding 10 bushels per acre, the cost per bushel would be approximately 24 cents.

During the season four combines were purchased and operated in the district. Summarized accounts of the reports which the owners furnished the Station are as follows:—

Messrs. Kinnon Bros., of Hughton, Sask., operating a 16-foot Case combine drawn by a 15-30 h.p. Hart-Parr tractor, cut 450 acres of wheat in fourteen days. The best day's work was 40 acres. Outside of depreciation, the estimated cost of operation was $1 per acre. The average yield was 4½ bushels per acre. No comparison between combine and binder could be made because the crop cut by the combine was too short for the binder. The grain from the combine kept without loss, and a portion which was sent directly to the elevator was special binned. The stubble-crop cut by the combine was the only stubble-crop cut in Messrs. Kinnon's district.

Mr. F. B. Lynch, of Forgan, Sask., operated a 16-foot Case combine, drawn by a 15-30 I.H.C. tractor, for a period of ten days. The best day's work was 30 acres. Outside of depreciation, the estimated cost of operation was $1.50 per acre. The yield was 15 bushels per acre, and the cost of harvesting per bushel was 10 cents. Objection was raised by the grain buyers to some grain, sent directly to the elevator, which contained a quantity of green weed-seeds. The combine was started on September 2, and binders on August 25. The estimated saving per bushel effected by the combine over the binder, stooking and threshing, was 15 cents.

Mr. M. M. Hess, of Hughton, Sask., operated a 16-foot Case combine, drawn by a 15-30 H.P. tractor. Four hundred and twenty acres of wheat, 200 acres of oats, and 160 acres of flax were cut. No time was lost for repairs, but two weeks were lost due to weather. The best day's work was 45 acres. Outside of depreciation, wheat yielding 23½ bushels per acre cost 5 cents per bushel. and $1.18 per acre. The estimated saving per bushel compared with binder, stooking, and threshing was 18 cents per bushel. The combine commenced operation on September 2, and the binders were used on August 24. The grain from the combine kept without loss. A portion sent to the elevators was accepted without any objection.

Mr. Lars Hendrickson, of Swift Current, operated an I.H.C. combine, and was very well satisfied by the work done.

On the Station a small field was harvested by the combine on September 6. The grain appeared to be in good condition, but when the bin was opened two months later the grain was bin-burnt. Too much emphasis can hardly be placed on the necessity of deferring combine operations until there is absolute certainty that the grain is hard enough to keep. This of course exposes the crop to damage from wind, rain or snow, and thereby constitutes the greatest objection to the general adoption of the combine in this district.

WEED CONTROL AND SOIL DRIFTING

In the spring of 1924 a quarter section of land lying three miles southeast of the Station was rented for the purpose of studying the relation between cultural methods and the control of weeds and soil drifting on land which has been under cultivation for some years.

The land we have rented is admirably suited to the purpose. The soil is a good chocolate clay loam, representative of a large area in southwestern Saskatchewan. It was broken in 1906, since which time it has been continuously under a rotation of fallow, wheat, wheat. It has become infested with weeds such as Russian thistle, tumbling mustard, wild buckwheat, and French weed, all of which are common in the district.

A variety of treatments, both of fallow and stubble, for wheat growing have been laid out. A rotation containing corn, rye and grass, part manured and part not manured, is now established. The work in 1924 has been largely of a preliminary nature, but the various treatments and rotations are now established so that comparable results may be obtained from them in 1925.

HORTICULTURE

VEGETABLE GARDENING

The season of 1924 was very unfavourable for vegetable growing. Until mid-July the temperatures were much below normal. The rainfall was below the average and at times high winds prevailed. Owing to lack of shelter, the garden suffered more from the wind than from any other cause. Some vegetables, particularly cabbage, peas, and potatoes, did well, but most others produced a small crop of poor quality.

Detailed reports of only a few horticural projects are published.

BEETS—VARIETY TEST

Variety	Source of seed	Yield per 30-ft. row	Remarks
		Lbs.	
Detroit Dark Red	McDonald Seed Co.	73	Medium size, round, good table beet.
Detroit Dark Red	C. E. F.	64	Medium size, round, good table beet.
Market King	Graham Seed Co.	42	Medium size, long.

Sown 19th May in 30-ft. rows and thinned to from 3 in. to 4 in. apart in the row.

CARROTS—DIFFERENT DATES OF SEEDING

Date sown	Average yield of duplicates per 30-ft. row	Remarks
	Lbs.	
May 14	16	33% very small.
May 27	17	33% very small.
June 3	17	33% very small.
June 13	12	55% very small.
June 23	5	80% very small.

Chantenay was the variety used in test.
Largest roots of earliest sowings were 6 in. long.
Largest roots of latest sowings were 3 in. long.
The two earliest sowings were ready to use August 20th.

PARSNIPS—DIFFERENT DATES OF SEEDING

Date sown	Average size of roots	Average yield of duplicates per 30 ft. row
	Inches	Lbs.
May 14	10 x 2½	16
May 27	10 x 2	10
June 3	10 x 1½	9
June 13	10 x 1½	9
June 23	10 x 1	6½

Hollow Crown was the variety used in test.
Sown in 30-ft. rows, spaced 30 in. by 3 in. to 4 in.
Roots were very difficult to pull; plough needed to loosen soil at side of roots before pulling.
First sowing was ready to use 17th September; the remainder, with exception of second sowing, were hardly worth pulling, even in October.

BEANS—VARIETY TEST

Eighteen varieties were sown in duplicate in 30-foot rows on 29th May. The entire crop, however, was very poor. The best yield was 9 pounds per 30-foot row. The varieties that approached nearest this yield were:—

Masterpiece—C.E.F. No. 2746.
Bountiful Green Bush—C.E.F. No. 2825.
Extra Early Valentine—C.E.F. No. 1479.
Refugee—C.E.F. 1631.

PEAS—VARIETY TEST

Variety	Source	Ready for use	Length vine	Length pod	Peas per pod	Yield of Green pods per 30-ft. row
			Inches	Inches		Lb.
English Wonder	C. E. F.	July 10	12	2	5	9
Thomas Laxton	McDonald	" 18	24	2½	6	18
Stratagem	Graham	Aug. 9	24	3	5	2
Advances	C. E. F.	July 29	24	2½	5	9
American Wonder "B"	"	" 18	18	2½	4	10
McLean Advancer—Gregory Surprise	"	" 29	20	2	5	9
Gradus—Am. Wonder	"	" 29	36	2½	6	9½
Gradus	"	" 28	36	3¼	6	7½
Danby Stratagem	"	" 28	18	4	8	11½
English Wonder	"	" 18	12	2	6	10¾
Gregory Surprise and English Wonder	"	" 19	30	2	4	9
Laxton Progress	"	" 19	12	4	6	5
Lincoln	Morse, C. E. F.	" 19	24	3½	7	11¾
Lincoln	Invermere, C. E. F.	" 20	24	3	6	10½
Seedling No. 1	" "	" 28	28	3	8	10¾
Seedling No. 2	" "	" 27	18	2½	6	6¾
Seedling No. 3	" "	" 27	30	4	8	5¾
Seedling No. 6	" "	" 21	30	2	6	7½
Seedling No. 8	" "	" 29	14	2	4	6

All sown May 3rd, 30-ft. rows, 30 in. apart and 2 in. apart in row.

POTATOES—VARIETY TESTS

Variety	Percentage marketable	Average size of tubers	Yield per acre	Remarks
			bus.	
Extra Ey. Eureka	80	Medium	473	White, considerable top.
Epicure	95	Fairly large	551	White, considerable top.
Houghton Rose	80	Large	532	Rose, little rough.
Country Gentleman	90	Large	358	Rose, little rough.
Irish Cobbler	80	Medium	435	White, fairly smooth.
Burnaby Mammoth	85	Large	493	Red, rough, considerable top.
Wee McGregor	90	Large	474	White, fairly smooth.
Early Hebron	80	Large	493	Rose, considerable top.
Carter Favourite	78	Medium	454	White, many small.
American Wonder	85	Large	532	White, rough, considerable top.
Duke of York	65	Small	348	Russet, early, very smooth, many small.
King Edward	70	Small to medium	454	White with rose tint, smooth.
Ashleaf Kidney	65	Medium	532	White, many small.
Early Ohio	80	Medium	358	Rose, fairly smooth.
Duchess of Norfolk	70	Medium	416	White, considerable top, many small.

Planted May 20. Duke of York and Early Ohio earliest varieties. Duchess of Norfolk latest. Crop, on the whole, was good.

DIFFERENT DATES OF PLANTING POTATOES TO OBTAIN BEST YIELDS

Date planted	Average of six 30-ft. rows
	lb.
May 14	26
May 27	17
June 3	22
June 13	10

Planted in rows 30 inches apart; spaced 18 inches apart in row.

CABBAGE—DIFFERENT DATES OF SOWING FOR STORAGE PURPOSES

Variety	Date sown	Weight of 10 heads	Remarks
		lb.	
Copenhagen Market	May 14	72·6	Large, splitting, too hard.
do	May 27	62·3	Large, splitting, too hard.
do	June 3	57·0	Medium size, a few too hard.
do	June 13	58·3	Small, but good for storage.
do	June 23	.....	Much too small, not marketable.
Ex. Am. Dan. Ballhead	May 14	89·2	Fair size, hard.
do	May 27	65·4	Fair size, hard.
do	June 3	58·3	Small, but good for storing.
do	June 13	46·3	Very small.
do	June 23	.....	Did not head up well.

All planted in 30 foot rows, duplicated, spaced 30 inches by 18 inches.

TOMATOES—VARIETY TEST

Twenty-one varieties tested. Seeded in hotbed March 29. Transplanted to flats April 10 to April 14. Planted out June 17. They were staked and pruned to one or two stems per plant. Season too cool for tomatoes. A few ripe tomatoes were secured from the following varieties: John Baer, Bonny Best, Burbank, Earliest Market, and Alacrity. Burbank was highest yielder. Bonny Best, Danish Export, and Alacrity were next, in the order mentioned.

GROUNDS

The planting of trees and shrubs for windbreaks and for decorative purposes has been continued. The shelter-belts on the north and west sides of the buildings have been filled out chiefly with ash, elm, evergreens, and caragana. A considerable number of ornamental shrubs were planted at various points about the buildings.

Annual flowers, comprising over sixty varieties, were planted about the grounds. The season, on the whole, was favourable for the growth of annual flowers, so that there was an abundance of bloom during the months of July, August and early September. Sweet peas did particularly well. Many of the varieties continued to bloom from early July until the end of September.

About two acres were seeded down for lawn. The seed mixture consisted of Kentucky blue grass and white Dutch clover. Some trouble was experienced from a rank growth of weeds before the grass got started. Frequent clipping with the mower kept the weeds down fairly well, and at the end of the season a good, thick stand of grass was well established.

CEREALS

The work with cereals consists of testing strains and varieties of spring and winter wheat, spring and winter rye, oats, barley, peas, flax, and some mixtures for yield, earliness, and general adaptability. Two general methods of variety testing are in use; namely, rod rows and fiftieth-acre plots. In the rod-row work all varieties are sown in three-row plots one rod in length, replicated four times. At harvest time only the centre row of the three is used for record purposes. A large number of strains and varieties are given preliminary trial in the rod rows.

A smaller number of the better-known varieties are grown in the fiftieth-acre plots. All plots are triplicated and borders are removed prior to harvest time. The following tables present the data secured from the cereal plots in 1924. These figures should be used with even more caution than is usual with single-year data, because, owing to the drought in July, inequalities of soil were brought to light which probably would not have been noticed in a year of abundant rainfall.

COMMON SPRING WHEATS GROWN ON CORN-STUBBLE LAND

1/50-acre plots—triplicated. All sown May 13 on spring-disked and harrowed corn stubble.

Variety	Date Ripe	Length Straw	Average Yield of Triplicates		Remarks
			Per plot	Per acre	
		inches	lbs.	bush.	
Red Fife	Aug. 31	29	25·58	21·17	
Ruby	" 22	29	25·16	21·04	3% tip-burned.
Early Red Fife	" 25	29	25·00	20·83	6% tip-burned.
Red Bobs Triumph	" 22	27	24·33	20·41	19% tip-burned.
Marquis Ottawa 15	" 22	25	22·78	19·26	26% tip-burned.
Marquis (E. Northcott)	" 22	26	22·16	18·46	26% lip-burned.
Golden	" 24	26	19·55	16·58	26% tip-burned.
Kota	" 25	25	15·33	12·77	

COMMON SPRING WHEAT VARIETIES ON SPRING-PLOUGHED WHEAT-LAND STUBBLE

1/50-acre plots—triplicated.

Variety	Date Ripe	Length Straw	Average Yield of Triplicates		Remarks
			Per plot	Per acre	
		inches	lbs.	bush.	
*Producer O–197	Aug. 23	24	24·91	10·77	Sawfly damage 4%
Kitchener	Sept. 1	22	23·91	19·92	
*Garnet O–197	Aug. 21	27	23·12	19·26	" " 1%
Kota	" 27	26	22·50	18·81	" " 1%
Red Bobs Supreme	" 26	22	22·08	18·25	
Ruby	" 22	24	21·62	18·01	
Red Fife	Sept. 2	24	20·25	16·84	" " 1%
Marquis O–15	Aug. 26	22	20·12	17·85	" " 2%
Early Red Fife	" 30	22	19·58	16·31	
*Reward	" 21	26	18·25	15·33	" " 4%
*Brownie O–491	" 21	25	10·83	9·07	" " 5%

*Four new varieties.

NOTES—Although the seedings of all varieties were made in triplicate upon what appeared, according to previous crops, to be quite uniform land, some irregularities in stand developed as a result of the dry weather in July. The yields in 1924, therefore, should not be regarded as indicative of the relative merits of the varieties under test.

DURUM WHEAT VARIETIES ON SPRING-PLOUGHED WHEAT STUBBLE

Plots 1/50-acre-triplicated. All sown May 12 on land that was fall-burned, spring-ploughed, harrowed, etc.

Variety	Date Ripe	Length Straw	Average Yield of Triplicates		Remarks
			Per plot	Per acre	
		inches	lbs.	bush.	
Kubanka Ottawa 37	Aug. 25..	32	25·66	21·38	
Kubanka U. of Sask	" 25..	32	24·75	20·61	
Acme, U. of Sask	" 25..	25	22·59	18·95	2% sawfly damage.

DURUM WHEAT VARIETIES ON CORN STUBBLE

1/50-acre plots—triplicated. All sown on corn-land, spring-disked and harrowed, etc. All sown May 13.

Variety	Date Ripe	Length Straw	Average yield of Triplicates	
			Per plot	Per acre
		inches	lb.	bus.
Kubanka, U. of Sask	Aug. 29.....	31	24·66	20·55
Acme, U. of Sask	" 29.....	28	23·75	19·76
Kubanka O -37	" 29.....	30	21·83	18·18

WINTER WHEAT—TEST OF VARIETIES OR STRAINS

1/40-acre plots—duplicated—all sown on fallow on September 1, with exception of Alberta Red, which was sown on September 10.

All protected through winter with straw mulch.

Variety	Date Ripe	Height at Harvest	Yield Grain per acre	Remarks
		inches	bus.	
Alberta Red	Aug. 27.....	38	53·75	
Broatch's Winter Wheat	" 28.....	42	50·00	
Belgolina	" 28.....	38	49·16	
Kanred Montana No. 2	" 28.....	38	47·06	
Montana No. 36	" 28.....	38	45·00	
Kanmont Montana No. 7	" 28.....	38	41·86	
Sevier	.....	.....	.....	Winter killed
Koffaid	.....	.....	.....	Winter killed

Not protected through winter.

Broatch's	Aug. 30.....	42	11·31	Very weedy: 60% winter killed
Alberta Red	.....	.....	.....	Winter killed

OATS—TEST OF VARIETIES OR STRAINS

1/50-acre plots—triplicated. Sown May 20 on spring-disked corn stubble.

Variety	Date Ripe	Height at Harvest	Average of Triplicates Yield of Grain per acre
		inches	bus.
Victory	Aug. 21	33	59·55
Gold Rain	" 30	39	52·31
Gerlach	" 30	39	51·82
O. A. C. No. 3	" 19	31	47·05
Cole	" 19	30	45·07
O. A. C. No. 72	" 30	37	43·34
Abundance	" 21	33	42·76
Daubeney	" 19	30	42·23
Alaska	" 19	33	39·33
Banner	" 29	39	34·64
Banner	" 29	39	33·04
Longfellow O -478	" 29	36	32·22

BARLEY—TEST OF VARIETIES AND STRAINS

1/50-acre plots-triplicated-sown June 5 on spring-ploughed oat stubble.

Variety	Average of Triplicates Height at Harvest	Yield of Grain per acre
	(inches)	bus.
Trebi	19	33·40
O. A. C. 21	24	32·29
Charlottetown No. 80	20	31·59
Hannchen	16	23·78
Keystone	19	23·42
Chinese 0–60	18	22·65
Bearer 0–475	16	21·52
Junior 0–471	21	20·83
Duckbill	20	17·44
Feeder 0–561	20	17·09
Bark's	15	15·08
Albert 0–54	21	14·99
Guymayle	15	12·23

PEAS—TEST OF VARIETIES

1/50-acre plots-triplicated-sown May 27 on spring-disked corn-stubble.

Variety	Date Ripe	Average of Triplicates Length Straw	Yield Peas per acre
		(inches)	Bus.
Carleton	Sept. 5	42	44·39
Golden Vine, Sask. 625	Aug. 25	33	42·23
Arthur 0–18	Sept. 2	32	41·94
Canadian Field	Aug. 28	42	36·72
Golden Vine	Sept. 5	48	31·37

NOTES—Peas were an excellent crop this year. Seed of Carleton and Golden Vine, Sask. 625, the two greatest yielders this year, was secured from the University of Saskatchewan, Saskatoon.

Carleton is a medium early variety, having purple blossoms, and seeds of medium size, brown in colour.

Golden Vine, Sask. 625 very early, small-seeded, blossom white.

Arthur 0-18 medium-early, blossoms white in cluster at tip of coarse stem; seeds yellow and of medium size.

FLAX—TEST OF VARIETIES

1/50-acre plots—triplicated. Sown May 30 on fallow.

Variety	Date Ripe	Average of Triplicates	
		Height at harvest	Yield of grain per acre
		(inches)	(bus.)
Common	Sept. 9	21	16·81
Novelty	" 9	21	16·74
Crown	" 6	21	15·45
Premost	" 9	21	14·27

NOTES—*Premost* —Seed secured from Ottawa. A re-selection of Premost flax obtained from Minnesota Agricultural College.

Novelty —Pure-line selection from seed of supposedly Russian origin. Seed secured from Ottawa.

Crown —Sask. 272; seed obtained from Central Experimental Farm which originally received it from University of Saskatchewan.

Common—Home-grown. Seed obtained from commercial seed house in 1922.

FALL RYE—TEST OF VARIETIES

All varieties were sown on September 1, on 1/50-acre plots, in duplicate.

Variety	Source of Seed	Date of Ripening	Height	Yield of grain per acre
			(inches)	(bus.)
Dakold	Glenewen	Aug. 3	51	46·64
Swedish No. 669	Univ. of Sask.	" 5	50	44·19
Dakold No. 295	Univ. of Sask.	" 4	51	43·96
Advance No. 668	Univ. of Sask.	" 4	49	42·85
Rosen	Home-Grown	" 5	56	41·29
Rosen No. 299	Univ. of Sask.	" 4	48	36·38

NOTES—All varieties made quick growth after seeding. All wintered well, with the exception of one plot of Rosen No. 299. Winter was mild. Fall rye was favoured considerably by rains during the early part of this year.

WHEAT AND FLAX—COMBINATION CROP

1/50-acre plots, replicated six times. All sown on well-prepared breaking on May 13.

Crop	Wheat	Flax	Height at Harvest		Yield of grain per acre. Average 6 plots	
			Wheat	Flax	Wheat	Flax
	lb.	lb.	(inches)	(inches)	(bu.)	(bu.)
Wheat alone	70	—	33	—	28·84	—
Flax alone	—	30	—	18	—	15·74
Wheat and Flax	50	10	32	17	23·70	1·18
Wheat and Flax	35	15	32	17	23·19	1·89
Wheat and Flax	25	20	32	17	21·82	2·34

NOTE—First year for this experiment. It will be continued in future on stubble-land as well as on fallow.

FORAGE CROPS

Under this division the experimental work consists chiefly of testing, for yield, hardiness, drought resistance and quality, a great many varieties and strains of all of the forage crops which show any possibility of being successful under southern Saskatchewan conditions. In addition to variety testing, cultural work with some of the forage crops is carried out.

In the forage-crop work particular attention is being given to the testing of strains and selections of corn, in the hope that this crop may be so developed as to occupy a more useful place in the agriculture of southwestern Saskatchewan.

The 1924 data from forage crop experiments are presented in the following pages:—

INDIAN CORN—VARIETY TEST FOR ENSILAGE PURPOSES

Swift Current No.	Variety	Source of Seed	Height at Harvest	Stage at Maturity	% Dry Matter	Yield per Acre. Average of Duplicates	
						Green Wt.	Dry Wt.
			inches			lb.	lb.
37	N. W. Dent	Home-grown	55	Late dough.	23·04	29756	6855
38	N. D. Wh. Flint	Home-grown	60	Dough	18·74	28896	5415
39	Gehu No. 1	Home-grown	66	Dough	19·24	24768	4765
40	Improved Squaw	Home-grown	51	Ripe	22·55	24252	5468
41	Burleigh County Mixed	Hoffmann, Maple Creek	50	Glazing	21·16	25800	5459
42	Minnesota No. 13	Unsworth, Piapot	63	Late dough.	23·70	27606	6183
43	N. D. Wh. Flint	Cleophas, Bienfait	50	Late dough.	27·56	22876	6304
44	N. D. Wh. Flint, X Gehu	Abbott, Maple Creek	54	Late dough.	23·48	25800	6057
45	Minnesota No. 13	Cleophas, Bienfait	58	Glazing	25·75	24424	6289
49	Minnesota No. 13	Frisby, Estevan	56	Glazing	23·76	26144	6211
50	N. D. Wh. Flint	Abbott, M. Creek	54	Dough	18·80	25628	4877
51	N. W. Dent	Hamilton, Empress	56	Dough	21·94	26316	5773
52	Gehu	Rowles, Empress	50	Late dough.	21.39	23994	5132
54	Disco N. W. Dent	Home-grown	59	Late dough.	18.63	25972	4838
55	Quebec No. 28	Home-grown	58	Dough	18·90	26402	4992
56	N. W. Dent	Home-grown	59	Dough	20·50	27778	5694
57	Disco Yel. Dent	Home-grown	60	Dough	18·74	32336	6059
58	Compton's Early	Home-grown	60	Dough	14·66	17716	2597
60	N. W. Dent	Steel-Briggs	57	Dough	18·58	31820	5948
64	Leaming, late maturing	McKenzie Seed Co.	62	Dough	16·82	32766	5511
65	Gehu No. 2	Home-grown	53	Dough	14·88	33110	4926
66	90-day	Sykeston, N. Dak.	56	Dough	19·85	24424	5906
67	N. W. Dent	Brandon Exp. Farm	59	Dough	20·12	26316	5294
68	Hybrid	A. Wimple	62	Early milk.	17·97	28208	5068
69	Leaming	John Parks	71	Early silk	16·54	33884	5604
70	Wisconsin No. 7	John Parks	66	Late silk	19·35	31906	6173
71	Leaming	J. O. Duke	67	Late silk	16·54	30100	4977
72	Wisconsin No. 7	J. O. Duke	67	Late silk	17·26	30358	5238
73	Amber Flint	A. Wimple	59	Glazing	17·48	30960	5411
74	Bailey	J. O. Duke	63	Early milk.	16·76	28724	4813
75	Compton's Early	J. O. Duke	62	Early milk.	16·65	28294	4710
76	N. W. Dent	McKenzie- N. D. grown	61	Late dough.	19·46	27520	5354
77	Golden Glow	J. O. Duke	65	Milk	20·23	34228	6924
78	Yellow Dent	A. Wimple	60	Milk	20·23	31390	6350
79	Quebec No. 28	Macdonald College	59	Late dough.	17·15	30186	5176
80	Twichell's Pride	Fredericton	57	Dough	18·25	25456	4645
82	Longfellow	J. O. Duke	56	Dough	18·08	30444	5697
83	N. W. Dent	McKenzie-Neb- grown	57	Dough	18·25	30358	5539
84	Disco Longfellow	Dak. Imp. Seed Co.	55	Dough	18·08	27434	4959
85	Disco N. W. R. Dent	Dak. Imp. Seed Co.	60	Dough	19·24	27950	5377
86	Disco Pride Yellow Dent	Dak. Imp. Seed Co.	63	Dough	18·80	26402	4023
87	Disco 90-day White Dent	Dak. Imp. Seed Co.	63	Dough	18·63	32852	6119
88	Manitoba Flint	Man. Agr. College	62	Late dough.	20·50	25112	5147
90	White Cap Yellow Dent	Steele-Briggs	64	Milk	19·13	30562	5890
91	Burr Leaming	G. S. Carter	61	Silking	18·69	30014	5611
92	N. Dakota	Steele-Briggs	65	Silking	16·65	32986	5741

On May 21, 46 varieties and strains of corn were sown in rows 42 inches apart and 72½ feet long. Owing to the cool season, germination and growth were slow, with the result that few of the strains reached maturity. All strains were harvested on September 21. The strains under test vary widely in the length of time required to reach maturity. Some of the late varieties, while yielding well in green weight, fell considerably below the earlier varieties in yield of dry matter. The value of corn for ensilage purposes is determined almost wholly by the yield of dry matter per acre.

INDIAN CORN—ROWS VS. HILLS—1924

Variety	Method	Spacing or plants per hill	Height when cut	Average Yield of Triplicates		
				Green Weight per Acre	Per cent Dry Matter	Dry Weight Per Acre
		inches	inches	lb.	%	lb.
N. W. Dent	Rows 42" apart	3	58	13440	19·58	2631
"	Rows 42" apart	6	58	13330	15·32	2042
"	Rows 42" apart	9	58	15623	16·92	2643
"	Rows 42" apart	12	58	16569	16·49	2732
"	Rows 42" apart	18	57	16090	16·71	2688
		plants				
"	Hills 42" x 42"	1	61	14190	16·38	2324
"	Hills 42" x 42"	2	61	17343	18·58	3222
"	Hills 42" x 42"	3	61	16454	19·69	3239
"	Hills 42" x 42"	4	60	14620	20·50	2997
"	Hills 42" x 42"	5	57	13846	17·15	2374
		inches				
N. D. White Flint	Rows 42" apart	3	54	16397	16·38	2685
"	Rows 42" apart	6	54	20410	14·72	3004
"	Rows 42" apart	9	53	17458	16·92	2953
"	Rows 42" apart	12	53	18776	14·17	2660
"	Rows 42" apart	18	53	15451	18·03	2785
		plants				
"	Hills 42" x 42"	1	53	12427	16·76	2082
"	Hills 42" x 42"	2	53	14749	18·86	2781
"	Hills 42" x 42"	3	55	17372	17·53	3045
"	Hills 42" x 42"	4	55	19221	17·26	3317
"	Hills 42" x 42"	5	55	12864	18·36	2361

In the corn planting experiment not only are rows and hills in standard rates of planting compared, but spacing in rows varying from 3 inches to 18 inches and plants per hill varying from one to five are under test. Two varieties, namely North Western Dent and North Dakota White Flint, are used; the former for fodder production and the latter for seed production. Due to the unfavourable season for ripening corn, both varieties were harvested for fodder purposes. The accompanying table shows the yields of both green and dry material for the various treatments:—

SUNFLOWERS—VARIETY TEST

Variety or Strain	Source of Seed	Height when cut	Stage when cut	Average yield of quadruplicates		
				Green Wt. per acre	% dry matter	Dry Wt. per acre
		(inches)		lb.		lb.
Mammoth Russian	C.P.R.	61	Late bloom	21122	19·77	4178
Manchurian	McKenzie	59	Late bloom	18131	19·40	3517
Mixed	C.P.R.	58	Late bloom	20057*	19·04	3158*
Manchurian	C.P.R.	56	Late bloom	20320*	19·24	3916*
Ottawa No. 76	C.E.F.	57	Late bloom	19597*	19·87	3893*
Black	C.P.R.	56	Late bloom	25006*	17·67	4418
Manteca	C.P.R.	54	Late bloom	24928	19·43	4843
Mennonite	Rosthern	39	Seeds ripng.	17881	19·60	3504
Mammoth Russian	K. McDonald & Sons	69	4% bloom	24088	18·08	4369
Russian Giant	Dak. Imp. Sd. Co.	69	3% bloom	21576	17·86	3853

*Average of triplicates.

Ten varieties of sunflowers were sown on May 30 in 72½-foot rows in a quadruplicate test. All, with the exception of Manchurian, are of the straight stem type, the Manchurian being multi-branching. Mennonite, the earliest and shortest variety, was ready to cut about August 15; the remainder were in bloom or beginning to bloom early in September.

SUNFLOWERS—HILLS VS. ROWS

Spacing, etc.	Height when cut	Average yield of duplicates	
		Green Weight per acre	Dry Weight per acre
	(inches)	lb.	lb.
Rows 42″ apart 3″ apart in Row	73	34700	6590
" 6″ "	74	23677	6360
" 9″ "	77	24811	4779
" 12″ "	79	22360	4245
" 18″ "	79	19909	4174
Hills 42″ x 42″ 1 plant per hill	81	16848	2824
" 2 "	80	21027	3854
" 3 "	75	21070	4161
" 4 "	75	24639	5059
" 5 "	75	26101	5084

An experiment of planting sunflowers in hills and in rows was carried out for the same purpose and in the same way as with the Corn, Hills vs. Rows Experiment. Russian Giant was the variety used. All plots were sown on May 29 and harvested on September 8. It will be seen that the heaviest sowings whether in hills or rows give the maximum yields. It was observed also that sunflowers grown thickly in rows or hills produced plants with the shortest and thinnest stems, and a crop somewhat the easiest to handle in the field or at the silo.

ANNUAL HAY CROPS—VARIETY TEST

Variety	Height at Harvest	Stage when cut	Average weight per acre of triplicates	
			green weight	dry weight
	inches		lb.	lb.
Spring rye	33	bloom	7451	2624
Oats and peas	42	oats in milk	15366	4307
Oats	42	milk	12683	4245
E.A. sugar cane	33	heading	12066	2703
Hubam	41	75% bloom	14866	4105
Sudan grass	42	seed formed	9216	2103
Teff grass	21	seed formed	9050	.....
Hungarian millet	26	early bloom	8883	3854
Hog millet	31	seeds ripening	8666	3205
Siberian millet	26	heading out	7456	3251
Common millet	26	heading out	6866	2953

Eleven varieties of annual fodder crops were grown in triplicate on 1/50-acre plots. All were sown on May 31. The oats and peas mixture is the outstanding crop this year. This is borne out by similar yields of the same mixture produced from ½-acre plots. Millets have not made as good a showing as in previous years, probably due to the relatively cool season. A number of plots of millets were sown for the production of seed, but none reached the stage where good viable seed was produced, with the exception of Hog millet, which produced a small quantity of seed.

HUNGARIAN MILLET—RATES AND DATES OF SEEDING

Rate sown per acre	Date Sown	Green weight per acre	Per cent dry matter	Dry weight per acre
lbs.		lbs.		lbs.
5	May 20	7800	41·57	3242
15	May 20	7800	40·85	3186
25	May 20	7600	41·00	3116
5	June 4	7000	39·47	2762
15	June 4	7600	32·10	2439
25	June 4	6600	39·53	2608
5	June 17	8800	38·32	3372
15	June 17	7800	34·95	2726
25	June 17	7000	36·17	2531

The experiment in rates and dates of sowing Hungarian millet is laid out in $\frac{1}{100}$-acre plots and triplicated. Growth was not very rapid during the early part of the season. By July 24, plots sown on May 20 had reached a height of 15 inches; June 4 seeding, 12 inches; and June 17 seeding, 8 inches. The lighter sowings also showed more promising growth, being considerably wider in the leaf. By September 13, however, all plots had grown to a height of 24 inches, when they were harvested. Weeds were more conspicuous on the early-sown plots.

ALFALFA—VARIETY TEST—SOWN ON FALLOW 1923

Variety	Source of Seed	First Cutting			Second Cutting			Total yield per acre	
		Height	Green weight per acre	Dry weight per acre	Height	Green weight per acre	Dry weight per acre	Green weight	Dry weight
		ins.	lbs.	lbs.	ins.	lbs.	lbs.	lbs.	lbs.
Grimm	Commercial	17	3550	1215	10	750	224	4300	1439
Variegated	McFayden Sd. Co.	12	2000	810	13	550	167	2550	977
Turkestan	Steele Briggs	19	3150	974	10	1110	288	4260	1262
Grimm	Lyman	19	3825	1408	11	825	199	4650	1607
Variegated	Steele Briggs	18	3650	1308	14	2050	594	2850	951
Shoobut	S. Argentine	18	2900	963	16	5600	1395	8500	2358
M. Falcata	Paramount Alfalfa Farm	24	13050	3697	7	1500	418	14550	4115
Cossack	" " "	20	6400	2139	14	2150	574	8550	2713
Grimm	McCannus	18	4400	1423	13	2150	693	6250	2116

All varieties of alfalfa were sown alone in duplicate $\frac{1}{50}$-acre plots on June 10, 1923, on spring-ploughed wheat stubble. Weeds, particularly Russian Thistle, were somewhat troublesome during 1923. Early in the spring of 1924 the weeds were burned off with the result that the first cutting, made on July 9, was quite clean. In the second cutting, August 22, more thistles were in evidence. Due to dry weather in late July, the second cutting of most varieties was light, which gave opportunity for the thistles to develop.

ALFALFA—INOCULATION TEST

Plot	Treatment	Yield per acre—first cutting			Yield per acre—second cutting			Total yield per acre	
		Height	Green Weight	Dry Weight	Height	Green Weight	Dry Weight	Green Weight	Dry Weight
		ins.	lb.	lb.	ins.	lb.	lb.	lb.	lb.
1	Not inoculated	16	2,750	887	10	400	118	3,150	1,005
2	Inoculated	17	4,050	1,385	10	700	210	4,750	1,595
3	Not inoculated	16	3,450	1,215	10	550	148	4,000	1,363
4	Not inoculated	16	2,600	944	9	500	154	3,100	1,098
5	Inoculated	17	3,050	1,046	10	800	238	3,850	1,284
6	Not inoculated	16	1,850	708	7	100	200	1,950	908

GRASSES, LEGUMES, AND MIXTURES SOWN WITH NURSE-CROP OF WHEAT, 1922

Crop	1923 Total Yields per acre		1924 Hay Crop—Yield per acre		
	Green Weight	Dry Weight	Height	Green Weight	Dry Weight
	lb.	lb.	inches	lb.	lb.
Brome and Western Rye	5,480	2,956	33	2,700	1,248
Brome	4,520	1,929	30	3,200	1,449
Western Rye	6,640	3,784	26	3,050	1,453
Timothy	1,640	800	24	2,850	1,325
Brome and Western rye	4,880	2,920	30	2,700	1,213
Kentucky Blue grass	1,800	800	18	1,550	699
Western rye and White sweet clover	5,280	1,950	28-30	1,800	1,018
Brome and White sweet clover	7,520	2,706	30	4,450	1,994
Brome and Western rye	6,240	3,304	30	3,350	1,410
Western rye and alfalfa	6,320	2,439	20-12	3,050	1,345
Grimm alfalfa	6,640	2,339	.....	.....	.....
Variegated alfalfa	3,680	1,425	.....	.....	.....
Brome and Western rye	6,480	3,930	24	2,950	974
Red clover	Failure			Failure	
Yellow sweet clover	7,080	2,200	26	3,900	1,736
White sweet clover	7,848	2,770	33	2,500	1,091
Brome and Western rye	4,800	2,552	24	2,050	952

The experiment of sowing various grasses, clovers and mixtures with a nurse-crop of wheat was laid down in 1922. All grasses and legumes were seeded with wheat on May 30 of that year. Yields of hay for both 1923 and 1924 are given. In the latter year the only crop yielding a second cutting was yellow sweet clover, which produced 1050 pounds of green material and 268 pounds of dry matter per acre. Plots containing either brome or western rye, or both, while they could not be cut a second time for hay, would have produced a fair amount of late pasture.

VARIETY TESTS OF ROOTS

Variety	Source of Seed	Per-centage stand	Yield roots per acre
	Mangels—Variety test for yield and purity		
			lb.
Barres half long	General Swedish Seed Co., Svalof, Sweden	78	25,070
Svalof Original Alfa	" "	95	24,150
Svalof Red	" "	94	23,000
Red Eckendorfer	" "	79	22,770
Taaroje Barres	H. Hartman, Copenhagen	87	22,540
	Carrots—Variety test for yield and purity		
Long Orange Belgian	A. E. McKenzie Seed Co	.....	13,340
Champion	Harris McFayden Seed Co	.....	13,110
White half long	"	.....	12,650
Champion	General Swedish Fish Co., Svalof, Sweden	.....	12,190
Champion	H. Hartman Co., Copenhagen	.....	11,960
	Turnips—Variety test for yield and purity		
Monarch	A. E. McKenzie Seed Co	.....	22,540
Halewoods Bronze Top	Steel Briggs Seed Co	.....	22,080
Imperial	A. E. McKenzie Seed Co	.....	21,850
Bangholm	Nappan Experimental Station	.....	20,240
Halls Westbury	Wm. Ewing Seed Co	.....	20,010
	Sugar Beets—Variety test for yield and purity		
Kitchener	Dominion Sugar Beet Co	88	14,720
Vilmorins Imperial	Vilmorins, Paris, France	92	12,880
Dieppe	Dominion Sugar Beet Co	100	12,880
Horning	"	91	11,960
Henning and Harving	"	96	9,890

A total of 29 varieties of mangels; 12 varieties of carrots; 23 varieties of turnips and 8 varieties of sugar beets are under test. Only the finest, highest-yielding varieties of each are here reported. Yields of other varieties ranged from the figures given in the table down to 7,130 pounds per acre of mangels, 3,910 of carrots, 13,340 of turnips and 9,890 of sugar beets. Although the greater part of the season was cool it was unfavourable for the growth of root crops on account of the limited rainfall. All of the roots were sown between May 14 and May 17 on spring-ploughed stubble land. They were cultivated three times during the season and harvested between October 13 and 15.

BUILDINGS AND IMPROVEMENTS

During the summer of 1924 the following building were erected:

(1) A piggery 19 feet by 46 feet, containing three pens and a feed-room, with a straw loft over the feed-room and one pen. The building has a concrete floor and foundation. Each pen is fitted with a wooden sleeping platform. Provision is made for heating the farrowing pen, so as to take care of early spring litters.

(2) A second poultry house 16 feet by 32 feet, temporarily fitted to provide incubator and brooder rooms, was built near the building erected in 1922.

(3) A concrete root cellar 24 feet long, 12 feet wide, and 8 feet high, was built in a location convenient to the garden. The cellar is covered with three feet of earth, and ventilation is provided by means of two ten-inch flues.

(4) A combination greenhouse and hotbed with a concrete wall and glass roof was built. This structure is 24 feet long and 12 feet wide. Attached to one end of the greenhouse is a frame shack 10 feet by 12 feet for use as a potting and transplanting room.

(5) Two small, portable granaries, each 10 feet by 12 feet, were built. The use of these eliminated all necessity of hauling wheat at threshing time.

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