DOMINION OF CANADA

DEPARTMENT OF AGRICULTURE

DOMINION EXPERIMENTAL FARMS

EXPERIMENTAL SUBSTATIONS

FORT VERMILION, ALTA.

FORT GOOD HOPE, N.W.T. FORT RESOLUTION, N.W.T.

FORT SMITH, N.W.T. FORT PROVIDENCE, N.W.T.

BETSIAMITES, QUE.

REPORT OF THE EXPERIMENTALISTS IN CHARGE

FOR THE YEAR 1929

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FORT VERMILION, ALBERTA

REPORT OF THE SUPERINTENDENT, ROBERT JONES

SEASONAL NOTES

The winter of 1928-29 from a standpoint of freedom from extreme temperatures and high winds, and with the very moderate snowfall, was considered mild both for man and beast, and for all outside activities.

The three autumn months of 1928 were extraordinarily fine for the finishing up of all the autumn work. September with its bright sunshine, and with only 0·64 inch of rainfall for the month, caused very little interruption with the threshing or stacking of grain either at the Station or throughout the district. October was quite a normal month with only 0·08 inch of rainfall, and quite free from any zero temperatures, so that ploughing and other work on the land was possible until well towards the end of the month.

While some sharp frosts were experienced during November other weather conditions were ideal for the completion of any building under construction, and general fixing up in readiness for the winter. The total precipitation for the month, was 0·08 of an inch. The Peace River did not stop running until the 8th, this being about the usual date. The lowest temperature for the month was −13·8, recorded on the 15th. All range cattle were taken in after this date, and the temperature for the balance of the month was quite moderate.

The weather conditions throughout the month of December were most favourable, 1½ inches of snowfall being the total precipitation, while only ½ inch of snow remained on the ground at the end of the month. Wheel vehicles were in use throughout the month, and while −38·0 was recorded on the morning of the 3rd, the temperature throughout the balance of the month was fairly mild.

The months of January and February were quite pleasant and comparatively mild for this North Land. The snowfall for these two months was unusually light. There were frequent spells of chinook weather when the ground would be quite bare of snow, but covered with a thin coating of ice.

While such conditions were favourable to the live stock, they were most adverse to the small fruit plantations, and to a greater extent to all varieties of clovers and the less hardy varieties of grasses. They resulted in a large percentage of root injury to the fruits and other garden plants, especially the roses and other flowering shrubs, and in a total killing out of many of the clovers and less hardy varieties of grasses. Winter rye suffered to some extent, while all varieties of winter wheat were completely killed out.

The total snowfall for the month of January was 6½ inches, and for the month of February 2½ inches.

March was quite a normal month with the winter beginning to break up on the 12th. The total snowfall for the month was 7 inches, with only 2 inches remaining on the ground at the end of the month. All live stock at the Sub-Station and throughout the district were in excellent condition on March 31, and many hogs throughout the district were being finished off in readiness for shipment to the Edmonton market.

During the first ten days of April some below zero temperatures were experienced, but a sudden change for the better, after the 10th, caused an early withdrawal of the frost from the ground, thereby permitting vegetable and flower seeds being sown in the hot-beds on the 22nd and 23rd, and the cultivation of

the soil by the 24th. Some vegetable seeds were sown on the 25th, while some wheat was sown on the higher prairie land on the 26th and by the 30th seeding was general. Much wheat was sown on this latter date, and the first potatoes were planted. Intermittent light showers of rain occurred during the latter part of the month.

The month of May followed with early summer temperatures, which hastened the germination of seed, and the growth of pastures and other crops as well as the fruit blooms.

With the exception of the grass, clover and alfalfa plots, the seeding and planting of all other crops was completed during May. Rain fell on seven different occasions during the month. The last date on which any serious frost occurred was the 18th when the temperature dropped to 26·5, but no serious damage was done by this frost.

During the first eight days of June when the temperature was quite above normal, with no precipitation since the 26th of May, the young plants of all crops suffered to some extent from the heat. A very welcome rain of 0·37 inch occurred on the 8th which greatly revived all growth, and the quite frequent showers of rain and more normal temperature made the balance of the month an ideal growing period for all crops, and for the stooling out of all cereal crops. During the latter part of the month all new seedings of grasses, clovers and alfalfa were completed. No frost was experienced during June.

Quite hot weather prevailed during the first seven days of July followed by rainfall on seven different occasions during the balance of the month. This precipitation along with other favourable weather conditions produced a very vigorous growth of all crops, more especially of the grasses, and by the end of the month many varieties of cereals were showing signs of ripening. Further showers of rain towards the end of the month tended to prolong the ripening period, and only one variety of oats, Eighty-Day was cut on the 29th. All varieties of cultivated fruits were being picked by the end of the month, the yields being much below the average. July was also quite frost free.

During my many years of residence in this Fort Vermilion district, this was the first time that any crop injury was caused by hail. This hail storm occurred on July 8, luckily the Station escaped.

The mean maximum temperature for August was 5·4 degrees above the average, while the mean minimum temperature was 3·9 degrees below that of August, 1928.

The numerous light showers that were experienced during the month lengthened the ripening period of all the varieties of cereals, and more especially delayed the cutting of those that were already ripe. No frost was experienced until August 25 when four degrees were recorded, and with the exception of the four following varieties, Red Fife, Marquis, Kitchener wheats, and Barks barley, all varieties of cereals were cut previous to this frost. The above four varieties while not cut were fully matured, so that no injury was done to any of the grain crops, but much damage and loss was caused to all immature crops, such as beans, corn, sunflowers and buckwheat.

The beauty of our flower garden was greatly impaired by this frost, but many species recovered and continued blooming until late in the autumn.

While the many light showers of rain which occurred during the month totalled 0·74 inch, there was no reserve moisture in the soil at the end of the month. The question being asked in the minds of the farmers throughout the district was, can we plough or must we wait until spring when the land may be

sufficiently moist from the winter snow to permit of ploughing, as by the end of August the land was extremely dry, all the moisture having been used up by the growing crops and through evaporation.

September was characterized by a precipitation of 2·38 inches, being 1·08 inch over the average for a period of five years. Eight rains on the 1st, 7th, 9th, 10th, 11th and the 16th accounted for 0·77 inch and the 22nd and 24th accounted for 1·61 inches. While these rains greatly delayed harvesting and threshing operations, they put sufficient moisture into the soil to expel all doubt as to whether ploughing was possible.

Ploughing started then, or as soon as the stooks were removed from the field whether by threshing or stacking, and by October 20 fully 85 per cent of the fall ploughing was completed throughout the district.

The potatoes and field roots and other late crops were harvested at intervals throughout September as the weather conditions would permit.

Considerable wheat was shipped from this district during the latter part of September to the elevators at Peace River. All shipments graded No. 2.

Most ideal weather conditions prevailed throughout the month of October, the total precipitation being only 0·18 inch. This amount fell on two different dates, 0·13 inch on the 4th, and 0·05 inch on the 31st. The temperature for the month was considerably above normal, with much bright sunshine. Threshing and ploughing proceeded throughout the month, and the completing of other farm work, and all farm work was well in hand by the end of October.

Further shipments of wheat were made during the early part of October, but owing to a serious mishap to the steamer D. A. Thomas and a partial breakdown to the gas boat Weenusk, much wheat still remains to be shipped, this will perhaps only be possible next season.

It was estimated that 45,000 bushels of grain were threshed in this settlement, 63 per cent being wheat, 25 per cent oats, and the balance barley and rye, both spring and fall varieties.

The acreage to be seeded in the spring of 1930 will be about double of that of 1929. Part of the extra acreage is land that has been broken by a number of new settlers that have taken up land throughout the district during the past year, and part the added acreage of new breaking and summer-fallowed land by the older settlers.

November to-date was comparatively mild with normal temperature and light precipitation. A snowfall of 2 inches was experienced on the 3rd, but by the 12th this had all disappeared. One-tenth of an inch of rain fell on the 13th, $\frac{1}{2}$ inch of snow on the 15th, 1 inch of snow on the 21st, and 1 inch on the following day, so that at this date there are $2\frac{1}{2}$ inches of snow on the ground and sleighs are being used.

Dates of Farm Operations

The first and last dates upon which work was done on the land were April 24 and October 20.

Operation	Began	Finished
Seeded vegetables in hot-beds	April 22	April 26
Garden vegetables sown in open ground	April 25	May 16
Spring ploughing for wheat	April 25	
And for other crops	.....	May 24
Seeding wheat	April 26	May 20
Seeding oats	May 1	May 24
Seeding barley	May 6	May 28
Seeding spring rye	April 30	May 6
Seeded fall rye autumn of 1928, plots	Aug. 21	
Seeded fall rye autumn of 1928, field	.....	Aug. 25
Seeding green feed mixtures and millets	May 15	May 22
Seeding field peas	May 1	May 4
Seeding flax	May 2	May 12
Seeding field and garden beans	May 7	May 10
Seeding field roots, mangels, sugar beets, Swede turnips and fall turnips	May 2	May 7
Seeding buckwheat	May 21	May 24
Planting field and garden corn	May 4	May 10
Seeding sunflowers	May 6	May 8
Planting potatoes	April 30	May 20
Transplanting of vegetables from hotbeds	May 29	June 5
Transplanting of flowers from hotbeds	June 3	June 10
Seeding alfalfa, clover and grasses	June 23	June 25
Ploughing summer-fallow	June 18	July 15
Breaking new land	June 20	July 15
Haying general	July 20	Aug 20
Cutting alfalfa, 1st crop	July 12	July 14
Cutting alfalfa, 2nd crop	Aug. 24	Aug. 26
Cutting all other varieties of cultivated grasses	July 14	July 18
Cutting fall rye	Aug. 21	Aug. 23
Cutting wheat plots	Aug. 5	
Cutting wheat field crops	.....	Aug. 28
Cutting oats	July 29	Aug. 7
Cutting barley	Aug. 7	Aug. 20
Cutting other miscellaneous cereal crops, flax, spelt, spring rye and buckwheat	Aug. 13	Aug. 22
Cutting field peas	Aug. 13	Aug. 20
Fall ploughing	Sept. 4	Oct. 20
Threshing	Sept. 4	Nov. 4
Harvesting potatoes	Sept. 13	Sept. 20
Harvesting field root crops	Sept. 16	Sept. 24
The ground frozen thereby stopping all ploughing	.....	Oct. 22
The ice in the Peace River stops running	.....	Nov. 18
Crossing possible on	.....	Nov. 20

The lowest temperature recorded for November was—20·0 which occurred on the 19th, with only ½ inch of snow on the ground.

Meteorological Records from the Fort Vermilion Experimental Sub-Station

Month	Maximum temperature			Minimum temperature			Precipitation		Total precipitation	Total hours of sunshine
	Highest	Date	Mean	Lowest	Date	Mean	Rainfall	Snowfall		
	oF.		oF.	oF.		oF.	in.	in.	in.	
October....1928	58·0	13th	41·9	9·9	28th	22·1	0·08	.....	0·08	103·3
November....1928	50·0	2nd	35·5	— 13·8	15th	5·1	0·08	.....	0·08	88·1
December....1928	44·0	7th	19·4	— 38·0	3rd	— 3·5	.....	2	0·20	53·1
January....1929	17·9	19th	— 3·7	— 54·0	24th	— 25·4	.....	6½	0·65	73·9
February....1929	29·6	13th	7·3	— 50·5	18th	— 19·2	.....	2½	0·25	81·5
March....1929	56·0	12th	28·5	— 34·0	8th	— 7·5	.....	7	0·70	181·0
April....1929	73·5	24th	44·0	— 17·9	13th	15·7	0·90	.....	0·90	188·3
May....1929	77·5	31st	62·0	21·0	4th	34·1	1·31	.....	1·31	299·1
June....1929	79·5	1st	66·2	36·5	25th	46·3	1·92	.....	1·92	196·3
July....1929	86·0	14th	74·9	38·5	1st	48·4	2·03	.....	2·03	270·1
August....1929	82·2	18th	75·4	28·0	25th	44·5	0·74	.....	0·74	297·4
September....1929	74·5	10th	59·9	22·5	5th	34·0	2·38	.....	2·38	158·5
Total	.....	.....	.....	.....	.....	.....	9·44	18	11·24	1,890·6

HORTICULTURE

THE SEASON

The comments made in the seasonal notes show that the season of 1929 compared with the average of the past two seasons April to September inclusive, was slightly warmer with a little more precipitation, and the hours of sunshine slightly above normal.

The last severe spring frost occurred on May 18, and the first light autumn frost occurred on August 24, giving a frost free season of ninety-seven (97 days). The first real killing frost of the season did not occur until September 5, although some slight damage was done to all tender or late maturing garden crops and flower gardens by the frost on August 24, otherwise the season on the whole, with the exception of for the fruits, was quite favourable for the horticultural work.

VEGETABLES

ASPARAGUS

The yield this season from the plantation which now contains two varieties, Conover Colossal and Burbank Quality, was quite abundant. The first cutting of Colossal was made on May 20, and the first of Burbank Quality on May 24, and subsequent cuttings were made until June 18. After this latter date no cutting was done, thus enabling the plants to become strong for another season.

Each autumn the rows are covered with barn-yard manure to a depth of four inches, and in the spring when this manure is removed from the rows, it is worked into the soil along-side and between the rows, and during the balance of the season weeding is the only attention needed.

One drill 33 feet long and 2 feet apart was seeded in the open garden to Burbank's Quality, and very good growth was made by these seedlings. The plants were moved during the late autumn to the permanent plantation, and mulched for the winter.

GARDEN BEANS

This season proved too short to bring these crops to full maturity as ripe beans, but as a green vegetable they were excellent, and a fair yield of good quality green pods were obtained over a period extending from August 4 to 24.

The different varieties were planted on May 10, in rows 33 feet long and were 30 inches apart. Two drills of each variety were planted, one drill for green pod production, and the duplicate drill for ripe seed production, the seed being planted 4 inches apart in the drills.

The plots were kept thoroughly cultivated during the season, and all varieties maintained a good strong growth until the frost of August 24 occurred.

The following table summarizes the results obtained:—

BEANS—RESULTS OF VARIETY TEST

Variety and source of seed	Date ready for use	Length of plants	Length of pods	Yield of green pods	Yield of ripe seed from duplicate plot	Comments
		in.	in.	lb.	lb.	
Stringless green pod, Ott. 11402	Aug. 8	17	5	9½	1½	25% frozen.
Plentiful French Wax, Ott. 2824	" 4	18	6	9	2¼	10% "
Wardwell Kidney Wax, Ott. 2823	" 4	13	5½	7½	1¾	25% "
Round Pod Kidney Wax, Ott. 1638	" 8	20	5	6½	No yield	100% "
Imp. Golden Wax Fort Vermilion	" 7	14	5	8½	1¼	35% "
Masterpiece, Ott. 2746	" 6	21	7	10½	1½	35% "
Princess of Artois, Ott. 925	" 6	10	4	7	1¼	35% "
Golden King Wax Pod Webb Pole Bean	" 20	32	5	6	No yield	100% "
The Prince, Sutton	" 8	22	8	10½	½	75% "
Early Red Valentine, Steele Briggs	" 7	18	4½	11½	1¾	35% "
*Swedish Brown Bean	" 8	22	5	.....	6¾	No frost damage

* The seed of this variety was supplied by one of our settlers, who claims that the seed was originally brought from Sweden, and the results obtained from this variety were good. No green pods were picked, as the plants looked so promising that it was left for seed production. A large plot of 1/60 acre of mixed garden beans Davis White Wax and Early Red Valentine were planted on April 25, for use of the many households at the station, the picking from this plot commenced July 28 and continued until mid-August, and when harvested on August 27 gave a yield of 15 pounds of ripe seed.

BROAD BEANS—VARIETY TEST

Ten varieties and strains of broad beans were tested this season. The seed was planted on May 10, in drills 33 feet long, the drills being 30 inches apart, with the seed spaced 3 inches apart in the drills.

One half of each drill was picked during the season as green beans for table use, the remaining half being left to reach maturity. The seed planted was from the 1928 crop.

While these beans were not harvested until August 27 they were fully matured previous to the date of the first frost on August 24. With the frequent light showers of rain that were experienced during the latter part of August and throughout the month of September, some little difficulty was experienced in getting these crops sufficiently dry for threshing, which was not done until October 14 when more favourable weather conditions did prevail.

In the following table are presented yields obtained with other data:—

BROAD BEANS—RESULTS OF TEST OF VARIETIES

Variety	Date ready for table use	Length of pods	Yield of shelled beans from half drill picked during season	Yield of ripe seed from remaining half of drill
		in.	lb.	lb.
Beck Green Gem	July 25	6	9½	7¼
Sharpe Conqueror	" 21	7	8	6
Giant 4 Seeded	" 22	6	7¼	5
Early Mazagan	" 24	5	9¼	7
Fan or Cluster	" 23	4½	7½	6¼
Green Windsor	" 22	7	8	5½
Taylor Windsor	" 22	6	8½	5½
Harlington	" 21	8½	9	5¼
Mammoth Broad Windsor	" 24	7	8	4½
Common	" 21	6½	8¼	5

Six drills of mixed varieties of broad beans were planted on April 25. The first picking from this plot was on July 12, and the plot was picked on very freely until August 6 by which date the beans were becoming too far advanced to be used as green beans. Twenty-four pounds of green beans were picked by the households during the season July 12 to August 6, and 19½ pounds of ripe seed was obtained when harvested.

TABLE BEETS—VARIETY TEST, DATE OF SEEDING AND THINNING EXPERIMENTS

Nine varieties and strains of table beets were under test this season. A very even germination of seed was obtained, the growth throughout the season was quite vigorous, and the yields obtained when harvested were very satisfactory.

This season, in the Dates of Seeding Experiment, the best results were obtained from the second date of seeding. The first varieties were sown on April 25, and at ten-day intervals until May 16.

Black Red Ball O-8694, Detroit Dark Red O-1046-7-8 and Extra Early Flat Egyptian, Moore, were the varieties used in the thinning experiments. Black Red Ball O-8694 was thinned to 4 inches apart, Detroit Dark Red O-1046-7-8 thinned to 6 inches apart and Extra Early Flat Egyptian to 8 inches apart in the drills. The eight-inch spacing is not to be recommended as the roots may become over large and coarse. The four-inch spacing is preferable, producing smaller roots of a better quality, finer texture, and more suitable for domestic requirements.

The varieties Crimson Globe, Detroit Dark Red O-8935, and Crosby Egyptian were thinned to 6 inches apart, and Extra Early Flat Egyptian Moore, Improved Dark Red, Webb, and Egyptian, James, were the earliest varieties sown. These were thinned during the season as used. The yields from these three plots given in the accompanying table were taken after they had been picked quite freely during the season.

In the following table are presented the yields obtained when harvested on September 16:—

TABLE BEETS—RESULTS OF VARIETY TEST, DATE OF SEEDING AND THINNING EXPERIMENTS

Variety and source of seed	Date sown	Date of emergence	Date thinned	Date ready for use	Yield per acre		Comments
					tons	lb.	
Black Red Ball, Ott. 8694	May 6	May 22	June 17	June 20	21	1,920	Quality good, size medium.
Detroit Dark Red, Ott. 1046-7-8	" 6	" 22	" 17	" 20	22	1,120	Quality fine, size large.
Extra Early Flat Red, Moore	" 6	" 23	" 17	" 21	25	1,600	Quality fair, very large.
Crimson Globe, McDonald	" 16	" 31	" 22	" 26	24	840	Quality good, size large
Detroit Dark Red, Ott. 8935	" 16	" 31	" 22	" 28	25	280	Quality good, very large.
Crosby Egyptian, Steele Briggs	" 16	" 31	" 22	" 28	26	560	Extraordinarily large.
Extra Early Flat Egyptian, Moore	April 25	" 14	As used	" 12	5	260	Quality good, size small.
Imp. Dark Red, Webb Novelty	" 25	" 14	"	" 12	7	400	Quality fine, size medium.
Egyptian, James	" 25	" 14	"	" 13	5	640	Quality excellent, small.

TABLE CARROTS—VARIETY TEST

Eight varieties of carrots were under test this season. The first date of seeding was April 25, and the second on May 9.

The germination of the seed from the April 25 seeding was very timely, with a continuous strong growth throughout the season, but there was a very uneven germination of the seed from the May 9 seeding, while a large percentage of the seed did not germinate until well towards the end of the month with its timely light showers of rain. During the remainder of the season the growth was excellent.

All varieties with the exception of Nantes Half Long and Oxheart, were thinned on June 17, to three inches apart in the drills. The two above mentioned varieties were thinned as used, commencing from June 12. While fair yields were harvested from all varieties, the different strains of Chantenay were again this season in the lead, both in yields and quality. In the following table are presented the yields obtained with other data:—

TABLE CARROTS—RESULTS OF TEST OF VARIETIES

Variety and source of seed	Date sown	Date of emergence	Date thinned	Date ready for use	Yield from plot	Yield per acre	Comments	
							Quality	Size
					lb.	tons lb.		
Chantenay, Ott. 285	May 9	May 31	June 17	June 23	312	18 1,440	Good....	Large.
Chantenay, McDonald	" 9	" 30	" 17	" 22	308	18 960	Good....	Large.
Danvers Half-Long, Rennie	" 9	" 31	" 17	" "23	180	10 1,600	Fair.....	Medium.
Ox-Heart, McDonald	" 9	" 30	" 17	" 22	195	11 1,400	Fair.....	Fair.
Nantes Half-Long, Steele Briggs	" 9	" 31	" 17	" 22	202	12 240	Good....	Medium.
Sutton Favourite Int	" 9	" 31	" 17	" 23	176	10 1,120	Fair.....	Small.
Nantes Half-Long, Steele Briggs	April 25	" 16	Thinning commenced	" 12	150	9 600	Good....	Small.
Ox-Heart, Steele Briggs	" 25	" 16	"	" 12	120	7 400	Fine.....	Small.

CABBAGE—TEST OF VARIETIES

Eight varieties and strains of green cabbage, and one of red, were sown under glass on April 24, and were transplanted to the open garden on May 28 and 29.

With the dryness of the soil the growth of these plants was rather slow until well towards mid-summer, when more frequent light showers of rain were experienced, causing a more satisfactory growth.

With the retarded spring growth, the dates on which the cabbage became fit for table use were considerably later than usual, and the total yields throughout the season, and when harvested, were much below the average.

OUTSIDE SOWING OF CABBAGE—TEST OF VARIETIES

Twelve varieties and strains of green cabbage, and one of red were sown in the open ground on May 11, one drill 33 feet long for each variety.

The land used for this test, was land that had been summer-fallowed with barn-yard manure added the previous season. The soil carried sufficient moisture for rapid germination, the emergence date being May 23, and the after growth was quite vigorous, and the yields obtained when harvested on September 14 were much above the average for the outside seeding test.

The plants were thinned on June 21 to 20 inches apart in the drills. In the following table are given the dates when the different varieties were fit for table use, and the average weight of heads when harvested.

CABBAGE—RESULTS OF VARIETY TEST

Variety and Source of Seed	Date ready for table use	Average weight per head when harvested	Comments	
			Quality	Size
Hotbed seeded:—		lb.		
Early Paris Market, McDonald	July 29	4	Quite good	Medium.
Early Jersey Wakefield, McKenzie	" 28	3½	Solid	Small.
Early Winnigstadt, Rennie	Aug 2	5	Very good	Medium.
All-Head Early, Steele Briggs	" 1	6	Loose	Medium.
Copenhagen Market, Madsen	" 3	12	Very good	Large.
Brunswick S. S., Madsen	" 2	11	Rather loose	Large.
Danish Hollander, Strandholm	" 3	10	Fine, solid	Large.
Ex. Amager Danish Ballhead Ott. 8620	" 3	13½	Excellent	Very large.
Red Dutch Pickling, McDonald	When harvested	10	Solid, good	Medium.
Seeded Outside—				
Early Jersey Wakefield, McDonald	July 30	4½	Very good	Medium.
Early Jersey Wakefield, McKenzie	Aug. 2	4	Fine	Medium.
Early Winnigstadt, Rennie	" 6	7	Fair, quite loose.	
All-Head Early, Rennie	" 4	3½	Solid	Small.
Gooden Acre, Harris	" 8	8	Very solid	Medium.
Ex. Am. Danish Ballhead Hollander, Harris.	" 18	10½	Very good	Large.
Mammoth Aubevilliers, Ewing	" 12	9	Excellent	Medium.
World Beater Imp. Autumn King Rennie	" 6	6	Fair	Medium.
Danish Ballhead, Strandholm	" 20	6	Very firm	Medium.
Copenhagen Market, James	" 22	11	Excellent	Large.
Danish Ballhead S. E., Harris	" 18	11¼	Good	Very large.
Red Dutch Pickling, McDonald	When harvested	3	Very solid	Small.

CAULIFLOWERS—TEST OF VARIETIES

Hot-Bed Seeded.—Three varieties were sown under glass on April 24, and transplanted to the open ground on June 3, in rows 37 feet long. The plants set 2½ feet apart, two rows of thirty-two plants of each variety.

This season was not favourable for the cauliflowers most of the plants being stunted by the unfavourable early season weather conditions, and did not respond to the more favourable weather conditions of the late summer. The largest and best quality heads were secured from the variety Early Snowball.

Outside Seeding.—Two varieties were sown direct to the open ground on May 11, on land identical to that on which the cabbage was sown, one drill of each variety. The plants were thinned to 20 inches apart in the drills on June 21. The mid-summer and early autumn growth was excellent. These two varieties far excelled the hot-bed plants this season, both in size, yield and quality.

In the following table is given, dates ready for use, average weight at harvest, with comments as to size and quality.

CAULIFLOWERS—RESULTS OF VARIETY TEST

Variety and source of seed	Date ready for table use	Average weight per head when harvested	Comments	
			Quality	Size
Hotbed seeded:—		lb.		
Early Snowball, McDonald	July 30 Size then small	5½	Good	Medium.
Extra Early Dwarf Erfurt, McDonald.	Aug. 1 Size then very small	4	Fair	Only medium
Snowball, Madsen	July 31 Size then extra small	3	Poor	
Outside seeding:—				
Early Snowball, McDonald	Aug. 1 Size then medium	6½	Very good	Large.
Earliest, Madsen	Aug. 4 Size then large	8	Excellent	Large.

BORECOLE OR KALE—TEST OF VARIETIES

One variety of kale Dwarf Green Curled Scotch, Rennie seed, was sown under glass on April 25, and set out on June 3. With the slowness of the early season's growth, the foliage became quite coarse and the flavour strong, and not as palatable as in previous seasons. These became usable by July 25, and when harvested on September 20, individual plants weighed 11 pounds.

Two varieties of borecole were sown in the open ground on May 11, one drill each of the following varieties: Tall Green Scotch Curled, Rennie Seed, and Dwarf Green Scotch Curled, also Rennie Seed. The Tall Green Scotch Curled produced a very strong growth. This variety became fit for table use on August 2, and while the leaves were large the flavour was quite fair. Individual plants of this variety weighed 14 pounds when harvested on September 21. The leaves of the dwarf variety were finer and better flavoured and were fit for table use on July 31. Individual plants of this variety weighed 12 pounds when harvested on September 21.

BRUSSELS SPROUTS

Only one variety of Brussels sprouts, Burpee Danish Prize, was tested this season. The seed was sown under glass on April 24, and transplanted into the garden on June 3. The growth throughout the season was quite poor. The sprouts were not fit for table use until late September, and at that time they were rather open and loose, and very uneven in size, altogether of a poor quality.

Since in the the past many varieties and strains of this vegetable have been tested at the Station with rather poor results, it would seem a very uncertain vegetable for this north land.

CHINESE CABBAGE

Three strains of this early vegetable were tested this season, Wong-Bok, Pe-Tsai and Chilli. The last named variety being under test for the first time this season, and by its performance this season it far excelled the other varieties both in growth, yield and flavour.

Wong-Bok and Pe-Tsai were sown on April 25, and were fit for table use on June 10 and remained usable until July 12.

Chilli was sown on May 14, and was fit for table use on June 26 and was used on steadily until July 20 when the plants showed signs of coming into bloom. Sufficient seed was gathered from all varieties before being injured by the frost.

CELERY—VARIETY TEST

Seven varieties of celery and one of celeriac were tested this season. The seed was sown under glass on April 24, the plants being transplanted into the garden on June 13.

The plants were set 6 inches apart in the trenches, which were about one foot deep, with three inches of well rotted barn-yard manure placed in the bottom, and three inches of soil placed on top of the manure, and the plants planted in this soil, as growth became sufficiently lengthy and strong. Blanching with the soil was commenced and continued at intervals throughout the season.

This season was rather dry for the best results from celery, while water was applied during the more critical part of the season, but better results might have been obtained with more frequent applications of water.

The following were the varieties under test, and the results obtained when harvested on October 11.

CELERY—RESULTS OF VARIETY TEST

Variety and source of seed	Date fit for table use	Length of plant when harvested	Weight of 12 heads
		in.	lb.
Giant Pascal, Graham	Aug. 20	15, small	8
Easy Blanching, Carrahan	" 5	14, large	14
Paris Rose Ribbed, Bruce	" 4	14, quite small	7
Paris Golden Yellow, Dupuy & Ferguson	" 1	17, small	8
Emperor, Andrews Mountain Co	" 2	15, small	8
Golden Plume, Carrahan	" 4	12, very small	5
Fordhook, Burpee	" 11	17, medium	10
Celeriac Delicacy, Harris	" 11	18, roots large	10

CELERY—CULTURAL EXPERIMENTS

In the past many different methods of growing and blanching celery have been used, and from these different methods each season's results show that the plants grown in the trenches and earthed up are usually larger and better blanched, as in this North Land with its autumn frosts better protection is afforded by the trenching and earthing methods.

Storage Test.—The yields from the following three varieties, Giant Pascal, Emperor and Fordhook were used in this test. After the roots were harvested they were stored on October 15 in damp sand in the cool root cellar with a temperature of about 36 degrees. No heart rot developed, but a further blanching of the stalks was noticeable as they were used during the late autumn and early winter.

CUCUMBERS—VARIETY TEST

A number of varieties of cucumbers were tested this season under different methods. The usual boxes with glass, the boxes and glass removed after all danger of frost is past, and in large hot-beds with the glass used as long as possible or until the plants began to send out runners, when the glass was removed for the balance of the season, and in open drills in the garden.

The seeding in the large hot-beds was done on April 27, and the seeding of the small boxes covered with glass in the garden, and also the open drills was done on May 14. The germination was very uneven, so that the plants required no thinning. Cool dry weather during the balance of May and the early part of June retarded the growth, and the plants were late in setting fruit, and the frost of August 24 stopped all further growth and production.

In the following table are given the varieties under test, with the results obtained:—

CUCUMBERS—RESULTS OF TEST OF VARIETIES

Variety and source of seed	Method of planting	Date ready for use	Number picked during season	Average weight then	Number picked when harvested Aug. 25	Seasons total picking
				oz.		
Imp. Long Green, Steele Briggs	Boxes, removable glass	Aug. 21	20	13	25	45
Early Russian, Burpee	" "	" 19	45	9	20	65
Boston Pickling, Dupuy & Ferguson	" "	" 21	29	10	26	55
Long Green, Brands	" "	" 21	36	11	23	59
Early Arlington White Spine Steele Briggs	" "	" 20	30	12	25	55
Davis Perfect, Steele Briggs	" "	" 19	20	14	22	42
Early Fortune, Steele Briggs	Sown in large hot-bed, glass removed as soon as runners stated	Aug. 16	15	10	23	38
Boston Pickling, Steele Briggs	1 drill 18 foot long in the open garden	" 21	13	5½	43	56
	No results were obtained from the variety West Indian Gerkin.					

TABLE CORN—VARIETY TEST PROJECT

Twenty-six varieties and strains were tested this season, in duplicate plots of 1/120 acre each in hills and drills, the hills 30 inches apart each way, the drills 30 inches apart.

The dates of planting extended over a period from May 3 to 10. The emergence date for the varieties planted on May 3 and 4 was May 30, and for the varieties planted on the 10th, June 6.

This season did not prove favourable for the corn crops. Cool dry weather in late May retarded germination, and the limited rainfall of the mid-summer and other unfavourable seasonal conditions were not conductive to rapid growth, so that on the whole the corn crop was not a decided success. No cobs were picked before the frost on August 24. While no severe damage was done to the cobs on the varieties that were well advanced and ready for use when this frost did occur, other varieties that were just well cobbed and others that were almost ready, were frozen to such an extent as to render them unfit for table use.

In the following table are given the names of the varieties tested with yields of both cobs and fodder:—

TABLE CORN—RESULTS OF TESTS OF VARIETIES

Variety and source of seed	Date sown and method of planting	Yield of fodder from plot	Length of plants when cut	Comments	Yield of cobs from plot	Yield of fodder per acre	
		lb.	in.		lb.	tons	lb.
Golden Bantam, Moore	May 3, hills	200	50	Well cobbed, green		12	
" " "	" 3, drills	215	52	" " "		12	1,800
Extra Early Cory, McDonald	" 3, hills	212	52	Cobs nicely formed		12	1,680
" " "	" 3, drills	220	54	" "		13	400
Extra Early Bantam, Harris	" 3, hills	223	60	Cobs green, not useable		13	760
" " "	" 3, drills	222	58	" "		13	640
Improved Early Dakota, Wills	" 3, hills	198	48	Cobs small and green		11	440
" " "	" 3, drills	218	48	" "		11	1,160
Selected Golden Bantam, McDonald	" 3, hills	187	50	Cobs well formed		12	1,760
Selected Golden Bantam McDonald	" 3, drills	198	52	" "		13	160
Early Cory, Graham	" 3, hills	232	54	Cobs quite green, heavy yield		13	1,840
" "	" 3, drills	237	56	" " "		14	440
Early Dighton, Moore	" 3, hills	202	50	Cobs just noticeable		12	240
" "	" 3, drills	206	52	" "		12	720
Sixty Day Makegood, Childs	" 3, hills	228	60	Cobs large	30	13	1,360
" "	" 3, drills	240	62	"	28	14	800
Whipple New Yellow, Harris	" 3, hills	233	54	Just a few useable cobs		13	1,960
" " "	" 3, drills	239	56	" "		14	680
Alpha, Ferry	" 3, hills	174	45	Few medium cobs	15	10	880
"	" 3, drills	180	47	" "	20	10	1,600
Early Mayflower, McDonald	" 3, hills	203	50	" "	26	12	360
" " "	" 3, drills	211	52	" "	29	12	1,320
Extra Early Adams, Ferry	" 3, hills	217	50	Cobs quite fair	32	13	40
" "	" 3, drills	220	52	" "	40	13	400
Old Squaw, Patmore	" 3, hills	207	50	Cobs quite good	55	12	840
" "	" 3, drills	212	50	" "	58	12	1,440
Tom Thumb, Wills	" 3, hills	170	42	Few medium cobs	27	10	400
" "	" 3, drills	178	42	" "	32	10	760
Gehu, Wills	" 3, hills	221	58	Cobs quite green		13	520
"	" 3, drills	226	60	" "		13	1,120
Assiniboine, Wills	" 4, hills	223	58	Cobs well formed		13	760
" "	" 4, drills	229	58	" "		13	1,480
Early June, Wills	" 4, hills	206	50	Few small cobs	15	12	720
" "	" 4, drills	212	50	" "	20	12	640
Gill Early Market, Harris	" 4, hills	198	48	Cobs quite good	42	11	1,740
" " "	" 4, drills	201	49	" "	49	12	120
Pickanniny C.E.F	"10, drills	186	50	Cobs quite good	50	11	320
" "	" 10, drills	192	50	" "	55	11	1,040
Banting C.E.F	" 10, hills	204	50	" "	36	12	480
" "	" 10, drills	207	50	" "	40	12	840
Peep-O-Day, Schell	" 4, hills	207	50	Few medium cobs	18	12	640
" "	" 4, drills	213	52	" "	21	12	1,560
Golden Bantam, Harris	" 4, hills only	206	50	Cobs small and green		12	720
Howes Alberta Flint, Fort Vermilion	" 4, "	181	44	14 pounds ripe, 15 pounds green	29	9	1,720
Early Malcolm C.E.F	" 10, hills	198	50	Fairly good cobs	21	11	1,760
" " "	" 10 drills	203	50	" "	26	12	360
Gold Nugget Strain A	" 4, hills only	102	45	Few medium cobs	14	6	240
Gold Nugget Strain B	" 4, "	100	40	" "	10	6	

The above two strains of Gold Nugget corn were received during the spring of 1929 from the Horticultural Department of the North Dakota Agricultural Experiment Station, State College Fargo, North Dakota. While these two strains did moderately well this season, they did not equal either Pickanniny or Banting in earliness or yields.

GARDEN CORN—SUCKERING TEST

This test was carried out on the varieties Golden Bantam, Moore, and Extra Early Cory, McDonald. These were grown in hills 3 feet apart each way, and the plants thinned to 5 to each hill.

The suckers were all removed from both varieties on July 20, and while the cobs were slightly larger on these two varieties, they were not any further advanced on August 24, when the first autumn frost did occur, than any of the other varieties, so that owing to this frost, no really satisfactory data were gathered this season from this test.

HERBS—TEST OF VARIETIES

The following varieties of herbs were sown in the open ground on May 10: caraway, dill, sweet majorum, sage broad leaf, summer savory, all Steele Briggs seed.

These varieties all made good strong growth during the season, and were used as soon as they became sufficiently advanced. A large amount was gathered for winter use, and a goodly amount was cut and given to visitors during the growing season, and more was given away at harvest time.

KOHL-RABI—TEST OF VARIETIES

Three strains of kohl-rabi were tested this season. Early Purple Vienna, Steele Briggs seed, was seeded on April 25, and White Vienna, McDonald, and Purple Vienna, Livingston, were seeded on May 9. The germination of the seed was quite timely, with a high percentage for the three strains. The plants were thinned to six inches apart in the drills. The vegetables from the April 25 seeding were ready for use on July 10, and those from the May 9 seeding were ready for use on July 19.

A very vigorous and healthy growth was maintained throughout the season by these crops, and when harvested on September 30, Early Purple Vienna, Steele Briggs, gave a yield of 40 pounds from a 33-foot drill. White Vienna, McDonald, gave a yield of 120 pounds from a 66-foot drill, and Purple Vienna, Livingston, gave a yield of 85 pounds from a 33-foot drill.

It has been found that this variety of vegetable is more immune to attacks of flea beetle or root maggot, and either the white or purple Vienna are quite suitable for this North Land.

LETTUCE—TEST OF VARIETIES

Sixteen varieties and strains of lettuce were sown in drills 33 feet long and 24 inches apart, on April 25 and again on May 9. In both dates of seeding the plants were thinned to 5 inches apart in the rows. The crop from both seedings made excellent growth, and provided an abundant supply of salad plants throughout the season. For many of the varieties the period in use was quite lengthy, and with the many frequent light showers of rain during the latter part of August, a second growth sprang up from the first cutting, which was usable until the late autumn.

In the following table are given the varieties tested, and dates of becoming ready for use:—

LETTUCE—RESULTS OF TEST OF VARIETIES

Variety and source of seed	Date sown	Comments
Grand Rapids, Brand	April 25	A loose leaf variety.
Big Boston, Brand	" 25	A head variety, good.
May King, Vaughan	" 25	A fine heading variety.
Selected Nonpariel, Rennie	" 25	A late summer heading variety.
Trianon-Cos, Vaughan	" 25	A fine late heading variety.
Early Hanson, Ewing	" 25	A splendid loose leaf variety.

The first to become ready for use was Grand Rapid variety, on May 30, the other varieties following in quick succession. The season of use extended until early July.

The May 9 seeding was partly a duplication of the above varieties, with some new strain added. The following varieties were used: Grand Rapids, Brand; Big Boston, Brand; May King, Vaughan; Selected Non-Pareil, Rennie; Grand Rapids, Steele Briggs; Hanson, Ewing; Trianon-Cos; Wonderful, Webb; Early Paris Market 0-6059; Iceberg, Ewing.

The crops from this seeding thrived well. The headed varieties became quite large and were still usable on September 1 when being removed from the garden to permit of ploughing.

ONIONS—TEST OF VARIETIES AND STRAINS

Five varieties of onions were sown on April 25, five on May 6, and nine varieties on May 10. All varieties were sown in $\frac{1}{120}$-acre plots, the drills 33 feet long, and 20 inches apart. All varieties seeded on April 25 were used during the season as they became sufficiently advanced. All other varieties were thinned to 3 inches apart on June 18, and notwithstanding the season, all varieties made very favourable growth, and were fairly well matured at the time of the first autumn frost on August 24.

This season, while the onion root maggots were in evidence, the damage done by these pests was but slight. The onion sets suffered to a greater extent than did the varieties grown from the seed.

The four following varieties were those that were seeded on April 25: Yellow Globe Danvers, Australian Brown, Southport Red Globe and Giant Prizetaker Yellow Globe, all Steele Briggs seed. These varieties were used on continually throughout the season, so that the final yields in the autumn were almost negligible, therefore they do not enter into the list giving the yields.

For storage purposes it has again been proven this season that the Yellow Globe Danvers and Southport Yellow Globe are the best in the yellows, and Large Red Wethersfield, Early Flat Red and Southport Red Globe are the best in the reds.

The harvesting of these crops extended over a period from September 2 to 12 inclusive. The following were the varieties tested, and yields obtained:—

ONIONS—RESULTS OF VARIETY TEST

Variety and source of seed	Date of seeding	Yield from plot	Size	Yield per acre
		lb.		bush.
Large Red Wethersfield, Steele Briggs	May 6	143	Medium	286
Extra Early Flat Red, S.B	" 6	155	Large	310
Southport Red Globe, S.B	" 6	52	Small	104
Australian Brown, S.B	" 6	130	Medium	260
Yellow Globe Danvers, S.B	" 6	120	Medium	240
Prizetaker Yellow Globe Graham, Project 131	" 6	165	Large	330
Sweet Spanish, Morse	" 10	136	Medium	272
Giant Yellow Prizetaker Graham, Project 131	" 10	218	Very Large	436
Extra Early Red Flat Graham, Project 131	" 10	143	Medium	286
Australian Brown, Burpee	" 10	93	Small	186
Large Red Wethersfield Graham	" 10	105	Medium	210
Alisa Craig, Graham	" 10	155	Large	310
Ebenezer Japanese, Schell	" 10	102	Medium	204
Giant Prizetaker, Steele Briggs	" 10	85	Small	170
Yellow Globe Danvers, Graham	" 10	93	Small	186
Large Red Wethersfield, Ott. 8929	" 10	87	Small	174
Yellow Globe Danvers, Ott. 1854	" 10	83	Small	166
Early Flat Red, Graham	" 10	79	Small	158

ONION SETS—TEST OF STRAINS

Three strains of onion sets were tested this season in $\frac{1}{120}$-acre plots. The sets were planted three inches apart in the drills.

These sets were attacked by the root maggots during the mid-season, and before they were got under control much damage had been done, therefore cutting down the yields, and greatly impairing the quality.

In the following table are given the dates of planting, with yields:—

ONION SETS—RESULTS OF TEST OF STRAINS

Variety and source of sets	Date planted	Yield from plot	Size	Yield per acre
		lb.		bush.
Our Own Sets, red	April 26	22	Small	44
McDonald's Sets, yellow	May 10	25	Medium	50
McDonald's Sets, red	" 10	28	Medium	56

GARLIC

Garlic was again tested this season, it was planted on April 25 in a $\frac{1}{120}$-acre plot. This variety of vegetable does thrive and produce good crops under this north land weather conditions, favourable or otherwise. While this vegetable is not used at the Station, it is in great demand by other folks throughout the district, and is given out as free distribution. This plot gave a yield of 50 pounds when harvested on September 12, or at the rate of 100 bushels per acre.

GARDEN PEAS—TEST OF VARIETIES AND STRAINS

Nineteen varieties and strains were sown on three successive dates, May 8, 10 and 11, in drills 3 feet apart and 33 feet long. The seed was planted 1 inch apart in the drills. Two drills of each variety were planted, one drill from which the season's yield of green peas were taken. The duplicate drill was left unpicked, and from it the yield of ripe seed was taken. A number of new

varieties were under test this season for the first time, and the season's growth of all varieties was excellent, and the yields obtained both green and ripe were much above the average for the past number of seasons.

In the following table are given the dates of planting, with yields:— obtained:—

GARDEN PEAS—RESULTS OF TEST OF VARIETIES AND STRAINS

Variety and source of seed	Date sown	Ready for use green	Yield of shelled green peas	Date pulled	Length of		Number of peas in pod	Yield of ripe seed	Comments
					Vine	Pod			
			lb.		in.	in.		lb.	
Gradus x American Wonder, Ott. 8624	May 8	July 18	12						
Duplicate drill	"	"	"	Aug. 13	42	2	4	8½	Large.
Gradus x English Wonder, Ott. 2330	" 9	" 21	12						
Duplicate drill	"	"	"	" 13	48	2½	5	8¾	Medium.
Gregory Surprise x English Wonder, Ott. 8623	" 9	" 21	9						
Duplicate drill	"	"	"	" 21	45	2	5	5¾	Very large.
Little Marvel, 1928 seed	" 9	" 17	12¾						
Duplicate drill	"	"	"	" 9	20	2½	5	5¼	Medium.
Alaska, 1928 seed	" 9	" 16	9¼	" 7	30	2	5	6	Medium.
Duplicate drill	"	"	"						
Pioneer, 1928 seed	" 9	" 18	14						
Duplicate drill	"	"	"	" 21	33	3	6	7	Large.
Thomas Laxton, 1928 seed	" 9	" 16	11¼	" 7	40	2½	6	6	Very large.
Duplicate drill	"	"	"						
Lincoln Invermere, new seed	" 9	" 22	14	" 13	28	3	7	7¾	Quite large.
Duplicate drill	"	"	"						
Early Morn, 1928 seed	" 9	" 16	14	" 13	46	3	5	7½	Large.
Duplicate drill	"	"	"						
Advancer, 1928 seed	" 9	" 22	11½	" 21	35	2	5	8	Very large.
Duplicate drill	"	"	"						
Director, Invermere, new seed	" 9	" 21	15						
Duplicate drill	"	"	"	" 13	33	3	9	8	Medium.
Bruce Invermere, new seed	" 10	" 23	10½						
Duplicate drill	"	"	"	" 21	44	3½	7	9½	Extra large.
Kootenay Invermere, new seed	" 10	" 10	15						
Duplicate drill	"	"	"	" 21	50	3½	8	8½	Very large.
The four following varieties were planted 3 inches apart in the drills.									
Invermere No. 6, new seed	May 11	July 29	7½						
Duplicate drill	"	"	"	Aug. 21	46	3½	9	4¾	Extra large.
Invermere No. 42, new seed	" 11	" 24	8						
Duplicate drill	"	"	"	" 21	27	3	8	5½	Large.
Quite Content Invermere, new seed									
One drill only was left for seed production	"	"	"	" 21	37	4	8	3½	Extra large.
A Swedish pea									
One drill only was left for seed production	"	"	"	" 21	48	3	8	3¼	Large.

MIXED GARDEN PEAS FOR USE OF THE HOUSES

Twelve drills, 33 feet long and 20 inches apart, were planted on April 25. The seed was planted one inch apart in the drills. The date of emergence for this plot was May 10 and it was ready for table use on June 24, remaining usable until July 18. This plot was used from most freely during the season, and when threshed out on August 19 gave a yield of 33 pounds of good seed.

A $\frac{1}{50}$-acre plot of the three following varieties: Pioneer, Alaska and Little Marvel were planted on May 10, in drills 12 inches apart. The growth of the vines on this plot was rank, and gave a large yield of fine quality green peas from July 12 to August 12. They were pulled on August 20, and threshed out on August 27, giving a yield of 57 pounds of fully matured seed. The yields of green peas from these two plots, with those from the test rows gave a goodly supply of green peas over quite a lengthy season.

SQUASH, MARROW AND PUMPKINS—TEST OF VARIETIES

Four varieties of pumpkins and twelve varieties of squash were planted on May 14. The planting and season's cultivation of these crops were similar to that for the citron and cucumbers. The germination of the seed was quite fair. All plants made good progress until August 24, when all further growth and development was stopped by the frost on that date. By this date all varieties were nearing maturity.

Large Cheese or Kentucky was under test for the first time this season, and its largest specimen weighed 39 pounds when harvested on August 25. A comparison was made this season with all these varieties, in hills with movable glass versus direct seeding to the open ground in drills. With the frost free spring quite fair results were obtained by this latter method.

In the following table are given the number harvested, and the average weights of each variety:—

PUMPKIN—RESULTS OF VARIETY TEST

Variety and source of seed	Number of hills	Number harvested	Average weight
			lb.
Small Sugar, Ott. 11015	4	61	5¼
Small Sugar, McDonald	4	59	6¼
Large Cheese or Kentucky, McDonald	4	26	11½
Mammoth or Jumbo, McDonald	4	28	13
Small Sugar Ott. 11015, seeded on May 16. In one drill 12 feet long	.....	32	4
Squash and Marrow (Project H. 201)			
Long White Bush, McDonald	4	33	7½
Early White Bush, McDonald	4	26	4
English Vegetable Marrow, Steele Briggs	4	14	8¾
Golden Hubbard, Ott. 11014	2	15	6
Perfect Gem, Morse	4	28	2
Large Summer Crookneck, McDonald	4	36	5¼
Table Queen, Henderson	1	7	1¾
Blue Hubbard, Stokes	1	6	5
Des Monies	1	4	3¾
Cocozelle Di Napoli, Vicks, sown in large hotbed	3	20	5½
Early White Bush Marrow, Stokes, sown in large hotbed	3	29	5¼

OUTSIDE SOWING OF SQUASH

The following varieties of squash were sown in drills 10 feet long and 8 feet apart on May 16. The germination of the seed was quite good, and the vines made strong healthy growth throughout the season, until August 24, when they were frozen. No damage was done to the fruits as they were nearing maturity.

The following were the varieties tested, with yields obtained when harvested on September 28:—

RESULTS OF OUTSIDE SOWING OF SQUASH

Variety and source of seed	Number harvested	Average weight
		lb.
Summer Crookneck, McDonald	18	4½
White Bush Marrow, McDonald	14	5
Long White Bush Marrow, McDonald	12	7
Golden Hubbard, Ott. 11014	19	6½
English Vegetable Marrow, Steele Briggs	32	5

PARSNIPS—VARIETY TEST

Four varieties and strains of parsnips were tested this season. One drill 66 feet long of Guernsey, Steele Briggs, was seeded on April 29, and was ready for table use on July 1. From this drill the tables of the Station were supplied during the mid and late season, and on September 16, 54 pounds were harvested from this drill.

The three varieties for the main crop were seeded on May 9, in plots of $\frac{1}{120}$-acre each, the plants were thinned on June 14 to four inches apart in the drills, while the emergence for these three varieties was not until May 23, the aftergrowth was very vigorous, and they were ready for table use on July 18. The quality and yields this season was very much above the average. All varieties were harvested on September 16, Hollow Crown O-2196 outyielding all others.

In the following table are given the yields obtained:—

PARSNIPS—RESULTS OF VARIETY TEST

Variety and source of seed	Yield from plot	Yield per acre		Comments
	lb.	tons	lb.	
Hollow Crown Ott. 2196	245	14	1,400	Very smooth, large.
X.X.X. Guernsey Rennie	237	14	640	Good, large.
Elcombe Improved Graham	240	14	800	Fair, very large.

PEPPERS—VARIETY TEST

Neapolitan, McDonald, Harris Earliest and Hamilton Market, Moore, were sown under glass on April 24, and transplanted in the open garden on June 10. All varieties made good strong growth, and while no fully ripe fruit was picked, a fair crop of green fruit was picked from each variety. Of these three varieties the Neapolitan is slightly the earliest.

PARSLEY—VARIETY TEST

Four varieties or strains were under test this season. They were sown in drills 33 feet long and 24 inches apart, two drills of each variety. Very satisfactory growth was made throughout the season, and quite liberal use was made throughout the season from the April seedings, and very good yields were obtained from all varieties when harvested on October 1.

In the following table are given the dates of seeding, dates ready for table use, with yields from the two drills of each variety.

PARSLEY—RESULTS OF VARIETY TEST

Variety and source of seed	Date sown	Date ready for table use	Yield
			lb.
Fine Triple Curled, Steele Briggs	April 25	June 10	70
Champion Moss Curled, Steele Briggs	" 25	" 12	75
Perfecta, McDonald	May 9	" 20	88
Champion Moss Curled, Ewing	" 9	" 22	68

Any of the above varieties can be recommended for this district.

PEPPER GRASS OR CRESS

Two drills of pepper grass were sown on April 25, and became fit for table use on May 15. The leaves of this plant make a very welcome garnish during the early season.

POTATOES—TEST OF VARIETIES

This season the potato crops at the Station were rather disappointing, as this season they were used rather as a summer-fallow substitute or cleaning crop on land that had grown a crop of cereals the previous season with twenty wagon loads of barnyard manure per acre applied after that season's crop had been removed and just previous to its being ploughed.

The land was extremely dry when ploughed and was still comparatively dry in the spring when the drills were made, so with the very limited rainfall of the past season which was not sufficient to penetrate to the roots of these crops, they suffered in consequence, the growth being greatly retarded throughout the season by these conditions. The growing season was shortened considerably by the August 24 frost. So that this season the profit over the cost of production was rather low.

This season the potatoes were planted direct from the root cellar, in $\frac{1}{16}$-acre plots, with an extra $\frac{1}{4}$-acre plot of Rochester Rose. The planting was done on May 1 and 2, all varieties being harvested on September 13.

In the following table are given yields obtained.

POTATOES—RESULTS OF VARIETY TEST

Variety	Date ready for use	Total yield per acre			Marketable	Unmarketable
			lb.	bush.	bush.	bush.
Rochester Rose	July 22	Small	12,960	216	116	100
King Edward	Aug. 2	Medium	15,840	264	169	95
Carman No. 1	" 3	Small	11,520	192	117	75
Irish Cobbler	" 2	Large	18,720	312	207	105
Gold Coin	" 2	Medium	17,280	288	188	100
Early Hebron	" 1	Medium	14,400	240	140	100
Rochester Rose ¼ acre plot	July 24	Small	11,160	186	100	86

RADISH—TEST OF VARIETIES

Numerous varieties and strains of radishes were tested this season, with very good results.—The first seeding was made on April 25, and the second on May 8. The date of emergence for the early seeding was May 9, and the radishes were ready for table use on June 5, and all were of a very fine quality. The date of emergence of the second seeding was May 14. These came into use on June 12, and the period usable for both seedings was fairly lengthy.

The following were the varieties seeded on April 25:—French Breakfast, Graham seed; Scarlet Short White Tipped, McDonald seed; Non Plus Ultra, Fort Vermilion seed; Scarlet White Tipped, Fort Vermilion seed.

The following strains were seeded on May 8: French Breakfast, Graham seed; White Icicle, Patmore seed; Rapid Forcing, Henderson seed; Non Plus Ultra, Ewing seed; Scarlet Turnip White Tipped, McDonald seed.

SPINACH—TEST OF VARIETIES

Broad Thick Leaved, Steele Briggs, and Victoria, our own seed were seeded on April 25, and came into use on June 1. These two varieties yielded very good crops, and remained usable until mid-July.

Victoria, McDonald, and Bloomsdale, McDonald were sown on May 9, and became fit for table use on June 10. The yields from this later seeding were very heavy, and remained in use throughout the month of August.

Any of the above varieties are quite suitable for this district.

SWISS CHARD

As this vegetable is grown for early greens, an early seeding was made on April 25. A Steele Briggs strain of seed was used for this early seeding, and greens from this seeding were ready for use on June 2. The yields from this seeding were readily consumed by the many households at the Station, during the early season.

A second seeding was made on May 9, Lucullus and Large Ribbed, both Ewing seed were used. Both strains became ready for table use on June 9, remained in use until August 19, and after being used most freely during the season, 246 pounds were removed from the 66-foot row of Lucullus, and 248 pounds from the 66-foot row of Large Ribbed.

SUMMER TURNIPS—TEST OF VARIETIES

Seven varieties and strains of summer turnips were tested this season. Two drills 33 feet long of the three following varieties, Extra Early Purple Top, Early White Milan, and White Globe Purple Top, were seeded on April 25 for early season use.

The four following varieties: Early Snowball, White Globe Purple Top, Golden Ball and Early White Milan were sown on May 11 for mid-season use. All varieties were thinned on June 12 to six inches apart in the drills. The varieties that were sown on the later date remained usable until well into the autumn. All were harvested on September 7, with the following results:—

SUMMER TURNIPS—RESULTS OF VARIETY TEST

Variety and source of seed	Date ready for table use	Number of drills	Yield from plot
			lb.
Extra Early White Purple Top Milan, S.B.	June 26	2	100
Early White Milan, Steele Briggs	" 24	2	109
White Globe Purple Top, Steele Briggs	" 25	2	98
Early Snowball, Graham	" 29	4	196
White Globe Purple Top, Steele Briggs	July 2	4	128
Golden Ball, Graham	" 8	4	177
Early White Milan, Harris	" 4	4	155

SALSIFY

Mammoth Sandwich Island was the only variety grown this season. This was sown on May 9, and this season the plants were thinned to three inches apart in the drill.

This variety grew to a very large size, was very free from rootlets, and of a fine flavour. The yield obtained from the 66-foot drill when harvested on October 1 was 64 pounds.

RHUBARB

The numerous varieties and strains made excellent growth again this season. Picking began from the earliest variety, Ruby No. 10-45, on May 10, and from the other strains of Ruby on May 15, Victoria and St. Martin on the 20th, and large crops of each variety were gathered throughout the season until late autumn.

Each season a large number of seedlings are grown, from seed supplied from the Horticultural Division, Ottawa. The more promising seedlings are planted in the permanent plantation, and all seedlings as well as the large roots that can be spared are distributed to those settlers that seem anxious to get started in rhubarb growing.

HORSE RADISH

The horse radish plantation still continues to make good growth, and many new plantations have been started throughout this district from roots supplied from this Station.

TOMATOES—VARIETY TEST. PROJECT H. 207

Eighteen varieties and strains were tested this season. The seeding in the hot-beds was done on April 24. They were transplanted to the open ground on June 4, sixteen plants to each row, the rows 4 feet apart, the plants spaced 3 feet apart in the rows. Eight plants on each row were pruned to one stem with two trusses of fruit, these eight plants were supported by stakes, while the other half of each row remained untrained and unpruned.

The weather conditions at the time of the setting out of these plants were very unfavourable. Hot dry winds caused conditions that greatly retarded the growth, and no fruit was set until the season was well advanced, and with the frost of August 24 all further growth and development was stopped.

While some of the very early varieties were showing signs of ripening, none had reached maturity when the frost did occur. A small percentage of the fruit on the plants that had been pruned was slightly damaged by this frost, and in all cases the fruit was small and rather of an inferior quality.

The following were the varieties tested, and yields of green fruit harvested from the pruned and unpruned plants. All were picked on August 26:—

TOMATOES—RESULTS OF VARIETY TEST

Variety and source of seed	Yield from eight plants		Total yield from sixteen plants	
	Staked	Unstaked		
	lb.	lb.	lb.	oz.
Pink 1, Ott. 9731	9	12	21	0
Pink 2, Ott. 9730	8½	11½	20	0
A x B.B., Ott. 11389	11	13	24	0
A x B.B., Ott. 11390	9½	12½	22	0
Pink No. 1, Ott. 6573	8¾	10½	20	4
Pink No. 2, Ott. 6567	9¾	11¾	21	8
Alacrity x Earlibell, Ott. 6572	7¾	9¾	17	4
Alacrity x Earlibell, Ott. 9723	9½	11½	21	0
Herald, Ott. 9725	10½	13	23	4
Herald Alacrity x Hipper, Ott. 6568	9¾	13¼	22	8
Alacrity 1-3-13-1-7-1, Gen. Run	10	14½	24	8
Alacrity, Ott. 11381	8¾	12¾	21	4
Penn St. Earliana, Stoke	11	13¼	24	4
Select Earliana, Moore	10¼	15	25	4
L.G.B.B., Ott. 11392	6¾	8¾	15	8
Danish Export, Wibollt	7¼	9¾	17	0
Alacrity, Ott. 6560	12	15¼	27	4
Bonny Best, Stoke	10¾	14¼	25	8

ORNAMENTALS

ANNUAL FLOWERS

A frost free spring, and the many light showers of rain that were experienced during midsummer and early autumn, made very favourable growing conditions for the flowers. Many varieties or strains of annual and perennial flowers grown

this season 1929, did extraordinarily well, and were again a source of surprise and pleasure to the many notable visitors that visited this station and district during the season of 1929.

While a few of the very tender varieties were slightly injured by the frost on August 24, the damage done was not serious, as these recovered somewhat and the blooms were profuse after this frost date, and they continued to bloom until the very late autumn.

All of the more hardy varieties were sown direct to the open ground from May 14 to 21, while the more tender varieties were sown in the hotbeds on April 24, and were transplanted to the flower borders in early June.

In the following tables are given the varieties under test, and dates of coming into bloom:—

ANNUAL FLOWERS—BRANCHING AND GIANT COMET ASTERS

Variety	Date transplanted	Date in bloom	Comments
Dobbie collection of tall branching asters.			*Hotbed seeded*
Lavender pink	June 7	July 29	The plants very large, many blooms.
Shell pink	" 7	" 30	Very branching, very fine.
White	" 7	" 29	An excellent showing of blooms.
Rose	" 7	" 31	Very good growth, many blooms.
Crimson	" 7	" 30	A fine strong growth, many blooms.
Dark blue	" 7	" 30	A very fine showing.
Steele Briggs collection of giant Comet asters, hotbed seeded			
Crimson	June 6	July 30	An excellent showing of blooms.
White	" 6	" 30	Very fine.
Lavender	" 6	" 29	Very good growth, many blooms.
Purple	" 6	" 30	Very fine, many blooms.
Shell pink	" 6	" 30	An abundance of fine large blooms.
Rose	" 6	" 29	Very fine showing of large blooms.
James, Comet light blue	" 8	" 29	An excellent showing of fine blooms.

Many fine nice blooms appeared after the frost of August 24, as was the case with many of the other varieties of flowers.

ANNUAL FLOWERS

Variety	Date sown	Date in bloom	Comments
Adlumia, Mountain Fringe, McDonald seed, seedlings and one year old plants.	.....	July 29	These plants made a very strong growth, and reached a goodly height of about 12 feet.
Artemisia, Summer Fir, McDonald seed.	.....	.....	This plant is very ornamental, with its rich dark green foliage.
Antirrhinum Int. Mixed, Steele Briggs. Hotbed sceded.	.....	July 19	Plants large, with many fine blooms.
Acrolinium, Dobbie	May 25 Open ground..	" 25	Very good.
Ammobium	" 25 "	" 22	Very fine showing.
Balsam Selected, Dobbie	April 24 Hotbed.....	" 30	Fine showing.
Balsam Camellia Flowered, McDonald.	..... "	" 29	Fine strong plants, many fine blooms.
Bartonia Aurea, Thompson & Morgan.	May 21 Open ground..	" 19	A splendid showing.
Clarkia Elegans, Steele Briggs	" 21 "	" 15	A very good showing.
Candytuft Crimson, Dobbie	" 21 "	" 6	A fine display.
Calendula Nankin, Dobbie	" 21 "	" 21	Very fine.
Calendula Sulphur Queen, Dobbie	" 21 "	" 19	Good.
Cosmos Crimson, James	April 24 Hotbed.....	June 26	Plants large, many blooms.
Cineraria Maritima, Dobbie	" 24 "	July 30	Very good.
Centaurea Ragusina, Dobbie	" 24 "	" 30	Excellent showing, very fine.
Calliopsis Crimson King, Thompson & Morgan.	" 24 "	" 8	Many fine blooms.

ANNUAL FLOWERS—*Conc.*

Variety	Date sown	Date in bloom	Comments
Canary Bird Vine, Steele Briggs..	May 20 Open ground..	July 22	Only fair.
Dahlia, Coltness Hybrids, S.B.....	April 24 Hotbeds.....	" 29	Single, but very pretty.
Dahlia, Double Mixed, S.B.....	" 24 "	" 29	Many fine large blooms.
Dahlia, Paeony Flowered, Dobbie.	" 24 "	" 29	A very good display.
Dianthus Allwoodii, James.....	" 24 "	" 18	Very fine, these plants were left in the hotbed to bloom.
Eschscholtzia Excelsior, James.....	May 21 Open ground..	June 27	Good.
Godetia Dwarf Mixed, S.B.....	" 21 " ..	Aug. 3	A very fine showing.
Helichrysum Double Scarlet, Dobbie.	" 22 " ..	July 25	Many fine blooms.
Helichrysum, Steele Briggs.....	April 24 Hotbeds.....	" 24	Plants quite large when set out in open ground, many fine blooms were picked for winter use.
Kochia, Steele Briggs.....	May 14 Open ground..	.....	Became fine large showy plants by mid-summer.
Linaria, Dobbie.....	" 21 " ..	June 26	A splendid showing.
Linum, Dobbie.....	" 21 " ..	July 1	Quite good.
Lupinus Manus, Dobbie.....	" 21 " ..	" 24	Many blooms, good.
Lobelia, Crystal Palace Compact, S.B.	April 24 Hotbed.....	" 6	Very good.
Marigold French Dwarf, Ottawa...	May 21 Open ground..	" 20	Very good, many fine blooms.
Mignonette, McDonald.....	" 21 " ..	" 12	Good growth fine blooms.
Nasturtium Dwarf Mixed, Ottawa..	" 14 " ..	" 20	Many fine blooms.
Nasturtium Dwarf Mixed, Rennie..	" 14 " ..	" 21	Very fine.
Nasturtium Tall, Rennie.....	" 20 " ..	" 22	Good strong growth, many fine blooms.
Nicotiana, Steele Briggs.....	April 24 Hotbed.....	" 4	Excellent, very fine.
Phlox Grandiflora, Steele Briggs...	" 24	" 14	Very good.
Phlox Dwarf Mixed, Steele Briggs.	" 24	" 25	An excellent showing.
Petunia Lavender, James.....	" 24	" 24	Fine blooms of many colours.
Rhodanthe White, Dobbie.....	May 25	" 24	Good.
Salpiglossis Emperor Mixed, James.	April 24	" 24	A very fine showing.
McDonalds collection of stocks, eight colours: White, Crimson King, Peach Blossom, Princess Alice, Yellow of Nice, Rose of Nice, Beauty of Nice, Queen Alexandra.	" 24, and were transplanted to the open ground on June 8. All strains were in bloom by July 30. Each colour was planted separately in individual beds, the plants became very large, and all bloomed most profusely throughout the season.		
Evening Scented Stocks, James....	" 24 Hotbed.....	June 18	Very fine display.
A collection of Crosland Bros., Poppies:—			
Rosy Giant Red.....	May 21 Open ground..	July 18	Very fine large blooms.
White Colossal.....	" 21 " ..	" 19	Very good.
Shirley McDonald Supreme.....	" 21 " ..	" 17	An elegant display.
Summer Chrysanthemum, Ottawa.	" 21 " ..	" 21	A very strong growth, very pretty.
Scabiosa, Mixed, Ottawa.....	" 21 " ..	" 23	A very fine showing.

SWEET PEAS

All the sweet peas were planted in trenches, previously prepared by digging ten inches deep and placing four inches of well rotted manure in the bottom, and three inches of the surface soil on the top of the manure. The seed was planted on the top of this soil; and then covered to a depth of one inch, the covering soil being pressed down firmly on the seed. This left a depression of a trench-like appearance of two inches, which helped to retain any future watering that was given the seed and later the plants.

By this method quite rapid germination of the seed was obtained, as well as a very strong aftergrowth, and a very plentiful supply of excellent large blooms were obtained, beginning from July 31 and continuing until mid-September.

PERENNIAL FLOWERS

The many varieties of perennial flowers in the perennial border again made favourable growth, and bloomed most profusely throughout the season, beginning

with the pansies and Iceland poppies on May 28, the Columbines and *Dictamnus fraxinella* (gas plant) and iris on June 30, followed by many of the other varieties until July 9 when the different coloured peonies came into bloom. The oxalis, montbretia, summer hyacinth and the different varieties of lilies and gladioli came into bloom at a later date, along with the other varieties that were listed in the 1928 report.

So that with some of the earliest varieties of perennials coming into bloom during May and June, and the later varieties during the month of July just as the annuals were beginning to bloom, there was a continual array of blooms throughout a comparatively long season.

No new varieties were added to this perennial border during the season of 1929.

Roses.—On account of their being rather shaded by the other shrubbery, a collection of the different colours of the Rugosa roses was moved during the spring of 1928 from the old plantation, and planted in a border alongside the perennial flower border. With the little extra care and attention that it has been possible to give these plants since being moved, they have made excellent growth, and gave a wonderful showing of blooms this season, beginning on July 4 and continuing to bloom until the very severe frost of mid-September.

FLOWERING AND ORNAMENTAL SHRUBS

Many varieties of lilac and other flowering shrubs were quite severely damaged by the severe weather conditions of the winter of 1928-29, so that the heavy pruning back of the tops necessitated by this winter-killing caused the blooms to appear at a much later date than usual, and the amount of blooms were much below the usual high standard.

It was also noticed, during the late summer, that a number of the more tender varieties did not recover from this severe killing back, and these were removed from the plantation, and the general appearance of these shrubs, when being removed, would indicate that the roots had been injured by the severe freezing brought about by the lack of sufficient or any snow for proper winter protection.

The above conditions show that during some seasons in this North Land, the very tender varieties of shrubs may be entirely eliminated.

A list of the shrubs that have done fairly well in the past at this station may be found in the 1927-28 report.

FRUITS

APPLES AND BUSH FRUITS

All apple trees and bush fruits suffered even to a greater extent than did the flowering shrubs, so that the few remaining apple trees of any culinary value were severely damaged by the severe freezing of the winter, and, since they showed no signs of life later in the spring, we were compelled to discard them from the plantation.

The only apple trees that survived the winter of 1928-29 were three Siberian crab apple trees. These were received from the Morden Experimental Station in the spring of 1927. But while these trees did show some injury, they produced a light crop of fruit this season, the fruit being quite small and rather of an inferior quality.

In the small collection of fruit trees and bushes received from the Morden Experimental Farm in 1927, were six small sandcherry bushes, and from their appearance they may be the Sioux sandcherry. While the tops of these bushes

have been repeatedly killed back during the past two winters, they have made considerable growth and produced their first real crop of fruit this season, and when fully ripe, and picked after the first touch of frost, they were quite palatable.

The yields from the different varieties of currants were much below the average this season, caused by the severe freezing back of the tops, which necessitated very heavy pruning, while a goodly number of the bushes from the different varieties were completely killed out, and have since been removed from the plantation, therefore leaving many vacant spots.

The fruit this season was very small and of an inferior quality, due to infestation by the larva of the Currant Fruit Fly, which was discovered too late in the season to be put under control.

RASPBERRIES.—The yields this season from the older plantation of raspberries was almost negligible, owing to what appears to be a mosaic disease. This plantation will have to be discarded next spring before any of the newer varieties have become affected.

A few plants of the following varieties which were set out in the spring of 1927 gave a very fair crop of fruit, both as to quality and yields: Cuthbert Red, Newman No. 23 Red, Golden Queen Yellow, Cumberland Black.

STRAWBERRIES.—The extreme dryness of the past two or three seasons and lack of almost any snow as winter protection, along with the severe freezing of the winter of 1928-29, and the alternating thawing and freezing of the early spring, resulted in the total loss of the few remaining plants on this plot, and with no new importation of plants, the strawberry plantation is now a blank.

CEREALS

WHEAT

The work with cereals at this station was somewhat extended this season particularly with respect to the number and replications of rod-row plots of wheat, oats and barley. Eleven varieties of wheat were tested under the rod-row system, and eleven strains and varieties were seeded in the larger plots.

The spring of 1929 was fairly early. The rod-row plots of wheat were seeded on April 30, and the larger one-sixtieth acre plots were seeded from April 30 on.

The temperature for the first ten days of May was slightly below normal, with the balance of the month quite normal and more springlike. The precipitation was slightly below normal but ample for good germination. The total hours of sunshine for the month were also slightly below normal.

The varieties Prelude, Reward, Garnet, and Marquis Ott.-15 were seeded on land that was ploughed out of brome grass and alfalfa mixtures during the season of 1928. The remaining six varieties were seeded on older land that had had a liberal application of barnyard manure applied during the season of 1928 when this land was summer-fallowed. These two blocks of land were ploughed at the same time and were given the same amount of summer and autumn cultivation.

While the precipitation of the past season was sufficient to produce fair crops from the older fertilized land, it will be noticed by the difference in the yields that it was not sufficient for the sod land. The many frequent showers of rain that occurred during the latter part of July and throughout the month of August prolonged the ripening period of all varieties of cereals.

The following are the results obtained from the one sixtieth acre plots:—

SPRING WHEAT—RESULTS OF VARIETY TESTS

Variety	Date of ripening	Number of days maturing	Average length of straw with head	Strength of straw on scale of 10 points	Yield per acre	Weight per measured bushel after cleaning
			in.		bush.	lb.
Huron, Ott. 3	Aug. 22	115	51	10	50	64·0
Bishop, Ott. 8	" 22	115	52	10	52	61·5
Kubanka, Ott. 37	" 26	119	54	10	46	63·0
Kota	" 22	115	46	10	45	61·0
Prelude, Ott. 135	" 9	102	44	10	28	62·0
Renfrew	" 22	115	54	10	48	62·5
Reward, Ott. 928	" 13	106	48	10	27	65·0
Garnet, Ott. 652	" 13	106	42	10	21	63·5
Marquis, Ott. 15	" 26	118	42	10	31	63·0

OATS

Sixteen varieties of oats were tested in 1929, eight varieties under the rod-row system, the original plot, and five replications, and eight varieties in larger plots of 1/60 of an acre, with the exception of the varieties Star and Gopher which were seeded in 1/120 acre plots. These two latter varieties were new to this Station, and both have done exceptionally well.

The larger plots were sown from May 1 to May 9. The land was well summer-fallowed the previous season after an application of twenty wagon loads of barnyard manure had been applied. This land was kept well cultivated during the midsummer and autumn of 1928 to check all weed growth, and to fully incorporate the fertilizer with the soil.

Climatic conditions which prevailed during the early autumn resulted in some of the heavier varieties being slightly lodged, but not sufficiently to interfere with the full development of the kernels. On the whole the weather conditions throughout the season were quite favourable to promote strong growth and a high percentage of stooling.

The two hulless varieties Laurel Ott-477 and Liberty Ott-480 have been under test for a number of years at this station with very fair results. The very remarkable results obtained this season with these two varieties were due to the quality of the seed sown which was supplied by the Cereal Division, and had been well treated against smut with copper carbonate.

All varieties did exceptionally well as will be seen from the yields per acre given in the following table:—

OATS—RESULTS OF VARIETY TESTS

Variety	Date sown	Date of ripening	Number of days maturing	Average length of straw with head	Strength of straw on scale of 10 points	Yield per acre	Weight per measured bushel after cleaning
				in.		bush. lb.	lb.
Star	May 8	Aug. 16	100	52	10	112 32	37
Gopher	" 8	" 14	98	42	10	105 30	35·5
Liberty, Ott. 480	" 9	" 21	104	52	8	93 18	47
Laurel, Ott. 477	" 9	" 17	100	51	8	87 2	52
Gold Rain	" 1	" 10	102	52	10	112 32	40
Leader	" 1	" 10	102	49	8	116 16	36
Eighty Day, Ott. 24	" 1	July 29	90	42	10	83 18	33
Daubenay, Ott. 47	" 1	" 31	92	41	10	91 26	34

BARLEY

Twenty-two varieties were tested in 1929, nine varieties under the rod-row system, and thirteen varieties in one-sixtieth acre plots. A number of the varieties seeded in the larger plots were also seeded in the rod-rows.

The varieties Plumage Archer C D 991 and Canadian Thorpe were under test for the first time this season. These two with Hannchen, Star and O.A.C. No. 21 were tested to determine if our soil and climatic conditions were suitable for the production of barley for malting purposes. It would seem that the weather of the past season produced barley of a very high quality with excellent yields.

The different varieties were seeded on May 3 to 9 on land that had been thoroughly summer-fallowed the previous season, with the exception of Hulless White, and Eureka which was sown on the land summer-fallowed out of the brome grass and alfalfa sod during the season of 1929. These two plots suffered from the want of sufficient moisture during the growing period.

The high percentage of germination of the seed, and very strong growth, with a very high percentage of tillering, due to the very frequent light showers of rain that occurred throughout the month of July, caused all the varieties of barley to lodge to a lesser or greater extent. This slightly prolonged the ripening period, but we consider that these rains were quite beneficial to the filling out of the kernels.

The yields and other data are included in the accompanying table:—

BARLEY—RESULTS OF VARIETY TESTS

Variety	Date sown	Date of ripening	Number of days maturing	Average length of straw with heads	Strength of straw on scale of 10 points	Yield per acre	Weight per measured bushel after cleaning
				in.		bush. lb.	lb.
Plumage Archer	May 9	Aug. 19	89	36	7	70 ..	53·0
Hannchen	" 9	" 16	86	35	8	67 24	55·0
Star	" 9	" 14	84	40	7	65 ..	50·5
O.A.C. No. 21	" 9	" 15	85	48	8	63 36	50·0
Manchurian, Ott. 50	" 3	" 19	107	36	8	68 36	55·5
Hulless White	" 3	" 9	98	35	8	50 ..	64·0
Eureka	" 3	" 9	98	35	10	53 36	63·0
Success	" 3	" 10	99	52	8	62 24	45·0
Gold	" 4	" 19	107	36	8	68 36	55·5
Charlottetown, Ott. 80	" 3	" 12	101	38	8	61 12	49·5
Albert, Ott. 54	" 4	" 7	95	48	10	71 12	47·0
Canadian Thorpe	" 9	" 19	89	49	10	73 6	50·5
Bark	" 7	" 16	101	36	10	67 24	45·5

FIELD PEAS

Nine varieties of field peas were sown on May 1. These were sown at the rate of $1\frac{3}{4}$ to $2\frac{1}{2}$ bushels per acre depending on size of the seed.

The white varieties are more in demand by the settlers in making a request for free samples of seed to make a beginning in growing peas. For this reason such varieties were seeded in duplicate plots of one-sixtieth acre, to enable us to fill these requests.

Lemaire, is a very early variety, of which a small quantity of seed was supplied this station from the Rosthern Experimental Station. It was grown at this station for the first time this year in a 1/120 acre plot.

With the exception of a short period during the harvesting of these crops when frequent light showers of rain were experienced, which necessitated much

turning to prevent sprouting and in getting them sufficiently dry for threshing, the early season conditions were very favourable for promoting very strong growth of vines. All varieties produced a very high yield of excellent quality grain, as will be seen by the following table:—

FIELD PEAS—RESULTS OF VARIETY TESTS

Variety	Date of ripening	Number of days maturing	Average length of vine	Yield per acre	Weight per measured bushel after cleaning	Yield of straw per acre
			in.	bush.	lb.	tons lb.
Arthur, Ott. 15	Aug. 13	105	52	46	65·0	1 1,960
White Albertan	" 15	107	68	55	64·0	2 80
Dashaway Sask. 625	" 20	112	62	61	65·0	2 140
Chancellor, Ott. 26	" 13	105	48	50	65·0	1 1,900
Mackay, Ott. 25	" 15	107	58	65	62·0	2 320
Prussian Blue	" 13	105	54	45	64·0	1 1,780
Empire Blue	" 15	107	64	58	62·0	2 20
Alberly Blue	" 20	112	74	43	65·0	1 1,540
Lemaire	July 31	89	15	52	65·0	1 840

FIELD BEANS

Six varieties of field beans were tested during the season of 1929. These were planted on well summer-fallowed land in duplicate plots of 1/120 of an acre each, the original plot in drills, the duplicate plots in hills, the hills two feet apart each way, the drills two feet apart. All varieties were planted on May 7.

The dates of emergence ranged from May 24 to June 3, with dates of blooming much later than usual. Germination of the seed was comparatively low, due partly to the ravages of the wireworms which were quite prevalent this season. Some varieties were cut down to sixty per cent germination.

A severe frost occurred on the night of August 24 when the temperature dropped to 28° F. This frost completely ruined a number of varieties from which no yields were obtained.

During the number of years that field beans have been under test, it would seem that at the present time in this North Land, with its tendency to late spring and early autumn frosts, field beans are almost eliminated as a possible cereal crop. Blight, anthracnose and wilt were quite noticeable this season, which would account somewhat for the slowness of the crop to mature.

The following were the varieties under test:—

FIELD BEANS—RESULTS OF VARIETY TESTS

Variety	Method of planting	Length of plant	Yield of grain from plot	Quality
		in.	lb.	
Norwegian, Ott. 710	Drills	18	18	Fair.
	Hills	19	20	Fair.
Beauty, Ott. 712	Drills	14	5	Poor.
	Hills	14	3	Poor.
White Pea	Drills	17	75% frozen	5 Very poor.
	Hills		All frozen, no results.	
Navy, Ott. 711			A complete loss.	
Early White			No results.	
No. 118			A complete failure.	

BUCKWHEAT

Two varieties of buckwheat were sown on May 21 on summer-fallowed land in one-sixtieth acre plots. This land was ploughed out of grass sod during the season of 1928 and thoroughly cultivated the balance of that season, and was thoroughly cultivated in the spring of 1929 previous to seeding.

While buckwheat will produce a luxurious growth of straw, it is so very susceptible to spring or autumn frost injury, that it is of doubtful value as a cereal crop for this northern district. The slighest touch of frost will destroy all blooms and thus prevent any further seed setting as was the case this autumn when a frost occurred on August 24, cutting down the yields by half. While the yields were low, the kernels that did reach maturity were quite plump and of good quality and weight.

Both varieties were cut on August 28, 99 days between date of seeding and date of harvesting, the following were the results obtained:—

BUCKWHEAT—RESULTS OF TEST

Variety	Length of straw	Yield of matured grain per acre	Yield of of straw per acre	Weight per measured bushel after cleaning
	in.	bush. lb.	tons lb.	lb.
Japanese	42	15 0	1 1,600	47
Silverhull	41	12 24	1 1,420	50

SPRING RYE

Two varieties of spring rye were sown on April 30, on land similar to that on which the barley was sown. The plots were one-sixtieth acre each, and were seeded at the rate of 84 pounds per acre. Common ripened in 112 days giving a yield of 30 bushels per acre while Ottawa Select ripened in 114 days with a yield of 32 bushels per acre.

SPELTZ

One variety of speltz was seeded on May 9, in a one-sixtieth acre plot, this variety made extraordinary growth this season and produced a high yield of grain of fair quality, ripening in 111 days.

FLAX

Three varieties of flax were tested this season for seed production. This season's results along with those obtained over a long period of years on all classes of soil from new breaking to summer-fallow, in both wet and dry seasons, would indicate that flax growing in this northern district is a safe proposition.

The three varieties were sown on May 2, in one-sixtieth acre plots, at the rate of twenty pounds per acre. The emergence date for the three varieties was May 10, and an excellent growth was maintained throughout the season. The yields this season were much above the average with no frost injury.

These crops were harvested on August 13 and 14, and were threshed under ideal weather conditions. No flax wilt was observed in any of the varieties this season.

The yields and other data are included in the following table:

FLAX—RESULTS OF TEST

Variety	Number of days maturing	Average length of plant	Yield of of grain per acre	Weight per measured bushel after cleaning	Yield of straw per acre	
		in.	lb.	lb.	tons	lb.
Premost No. 25	104	31	1,500	56·0	1	1,660
North Dakota No. 52	104	31	1,560	57·0	1	1,900
Fibre flax	103	31	1,320	55·0	1	1,600

WINTER WHEAT

Only one variety Kharkov M C 22, was seeded in the autumn of 1928, the seed was sown on August 25 in duplicate plots of one-sixtieth acre each.

These plots made fair growth during the fall, and went into the winter with a 100 per cent stand, but owing to the comparatively open winter, with no snow until after the New Year, and then not sufficient for good protection, and with the alternating thawing and freezing of the early spring there was a complete killing out of these plots, the land being seeded later to other crops.

During the many years that winter wheat has been under test at this station it has been seeded in many different locations, on the heights and in the hollows in the expectation that the most favourable location could be found. Always the same ruinous results were obtained which are mostly caused by the alternating thawing and freezing of the early spring.

FALL RYE

Five varieties of fall rye were sown on August 25, in duplicate plots of one-sixtieth acre each. They were sown on soil similar to that on which the winter wheat was sown, under the same conditions.

The fall rye wintered quite satisfactorily, with only a very small percentage of winter-killing from which they readily recovered with the more favourable weather conditions which prevailed during the latter part of the spring. This variety of cereal with its strong tendency to tillering, resulting in a very heavy stand of straw, producing a heavy yield of fine quality grain. All plots were ripe on August 21. A twelve-acre field of fall rye was sown on August 23 on summer-fallowed land, the soil of which is rather sandy and gravelly. This crop was heavily pastured by live stock during the autumn, but gave a yield this season of 26 bushels per acre.

The experience gained with fall rye on this farm during a number of years, proves it to be a fairly sure crop for this North Land, and a crop that could be grown to good advantage on many out-laying farms in this district.

FALL RYE—RESULTS OF VARIETY TESTS

Variety	Average length of straw including head	Strength of straw on scale of 10 points	Yield of grain per acre	Weight per measured bushel after cleaning	Yield of straw per acre	
	in.		bush.	lb.	tons	lb.
Common Vermilion seed	54	10	67½	55·5	4	1,240
Mammoth White	52	10	54¾	55·5	3	1,200
North Dakota 959	53	10	59	55·0	3	1,920
Saskatoon	56	10	54¾	56·0	4	1,000
Rosen	56	10	66½	56·0	4	400

FORAGE CROPS

The season of 1929 was only moderately favourable for forage crops, more especially the corns and all varieties of clovers.

While the 1928 seedings of clovers made fair growth during the latter part of the season 1928, and went into the winter with a fairly strong growth, the very unfavourable weather conditions throughout the winter of 1928-29, lack of sufficient snow to afford good protection, with frequent chinooks when the ground would be quite bare of snow and covered with a coating of ice, and short periods of extremely low temperature, and later the alternating thawing and freezing, resulted in a total killing out of many of the varieties, while other varieties of clover and the less hardy varieties of grasses were so badly thinned out that the yields obtained were almost negligible.

Teff Grass for the third season was a total failure. As this variety of grass is so very susceptible to the slightest frost it cannot be recommended as a hay crop for this district.

The 1928 seeding of sweet clover suffered to a great extent, but the varieties that did survive the severe conditions of the winter of 1928-29 gave a fair account of themselves when harvested.

The alfalfa plots, both from the 1927 and 1928 seedings, came through the winter of 1928-29 in quite fair condition, showing only a very light percentage of winter-killing, as did the more hardy varieties of grasses, and with the growing season's fair weather conditions, these varieties made good strong growth, and produced yields quite above the average, both for first and second cuttings.

Owing to the millets and other similar fodder plants, as well as the fleshy annuals being sown on land broken out of sod in the season of 1928, which land did not carry sufficient moisture from the scant snowfall of the winter 1928-29, these crops were slow in getting started, and made only moderate growth throughout the season, and were in a green state when they were frozen on August 25.

The cereals, grown as annual fodder crops, were sown on well prepared summer-fallowed land with a fair amount of moisture in the soil for rapid germination and good strong growth. These crops were cut previous to the August frost, and stacked in fine condition, with very heavy yields, and of excellent quality.

While the sunflower crops were caught by the August frost damaging their feeding qualities somewhat, the yields were high.

As all the root crops were sown on summer-fallowed land, germination of the seed was quite timely, and with fair seasonal weather conditions a good stand of all varieties was secured, with a much higher yield than for the past two previous seasons.

VARIETY AND STRAIN TEST OF CORN

Ten varieties of field corn were seeded from May 4 to 9, planted in duplicate and triplicate plots of $\frac{1}{60}$-acre each.

The cool weather conditions of May and the unequal distribution of moisture and other peculiar weather conditions during the growing season, did not bring about as rapid a growth as might have been expected. Frost which occurred on the night of August 24, and on three successive nights in September the 3rd, 4th and 5th, greatly impaired the feeding qualities of the corn crops, and with the almost continuous light showers of rain these crops were not harvested until September 28. Further frosts were experienced between September 5 and date when cut.

The yields per acre given in the following tables are for the crops as harvested, and were compartively dry. The original plots were planted in hills 3 feet apart each way, the duplicate plots in drills 3 feet apart, and the triplicate plots in drills 2½ feet apart.

FIELD CORN—TEST OF VARIETIES

Variety	Distance apart	Date planted	Date in tassel	Date in silk	Average height of plants	Stage of maturity when harvested	Yield per acre as cut	
	in.				in.		tons	lb.
Twitchells Pride, Forage Division	Hills 30	May 8	July 22	No silk	56	No cobs	15	50
" " " "	Drills 30	" 8	" 22	"	58	"	15	150
Quebec No. 28, Macdonald College	Hills 30	" 8	Aug. 5	"	65	"	17	1,000
" " "	Drills 30	" 8	" 5	"	68	"	18	700
Wisconsin No. 7 x Twitchells Pride, Summerland	Hills 30	" 8	" 2	Aug. 14	60	Cobs just forming	16	275
" " " "	Drills 30	" 8	" 2	" 14	62	Some cobs	16	500
N.W. Dent, Macdonald College	Hills 30	" 4	" 6	No silk	52	No cobs, very leafy	14	400
" " " "	Drills 36	" 4	" 6	"	53	" "	14	700
" " " "	Drills 30	" 4	" 8	"	52	" "	14	750
Wisconsin No. 7, Duke	Hills 36	" 4	No tassel	"	54	No cobs	14	680
" "	Drills 36	" 4	"	"	54	"	14	900
" "	Drills 30	" 4	"	"	54	"	14	1,200
Comptons Early, Duke	Hills 36	" 4	"	"	58	"	15	1,500
" "	Drills 36	" 4	"	"	56	"	15	80
" "	Drills 30	" 4	"	"	65	"	17	—
Golden Glow, Duke	Hills 36	" 4	"	"	52	"	14	125
" "	Drills 36	" 4	"	"	55	"	14	1,150
" "	Drills 30	" 4	"	"	58	"	15	1,950
Minnesota No. 13, McKenzie	Hills 36	" 4	"	"	52	"	15	1,900
" " "	Drills 36	" 4	"	"	56	"	16	300
" " "	Drills 30	" 4	Sept. 25	"	60	"	16	600
Gehu, McKenzie	Hills 36	" 4	July 21	Aug. 8	55	Cobs well formed	15	1,375
" "	Drills 36	" 4	" 21	" 8	56	" "	16	—
" "	Drills 30	" 4	" 22	" 9	54	" "	16	200
Stowells Evergreen, Forage Division	Hills 30	" 9	July 29	" 8	54	Some green cobs	14	200
" " "	Drills 30	" 9	" 29	" 8	56	" "	14	250
Mixed field varieties	Drills 36	" 7	" 31	" 6	54	" "	16	350

SUNFLOWERS

Only four varieties were under test this season. They were seeded on May 6 and 7 in duplicate plots of 1/30-acre each, in drills 30 and 36 inches apart for the two varieties Mennonite and Ottawa 76. A large percentage of branching with many seed heads were noticeable on the above two varieties.

The two larger and later varieties, Mammoth Russian and Manchurian, were seeded in drills 38 and 42 inches apart. The last two mentioned varieties are tall growing, with a single seed head. The same method of planting and cultivating was followed as with corn, and all plots of sunflowers were cut on September 29 after much frost had been experienced.

In the following table are presented the yields, and other data, in connection with these crops:—

SUNFLOWERS—TEST OF VARIETIES

Variety and source of seed	Distance apart	Date harvested	Height of plant when cut	Stage of maturity when harvested	Yield per acre as cut	
	in.		in.		tons	lb.
Mennonite, Rosthern	Drills 30	Sept. 29	70	100% matured	19	1,000
" "	" 36	" 29	72	90% matured	19	95
Ottawa 76, Forage Division	" 30	" 29	74	5% matured 95% soft dough	19	1,575
" "	" 36	" 29	74	15% matured 85% firm dough	19	595
Mammoth Russian, McKenzie	" 38	" 29	86	60% soft dough 40% in bloom	21	600
" McDonald	" 42	" 29	87	65% soft dough 35% in bloom	20	1,800
Manchurian, McKenzie	" 38	" 29	100	50% ripe 50% soft dough	22	1,275
" "	" 42	" 29	100	50% ripe 50% soft dough	22	285
Mixed varieties	" 30	" 29	118	50% ripe 50% soft dough	23	100

OTHER DATA ON SUNFLOWERS

Variety	Date sown	Date of emergence	Per cent of germination	Height July 15	Date in bloom	Per cent stand when cut
				in.		
Mennonite, Rosthern	May 6	May 20	90	63	July 17	90
Ottawa 76	" 7	" 18	100	54	July 20	100
Mammoth Russian, McKenzie	" 6	" 20	100	60	Aug. 3	100
Mammoth Russian, McDonald	" 6	" 20	100	59	" 4	100
Manchurian, McKenzie	" 6	" 20	95	60	July 21	100
Mixed varieties	" 6	" 20	100	58	" 21	100

MANGELS, VARIETY TEST

Eleven varieties of mangels were grown in 1929. The land used for this test had been summer-fallowed and well cultivated the previous season. Twenty wagon loads of well-rotted barn-yard manure per acre were applied to this land in the autumn of 1927. After that season's cereal crop had been harvested, the thorough cultivation that this land received thoroughly incorporated the fertilizer with the soil. Some cultivation was given the land with spring-tooth and smoothing harrows just previous to the seeding, thereby putting the land in excellent condition for the seeding of the different root crops, as on this block of land all root crops were sown.

The soil carried sufficient moisture for favourable germination, and with the frequent light showers of rain that occurred from May 10 to the end of the month, there was a fair growth of all root crops.

The mangels were sown on May 2 in $\frac{1}{60}$-acre plots, in drills twenty-four (24) inches apart. The different plots of mangels were thinned on June 17, the plants being thinned to ten (10) inches apart. Sufficient cultivation was given the root crops throughout the early season to keep the plots absolutely free of weeds and to stimulate the growth.

In the following table are presented the yields obtained:—

MANGELS—RESULTS OF TEST OF VARIETIES AND STRAINS

Variety and source of seed	Date of emergence	Percentage of germination	Yield per acre green weight		Comments at harvest	
					Per cent stand	Size and quality
			tons	lb.		
Danish Sludstrup, Ewing	May 19	80	13	400	85	Medium Fair.
Yellow Intermediate, C.E.F	" 18	100	25	400	100	Large Very good.
Gatepost, McKenzie	" 20	90	15	1,680	90	Medium Fair.
Eclipse, McKenzie	" 22	75	17	80	80	Medium Good.
Giant White Feeding Sugar, S.B	" 18	85	19	400	90	Fair Very fine.
Giant Yellow Intermediate, S.B	" 19	95	28	1,360	100	Very large Excellent.
Golden Fleshed Tankard, S.B	" 20	75	14	800	75	Medium Fair.
Mammoth Long Red, S.B	" 18	90	24	—	90	Fair Very good.
Royal Giant, Steele Briggs	" 18	90	21	1,200	100	Large Very good.
Large Yellow Globe, Bruce	" 19	80	20	800	90	Large Fine.
Red Tankard, Graham	" 18	95	23	200	100	Quite large Good.

SUGAR BEETS, TEST OF VARIETIES

Six varieties of sugar beets were sown on May 7, in test plots of one-sixtieth acre each, on land identical to that on which the mangels were grown on, with the same seasonal cultivation.

The plots were thinned on June 15 to ten inches apart in the drills, the drills being twenty-four inches apart. The different varieties were harvested on September 24.

Twelve roots of each variety were forwarded to the Dominion Chemist for analysis as to sugar content, and at this time of writing the 1929 analysis had not been received.

The result of the analysis test on sugar beets from the 1928 crop is given below.

RESULTS OF ANALYSES OF SUGAR BEETS

Variety	Sugar in juice	Coefficient of purity	Average weight of one root	
	p.c.	p.c.	lb.	oz.
Home grown	19·97	85·25	0	11
Horning	20·17	84·61	0	14
Schreiber & Sons	20·58	84·99	0	13
Dieppe	20·92	85·53	1	3
Fredericksen	20·84	86·06	1	3
Buszczyschi	20·65	85·96	1	1

An extract from the Chemist's report on the sugar beets was as follows:

The data for both sugar content and purity like those of the previous season, indicate a beet which would be quite satisfactory for sugar extraction. The yields per acre for the 1929 crop are given in the following table.

SUGAR BEETS—RESULTS OF TEST OF VARIETIES

Variety and source of seed	Date of emergence	Per cent of germination	Yield per acre		Per cent stand at harvest
			tons	lb.	
Schreiber & Sons, Chemistry Division, 1928	May 18	90	12	960	100
Vilmorins Improved B, Chemistry Division, 1928	" 20	90	12	480	100
Dieppe, Chemistry Division, 1928	" 18	100	9	720	100
Horning, Chemistry Division, 1929	" 17	100	10	1,600	100
Rabbethge & Giessecke, Chemistry Division, 1929	" 18	100	10	880	100
Fredericksen, Chemistry Division, 1929	" 17	100	9	—	100

SWEDE TURNIPS, TEST OF VARIETIES

Fourteen varieties and strains of swede turnips were seeded on the well prepared summer-fallowed land on May 7, in one-sixtieth acre test plots. The seed-bed was prepared with a spring-tooth cultivator and smoothing harrow. The seed was sown with a garden seeder, in drills twenty-four inches apart.

The germination of the seed was quite timely, with a fairly high percentage. The plants were thinned on June 18 to twelve inches apart in the drills. These crops were harvested on September 16, and all varieties were quite free from club roots. Some individual roots weighed as high as twenty-three pounds.

The yield obtained and other data are presented in the following table:—

SWEDE TURNIPS—RESULTS OF TEST OF VARIETIES AND STRAINS

Variety and source of seed	Date of emergence	Per cent of germination	Yield per acre green weight	Per cent stand	Size	Quality
			tons lb.			
Bangholm, Nappan	May 18	95	22 1,960	100	Medium	Good.
Bangholm Club Root Resistant, Charlottetown	" 18	95	23 1,520	100	Large	Very good.
Ditmars, McNutt	" 20	90	23 800	95	Medium	Fine.
Bangholm, General Swedish Seed Co	" 20	95	25 400	100	Very large	Good.
Bangholm Olsgaard, Hjalmar Hartman	" 20	100	28 1,600	100	Extra large	Good.
Bangholm, Ewing	" 18	100	25 1,360	100	Large	Extra fine.
Selected Purple Top, Steele Briggs	" 20	90	24 —	100	Large	Good.
Shepherd Golden Glow, Hartman	" 21	85	27 —	100	Very large	Fine.
Canadian Gem, Steele Briggs	" 20	100	28 400	100	Large	Very good.
Jumbo, Steele Briggs	" 18	100	20 1,000	100	Medium	Good.
Skirvings Improved, McDonald	" 18	100	29 440	100	Very large	Excellent.
Hartleys Bronze Top, Bruce	" 18	100	26 1,040	100	Large	Good.
Good Luck, Steele Briggs	" 18	100	29 500	100	Large	Fine.
Westbury, Steele Briggs	" 18	100	27 600	100	Large	Very good.

FALL TURNIPS, TEST OF VARIETIES

Eight varieties of fall turnips were sown on May 7, in one-sixtieth acre test plots. The drills were 24 inches apart, the plants being thinned on June 14 to 10 inches apart in the drills.

These varieties of turnips were sown on land similar to that on which the swede turnips were grown, and were given the same method of cultivation. The varieties were harvested on August 26, the day following the first autumn frost. They were not stored, but were fed out to the live stock during the late autumn.

The yields per acre and other data are presented in the following table:—

FALL TURNIPS—RESULTS OF TEST OF VARIETIES

Variety and source of seed	Date of emergence	Per cent of germination	Yield per acre green weight	Comments at harvest		
				Per cent stand	Size	Quality
			tons lb.			
Greystone, Steele Briggs	May 18	100	22 1,600	100	Large	Good.
Red Paragon, Sutton	" 18	80	24 —	100	Very large	Fair.
Hardy Green Round, Sutton	" 18	100	19 1,840	100	Medium	Quite good.
Aberdeen Purple Top, Steele Briggs	" 18	100	23 560	100	Large	Medium.
Green Top Yellow Aberdeen, Ewing	" 18	100	13 160	100	Small	Fair.
Purple Top Mammoth, Steele Briggs	" 18	100	13 1,900	100	Medium	Good.
Pomeranian White Globe, S.B	" 19	100	19 400	100	Medium	Fair.
White Globe, Ewing	" 20	95	22 640	100	Large	Medium.

FIELD CARROTS, TEST OF VARIETIES

Nine varieties and strains of field carrots were sown on May 7, but owing to the very low percentage of germination of the seed from this seeding, the plots were recultivated and reseeded on May 25, with new seed of the same varieties that had just come to hand from the Forage Crops Division.

The size of the plots were one-sixtieth acre each, and the drills were 24 inches apart. The treatment of the land for the carrots was similar to that given for the other root crops. The plants were thinned to 4 inches apart on June 20.

These crops were harvested on October 1, and in the following table are presented the yields per acre with other data. While the yields were slightly below the average, the roots were of a good quality.

FIELD CARROTS—RESULTS OF TEST OF VARIETIES

Variety and source of seed	Date of emergence	Per cent of germination	Yield per acre green weight		Comments at Harvest		
					Per cent stand	Size	Quality
			tons	lb.			
Imp. Intermediate White, Ewing	June 8	100	12	—	100	Fair	Good.
Imp. Half Long, McKenzie	" 8	100	13	1,000	100	Large	Good.
Mammoth Short White, Rennie	" 8	100	12	1,920	100	Large	Good.
White Belgian, Dupuy & Ferguson	" 8	100	11	740	100	Medium	Fair.
Danish Champion, C.E.F	" 8	95	11	80	95	Medium	Good.
White Belgian, Ewing	" 9	95	11	860	100	Medium	Fair.
Long Orange, Bruce	" 8	100	13	580	100	Large	Good.
White Belgian, Steele Briggs	" 10	90	10	1,720	90	Medium	Fair.

FLESHY AND OTHER PASTURE PLANTS

In order again to test the value of rape and kale as supplementary pasture plants, two varieties of rape, and five varieties of kale were sown, and were used as such during the growing season.

These forage crops were grown on land that had been ploughed out of grass sod in June, 1928, and kept thoroughly cultivated throughout the balance of that season, by the use of the disk, spring-tooth and smoothing harrow. No manure was applied to this land, and just previous to seeding the seed-bed was prepared by disking, and with a spring-tooth cultivator and smoothing harrow.

The different varieties were sown on May 15, in test plots of one-sixtieth acre each, in drills 9 inches apart, 30 drills to the plot.

As it was impossible to pasture these plots, they were cut at intervals throughout the season beginning from June 5 and continued to August 22, until half of each plot was cut and fed out. The remaining half of each plot was then left until the final harvest.

These crops were fed out to calves and brood sows with their litters that were confined to a limited space of land, and this almost daily ration of succulent feed was greatly relished, and had a very beneficial effect on this stock. The final yields from these plots were fed to the same young stock during the late autumn.

Owing to the dryness of the soil at seeding time and the season's limited rainfall for this type of land, the second growth, even from the early date of cutting was very scant.

The following table gives the total yields and other data from all cuttings. It will be noticed that the different plots were cut on alternate dates.

TEST OF VARIETIES, RAPE AND KALE

Three drills of each variety of rape and kale were cut and hauled away on the dates given below.

RESULTS WITH KALE

Variety and source of seed	Date cut	Number of drills	Height of plant	Green weight
			in.	lb.
Green Steam Marrow, Sutton	June 5	3	12	56
	July 12	3	15	59
	" 27	3	17	72
	Aug. 1	3	18	64
	" 10	3	22	75
Total amount cut from half the plot during the season				326
Yield from the remaining half of plot cut August 28				390
Total weight from plot				716
Total yield per acre, 21 tons, 960 pounds.				
Purple Stem Marrow, Sutton	July 25	3	18	63
	" 31	3	19	70
	Aug. 1	3	19	70
	" 8	3	21	73
	" 20	3	23	76
Total amount cut from half the plot during the season				352
Yield from the remaining half of plot cut August 28				400
Total weight from plot				752
Total yield per acre, 22 tons, 1,120 pounds.				
Sutton's Sheep Kale	July 8	3	14	59
	" 13	3	16	62
	" 29	3	16	71
	Aug. 7	3	17	73
	" 13	3	18	74
Total amount cut from half the plot during the season				339
Yield from the remaining half of plot cut August 28				370
Total weight from plot				709
Total yield per acre, 21 tons, 540 pounds.				
Improved 1,000 Headed, Suttons	July 15	3	15	43
	" 22	3	17	51
	" 24	3	17	52
	Aug. 3	3	18	63
	" 14	3	20	65
Total amount cut from half the plot during the season				274
Yield from the remaining half of plot cut August 28				382
Total weight from plot				656
Total yield per acre, 19 tons, 1,360 pounds.				
1,000 Headed, Suttons	July 15	3	15	63
	" 26	3	15	64
	Aug. 5	3	17	70
	" 12	3	20	75
	" 14	3	21	76
Total amount cut from half the plot during the season				348
Yield from the remaining half of plot cut August 28				463
Total weight from plot				811
Total yield per acre, 24 tons, 660 pounds.				

RESULTS WITH RAPE

Variety and source of seed	Date cut	Number of drills	Height of plant	Green weight
			in.	lb.
Dwarf Essex, C.E.F.	June 29	3	12	64
	" 14	3	18	70
	" 31	3	20	71
	Aug. 15	3	22	75
	" 22	3	22	75
Total amount cut from half the plot during the season				355
Yield from the remaining half of plot cut August 28				375
Total weight from plot				730
Total yield per acre, 21 tons, 1,800 pounds.				
Giant, Suttons	June 26	3	12	63
	July 10	3	18	70
	Aug. 6	3	21	75
	" 15	3	22	76
	" 21	3	22	76
Total amount cut from half the plot during the season				360
Yield from the remaining half of plot cut August 28				380
Total weight from plot				740
Total yield per acre, 22 tons, 400 pounds.				

ANNUAL FODDER CROPS, TEST OF VARIETIES

Numerous varieties and strains of millets and other similar annual fodder plants were sown in 1/60-acre plots on May 15, the drills being seven (7) inches apart, on land identical to that for the rape and kale, this being the only land available this season for these crops.

The millets and similar crops were very slow to start, the emergence dates for the millets was not until June 3, and through lack of sufficient moisture growth was greatly retarded throughout the whole season. The millets were very much in the green stage when caught by the frost of August 25, thereby lowering both yields and quality of these crops, the weights being taken when these crops were perfectly dry by frost and sun.

The emergence date for the following five varieties of southern fodder plants: Feterita, Early Amber Sugar Cane, Milo Maize, Kaffir Corn and Teosinthe was not until June 12, and the after-growth was very slow.

On the whole, this and other seasons were extremely unfavourable for these crops. The delay in germination, our cool growing season, lack of abundance of moisture, and the early frosts, constitute a combination of factors which make these varieties very poor and often a complete failure.

In the following table are given the yields and other data on the millets, sudan grass and canary grass:—

MILLETS AND SIMILAR PLANTS

Variety and source of seed	Length of plant when cut	State of maturity	Yield per acre of perfectly dry fodder	
	in.		tons	lb.
Early Fortune	20	Seed just appearing	2	1,000
Kursk	16	Seed in milk stage	1	1,300
Golden	22	Seed well advanced	2	1,400
Common	21	Seed in soft dough	2	1,280
Hungarian	18	Just coming to head	2	740
Hog	20	The seed well developed	2	920
Japanese	19	Seed appearing	2	620
Sudan grass	27	The seed well advanced	2	1,580
Canary Grass (Fort Vermilion)	29	Seed in firm dough	3	600

A plot of one sixtieth of an acre of Golden Millet was sown on May 18, on land on which the winter wheat had been sown in the autumn of 1928, the wheat having been completely killed out. This land had been summer-fallowed during the season of 1928, after a very liberal application of barn-yard manure had been added for any future crops, and was recultivated just previous to the millet being sown. The germination of the seed was very timely, and a very strong growth was maintained throughout the season, and reached a height of 42 inches when harvested on August 28, with a yield of 7 tons 1,960 pounds, the weight taken when cut being comparatively dry. There was a vast contrast between the yields on the well cultivated land in a high state of fertility, with a year's accumulation of moisture, as compared with the yields on sod land without the added fertilizer, and much of the soil moisture sapped by the previous hay crops.

MISCELLANEOUS FORAGE CROPS OTHER THAN GRASSES AND CLOVERS

Twenty-two annual fodder crops consisting of both single varieties and mixtures of cereals were sown during a period extending from May 2 to 22, on well prepared summer-fallowed land, that had received an application of barn-yard manure at the rate of twenty wagon loads per acre, just previous to its being ploughed in June, 1928. By frequent cultivation during the balance of the season the land was kept free from weeds, and in good tilth, and the seed-bed was well prepared for seeding by the use of the spring-tooth cultivator and smoothing harrow.

This season, where field peas were used in any mixture with cereals for hay, the proportion used was 1½ bushels of peas to 1¼ bushels of any other cereal.

With a reserve of moisture in the soil, the germination of the seed was very timely, and with the quite frequent showers of rain during the growing season, was sufficient to promote very strong growth, and a high percentage of tillering, from which a very heavy crop of excellent quality fodder was harvested. These crops were not used as silage, but were stacked in good condition for feeding later.

The season's growth of these different crops was followed throughout the season with much interest by many of our farmers who visit the station at quite frequent intervals, during the summer months. These men showed much surprise at the strong growth of these crops, and, later in the season, at the readiness with which all live stock took to this class of fodder.

The yields of dry fodder per acre and other data are presented in the following table.

Variety	Date sown	Date of emergence	Date cut	Length plants	Stage of maturity	Per cent stand	Yield per acre perfectly dry fodder
				in.			tons lb.
Victory oats and	.....	May 12	.....	50	Firm dough.....	70	
Chancellor field peas...	May 2	" 14	July 30	53	"	30	6 1,320
Gold Rain oats and	.....	" 12	.....	42	"	65	
Prussian Blue field peas	" 2	" 14	" 24	44	"	35	6 480
Hulless White barley and.....	.....	" 17	.....	35	Soft dough.....	25	
Prussian Blue field peas	" 6	" 19	" 26	34	Firm dough.....	75	3 900
Banner oats and.....	.....	" 27	.....	52	Soft dough.....	75	
Prussian Blue field peas	" 17	" 29	Aug. 3	45	Peas just forming...	25	5 200
Victory oats and.....	.....	" 27	.....	50	Firm dough.....	70	
Empire Blue field peas.	" 17	" 29	" 3	52	Soft dough.....	30	5 320
Leader oats and.....	.....	" 28	.....	47	Soft dough.....	75	
Arthur field peas.....	" 17	" 29	" 3	64	Pods just forming...	25	3 1,800
Gold Rain, oats and....	.....	" 27	.....	53	Soft dough.....	90	
Dashaway field peas...	" 17	" 29	" 3	50	Medium dough.....	10	5 440
Daubenay oats and....	.....	" 27	.....	43	Firm dough.....	80	
Chancellor field peas...	" 17	" 29	July 31	48	Soft dough.....	20	4 1,900
Eighty Day oats and..	.....	" 27	.....	44	Firm dough.....	50	
Mackay field peas.....	" 17	" 29	" 31	54	Soft dough.....	50	5 1,520
Hulless White Barley and.....	.....	" 27	.....	40	Firm dough.....	40	
White Albertan field peas.....	" 17	" 30	" 31	50	Soft dough.....	60	5 800
Success barley and.....	.....	May 27	.....	38	Firm dough.....	35	
White Albertan field peas.....	May 18	" 31	Aug. 3	52	"	65	5 80
222 wheat and.....	.....	" 29	.....	48	Soft dough.....	35	
Prussian blue field peas	" 18	" 30	" 6	50	Peas well formed...	65	6 1,200
Renfrew wheat and....	.....	" 29	.....	48	Soft dough.....	85	
Arthur field peas.....	" 18	" 31	" 6	54	Firm dough.....	15	5 1,520
Bishop wheat and.....	.....	" 29	.....	52	Soft dough.....	70	
Dashaway field peas...	" 18	" 31	" 6	62	"	30	6 1,320
Red Fife wheat and	.....	" 29	.....	51	"	25	
Banner oats.....	" 18	" 28	" 6	58	Firm dough.....	75	9 1,800
Japanese millet and....	.....	" 31	.....	20	Seed just forming...	20	
Eighty Day oats.....	" 18	" 27	July 31	40	Firm dough.....	80	4 1,360
Common millet and...	.....	" 31	.....	22	No seed heads.....	25	
Daubenay oats.....	" 18	" 30	Aug. 2	42	Firm dough.....	75	5 800
* Spring rye and.....	.....	" 30	.....	48	Soft dough.....	50	
Victory oats.....	" 22	June 1	" 5	86	"	50	5 1,520
† Spring rye and.....	.....	May 31	.....	59	Firm dough.....	60	
Banner oats.....	" 22	June 2	" 5	43	"	40	5 1,560

* Quarter-acre plot sown with horse seeder.
† Half-acre plot sown with horse seeder.

At the date of cutting the later sown plots of fodder on August 5, it was found that the two varieties of straight field peas, Chancellor and Dashaway, which were sown on May 18, in one-sixtieth-acre plots, were so well advanced that it was thought advisable to allow them to reach a full stage of maturity before harvesting them. This was done, the plots being cut on August 28, thereby increasing our seed and distribution supply.

The following were the results obtained:—

Variety	Length of plant	Yield of grain per acre	Yield of straw per acre
	in.	bush.	tons lb.
Chancellor.....	46	43	1 1,900
Dashaway.....	48	40	1 840

TESTS AND YIELDS OF MISCELLANEOUS GRASSES

The accompanying tables give an idea of the yields produced by the different varieties of alfalfa, grasses and clovers in mixtures, from the 1927 and 1928 variety test plots. It will be seen that there was quite a variation in the yields this season, the more hardy varieties yielding quite high, due greatly to the fairly favourable growing conditions throughout the season. Some of the varieties have not withstood our winter conditions, and others for various reasons are not adapted to the severe conditions which prevail in this north land.

YIELDS FROM GRIMM ALFALFA, 1927 SEEDING

Distance apart of drills	Per cent stand when cut	Length of plants, 1st cutting	Length of plants, 2nd cutting	Yield per acre, 1st cutting	Yield per acre, 2nd cutting	Total yield
in.		in.	in.	tons lb.	tons lb.	tons lb.
Broadcast	85	37	22	2 1,100	1 400	3 1,500
8	70	35	19	1 1,960	0 1,800	2 760
12	100	37	21	3 420	1 700	4 1,120
16	100	40	23	3 1,500	1 1,240	5 740
20	100	40	23	3 300	1 940	4 1,240
24	95	42	24	2 1,400	1 460	3 1,860
28	90	40	20	2 1,280	1 340	3 1,620
30	95	42	21	2 1,700	1 400	4 100
32	85	35	18	1 1,900	0 1,860	2 1,760

Date of first cutting, July 12, 1929.
Date of second cutting, Aug. 24, 1929.

YIELDS FROM GRASSES AND CLOVER MIXTURES

Variety	Per cent stand when cut	Length of plants when cut	Yield per acre of cured hay	Comments
Grasses—		in.	tons lb.	
Brome grass	100	42	3 1,800	Fine quality hay.
Meadow fescue	100	36	2 320	Good quality.
Canadian blue grass	80	32	2 1,400	A small percentage of sweet clover.
Kentucky blue grass	85	24	3 —	Excellent fodder.
Western rye grass	100	45	3 1,800	A very heavy stand.
Timothy, Regal	100	37	4 1,000	A heavy stand of excellent hay.
Clovers and Mixtures—				
Red Top*	50	26	1 1,000	Stand thin, but fodder good.
Kentucky blue grass*	55	25	1 1,300	Stand medium, fodder good.
Sweet clover, White Blossom	80	40	4 1,240	A very heavy stand.
Brome grass and	50	50		
Western rye grass	50	45	4 100	Fine quality hay.
Common sweet clover, White Blossom broardcast	100	58	6 —	A heavy growth.
Common sweet clover, White Blossom drills	90	56	3 480	Only a fair stand.
Common sweet clover, Yellow Blossom broardcast	90	52	3 660	Stand fair, quality good.
Common sweet clover, Yellow Blossom drills	100	65	5 800	A very good stand.
Sweet clover, Grundy and	10	47	1 700	Only 50% stand, light but good
Timothy, commercial	40	42		
Red Top*	65	33	1 1,600	Stand thin, quality good.
Timothy, Boon*	80	40	2 800	Quality very good.
Kentucky blue grass*	50	38	1 1,300	Quality very fine.
Alfalfa and	60	30		
Western rye grass	40	40	1 1,000	Excellent hay.
Alfalfa and	30	33		
Brome grass, $\frac{1}{30}$ acre plot	70	49	6 900	An excellent stand of very good hay.

Date of cutting, July 12, 1929.
*These plots contained a percentage of some variety of small clover, and while some varieties were quite noticeable this season, they did not add materially to the yields. With the somewhat frequent rains after cutting, these clovers became more noticeable.

ALFALFA CLOVERS AND GRASSES, SEEDED IN 1928

Variety	Distance of drills apart	Per cent stand	Length of plants, 1st cutting	Length of plants, 2nd cutting	Yield per acre of cured hay				Total	
					1st cutting		2nd cutting			
	in.		in.	in.	tons	lb.	tons	lb.	tons	lb.
Grimm Alfalfa	8	100	35	20	3	840	1	1,240	5	80
"	10	100	34	21	3	1,200	1	1,380	5	580
"	12	100	35	21	3	480	1	940	4	1,420
"	14	95	36	21	3	960	1	1,040	5	—
Medicago Falcata Alfalfa	8	100	34	22	4	1,240	1	1,260	6	500
" "	10	100	32	19	3	600	1	820	4	1,420
" "	12	85	29	16	2	200	0	1,860	3	60
* Sweet clover in drills.										
Zowane	8	65	56	.....	1	600	.....		1	600
*Sweet clover, White Blossom	8	100	68	.....	4	1,600	.....		4	1,600
Sweet clover, Yellow Blossom	8	50	54	.....	2	800	.....		2	800

* Yield from the only cutting, on July 12.

1928—SERIES OF STRAIGHT VARIETIES OF GRASSES

Variety	Per cent stand when cut	Length of plants	Yield per acre of cured hay		Comments
		in.	tons	lb.	
Brome grass	100	31	3	600	Fine quality hay.
Meadow Fescue	90	43	2	800	Very fine quality.
Canadian Blue grass	80	27	3	—	Excellent quality.
Orchard grass	Badly winter killed, yield negligible.				
Western Rye grass	100	45	3	1,200	A very heavy stand.
Timothy Regal	100	47	3	860	Very fine quality.
Kentucky Blue grass	50	40	2	200	Quality very fair.
Red Top	85	35	2	1,400	Good quality hay.
Teff grass	Completely winter killed.				

1928—SERIES OF GRASS AND CLOVER MIXTURES

Varieties	Per cent stand when cut	Length of plant	Yield per acre of cured hay		Comments
		in.	tons	lb.	
Danish Stryno White Dutch clover	15	14	0	300	Very thin.
Kenora red clover	Badly winter killed, a few plants noticeable, improved later in the season. No yield.				
Kenora red clover and	"	"	"	"	
Meadow Fescue	100	42	3	840	Meadow Fescue only, very good.
Kenora red clover and	Completely winter killed.				
Red Top	80	34	1	1,000	Hay of very good quality.
Early Sweden red clover and	Completely winter killed.				
Canadian blue grass	Very poor, yield negligible.				
St. Clet red clover and	Badly winter killed, a few plants noticeable, improved later in the season, no yield.				
Brome grass	100	50	3	1,440	A heavy yield.
St. Clet red clover	Badly winter killed, a few plants noticeable, improved later in the season, no yield.				
St. Clet red clover and	"	"	"	"	
Western rye grass	100	49	3	1,920	A very heavy stand.

SPECIAL ALFALFA

Five strains of alfalfa seed were received during the autumn of 1928, from the Turkestan Plant Breeding Station, Tashkent Post Box No. 2.

This seed was sent to us in exchange for alfalfa seed we were able to send the Turkestan Station. The seed forwarded from this Station to Turkestan was from the plants tagged by Dr. McRostie when he made his visit to this station some years ago.

The names and numbers given for each strain are as taken from each small envelope which contained the seed.

No. 1 J Strain Tashkent	$\frac{1}{120}$	acre	plot
No. 2. Khiva	$\frac{1}{120}$	"	"
No. 3. 134 F. Alma Station, Seven River Region West Terkestan	$\frac{1}{120}$	"	"
No. 4. N 778 Dscharkent, North Turkestan, Northern Type	$\frac{1}{120}$	"	"
No. 5. Kuplastovca, near Alma Station (30 k m)	$\frac{1}{120}$	"	"

The limited amount of seed received accounted for the smallness of the plots. No nurse crops were sown with these strains of alfalfa, and the season's growth was very strong. They were left unclipped, and should they survive our northern winter weather conditions and make a favourable growth next season, we should be able to develop some hardy strains suitable for this north land.

FIBRE CROPS

FLAX—RATES OF SEEDING TEST

One variety of fibre flax was under test this season. The seed was sown on May 14 in duplicate one-sixtieth-acre plots, at the following rates of seeding: 1½, 1¾ and 2 bushels per acre. The seed was sown broadcast. The growth throughout the season was quite favourable, and while these plots were not harvested until October 3, they were fully matured previous to the frost which occurred on August 24.

The plots of the heavier rate of seeding were comparatively free from weeds, while a large percentage of weeds were found on the plots of the lighter rate of seeding. Therefore should the fibre from the plots sown to the higher rate of seeding be equal in quality to that from the lighter rate of seeding, the higher rate of seeding is to be recommended.

The following table gives rate of seeding, with yields obtained:—

FLAX—RESULTS OF RATES OF SEEDING TEST

Variety and source of seed	Rate of seeding per acre	Average height of plants	Yield from plot	Yield per acre dry matter	
	bush.	in.	lb.	tons	lb.
J. W. S., Fibre Division	1½	39	69	2	140
Duplicate plot	1½	38	67	2	20
J. W. S., Fibre Division	1¾	37	75	2	500
Duplicate plot	1¾	36	72	2	320
J. W. S., Fibre Division	2	38	105	3	300
Duplicate plot	2	35	80	2	800

HEMP—RATES OF SEEDING TEST

One variety of hemp was also under test this season, the seed was sown on May 14, in duplicate one-sixtieth-acre plots, at different rates of seeding.

The object of the different rates of seeding had a double purpose, fibre production mainly, and also the ability of the crop to prevent or outgrow or

smother weed growth, should the land on which it is sown be infested with weeds. This season's results showed clearly that the percentage of weeds found on the plots sown at the higher rate of seeding were low or almost nil, while many weeds were noticeable on the plots sown at the lower rate of seeding. If the fibre from the thickly sown plots be fully equal in quality to that on the thinly sown plots, from a standpoint of the extra yield of fibre, as well as weed control, the higher rate of seeding can be recommended.

The following table gives the rates of seeding, with yields obtained:—

HEMP—RESULTS OF RATES OF SEEDING TEST

Variety and source of seed	Rate of seeding per acre	Average height of plants	Yield from plot	Yield per acre dry matter	
	lb.	in.	lb.	tons	lb.
Hemp, Fibre Division	50	96	158	4	1,480
Duplicate plot	50	94	170	5	200
Hemp, Fibre Division	60	80	155	4	1,300
Duplicate plot	60	76	148	4	880
Hemp, Fibre Division	70	69	143	4	580
Duplicate plot	70	84	185	5	1,100

GENERAL NOTES

During the past summer visitors to the station were more numerous than ever, and all were extended a very hearty welcome. Often these visitors came in small groups, and at such times we took the opportunity of entertaining these farmer guests to luncheon, which gave the opportunity to fully explain the work in its many branches, and this line of work we feel has been highly appreciated.

A small party, during August, headed by our Provincial Premier, the Hon. J. E. Brownlee, made a very extensive visit to this district, and during their stay visited the station and were shown over the work, and were then entertained at luncheon at the station. A number of the most prominent farmers were present at this luncheon.

The Premier and party were greatly impressed by the very favourable conditions they found in this district, and left Fort Vermilion on their way to Great Slave lake, having a more comprehensive idea of just what possibilities there are in this district.

The correspondence during the past year shows a steady increase, and with the numerous settlers that have moved into the surrounding district during the past year there has been created an increased demand for samples of all varieties of cereals, which we have been able to fill quite satisfactorily.

During the season of 1929 a block of land, back from the river front, was put in readiness for a new plantation of fruits and ornamental shrubs in the spring of 1930.

A large exhibit of the different varieties of cereal plants was forwarded during the early autumn to the Edmonton Journal. These were then placed on exhibition in the Chamber of Commerce, Edmonton.

While no actual experimental work is being done with live stock, still a small herd of grade Shorthorns are kept at the Station for milk and meat supply, and during the past four years not the slighest trace of tuberculosis has been discovered in this herd.

Sufficient swine are carried each season to supply the station with fresh pork and bacon. A small flock of poultry, Barred Rocks, is maintained for egg production.

Sufficient horses are kept throughout the year to successfully carry on the work.

FORT GOOD HOPE, N.W.T.

The Experimental Substation of Fort Good Hope is very probably the northernmost of all. It is situated at a few minutes only from the Polar Circle, exactly at 66° 15′ 12″ northern latitude and 128° 49′ western longitude. The latitude is approximately that of the northern part of the Great Bear lake. The following table indicates the maximum and minimum temperatures for this year 1929 to September 15:—

MAXIMUM AND MINIMUM TEMPERATURES AT FORT GOOD HOPE, 1929

Month	Date	Maximum	Minimum
January	15		− 50°
	19	+ 12°	
February	11	+ 33°	
	22		− 52°
March	9		− 54°
	19	+ 24°	
April	7		− 25°
	30	+ 46°	
May	14		+ 18°
	26	+ 71°	
June	20		+ 30°
	27	+ 79°	
July	1	+ 80°	
	11		+ 34
August	3	+ 85°	
	25		+ 24
September	6	+ 71°	
	12		+ 31

Evidently, it would be rash to believe that there are immense cultivated areas in such a latitude, especially when it is known that tractors and ploughs of any kind are still totally unknown here. The only agricultural implements are the pick, spade, hoe, rake and others of the same primitive character. The only power available is that of two missionaries and their Indian labourers.

Nevertheless, precisely because of its position, the Fort Good Hope Substation can offer a certain interest from an experimental viewpoint, and it never fails to interest visitors who set foot in these far regions. The latest date of harvesting was September 10, when the first snowfall hastened the digging out of what could be used and checked the growth of the remainder.

POTATOES

It will perhaps be remembered that last year the potato crop at Good Hope was marvellous. This year the general average was about 5 for 1, that is 29 bushels were planted and 150 bushels dug out. The pink seed potatoes were kept in a cool place during the winter and sprouted on May 1. They were planted in three different soils. The first (A) and third (C) were mostly new land. Moreover, the first soil suffered to a larger extent from the cold nights of July 11 and August 24.

RESULTS OBTAINED WITH POTATOES

Soil	Planted	Germinated	Dug out	Total crop	Average weight	Area
				bush.	oz.	sq. yds.
A	May 24	June 12	Sept. 2	17	1½	512
B	" 25	" 12	" 2	58	3	800
C	" 27	" 13	" 3	78	2½	1,832

CARROTS AND PARSNIPS

Chantenay and Half Long Danvers carrots gave very good results for the region. We dug out 10 bushels, average weight 2½ ounces. They were in full growth when, fearing the cold, we dug them out. This applies also to parsnips, of which the average weight was two ounces.

CABBAGES

On the whole, this crop was also quite encouraging. About 550 cabbages were grown and the average weight, varying according to the kinds, was 1 to 6 pounds.

CABBAGE—RESULTS OF TEST

Variety	Sown	Transplanted	Ready to use	Date of harvest	Quantity	Average weight
						lb.
Early Snowball Cauliflower	May 1	June 10	Aug. 14	Sept. 10	15	1
River Globe Savoy	" 1	" 10	" 25	" 10	40	2
Paris Market Early	" 1	" 10	" 16	" 10	50	3½
Golden Acre	" 1	" 10	" 18	" 10	400	4
Copenhagen Market	" 1	" 10	" 26	" 10	50	6

TURNIPS AND BEETS

Although not abundant, the crop was better than last year when it was nearly a complete failure.

Variety	Sown	Germinated	Ready to use	Date of harvest	Quantity	Average weight
					bush.	oz.
Webb's turnip	May 22	June 7	Aug. 20	Sept. 10	2	3½
Swede turnip	" 24	" 10	Sept. 1	" 10	2	14
Crosby Egyptian beets	" 22	" 15	" 1	" 10	3	5

CORN

Our four varieties of corn: Pickaninny, Banting, Devil's Hell Bride and Howe's Alberta Flint, sown on May 22, germinated about June 9 and 10 and were in bloom on August 24 when a heavy frost destroyed them entirely.

SUNFLOWERS

Sown on May 24. The first plants appeared on June 9 and grew fast enough to enable us to present the first open corol to Mr. Finnie on August 12, but no flower reached complete maturity. On September 10 the largest weighed 3½ ounces.

RHUBARB

The rhubarb previously acclimatized here succeeded generally well, having big stems and large leaves. The plants received from Ottawa aparently froze in transit and did not bear anything.

BEANS AND PEAS

These would have required only a week or two more to reach full maturity. However, they were quite fit to use. We need peas that can be eaten in the pod.

RESULTS WITH BEANS AND PEAS

Varieties	Sown	Germinated	In bloom	Ready to use	Picked
Beans—					
Broad Longpod	May 25	June 9	July 3	Aug. 25	Sept. 10
Broad Mammoth, Rennie	" 25	" 10	" 3	" 28	" 10
Princess of Artois	" 25	" 10	" 5	.....	" 10
Peas—					
Alaska	May 25	June 8	July 3	Aug. 20	Sept. 10
Lincoln, Rennie	" 25	" 8	" 3	" 20	" 10
Thos. Laxton-11407	" 25	" 8	" 3	" 20	" 10
Dery's Dwarf Pea	" 25	" 8	" 3	" 20	" 10

LETTUCE

Three varieties were sown in hotbeds and two succeeded perfectly (Grand Rapids and Sutton's Early Paris). Sown on May 1, they germinated on the 6th and provided a plentiful supply from May 27 to September 15. The third variety (Iceberg) bolted to seed nearly at once.

SPINACH AND OTHERS

King of Denmark and New Zealand spinach gave fine stems and leaves. The first variety was nearly ripe on September 10.

About fifteen tomato plants came into leaf, and that was all.

A few radishes and onions reached the size of a thumb. Potato-onions would perhaps be more successful.

CEREALS

Experiments were also tried with cereals (wheat, barley and oats), with the following results:—

RESULTS OF TESTS OF CEREALS

Varieties	Sown	Germinated	Headed out	Ripe
Wheat—				
A. Garnet Ottawa 652	May 11	May 25	July 4	Aug. 24
B. Prelude 135	" 11	" 25	" 4	" 24
C. Reward 928	" 11	" 25	" 4	" 24
Barley—				
A. Albert Ottawa 54	May 11	May 23	June 26	Aug. 24
B. O.A.C. No. 21	" 11	" 23	July 3	" 24
C. Trebi	" 11	" 23	" 3	" 24
Oats—				
A. Alaska	May 11	May 24	July 2	Aug. 22
B. Legacy Ottawa	" 11	" 24	" 2	" 22

The barley and oats were apparently ripe several days before they were harvested, but the rainy weather from August 15 to 21 did not allow cutting them at the proper time, and during that week several heads were damaged by wind, rain and field mice.

FORAGE PLANTS

Ten varieties were sown in good soil, in plots 5 feet square. The results are given in the following table:—

RESULTS OF TESTS OF FORAGE PLANTS

Varieties	Area	Date sown	Length of stem on Sept. 12	Remarks
	sq. ft.			
Timothy	25	May 23	5½ inches	Headed out.
Common millet	25	" 23	.....	Frozen Aug. 24.
White Dutch clover	25	" 23	"	In bloom Aug. 28.
Kentucky blue grass	25	" 23	6-inch leaves	No stem nor flower.
Red clover	25	" 23	5½ inches	In bloom Sept. 1.
Alsike clover	25	" 23	8 "	A few flowers, Sept. 10.
Sweet clover	25	" 23	5 "	In bloom Sept. 1.
Grimm Alfalfa	25	" 23	4 "	No flowers.
Awnless Brome Grass	25	" 23	.....	A few miserable blades.
Western Rye Grass	25	" 23	12 "	Headed out, Sept. 1.

FORT SMITH, N.W.T.

The weather was particularly cold, almost without interruption, during the spring months of 1929. The first night without frost was that of April 14. In May cold north winds prevailed for a long period. All that could be done in the early part of May was to prepare the fields and the gardens for seeding. The winds had dried the soil, and there being no rain, growth was very slow. Although water was difficult to procure, it was necessary to irrigate the garden to keep the seed from dying.

On May 17, the ice flowed out of Slave river. On May 21 there was a blizzard with rain and snow, followed by a heavy night frost. There was a rainy period at the end of the month. June was rather wet and vegetables germinated well, although somewhat late, and showed good growth.

On July 1, there was a rather sharp frost which nipped the potatoes. July was somewhat drier than June, and all crops progressed favourably. The wheat field was exceptionally fine.

Marquis wheat was sown on one acre of land, and a mixture of varieties on another acre. All the wheat grew well and harvest was begun on August 29. It was not quite ripe on account of lack of dry weather, but the yield was satisfactory.

Banner oats grew well to full maturity. From eight bags of seed, 130 bags of oats were harvested. Some of the crop was previously cut as green feed.

The potato crop looked well at first, but worms injured the roots over part of the area. However, a fairly satisfactory crop was harvested. Carrots and other vegetables gave excellent results.

The flower garden was nearly a failure, chiefly on account of the frost on July 1.

FORT RESOLUTION, N.W.T.

SEASONAL NOTES

The winter of 1928-29 began suddenly with heavy snowfalls about the end of October and throughout November. The cold was not very severe during these first months, and after a storm on December 1, which broke the ice on the Great Slave lake, it barely succeeded in again solidifying this immense body of water about December 25.

January, February and March were more rigorous than the previous months and they represent a period of continuous cold during which the thermometer remained between 35 and 45 below zero. At Smith, Hay River and Providence the cold was more severe than at Resolution, the thermometer having fallen to 55 below zero for several days. Winter ended in April. The thaw progressed until the 18th, when all traces of snow vanished.

When May began the garden soil was in good condition for ploughing. After a slight rainfall on the 10th, seeding was proceeded with continuously from the 15th to the 22nd, ending with potato planting. On May 24, the field crops, cereals and hay, were sown. Following is a list of the hay crops tried: red clover, clover, timothy, awnless brome grass, alsike, alfalfa, White Dutch clover, Kentucky blue grass, orchard grass, meadow fescue, western rye, Canadian blue grass, golden millet, rape.

A few varieties of oats, wheat and barley were also tried, as follows:—

Oats.—Alaska, Gold Rain, Banner, Liberty.

Wheat.—Huron, Garnet.

Barley.—Albert, Himalayan, Chinese.

All these varieties were sown under good conditions and in ideal warm weather which lasted up to the end of May.

Early in June there was a moderately warm period followed by a few days of rain. Then, from the 17th to the 22nd, there was a week of snow, of icy rain and wind which was very harmful to the plants hardly out of the ground and whose development would have needed very warm weather. July and August, during which there were fairly frequent showers, were not warm. During these months plant growth was slow, the subsoil being too moist. It can be said that during the summer of 1929, the thermometer seldom reached 85 degrees, the average resting between 65 and 75 degrees. This lack of heat was very harmful to plant growth and to the vigour of the seeds on trial. The hay in the natural meadows did not reach its usual size, and in order to obtain the 80 tons required for the wintering of our cattle we had to cut over an area much more extensive than in former years. The crop of wild fruits, strawberries and raspberries, usually very abundant in this region and which constitutes a very appreciable resource, was most mediocre and the latest known for a long time. One advantage of this lack of heat was the absence, or at least the decreased number of insects, mosquitoes and breeze flies on the banks of the Great Slave lake, which made the summer very pleasant. The animals were thus able to enjoy their pasture.

This temperate atmosphere, although insufficient for the summer, was ideal for the storing of the crops which began on September 15 and was completed on the 20th.

FIELD CROPS

Hay and Oats.—No part of our land was used as an artificial meadow. Three acres which had been double ploughed during two consecutive years, were seeded to hay seeds, western rye grass and oats. On these three acres, 25 plots were seeded to varieties of the above-mentioned hay, wheat, oats and barley.

Three tons of green oats were harvested on this land and the western rye grass threw out strong roots which promise well for next year. The hay, oats, wheat and barley plots also became well rooted. Canadian blue grass and Golden millet were superior to the others, as well as hulless oats and Himalayan barley. Nine other acres, less well prepared than the three above-mentioned acres, were sown to oats alone and yielded 9 tons of green oats.

In July, thanks to the Indian agent, Dr. C. Bourget, who kindly loaned his tractor and plough, 15 acres of meadow land which had been left in sod for several years were broken. This new land received an initial harrowing this fall and will be double harrowed in 1930 before being sown to oats.

POTATOES.—The yield was higher than in previous years, an average of 4 bags for each one planted. The tops were strong and bore an abundance of flowers, but the yield was low because of the lack of heat.

VEGETABLES

CABBAGES.—Both varieties of cabbages, Copenhagen Market and Danish Ballhead, succeeded very well and a few specimens weighed 15 pounds.

TOMATOES.—Earliana and Bonny Best, transplanted outside on June 10, bore plenty of fruits which failed to ripen.

CARROTS.—Chantenay and Guerande gave good results: 20 bags in a 100 by 20-foot plot.

RED BEETS.—Extra Early Egyptian and Crosby, gave excellent results and some specimens measured 4 inches in diameter.

TURNIPS.—Four varieties, Purple Top Milan, Kangaroo, Purple Top and Jumbo, were sown and all succeeded well. Many specimens weighed 10 pounds.

In general the yield in the vegetable garden was very satisfactory, when compared with those of previous years, for the wet season was favourable to the garden crops.

FLOWERS

All the varieties grown—asters, chrysanthemums, stocks, lavatera, antirrhinum and godetia—were very ornamental. All varieties bloomed well, although late in the summer; however, we were able to enjoy them until October 15.

FORT PROVIDENCE, N.W.T.

HORTICULTURE

POTATOES.—Seventy-five bags of potatoes were planted when the soil had thawed out sufficiently, late in May. In June there were several fairly heavy rainfalls which were beneficial to all the crops, especially the potatoes which began to grow vigorously. In contrast to previous years, the rows of potato plants were complete, not one tuber having failed to germinate. All the plants bloomed very early.

Digging began, as usual, about the middle of September, and the three fields yielded 512 bags. One-hundred-pound flour bags were used.

Several potato samples were received from Ottawa, but were planted too late, and the trial was practically a failure.

CARROTS.—The carrot crop was poor in 1929. Although sown in excellent and well prepared soil, many of the seeds did not germinate, notwithstanding plentiful waterings practically each night by means of a small irrigation system operated by a gasoline motor.

TURNIPS.—There was a small crop of turnips, these roots not reaching the size they did in previous years.

CABBAGE.—As usual the cabbage crop was good and enough were harvested for use on the substation.

BEETS AND ONIONS.— These did not succeed very well, probably due to the fact that hoeing was somewhat neglected.

LETTUCE.—This crop succeeded well and there was some for use during the whole summer.

GRAIN

A fairly large area was seeded to oats, and growth was better than in previous years. Some of this crop was used as green feed and the remainder kept for poultry feeding.

CATTLE

About twenty head of cattle will be kept through the winter of 1929-30. It was necessary to go sixteen miles down the river for hay.

BETSIAMITES, P.Q.

The spring of 1929 dragged out discouragingly, the cold weather and continued rain preventing all farm work until the end of May. The soil on the substation is very low and moist, and therefore adversely affected by cold wet weather.

Practically no cereals were harvested. Wheat, barley and oats grew miserably and did not reach maturity. Wheat and barley were sown on June 10, and oats on June 12. The cold and rain persisted all summer and there was practically nothing to harvest in October. In August alone there were twenty days of heavy rainfall, besides showers and fogs.

Cabbages and cauliflowers were sown in beds early in April, transplanted to other beds on May 16, and planted outside on June 15. Results were poor.

Chantenay and Scarlet Horn carrots were ready for the table about September 20. Long Standing and King of Denmark spinach were ready to use early in September. Red Top Strap Leaf, Extra Early Purple Top and Early Snowball turnips gave poor results.

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