DOMINION OF CANADA
DEPARTMENT OF AGRICULTURE
DOMINION EXPERIMENTAL FARMS

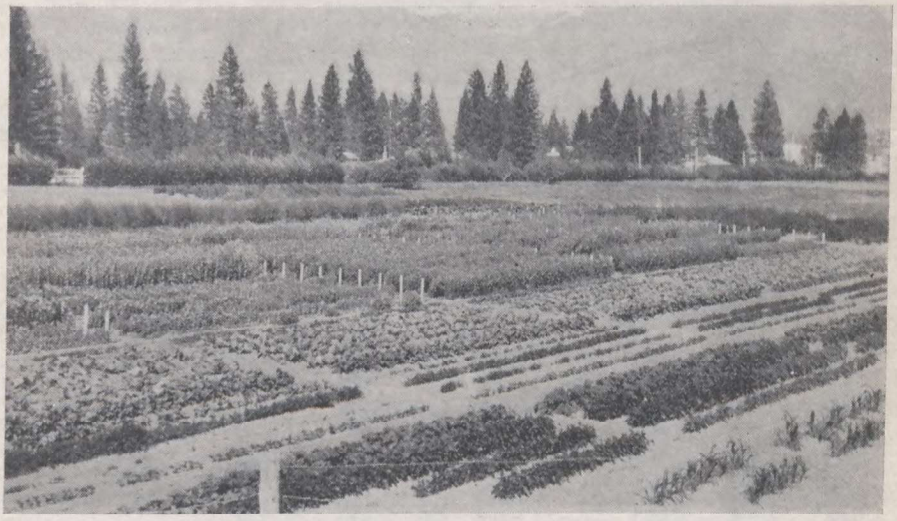
EXPERIMENTAL STATION

INVERMERE, B.C.

REPORT OF THE SUPERINTENDENT

R. G. NEWTON, B.S.A.

FOR THE YEAR 1924



General view of the garden at Invermere where varietal and cultural work is conducted.

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REPORT OF THE SUPERINTENDENT, R. G. NEWTON, B.S.A.

SEASONAL NOTES

Meteorological records have been kept at the Station for eleven years, and the following references to averages relate to data obtained during those eleven years.

January, 1924, was a fairly normal month. Although snow fell on nine occasions, the showers were so light that the precipitation was half an inch below the average. The first week of the month was one of extreme cold, but the remainder was mild, and the month closed with a thorough thaw. February was the mildest on record, and precipitation was a little below the average. March and April were pleasant with even temperatures. Precipitation was below the average for both months, and growing was very tardy. May was a month of exceptionally bright days, as much as 102 hours of bright sunshine above the average. This with precipitation half an inch below normal resulted in everything becoming very dry. June was cool and showery. Rain fell in tiny showers on fifteen ocasions, but the total was again half an inch below normal. July began with an exceptionally hot week. The hottest day (July 6) was followed by a cold night with a slight ground frost. Precipitation 0.81 below normal. August brought a precipitation which measured about three-quarters of an inch above the average. Rain fell on six occasions during the third week, too late to materially affect crops. One degree of frost occurred on the night of August 29. This was the only August frost recorded for ten years. September was characterized by an abundance of cool southerly winds, with low night temperatures during the last week. Precipitation was again down. During October rain fell on five occasions, bringing up the precipitation to a little above the average. The mildness facilitated fall work, and some ploughing was done towards the close of the month. November and December were on the whole pleasant months. Mild weather prevailed until the third week in December, when a sudden drop in temperature occurred, and for a week the thermometer registered between 33 and 38 degrees below zero.

METEOROLOGICAL RECORDS

Month	Temperatures F.			Precipitation			Average per month for past 11 years	Total hours sunshine
	Mean	Highest	Lowest	Rain	Snow	Total		
1924	°	°	°	inches	inches	inches	inches	
January	8·79	45	−36	0·06	4·5	0·51	0·95	56·7
February	31·23	49	9	0·37	4·5	0·82	0·63	120·7
March	32·90	52	10	.....	0·2	0·02	0·32	177·3
April	40·59	68	18	.....	5·0	0·50	0·66	201·6
May	53·30	85	25	0·87	.....	0·87	1·36	324·6
June	56·61	91	35	1·04	.....	1·04	1·57	222·7
July	62·90	98	33	0·39	.....	0·39	1·20	292·0
August	58·70	85	31	2·21	.....	2·21	1·50	215·4
September	52·31	83	27	0·87	.....	0·87	1·05	191·8
October	42·28	64	22	1·20	.....	1·20	0·75	134·2
November	25·33	49	4	0·51	4·75	0·98	0·65	72·3
December	5·22	46	−38	0·36	26·00	2·96	1·18	55·5
Totals	.....	.....	.....	7·88	44·95	12·37	11·82	2,064·8

Precipitation for the six growing months, April to September, 1924..... 5·88 inches.
Average precipitation for the six growing months for the past eleven years... 7·36 inches.
Highest temperature recorded at the Station, 98 degrees on July 2, 1924.
Lowest temperature recorded at the Station, −38 degrees on December 15, 1922, and on December 18, 1924.

ANIMAL HUSBANDRY

No experimental feeding work has been undertaken with live stock, due to limitation in land and equipment.

During the year the following additions were made to the various classes of live stock:—

Four young heavy horses were purchased in July at Calgary, two of the mares being in foal to the Senior Champion Clydesdale at the Calgary Summer Exhibition.

In November a consignment of Ayrshires was received from the Central Farm, Ottawa. It consisted of three young cows, a yearling heifer and a yearling bull. The following is a brief outline of each individual:—

"Flavia 2nd E." 73564, three years old, a show animal, her latest success being at the National Dairy Show, where she stood ninth, and one of a group of five winning second money. She is from a 10,000 pound dam, and a record granddam.

"Ottawa Dunlop Blossom", 76064, sired by "Dunlop King of the Ring", whose dam has a Scotch record around 12,000 pounds. This heifer freshened in January, 1924, and in the Honour Roll Division produced 7,306.5 pounds milk in 288 days, the test being discontinued as the animal was dried off to ship. Since arriving on January 5, 1925, she has dropped a promising heifer calf.

"Ottawa Merry May", 76065, and "Ottawa Merry Maid", 86588. This pair are three-quarter sisters, from a typey but old-fashioned cow, and from "Burnside Ypres Masterpiece" and "Ottawa Mons".

"Ottawa Lord Kyle 22nd" on the dam's side is from "Old Hall Maggie 9th", imp: with R.O.P. record of 12,290 pounds milk, 512 pounds fat. On the sire's side he is from "Ottawa Lord Kyle 2nd", out of a 10,000 pound dam. This young bull stood eighth at the National Dairy Show.

During the year a young Yorkshire hog was received from the Aggasiz Farm herd, to use on the sows at this Station. This young hog is from the imported hog now at Agassiz.

HORSES

At present there are thirteen horses on the Station, made up as follows: One Clyde stallion, rising six years old (this fine animal is available for breeders throughout the district) two registered Clyde mares; four grade Clydes; one two-year Clyde colt; one Clyde filly yearling; one Clyde filly foal; one old work team; and a single horse or driver. The increase in horses was necessitated by the new area being developed at Windermere.

CATTLE

The Ayrshire herd at the end of the year numbered twelve head, this number being made up by the Ottawa shipment mentioned previously. The cows gave a very good account of themselves, and while not entered under R.O.P., gave very creditable returns. The most promising individual, "Lady Nancy Skylark", produced over 11,000 pounds of milk, testing 4.6 per cent as a three-year-old. So far we have been particularly fortunate in having 80 per cent heifer calves.

SWINE

The swine at the end of January numbered four, comprising three brood sows and a hog. The number was reduced from the previous winter as the stock was being removed to the Windermere area, where suitable accommodation had been provided.

During the year there was a brisk demand for young stock, and a very heavy demand in the fall for bred sows.

FIELD HUSBANDRY

Four distinct rotations are being conducted, incorporating as far as possible crops suitable for the district in conjunction with good farm practice. A three-, a four-, and two six-year rotations are practised. Cash crops such as potatoes, peas, and even hay, are incorporated into most of the rotations. At present potatoes have been grown very successfully, and at a distinct profit, the yields on the three rotations running from 13.75 to 17 tons per acre. On ordinary farm practice it might not be found practicable to have such a large area devoted to potatoes, but the hoed crop area could be readily devoted to such crops as corn, sunflowers, mangels, turnips, carrots, etc. At present there is no crop on the farm that has paid such handsome returns as the potatoes. The potatoes were sold from the field at $30 per ton and some were sold in the spring as certified seed at $70 per ton. The figure, $25 per ton, is usually a general average price of potatoes from year to year. It is noteworthy that the cereals about break even with cost of production, and that peas, which usually yield twice what wheat does, make a handsome profit. The hay crop was about average and shows a very fair profit over cost of production. The great amount of labour attached to mangels means that this crop is produced at a loss, but possibly the cleaning of the land more than makes up for this loss.

In the calculations the following figures were used:—

COST VALUES

	$ c.
Rent of land	9 75 per acre
Manure	2 00 "
Manual labour	0 35 per hour
Teamster	0 35 "
Horse labour	0 15 "
Machinery	3 00 per acre
Twine	0 25 per pound
Seeds	.... at cost
Threshing—wheat; peas	0 15 per bushel
Threshing—oats	0 10 "

RETURN VALUES

	$ cts.
Hay	20 00 per ton
Wheat	1 50 per bushel
Wheat straw	2 00 per ton
Oats	0 75 per bushel
Oat straw	4 00 per ton
Peas	2 50 per bushel
Pea straw	4 00 per ton
Potatoes	30 00 "
Sunflowers	4 00 per ton

The following summarizes the results of the various rotations:—

ROTATION A—(FOUR-YEAR)

Crop	Yields in 1924	Value	Cost of production	Profit or loss (−)
		$	$	$
Alfalfa (Grimm)	4·27 tons	85 40	27 90	57 50
Peas (Prussian Blue)	38 bush.	107 80	49 88	57 92
Potatoes (Rural Russet)	17 tons	510 00	217 67	292 33
Wheat (Marquis)	28·6 bus	46 90	46 55	0 35
Average per acre	.....	187 52	85 50	102 02

ROTATION B—(SIX-YEAR)

Oats (Banner)	61·8 bush.	55 35	42 85	12 50
Wheat (Marquis)	20·0 "	33 50	35 83	−2 33
Peas (Prussian Blue)	49·0 "	129 50	55 50	74 00
Roots (intermediate half sugar)	34·5 tons	91 77	106 27	−14 50
Clover and grasses	4·15 "	83 00	36 60	46 40
Clover and grasses	4·15 "	83 00	34 80	48 20
Average per acre	.....	51 97	79 35	27 37

ROTATION D—(SIX-YEAR)

Potatoes (Sir Walter Raleigh)	14·17 tons	425 10	206 27	218 83
Oats (Victory)	64 bush.	57 00	56 00	1 00
Sunflowers (Mammoth Russian)	26·75 tons	107 00	62 80	44 20
Peas (Prussian Blue)	63 bush.	176 70	65 95	110 85
Alfalfa (Grimm)	4·4 tons	88 00	27 85	60 15
Alfalfa	4·4 "	88 00	27 85	60 15
Average per acre	.....	156 96	74 48	82 53

ROTATION J. (THREE-YEAR)

Clover (Winter-killed; seeded to peas)	47·6 bush.	131 00	56 45	74 55
Potatoes (Netted Gem)	13·75 tons	412 50	194 57	217 93
Oats (Victory)	86 bush.	62 00	60 50	1 50
Average per acre	.....	201 83	103 84	97 99

HORTICULTURE

As will be seen under seasonal notes, the growing season was trying for horticulture, and many things did not show themselves at their best.

The work in horticulture consists of variety and cultural tests of vegetables, fruits and flowers; also plant breeding. In the breeding of vegetables special attention is paid to peas, potatoes and rhubarb, and in flowers to tuberous begonias, pansies and lilacs.

VARIETY TESTS OF VEGETABLES

ASPARAGUS.—This valuable vegetable does exceedingly well in our alkaline soil, and it is the earliest green vegetable in the season. Planted in 1914, the bed is still in profitable bearing. The first cutting was made on May 1, and cutting was discontinued after June 17. During this period 259 pounds of grass were cut from 1,000 lineal feet of rows, the rows being three feet apart. Palmetto is the variety grown.

BEETS.—Three varieties were sown on May 14. All were reasonably true to type and yielded good crops. Where choice of variety is limited we recommend Detroit Dark Red.

Variety	Source of seed	Yield per 30-ft. row
		lbs.
Detroit Dark Red	McDonald	87
Detroit Dark Red	C.E.F. Ottawa	85
Extra Early	McKenzie	84
Crosby Egyptian	Steele Briggs	88

BEANS—DWARF.—Twenty trials were made of different varieties and strains of dwarf beans as a green vegetable. No attempts at ripening were made as our season is too short for this work as a profitable undertaking. Sowings were made May 31.

Variety	Source of seed	Ready for use	Yield per 30-ft. row
			lbs.
Bountiful Green Bush	C.E.F., Ottawa	Aug. 6	49¼
Masterpiece	Vaughan	" 9	46¼
Masterpiece	C.E.F., Ottawa	" 9	45¼
Dwarf Plentiful	Suttons	" 9	43½
Davis Wax	C.E.F., Ottawa	" 8	41
Henderson Bountiful	D. & F.	" 7	37½
Davis White Wax	McDonald	" 7	35½
Plentiful French	C.E.F., Ottawa	" 8	32½
Stringless Green Pod	C.E.F., Ottawa	" 9	31½
Wardwell Kidney Wax	Graham	" 8	30¾
Wardwell Kidney Wax	C.E.F., Ottawa	" 8	29½
Yellow Eye Yellow Pod	C.E.F., Ottawa	" 9	28
Extra Early Round Pod Valentine	Steele Briggs	" 9	28
Extra Early Valentine	C.E.F., Ottawa	" 12	28
Hodson Long Pod	Rennie	Sept. 3	24½
Hodson Long Pod	C.E.F., Ottawa	" 3	24½
Round Pod Kidney Wax	C.E.F., Ottawa	Aug. 9	24½
Round Pod Kidney Wax	McDonald	" 12	23½
Refugee	C.E.F., Ottawa	Sept. 3	23
Chamption Black Wax	C.E.F., Ottawa	Aug. 4	18¾

BEANS—RUNNER.—Two varieties of these were tried, namely, Scarlet Runner (Vaughan) and No. 1 Pole Bean (C.E.F. Ottawa). They were ready for use, respectively, on August 22 and September 1, and the yields per 30-foot row were 50½ pounds and 18¾ pounds.

CAULIFLOWER.—Three varieties were sown on May 5, in the open ground, and when large enough were thinned to 18 inches apart in the rows, the rows being 2 feet 6 inches apart.

Variety	Source of seed	Ready for use	Yield per 30-ft. row
			lbs.
Snowball	Graham	Aug. 4	68
Extra Early Dwarf Erfurt	McDonald	" 7	58
Veitch Autumn Giant	McDonald	Sept. 3	75

CABBAGE—CHINESE.—Two varieties—Wong Bok and Pe Tsai—were sown on May 14 and were ready for use early in July. This is a very useful vegetable, coming early when green stuff is scarce.

CABBAGE.—These were sown in the open on May 14 and thinned to 18 inches apart in the rows. On the whole the season was favourable and loss from root maggot very small.

Variety	Source of seed	Ready for use	Yield per 30-ft. row
			lbs.
Golden Acre	Harris	Aug. 4	75
New Babyhead	D. & F.	" 7	115
Dala	McDonald	Sept. 1	185
Summer Ballhead	Harris	Aug. 12	90
Brandon Market	McKenzie	Sept. 1	70
Select Early Jersey Wakefield	McDonald	Aug. 12	200
Etampes Very Early	Frith	" 11	80
Copenhagen Market	Graham	" 8	200
Extra Am. Danish Ballhead	C.E.F., Ottawa	Oct. 10	140
Danish Roundhead	D. & F.	" 10	95
Red Dutch	McDonald	" 10	110

CARROTS.—Our soil is eminently suited for carrots. Provided the strain is good, heavy crops are the rule, with a negligible percentage of culls. Sowings were made May 14 and the crop harvested on October 10.

Variety	Source of seed	Yield per 30-ft. row		
		Marketable	Culls	Total
		lb.	lb.	lb.
Chantenay	McDonald	142	2	144
Chantenay	C.E.F., Ottawa	87	3	90
Garden Gem	McKenzie	107	4	111
Oxheart	Steele Briggs	106	6	112
Golden Ball	D. & F.	74	5	79

CELERY.—This was sown in the greenhouse on April 1, and received one transplanting before being put in the open ground on June 6, in shallow trenches. It was twice earthed up during the season. The quality of celery grown here is very high.

Variety	Source of seed	Weight of twelve heads trimmed
		lb.
Easy Blanching	McDonald	20¼
Easy Blanching	Stockes	17
Easy Blanching	Garrahans	22¼
White Plume	Graham	14¼
Paris Golden Yellow	D. & F.	25¼
Golden Self Blanching	C.E.F., Ottawa	15
Golden Self Blanching	McDonald	18
Evans Triumph	D. & F.	21
Giant Pascal	Graham	21

CORN.—Nine varieties of corn were grown, namely, Golden Bantam, New Golden Giant, Whipple Yellow, Malakoff, Sixty Day Make Good, Early Malcolm, Sweet Squaw and Pickaninny. The season was unfavourable for its development, and only Pickaninny was satisfactory. This, an introduction of the Central Experimental Farm, Ottawa, is a blue-seeded variety, very sweet and early in maturing.

CUCUMBERS.—The season was not favourable for these. No fruit came to a marketable size.

ENDIVE.—Green Curled, from McDonald, was sown May 14 and blanched with boards when large enough. It gave good salading during August.

LETTUCE.—A fifteen-foot row of each variety of lettuce was sown on May 14. The varieties mostly in favour here are Hanson, Tom Thumb, Grand Rapids, Trianon, Earliest Wayahead and Giant Crystal Head. The following table summarizes the results:—

Variety	Source of Seed	Ready for use	Yield per 15-feet row
			lb.
Giant Crystal head	Vaughan	July 14	35
Cos—Trianon	Vaughan	" 22	30
Iceberg	Ewing	" 14	30
Improved Hanson	Ewing	" 10	30
Cos—Paris White	Graham	" 22	28
Black Seeded Simpson	Ewing	" 12	28
Grand Rapids	McKenzie	" 5	28
Curled Silesian	Ewing	" 12	27
Black Seeded Simpson	Vaughan	" 12	27
Grand Rapids	C.E.F., Ottawa	" 5	27
Grand Rapids	Burpee	" 5	27
Early Curled Simpson	Ewing	" 12	27
Crisp-as-Ice	Wills	" 8	25
Denver Market	Vaughan	" 5	20
Tom Thumb	Burpee	" 10	20
Earliest Wayahead	D. & F.	" 5	16

MUSKMELON.—These were a failure on account of the season.

ONIONS.—White Barletta, Large Red Wetherfield, Yellow Globe and Japanese were sown on May 15, but failed to produce a crop on account of maggot. Sets planted on the same date met a similar fate. White Welsh, a non-bulbing variety, grown for green onions, resists the maggot well.

LEEK.—One variety, Musselburgh, was sown on May 14, but produced only small roots, the season being too short.

PARSLEY.—Moss Curled from Ewing gave a heavy crop of finely curled leaves.

PARSNIPS.—A thirty-foot row of each of the following varieties was sown on May 14. The roots of Hollow Crown (Graham) were badly forked.

Variety	Source of Seed	Yield per 30-ft. row
		lbs.
Hollow Crown	C.E.F., Ottawa	65
Hollow Crown	McKenzie	64
Hollow Crown	Graham	71
Cooper Champion	D. & F.	71

PEPPERS.—Three varieties of these were sown in the greenhouse on April 1, namely, Neapolitan, Harris Earliest and Squash or Tomato. They were planted in the open on June 12. A fair crop of green peppers resulted, but no ripe fruit.

PEAS.—Forty-one tests were made of commercial varieties and seedlings received from Central Experimental Farm, Ottawa, together with five of our own selected seedlings. All were sown on May 14. On account of the poor germinating qualities of many of the commercial stocks, the results obtained are not always fair as regards the relative standing of the variety under trial. In order to overcome this we have this season harvested seed of most varieties, so that in 1925 trials will be conducted with seed from a common source as far as possible.

Variety	Source	Ready for use	Weight of pods per 30-ft. row	Shelled green peas per pound of pods
			lbs.	Ozs.
Invermere Seedling No. 1	Invermere	July 28	49¼	7·2
Danby Stratagem	C.E.F. Ottawa	Aug. 4	33¼	7·5
Invermere Sdlg. No. 2	Invermere	July 21	30¾	7·0
Advancer	Harris	" 31	30	7·8
Lincoln	Invermere	" 28	28	7·4
American Wonder	C.E.F. Ottawa	" 21	28	8·0
Invermere Sdlg. No. 8	Invermere	" 24	27½	7·5
Invermere Sdlg. No. 6	Invermere	" 24	27¼	6·8
English Wonder	C.E.F. Ottawa	" 18	27	7·2
Lincoln	Morse	" 28	26	7·3
Pioneer	Gregory	" 24	25¾	7·5
Gradus X American Wonder	C.E.F. Ottawa	" 20	25	7·2
Advancer	C.E.F. Ottawa	" 31	24¼	8·0
American Wonder	Graham	" 20	24¼	7·4
British Wonder	Burpee	" 31	23¾	8·1
Acquisition	Crossland	" 17	23½	6·3
Invermere Sdlg. No. 3	Invermere	" 21	22½	6·3
Telephone	D. & F.	" 31	22¼	6·2
Sutton Excelsior	Harris	" 18	21½	6·9
Gradus	C.E.F. Ottawa	" 19	21	6·6
Greg. Surprise X Engligh Wonder	C.E.F Ottawa	" 21	20½	7·1
Blue Bantam	Graham	" 19	20	6·4
First and Best	McKenzie	" 9	19¼	6·9

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POTATOES.—Our tests of varieties and stocks of potatoes from various sources grow in volume every year, and this past season saw nearly 100 trials in operation. All varieties are sprouted before planting, and only tubers giving strong sprouts are retained. By this method practically a perfect stand is assured, and diseases kept in check to a certain extent. During the growing season the plots are rogued for disease. Irrigation is applied during the season as needs demand. Planting this year took place around May 22, and the crop was lifted the first week in October. The accompanying table gives the average yearly yields of seventeen leading commercial varieties over a period of five years. These have been grown her continuously for twelve years without a change of seed.

Variety	Average yield per acre for years 1920–21–22–23 and 1924	
	Tons	lbs.
Gold Coin	30	1,954
Ashcroft	28	1,985
Bovee	28	1,230
Wee McGregor	28	980
Deleware	28	296
Houlton Rose	27	1,346
Manistee	26	759
Irish Cobbler	25	1,552
Sir Walter Raleigh	24	1,245
Late Puritan	23	1,707
Early Norther	23	1,590
Carman No. 1	22	700
Early Six Weeks	22	532
Cambridge Russet (Netted Gem)	22	381
Early Rose	22	228
Bermuda Early (Bliss Triumph)	20	1,083
Early Ohio	19	404
Average of the 17 varieties	25	116

Amongst varieties grown here, other than those tabulated, mention may be made of Burbank, King Edward, Rural Russet, Beauty of Hebron, White Ohio, Sharp Express, Gold Nugget, Epicure, Early St. George, Early White Prize, Jersey Royal, Kerr Pink and Up-to-Date. Work is being carried on among these by way of working up healthy stocks and testing their merits as commercial varieties. Special attention is being given to the Up-to-Date group, as in general appearance the several varieties embraced have practically nothing to distinguish them from the type. These include Up-to-Date, Million Dollar, Jones White, U.B.C., Queensborough, Eureka and others. Before reaching definite conclusions it is necessary to have these under observation for three or four years at least.

During the five-year period just completed, all potatoes in the variety tests have been planted one foot apart in the rows, with rows 2 feet 6 inches apart.

RADISH.—Eight varieties were sown on May 14. Scarlet White Tip, French Breakfast, Extra Early Scarlet White Tip and Twenty Day were ready for use on June 18; XXX Scarlet Oval and Chartier on June 20; Icicle, June 26; and White Strasburg on June 29. Icicle was much superior to White Strasburg.

RHUBARB.—The plantation of rhubarb was made in May, 1921, and continues vigorous and profitable as shown by the yields, as follows:—

Variety	Ready for use	Yield—Average per plant
		lbs.
Dawes Champion No. 1	May 18	11¾
Dawes Champion No. 2	" 18	10½
Raspberry	" 18	8½
Hobday Giant	" 18	19½

SPINACH.—Two varieties of spinach were grown, Broad Leaf Flanders and New Zealand. Sowings were made on May 14 and the Spinach was ready for use June 6. Spinach is a very useful green here, and is continuous until killed by frost.

SWISS CHARD.—One variety, Giant Lucullus, was grown and gave a heavy crop of stalks and leaves.

TOMATOES.—Our season is too short to contemplate the growing of tomatoes on a commercial scale, still by using a certain amount of care it is quite possible to supply home demands. The seed is sown on April 1 in the greenhouse; and as soon as large enough to handle, the seedlings are pricked out into flats, about 2 inches apart. Before they get overcrowded they are transplanted into cold-frames and allowed from 4 to 6 inches of room each way. When danger from frost is passed, they are planted in the open in rows 2 feet 6 inches apart, with the plants a foot apart in the rows. Stakes 2 feet 6 inches in length are driven in at planting, and as the plants grow they are kept tied. All lateral growths are removed as soon as they appear, the plants being kept to one shoot. As soon as the second truss of fruit appears the plants are stopped. A uniform state of moisture is maintained during the season, thus minimizing cracked fruit. The accompanying table summarizes the results under this treatment during 1924, all varieties being planted in the open on June 12.

Variety	Source of seed	Date ripe	Weight of ripe fruit per 10 plants
			lbs.
Holders Dreadnought	Littlejohn	Aug. 21	23¼
Sunnybrook Earliana	Burpee	" 16	22¼
Devon Surprise	Dobbie	" 14	21½
Alacrity X Earlibell	C.E.F. Ottawa	" 18	20¾
Early Mascot	Graham	" 24	20½
Earliana	Ferry	" 10	20½
Earliest Market	Buckpee	" 31	20
Alacrity	C.E.F. Ottawa	" 13	18½
First-of-All	McKenzie	" 18	18½
Alacrity X Hipper	C.E.F. Ottawa	" 10	17¾
Sparks Earliana	Burpee	" 8	17¼
New Fifty Day	Buckpee	" 16	17
Earliest-of-All	Steele Briggs	" 16	17
Pink	C.E.F. Ottawa	" 31	16¼
Sparks Earliana	Ewing	" 8	16
Earliana Grade 2	Langdon	" 6	15¾
Self Pruning	Burpee	Sept. 7	15¼
Bonny Best	Keith	Aug. 18	15
Danish Export	Wibbolt	" 16	15
Bonny Best	Stokes	" 18	14¼
Rosy Morn	Livingston	Sept. 1	14
Pepper	Diener	" 7	14
Burbank Early	C.E.F. Ottawa	Aug. 8	13¾
Super Std. Bonny Best	Stokes	" 21	13½
John Baer	Steele Briggs	" 24	11¼
Coreless	Livingston	Sept. 7	11
Chalks Early Jewel	Steele Briggs	Aug. 31	11
Early Detroit	Ferry	Sept. 3	10¾
Blight Resister	Stark	" 7	10¼
Norton	Livingston	" 9	10
Super Std. Gtr. Baltimore	Stokes	" 6	10
Stone	Livingston	" 3	7½
Matchless	Livingston	" 8	7½

TURNIPS.—These do very well here, sown early. As a rule the later sowings suffer so much from maggot that they are useless for storing for winter use.

Variety	Source	Date of sowing	Ready for use	Weight per 30-ft row
				lbs.
Early White Milan	Harris	May 14	July 8	84
Snowball	Graham	" 14	" 16	90
Red Top Strap Leaf	McDonald	" 14	" 14	83
Golden Ball	Graham	" 14	" 25	95

VEGETABLES—CULTURAL EXPERIMENTS

BEANS—DWARF.—To determine the best distances at which beans should stand in the row, three thicknesses of sowings were made of two varieties, Stringless Green Pod and Round Pod Kidney Wax. The distances between plants were set for 2, 4 and 6 inches. Owing to poor germination no definite results could be obtained.

BEET.—Four seedings of beet were made at different dates with thirty feet of drill in each seeding. Fifteen feet of row were harvested as green beet, in bunches of five, and fifteen feet were allowed to mature. Results were as tabulated. The two last sowings gave fine quality beet for winter storage:—

Variety	Date sown	Ready for use	Number of bunches of five per 15 feet of drill	Mature beets per 15 feet of drill
				lbs.
Detroit Dark Red	May 14	July 19	36	42
" "	" 24	" 28	32	43
" "	June 3	Aug. 10	21	36
" "	" 13	" 16	4	10

CARROTS.—Four seedings of carrots were made at different dates using thirty feet of drill in each seeding. Fifteen feet of row were harvested as green carrots in bunches of five, and fifteen feet taken up at maturity. Results were as tabulated. Poor germination of the fifteen feet for maturity sown on May 24 affected the yield:—

Variety	Date sown	Ready for use	Number of bunches of five per 15 feet of drill	Mature roots per 15 feet of drill
				lbs.
Chantenay	May 14	Aug. 14	123	72
"	" 24	" 22	120	44
"	June 3	Sept. 1	106	54
"	" 13	" 15	98	33

PARSNIP.—Three sowings were made of Hollow Crown, namely, May 14, May 24 and June 3. The first sowing yielded 71 pounds, the second 63 pounds, and the last 43 pounds of roots. This vegetable should have as long a season of growth as it is possible to give.

CELERY.—Five experiments were made in growing and blanching celery as follows:—

1. Planted in bed 6 feet by 6 feet, plants standing 6 inches apart each way.
2. Alternated double row on level; plants 6 inches apart, blanched with building paper.
3. Single row on level; plants 6 inches apart and earthed up as usual.
4. Single row grown in trench 6 inches deep, and gradually earthed up.
5. Single row on level and blanched with boards; plants 6 inches apart.

Results were as follow:—

1. Twelve heads trimmed for market weighed 7 pounds. Quality poor; loose and tough; did not blanch well.
2. Twelve heads trimmed for market weighed 10 pounds. Well blanched and clean, but lacked crispness.
3. Twelve heads trimmed for market weighed 16 pounds. Quality good but heads rather loose.
4. Twelve heads trimmed for market weighed 16 pounds. Heads compact; blanching good; quality good.
5. Twelve heads trimmed for market weighed 15 pounds. Clean but lacked crispness. Heads loose.

The variety used in these experiments was Golden Self Blanching.

CABBAGE.—To determine the best dates of sowing cabbage to produce heads for winter storing, four sowings each were made of two varieties, Copenhagen Market and Danish Ballhead, with the following results:—

Variety	Date sown	Weight of 20 heads	Remarks
		lbs.	
Copenhagen Market.....	May 14	200	Too early for storing.
" "	" 24	185	Majority too early for storing.
" "	June 3	160	Majority in good condition for storing.
" "	June 13	80	Not solid enough.
Danish Ballhead.....	May 14	–	Mature heads, good for storing.
" "	May 24	–	Did not mature.
" "	June 3	–	"
" "	June 13	–	"

These sowings of cabbage were made in the open ground where they were to stand. They were thinned to 18 inches apart.

CAULIFLOWER.—Four seedings in the open were made for this purpose. The first on May 14 gave heads ready for use on August 8. The second on May 24 were ready on August 16; the third on June 3 were ready August 28; and the fourth sown June 13 had good curds on September 1 and continued throughout the month. This last sowing, however, suffered somewhat from maggot. The variety used was Snowball, and the heads averaged around 3½ pounds trimmed.

CORN.—A test was made with corn with the suckers removed, against corn unsuckered. The season being unfavourable for corn no cobs were matured, but those suckered came nearest to maturity. The varieties used in this test were Early Malcolm and Golden Bantam.

RHUBARB FROM SEED FOR FORCING.—Seed sown in the spring of 1923 made good growth during the first season, and the resultant roots were transplanted in May, 1924. Growth was rapid and by the autumn strong forcing crowns were obtainable. Plants showing special merit are being kept under observation another year.

TOMATOES.—Three varieties were subjected to different styles of pruning, the object being to find out the most practical way of ensuring a supply of ripe fruit during our short season. Unfortunately a slight frost on July 7 affected

the setting of the lower trusses of fruit, so that those plans carrying the lesser number of trusses appear at a disadvantage. All plants were in rows 2 feet 6 inches apart, and stood a foot apart in the rows. Stakes were provided of the necessary heights and the plants tied to them as growth proceeded. All lateral growths were removed as soon as they appeared. Seed of all varieties was sown on April 1. The first pricking out into flats, 2 inches apart each way, took place April 16. On May 16 they were transplanted into cold frames on a hard bottom, two inches of surface soil being allowed. Here they were spaced 6 inches apart each way. Planting in the open occurred on June 12, and irrigation was applied throughout the season as needed.

Variety	Treatment	Date ripe	Yield per 10 plants
			lbs.
Alacrity	Stopped in hotbed, 3 shoots taken on and stopped at first truss in each	Aug. 23	16¾
"	Stopped at first truss	13	6¾
"	Stopped at second truss	13	17
"	Stopped at third truss	15	25½
"	Unstopped	18	21½
Bonny Best	Stopped in hotbed, 3 shoots taken on and stopped at first truss on each	Aug. 28	19
"	Stopped at first truss	20	7
"	Stopped at second truss	20	13¾
"	Stopped at third truss	22	19¼
"	Unstopped	25	31¾
Danish Export	Stopped in hotbed, 3 shoots taken on and stopped at first truss on each	Aug. 25	13¾
"	Stopped at first truss	16	7½
"	Stopped at second truss	16	12½
"	Stopped at third truss	18	20¾
"	Unstopped	21	20½

POTATOES.—As the potato promises to play an important part among the cash crops in this district, considerable attention has been paid to it in cultural methods:—

Distances Apart in Row.—After four years experimenting on the various distances between the sets in the rows, the general conclusion arrived at is that on the whole close plantings give the best results. During this period the rows have been spaced 2 feet 6 inches apart, and the distances between sets in the rows have been 12, 14, 16, 18, 20 and 22 inches respectively. The size of seed used has been 2 ounces. The increase in crop weight of 12-inch over 22-inch plantings is around 20 per cent. But this is not the only advantage, for in the 20-inch and 22-inch plantings many of the tubers run so large as to make them undesirable as a commercial commodity. In the 12-inch planting the majority of tubers will run from 4 to 10 ounces, but in the wider distances tubers of 2 pounds and over are not uncommon. Should the growing of seed be the object under consideration we do not hesitate to advocate 12-inch planting. If a baking potato is specially desired then 14 or 16 inches would prove better distances, but beyond the latter under prevailing conditions, it is not desirable to go. The fact must not be lost sight of that irrigation conditions prevail here, so that extra room for cultivation for the conservation of moisture does not apply.

Size of Sets.—The nature of our soil enables us to use a small set with good results, yet even so, four years' experimenting with sets weighing 1, 2, 3 and 4 ounces show consistent increases when the heavier sets are used. On the whole we prefer using a set of from 2 to 3 ounces. However, the price of seed will

determine the size of set to plant, as when seed runs above $50 per ton four ounce sets would entail a cost of over $100 per acre for seed alone. Under these conditions we advise using a set as small as could reasonably be expected to yield a good crop. We find that the yield is influenced to the extent of 10 per cent in favour of the larger sets. This may or may not affect the extra cost of seed. It will naturally depend on the price realized by the crop itself.

Well vs. Badly-shaped Seed.—Experiments relative to the above have been conducted, and in no instance has it been proven that like produces like. The yields and shape of resultant tubers have in no way been adversely affected by the use of badly-shaped seed. It must be borne in mind though that the badly-shaped seed was from healthy stock.

Change of Seed.—While admitting that in many districts a change of seed is of great benefit, numerous tests made here during the past five years convince us that our locally-grown seed almost invariably gives better results than seed brought in from outside. The stocks of standard varieties with which our tests are made have been grown here continuously for twelve years, and maintain their fertility to a marked extent.

Sprouting Experiment.—An experiment to decide if sprouted seed has any advantages for this district over retarded seed is under way, but no conclusions have as yet been arrived at.

Dates of Planting.—Plantings have been made ranging over the period between May 1 and June 12, with both early and late varieties. Results show that the heaviest crops are obtained from plantings around May 20.

Potato Breeding.—Attention is being paid to this branch of the work, and every year nearly a thousand seedlings are raised. Some of these are from hand-fertilized flowers, and some from self-fertilization. As a rule the majority of the seedlings are discarded the first season, only those with promise of merit being retained for further trial. At the present time we have some 200 seedlings under the advanced test. During 1925 the best of these will be tried out against standard varieties.

PEAS.—To determine relative earliness and yield as a green vegetable, three 30-foot rows of each of the following varieties, Thos. Laxton, Stratagem, and English Wonder, were sown at various thicknesses, as per table, the date of seeding in each case being May 12.

Variety	Source	Distance between plants in row	Ready for use	Yield
		inches		lbs.
English Wonder	C.E.F. Ottawa	1	July 18	23
"	"	2	" 18	18¾
"	"	3	" 18	23

The commercial seed of Thos. Laxton and Stratagem germinated so badly that the experiment was rendered valueless so far as these two varieties were concerned. The seed of English Wonder from C.E.F., Ottawa, gave a good stand, as the table shows.

Soil conditions were not uniform enough to learn more accurately of the experiment this year. In former years the rule has been to get increased yields from the heavier seedings.

Breeding and Selection.—Of the fifteen seedlings selected in 1920 we have retained five varieties for garden and three for field work. The records of the garden varieties will be found in the section dealing with the variety tests. The

field varieties are still under trial. The work of selection within the variety for elite and improved strains is being continued with "Lincoln" and other varieties, also with fixed seedlings.

Work was continued with the crosses made in 1921, namely:—

Pioneer X Thos. Laxton.
Pioneer X Lincoln.
Reliance X Lincoln.
Reliance X Thos. Laxton.
Lincoln X Arthur.

Discards were made, and varieties presumably fixed and of promise will be tried out against standard varieties during the coming season. Work on the fixing of the fasciation of the field pea "Arthur" by cross- and self-breeding has met with excellent results, some very fine fasciated stocks having developed.

Fall-sown Vegetables.—This experiment failed to yield satisfactory results in many instances this season. The seed was sown just before the freeze-up and remained dormant throughout the winter, germinating in April and May. Drying winds caked the surface soil and the majority of the seedlings died before the irrigation water was available. The vegetables which did well in spite of these adverse conditions were carrots, lettuce, and spinach. These were ready for use several weeks earlier than those sown in the spring.

Rhubarb, Forcing.—Sets were planted in May in well-manured soil to produce stools for forcing in the basement. Good growth was made during summer, and in the fall just before freeze-up they were lifted and stored where they would freeze. As required they were removed to the basement, where a temperature around 60 degrees prevails. Part of the roots were forced in moss and part in soil. No definite data as to which was the better material could be arrived at as individuality of roots enters into the amount of success achieved. Both gave good results, and preference leans towards moss, it being cleaner and easier to handle. It requires about a month to grow rhubarb under these conditions, and a few roots introduced at intervals of three weeks will give an unbroken supply of stalks.

APPLES

Practically all the commercial varieties of apples have been planted at the Station since it was opened with but a limited amount of success. As a commercial proposition apples may be ruled out of this district, yet for home consumption it will be found profitable to plant a few trees of the hardier varieties. In normal seasons Yellow Transparent, Wealthy, Dudley, Duchess, Rupert, Okabena, Charlamoff and Pinto may be relied on to carry satisfactory crops. In order to avoid winter injury it is necessary to see that all trees go into winter with plenty of moisture at the roots. Wealthy and Pinto grown here serve as winter apples, and with good storage will keep in good condition until spring. The district seems particularly well suited for crab apples, and a higher quality of Hyslop and Transcendent crabs than that produced here it is difficult to find. Our high altitude and dry atmosphere seemingly render apples and crabs immune to scab.

SMALL FRUITS

Gooseberries.—Several varieties have been tried out in the past. The only one surviving being Oregon Champion. This resists mildew fairly well, and well-grown bushes yield an average of 15 pounds of fruit. Unfortunately the berries are rather small.

Red Currants.—These do very well here and suffer little, if any, winter killing. The varieties giving best results are Fay Prolific, Perfection, Wilder and Rankin, the two former yielding up to 25 pounds of fruit per bush. This

season robins and cedar waxwings destroyed a big proportion of the crop, a very unusual occurrence.

BLACK CURRANTS.—While not yielding such heavy crops as the reds, these do very well, and the quality of the fruit is well above the average. The district seems to be free from currant-borer as no damage from this pest has ever been noticed. Care must be exercised in pruning so as to avoid coarse sappy growth otherwise much winter-killing results. Among varieties best suited to this district are Topsy, Collins Prolific, Naples, Climax, Black Eagle and Victoria. The last named is a currant of very fine flavour.

RASPBERRIES.—Experimenting with raspberries it has been found that the Cuthbert, a popular variety west and south of this district, is too tender to withstand our winters, and invariably kills to the ground. King and Herbert are better suited to our conditions, and two recent introductions from Ottawa, Count and Brighton, also impress us favourably. The everbearing variety, St. Regis, yields good crops of fruit in late summer and autumn.

TREES AND SHRUBS

In addition to the native species of trees, including Douglas Fir, Cottonwood, Balsam and Aspen Poplars, the following are used with success as screens, windbreaks and shade trees: Russian Poplar, Ash, Manitoba Maple, Laurel-leaved Willow, and Golden Bark Willow.

HEDGES.—For evergreen hedges, Spruce, Douglas Fir and Juniper, all native, give great satisfaction. Deciduous hedges are represented by Laurel-leaved Willow, Lilac, Dogwood and Caragana. Shorn once or twice a year these hedges make excellent screens and windbreaks.

FLOWERING SHRUBS.—While the range of flowering shrubs with which a good measure of success may be ensured is comparatively restricted, some lines do exceptionally well, especially the lilacs. The named varieties of the common lilac—*Syringa vulgaris*—are represented by specimens of Souvenir de L. Spath, Condorcet, Mme. C. Perier, Marie Legraye, Mme. Lemoine and G. Bellair. These are extremely hardy and every year are crowded with bloom. Of the species, *Syringa Villosa* and *Syringa amurensis* never winter kill, and blooming later than the varieties of *S. vulgaris*, extend the lilac season to late July. The shrubby spireas, such as *S. arguta*, *S. intermedia* and *S. Van Houttei*, give good results, as also do roses of the Austrian Briar class, and the hardiest of the Rugosa hybrids. Most of the hybrid perpetuals and hybrid teas are disappointing, as they winter-kill readily.

FLOWERS

PERENNIAL.—A good showing is made in the perennial borders with Asters, Michaelmas Daisies, Aquilegia, Campanula, Delphinium, *Iris germanica*, Gypsophila, Iceland and Oriental Poppies, Paeony, Phlox, Pink, Sweet William, Rudbeckia, Shasta Daisy, Lychnis, Pansy, etc. Especially worthy of mention is *Iris germanica* in its many varieties.

ANNUALS, AND FLOWERS TREATED AS ANNUALS.—Most of this class of flower are raised in the hotbed and planted in the open when danger of frost is past. Splendid showings were made with Aster, Antirrhinum, Clarkia, Cosmos, Datura, Lobelia, Marigold, Nemesia, Nasturtium, Petunia, *Phlox Drummondii*, Poppy, Salpiglossis, Stock, Tagetes and Sweet Peas.

VARIOUS.—A collection of geraniums (Zonal Pelargonium) raised at the Central Experimental Farm, Ottawa, was received and the stock is being propagated for distribution. Some of the varieties are of a very high order of merit. Special attention is being paid to the development of a strain of fancy Pansies. These are greatly admired by visitors. Work is also being done with Tuberous Begonias in both double and single varieties, and it is hoped to bring this flower into more prominence than it enjoys at present.

CEREALS

The season was not altogether favourable for cereals. The month of May was particularly dry, while June was cool, and the grains were backward. Early July was quite warm, the hottest day, July 6, being followed by a frost that touched most of the leaves. The rainfall was considerably below the average, and irrigation was necessary. The grain matured early in August, but towards the latter part of the month considerable rain fell, making threshing difficult.

This year a number of varieties of wheat, oats and barley were grown in rod-row plots and replicated four times. It was thought that this would admit of a great many more varieties being tried out, and the replication would check or tend to eliminate inequalities in the plots.

A few of the better known and recommended varieties were grown in larger plots as before. Speaking generally, cereals will never be of great economic importance to the agriculture of the valley. Data gathered from our rotations show that the cereals just about break even with the cost of production. However, there will always have to be a certain quantity of cereals grown in any farm scheme. Peas, on the other hand, are a particularly outstanding crop, and when grown for seed purposes should yield a handsome return on the capital and labour invested.

WHEAT

Marquis, Huron and Ruby were tested during the past year. Huron, which is usually the high yielder, fell down for some unknown reason. Ruby was particularly low this season.

VARIETY TESTS OF WHEAT

Variety	Date of sowing	Date of ripening	Number of days maturing	Average length of straw	Strength of straw on a scale of 10 points	Yield of grain per acre
				inches		lbs.
Marquis—0·15	May 5	Aug. 23	110	36	10	2,020
Huron—0·3	" 5	" 18	105	42	10	1,900
Ruby—0·623	" 5	" 13	100	34	10	1,600

OATS

Three varieties were tested, the Banner yielding the highest, although considerably lower than in previous years. Alaska, an early oat, matured in 89 days, but did not fill as it should. Laurel, a hulless oat, gave a fair yield.

VARIETY TESTS OF OATS

Variety	Date of sowing	Date of ripening	Number of days maturing	Average length of straw	Strength of straw on a scale of 10 points	Yield of grain per acre
				inches		lbs.
Banner	May 5	Aug. 20	107	38	10	2,760
Alaska	" 5	" 2	89	31	10	1,300
Laurel	" 5	" 18	105	36	10	1,300

BARLEY

Four varieties were tested, Gold (0.2) being the highest yielder. Himalayan, usually a very good yielder, fell down considerably this season. Success (0.6), a beardless variety, gave a fair yield.

VARIETY TESTS OF BARLEY

Variety	Date of sowing	Date of ripening	Number of days maturing	Average length of straw	Strength of straw on a scale of 10 points	Yield of grain per acre
				inches		lbs.
Gold—0·2	May 5	Aug. 9	96	26	10	2,760
Chinese—0·60	" 5	" 7	94	39	10	2,300
Himalayan—0·59	" 5	July 24	80	32	10	1,660
Success—0·6	" 5	" 24	80	37	10	1,680

FIELD PEAS

As mentioned previously, field peas give excellent returns. As a green feed alone, or mixed with oats, or oats and vetch, this crop gives a good return, and it is one of the best legumes for turning under as a green manure. The following varieties were sown this year and gave yields as shown:—

Variety	Yield of seed per acre
	lbs.
Mackay	3,600
Prussian Blue	3,120
Chancellor	3,080
Solo	3,000
Arthur	2,880

FORAGE CROPS

The season was not particularly favourable for the various forage crops. The rainfall during the growing season was light, while a shortage of irrigation water made itself felt. The season was one of extremes, which is naturally hard on all plant life. This was strikingly shown on July 6, when the mercury rose to 98, while the following morning there was a slight ground frost.

HAY CROPS

The hay crop was up to average. Alfalfa as a permanent crop, or for long rotations is increasing in favour. It withstands the winters better than the clovers, and when firmly established will out-yield them considerably. Two good cuttings may be taken from the alfalfa, while a later growth may be pastured or ensiled. Red clover has winter-killed badly, due to lack of fall irrigation. In this respect alsike has proven to be more hardy. A mixture of red clover, western rye grass, orchard grass and meadow fescue is continuing to give excellent results. Hubam, the annual sweet clover, was used to some extent as a green manure with excellent results.

INDIAN CORN

Twenty varieties of corn were sown on May 30. On August 29 all varieties were caught by a severe frost, and hence no data as to yields were obtained. The results of previous testings however indicate that the most suitable varieties

for this district are Compton's Early, Longfellow and Wisconsin No. 7. It must be remembered that as yet there is no field variety capable of definitely producing mature seed, the recommendation being for silage and forage only.

SUNFLOWERS

Ten varieties of sunflowers were tested this season. They were sown on May 15, irrigated and cultivated as required, and harvested for silage on September 4.

SUNFLOWERS—TEST OF VARIETIES

Variety	Source	Height	Percentage in head	Yield per 200 ft. row	Yield per acre	
		inches	%	lbs.	tons	lbs.
Mammoth Russian	McDonald	108	Very few	730	26	998
Ottawa No. 76	C.E.F	72	100	590	21	834
Manchurian,	McKenzie	78	100	524	19	424
Manchurian	C.P.R. No. 4	84	100	500	18	300
(Mixed)	C.P.R. No. 5	84	100	500	18	300
Russian Giant	Dakota Imp. Seed Co.	108	Very few	465	16	1,759
Black	C.P.R. No. 3	77	100	462	16	1,541
Mammoth Russian	C.P.R. No. 2	77	100	420	15	492
Mantica	C.P.R. No. 1	72	100	362	13	281
Mennonite	Rosthern	53	100	221	8	446

FIELD ROOTS

MANGELS.—During the past season thirty-two varieties of mangels were tested. They were sown on May 14, and harvested on October 13. The stand was not perfect, nor was the yield on a 100 per cent basis as good as might be expected.

Variety	Source	Yield per 100 feet row	Per cent stand	Yield per acre on 100 p.c. stand	
		lbs.		tons	lbs.
Fjerritslev Barres	Harmann	228	75	22	141
Sludstrup Barres	"	216	75	20	1,818
Rosted Barres	"	230	85	19	1,290
Barres Oval	Gen. Swedish Co	206	75	19	1,214
Eckendorfer Yellow	Hartmann	190	75	18	748
Svalof Alfa	Gen. Swedish	170	70	17	1,263
Danish Sludstrup	McDonald	170	70	17	1,263
White Green Top	Hartmann	153	67	16	1,159
Barres Half Long	Gen. Swedish	216	95	16	1,014
Eckendorfer Red	Hartmann	181	80	16	852
Stryno Barres	"	165	73	16	819
White Red Top	"	203	90	16	751
Elevatham Mammoth	"	219	98	16	448
Barres Sludstrup	Gen. Swedish	139	65	15	1,050
Svalof Red	"	187	88	15	885
Tarroje Barres	Hartmann	84	40	15	492
Gatepost	Bruce	175	85	14	1,894
Large Yellow Globe	"	170	85	14	1,040
Yellow Eckendorfer	Gen. Swedish	157	85	13	819
Giant Rose Sugar	Bruce	181	100	13	281
Giant White Feeding	"	165	92	13	32
Giant White Fdg. Sugar	S. Briggs	150	85	12	1,624
Yellow Globe	"	140	86	11	1,637
Mammoth Long Red	"	150	95	11	927
Royal Giant Sugar Beet	"	145	95	11	162
Giant Yellow Inter	Bruce	136	95	10	787
Golden Fleshed Tankard	S. Briggs	105	75	10	328
Yellow Intermediate	C.E.F	116	85	9	1,816
Yellow Leviathan	S. Briggs	120	90	9	1,360
Golden Tankard	Bruce	120	90	9	1,360
Red Eckendorfer	Gen. Swedish	119	92	9	781
Danish Sludstrup	D. & F	100	95	7	1,284

TURNIPS.—Sixteen varieties of swede turnips and one fall turnip were sown on May 14, and harvested on October 22. The following table gives the acre yields on a basis of 100 per cent stand:—

TURNIPS—TEST OF VARIETIES

Variety	Source	Yield per 100 feet row	Per cent stand	Yield per acre on 100 p.c. stand	
		lb.		T.	lb.
Swedes—					
Ditmars	H. H. McNutt	490	95	36	1,840
Kangaroo	Bruce	370	80	33	1,155
Jumbo	S. Briggs	400	100	29	80
Magnum Bonum Purple	Bruce	376	95	28	1,468
Hartley's Bronze Top	Bruce	320	90	25	1,627
Shepherd's Golden Globe	Hartmann	350	100	25	820
Purple Top	Bruce	290	90	23	787
Canadian Gem	Bruce	290	92	22	1,770
Good Luck	Steele Briggs	290	95	22	324
Canadian Gem	Steele Briggs	282	93	22	28
Bangholm Swede	Gen. Swedish	260	95	19	1,739
Elephant or Monarch	Bruce	270	100	19	1,204
Bangholm	Nappan E. F.	254	95	19	822
Bangholm	Hartmann	210	98	15	1,114
Improved Yellow	Gen. Swedish	180	93	14	103
Fall turnips—					
Bortfelder	Hartmann	350	90	28	467

CARROTS.—Nineteen varieties of carrots were sown on May 15. The first seeding failed to come through and consequently all varieties were resown on June 17. Considering the lateness of the season a fair crop was produced.

CARROTS—TEST OF VARIETIES

Variety	Source	Yield per 100 feet row	Per cent stand	Yield per acre on 100 per cent stand	
		lb.		T.	lb.
Yellow Belgian	Ewing	127	100	9	440
Improved Inter. White	D. & F.	100	90	8	130
White Belgian	Hartmann	110	100	7	1,972
Long White Vosges	Bruce	92	90	7	843
New Yellow Inter	Halifax Seed Co.	66	70	6	1,690
Improved Short White	Steele Briggs	86	95	6	1,566
Mammoth Inter: (Smooth) White	Bruce	79	89	6	810
Champion Carrot	Gen. Swedish	82	95	6	532
White Belgian (French)	Ewing	81	95	6	380
White Belgian	Halifax Seed Co.	81	95	6	380
New Yellow Inter:	Ewing	75	93	5	1,710
Long Orange Belgian	Bruce	78	100	5	1,326
Champion	Hartmann	68	90	5	971
White Belgian	Bruce	66	90	5	648
Danish Champion	C.E.F.	71	100	5	309
Improved Inter: White	Ewing	63	95	4	1,620
Half Long White	Gen. Swedish	61	93	4	1,524
Large White Belgian	Steele Briggs	53	90	4	551
Long Red Surrey	Steele Briggs	45	80	4	168

SUGAR BEETS.—Eight varieties of sugar beets were sown on May 15. While the crop this year cannot be considered a success, the yield being only about 5 tons per acre, yet it is interesting to note that the percentage sugar in the juice is unusually high, namely 16.65 to 18.42.

PEAS, OATS AND VETCH MIXTURES

The results this season do not confirm those of the last two years. Since it is possible that mixtures of this nature might be very valuable in this district, further experiments are planned to determine which mixture is most profitable. The following table gives the results of three mixtures sown this year on May 8, and harvested on August 8:—

PEAS, OATS AND VETCH MIXTURES

Plot No.	Mixture	Yield			
		Green		Dry	
		T.	lb.	T.	lb.
1	1½ bush. oats ¾ bush. peas 15 lbs. vetch	10	730	3	1,186
2	1½ bush. oats 1 bush. peas	7	1,101	2	937
3	1½ bush. oats 30 lbs. vetch	6	23	2	146

POULTRY

The poultry year 1924 was on the whole not satisfactory. The hatching season was poor and the laying pens were not as uniform nor as well developed as one would wish. It was found necessary in the late fall to reduce the stock considerably as the poultry plant was being removed from Invermere to the Windermere area. At the same time it was decided to concentrate the efforts on one breed—the White Leghorn. The stock of White Wyandottes was therefore disposed of. The demand for cockerels for breeding purposes has not been as active as in past years. Nevertheless it is felt that one of the best ways in which the Station can serve the individual is by supplying males from proven ancestry.

HATCHING

The results this season, while poor, confirm other seasons' experiences. The long period of confinement during the winter months has a decidedly detrimental effect on the fertility and hatchability of the egg. About 79 per cent of the eggs were fertile in March, while 93 per cent were fertile in May. In this respect the Leghorns were better than the Wyandottes.

INCUBATORS

Three makes of incubators were tested, namely, Buckeye, Prairie State, and Cyphers. The Buckeye gave the best results, and the Cyphers slightly better results than the Prairie State. The Buckeye is a 600-egg machine and consumes 1½ quarts of kerosene daily. The Prairie State and the Cyphers, having capacities of 200 and 150 eggs respectively, each consume a quart of kerosene daily. The Buckeye this year gave better hatches and at a lower unit cost.

BROODING

Oil-burning brooders were used exclusively last season, and gave satisfactory results. Comparing them with the small coal-brooders under local conditions, a more satisfactory temperature can be maintained with the oil-burners. One of the great difficulties with the small coal-brooder is to obtain satisfactory fuel, although where good anthracite coal is available they should give satisfactory results.

HOUSING

The poultry houses consist of two laying-houses, five breeding-houses and one brooder-house, also two colony-houses and an administration building. The laying houses are 16 feet by 32 feet, and 16 feet by 48 feet, and are divided into two and three pens respectively, each pen holding fifty mature birds. These are known as "farmers' poultry houses," and are built according to plans in Bulletin 87 on Poultry House Construction. The front is one-third boards, one-third glass and one-third cotton. A big feature is the straw loft with slatted ceiling. This affords good ventilation and also absords moisture. These houses are giving satisfaction and are highly recommended. The breeding- and colony-houses are of various sizes and have a shanty-roof. Later in the season the breeding-houses are used to divide pullets from cockerels. The administration building is a log and frame structure, the upper portion being used as poultryman's quarters, and the basement as feed and incubation room.

TURKEYS

The few turkeys kept last year made a good showing. Over forty poults were hatched, and there were a few nice birds in October. Some of these were sent to other farms, and the balance were fed and sold for the Christmas and New Year's trade.

APIARY

The season on the whole was favourable for the beekeeper. Although low temperatures were recorded during the winter, there was no winter-killing, and the colonies started to build up early. As in previous years, it was noted that the bees did not work the white Dutch clover nor the alfalfa to any extent. From observation, the bees seemed to work the sweet clover, but recorded very little increase in weight while doing so. This is largely at variance with conditions in other districts.

During the summer a field day was held, on the occasion of the visit of the Dominion Apiarist.

RETURNS FROM APIARY

From twelve colonies, spring count, 1,370 pounds of extracted honey were taken, or an average of 114 pounds per colony, the highest yield from one colony being 150 pounds. As in previous years, the honey was put up in five-pound pails and sold at $1.25 retail, netting $342.50. Sugar to a weight of 296 pounds was fed, valued at $32.02.

The net returns from the apiary are: $342.50 proceeds from honey, less $32.02 value of sugar fed, giving $310.48 as the net production of the apiary, or a profit of $25.87 per colony.

RETURNS FROM APIARY

Year	Colonies to go into winter the previous fall	Colonies died in winter or united in spring	Colonies-spring count	Increase in Colonies during season	Colonies to go into winter	Value of increase or decrease compared with previous fall		Total honey produced	Average weight of honey per hive Spring count	Highest yield from one colony	Selling price per pound	Total value of honey	Value of sugar fed during season	Net Production value	
						Inc.	Dec.							Per Apiary	Per Hive
	No.	No.	No.	No.	No.	$	$	lb.	lb.	lb.	cts.	$ c.	$ c.	$ c.	$ c.
1917.....	12	.....	12	2	14	10	.....	975	81·25	120·0	17	165 75	38 25	137 50	11 45
1918.....	14	4	10	.....	10	.....	20	1,189	118·9	192·0	28	332 92	22 00	290 92	29 09
1919.....	10	3	7	4	11	7	.....	885	126·4	234·0	33	292 05	23 40	276 65	39 52
1920.....	11	2	9	1	10	.....	7	810	90·0	199·0	47	380 70	46 00	327 70	36 41
1921.....	10	2	8	3	11	7	.....	322	40·3	79·5	35	112 70	26 50	93 20	11 65
1922.....	11	6	5	4	9	.....	14	465	93·0	146·0	25	116 25	16 80	85 45	17 09
1923.....	9	3	6	6	12	21	.....	502	83·7	110·0	25	125 50	19 50	127 00	21 16
1924.....	12	.....	12	.....	12	.....	.....	1,370	114·1	150·0	25	342 50	32 02	310 48	25 87

CONTROL OF SWARMING

The method adopted at the Station is to go through the brood-chambers every week or ten days, and remove queen cells if present, and increase the working room of the bees. This can be done by moving or transferring frames of brood from the brood-chamber to the super or supers above. Some advocate the jumbo frame for the brood-chamber, but better results have been obtained by using a shallow super over the ordinary brood-chamber of Langstroth frames, and giving the queen the run of this. If queen cells are formed they will nearly always be at the bottom of the shallow frames and can be readily detected by raising one end of the super and glancing along the lower side of the frame. It will be found that the addition of the shallow frame will do away to a large extent with the individual examination of the frames in the lower brood-chamber. This last season the colonies were all re-queened, and with careful watching and by practising the above details, swarming was absolutely controlled.

FEEDING

The Miller feeder has been used exclusively in the fall with good results. For spring feeding an ordinary honey pail with the lid punched full of holes has been used with satisfactory results. This past season 296 pounds of granulated sugar, valued at $32.02, were fed to twelve hives. This was an average of 24.8 pounds, valued at 2.67 cents per hive. The syrup is made in the proportion of two of sugar to one of water. The following table summarizes the feeding data for the past eight years:—

AMOUNT AND COST OF SUGAR FED, 1917-1924

Year	Number of hives, fall count	Weight of sugar fed	Average weight of sugar per colony	Total value of sugar	Value of sugar per colony
		lb.	lb.	$ cts.	cents
1917	14	340	24·3	38 25	2·73
1918	10	160	16·0	22 00	2·20
1919	11	180	16·4	23 40	2·13
1920	10	200	20·0	46 00	4·60
1921	11	200	18·18	26 50	2·41
1922	9	160	17·7	16 80	1·87
1923	9	176	19·6	19 50	2·17
1924	12	296	24·8	32 02	2·67

WINTER PROTECTION

Eight colonies were wintered in Kootenay hive cases, and four in a four-colony wintering-case. Although the winter was quite severe on occasions, the bees came through in good shape. The bees had a flight on some days each month during the winter, and commenced rearing brood early in April.

GENERAL NOTES

EXTENSION.—The Station exhibit was able to take in the fairs at Nelson, Cranbrook and Lake Windermere, while a display of potatoes was sent to Creston Fair. Considerable interest was taken in the exhibit and personal contact with many individuals established. Much literature was distributed and many names added to the mailing list.

Material from the Station was forwarded to the Experimental Farms exhibit at the Provincial Exhibition at Vancouver in August. In November

a very attractive display of potatoes raised at the Station was exhibited at the Provincial Potato Show in Vancouver.

Various provincial and local conventions and meetings along agricultural lines were attended by the superintendent or some member of the staff.

Articles on timely topics were contributed to the press and to the publication "Seasonable Hints".

Two field days were held during the summer, an Apiary field day and a Potato field day. The Station is receiving an increasing number of visitors, due to the opening of the Banff-Windermere Highway.

Correspondence is increasing, and literature in the form of bulletins, circulars, etc., has been freely distributed.

The sending out of samples has been confined largely to potatoes. These are put out at a nominal cost of 50 cents to cover parcel postage rates. It offers an excellent way for the farmers to get a small stock of seed, true to name, and which has been grown under careful conditions and diseases eliminated to a great extent.

NEW FARM.—Considerable expansion took place during the year, as the Windermere area consisting of 280 acres was obtained, and operations commenced. This area consists of approximately 190 acres of land that has been under cultivation and irrigation.

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