DOMINION OF CANADA
DEPARTMENT OF AGRICULTURE
DOMINION EXPERIMENTAL FARMS

EXPERIMENTAL STATION
SCOTT, SASK.

INTERIM REPORT OF THE SUPERINTENDENT

M. J. TINLINE, B.S.A.

FOR THE YEAR 1921

An Excursion Day at Scott

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EXPERIMENTAL STATION, SCOTT, SASK.

REPORT OF THE SUPERINTENDENT, M. J. TINLINE, B. S. A.

SEASONAL NOTES

The spring of 1921 was late opening up. During the first week in April 12½ inches of snow fell. The weather continued cool, and rains from the 21st to the 24th delayed the commencement of seeding operations so that the first start was made during the last days of the month. There was ample moisture for good germination of all seeds, and a rainfall of 0·83 of an inch on June 17 gave most crops a good start. From this date to the end of August, a period of seventy-six days, there were only 2·41 inches recorded, or less than the normal amount for the month of July alone. It may be stated here that reports indicate much more moisture than this for most districts in northwestern Saskatchewan for this period. By the middle of July, crops on the Station were suffering from lack of moisture, and on July 20 a temperature of 99·5 was recorded. Fortunately this was followed during the night by a light rain which cooled the soil down to some extent. The warm weather hastened the maturity of all crops, so that harvesting the early varieties commenced on August 12.

The moisture during the early season was particularly beneficial to hay crops and good yields were obtained; but crops such as sunflowers and field roots, that require most of their moisture supply late in the summer, produced comparatively light crops.

Threshing operations were commenced early on the Station, and by September 3, when wet weather set in, practically all the grain for seed had been threshed as well as quite a number of the plots and fields.

The wet weather continued from September 3rd to the 22nd, so that very little threshing was done in the district before the last week of the month. Although the total precipitation for September amounted to only 2·51 inches the stooks were kept moist for a long time. The grade of wheat was lowered from No. 1 to No. 2 Northern, and the delay in marketing the crop caused a serious financial loss to the farmers owing to the decline in prices which occured at that time.

As is usual in this district, very little fall ploughing was done. On November 7 the ground froze too hard to plough, and on November 11 winter weather set in.

METEOROLOGICAL RECORDS FOR SCOTT, 1921

Month	Temperature F			Precipitation					Total Sunshine
	Highest	Lowest	Mean.	Rain-Fall	Snow-Fall	Total	Average 10 Years	Heaviest in 24 Hours	
				Inches	Inches	Inches	Inches	Inches	Hours
January	39·0	−26·8	6·28	.....	5·25	0·525	0·57	0·1	93·3
February	48·0	−37·8	8·3	.....	8·0	0·8	0·32	0·2	104·6
March	39·9	−26·6	12·58	.....	9·5	0·95	0·6	0·45	154·3
April	57·7	− 1·8	32·55	1·19	13·5	2·54	0·89	0·72	232·5
May	80·7	26·2	50·49	1·39	.....	1·39	1·19	0·33	221·8
June	84·7	26·7	61·26	1·66	.....	1·66	1·88	0·83	323·4
July	99·5	40·2	61·40	1·65	.....	1·65	2·626	0·40	317·7
August	91·8	32·5	60·42	0·56	.....	0·56	1·889	0·38	303·0
September	74·8	26·7	47·35	2·29	2·2	2·51	1·545	0·86	160·3
October	75·7	16·7	42·88	.....	.....	.....	0·67	.....	167·8
November	53·3	−18·8	15·06	.....	6·75	0·675	0·394	0·20	75·1
December	41·0	−36·8	7·69	.....	2·25	0·225	0·476	0·1	95·7
Total for Year	.....	.....	.....	8·74	47·45	13·485	13·05	.....	2,249·8

ANIMAL HUSBANDRY

HORSES

During the past season a Percheron Horse Breeders' Association was formed in the district under the Federal plan for assistance to horse breeders. This has given an impetus to horse breeding locally.

The experiments to determine the cost of horse labour and cost of raising horses were planned to cover periods of one year each. These were reported on for the year ending March 31, 1921, and therefore, are not included herewith.

CATTLE

Five pure-bred heifers and one young bull of the Shorthorn breed were received from the Indian Head Experimental Farm. Three of these heifers have freshened, increasing the herd by two female calves and one male. During a twelve-months' period, one grade Holstein cow, kept to furnish milk for the employees, yielded over 12,000 pounds of milk.

Twelve yearling steers and an equal number of two-year-old steers were bought up from local farmers at three and four cents per pound. Each of these lots have been divided into two pens.

The experiments started include the following:—

Project 1.—Determining the profits or losses from winter fattening.

Project 2.—Ascertaining the losses from dehorning.

Project 3.—Investigating the value of sunflower silage.

Project 103.—Comparing yearling and two-year-olds as feeders.

SHEEP

The flock now numbers one hundred and thirty-four head, consisting mostly of grade Shropshires. There are three pure-bred Shropshire ewes and two rams, six pure-bred Cheviot ewes and two rams, several cross-breds, and, in addition, one Rambouillet ram, purchased in November, 1921.

Project 11.—In the breeding work there are two main objects in view. First, to grade up a flock of Shropshires from range ewes by use of pure-bred sires and secondly to determine the advisability of crossing Cheviot and Rambouillet sires on the grade Shropshire ewes. The grading experiment was started in 1917, the Cheviot crossing in 1920 and the Rambouillet crossing in 1921. In addition to the breeding work mentioned pure-bred flocks will be developed from the pure-bred ewes on hand.

Project 104.—In the spring of 1921 there was a heavy loss of lambs from goitre. This year an experiment is being conducted giving four lots of ewes different treatment for a few months previous to lambing time, to find what effect feeding or exercise will have upon the health and vigour of the lambs at birth. One lot is fed oats and oat straw, which composed the ration last winter. The oats for this lot are fed some distance from the shed, and, as all lots are fed three times per day, the ewes in this lot will receive considerable exercise. The second lot is given the usual feed and, in addition, a treatment with iodide of potassium fed in salt. The third lot is fed a reasonably well balanced ration of oats, barley, bran, oilcake, sunflower silage, brome and Western rye grass hay. The fourth lot is used as a check, receiving the old ration with no special plan to compel the ewes to take exercise.

LAMB FEEDING EXPERIMENT, 1920-21

Project 16—Object of Experiment.—To compare the value of sunflower silage and turnips as succulent feeds for fattening lambs.

How Experiment was Conducted.—Seventy-five grade Shropshire lambs were divided into three lots. The housing and pens were identical. The feeding was done inside, and each lot had access to snow, water and salt. The feeding was done twice per day. The grain ration consisted of equal parts of oats and barley. At the beginning of the experiment the grain was fed at the rate of one pound per day per head, which was gradually increased to two pounds, and during the latter part of the experiment two ounces of oilcake per head were added to the daily ration of each lot. The silage fed lot was started with one pound per day per head, which was increased gradually to two and one-half pounds. The turnip fed lot received corresponding quantity of turnips by weight.

Cost of Feed

Whole oats	35c. per bushel
Barley	50c. "
Green oats and sunflower silage	$6 00 per ton
Turnips	4 00 "
Oat straw	3 00 "

SUMMARY OF LAMB FEEDING EXPERIMENT

—		Straw	Silage and Straw	Turnips and Straw
		Lot 1	Lot 2	Lot 3
Number of lambs in lot		24	24	25
First gross weight (Jan. 4th)	Lbs.	1,776	1,885	1,890
First gross weight, Ave. (Jan. 4)	"	74	78	75
Finished gross weight, April 1	"	2,060	2,280	2,210
Finished average weight, April 1	"	85	95	88
Total gain in 87 days	"	284	395	320
Average gain per lamb	"	11·8	16·4	12·8
" daily gain per lamb	"	·13	·18	·14
Amount of oats eaten	"	1,315	1,315	1,369
" of barley eaten	"	1,315	1,315	1,369
" of oil cake eaten	"	72	72	72
" of silage fed	"	.....	3,819	.....
" of turnips fed	"	.....	.....	4,003
" of straw fed	"	3,000	2,000	3,000
Gross cost of feed	$	34·23	44.18	43.34
Average cost of feed per lamb	$	1.42	1.84	1.73
Cost for 1 lb. of grain	c.	0.12	0.11.2	0.13.5
Number of pounds of Meal for 100 lbs gain	Lbs.	951	684	878

Conclusions.—Silage is a more profitable feed for fattening lambs than roots.

Roots give increased gains over a straight grain ration.

Lambs preferred sunflower silage to that made from green oats.

While silage decreased the straw consumed, turnips did not.

Good growthy lambs will make good gains.

Oil cake increases the palatability of the ration, besides aiding in balancing it.

With the increase in fleshing there was a corresponding improvement in grading from the butcher's standpoint.

WOOL

Project 105.—Samples of wool from the shoulder, side and thigh are taken from each breeding ewe at one and two years old. These samples are mounted on cards which give the weight of clip, flock number of ewe, age, breeding, etc. This makes

possible a comparison in quality and quantity of fleece during the entire process of grading up, and is very useful in the crossbreeding work for the improvement of the fleece.

There is an improvement in quality as each cross of pure blood is introduced. The weight of clip is considerably increased in the first cross as compared with the range ewes, but there is only about one-tenth of a pound average increase in the second cross over the first.

The pure-bred Cheviots have a more open fleece than the Shropshires, and although the aged Cheviot ram gave a clip equal to that of the aged Shropshire ram, the Cheviot ewes gave an average of only six pounds as compared with 7·9 for the grade Shropshire ewes.

The total weight of wool clip for 1921 was 1,634 pounds, and was shipped to the Canadian Co-operative Wool Growers and graded as follows:—

Medium combing	530 lbs.
" clothing	8 "
Low medium combing	675 "
Low combing	45 "
Burry and seedy	284 "
Medium tags	92 "

The returns for the wool have not come to hand at time of writing this report. The total sales during the year amounted to $777.89, about half of which was sold on foot to the butcher and remainder locally, some for breeding purposes and some for mutton.

SWINE

The swine on hand December 31, 1921, include thirteen Yorkshire sows and one boar, five Berkshire sows and one boar, one Duroc Jersey boar and fourteen experimental feeders, making a total of thirty-four.

The experimental work with swine during the past year may be outlined as follows:—

Cross-breeding.
Determining the value of rape pasture for fattening.
Self-feeder vs. trough in fattening.
Rye vs. barley for fattening.

CROSS-BREEDING

Project 20.—In order to show the average number of pigs per litter from each breed and each cross the following table is submitted. These figures were compiled from the numbers in litters in the spring of 1921, and further observations are necessary:—

Pure bred Yorkshire	Pure bred Berkshire	Yorkshire Sire Berkshire Dam	Berkshire Sire Yorkshire Dam
9 pigs in litter	6 pigs in litter.	7 pigs in litter.	5 pigs in litter.
3 "	6 "	4 "	10 "
9 "	2 "	8 "	8 "
21	14	19	23
Average...7	4·6	6·3	7·6

Object of Experiment.—To determine the value of cross-breeding for the production of good market hogs.

How Experiment was Conducted.—Eighteen pigs were separated into three equal lots, according to breeding. The experiment was started only a few weeks after the pigs were weaned, and was continued until they were ready for market. All lots were fed oat chop, oil cake meal and shorts until about three months old, after which they were given all they would eat, three times per day, of a mixture of two-thirds oats and one-third barley crushed and fed wet. Individual weights were taken each month and gains compared.

Cost of Feed

Oats	$0 44 per hundred
Barley	1 04 "
Oil cake meal	3 00 "
Shorts	1 65 "

		Cross-breds Yorkshire Sire Berkshire Dam	Pure-bred Yorkshires	Cross-breds Berkshire Sire Yorkshire Dam
Number in each lot		6	6	6
First weight gross	Lbs.	219	264	196
First average weight	"	36·5	44·0	32·6
Final weight gross	"	1,039	1,119	973
Final average weight	"	173·1	186·5	162·1
Number of days in experiment		116	116	116
Total gain for 116 days		820	855	777
Average gain each	Lbs.	136·6	142·5	129·5
Average daily gain each	"	1·17	1·22	1·11
Average daily gain for lot	"	7·06	7·37	6·68
Pounds of feed consumed	"	2,838·8	3·172	2,672·8
Total cost of feed	$	23.14	27.77	22.40
Cost of feed per head	$	3.86	4.63	3.73
Cost per pound gain	$	0·0282	0·032	0·0289
Pounds of feed per 100 lbs gain		346 lbs	371 lbs	344 lbs
Profit over feed	$	58.86	57.73	55.30

Selling price 10 cents per pound alive.

The term Yorkshire-Berkshire denotes a pig from a Yorkshire sire and Berkshire dam, and the term Berkshire-Yorkshire denotes a pig from a Berkshire sire and a Yorkshire dam.

The pure-bred Yorkshires were about two weeks older than the other two lots; hence they ate more and made greater gains, but the other lots made cheaper gains The Yorkshire-Berkshires gained more and the Berkshire-Yorkshires gained less than the pure-breds. When the cost of feed is deducted from the selling price of each lot the Yorkshire-Berkshire cross gave the greatest profit and the pure-breds ranked second.

The difference in type of the cross-breds was quite marked and became more noticeable as the pigs approached maturity. The Berkshire-Yorkshires resembled the thicker Berkshire type of the sire while the Yorkshire-Berkshire was longer in body and smoother in outline thus conforming to the Yorkshire sire or the select bacon type.

Deductions.—In proportion to the feed consumed the Yorkshire-Berkshire were most profitable.

The pure-bred Yorkshires were more profitable than the Berkshire-Yorkshires.

The cross-bred lots were the same age, and according to the figures in the table the Yorkshire-Berkshire is the more profitable type of the two to feed.

The experiment should be repeated before final conclusions are drawn.

Project 18.

METHODS OF FATTENING

(*a*) Value of Rape Pasture.

(*b*) Self-feeder vs. Trough.

Object of Experiment.—(1) To compare the self-feeder with the trough. (2) To determine the value of rape pasture.

How Experiment was Conducted.—Lots one and two were placed in the piggery, allowed plenty of room inside and a dry lot outside. Lot one was trough fed three times per day and lot two had access to a self-feeder. Lot three had access to a self-feeder and rape pasture, and was provided with a cabin for shelter and some additional shade for protection from the summer heat.

Prices charged for feed

Oats	$0 44 and $0 82 per hundred
Barley	1 04 per hundred

		Lot 1	Lot 2	Lot 3
		No Pasture Trough-fed	No Pasture Self-feeder	Rape Pasture Self-feeder
Number in group		6	6	6
First weight gross	Lbs.	353	336	339
First weight average	"	58·8	56	56·5
Finished weight gross	"	940	965	980
Finished weight average	"	156·6	160·8	163·3
Number of days in experiment		81	81	81
Total gains	Lbs.	587	629	641
Average gain each	"	97·8	104·8	106·6
Average daily gain each	"	1·20	1·29	1·31
Average daily gain group	"	7·2	7·74	7·86
Feed eaten by group	"	2,433	2,678	2,388
Total cost of feed	$	18.29	19.02	16.47
Cost of feed par head	$	3.04	3.17	2.75
Amount feed per 100 lbs gain		414 lbs	425 lbs	372 lbs
Cost per lb. gain	c.	0·031	0·03	0·025
Profit over feed	$	40.41	43.88	47.63

Selling price 10 cents per pound live weight.

Deductions.—The self-feeder as compared with the trough gave greater profit, even with more feed consumed. (The extra cost of labour for trough feeding was not included).

The rape pasture reduced the cost of production of pork by sixty cents per hundred, or about forty-four pounds of chop was saved per pig for the feeding period.

BARLEY VS. RYE FOR FATTENING

Project 106—Object of Experiment.—To compare barley and rye as feeds for fattening.

How Experiment was Conducted.—Two lots of six pigs each were fed a ration composed of three parts of oat chop, lot one receiving in addition one part rye chop and lot two one part barley chop. The chop mixture was fed with a liberal quantity of water three times per day.

		Lot 1	Lot 2
		Rye Fed	Barley Fed
Number of pigs in each lot		6	6
First gross weight	Lbs.	668	673
First average weight	"	111·3	112·1
Finished weight gross	"	1,113	1,076
Finished weight average	"	185·5	179·3
Number of days in experiment		48	48
Total gain in 48 days	Lbs.	445	403
Average gain per pig	"	74·1	67·1
Average daily gain per pig	"	1·5	1·3
Average daily gain per lot	"	9·2	8·4
Quantity of meal eaten	"	2,222	2,222
Total cost of feed—1501 lbs oats (each lot) 721 lbs rye—721 lbs barley	$	16.59	15.23
Total cost of feed per pig	$	2.76	2.53
Pounds of meal mixture for 100 lbs gain		499 lbs	551 lbs
Cost to produce 1 lb. gain	$	0·037	0·037
Returns at $7.50 per cwt (on foot)	$	83.47	80.70
Profit excluding labour in 48 days	$	16.78	14.99

The rye mixture was rather sticky unless a very liberal quantity of water was used. It seemed rather difficult for the pigs to masticate the dry chop. On account of this sticky property of rye, it may not prove so successful as barley for feeding dry in a self-feeder, but mixed with water it gives satisfaction.

Conclusions.—The meal mixture required per pound gain was 4·9 pounds of rye mixture as compared with 5·4 pounds of barley mixture.

Rye at reasonable prices is a profitable feed for fattening swine.

FINANCIAL STATEMENT

Value April 1 1921		Value December 31 1921		Returns Including Sales, Exch. and Increased Value	Cost of Feed and Purchases	Profit over Cost of Feed and Purchases
No. of Swine	Value	No. of Swine	Value			
32	$839.00	34	$1,012.00	$1,246.87	$692.06	$554.81

FIELD HUSBANDRY

SOIL MANAGEMENT EXPERIMENTS

The soil upon which these experiments are being conducted is a chocolate clay loam, and is fairly uniform.

In each experiment a rotation is followed which is most suitable for the purpose for which the experiment is intended. With few exceptions the different rotations include a summer-fallow year. It should be clearly understood that these rotations, used in cultural investigation work, are not presented as being the most profitable rotations for the farmer to adopt, but the object in view is to meet the requirements of the experiment in question. The plots are one-fortieth of an acre in size and are seeded with a common seed drill. The spring of 1921 was rather late; the grain crops were sown between May 4 and 11, and the grass plots were sown shortly after.

The conclusions, regarding the following experiments, have been drawn from the average yields rather than from the 1921 figures shown in the first column.

DEPTH OF PLOUGHING

Project 25—Notes. In this experiment the summer-fallow is ploughed early in June at varying depths as indicated below. The subsoiling is done by an attachment consisting of a large cultivator tooth fastened to the back of the plough. This stirs the soil to a depth of four inches below the sole of the furrow. The subsoiling is done only in the summer-fallow year.

The Rotation Used:

First year.—Summer-fallow.

Second year.—Wheat.

Third year.—Oats.

Depth of Ploughing Summer-fallow to be seeded to Wheat.	Yield of Wheat 1921		Wheat Yield per Acre 7-Year Average	
	Bush.	Lbs.	Bush.	Lbs.
Ploughed 3 inches deep	23	30	22	12
" 4 " "	24	..	23	22
" 5 " "	22	50	22	09
" 6 " "	22	20	22	07
" 7 " "	23	30	22	37
" 8 " "	22	20	21	30
" 5 " " and subsoiled 4 inches	21	..	22	49
" 6 " " " " 4 "	20	20	22	06
" 7 " " " " 4 "	20	20	22	59
" 8 " " " " 4 "	20	20	22	09

The highest yield was obtained by ploughing four inches deep. It is possible that the results from this experiment may be altered as the land is cultivated for a longer period, but for comparatively new land the above figures indicate that four inches is a very satisfactory depth to plough summer-fallow. It is also shown that it is not profitable to use the subsoiling attachment when ploughing from five to eight inches deep. An occasional deep ploughing may be necessary to prevent a hardening of the soil at the sole of the furrow and if this is done it should be done during the summer-fallow year.

DEPTH OF PLOUGHING TEST

Depth of Ploughing Wheat Stubble to be Seeded to Oats.	Yield of Oats 1921		Oats—Yield per Acre 6-Year Average	
	Bush.	Lbs.	Bush.	Lbs.
Ploughed 3 inches deep	68	18	50	25
" 4 " "	67	02	51	31
" 5 " "	65	10	48	33
" 5 " "	64	04	47	12
" 5 " "	62	12	46	27
" 5 " "	65	20	45	31
Subsoiled in summer-fallow year.				
Ploughed 5 inches deep	65	20	49	17
" 5 " "	64	24	50	06
" 5 " "	64	04	50	16
" 5 " "	62	22		

The heaviest yield is again in favour of the plot which is ploughed four inches deep, both as summer-fallow and as fall ploughing. The subsoiling done in the summer-fallow year has not given sufficiently increased yields to warrant the operation.

SUMMER-FALLOW TREATMENT

Project 26. The important points regarding summer-fallow are: the depth of ploughing, date of ploughing, cultivation previous to summer-fallowing, the advisability of ploughing twice, and the growing of pasture crops on summer-fallow.

A three-year rotation is followed:—

First year.—Summer-fallow.

Second year.—Wheat.

Third year.—Oats.

PLOUGHING SUMMER-FALLOW ONCE VS. TWICE

Treatment of Summer-fallow to be seeded to Wheat.	Yield of Wheat 1921	Yield per Acre 7-Year Average
	Bush. Lbs.	Bush. Lbs.
Plough 4 inches deep in June	27 — ..	22 — 55
" 6 " " " "	24 — 20	23 — 01
" 8 " " " "	22 — 40	22 — 50
Plough 4 inches deep in June and 4 inches in September	27 — 30	23 — 17
" 6 " " " " " 6 " " "	26 — 10	23 — 04
" 8 " " " " " 8 " " "	28 — 40	22 — 17
" 6 " " " " " 4 " " "	32 — ..	24 — 21
" 4 " " " " " 6 " " "	34 — ..	27 — 36
Harrow after second ploughing	34 — ..	27 — 36
Leave untouched after second ploughing	32 — 40	27 — 43

There is not sufficient increase in yield of wheat on a seven-year average to justify twice ploughing if the ploughing is the same depth each time. Once ploughing six inches deep gives a yield within sixteen pounds of the highest yield obtained by twice ploughing at the same depth. Ploughing in June and at a different depth in September has increased the yield. The highest yield was obtained by ploughing four inches in June and six inches in September.

INFLUENCE OF SUMMER-FALLOW TREATMENT ON THE YIELD OF OATS FOLLOWING THE WHEAT

Treatment of Summer-fallow.	Yield of Oats 1921	Yield per Acre 6-Year Average
	Bush. Lbs.	Bush. Lbs.
Plough 4 inches in June	72 — 12	58 — 33
" 6 " " "	66 — 16	55 — 18
" 8 " " "	68 — 18	58 — 03
" 4 " " " and 4 inches in September	72 — ..	57 — 20
" 6 " " " " 6 " " "	66 — 26	56 — 02
" 8 " " " " 8 " " "	56 — 16	51 — 21
" 6 " " " " 4 " " "	65 — ..	52 — ..
" 4 " " " " 6 " " "	78 — 18	52 — 08
Harrow after second ploughing	78 — 18	52 — 08
Leave untouched after second ploughing	63 — 8	50 — 10

On a six-year average the oats as second crop gave the highest yield on plots which were ploughed once in June four inches deep. June ploughing four inches deep gave 1 bushel and 13 pounds more per acre than the twice ploughing. In 1921 the ploughing four inches in June and six inches in September gave a high yield, but on the six-year average the yield is low.

INFLUENCE OF TIME OF PLOUGHING SUMMER-FALLOW

Time of Ploughing	Yield of Wheat 1921		Yield per Acre 7-Year Average	
	Bush.	Lbs.	Bush.	Lbs.
Plough 6 inches deep May 15	28	40	26	50
" 6 " " June 15	26	40	24	42
" 6 " " July 16	26	40	23	..

The early ploughed summer-fallow shows the highest yield. When the ploughing is not done until the weeds have grown up there is considerable moisture taken from the soil by these weeds.

INFLUENCE OF TIME OF PLOUGHING SUMMER-FALLOW ON THE YIELD OF OATS FOLLOWING WHEAT

Time of ploughing Summer-fallow	Yield of Oats 1921		Yield per Acre 6-Year Average	
	Bush.	Lbs.	Bush.	Lbs.
Plough 6 inches deep May 15	83	18	54	17
" 6 " " June 15	76	26	48	1
" 6 " " July 15	64	14	48	13

The increased yield resulting from the early ploughing is carried through to the second crop. It is seldom possible to plough summer-fallow in May on the average farm, but a special effort should be made to plough as soon after seeding as possible, before there is a loss of moisture through weed growth.

INFLUENCE OF FALL CULTIVATION PREVIOUS TO SUMMER-FALLOW

Treatment of Oat Stubble	Yield of Wheat per Acre on summer-fallow			
	1921		7-Year Average	
	Bush.	Lbs.	Bush.	Lbs.
Cultivate in autumn	26	40	24	15
Fall plough 4 inches deep	29	20	24	45
No fall treatment	25	30	25	45

A seven-year average shows the highest yield to result from leaving the stubble untouched to catch the snow during the winter, while the 1921 yield shows the fall ploughing to give the highest yield.

INFLUENCE OF FALL TREATMENT, PREVIOUS TO SUMMER-FALLOWING, ON OATS FOLLOWING THE WHEAT

Treatment	Yield of Oats 1921		Yield per Acre 6-Year Average	
	Bush.	Lbs.	Bush.	Lbs.
Cultivate in autumn	67	12	49	27
Fall plough 4 inches deep	68	24	50	26
No fall treatment	65	20	51	26

There is an increased yield for 1921 in favour of the fall ploughed stubble carried through to the second crop as compared with the cultivating. However, the six-year average shows a higher yield from the plot left untouched previous to summer-fallowing.

PASTURE CROP ON SUMMER-FALLOW

The moisture required to produce a pasture crop on the summer-fallow seems to cause a shortage for the following crop. Rape has been used for the pasture crop until 1921. Oats will be used in future, seeded at the rate of one-half bushel per acre shortly after ploughing for summer-fallow.

The rape pasture as compared with the well cultivated fallow shows, on a six-year average, a decreased yield of approximately two bushels per acre of wheat as first crop, but the second crop shows an increased yield of five bushels of oats in favour of the pastured summer-fallow. This heavier second crop may be accounted for by the fact that the hard surface formed by the tramping stock when pasturing has been broken up and the manure has been ploughed under and has become available. It is not considered a good practice to sow a pasture crop on summer-fallow, but if the soil is inclined to drift the pasture crop may be a temporary remedy during the summer, and the stubble remaining the following spring may assist in controlling the drifting until the young crop gets a start. The lesser amount of cultivation necessary is also a point in favour of the pasture crop.

STUBBLE TREATMENT

Project 27.—In this experiment all plots received the same treatment during the summer-fallow year. The plots are seeded to wheat to obtain a uniform stubble for experimental treatment.

A three-year rotation is followed:—

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

Stubble Treatment in Spring	Second crop of Wheat Yield per Acre			
	1921		6-Year Average	
	Bush.	Lbs.	Bush.	Lbs.
Burn stubble in spring seed at once	30	40	26	21
Plough in spring—seed—pack	27		24	11
Plough in spring—seed	24		23	45
Stubble Treatment in Fall				
Disc at cutting time—spring plough	25	50	21	21
Plough in fall—pack	25	30	19	43
Disc at cutting time—fall plough	24		19	36

In the spring treatment, the highest yield was obtained by burning the stubble and seeding at once. Straw was scattered over the stubble to ensure a clean burn and the soil was in a mellow condition, being entirely free from sod. Destroying the stubble by fall cultivation has decreased the yield by several bushels per acre.

Discing at cutting time previous to spring ploughing has given a higher yield than discing prior to fall ploughing or fall ploughing and packing, but it will be noted that spring ploughing gave a still higher yield when the discing at cutting time was omitted and the stubble was left to catch the snow during the winter.

STUBBLE TREATMENT FOR OATS AS SECOND CROP

Treatment of Wheat Stubble	Yield per Acre Oats			
	1921		7-year average	
	Bush	Lbs	Bush	Lbs
Plough in spring—seed—pack	64	— 24	51	— 28
Cultivate fall—spring plough	72	— 32	47	— 20
Plough in autumn—pack at once	63	— 28	42	— 29

The six-year average shows that in the preparation for oats the spring ploughing gives the highest yield. Cultivating the stubble in the fall and spring ploughing gave 4 bushels and 25 pounds of oats more than the fall ploughing.

SEEDING TO GRASS AND CLOVER

Project 28.—The object of this experiment is to compare the methods of seeding to grass—to determine the influence of the different preparatory crops and to ascertain how successful a grass crop will be when seeded on land which has grown a number of crops after being summer-fallowed. The stubble land was fall ploughed and worked down at once. The clover and grass seed were mixed with the grain in the drill box when seeding with a nurse crop. When the grass and clover were seeded alone cracked grain was mixed with the seed to facilitate the regulating of the run of the seed. Red Clover was used for a number of years, but, owing to the fact that it has not proved hardy on the Station, sweet clover is being substituted. The grass used is Western Rye. In the past eight years a total of eighty-eight plots have been seeded in the several different ways. A catch of grass has been obtained in every case, although in the dry seasons the crop of hay was sometimes very light.

The following tables give the average returns of cured hay. All seeding was done with a common grain drill:—

FIRST HAY CROP, 1921

	Yield per Acre			
	Sown Alone		Sown with Nurse Crop	
	Tons	Lbs	Tons	Lbs
Sown on summer-fallow	2	— 1520	1	— 1200
Sown after turnips	2	— 280	1	— 960
Sown after first crop on summer-fallow	2	— 520	1	— 720
Sown after second crop on summer-fallow	1	— 1140	1	— 1280
FIRST HAY CROP—8-YEAR AVERAGE				
Sown on summer-fallow	1	— 1960	1	— 605
Sown after turnips	1	— 1210	-	— 1980
Sown after first crop on summer-fallow	1	— 920	-	— 1670
Sown after second crop on summer-fallow	1	— 1032	-	— 1995

FIRST YEAR HAY CROP

				8-year average Tons.	Lbs.
Average of	2	plots	seeded on fallow	1	1,282
"	2	"	after turnips	1	597
"	2	"	after first year wheat	1	295
"	2	"	second year grain	1	516
"	4	"	with nurse crop	1	62
"	4	"	alone	2	285

SECOND YEAR HAY

				8-year average Tons.	Lbs.
Average of	3	plots	seeded with nurse crop	1	831
"	3	"	alone	1	630

Regardless of the condition of the land under test, the seeding alone gave the heavier yield of hay the first year. The yield of hay the second year depends more upon the moisture available than upon the method employed in seeding down.

Seeding on summer-fallow gave the highest yield of hay, but very little difference is shown between seeding after roots or grain crops. The 1921 yields show a lighter hay crop resulting in seeding after two crops have been taken off, but the eight-year average shows very little difference. The increase yield resulting from seeding alone is not sufficient to warrant dispensing with the grain crop. The stubble land seeded to grain in this experiment was free from weeds, which would not be true on the average farm. If many weeds are present the best plan would be to seed with a nurse crop on summer-fallow. If the nurse crop is taken off early as green feed the hay yield is reduced considerably. This may be due to the fact that while the nurse crop is green the grass plants are fairly well protected from the sun and consequently are quite tender. If the nurse crop is allowed to ripen the grass plants are gradually hardened to the heat of the sun as the leaves of the grain crop dry; while if the green crop is removed while the grass plants are tender the hot sun will damage them considerably, and thus decrease the yield of hay.

In ploughing under the eight tons of rotted manure per acre in the fall before seeding, the yield of hay has been increased by 377 pounds per acre on an eight-year average. This manure would probably have been of more value if applied preceding the grain crop.

APPLICATION OF BARNYARD MANURE

Project 36.—This experiment is conducted with a view to determining the value of manure in grain farming, whether rotted or green manure should be used, what the effect is on wheat, oats, and barley and when the manure should be applied.

All but one of the stubble plots are ploughed in the fall. This unploughed plot has manure applied in spring before ploughing. The discing or burning of the stubble in the fall is done on the same day that it is ploughed. All manure is applied at the rate of twelve tons per acre.

Rotation:—

Summer-fallow.
Wheat.
Wheat.

MANURE TO AFFECT WHEAT

	Yield of Wheat per Acre	
	1921	6-year average
	Bush. Lbs	Bush. Lbs
Rotted manure applied in spring before ploughing	31 — 20	27 — 22
Rotted manure applied in fall before ploughing	27 — 20	24 — 57
No manure—disc stubble—fall plough	27 — -	22 — 37
No manure—burn stubble—fall plough	29 — 30	22 — 20
Rotted manure after seeding on fall ploughed land	28 — -	20 — 56
Fresh manure in winter on fall ploughed land	24 — -	20 39—39
No manure—fall ploughed	21 — 30	19 — 36
First crop of Grain after Summer-fallow		7-year average
Rotted manure after seeding on summer-fallow	30 — 20	22 — 25
Fresh manure in winter on summer-fallow	30 — 30	22 — 25

The highest yield was obtained by applying rotted manure in spring and ploughing under at once, but at least a part of this increased yield is due to extra moisture from the snow caught in the stubble during the winter, as spring ploughing almost invariably gives higher yields on this Station than fall ploughing. The next highest yield is a result of ploughing rotted manure under in the fall. Compared with fall ploughing and no manure, discing stubble prior to fall ploughing resulted in an increased gain of three bushels. The burning of the stubble increased the yield 2 bushels and 44 pounds, but this result was following a perfect burn which cannot always be procured under field conditions. Weeds were not prevalent and the stubble was in a mellow condition. Fresh manure, direct from the stable, applied in winter has increased the yield as compared with no manure, but the weeds and volunteer growth were quite noticeable.

Top-dressing after seeding gives a slightly increased yield as compared with land not manured. If the manure can be ploughed under soon after application more benefit will be derived from the manure, as the figures in the table above indicate. If the soil is of such a texture that it will drift, the top-dressing may be advisable. If it is to be done, it should be before the grain comes up or it may check the growth temporarily.

MANURE APPLIED TO AFFECT OATS AS SECOND CROP OF GRAIN AFTER SUMMER-FALLOW

	Yield of Oats per Acre	
	1921	6-year average
	Bush. Lbs	Bush. Lbs
Rotted manure in spring before ploughing	68 — 8	62 — 8
Green manure in winter on fall ploughing	74 — 4	56 — 19
No manure—burn stubble—fall plough	62 — 10	56 — 2
Rotted manure in fall before ploughing	62 — 32	55 — -
No manure—disc stubble—fall plough	65 — 30	52 — 15
Rotted manure after grain is sown on fall ploughing	63 — 8	51 — 21
No manure—fall plough	50 — 30	46 — 16

FIRST CROP OF GRAIN AFTER SUMMER-FALLOW

	Yield of Oats per Acre	
	1921	6-year average
	Bush. Lbs	Bush. Lbs
Fresh manure in winter on summer-fallow	70 — 20	51 — -
Rotted manure after seeding on summer-fallow	54 — 14	49 — 5

The spring ploughing done immediately after rotted manure was applied has given the highest yield, as was the case with wheat.

The burning of stubble in the fall before ploughing has given an increased yield of nearly ten bushels per acre as compared with fall ploughing without burning. Rotted manure ploughed under in fall has given an increased yield of 8 bushels and 18 pounds per acre as compared with no manure.

MANURE APPLIED TO AFFECT BARLEY AS SECOND CROP OF GRAIN AFTER SUMMER-FALLOW

—	Yield of Barley per Acre			
	1921		6-year average	
	Bush.	Lbs	Bush.	Lbs
Rotted manure in spring before ploughing	35	30	30	1
Rotted manure in fall before ploughing	35	40	28	44
No manure—burn stubble—fall plough	32	24	26	20
Fresh manure in winter on fall ploughing	34	8	24	38
No manure—disc stubble—fall plough	31	22	22	47
No manure—fall ploughed	28	36	19	3
Rotted manure after seeding on fall ploughing	32	4	17	45
First Crop of Grain after Summer-fallow			7-year average	
Rotted manure after seeding on summer-fallow	–	–	24	19
Fresh manure in winter on summer-fallow	25	40	23	1

The highest yield of barley was obtained by applying rotted manure in the spring and ploughing at once. The next highest yield was a result of ploughing under rotted manure in the fall. This latter treatment gave an average increased yield of 9 bushels and 41 pounds as compared with the adjoining plot, which received no manure. Burning the stubble before fall ploughing has again given a higher yield than ploughing without burning. The general results of the whole experiment in applying barnyard manure may be summed up as follows:

It is advisable to rot all manure before applying it on the fields, with a view to destroying the viable weed seeds and kernels of different grains found in the fresh manure.

PLOUGHING UNDER GREEN CROPS

Project 31.—In this experiment green crops are grown on the summer-fallow and ploughed under, and the yields procured are compared with those from an adjoining plot receiving barnyard manure at the rate of twelve tons per acre and with a plot well cultivated and receiving no manure.

Rotation:—

Year 1.—Treated.
" 2.—Wheat.
" 3.—Oats.

PLOUGHING UNDER GREEN CROPS

Treatment	Yield of Wheat per Acre			
	1921		7-year average	
	Bush.	Lbs	Bush.	Lbs
Peas seeded 2 bushels per acre—ploughed under early July	22	—	21	23
Peas seeded 2 bushels per acre—ploughed under when in bloom	21	20	20	55
Tares (vetch) seeded 1 bushel per acre—ploughed under late July	23	10	18	19
Cultivated summer-fallow—rotted manure applied—12 tons per acre on fallow in September	27	20	24	17
Cultivated summer-fallow no manure	23	10	21	47

The yields indicate that it is more advisable to apply rotted manure than to grow green crops to be ploughed under. The moisture required to grow the green crop is perhaps more necessary to the following grain crop than the fertilizing elements supplied by the crops ploughed under. When barnyard manure is applied on the cultivated fallow both the fertilizer and the maximum amount of moisture are available for the wheat crop the following year. The cultivated summer-fallow not receiving any manure gave a decreased yield of two and one-half bushels of wheat per acre as compared with the plot receiving the rotted manure.

Ploughing rotted manure under in spring gives a higher yield than ploughing under in fall.

Burning the stubble before fall ploughing generally gives a higher yield than discing before fall ploughing. The discing before fall ploughing gives a higher yield than fall ploughing the untouched stubble. Ploughing rotted manure under gives higher yields than top-dressing.

The benefit of an application of rotted manure extends through a number of years. Three plots were manured in 1915 and again in 1918, and summer-fallowed in 1920. In 1921 the average increased yield of wheat was approximately five bushels per acre above the adjoining plots which had not been manured.

SOIL PACKING

Project 31. In this experiment an attempt has been made to determine the effect of each type of packer, the time packing should be done to get the highest yields on summer-fallow, spring ploughing, and fall ploughing, and to find whether the packer will increase the yield or not. It is now a recognized fact that the time to pack and the condition of the soil at the time of packing are two of the most important points to consider, and perhaps have had more to do with the results than was formerly believed. It has been considered advisable to remodel this experiment. The new plans does not include the subsurface or combination packers. The old experiment indicates that on a chocolate clay loam, such as is found at Scott, the surface packer will prove to be a little more profitable than either of the other types mentioned. The cultipacker, being comparatively a new type, will be included, so that it may receive a fair trial. It will be compared with the surface packer and the drag harrow.

Results from the old experiment are shown below:—

TYPES OF PACKERS

Spring Treatment of Summer-fallow after Seeding	Wheat—Yield per Acre	
	1921	6-year average
	Bush. Lbs	Bush. Lbs
Harrow—seed—surface pack	35 — -	26 — 03
Harrow—seed—subsurface pack	26 — 50	24 — 20
Harrow—seed—(no packing)	.....	22 — 50
Harrow—seed—combination pack	24 — 20	22 — 30

The above table shows the surface packer to give a higher yield than either of the other types under test, and an average increased yield of 39 bushels and 13 pounds per acre as compared with no packing.

Summer Treatment of Summer-fallow	Wheat—Yield per Acre	
	1921	8-year average
	Bush. Lbs	Bush. Lbs
Plough for summer-fallow—surface pack	24 — 50	24 — 13
" " subsurface pack	24 — 30	24 — 07
" " combination pack	27 — 20	23 — 50
" " harrow	24 — 00	23 — 07
Spring ploughing		6-year average
Harrow—seed—surface pack	23 — -	22 — 21
" " subsurface pack	27 — 50	22 — 17
" " combination pack	24 — 20	21 — 55
" " (no packing)	.....	21 — 55
Fall ploughing		6-year average
Surface pack in fall—seed in spring—surface pack	26 — 50	21 — 41
Combination pack in fall—seed in spring—combination pack	23 — 20	21 — 31
Harrow—(no packing)	28 — 20	21 — 01
Subsurface pack in fall—seed in spring—subsurface pack	24 — 30	19 — 33

Conclusions are drawn from a comparison of the average rather than the 1921 yields.

Packing the summer-fallow immediately after the plough has given an average increased yield of 1 bushel and 6 pounds as compared with land which was not packed.

On spring ploughing the difference in yield is small, but the surface packer is high and the unpacked plot is low.

The surface packer gives slightly higher average yields on fall ploughing but the difference, as compared with no packing, is not great enough to warrant the operation.

TIME TO PACK

The yields submitted below represent an average of the three types of packers used, and an average of two adjoining plots not packed, with a view to determining the most profitable time to pack summer-fallow and to compare the yields from the packed and unpacked land.

Spring Treatment of Summer-fallow	Wheat—Yield per acre	
	1921	6-year average
	Bush. Lbs	Bush. Lbs
Pack before and after seeding	30 — 40	24 — 20
Pack after seeding	28 — 43	24 — 14
Harrowed—(no packing)	.....	23 — 16
Packed before seeding	24 — 50	23 — -
Summer Treatment of Summer-fallow		8-year average
Plough for fallow—pack at once and again in spring after seeding	31 — 26	24 — 45
Plough for fallow—harrow—(no packing)	26 — 25	24 — 21
Plough for fallow—pack at once	25 — 33	24 — 03

There has been very little gained by packing summer-fallow in the spring. If packing only once, it should be done just after seeding.

There has been no increase in yield resulting from packing summer-fallow immediately after ploughing as compared with land harrowed immediately after ploughing.

PACKING SPRING PLOUGHED STUBBLE

	Wheat—Yield per acre	
	1921	5-year average
	Bush. Lbs	Bush. Lbs
Pack before and after seeding	28 — 30	24 — 36
Pack after seeding	25 — 03	22 — 44
Harrowed—(no packing)	26 — -	21 — 19
Pack before seeding	.....	21 — 18
Packing Fall Ploughed Stubble		6-year average
Pack after fall ploughing and after seeding in spring	24 — 53	20 — 55
Harrowed—(no packing)	25 — 40	20 — 33
Pack after seeding	29 — 23	20 — 28
Pack after ploughing	25 — 56	18 — 52
Pack in spring before seeding	28 — 13	18 — 46

No increase in yield has resulted from packing just before seeding spring ploughed land, but packing after seeding has given an average increased yield of 1 bushel and 25 pounds per acre as compared with no packing. Packing spring ploughing both before and after seeding has increased the yield by 3 bushels and 17 pounds per acre.

The packing of fall ploughing has not proved to be a profitable practice.

PACKING AND HARROWING GROWING GRAIN ON SUMMER-FALLOW

	Wheat—Yield per acre	
	1921	8-year average
	Bush. Lbs	Bush. Lbs
Pack when six inches high	26 — 40	23 — 22
Harrow when six inches high	22 — -	22 — 43
Untouched after seeding	22 — 20	21 — 56

Packing the summer-fallow when the grain is six inches high has resulted in an increased yield of 1 bushel and 26 pounds per acre.

DATES OF PLANTING—SUNFLOWERS

Project 107.—The spring of 1921 was late opening up, the first sunflowers were planted on May 10 and every week thereafter for four successive plantings. The Giant Russian variety was used, and the seed planted with the grain drill on summer-fallow.

Dates of Planting	Average Height	Stage of Maturity when cut	Green Weight per acre
	Inches		Tons Lbs
May 10	54	One per cent in flower	4 — 1106
" 17	54	" "	5 — 1775
" 23	54	" "	5 — 362
" 30	54	" "	6 — 403

In opposition to the work of previous seasons, late planting gave the best yields.

DISTANCES APART TO PLANT SUNFLOWERS

Project 108.—The Giant Russian variety of sunflower was planted in the fields on May 20. The crop was harvested on September 2. The plants in the rows were not thinned out and the yields given in the following table are from the crop grown in the field where a large number of long rows were sown.

SUNFLOWERS—DISTANCES APART

Spacing between	Average Yield per acre			
	1921		3-year average	
	Tons	Lbs	Tons	Lbs
24 inches	7	— 1249	8	— 473
30 "	7	— 688	7	— 999
36 "	6	— 1936	7	— 707
42 "	6	— 533	6	— 1739

It was noted that the closer the rows the finer the stalks. No difference in maturity was noted at cutting time from the different spacings. During the past year spacing 6, 9 and 12 inches in the rows was tested. The results indicate that where the plants are 6 or 9 inches in the rows the returns are heavier than where the plants are 12 inches apart.

HORTICULTURE

The season of 1921 was late opening up, and work in the gardens was not possible until April 29. Sufficient moisture was available to insure germination of seeds and to provide moisture to carry the vegetables, flowers and etc., through a rather dry summer. Frost on May 25 damaged cauliflower and cabbage that had been newly set out. On June 3 six degrees of frost coming at the flowering stage undoubtedly decreased the yields of cultivated and wild small fruits. No further frosts were recorded until September 9.

The horticultural work on the Station attracts more attention from visitors than, possibly, any other branch of the work. While great interest has always been taken in the trees, hedges and fruits, there was a marked increase in the interest shown in the work with vegetables. Hitherto a considerable quantity of the vegetables consumed in northwestern Saskatchewan have been bought over the counters in the village stores, either in tin cans or as so-called fresh vegetables. An increase in the number of home gardens during the next few years is looked for.

VEGETABLES

ASPARAGUS

Project 81.—The first stalks of asparagus were cut on May 25 and the bed continued to bear until June 15; after this date, the stalks were allowed to grow so as to build up the rooting system for another year. Twenty-five pounds were taken off a small bed. The rate of yield is not high, but is estimated at over one-half ton per acre.

ARTICHOKES

Project 108.—Jerusalem artichokes were planted on May 2—the dates of emergence varied considerably. The plants reached a height of 4¾ feet. The crop was harvested on October 3 and the rate of yield was 532 bushels per acre. This was about

equal to the yields of potatoes on adjoining plots. But while the potato tubers were all a good size, a considerable number of the artichokes were very small and unshapely. The table test showed them to be of good quality.

BEANS

Project 109.—Experimental work with beans has been restricted mainly to trying to secure some early maturing sorts suitable for the short growing season usually experienced in this district. The test of varieties included not only comparing yields of beans in the pod but yields of ripened seed. For several seasons tests have been made to compare sowing an early maturing variety of beans at four weekly intervals with sowing four varieties that were ready for use at different periods. The final results from this experiment are also included in this report. The seed was sown in the garden on June 4 and the plants emerged on June 12.

Variety	Seedsmen	Season	Yield Beans in Pod 40 sq.-ft.	Remarks
			Lb Oz	
Plentiful French	C.E.F.	August 2—August 29	14 — 3	Tough, poor flavour.
Masterpiece	"	" 2— " 29	12 — 14	Excellent for cooking.
Ex. Early Valentine	Rennie	" 2— " 29	12 — 7	" "
Wardwell Kidney Wax	McDonald	" 1— " 29	11 — –	Medium tender good flavour.
Pencil Pod	"	July 30— " 30	11 — –	Tender, mild flavour.
Davis White Wax	"	" 29— " 29	10 — 7	Good, early variety.
Bountiful Bush	Gregory	" 30— " 30	10 — 2	Tender, mild flavour.
Stringless Green Pod	Rennie	August 1— " 29	8 — 14	Very tender, medium flavour.
Stringless Green Pod	Burpee	" 2— " 30	8 — 7	Very tender, medium flavour.
Pilot	Wills	" 9— " 30	7 — 7	Good but rather late.
Kentucky Wonder	Rennie	" 10— " 29	7 — 3	Too late.
Refugee	Bruce	" 9— " 29	6 — 14	Extra good cooker.
Round Pod Kidney	McDonald	" 2— " 29	6 — 13	Very tender, good flavour.
Hodson Long Pot	Rennie	" 15— " 29	6 — 3	Too late.
Hidasta	Wills	" 15— " 30	6 — 3	"

DATES OF SEEDING BEANS

Project 85.—Six years' results comparing sowing one variety of beans at weekly intervals with sowing four varieties that are fit for use at different times indicates the latter to be much the better plan. It has been found that although there was a week's difference between each date of seeding the varieties would reach the cooking stage with only a few days difference between the first and last seedings. In dry seasons late June seedings may not germinate well. A fairly good succession of beans are Pencil Pod, Stringless Green Pod, Extra Early Valetine and Refugee. While there was very little difference in time of ripening of the first three varieties during 1921 there is frequently a much greater difference than is shown in the previous table in time of bearing.

BRUSSELS SPROUTS

Project 110.—This vegetable has done well in only one year out of seven. The seasons appear too dry, the sprouts do not close up well, and in addition they are too strongly flavoured. Of the two varieties tested, Amager Market gave a better yield than Dalkeith, and in addition proved earlier and had more compact sprouts. These plants were transplanted from the hotbed on June 2, and were slightly damaged by frost on June 3.

BORECOLE OR KALE

Project 111.—This vegetable made a strong growth, the leaves were coarse and even the tenderest leaves were rather strongly flavoured. This borcole was started in the hotbed and transplanted in early June.

BEETS

Project 112.—The experiments with beets included testing the most popular varieties and determining the best distance to thin the beets. The following tables give the particulars secured. The beets were sown on May 25 and harvested on September 29.

Variety	Seedsmen	Yield per Acre	Remarks
		Bushels	
New Dandy	S. Briggs	1149	Very uneven in shape otherwise good.
Eclipse	McDonald	1040	" " "
Crimson Globe	"	944	Even in shape and size, good beet.
Detroit Dark Red (0-200)	C. E. F.	944	Good table beet.
Early Wonder	McDonald	905	Coarse and unshapely.
Crosby Egyptian	Harris	882	One of the best for table use.
Early Model	D. & F.	872	Rather large and coarse.
Extra Early	McKenzie	861	Very uneven in size and shape, poor table beet.
Black Red Ball	C. E. F.	829	Good but rather large in size.
Black Red Ball (0-245)	C. E. F.	563	Uneven shape, too large for table use.

NOTE.—Some of the above varieties might have proved better table beets had they been harvested earlier.

DISTANCE APART TO THIN BEETS FOR TABLE USE

Project 113.—In this experiment the beets were sown on May 5 in the garden, and thinned June 20. The crop was harvested on September 29.

Variety	Distance between Plants	Yield per acre	Remarks
	Inches	Bush.	
Detroit Dark Red	2	1021	Very uneven in size.
Detroit Dark Red	3	936	Most suitable for table use.
Detroit Dark Red	4	941	Much too large for table use.

This experiment has been conducted for five years, and the results would indicate that with sufficient moisture two inches between the beets will give the best yields, while in dry seasons four inches between the beets yields the most. But for table use three inches is the most satisfactory for northwestern Saskatchewan conditions.

CABBAGE

Project 114.—Eighteen varieties of cabbage were included in the tests.

Of the three earlier maturing sorts, Paris Market was first fit for use and proved to be of good quality when cooked. The Copenhagen Market gave heavier yields, and was a week later in becoming fit. Of the medium season varieties, Enkhuizen Glory gave the heaviest crop, but Succession produced the most uniform lot of heads. Danish Ballhead gave the best yields of the late varieties. A red cabbage, Danish Red Stonehead, produced fair sized heads that were unusually firm. Two Chinese sorts, Wong Bok and Pe-Tsai, were grown, but did not prove popular for table use.

CELERY

Project 82.—The seasons in this part of Saskatchewan are usually too dry for celery. Where this crop is to be grown for home use water should be supplied in order to stimulate growth. On this Station artificial watering is not practised; consequently the past season proved to be a poor year for this crop. Of the nine varieties planted, Giant Pascal and Sandford Superb gave the best yields. During the past several years, blanching the celery with boards, paper and soil have been tried out. Of these methods mounting up with soil gave better blanching, and in addition it provided more protection from early frosts.

CARROTS

Project 115.—This vegetable has thriven well on this Station during recent years when grown in the garden where the soil is ploughed deep and where manure is applied occasionally. On the fields the carrots do not produce heavy crops, although grown on summer-fallowed land. This illustrates the importance of having the garden soil properly prepared. This is one of the first essentials in successful gardening. In the variety tests, Hutchinson gave the best yields, amounting to 908 bushels per acre. In the cooking test this variety proved to be of good flavour and texture. The Garden Gem slightly outyielded the Hutchinson, but the bulbs were not as uniform in size.

In the thinning experiment with carrots, in four years out of six one and a half inch spacing gave better yields than wider spacing.

GARDEN CORN

Project 116.—During the past three years, work with garden corn has rapidly increased; this year twenty-four varieties and selections were grown. Of these, six plots were from seed saved on the Scott Station from the 1920 crop. Observations made on the corn grown in the fields on summerfallow and the corn grown in the gardens, shows that the latter makes the more rapid growth and appears to have a much richer coloured foliage. This may indicate the *importance of proper* preperation of the soil for garden corn as well as for all classes of vegetables. It has also been noted that plants from home grown seed break through the soil earlier than plants from seed secured from other sources.

The corn was planted in hills and in rows on May 30, and the plants showed above ground about June 6. By August 15, Howes Alberta Flint was fit for use, requiring seventy-seven days to reach the roasting stage.

The following table gives a list of varieties in order of reaching the roasting stage:—

Variety	Seedsmen	Date fit for use	No. of cobs reaching roasting stage	Remarks
Howes Alberta Flint	Un. Alta	Aug 15	146	Medium flavour, yellow corn.
No. 74	Scott seed	" 17	160	" " " "
Pickaninny	C. E. F.	" 18	140	Good flavour.
Sweet Kloochman	Scott seed	" 19	115	"
Sweet Squaw	"	" 20	128	Fairly sweet, White.
Assiniboine	"	" 22	149	" "
"	Wills	" 23	95	" yellow.
Sweet Kloochman (0-896)	C. E. F.	" 27	94	Good flavour.
Early June	Wills	" 29	123	Squaw flavour, mixed colours.
Sweet Squaw	C. E. F.	" 29	88	Medium flavour, white.
Imp. Early Dakota	Wills	" 31	101	
Extra Early Adams	Ferry	Sept. 3	52	White, rather tough.
Nuetta Sweet	Wills	" 6	98	Good flavour, yellow.
Early Malcolm	C. E. F.	" 7	76	" "
Early Mayflower	McDonald	" 8	76	" white.
Extra Early Cory	"	" 9	45	White, tender, late.
Early Fordhook	Burpee	" 10	53	Medium flavour, tender, late
Malakoff	Vaughan	" 10	89	Good flavour, tender, late.

In addition, Pocahontas Sweet, Evergreen Bantam, Howling Mob and Whipple Early were tested, but all proved too late.

CUCUMBERS

Project 117.—Six varieties of cucumbers were grown in the tests and in addition to the usual plan of sowing the seed in the garden, seed of each variety was sown in small boxes in the hotbed and set out in the garden on July 4. This proved too late for transplanting, and the yield was even poorer than where the seed was sown out of doors on June 7. The first cucumbers were picked from the Improved Long Green on August 20, this variety was second from standpoint of yield. Giant Pera gave the heaviest yield and was first fit for use on August 23. Prolific and Early Russian are two other good varieties. A West India gherkin failed to produce edible fruit.

KOHL-RABI

Project 118.—This vegetable was tested out for the first time on this Station. It grew rapidly, and appeared to thrive well. If used before becoming too far advanced it makes an excellent vegetable to replace the summer varieties of turnips which are usually too strong and bitter. The Early White kohl-rabi produced the heaviest crops.

LETTUCE

Project 119.—Twelve varieties of lettuce were tested. The seed was sown in the garden on June 6. The variety Earliest Wayahead was fit for use on July 10. The average weight of head was only 6 ounces, and the plants went to seed early. Hanson Improved was fit for use on July 25, with heads weighing 1 pound, 7½ ounces. New York proved to be one of the best of the head lettuce, continuing fit for use from July 19 to quite late in the season. Crisp as Ice is another promising variety.

ONIONS—VARIETY TESTS

Project 122.—The growing season for onions in this district appears to be too short to permit growing good seed onions. When grown from sets the onions develop in less time, and in favourable seasons mature sufficiently to permit storing for winter use. In the experiments it has been a practice to sow the seed as soon as the soil was workable in the early spring, later the onions were thinned. The cool weather of autumn usually delayed ripening of the bulbs. Fall planted seed has hitherto failed to produce a satisfactory crop.

Twelve varieties of onions were sown in the variety tests rows this year. Yellow Globe Danvers gave the best yield. Prize Taker was second in point of yield, and produced some fairly even sized bulbs. Extra Early Flat Red has usually been one of the best varieties, but this year it produced a very poor crop.

THINNING ONIONS

Project 120.—Thinning onions to spacings of one, two and three inches in the rows has been practised for several seasons. This year's yield bears out the results obtained in previous seasons that one inch between the young plants is sufficient. Three varieties were used each year in this experiment.

SIZE OF ONION SETS

Project 121.—It would appear that growing onions from sets is likely to prove the most satisfactory method of growing onions for winter. In order to determine the best size of sets to use, four different lots were graded into one-quarter-, one-half- and three-quarter-inch sizes.

The first lot of sets had been well ripened, and it was found that the smaller sets gave heavier crops than the next larger size, and also that the three-quarter-inch gave the least yield.

Three other lots of sets, all home grown, and from bulbs that were not mature at time of digging, were graded. In this experiment the findings were reversed, and the crop from the larger sized sets in all instances was heavier than from the intermediate size, while with one exception the smaller sized sets gave the least yield.

GROWING ONION SETS

Project 86.—Six years' work with growing three varieties of onion sets goes to show that this is scarcely practicable or profitable here. The sets never ripen before the season for severe frosts arrives. Fairly good yields have been obtained but there has been a serious loss in storing.

GARDEN PEAS

Project 123.—Garden peas have usually thriven well at Scott and have given good yields of both green pods and ripe peas. Twenty varieties were sown in the test rows on May 6. The first varieties showed through the soil on May 20, and the last varieties on May 24. In the tests one-half of each test was picked for green peas; the other half was allowed to ripen seed; in this way yields of both the green peas in the pod and the ripened seed were secured. Calculated on an acre basis the Reliance variety yielded at the rate of over 7 tons per acre of green peas in the pod, while the yield of ripe seed ran over 36 bushels per acre. The retail price on peas in the pod in 1921 was 10 cents per pound and ripe peas for seed were selling at the rate of $15 per bushel.

The varieties are listed in the table according to yields of peas in the pod.

TEST OF VARIETIES OF PEAS

Variety	Seedsmen	Date ready for use	Average No. of Peas in Pod	Yield from 45 sq. ft.		Quality
				Green Pods	Ripe Peas	
				Lb. Oz.	Lb. Oz.	
Reliance	S. Briggs	July 25	8-9 large	14 — 10	2 — 4	Excellent.
McLean Advancer	0-167-8	" 21	5- small	12 — 13	2 — 4	Fairly sweet.
Sherwood	McKenzie	" 25	6-7 large	12 — 6	1 — 8	Sweet, firm tender.
Danby Stratagem	Carter	" 25	8-9 "	12 — 1	1 — -	Excellent.
Western Beauty	S. Briggs	" 16	6- medium	11 — 13	1 — 6	Medium.
Gregory Surprise	Gregory	" 15	6- small	11 — 6	1 — 6	"
American Wonder	Carter	" 15		10 — 12	1 — 8	Off type.
Little Marvel	Graham	" 15	7-8 small	10 — 11	1 — 6	Excellent.
Laxtonian	"	" 15	8- large	10 — 11	1 — 6	Medium.
Gradus	Carter	" 16	5- "	9 — 12	1 — 6	"
Manifold	McKenzie	" 19	7-8 medium	9 — 12	2 — -	Inferior.
Pioneer	Gregory	" 16	6-7 "	9 — 10	1 — 4	Medium.
Richard Seddon	McKenzie	" 23	7-8 small	8 — 10	1 — 10	"
Sutton Excelsior	Sutton	" 20	7- med	8 — 5	2 — -	"
English Wonder	0-8929	" 20	7- "	7 — 15	2 — -	"
Eight Weeks	Carter	" 16	6- small	6 — 5	1 — 2	
Early Morn	McDonald	" 7	6- "	6 — 3	1 — -	Excellent.
Dwarf Pea (2360)	Sidney	" 18	5-6 large	5 — 7	1 — -	Medium.
Eldorado	McKenzie	" 25	5- large	4 — 10	- — 14	"
Homesteader	"	" 17	7-8 med	1 — 4	2 — 5	"

SECURING A SUCCESSION OF GREEN PEAS

Project 124.—As with beans, the experimental work with peas goes to prove that it is advisable to sow three or four varieties of peas that reach the cooking stage at different intervals rather than sow any variety at several different dates. The following would give a fairly long season for green peas, and they could all be sown on the same day: Early Morn, Gradus, Stratagem, Reliance.

PARSNIPS

Project 125.—There is always a good demand for parsnips for storing for winter. The Hollow Crown is one of the best varieties, and thinning the plants to two-inch spacing results in a heavier yield than where wider spacing is practised.

PEPPERS

Project 126.—The earliest varieties of peppers, if started in the hot-beds, fruit at Scott, provided also there is a fairly open autumn. Fruit has ripened on the variety Harris Earliest during the past two seasons.

RADISH

Project 127.—Radish usually grows fairly rapidly if sown during the season of the most rapid growth in the spring. White Icicle produced better bulbs than the Scarlet Turnip White Tipped variety. These were the only two varieties tested.

RHUBARB

Project 128.—Numerous inquiries received at the Station indicate that many who have started rhubarb have not had much success with this vegetable. One of the main difficulties is that insufficient fertilizer is provided. While it is advisable to move the plants every few years, they may be left much longer in one location, provided the patch is covered with well-rotted barnyard manure. The manure may be spread on the plot after the season for pulling the stalks is past. Six inches of manure will increase the crop returns the following year several-fold. This will stimulate growth of stalks and leaves, and less seeding will be noted. Another difficulty some have encountered is caused by a bacterial disease which causes the plants to decay. The remedy for this would appear to be to take up the diseased plants and burn them, and to move the plantation from time to time and start with plants grown from seed. The Victoria appears to be one of the most popular varieties of several that are under test on this Station.

A plan to provide rhubarb for winter use is as follows: Several roots are taken up late in the autumn and allowed to stand out of doors until they have frozen and thawed several times. The roots are then taken and put in the cellar, packed in close together, and covered with soil. This plan has been followed on the Scott Station a number of times with success. The main factors contributing to success in this venture are:—

First—To have a good supply of roots.

Second—To expose the roots to the severe weather for a time.

Third—To keep moistened during the winter.

SPINACH

Project 129.—Two varieties of spinach were sown on May 9 in the gardens. The Victoria was showing above ground on May 22, but the New Zealand variety did not show through until later. The Victoria continued fit for use for only a short period, but the New Zealand remained edible until late in the season.

SQUASH, PUMPKIN, MARROW

Project 130.—Owing to climatic conditions it is not always possible to secure reasonable results with these vegetables. This year, owing to the absence of early September frosts, fair crops were harvested from the Connecticut field pumpkin, the Hubbard squash and from the Long White Bush marrow.

TURNIPS

Project 131.—Summer turnips are an unsatisfactory crop to grow. Growth is rather slow during the summer months, and the turnips become too strongly flavoured for winter use. Such varieties of swede turnips as Sutton Champion are much more popular.

TOMATOES—VARIETY TESTS

Project 132.—During the first years the Station was operated it was seldom that even a fair crop of tomatoes could be harvested, but during recent years some good crops have been taken off. The following methods have been instrumental in hurrying the development of the tomato crop so that part of the fruit can be ripened on the vines.

(1) Using earlier maturing varieties.

(2) Having the plants ready for flowering at time of transplanting.

(3) Pruning all superfluous foliage.

(4) Tying pruned plants up to stakes.

(5) Growing a Caragana hedge around the garden.

The tomatoes were started in the hot-beds on April 14 and transplanted to the garden on June 18. The first ripe fruit was picked on August 10. The plants continued to produce ripe fruit up to September 9, when the whole crop, ripe and green, was harvested and weighed up.

The following table gives a list of varieties tested, arranged in order of total yield from eight plants of each variety:—

VARIETIES OF TOMATOES

Variety	Seedsmen	First Ripe Fruit	Quantity of Ripe Fruit	Quantity of Green Fruit	Remarks
			Lb. Oz.	Lb. Oz.	
Burbank Early	C. E. F.	Aug. 13	7 — 3	15 — 9	One of the best varieties tested.
Crimson Canner	"	" 13	10 — 4	10 — 14	Large smooth fruit.
Earlibell	"	" 16	3 — 4	17 — 8	Good shape and smooth.
Danish Export	Wiboltt	" 16	4 — 10	14 — 10	Lacks uniformity in size of fruit.
Alacrity x Earlibell	C. E. F.	" 10	11 — 12	6 — 12	One of the best varieties grown.
John Baer	"	" 16	4 — 10	12 — 15	Fruit even in size and shape.
Alacrity x Hipper	"	" 10	10 — -	6 — 10	Fruit rather unshapely.
First of All	McKenzie	" 16	3 — 3	8 — 6	Fruit even in size and shape.
Chalk Jewel	C. E. F.	" 20	1 — 14	9 — 8	Fruit small but in clusters.
Red Head	Langdon	" 24	3 — 6	7 — 3	One of the best for shape and size of plant.
Chalk Early Jewel	Carter	" 16	1 — 13	4 — 6	Fruit small and unshapely.

It will be noted that selection of seed made at the Central Experimental Farm produced the earliest and heaviest yielding crops. This illustrates the importance of establishing good strains of tomatoes. The yields from the heaviest yielding are very creditable, running over 150 bushels per acre.

PRUNING AND TYING UP TOMATOES

Project 83.—In the pruning experiment, plants were pruned to one stem, to two stems, to half foliage and left unpruned. Unpruned plants usually produced slightly the heaviest yield but very little fruit ripens, and the green fruit varies considerably in size. Leaving two stems resulted in heavier yields than where only one stem was left, where the plants were tied to wires; but when tied to stakes the one stem plants produced the heaviest yield. Removing half the foliage appeared to have a detrimental effect.

Both wires strung along the tomato rows and fastened to stakes at the end and individual stakes for each plant were used as supports for the tomato plants. These were compared with unpruned plants left on the ground. Plants tied to wires are difficult to hold up, and the wires cut the stalks of the tomatoes. One stake driven down beside each plant is quickly done. Tying up requires but little time, and once firmly fastened gives little further trouble, while the plants being suspended gives the fruit a better opportunity to ripen.

METHODS OF RIPENING GREEN TOMATOES INDOORS

Project 133.—Owing to the short summer season and early autumn frosts there is always a quantity of large green fruit that can be ripened indoors. In addition, this plan lengthens the season for ripe tomatoes, particularly if the room in which they are stored is not too warm.

The green tomatoes were put in layers, in straw, some were put in an air-tight box, others were left on the vines and suspended from the wall. Also, one lot was put in a sunny window. The tomatoes in the air-tight box ripened the most uniformly and were quite firm. The tomatoes on the vines made much the poorest showing. This bears out the experience of previous years.

CULTURAL EXPERIMENTS WITH POTATOES

A number of the cultural tests with potatoes were started in 1915. These experiments have been most interesting and have thrown some light on potato growing under northwestern Saskatchewan conditions. As many of these experiments will not be repeated it has been considered advisable to publish details of the results fairly fully.

DATES OF PLANTING

Project 94.—In this experiment potatoes were planted each year on May 1 and weekly intervals thereafter for six successive plantings. The tubers were cut to three eyes in a set and planted in rows 30 inches apart, with 12 inches between the sets in the row. In the first years the experiment was conducted the work was carried out under field conditions; during later years planting in the vegetable garden was practised. This accounts for the increased yields obtained over other experiments.

POTATOES—DATES OF PLANTING

Date of Planting	Yield per Acre, 7-Year average			
	Early Maturing Varieties		Late Maturing Varieties	
	Bush.	Lb.	Bush.	Lb.
May 1	351	22	393	15
" 8	338	44	395	31
" 15	353	33	383	29
" 22	326	9	352	22
" 29	274	35	322	32
June 5 (6 years only)	246	27	265	13

During the years these experiments have been under way the earlier planted lots were frozen back to the ground line in two or three years, but there has been only one season when any misses in the plantation were traceable to this cause. It will be noted that the later maturing varieties should be planted as soon as possible after May 1, while with both varieties the yields dropped rapidly when planting was done after the middle of May.

SPROUTING POTATOES BEFORE PLANTING

Project 89.—Two varieties were used in this experiment: one an early maturing sort, the other a late variety. The potatoes to be sprouted were placed in a cool, light room with the seed end up about six to eight weeks before planting time. Short green sprouts developed at the seed end of the tuber, and the sprouts in the other parts of the tubers were stunted so that the main sprout was well fed until the roots in the plant were firmly established. This experiment has been conducted for seven years, and the following table gives the average results secured. The potatoes were planted each year at the same time as the other potato tests, about May 15.

SPROUTING BEFORE PLANTING—EARLY VS. LATE MATURING VARIETIES

Treatment	Yield per Acre Average 7-years			
	Early Maturing Varieties		Late Maturing Varieties	
	Bush.	Lb.	Bush.	Lb.
Sprouted before planting	271	39	300	29
No sprouts before planting	219	31	234	27

This experiment shows an increase of 52 bushels per acre in favour of sprouting an early maturing sort, and 66 bushels per acre increased gain when a late maturing variety was sprouted. This increase is, no doubt, largely due to giving the crop a longer season for growth, since sprouts on the tubers before planting hasten the date of emergence by many days. It is planned to continue the experiment, carrying it out on a commercial scale.

KINDS OF SETS

Project 88. Two types of potatoes were used in this experiment; one variety had most of the eyes at the seed end of the tubers, and in the other variety the eyes were more uniformly distributed. The following table gives the average of the yields from the two varieties for a seven-year period.

POTATOES—KIND OF SETS

Kind of Sets	Average Yield per Acre 7-years			
	Eyes Uniformly Distributed		Eyes mostly in one end of Tube	
	Bush.	Lb.	Bush.	Lb.
Whole medium sized potatoes	221	35	215	27
Cut with three eyes in each set	225	34	231	28
Cut with two eyes in each set	198	38	210	35
Cut with one eye in each set	180	28	179	40

Conclusions.—Having three eyes in each set not only resulted in heavier yields, but in a greater percentage of marketable potatoes. The second highest yielding seed was the whole medium-sized potatoes.

The experiment shows that cutting sets as small as is generally practised is poor economy. Three eyes in each set produced 27 and 21 bushels per acre more than where only two eyes in each set were used, and 40 and 50 bushels more than where only one eye was left in each set.

POTATOES—DISTANCE APART

Project 90. In this experiment two varieties were used, an early and a later maturing sort. Thirty and 36 inches between the rows and 12 and 14 inches in rows were the spacings tested. The plots were one-twentieth acre in size, and the experiment has now been carried on for seven years. The yields for the different spacings have varied considerably; sometimes these were traceable to seasonal variations, and at other times no reasons were apparent.

Averaging up the results for the whole period would indicate that the closer planting would bring in slightly heavier yields—the increase was not sufficient to pay for the extra seed required. If 20 bushels of potatoes per acre are required for seed, the 12-inch spacing would have to yield three bushels per acre more than 14-inch spacing. Calculating that 20 bushels of seed were required when 30-inch spacings between the rows was practised then the 30-inch spacing would have to yield over three bushels per acre more to make up for additional seed requirement. It may be stated, therefore, that for dry land conditions 36 inches between the rows and 14 inches in the rows are sufficiently close.

POTATOES—HILLING VS. LEVEL CULTIVATION

Project 91. It has generally been considered that hilling potatoes is an unprofitable practice under dry farming conditions. The average of seven years' returns at Scott shows an increased yield of 9 bushels 49 pounds per acre over plots that were cultivated and not hilled. In the dry years of 1917-18 the level cultivation gave the best returns. During the past season there was very little rain during July and August, and as a result level cultivation gave the best returns. However, in four years out of seven hilling up was the most profitable. Hilling up is also beneficial in preventing sunburned tubers, and, what is more important, aids in protecting the tubers against early fall frosts.

Straw Mulch. The application of a straw mulch for potatoes has been discontinued after two years' work at Scott. This experiment was dropped as the mulch seriously decreased the yields and the tubers were badly infected by scab.

POTATOES—COST OF PRODUCTION

Project 93. The experiment to determine the cost of growing potatoes has also been under way for seven-year period. The following is the estimated costs and return values for this crop for the season of 1921:—

Rent for 1 acre	$ 3 00
Seed, 20 bushels at $1 per bushel	20 00
Cutting sets, 13 hrs. manual labour at 35c	4 55
Ploughing in sets, man and team, 8 hrs. at 59c	4 72
Dropping sets, 18 hrs. manual labour at 35c	6 30
Harrowing and packing after planting, 2⅛ hrs. at 59c	1 28
Cultivating two times, 6½ hrs. man and team at 59c	3 83
Cultivating and hilling, 4 hrs. man and 1 horse at 47c	1 88
Weeding, 1 man, 3 hrs. at 35c	1 05
Digging, man and team, 6½ hrs. at 59c	3 83
Picking manual labour, 26½ hrs. at 35c	9 27
Hauling to basement, man and team, 4 hrs at 59c	2 36
Total cost	$62 07
Returns per acre	
62 bushels of Everitt at 65c. per bushel	$40 30
65 " Gold Coin at 65c. per bushel	42 25
Total returns	$82 55
Total cost per acre	62 07
Profit per acre	$20 28

POTATOES—COST OF PRODUCTION, 1915-1921

Cost of Production	Yield per Acre Everitt	Yield per Acre Gold Coin	Sale Price per Bushel	Value of Crop One Acre	Average Profit per Acre 7-Years
	Bushels	Bushels			
$79 49	165	194	76c.	$120 72	$41 23

VARIETY TESTS—POTATOES

Project 87. The varieties of potatoes were planted on land that had been summer-fallowed in 1920. They were planted about 4 inches deep on May 18 with plough. The crop was harvested with the potato digger on September 26.

VARIETY TESTS—POTATOES

Variety		Yield per Acre. Marketable 1921		Unmarketabe 1921		Ave. Yield per Acre 8-Years	
		Bush.	Lbs.	Bush.	Lb.	Bush.	Lb.
Dreer Standard	Late, good keeper, eye deep	249	42	22		219	36
Prince Albany	" " " " "	234	24	26	24	216	38
Carman No. 1	" " " " " med. deep	254	6	26	6	216	30
Wee MacGregor	" " " quality good	247	45	27	30	215	26
Early Northern	Early, very poor keeper	211	12	28	36	211	32
Gold Coin	Late, good keeper	249	42	25	18	205	29
Empire State	Late, good keeper, deep eye	218	54	22		203	42
Morgan Seedling	Rather late	201	8	22		203	23
Rochester Rose	Early, fair keepers	180	28	29	42	197	35
Everitt	" " "	152	12	29	42	197	26
Late Puritan	Late, good keeper	217	48	25	15	195	34
Dalmeny Beauty	" " "	253		41	48	192	40
Table Talk	Too late for this district	225	30	48	24	188	33
New Queen	Early, good keeper	211	12	28	52	187	31
Houlton Rose	" medium keeper	220		27	30	187	26
Irish Cobbler	" good keeper	162	48	22	41	184	28
Rawlings Kidney	Late, crop yields too light	234	18	26	24	183	14
Early Hebron	Early crop yields too light	211	12	28	36	177	18
Reeves Rose	" " " " "	155	26	20	54	169	24
Vick Extra Early	" " " " "	170	30	20	54	164	33
Hard to Beat	Late, crop " " "	174	54	18	42	157	35
Money Maker	" " " " "	160	36	22	42	154	30
Early Ohio	The Earliest under test	134	12	18	48	143	31
Bermuda Early	Early, yield insufficient	129	48	13	12	131	30

It has been decided to drop the last fourteen on the list, with the exception of Irish Cobbler and Early Ohio varieties. The former is one of the earliest of the white skinned varieties and the latter is the earliest variety grown at Scott. Owing to its inferior keeping qualities the Early Northern will also be omitted from the 1922 planting list.

New varieties recently introduced include Gold Nugget, Majestic, Acme, Bovee and Peacock Surprise.

The Gold Nugget did well in 1920; during the past year it did not make such a good showing. but slightly outyields the Irish Cobbler in the field test. In the garden it made a much better showing where registered seed district from the originator was planted. So far, none of the other recent introductions have shown any particular improvement over standard varieties.

FRUITS

TREE FRUITS

Project 134.—Very little progress can be reported with the growing of apples. Out of a considerable number of varieties planted since 1911, most of the trees have been winter killed, particularly during the winter of 1915-16. This year several crossbred apple trees and a few crab apples produced a small quantity of fruit. The Alberta, Jewel, Pioneer and Piotash produced fruit; also the Transcendent crab apple. None of the fruit was over one and one-quarter-inch in diameter, but one Alberta tree produced 150 apples in this its first producing year.

PLUMS

Project 135.—Seedlings of Native Manitoba plums continue to thrive well, and have outgrown the apple trees. Quite a number fruited again this year. Seed from two of the trees was saved. The fruit on the one tree was a fairly large red plum with a thin skin, rather large pit; the fruit was excellent for eating out of hand. The other tree bore a heavy crop of smaller, round yellow plums with a small pit but a thick skin. Fruit on both of the trees ripened early. It is planned to plant the pits in the spring and determine to what extent the character of the fruit is transmitted to the seedlings.

SMALL FRUITS

Project 136.—Spring frosts undoubtedly decreased the yields of currants and all crops suffered from the dry weather experienced during July and August.

A plantation of currants set out in 1918 is now beginning to produce good crops. The older plantation, however, continues to give the best returns. Observations made at Scott indicate that a longer time is required to get a small fruit plantation well established than is required where there is more rainfall. On the other hand, because of a less luxuriant vegetative growth, it may be advisable to leave strawberry beds and bush fruits longer in bearing than in moister sections.

The following table gives the comparative yields of fruits from some of the best yielding varieties of small fruits:—

SMALL FRUITS

Variety	Growth of Bushes	Size of Fruit	Yield per Acre 1921
			Lb.
Black Currants:—			
Magnus	Strong, vigorous	Medium	9214
Black Beauty	" "	"	6241
Kerry	" "	Large	5880
Saunders	" "	Medium	3920
Topsy	" "	Large	3883
Naples	" "	Medium	3702
Red Currants:—			
X Raby Castle	Medium sized bushes	Large	4029
Stewart	Strong Vigorous	"	3702
Red Grape	Medium growth	"	2772
White Currants:—			
White Grape	Weak	Medium	4356
Gooseberry:—			
X Houghton	Strong	Small	1497
Raspberries:—			
Kings	Small vigorous	Medium	2409
X Sunbeam	Large "	Small	1969
Herbert	Medium "	Large	1255
Strawberries:—			
X Dakota	Vines small	Medium	2686
Senator Dunlop	" medium	" to large	2032

NOTE.—The varieties marked X are considered very hardy. All the black currants are quite hardy.

While the yields of fruit are not as high as usual, sufficient was produced from a comparatively small area to supply a considerable number of families with currants, gooseberries, raspberries and strawberries. The retail price at the Station was 15 cents a pound for currants and gooseberries and 20 cents a pound for raspberries and strawberries.

The experimental work with small fruits, in addition to determining the best varieties to grow, is a demonstration in fruit growing that appeals particularly to the people who visit the Station.

ORNAMENTAL GARDENING

TREES AND SHRUBS

Project 79.—Notes taken during the past summer on the rate of growth of trees and shrubs in the test rows in the arboretum show a stronger growth than for several seasons. The Native White Spruce now adds to its height from one foot to eighteen inches each season. Flowering shrubs such as Bush Honeysuckle, Caragana, Lilac and Spiraea bloomed well during June. The honeysuckle in particular is to be recommended as a flowering shrub; it is particularly hardy and free flowering. The Caragana continues to make a useful hardy hedge. For a rapid growing tree the genuine Russian poplar (*Populus petrowskyana*) is recommended—no other variety of poplar or cottonwood is as hardy.

The importance of keeping the grass cut from the tree plantation has been fully demonstrated at Scott. According to the original plan, small circles about three feet in diameter were kept free from grass and weeds around each tree on the lawn. Each year for three seasons the grass in between the trees has been destroyed either by digging or ploughing in one of more clumps. This work is usually done early in the summer, and even in the first year an increased rate of growth is noted in the trees in the clumps newly cultivated.

FLOWERS

PERENNIALS

Project 80.—Flowers thrive well at Scott. With even a light amount of rainfall good bloom can be obtained. The long summer days and so much bright sunshine appear particularly favourable to most kinds of flowers. Perennial Larkspur, Iceland Poppies, Gypsophila, Columbines, Polemoniums and Scarlet Lychnis are all hardy and can be readily grown from seed in any garden, and add much to the appearance of the home surroundings.

ANNUALS

One hundred and ninety varieties of annual flowers were grown in the gardens during the past season. Some work was required to start the plants, many of which were started in the hot-bed and transplanted early in June to the flower garden, but, once set out, surprisingly little attention was given and the returns repaid for the labour several times over.

The following is a list of annual flowers that were self-sown and that bloomed well:—

Phlox Drummondii,
Schizanthus,
Sweet Sultan,
Kochia,
Linaria,
Petunia,
Corn Flower,
Nicotiana,
Helichrysum,
Larkspur (annual),
Eschscholtzia.

BULBS

Tulips

Project 187.—Tulips are hardy flowers that thrive well on the prairie, but are comparatively little grown. Because they produce early, frost-hardy, spring flowers they should be grown more extensively than they are at present. Bulbs planted late in the autumn bloom in late May and June of the succeeding summer. Spring planting was tried out at Scott in the spring of 1920, but the soil was dry; consequently few of the bulbs bloomed until 1921. These, together with the bulbs planted in the autumn of 1920, gave much more extensive flower beds than have been in evidence at Scott since the war started.

For outdoor planting the early tulip is hardier than other kinds, and is less expensive. The following is a list of some of the best varieties under test:—

Proserpine (Old Rose),
Chrysolora (Golden Yellow),
Duchesse de Parma (Terracotta),
Pottebakker (White),
Vermillion Brilliant,
La Reine (Pink).

Bulbs for Indoor Bloom for Winter

Each autumn narcissi, hyacinths and tulips are planted in flower pots, pans, etc., for winter flowers. Comparatively little care is required and usually there is a splendid showing of flowers to brighten up the windows during the winter weather. Bulbs can be secured from any seed house, and are usually advertised in the fall catalogues.

The main factors in successful pot culture are as follows:—
(1) Securing sound, well-developed bulbs.
(2) Planting in good soil that will not bake.
(3) Storing potted bulbs in a cool basement for several weeks.
(4) Giving the flowers a plentiful supply of moisture during the flowering period.

The following is a list of varieties that have been tested out at Scott and have given satisfaction:—

Hyacinths.	*Narcissi.*	*Tulips.*
La Grandesse.	Emperor.	Proserpine.
Moreno.	Empress.	Chrysolora.
Gigantea.	Sir Watkin.	Duchesse de Parma.
Grand Lilas.	Van Sion (double).	Pottebakker White.
		Vermilion Brilliant.
		La Reine.

CEREALS

WHEAT

Project 21.

Seven named varieties of hard red spring wheat and six numbered sorts were grown in the uniform tests plots. The latter are under test for the Dominion Cerealist and are not reported upon here.

The field had been summer-fallowed in 1920 and the plots were sown on May 8 at the rate of 1¾ bushels of wheat per acre. Duplicate tests were made of all varieties.

SPRING WHEAT—TEST OF VARIETIES

Variety	No. of Days required to Mature	Average Length of Straw Including Head	Average Strength of Straw Scale of 10-Points	Average Length of Head	Yield of Grain per Acre	Yield of Grain per Acre
	Days	Inches		Inches	Lb.	Bush. Lb.
Early Red Fife.....Ottawa 16	107	35	9·5	2·8	1910	31 — 50
Kitchener.....	109	34	9·5	2·75	1855	30 — 55
Red Fife.....Ottawa 17	109	35	9·8	2·75	1840	30 — 40
Red Bobs.....	101	30	9·6	2·5	1775	29 — 35
Marquis.....Ottawa 15	106	34	9·5	2·7	1765	29 — 25
Pioneer.....Ottawa 195	101	30	9·5	2·25	1525	25 — 25
Ruby.....Ottawa 623	99	30	9·5	2·5	1080	18 —

The following varieties have been under test for at least a four-year period. The following table gives the average number of days required to mature, and the average yields per acre:—

WHEAT—AVERAGE YIELDS

Variety	Average No. of Days required to Mature	Average Yield per Acre 4-Years
		Bush. Lb.
Kitchener.....	117	21 — 5
Red Fife.....Ottawa 17	117	20 — 7
Marquis.....Ottawa 15	114	19 — 5
Red Bobs.....	110	19 — 3
Ruby.....Ottawa 623	104	12 — 43

Three years out of the four have been very dry at Scott; consequently yields were low and the later maturing varieties have made the best showing. The yields for a nine-year period show Marquis to have outyielded the Red Fife by an average of two-thirds of a bushel. In addition, Marquis does not shell nearly so readily as Red Fife if not cut promptly. On large fields this factor alone has saved farmers much more than has ever been lost through the Marquis being difficult to thresh.

Kitchener is the heaviest yielding for the four-year period, but further tests during moister years should be made to determine its strength of straw as well as its yield. Red Bobs has matured earlier than Marquis, and has given about equal yields. At Scott it has made a very creditable showing. Two other Dominion Experimental Stations in Saskatchewan report Red Bobs much more susceptible to rust than Marquis.

Among the newer introductions, Early Red Fife has yielded well, coming second to Kitchener in 1920 and outyielding it in 1921. Owing to its shattering habit in the field a further test will be necessary before it can be recommended.

Kubanka, the durum wheat that is recommended as one of the best varieties to grow for the macaroni trade, was grown this year. It outyielded the bread wheats. It is planned to continue to test this variety at Scott to compare it with barley and spring rye for yield and for feeding to live stock.

Rust did no damage on the Scott Station in 1921, and has not played any important part in crop yields since 1916.

OATS

Project 138.—Nine varieties of oats were sown on May 16 on the duplicate test plots. The field had been summer-fallowed in 1920. Two and one-half bushels of

seed per acre was used for all varieties except the hull-less variety "Liberty." This variety was sown at the rate of one bushel per acre.

OATS—TEST OF VARIETIES

Variety	No. of Days to Mature	Average Length of Straw Including Head	Strength of Straw on Scale of 10-points	Average Length of Head	Yield per Acre	Yield per Acre
	Days	Inches		Inches	Lb.	Bush. Lb.
Banner Ottawa 49	94	36	9·5	7·5	2680	78 — 28
Victory	94	37	9·25	7·0	2560	75 — 10
Gold Rain	93	37	9·3	7·0	2525	74 — 9
Leader	94	37	9·1	8·0	2370	69 — 24
Russian Yellow	96	37	9·5	7,5	2260	66 — 16
Tartar King	93	35	9·3	7·75	1935	56 — 31
Daubeney Ottawa 47	82	33	9·5	5·5	1915	56 — 11
Alaska	78	37	8·0	6·0	1660	48 — 28
Liberty Ottawa 480... (Hull-less)	88	37	9·0	7·5	1480	43 — 18

The newer introductions did not yield nearly as well as the three standard varieties, Banner, Victory and Gold Rain. This is the second season the Leader and Russian Yellow have been grown at Scott. The former yielded 12 bushels per acre less than Banner in 1920, and 9 bushels less this year. Russian Yellow which was second highest yielding variety in 1920 is down to fifth place this year. As is usual at this Station, early maturing varieties have not yielded well. The hull-less oat (Liberty) continues to produce well for this type of oat, and it can be recommended for growing on farms where young stock such as pigs, calves, etc., are raised. The ground hull-less oats provide a most satisfactory ration for young animals.

Five varieties of oats have been grown in the comparative test plots for seven years in succession. The following table gives the average number of days required to mature, and the average yield per acre:—

OATS—AVERAGE YIELD

Variety	Average No. of Days required to Mature	Average Yield per Acre 7-Years
		Bush. Lbs.
Banner Ottawa 49	115	69 — 24
Victory	115	69 — 2
Gold Rain	114	66 — 30
Tartar King	114	59 — 14
Daubeney Ottawa 47	104	52 — 26

The Banner and Victory oats are about equal in point of yield. The Banner variety appears to withstand adverse conditions better than the Victory. In the recent dry years it has outyielded the Victory in four years out of five. Tartar King is grown as a representative of the side oats; it is much below the best branching oats in yield and takes about as long to mature. The Daubeney is a representative of the early chewan, owing to their light yields. Also, Eigthy Day, Twentieth Century, Thou- chewan, owing to their light yields. Also, Eighty Days, Twentieth Century, Thousand Dollar, Abundance, Ligowo, Great French, Lizo and Alsask varieties have been tested and dropped from the lists as not being equal to the standard varieties.

BARLEY

Project 139.—Ten varieties of barley have been under test during the past year. The seed was sown on May 16 on summer-fallowed land, all tests were conducted in duplicate, and the figures quoted are the average of the returns from the two plots.

BARLEY—TEST OF VARIETIES

Variety	No. of Days Required to Mature	Average Length of Straw Including Head	Average Strength of Straw Scale 10-Points	Average length of Head	Yield per Acre	Yield per Acre
	Days	Inches		Inches	Lbs.	Bush. Lbs.
Six-rowed:—						
Barks	96	28	9·0	1·6	2,195	45 — 35
Chinese Ottawa 60	83	35	9·0	2·25	2,015	41 — 47
O.A.C. No. 21	83	32	9·0	2·0	2,000	41 — 32
Stella Ottawa 58	86	36	9·0	2·75	1,960	40 — 40
Himalayan Ottawa 59 (hulless)	78	29	9·2	2·5	1,680	35 — -
Albert Ottawa 54	71	31	9·0	1·8	920	19 — 8
Two-rowed:—						
Early Chevalier Ottawa 51	82	36	8·8	2·7	1,780	37 — 4
Gold	93	27	9·0	2·7	1,700	35 — 20
Duckbill Ottawa 67	93	29	9·0	2·75	1,640	34 — 8
Gordon A	83	36	9·0	2·6	1,410	29 — 18

The six-rowed varieties have this year for the most part outyielded the two-rowed sorts. The Barks barley was secured from a seed house in the spring of 1921; an examination of the plot showed many different types of heads. The Chinese was received from Ottawa in the spring; it is a selection from the same foundation stock as the Manchurian; the latter variety was dropped at Scott because it was found to shatter too readily in the field. The Himalayan is a selection from the old hull-less variety known as Guymalaye.

Three six-rowed varieties and an equal number of two-rowed sorts have been under test for four years.

BARLEY—AVERAGE YIELD

Variety	Average No. of Days required to Mature	Average Yield per Acre 4-Years
	Days	Bush. Lbs.
Two-rowed:—		
Duckbill Ottawa 57	121	20 — 32
Early Chevalier Ottawa 51	102	18 — 1
Gold	108	17 — 43
Six-rowed:—		
O.A.C. 21	104	18 — 30
Stella Ottawa 58	103	16 — 39
Albert Ottawa 54	97	13 — 16

The average for the four-year period shows the Duckbill to have outyielded the leading six-row variety by two bushels per acre. Taken over a period of eight years, the Duckbill outyielded the O.A.C. No. 21 by five bushels per acre.

In addition to Manchurian, Brewer, Success, Black Japan and Charlottetown No. 80 have been tested during the past few years but none of them proved as satisfactory as Duckbill or O.A.C. No. 21, and were dropped.

FIELD PEAS

Project 140.—Five varieties of peas were tested. They were sown on land that had been summer-fallowed the previous year. The average results from the duplicate tests were as follows:—

PEAS—TEST OF VARIETIES

Variety	No. of Days Required to Mature	Length of Vine	Length of Pod	Yield per Acre	Yield per Acre
		Inches	Inches	Lbs.	Bush. Lbs.
Prussian Blue	113	34	1·75	2,015	33 — 35
Early White	99	30	1·7	1,720	28 — 40
Chancellor Ottawa 26	94	29	1·7	1,690	28 — 10
Arthur Ottawa 18	103	29	1·7	1,660	27 — 40
Solo	105	33	2·1	1,535	25 — 35

This is the third year in succession that the Prussian Blue has given the heaviest yields. It withstands drought better than the earlier maturing sorts. In years with a plentiful supply of rain this variety is sometimes caught by the fall frosts. The Early White variety continues to mature early and yield well. Chancellor, Ottawa 26, was received from the Dominion Cerealist and replaces the strain of Chancellor used in previous seasons. Solo has seldom yielded well at this Station.

FLAX

Project 141.—Owing to the soil on the Station being unsuitable for flax growing, very little work is done with this crop. The following table includes the average yields of the two varieties under test both for 1921 and for a five-year period:—

FLAX—TEST OF VARIETIES

Variety	No. of days required to Mature	Height	Average Yield per acre 1921	Average Yield per acre 5-years
		Inches	Bush. Lbs.	Bush. Lbs.
Novelty Ottawa 53	121	19	11 — 14	8 — 26
Premost	121	18	9 — 6	8 — 22

SPRING RYE

Project 142.—Spring rye has again given good yields. On the comparative test plots the variety "Prolific" gave a return of 2,355 pounds of grain as compared with 2,195 pounds from the highest yielding variety of barley.

SPRING RYE—TEST OF VARIETIES

Variety	No. of Days Maturing	Average Length of Straw	Strength of Straw Scale of 10-points	Average Length of Head	Yield per acre	Yield of Grain per acre
		Inches		Inches	Lbs.	Bush. Lbs.
Prolific	94	42	9	2·6	2,355	42 — 3
Ottawa Select 12	92	45	9	2·7	1,875	33 — 27

The Prolific spring rye has outyielded Ottawa Select each year since it was introduced three years ago. The plants of the Prolific variety are more leafy and the threshed grain is larger in size.

FALL RYE

Project 143.—Two plots of Dominion fall rye and one of North Dakota 959 were sown on July 29 of the previous year. Both plots of Dominion winter-killed. The North Dakota 959 yielded at the rate of 15 bushels and 20 bushels per acre. For northwestern Saskatchewan conditions it appears necessary to use only the hardiest varieties of fall rye.

SEED GRAIN

Project 144.—The multiplication of the best varieties and strains of seed grain receives very careful attention. The following table gives some particulars regarding the seed grain raised on the Station during the past year:—

Variety	Source of Seed	Area	Date Sown	Date Harvested	Total Yield from Field	Yield per acre
		Acres			Lbs.	Bush. Lbs.
Banner Ottawa-29 (oats)	C.E.F. 1919	12·0	May 11	Aug 20	31,008	76 — —
Duckbill Ottawa-57 (barley)	C.E.F. 1917	6·0	" 19	" 24	8.664	24 — —
Liberty Ottawa-480 (hulless oats)	C.F.E. 1919	·75	" 27	" 24	720	28 — 16
Marquis Ottawa-15 (wheat	C.E.F. 1919	20·0	" 4	" 16	29,460	24 — 33
Prolific (spring rye)	University, Sask. 1919	4·01	" 27	" 24	7,560	23 — 37
Ruby Ottawa-623 (wheat)	C.E.F. 1917	2·04	" 27	" 24	2,580	21 — 24

FORAGE CROPS

The season of 1921 was favourable to the production of hay crops on fields where the grass was well established, but unfavourable to hay crops grown on fields seeded down in 1920, and to the production of good crops of roots or crops for ensilage.

ENSILAGE CROPS

INDIAN CORN

Project 43.—Seven varieties of field corn were planted in the test rows on May 23 and the crop was harvested on September 2. The seed was planted on summer-fallowed land with the ordinary grain drill. An even stand of corn was secured but owing to dry weather experienced during July and August the yields were even lighter than usual.

INDIAN CORN FOR ENSILAGE—TEST OF VARIETIES

Variety	Height	Stage of Maturity	Yield per acre
			Tons Lbs.
Compton's Early	37 inches	Early tassel	3 — 1,778
Twitchell's Pride	36 "	" silk	3 — 1,778
Longfellow	50 "	" tassel	3 — 977
North Western Dent	47 "	" silk	2 — 1,657
Leaming Field Corn	39 "	" tassel	2 — 1,421
Canadian Yellow	40 "	" silk	2 — 1,185
Quebec 28	36 "	" "	2 — 714

In addition to the variety test of corn, 1¾ acres of Northwestern Dent was planted in the same field as the sunflowers. The field corn yielded at the rate of 2 tons 1,058 pounds per acre. Sunflowers in rows the same distance apart gave a return of 6 tons 533 pounds per acre.

INDIAN CORN FOR ENSILAGE—TEST OF VARIETIES, 1919-21

Four varieties of Indian corn have been under test for three consecutive seasons. The following are the average yields green weight for this period:—

Variety	Average yield per acre 3-years
	Tons Lbs.
Compton's Early	8 — 1,087
Longfellow	7 — 1,330
North Western Dent	6 — 1,671
Quebec 28	6 — 1,230

Compton's Early has been the highest yielding corn each year during this period. The Longfellow also outyields the other two varieties every season. The Quebec 28 is usually a little more mature than the other sorts.

SUNFLOWERS

Sunflowers are a more promising crop than corn in this district for making into ensilage, mainly because they are more frost resistant and produce heavier yields most seasons.

Seed of several different types of sunflowers was secured and planted on May 23 on summer-fallow. Owing to rabbits eating the tops of the young plants no record of yields was obtainable but the following table gives the other particulars secured from plants not injured by the rabbits.

TEST OF VARIETIES—SUNFLOWERS

Project 44—

Variety	Source of Seed	Height	Stage Maturity on Sept. ?
		Inches	
Friesian	Rosthern	56	One per cent in flower.
Alberta Seed	G. H. Hutton	55	" " " "
Early O-76	C.E.F.	50	Late bloom and seed.
Early Sunflowers	Dominion Cerealist.	48	" " " "
Red Seeded	Scott	45	Late bloom some seed.

SHRINKAGE IN SUNFOWERS AFTER CUTTING

Project 145.—The matter of how long to leave sunflowers and corn, when cut immature, before ensiling is one question that is receiving some attention. In this experiment representative samples of corn and sunflowers were weighed as soon as cut and left on the ground until weighed again. The sheaves were weighed twenty-

four hours after cutting, but owing to rain and cloudy weather were not weighed again until five days after cutting.

	Corn	Sunflowers
	Lbs.	Lbs.
Weight of 15 sheaves at time of cutting	296·0	448·0
Weight of 15 " 24 hours after "	200·0	390·0
Weight of 15 " 5 days after "	172·0	315·0
Percent shrinkage in 24 hours	32·4	12·7
Percent " in 5 days	41·8	25·2

About two per cent of the sunflowers were in bloom at time of cutting, and five per cent of the corn was in the early silk.

This experiment has been conducted for two seasons. During late August, 1920, over two inches of rain had fallen; as a result the sunflowers cut on September 7 appeared to contain a high percentage of moisture, and some shrinkage was advisable to save labour in handling and possible loss of plant food through the moisture seeping out from the silo. In 1921 very little rain fell for a month preceding the time of cutting the sunflowers; consequently the main crop of sunflowers was put into the silo as soon as cut.

The shrinkage test with sunflowers in 1920 showed 31·9 per cent of moisture lost by leaving the sheaves on the ground for forty-eight hours, whereas in 1921 the loss of moisture after five days only amounted to 25·5 per cent. In 1920 there was a heavy seepage from the silo, but in 1921 much less than usual was noted. It would appear, therefore, that the time that should elapse between cutting and ensiling sunflowers will depend on the amount of moisture available for plant growth, and to this might be added the stage of maturity.

GRASSES AND LEGUMINOUS PLANTS

ANNUAL HAY CROPS

Annual hay crops are most useful when a grass crop has failed to catch or where a large quantity of bulky feed is required.

These tests were conducted in duplicate on one-fortieth acre plots. The crops were sown on June 2 and were cut when considered fit for hay. The millets were the last to be ready for cutting.

ANNUAL HAY CROPS

Projects 51, 69, 70 and 71—

Variety	Yield per acre			
	1921		6-year Average	
	Tons	Lbs.	Tons	Lbs.
Oats and peas	2	— 700	2	— 1,170
Oats	2	— 500	2	— 830
Spring rye	2	—	2	— 316
Japanese millet	1	— 600	2	— 280
Hungarian millet	1	— 300		

Because of a greater percentage of leaf, the oats or oats and peas made better hay than the Spring rye, but the latter has a decided advantage in the one respect that it makes hay in a shorter time than any other annual hay crop that has been tested.

GRASSES, CLOVERS AND ALFALFA

Experimental work with these crops has increased until approximately 200 one-fortieth-acre plots are in use, and several small fields are devoted to testing out hay and pasture crops. Seeding down to grasses is rapidly increasing in the district, and numerous enquiries are received at the Station regarding the possibilities of sweet clover, with a few enquiries about alfalfa.

The following gives the average of the yields obtained from grasses, clovers and alfalfa during the past year. The figures quoted are for yields of cured hay.

HAY CROPS—TEST OF VARIETIES

Project 77—

Variety	Average Yield per acre 1921		Average 2-years	
	Tons	Lbs.	Tons	Lbs.
Sweet clover	2	— 1,640	2	— 1,060
Western rye grass	2	— 660	22	— 550
Brome grass	2	— 880	1	— 1,440
Alfalfa		1,280	Winter killed, 1920..	
Timothy		1,200	"	" 1,920
Kentucky Blue grass		880	"	" 1,920
Meadow fescue		400	"	" 1,920

It will be noted that the sweet clover has slightly outyielded the rye grass. Brome grass this year gave better returns than the rye but owing to being so much lower in yield in 1920 is lower in average returns for the two years. Timothy, Kentucky Blue grass and meadow fescue are not satisfactory grasses for hay production in this district.

Brome Grass and Western Rye Grass plot.

The following mixtures of grasses, clovers and alfalfa were part sown in 1919 and the remainder in 1920. The yields quoted are for cured hay:—

GRASS, SWEET CLOVER AND ALFALFA MIXTURES

Mixture	Yield per acre 1921	
	From 1919 Seeding	From 1920 Seeding
	Tons Lb.	Tons Lb.
Brome grass and alfalfa	2 — 820	
Brome grass and sweet clover (sweet clover dead)	2 — 240	
Western Rye grass and sweet clover (sweet clover dead)	2 — -	1 —1,320
Western Rye and alfalfa	1 —1,720	1 —1,000
Western Rye and Brome grass	1 —1,920	2 — -

Compared with the previous table it will be noted that there appears to be no advantage in the mixing of these forage plants, in so far as yields are concerned. Both alfalfa and sweet clover cure more easily in the grass mixtures, and, in addition, the alfalfa in particular improves the quality of the hay. Brome grass and Western rye, when mixed, make curing of the Brome grass less difficult and the Brome helps to bind the rye grass hay together, making it easier to handle. On the other hand there is a slight decrease in yield when they are mixed and breaking and backsetting will be necessary to control the Brome, while breaking only is required to destroy the rye grass.

SWEET CLOVER

Project 68. The tests to determine the possibilities of growing Sweet Clover with a nurse crop have thrown some light on the subject in so far as one season's work can go.

Both oats and barley were used as a nurse crop, and several rates of seeding nurse crop were included. The clover seed was mixed with the grain and sown through the grain drill on June 7, 1920, on summer-fallow land. The weights stated are for cured hay.

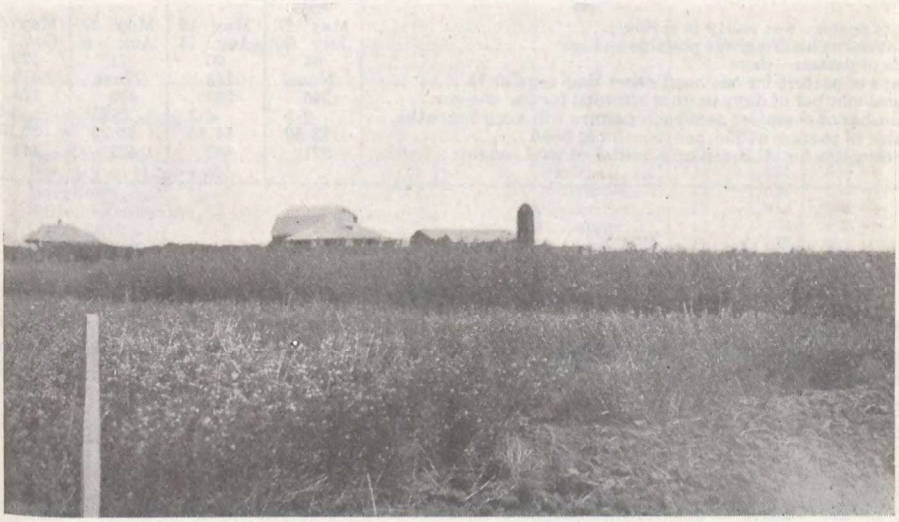
SEEDING SWEET CLOVER WITH A NURSE CROP

Nurse Crop used in 1920	Yield per acre 1921		
	First Cutting	Second Cutting	Total Yield
	Tons Lb.	Tons Lb.	Tons Lb.
Oats ¾ bushel per acre	1 — 320	- — 880	1 —1,200
Oats 1½ "	- —1,400	- — 760	1 — 160
Oats 2¼ "	—1,080	- — 720	- —1,800
Barley 1 "	1 — 80	- —1,040	- —1,120
Barley 2 "	—1,920	- —1,080	1 —1,000
Seeded alone	2 — 280	- —1,360	2 —1,560

It will be noted that three-quarter bushel of oats used as a nurse crop decreased the yield of hay per acre by 1 ton 360 pounds as compared with where no nurse crop was used. The yield of threshed oats in 1920 from using three-quarters of a bushel of seed amounted to 47 bushels. It will be seen that the matter of using a nurse crop will depend on the relative values of oats and hay. These are only the results from one season's work and experiments along this line are being continued.

ALFALFA

Project 59. The yields of alfalfa in recent years have been light owing to lack of sufficient moisture. A comparison was made between sowing alfalfa with a nurse crop and alone. The yield per acre alone amounted to 1 ton 120 pounds per acre and where the nurse crop was used the yield only amounted to 1,280 pounds per acre.



Alfalfa in foreground; Sweet Clover in background.

PRODUCTION OF GRASS SEED

Project 54. Only one small field of Western Rye grass was saved for seed, this yielded at the rate of 581 pounds per acre. This is the second year the field has produced seed.

PASTURE CROPS

Project 146. Four different crops were used in this experiment, sweet clover, alfalfa, Western Rye grass and Fall rye. The fields were about one acre each in size. The sweet clover and alfalfa were sown in June, 1920 and the Fall Rye in August of the same year, while the Western Rye grass seed had been in sod for several seasons.

Sheep were used to remove the crops. Fifteen sheep were used in each field, and when the pasture became too short the sheep were weighed out and kept on a common field. When the pasture grew up again the same lot of sheep was weighed back in. In the case of the sweet clover it was found necessary during June to put in twelve additional sheep to keep the growth from becoming too rank.

In the following table the gains of the sheep are given and the number of days pasture:—

PASTURE FOR SHEEP

	Fall Rye	Western Rye	Alfalfa	Sweet clover
Date pasture was ready in spring	May 27	May 15	May 27	May 27
Last date pasturing was possible	July 30	Aug. 13	Aug. 6	Oct. 3
Life of pasture—days	64	90	71	129
Days of pasture for one head other than regular 15	None	143	None	410
Total number of days pasture afforded for one sheep	345	593	435	774
Number of sheep per acre each pasture will keep 5 months	2·5	4·7	2·95	5·2
Value of pasture at 25c. per month per head	$2.50	$4.25	$3.25	$6.25
Total gains for all sheep from initial to final weight	271	462	472	441

FIELD ROOTS

The work with field roots has during the past season consisted mainly in comparing turnips and rutabagas for yield. Seed of the same varieties was secured from seedsmen and in addition three European varieties were tested. The months of July and August were particularly dry, consequently, the roots made but little development previous to the September rains. The turnips were harvested on October 6 and the following table gives the average yields secured from two tests:—

FALL TURNIPS—TEST OF VARIETIES

Projet 147—

Variety	Seedsmen	Total Yield per acre			
		Tons	Lb.	Tons	Lb.
Greystone	Svalof	18	—1,060	741 —	10
Purple Top Yellow Aberdeen	McKenzie	17	— 188	683 —	38
Stubbs	Svalof	15	—1,944	638 —	44
Pomeranian White Globe	Rennie	15	—1,944	638 —	44
Ostersunder	Svalof	15	—1,152	623 —	2
Purple Top Mammoth	Rennie	14	—1,436	588 —	36
Improved Greystone	S. Briggs	14	—1,172	583 —	22
Greystone or Mammoth	McKenzie	14	—1,040	580 —	40
Greystone	Rennie	13	—1,852	557 —	2
Red Top Strap Leaf	"	13	—1,324	546 —	24
Yellow Aberdeen	"	12	—1,608	512 —	8
Red Top Strap Leaf	S. Briggs	12	— 948	498 —	48
Bortfelder	Svalof	12	— 420	488 —	20
Pomeranian White Globe	S. Briggs	12	— 420	488 —	20
Aberdeen Yellow Purple Top	"	9	—1,932	398 —	32
Average		14	— 562·6	571·2 —	26

FALL TURNIPS

McKenzie's Purple Top Yellow Aberdeen did particularly well and theirs was the only strain of this variety to yield well. The bulbs on the Yellow Aberdeen are much smoother than the Greystone. In some seasons quite a number of bulbs of the Greystone are hollow. The Greystone, Stubbs, Ostersunder and Bortfelder are four varieties the seed of which was secured from the plant breeding station, Svalof, Sweden. The Stubbs is a flat to oval and is easily harvested; the last two have long tapering bulbs and are difficult to pull. The Greystone from Svalof gave the highest yield of all varieties tested. The Red Top Leaf is too rough and can well be discarded.

SWEDE TURNIPS OR RUTABAGAS

Project 50.—The swede turnips were sown in the same field as the fall turnips and were planted and harvested with them. The following table gives the comparative yields from the purple top and green bronze top types:—

SWEDE TURNIPS OR RUTABAGAS

Variety	Seedsmen	Total Yield per acre	
		Tons Lb.	Tons Lb.
Purple Top Varieties:—			
North Western	McKenzie	15 —1,416	628 — 16
Purple Top Mammoth	Rennie	14 —1,436	588 — 36
Bangholm	McKenzie	13 —1,852	557 — 2
Sutton Champion	Kentville	12 —1,212	504 — 12
Good Luck	S. Briggs	12 — 156	483 — 6
Select Purple Top	"	11 —1,100	462 — -
Bangholm Improved	"	11 — 968	459 — 18
Haszard Improved	"	11 — 176	443 — 26
Halls Westbury	Rennie	11 — 44	440 — 44
Bangholm	"	10 —,1648	432 — 48
Monarch or Elephant	McKenzie	10 — 988	419 — 38
Monarch	Nappan	9 — 480	369 — 30
Average		12 — 123	482 — 23
Green or Bronze Top:—			
Ditmar	R. V. Ditmars Red Brook, N.S.	16 — 76	641 — 26
Kangaroo	Rennie	10 —1,912	438 — 12
"	McKenzie	10 —1,252	425 — 2
"	S. Briggs	8 — 368	327 — 18
Average		11 — 902	458 — 2

SWEDE TURNIPS

It will be noted that the average yield from the fall turnips is two tons per acre more than for the swedes. The green and bronze top types yield almost one ton per acre less than the purple top types. Again it will be noted that the Ditmars' selection gave the highest yield. McKenzie North Western did well, also Rennie Purple Top Mammoth.

SUGAR BEETS

Project 148.—Three "varieties" of sugar beets were sown in test plots June 2 and harvested October 6, when representative roots of each lot were forwarded to the Dominion Chemist for analysis. Yields obtained are given in following table:—

Variety	Average Yield Per Acre	
	Tons Lb.	Tons Lb.
British Columbia	7 — 256	285 — 6
Chatham	6 — 408	248 — 8
Waterloo	5 —1,748	234 — 48
Average	6 — 804	256 — 4

Seed of all varieties was grown in Canada and obtained through the Dominion Sugar Company, Chatham, Ont.

SILOS

The introduction of the sunflowers as an ensilage crop has created a demand for information on silos from districts where formerly the silo was considered entirely out of the question. Corn has never proved a dependable crop in northwestern Saskatchewan, but sunflowers appear quite hardy and can be grown on any farm. In addition, experiments indicate the sunflower ensilage to be of about equal feeding value to silage made from corn. While crops of sunflowers in the drier districts of the prairie will necessarily be light, the ensilage is a feed that is greatly needed on the prairie farms to furnish succulence to the rations fed the farm animals.

The silo as a storehouse is one of the cheapest available, since more bulky feed can be stored in less space in the silo than in any other building constructed. The main objections to the introduction of the silo and ensilage on the farms are the cost of not only the building but the cost of the equipment to handle the crop. This equipment would probably include a two-row culitvator, a corn binder and an ensilage cutter.

THE STAVE SILO

In the summer of 1919 a stave silo 12 feet in diameter by 28 feet high was erected. This silo was of the ready-made type; the staves, hoops, roof and brace wires were shipped ready to set up. The total cost, which included the purchase price, freight, cement foundation and labour charges for erecting, amounted to $547.90. This silo readily holds 80 tons of sunflowers.

Some difficulty from silage freezing to the walls has been experienced. This has been overcome to an extent in some years by threshing a pile of straw around the silo. Keeping a layer of cut straw on top of the silage has assisted greatly, particularly when only a small quantity of silage was removed each day. The straw was forked to one side in the silo and a layer to a depth of eight inches removed from just one section of the surface. The straw was then tramped back in place again. The frozen silage picked off the walls, when taken into a warm building and thawed rapidly, was readily eaten by the animals.

A PIT SILO

The pit silo has been recommended in certain sections of the United States and in one or two districts in Western Canada.

With a view to ascertaining the cost of the pit silo and its possibilities in this district one was constructed on the Station during the early winter months. In the following statement the time required to remove the earth from around the top of the silo has been included. Where the soil was banked near the silo there would be a saving of 160 hours of manual and 320 hours of horse labour. This would amount to a saving of $88.

COST OF DIGGING PIT SILO—NOVEMBER 17-DECEMBER 17, 1921

Size of silo 13½ feet in diameter by 20 feet deep

Cost of manual labour digging—612 hrs. at 35c	$214 20
Cost of horse labour digging—398 hrs. at 10c	39 80
Cost of manual labour, cement—239 hrs. at 35c	83 65
Cost of cement—49 sacks at $1.22	59 78
Cost of manual labour hauling sand and etc.—35 hrs. at 35c	12 25
Cost of horse labour hauling sand and etc.—42 hrs. at 10c	4 20
Cost of planks for top 268 feet at 4.9c	13 13
Total cost including cement floor	$427 01

It will be noted that the only cash outlay was $59.78 for cement and $13.13 for lumber for cover.

POULTRY

The work with poultry has consisted mainly in a continuation of the experiments started a few years ago. The flock has been further improved by the use of cockerels secured from the Dominion Experimental Station at Lethbridge, and from the university at Saskatoon. The winter was unusually mild, and this afforded the later hatched pullets an opportunity to develop before the severe weather set in. The spring opened up later than usual; and this decreased the egg production during April. The Buff Orpingtons were discontinued as they had never made even a reasonable showing as egg producers, although they proved useful as broody hens. The White Wyandottes were shipped to the Lacombe Experimental Station and exchanged for a number of Barred Rock pullets and hens.

STOCK

The following is a list of the laying and breeding stock on hand at the close of the poultry season on October 31:—

Barred Plymouth Rock hens	95
Barred Plymouth Rock pullets	168
Barred Plymouth Rock cockerels	33
	296

EGG PRODUCTION RECORDS

TRAP-NESTING

Project 99.—Trap-nesting has been followed on the Scott Station since 1918, but during the first two years it was not followed up during the summer months. Commencing with 1920, trap-nesting all the laying stock has been under way, and a decided increase in egg production per bird has been noted. This increase is, no doubt, due in part to better feeding and to improvement effected by the use of the best cockerels available, but it is also undoubtedly due in part to saving the eggs from the highest producing females. Nine birds laid over 200 eggs during the year, with an average of 217 eggs per bird. Thirty-three others laid over 150 eggs, with an average of 170 per bird. This is a fair record considering that the test was conducted in latitude 52 and at an altitude of 2,100 feet above sea level.

Barred Rocks, White Wyandottes and Buff Orpingtons were compared for egg production. The following table gives the records secured for the several periods that the birds were in the tests:—

EGG PRODUCTION RECORD FOR BREEDS

Period	Barred Rocks		White Wyandottes		Buff Orpington	
	Hens	Pullets	Hens	Pullets	Hens	Pullets
November 1 to April 30	7·9	13·7	7·4	10·3	.....	11·2
May 1 to July 1	10·2	14·6	10·2	12·2	.....	.....
August 1 to October 1	9·8	13·5	.....	.....	.....	.....

It will be noted that the pullets gave a considerably higher egg production than the hens. The Buff Orpingtons were disposed of at the end of April. The White Wyandottes were shipped to the Lacombe Station in August.

STORING EGGS FOR FALL AND WINTER MARKETS

Project 149.—During the months of June and July fresh eggs were selling at 15 cents per dozen on the local markets. In order to determine the profitableness of preserving eggs for the fall and winter trade all the surplus eggs were packed in water-glass or lime water.

On September 28, seventy-eight dozen were sold to a local merchant at 35 cents per dozen. The remainder were sold in December at 45 cents per dozen. Losses were light; in the last lot sold, out of 588 the only losses were one and one-half dozen, and these would class as "cracks".

In order to preserve eggs it would appear advisable to use only infertile eggs. This can be accomplished by removing the male birds a couple of weeks before commencing to save the eggs. Fresh eggs, clean, and with sound shells should be used. The container for packing the eggs should be well sterilized before using, and the water-glass or lime water should be boiled and allowed to cool before using. The best temperature for storing eggs runs from 40 to 45 degrees, but for comparatively short keep higher temperatures than these may be used.

NOTE.—Exhibition Circular No. 42, "Lime water for the Preservation of Eggs" by Dr. Shutt, Dominion Chemist, can be had by writing this farm or the Central Experimental Farm, Ottawa.

INCUBATION

Project 95.—Incubators were used almost exclusively for hatching. This was due mainly to the spring opening up so late that it was late in the season before the hens could be set out of doors. Three hens were set, but owing to the soil being so damp poor hatches were secured. Comparisons were made between the three incubators in use, and an attempt was made to determine the best month for hatching. The following table gives the particulars secured regarding the three different makes of incubators.

TEST OF DIFFERENT MAKES OF INCUBATORS

Name of Incubator	No. of Eggs Set	Percent Eggs Fertile	Percent of Fertile Eggs Hatched	Percent of Chicks Hatched Alive July 1	Total Eggs for one Chick Alive July 1
Buckeye	897	91%	64%	42	2·4
Prairie State	729	93%	49%	63	3·2
Tamlin	184	88%	50%	45	5·0

The Buckeye machine is supposed to be self regulated as far as moisture is concerned. Moisture pans are used in the Prairie State machine. The Tamlin is a hot-water machine and sand trays are used to supply the moisture. In order to maintain the humidity in the incubator it was found necessary at times to sprinkle water on the floor. Both room hygrometers and incubator hygrometers were used to keep a check on the moisture supply.

TIME OF HATCHING

Project 100.—Although the month of April was unusually cool good hatches were secured; this was partly due to the mild winter resulting in the pullets commencing to lay earlier in the winter and to the birds securing more exercise.

Month Hatched	No. of Eggs Set	Percent Eggs Fertile	Percent Fertile Eggs Hatched	Percent of Chicks Hatched Alive July 1	Total Eggs for one Chick Alive July 1
April	461	91%	55%	63%	3·0
May	1,094	91%	56%	47%	4·0
June	237	91%	60%	44%	4·0

BROODING

Project 150.—Early in the season one brooder house was used, later a second one was started up. These buildings are two of the portable colony houses and are not as tightly constructed as is advisable for best results with the heating equipment. A commercial colony brooder stove was used which burned chestnut sized hard coal. A hover suspended over the stove deflects the heat to the floor and allows the chickens to secure any degree of warmth they desire, provided the stove is operating properly. Very little difficulty occurred with the heating equipment except during windy weather, when the colony houses cooled off. A thermostat controls the draft in the stove, but the wind increased the draft so that some attention during the night had to be given. Otherwise, filling the stove with coal twice per day was all that was required. Losses between the time the chicks were hatched and July 1 amounted to 46 per cent. This is higher than is desirable. In order to decrease the rate of loss in another season new floors have been laid in the houses, and it is planned also to insulate the walls.

FEEDS FOR POULTRY

Project 151.—For the most part feeds used in the poultry plant are grown on the Station, but it is considered a good business proposition to buy such feeds as meat scraps where milk is not available, oyster shell, sharp grit, charcoal, and, where necessary, bran and shorts. The following table gives the feeds used for feeding for egg production:—

Ration for Laying Hens:

Scratch Grain—	
Wheat	300 lbs.
Oats	150 "
Barley	150 "
Dry Mash (for feeding through self-feeder)—	
Oat chop	100 lbs.
Bran	100 "
Barley chop	50 "
Shorts	50 "
Beef scrap	45 "
Salt	9 oz.

Sprouted oats and mangels are fed additional.

Ration for Baby Chicks.—Quite a number of rations are used for feeding young chicks. The following have been used on the Station with good success.

Feed not to be given young chicks sooner than thirty-six hours after hatching.

Bran	1 part
Rolled oats	1 "
Bread crumbs	1 "

Small quantity of chick grit.
Moisten with milk or water.

Growing Ration for Chicks:

Scratch Grain (fed twice per day)—
- Pinhead oatmeal.. .. .. 10 lbs.
- Cracked wheat.. .. .. 10 "

Dry Mash (fed through hopper)—
- Sifted oat chop.. .. .. 10 lbs.
- Corn meal.. .. .. 5 "
- Shorts.. .. .. 10 "
- Bran.. .. .. 10 "
- Beef scrap (if milk is not available).. .. .. 2 "

Chick grit (fed through hopper).

FATTENING POULTRY FOR MARKET

Project 97.—Every autumn large numbers of unfitted spring chickens flood the markets in Saskatchewan. The sale of this stock brings the owners but indifferent returns, has a reactionary effect on the market for all dressed poultry, and decreases the price of the better grades. It has frequently been suggested that this stock be fattened on the farms.

During the past few years some crate fattening has been done on the Scott Station. The work during 1921 consisted in the following lines of experimental work:—

(1) Determining the profitableness of crate fattening.
(2) Comparing beef scrap and milk for fattening.
(3) Ascertaining the value of pea meal in grain mixtures.

Barred Rock cockerels were used in the experiments. The crate fattened birds were fed the meal mixture moistened. The check lots were allowed to run with the birds on free range. For this reason it was difficult to secure the quantities of feed they consumed.

The feed was charged at the valuations given in the following table:—

- Oat chop.. .. .. 1c. a lb.
- Barley chop.. .. .. 1c. "
- Shorts.. .. .. 1½c. "
- Pea meal.. .. .. 1½c. "
- Beef scrap.. .. .. 8c. "
- Milk.. .. .. ½c. "

CRATE FATTENING (AUGUST)

—	Pea Meal, Oat Chop, Barley Chop, Milk Lot 1	Pea Meal, Oat Chop, Barley Chop, Beef Scrap Lot 2	Oat Chop, Barley Chop, Milk Lot 3	Free Range Lot 4
Number of birds in experiment	4	4	4	9
	Lb. Oz.	Lb. Oz.	Lb. Oz.	Lb. Oz.
Initial August weight of birds	12 — 4	12 — 7	13 — 12	27 — 3
Final weight of birds	15 — 6	15 — 6	15 — 9	29 — —
Total gain in 14 days	3 — 2	2 — 15	1 — 13	1 — 13
Average gain per bird	1 — 12	— — 11·7	— — 7	— — 3
Amount of oats and barley fed	19 — —	19 — —	18 — 12	— — —
Amount of pea meal	9 — —	9 — —	— — —	— — —
Amount of beef scrap	— — —	2·6— —	— — —	— — —
Amount of milk	8 — —	— — —	— — —	— — —
Total cost of feed	$0.40½	$0.50½	$0.18¾	
Cost per lb. of gain	$0.13	$0.17·2	$0.10·2	

CRATE FATTENING OCTOBER 7–21

—	Pea Meal, Oats and Barley, Beef scrap Lot 1	Pea Meal, Oats and Barley Lot 2	Shorts, Oats and Barley, Beef scrap Lot 3	Free Range Lot 4
Number of birds in experiment	5	5	5	9
	Lb. Oz.	Lb. Oz.	Lb. Oz.	Lb. Oz.
Initial weight	18 — 4	21 — –	19 15	38 — 2
Final	22 — 11½	23 — 6½	22 — 10½	42 — 3
Gain in 14 days	4 — 7½	2 — 6½	2 — 11½	4 — 1
Average gain per bird	– — 14·3	– — 7·7	– — 8·7	– — 7·2
Amount of oats and barley fed	14 — –	14 — –	14 — –	14 — –
Amount of pea meal	6 — –	6 — –	– — –	– — –
Amount of shorts	.....	.....	6 — –	
Amount of beef scrap	2·2— –	.....	2 — –	
Amount of Milk	.....	.....	.....	.....
Total cost of feed	$0.38	$0.23	$0.37	
Cost per lb. of gain	$0.8·6	$0.9·5	$0.13·3	

Conclusions.—Crate fattened dressed poultry proved popular on the local market, the demand keeping well ahead of the supply. This might warrant asking higher prices for crate-fattened birds. It will also be noted that the crate-fattened stock made more gains than the stock on free range.

While the individuality of the birds plays an important part in determining the gains made, it would appear to be more profitable to use skim-milk rather than beef scrap.

Below is submitted a balance sheet for poultry for the year closing October 31, 1921.

—	Nov. 1, 1920 Value	Oct. 31, 1920 Value	Returns including Sales	Total cost of Feed	Return in excess of Feed costs
Poultry	$553 60	$608 50	$1,162 08	$574 93	$587 15

EXTENSION AND PUBLICITY

The Interim Report was the only publication issued from the Station this year. There is a good demand for this report, the first published since 1916 (owing to the war), in which the work of the Station as a whole has been discussed in detail.

The Scott Station sent down a number of exhibits to the Saskatoon Summer Exhibition. These were used in the exhibit put on by the Dominion Experimental Farms.

EXCURSIONS

Instead of sending out an exhibit from the Station to the smaller summer fairs it was thought advisable to make a special effort to encourage excursions from the surrounding districts to the Station.

The Provincial Department of Agriculture kindly co-operated as in 1920, and three-day excursions were arranged and advertised for July 11, 12 and 13. Approximately 100 returned soldiers with their wives and families visited the Station on the first day. On the second day quite a number of people from eastern Alberta and western Saskatchewan came in on the morning train and the train service made it possible for them to return in the evening. This was the poorest excursion in point of numbers, but this was mainly due to the morning train leaving the western points

too early in the day. On July 13 the local farmers' organizations met at the Station and well over 1,200 people were in attendance.

Other organizations that visited the Station included the Narrow Lake Homemaker's Excurson, July 1, and the Scott Hospital Aid Garden Party. The Agricultural Society and Board of Trade from Luseland ran a joint excursion which was well attended.

As a result of the advertising received from the people who attended these excursions, there was a marked increase in the visitors during the remainder of July and August. While visitors are welcome at any season of the year, it is felt that they can secure a greater amount of information by seeing the various crops while still growing but while the latter are approaching the mature stage. For this reason special efforts were made to encourage visits during these two months.