DOMINION OF CANADA
DEPARTMENT OF AGRICULTURE
DOMINION EXPERIMENTAL FARMS

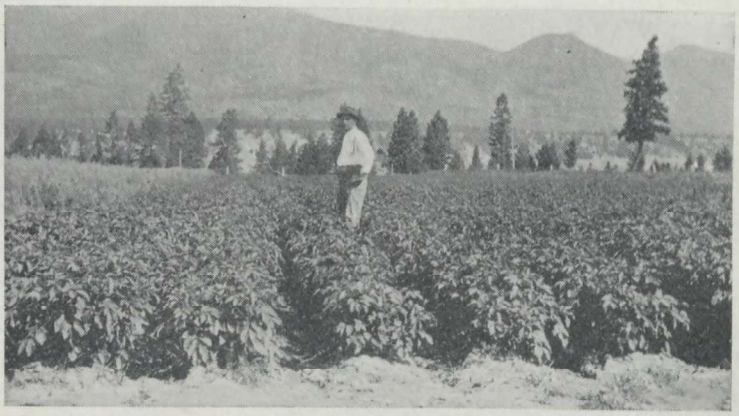
EXPERIMENTAL STATION

INVERMERE, B.C.

REPORT OF THE SUPERINTENDENT

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

FOR THE YEAR 1922



Cambridge Russet Potatoes—Rotation B. Plot 2—Just prior to blooming, 1922

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OTTAWA
F. A. ACLAND
PRINTER TO THE KING'S MOST EXCELLENT MAJESTY
1923

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EXPERIMENTAL STATION, INVERMERE, B.C.

Report of the Superintendent, R. G. NEWTON, B.S.A.

SEASONAL NOTES

Meteorological records have been kept at the Station for nine years, and the following remarks as to averages relate to data obtained during those nine years. The first two months of the year were exceptionally cold. The weather during March was also cool, but not to the extent of a degree below the average. April was about normal both as regards temperature and precipitation, and vegetation was backward. During the latter part of May vegetation came along well, but a drop in the average precipitation for that month, and the drying of the surface soil by strong winds, tended to retard growth. With the close of the month potato planting ended, and irrigation for the first hay crop was proceeding. The June precipitation was below the average, and while crops under irrigation did well, the countryside suffered from dryness. Early in July, hay harvesting commenced, and was carried on under ideal conditions. Precipitation in July was again below the average, and this brought a setback to root crops. In August a slightly increased precipitation relieved the dryness and improved pasture lands, although it came too late to materially affect the grain crops. September was very favourable for harvesting and no frosts were registered. Threshing was completed and potato digging well under way by the close of the month. October was exceptionally fine, which helped forward fall ploughing. All root crops were harvested in good shape. The November mean temperature was below the average; precipitation was a little above, because of an exceptional fall of 12½ inches of snow on the 28th of the month. Range stock went into the winter in fair shape, but feed was not too plentiful in the district. During December, snow fell on six occasions and rain on two, resulting in a normal precipitation. The month's mean temperature was 6·4 degrees below the average, and on four nights the lowest temperature recorded at the Station was exceeded. A thaw during the last ten days of the month brought a welcome relief from the extreme cold.

METEOROLOGICAL RECORDS

Month	Temperatures F.			Precipitation				Total hours sunshine
	Mean	Highest	Lowest	Rain	Snow	Total	Average per month for past 9 years	
1922	°	°	°	inches	inches	inches	inches	
January	6·17	38	−27	.....	11·8	1·18	1·13	74·0
February	10·70	38	−24	.....	0·1	0·01	0·61	133·2
March	28·41	52	− 3	.....	2·5	0·25	0·39	171·1
April	41·16	70	24	0·77	.....	0·77	0·71	171·4
May	49·41	78	24	0·44	.....	0·44	1·33	259·5
June	60·39	85	38	0·63	.....	0·63	1·47	275·7
July	61·98	90	37	0·19	.....	0·19	1·31	283·2
August	61·89	94	40	1·92	.....	1·92	1·50	233·9
September	54·53	82	33	0·61	.....	0·61	1·15	204·7
October	43·75	69	22	0·86	.....	0·86	0·71	169·1
November	25·33	48	10	0·05	12·5	1·30	0·66	66·8
December	7·43	45	−38	0·06	9·5	1·01	1·01	66·2
Totals	.....	.....	.....	5·53	36·4	9·17	11·98	2,108·8

Precipitation for the six growing months, April-September, 1922, 4·56 inches.
Average precipitation for the six growing months for the past nine years, 7·48 inches.
Highest temperature recorded at the Station, 95 degrees on July 31 and August 1, 1914.
Lowest temperature recorded at the Station, −38 degrees on December 15, 1922.

ANIMAL HUSBANDRY

Live stock work at this Station is carried on only so far as labour requirements and demand for animal products warrant. No experimental work has been attempted with any class of stock, largely owing to limitations in the way of land, equipment and facilities generally.

Three horses are kept—a work-team and a driver.

Two milch cows are kept to supply the requirements of the Station.

A couple of Yorkshire sows and a boar are kept, the services of the latter being available to farmers.

A good Clydesdale stallion is kept; also a pedigree Shorthorn bull. The use of these pure-bred sires is available to breeders and stockmen in the district.

FIELD HUSBANDRY

This season, a new series of rotations was started, as from past experience and present requirements the old rotations were decided not to be adaptable to general conditions throughout the district. In planning these new rotations, the following were mainly considered: first, soil fertility; second, adaptability to general farming practice as carried on in the district; third, cash crops were incorporated into the rotation, as this feature is badly needed on most of the farms at the present time. The rotations are all under irrigation, and the soil is fairly uniform. They are as follow:—

Rotation A—Half-acre plots—

1. Alfalfa.
2. Potatoes (manured 6 tons).
3. Wheat.
4. Peas.

Rotation B—Half-acre plots—

1. Peas (manured 6 tons).
2. Potatoes.
3. Oats (manured 6 tons).
4. Wheat.
5 and 6. Grasses and Clover.

Rotation D—Quarter-acre plots—

1. Sunflowers.
2. Peas (manured 3 tons).
3 and 4. Alfalfa.
5. Potatoes.
6. Oats (manured 3 tons).

Rotation J—Quarter-acre plots.

1. Clover.
2. Oats (manured 3 tons).
3. Potatoes.

Returns from Various Rotations

ROTATION A

1. *Alfalfa.*—A good stand was obtained, but no crop was taken this season.

2. *Potatoes.*—This plot was planted with Cambridge Russets, and under certification, yielded at the rate of 12 tons 1,276 pounds per acre.

3. *Wheat.*—Sown to Marquis wheat. Only a fair yield, going a little over 22 bushels per acre.

4. *Peas.*—Sown to Chancellor peas and yielded at the rate of 2,048 pounds of peas to the acre.

ROTATION B

1. *Peas.*—Sown to Prussian Blue. Yielded 2,824 pounds to the acre.

2. *Potatoes.*—Planted to Cambridge Russets. Yielded 9 tons 644 pounds per acre.

3. *Oats.*—Sown to Banner oats. Yielded 1,840 pounds of grain per acre.

Rotation B, Plot 4 — Marquis Wheat.

4. *Wheat.*—Sown to Marquis wheat. Yielded a very heavy crop, going 2,890 pounds of grain per acre.

5 and 6. *Clover and Grasses.*—Seeded down and a very fine stand obtained.

ROTATION D

1. *Sunflowers.*—Variety tests of sunflowers tried out on this plot. The best varieties yielded up to 27 tons per acre.

2. *Peas.*—Arthur peas were sown and a fair crop obtained, going 1,400 pounds per acre.

3 and 4. *Alfalfa.*—The land intended for alfalfa required considerable levelling and clearing of rocks. This was not done until it was too late for sowing the alfalfa.

5. *Potatoes.*—Cambridge Russets were planted and a good crop of 13 tons 1,432 pounds per acre obtained.

6. *Oats.*—Banner oats were sown and a fair crop of 1,452 pounds per acre obtained.

ROTATION J

1. *Clover.*—Winter-killed badly. Sown to peas and ploughed under.

2. *Oats.*—Banner oats sown and a large crop of 3,232 pounds of grain per acre obtained.

3. *Potatoes.*—Cambridge Russets planted and a fair crop obtained.

58363—2½

HORTICULTURE

VEGETABLES

The work with vegetables consists mainly in testing varieties, comparing cultural methods and originating new varieties, particularly with peas and potatoes. Some work has been done with the winter forcing of vegetables, and the first results obtained from fall-sown seed as compared with spring-sown seed are herein dealt with.

ASPARAGUS

The asparagus crop is an important one, as it is one of the first early vegetables. It does best in light loam, strong in plant food. It should be planted fairly deep in the spring, from one to two feet apart in the rows and the rows four feet apart. The first crop should not be taken under three years, and cutting late in the season will reduce yields the following year. The Palmetto variety has given good returns at the Station, cuttings being taken from April 27 up to June 20 this past season.

TABLE BEETS

Seven varieties were sown on May 29. From the results obtained it is evident there is need for selection in many of the varieties. For winter use a later sowing, around July 5, is recommended.

TABLE BEETS—TEST OF VARIETIES

Variety	Source	Yield from 30′ row	Remarks
		lbs.	
Long Smooth Blood Red	McKenzie	75	Colour good, but rather rough.
Cardinal Globe	Rennie	75	Colour poor. Coarse.
Detroit Dark Red	McDonald	72	Colour good. Nice, even roots.
Crosby Egyptian	Harris	70	Colour good.
Crimson Globe	Graham	70	Colour fair.
Extra Early	McKenzie	70	Colour poor.
Black Red Ball	Burpee	55	Colour fair. Rough and uneven.

GARDEN BEANS

Seventeen varieties of beans were sown on June 1, when danger of frost was past. On account of September being free from frosts, the yields from beans have been very high this season. It is impossible to mature beans at the Station. The following table summarizes the results of the past season. It will be noted that most of the varieties are selections from the Central Farm, Ottawa:—

GARDEN BEANS—TEST OF VARIETIES

Variety	Source	Ready for use	Weight of green beans from 30-ft. row
			lbs.
Masterpiece	0-1916	July 31	50½
Pencil Pod Black Wax	0-1642	" 31	38
Grenell Rustless	0-1928	" 31	28½
Bountiful Green Bush	0-1633	" 30	27½
Stringless Green Pod	0-1630	Aug. 3	27½
Plentiful French	0-1639	" 4	27
Fordhook Favorite	0-1641	" 5	26
Yellow Eye	0-1643	" 4	25¾
Davis White Wax	0-1636	" 4	24¾
Matchless Green Pod	McKenzie	July 31	24¾
Extra Early Valentine	0-1632	Aug. 9	24
Round Pod Kidney Wax	0-1638	" 4	23½
Wardwell Kidney Wax	0-1634	July 31	20¼
Challenge Black Wax	0-1915	" 28	18
Refugee	0-1469	Aug. 31	13½
Hodson Long Pod	0-1635	" 31	12

BROAD BEANS

One variety—Seville Long Pod—from McKenzies, was tried out, and yielded 19½ pounds per 30-foot row.

BORECOLE

One strain from Vaughan was tried out this season. It was planted May 15, and was ready for use early in October. It yielded 150 pounds from a 30-foot row.

BRUSSELS SPROUTS

Dalkeith, from McDonalds, was sown on May 15. Only small, immature sprouts had formed by the end of the season. From the experience of the past three years it would appear that, if this crop is to mature, it should be started under glass and set out with the early cabbage plants.

CABBAGE

Ten varieties were sown in the open on May 15. The following table summarizes the results for the past season:—

CABBAGE—TEST OF VARIETIES

Variety	Source	Ready for use	Weight per 30-ft. row
			lbs.
Copenhagen Market	Graham	Aug. 5	150
Ex. Amager Danish Ball Head	0-1193 (Select head)	Oct. 10	140
Copenhagen Market	McKenzie	Aug. 3	130
Brandon Market	"	Oct. 1	120
Flat Swedish	Lennoxville	" 5	120
Ex. Amager Danish Ball Head	0-934-2-3	" 10	100
Early Jersey Wakefield	McDonald	Aug. 5	100
Northern Favorite	McKenzie	Sept. 1	80
Early Paris Market	Dupuy & Ferguson	Aug. 5	80
Delicatesse	Dupuy & Ferguson	(Did not mature)	

Cabbage—Cultural Experiment for Early Cabbage

Seed of Early Jersey Wakefield, Early Paris Market and Copenhagen Market were sown in the hotbed on April 5. They were planted in the open on June 1. The following table summarizes the result:—

Variety	Source	Ready for use	Weight per 30-ft. row
			lbs.
Copenhagen Market	Graham	Aug. 1	180
Early Jersey Wakefield	McDonald	" 1	108
Early Paris Market	Dupuy & Ferguson	" 1	80

Cabbage—Cultural

Sowings made to determine the best date of sowing for winter storage. Sowings were made on May 15, June 6 and June 17 of Copenhagen Market, Early Jersey Wakefield and Early Paris Market. The sowing on June 6 gave the highest percentage of good heads fit for winter storage.

Chinese Cabbage

Pe Tsai and Wong Bok, two varieties from Burpee were tested. The former was a little earlier than the latter. Both were true to type.

CAULIFLOWER

Two varieties—Early Snowball and Early Dwarf Erfurt—from McDonalds, were tried out this past season. They were ready for use on August 20, yielding 95 and 84 pounds respectively per 30-foot row.

Cauliflower—Cultural

To determine the best time to plant, or sow, cauliflower seeds, an experiment was tried with Early Snowball and Early Dwarf Erfurt. Young plants were transplanted from the hotbed on June 1. Sowings were made in the open on May 15, June 6 and June 17. Results showed that the transplanted plants matured earlier and gave a higher yield than did the plants from the various sowings. The early sowing gave very fair yields, but the latest sowing only about half matured.

TABLE CARROTS

Eight varieties were sown on June 15 and were harvested on October 5, with the following results:—

Table Carrots—Test of Varieties

Variety	Source	Weight per 30-ft. row	Remarks
		lbs.	
Improved Danvers	D. & F.	70	Good.
Intermediate	McDonald	68	Slight admixture of Long White.
Ox Heart	Steele Briggs	67	True to type.
Chantenay	McDonald	55	"
Chantenay	0-206-9	51	"
Garden Gem	McKenzie	51	Slight admixture of Long Yellow.
Early Scarlet Horn	D. & F.	39	Rather long.
Danvers	Rennie	27	Coarse.

CELERY

Nine varieties of celery were transplanted to the open on June 6. White Plume, (from Graham's) was the earliest, but it was also the lowest in yield. Golden Self Blanching, (O-229-30) is an excellent selection.

CELERY—TEST OF VARIETIES

Variety	Source	Ready for use	Yield per 30-ft. row
			lbs.
Giant Pascal	Graham	Oct. 1	42
Hamilton Red	Bruce	" 1	42
Winter Queen	Graham	" 1	40
Evans Triumph	McDonald	" 1	40
French Success	Harris	" 1	38
Golden Self Blanching	0-229-30	Aug. 12	35
Easy Blanching	McDonald	Oct. 1	35
Golden Yellow	Graham	Aug. 12	30
White Plume	Graham	" 1	25

CELERY—METHODS OF BLANCHING

Three methods of blanching celery were tried out, viz.:

(1) Plants were wrapped with several layers of building paper; (2) plants enclosed with boards, and (3) plants banked with soil. The results are as follows:—Wrapping with paper blanched the celery, but it lacked crispness. Method No. 2 blanched the celery, but the plants were loose. Banking with soil proved the best method, as the plants were well blanched, compact, crisp and nutty.

GARDEN CORN

Eleven varieties were sown on May 29. On account of the short season only early varieties are satisfactory. The following varieties are to be recommended:—

Picaninny, O-15420.
White Alberta.
Early Malcolm.
Sweet Squaw, O-1445.
Jehu.

One variety of pop-corn (Tom Thumb) did very well.

CUCUMBER

Seven varieties were tried out, Early Russian, in the open, giving the best results. Rollison Telegraph and Rochford Covent Garden were transplanted into hot-frames and produced excellent fruits for the table use.

CHICORY

Witloof was the only variety tested. It made excellent growth and produced good, strong, forcing crowns by fall.

ENDIVE

The Moss Curled from McDonald's was sown on May 15. This made good growth and was blanched by covering with boards.

KOHL RABI

Two varieties, Early White and Early Purple, were sown on May 15, and were ready for use by the 1st, of August. The Early White gave slightly better yields than the Early Purple.

LETTUCE

Eleven varieties were tried out this past season, being sown in the open on May 15. Germination was not as good as usual, and accounts for reduced yields. For early lettuce, Earliest Wayahead comes first. Grand Rapids is always popular, but Improved Hanson is the favourite here. The following table summarizes the results:—

LETTUCE—TEST OF VARIETIES

Variety	Source	Type	Ready for use	Weight per 30-ft. row
				lbs.
Giant Crystal Head	Vaughan	Cabbage	Aug. 1	75
Iceberg	Ewing	"	July 12	65
Black Seeded Simpson	"	Loose	" 15	60
Grand Rapids	Summerland	"	" 6	60
Grand Rapids	Burpee	"	" 6	56
Imp. Hanson	Ewing	Cabbage	" 12	55
Cos	D. & F.	Cos	Aug. 1	45
Salamander	McDonald	Cabbage	July 6	32
Ex. Early Paris Market	0-845	Loose	" 4	30
Earliest Wayahead	D. & F.	Cabbage	" 4	30
Crisp-as-Ice	Wills	"	" 6	25

MUSK MELON

Four varieties were sown on June 2, but failed to produce any ripe fruit. Some grown in frames gave fairly good results.

ONIONS

Nine varieties were sown on May 15, but the season was bad and the results poor. Great difficulty is experienced in getting the onion to mature, and the onion maggot is hard to control.

ONIONS—FALL SOWING

A sowing of ten varieties was made on August 3, 1921. The seed germinated well and good growth was made before winter set in, but all varieties, with the exception of White Welsh, winter-killed. White Welsh is a non-bulbing onion, very hardy, and gives a large amount of green onions early in the spring and during the summer.

PARSNIP

Hollow Crown (O-1046) was the only variety tested. It gave fair results. Elsewhere more detail will be given regarding fall-sown seed, and in the case of parsnip, much better results were obtained.

PARSLEY

Champion Moss Curled (Ewing), and Double Curled (Vaughan) were sown May 15, and made excellent growth during the season the former being a little stronger in growth.

PEPPERS

Neapolitan and Harris' Early, from Creston and Summerland respectively, were grown with good success this season. Some ripe fruit was picked, and a couple of pickings of green peppers.

GARDEN PEAS

Seventeen named varieties and twelve seedling selections were sown on May 13. The Lincoln, which has headed the list in previous years, has had to give way to some of the new hybrid selections.

GARDEN PEAS—TEST OF VARIETIES

Variety	Source	Germination	Ready for use	Yield of pods 30-ft. row
				lbs.
Invermere No. 1	Invermere	Good	July 28	40¼
Invermere No. 10	"	"	" 22	30½
Invermere No. 12	"	"	" 24	30
Invermere No. 2	"	"	" 25	28½
Invermer No. 5	"	"	" 25	28
The Lincoln	"	"	" 25	27½
Invermere No. 8	"	"	" 21	27
McLean Advancer	Harris	"	Aug. 3	26¾
Invermere No. 3	Invermere	"	" 24	26½
Invermere No. 11	"	"	July 24	26¼
Thos. Laxton	0-1648-68	"	" 12	25¾
Harrison Glory	Invermere	"	Aug. 1	25
Sutton Excelsior	Harris	"	July 18	25
Invermere No. 7	Invermere	"	" 30	24½
Invermere No. 6	"	"	" 24	24
Eldorado	McKenzie	"	" 18	24
Pioneer	Gregory	"	" 20	22¼
Invermere No. 9	Invermere	"	" 15	22
Danby Stratagem	Carter	"	" 27	22
English Wonder	0-1644	"	" 20	20¼
Juno	Bolgiano	"	Aug. 2	20¼
Gregory Surprise	Gregory	"	July 18	18
Invermere No. 4	Invermere	"	" 23	17
Gradus	Carter	Medium	" 14	16¼
Pilot	Stokes	Good	" 23	15¾
Eight Weeks	Carter	"	" 12	14¼
Blue Bantam	Ewing	Poor	" 14	11
Laxtonian	Graham	Good	" 23	10¼
Little Marvel	Rennie	"	" 14	9¾

PEAS—CULTURAL TEST—RATE OF SEEDING

Four rates of speeding were used, running from one to four ounces per 30-foot row. Thos. Laxton was used and the results are similar to last year, the three-ounce sowing giving the best results. The following table will emphasize the value of heavy seeding:

GARDEN PEAS—RATIO OF SEEDING

Rate of seeding	Date sown	Ready for use	Weight per 30-ft. row
			lbs.
1 oz	June 5	July 22	4
2 ozs	" 5	" 22	6
3 ozs	" 5	" 22	14
4 ozs	" 5	" 22	12

Peas—Percentage Weight of Peas and Pods

The weights of peas and of pods of four varieties were taken. The results given in the following table clearly show that certain varieties are much more valuable than others on account of the higher percentage of peas:

Variety	Percentage of shelled peas	Percentage of pods
	%	%
Invermere No. 2	50	50
The Lincoln	47	53
Invermere No. 3	45	55
Danby Stratagem	42	58

Selection of Seedling Peas

The fifteen selections made in 1920 were tested out against standard varieties this season (as per table "Variety Test of Peas"), and gave a very good account of themselves. One seedling, No. 4, is being discarded. Nos. 13, 14 and 15 are being carried on in the hope that they may be suitable as field peas. They are earlier than any of the standard field peas that are being experimented with here and the yields compare favourably. Invermere No. 1 is an outstanding pea, both in quality and yield, and has outstripped the standard varieties by a large margin.

Breeding Work With Peas

The hybrids that resulted from the crosses in 1921 were sown on May 13, and a large amount of seed obtained. The following were the crosses made:

Pioneer x Thos. Laxton.
Pioneer x Lincoln.
Reliance x Lincoln.
Reliance x Thos. Laxton.
Lincoln x Arthur.

Fall Sowings of Vegetable Seeds

A preliminary start with fall sowing of vegetable seeds was made in 1921. The seeds were sown on October 8, well before freeze-up, and remained dormant until spring. The results were very encouraging, and this fall the work was considerably enlarged. Last year the results were interfered with to some extent by an overflow from the water mains collecting in the winter and forming a large quantity of ice above the land sown to fall seeds. When this ice thawed in the spring the water washed out many of the seeds. The following summarizes the results:

Cabbage.—Early Jersey Wakefield. Fair stand. Ready for use July 20, as compared with August 5 with spring sown seed. Trimmed heads weighed up to 6 pounds.

Danish Bald Head. Fair stand. Well matured. 8 to 12 pounds per head. A decided advantage over spring sown seed.

Carrots.—Early Scarlet Horn. Fair stand. Ready for use July 1, as compared with August 1 from spring sown seed.

Chantenay. Fair stand. Ready for use July 10. Considerably earlier than spring sown seed.

Lettuce.—Crisp-as-Ice and Black Seeded Simpson. Ready May 20 and June 1, as compared with July 6 and 15 with spring sown.

Onions.—Yellow Danvers. Fair stand. Suffered somewhat from maggot, but they were the only onions maturing this year.

Parsnip.—Hollow Crown (0-1046). Good stand. Very superior to spring seeding, giving a yield per 30-foot row of 95 pounds as compared with 29 pounds from spring seeding.

Radish.—A failure.

Spinach.—Broad Flanders. Good stand. Came away early. Ready for use May 15, as compared with June 25 from spring sown seed.

POTATOES—INDIVIDUAL TUBER SELECTION

Three years ago, hill selection having failed to give the desired result, individual tuber selection was adopted. Results have been so marked that a brief description of the methods used should prove timely. The potatoes are brought out to the light about three or four weeks before planting time, and allowed to sprout. Only tubers showing strong, vigorous sprouts are selected. All varieties do not show the same sprouting tendencies or characteristics, but the grower will readily learn to distinguish the strong, vigorous tubers, and reject the weak ones. The following table shows the average yield of 22 varieties from 1917 to 1919, and the average yields of the same varieties for the three succeeding years 1920 to 1922, where individual tuber selection was followed. The average increase due to selection was nearly 100 per cent. Not only were the yields increased, but disease was eradicated or held in check:—

POTATOES—INDIVIDUAL TUBER SELECTION

Variety	Average yield per acre			
	1917-18-19		1920-21-22	
	tons	lbs.	tons	lbs.
Gold Coin	14	1,788	37	1,859
Delaware	14	1,612	32	878
Houlton Rose	13	1,500	31	1,813
Ashcroft	14	1,964	31	1,619
Bovee	17	414	31	941
Wee McGregor	16	1,660	31	878
Sir Walter Raleigh	18	1,227	28	1,373
Irish Cobbler	13	213	28	1,228
Late Puritan	13	48	28	260
Manistee	10	730	27	1,679
Carman No. 1	17	100	27	617
Cambridge Russet	12	1,168	26	1,977
Early Six Weeks	14	1,172	25	1,999
Extra Early Eureka	15	221	25	1,560
Early Norther	15	1,504	25	982
Early Rose	13	1,016	25	892
Sutton Abundance	17	1,508	24	1,105
Bermuda Early	8	1,644	23	1,717
Silver King	14	1,632	22	1,135
Snow	15	1,646	22	833
Early Ohio	12	992	22	349
Total average yields	14	645	27	620

TREATING SEED POTATOES

After selecting the seed potatoes, they are treated with corrosive sublimate. This is preferable to formalin as it will help to combat rhizoctonia. It is used in the proportion of one ounce of corrosive sublimate to 30 gallons of water, immersing the potatoes for 1½ hours. A cement tank has been constructed for treating potatoes and grain, of the following inside dimensions, namely, length 72 inches, width 30¾ inches, depth 36 inches. This is a conven-

ient size for the average farm, as every inch in depth is equal to eight gallons. One third of the tank is below ground, and, through a 2-inch pipe in the bottom of the tank, the contents, after use, can be drained into the soil.

Variety test of Potatoes

All varieties were sown on May 22, a foot apart in the rows, and the rows 2½ feet apart. Two to three ounce sets were planted about five inches in depth. They were irrigated when they appeared above ground, followed by cultivation hoeing and hilling up. In all, they received three applications of water, a total of about 8 acre-inches. They were harvested on September 28, and the vines were not cut by frost. Disease was present, most plants being affected with slight mosaic, and in some cases severe. Varieties with severe mosaic, have increased in yield rather than decreased although, according to previous investigations, the reverse is the case. Leaf roll was only present in varieties that were being tried out for the first time. Common scab and rhizoctonia were quite prevalent, the latter disease reducing the yields considerably. The following table summarizes the season's results:—

Potatoes—Test of Varieties

Variety	Source	Yeild per 30-ft. row.			Yield per acre	
		Marketable	Culls	Total		
		lbs.	lbs.	lbs.	Tons	lbs.
Gold Coin	Invermere	177	4	181	52	116
Bovee	Invermere	153	3	156	45	636
Green Mountain	Stonehouse, 1922	141	14	155	45	55
Sir Walter Raleigh	Invermere	137	8¼	145¼	42	390
Gold Coin	Lethbridge, 1922	114	18	132	38	692
Ormandy	Burgess, 1922	124	7	131	38	111
Houlton Rose	Invermere	119½	9	128½	37	658
Gold Coin	Lethbridge, 1921	121	7	128	37	368
Gold Coin	Lethbridge, 1920	119	7	126	36	1,206
Cambridge Russet	Invermere	111	10	121	35	444
Agassiz Special	Agassiz, 1922	113	5½	118½	34	848
Eureka Extra Early	Invermere	92	26	118	34	558
Carman No. 1	Invermere	111	6½	117½	34	267
Early Norther	Invermere	109	5¼	114¼	33	379
Cambridge Russet	Jones, 1921	103	10	113	32	1,653
Jones White	Scott, 1922	105	7	112	32	1,072
Sir Walter Raleigh	Pennsylvania	107	3	110	31	1,910
Late Puritan	Invermere	103	5	108	31	748
Manistee	Invermere	104	3	107	31	167
Irish Cobbler	Lethbridge, 1920	100½	6¼	106¾	30	1,876
Irish Cobbler	Lethbridge, 1922	103	3	106	30	1,596
Netted Gem	Meggitt, 1921	94	12	106	30	1,596
Irish Cobbler	Invermere, 1922	102	3½	105½	30	1,295
Sutton Reliance	U.B.C. 1922	86	19½	105½	30	1,295
Wee McGregor	Invermere	93	12	105	30	1,015
Early Rose	Invermere	94½	9¼	103¾	30	298
Delaware	Invermere	93	10	103	29	1,843
Gold Coin	U.B.C., 1922	86	13	99	28	1,519
Early White Prize	U.B.C.	90	8	98	28	938
Cambridge Russet	Jones, 1922	86	10	96	27	1,776
Sutton Abundance	Invermere	82	12	94	27	614
Netted Gem	Nicholls, 1922	69	22	91	26	871
Irish Cobbler	Morrison, 1922	85	5½	90½	26	580
Early Six Weeks	Invermere	84	6½	90½	26	580
Ashcroft	Invermere	70	19	89	25	1,709
Netted Gem	Marples, 1920	72	15	87	25	547
Early Ohio	Invermere	84½	2½	87	25	547
Jersey Royal	Unsworth	82	4	86	24	1,966
Million Dollar	Littlejohn, 1922	76	10	86	24	1,966
Snow	Invermere	71	14	85	24	1,385
Silver King	Invermere	76	8	84	24	804
Peacock Surprise	Brandon	72	12	84	24	804
Cambridge Russet	Morland	70	12	82	23	1,642
Bermuda Early	Invermere	77½	4	81½	23	1,351
Sir Walter Raleigh	Vantreight, 1922	79	2¼	81¼	23	1,206
Blue Snyder	Snyder, 1922	68	10	78	22	1,318
Rural Russet	Pennsylvania, 1922	70	4	74	21	994
U. B. C.	U. B. C.	35	15	50	14	1,050

Potatoes—Cultural Tests

To determine the best distance apart to plant potatoes in the rows, two-ounce sets (Wee McGregor) were used, and were planted 12, 14, 16, 18, 20 and 22 inches apart in the rows. The results, as shown by the following table, are similar to last season and show a distinct advantage for the closer planting:—

Planting at different distances

Distance apart in rows	Weight of Potatoes. 66 ft row.		
	Marketable	Culls	Total
Inches	lbs.	lbs.	lbs.
12	240½	6½	247
14	217	8	225
16	210	6	216
18	190	3	193
20	173	4	177
22	165	4	169

Potatoes—Size of Sets

To determine the size of sets that will give the best results, one, two, three and four-ounce sets were planted 12 inches apart in the rows. The table given below shows that the largest set produces the highest yield. However, the price of seed potatoes will have considerable bearing on the size of set planted. When the amount of seed planted is subtracted from the total crop, one-ounce seed will stand in the second place:—

Potatoes—Size of Sets

Size of set	Weight of Potatoes. 66-foot row		
	Marketable	Culls	Total
Ozs.	lbs.	lbs.	lbs.
1	187	11	198
2	185	13	198
3	197	9	206
4	202	20	222

Potatoes—Kind of Set

To ascertain the difference in yield in planting the front and hind quarters of seed potatoes, Cambridge Russet seed was used, and eight-ounce potatoes were cut into four sets. The front quarter, or seed end, out-yielded the stem end. Last year the results were practically the same:—

Potatoes—Kind of Set

	Yield per 30-foot row		
	Marketable	Culls	Totals
	lbs.	lbs.	lbs.
Cambridge Russet, Front quarters	136	6	142
Cambridge Russet, Hind quarters	109	6	115

Test to Compare Perfectly Shaped Seed with the Worst Shaped Seed

Uniform, smooth seed of equal size was selected from perfectly shaped seed; and the worst possible specimens were selected to try out against them This season the bad-shaped seed out-yielded the ideal-shaped seed and produced equally as good-shaped tubers as did the latter.

Tests to Ascertain the Value of Change of Seed

Seed from various sources was tried out against seed grown here for ten years; also imported seed grown here for one, two and three years. Results up to the present show that there has been no advantage in getting seed from other sources. The following table summarizes the results:

Potatoes—Source of Seed

Variety	Source	Grown here	Yields per 30-foot row		
			Marketable	Culls	Totals
		Years	lbs.	lbs.	lbs.
Gold Coin	Invermere	10	177	4	181
Gold Coin	Lethbridge, 1920	3	119	7	126
Gold Coin	Lethbridge, 1921	2	121	7	128
Gold Coin	Lethbridge, 1922	1	114	18	132
Irish Cobbler	Invermere	10	102	3½	105½
Irish Cobbler	Lethbridge, 1920	3	100½	6¼	106¾
Irish Cobbler	Lethbridge, 1922	1	103	3	106
Irish Cobbler	Morrison, 1922	1	85	5½	90½

Experiment to Determine the Result of Planting Large Whole Potatoes at a Distance of 3′ x 3′

Two varieties were used. Wee McGregor and Cambridge Russet. The yields were greatly reduced from the ordinary planting, and a heavy proportion of large, rough tubers was harvested.

Potato Breeding

A quantity of seed, mostly Cambridge Russet, naturally pollinated, was sown, and several hundred plants raised. Growth was vigorous and diseases were absent. Selections to the number of 85 were made to try out during the coming season.

To Determine the Effect of Soil Fumigants in the Control of Potato Scab and Rhizoctonia

Following is the result obtained last season with creolin, further experiments were carried on with crude carbolic acid and pacolin, the latter being used because creolin was not obtainable. These were used in three strengths —one, two and three. The liquid was mixed in sand and thoroughly worked so that an even distribution over the soil would be obtained. It was broadcasted by hand and thoroughly worked into the soil to a depth of six inches, previous to planting. Untreated Wee McGregor seed that contained both scab and rhizoctonia was used, and to make sure that the soil was infected with spores, the dust and dirt from the potato bins was worked into it. In the check plot the soil was not sown with dust from the potato bins, and the seed was treated with corrosive sublimate. The following tables summarize the results, and clearly show that these products have had a beneficial influence

in the control of scab and rhizoctonia. Another season these experiments will be enlarged so as to ascertain the best time and amount of application. To those who wish to give this a trial on a small seed plot, it is suggested that a pint of crude carbolic be used to every four square rods:

CRUDE CARBOLIC AS A SOIL FUMIGANT

Strength	Percentage of Disease		
	Clean potatoes	Slightly affected	Badly affected
	%	%	%
Carbolic No. 1	4	96	..
Carbolic No. 2	..	100	..
Carbolic No. 3	40	60	..
Check row	..	10	90

PACOLIN AS A SOIL FUMIGANT

Strength	Percentage of Disease		
	Clean	Slightly affected	Badly affected
	%	%	%
Pacolin No. 1	..	100	..
Pacolin No. 2	44	56	..
Pacolin No. 3	48	52	..
Check row	..	10	90

EFFECT OF AIR-SLAKED LIME ON POTATOES

Air-slaked lime at the rate of 1000 pounds to the acre was applied to soil immediately prior to planting, to ascertain the effect on the control of scab and rhizoctonia. The following table summarizes the results obtained, Wee McGregor seed being used:

Seed used	Weight of lime per acre	Percentage of Disease		
		Clean	Slightly affected	Badly affected
	lbs.	%	%	%
Seed treated with corrosive sublimate	1,000	16	84	..
Seed untreated	1,000	24	76	..
Seed treated with corrosive sublimate	Nil.	..	10	90

EFFECT OF SULPHUR ON POTATOES

Agricultural sulphur, at the rate of 600 pounds to the acre, was applied to half of two half-acres of potatoes on Rotations A and B. On Rotation A the sulphur seemed to have a stimulating effect, and the crop on that plot outyielded that on the untreated area. On Rotation B this was not the case. The plots were planted with the Cambridge Russet variety, and while an odd potato had a touch of scab, it could not be noticed that the area treated with

sulphur was cleaner than the untreated area. The following table summarizes the yields from the treated and untreated areas on Rotations A and B:—

EFFECT OF SULPHUR ON POTATOES

Rotation	Yield per acre			
	Treated. Sulphur, 600 lbs. to the acre		Untreated	
	tons	lbs.	tons	lbs.
A	6	1,078	6	198
B	4	1,292	4	1,352

RADISH—VARIETY TEST

Four varieties were sown on May 15, and were ready for use on June 20. The maggots were bad this season. The varieties were quite true to type.

RHUBARB

Two selections of Daw Champion, two of Hobday Giant and one of Raspberry were set out in May, 1921. The following table shows the average weight per root pulled during 1922, commencing on May 20. Ample growth was made to build up the crowns for next season:—

Variety	Average production per foot
	lbs.
Hobday Giant No. 1	15½
Hobday Giant No. 2	13
Daw Champion No. 2	13
Raspberry	12½
Daw Champion No. 1	6

FORCING RHUBARB IN CELLAR DURING WINTER

Sets are planted in May in well-manured soil to produce stools for forcing in the basement. In the fall they are lifted and stored where they may freeze. As needed they are removed to the furnace room in the basement where the temperature ranges from 50 to 60 degrees. It takes the rhubarb about three weeks to develop, and pulling will last about three weeks. A succession of rhubarb can thus be obtained throughout the winter and spring months.

SWISS CHARD

Giant Lucullus from Ewing's was sown on May 15, and was ready for use early in August. This crop does very well in alkaline soil.

SPINACH

Three varieties, Victoria, Broad Flanders and New Zealand, gave very good results. The last-named does not go to seed so readily, and makes good growth until cut by frost.

SEAKALE

Thongs were planted on June 1st, and made good forcing crowns by fall.

SEAKALE—WINTER FORCING IN CELLAR

The crowns are lifted in the fall and stored in a shed and allowed to freeze. As needed they are placed in moss in the basement, near the furnace. It takes about five weeks to develop, and cuttings can be taken for about three or four weeks.

WINTER FORCING OF CHICORY

Similar treatment as with seakale is given to chicory, and greens for salads may be enjoyed during the winter.

TOMATOES

Nineteen varieties were sown in the hotbed on April 5, and transplanted into the garden on the 14th June. They are trained to a single stem, staked, and stopped after the second truss of fruit has formed. The rows are 2½ feet apart, and the plants a foot apart in the rows. The following table summarizes the results:—

TOMATOES—TEST OF VARIETIES

Variety	Source	Date of first ripening	No. of fruits to the lb.	Total yield from ten plants
				lbs.
Crimson Canner	0–707	Aug. 18	4	33¼
Red Head	Langdon	" 10	3	33
Bonny Best	Stokes	" 18	4	32¼
Burbank	Bruce	" 3	4	32¼
Alacrity	0–18–15–29	" 1	4	32
Earlibell	0–1705	" 18	4	31¼
Earliana	Langdon	" 7	4	30½
Matchless	Burpee	" 28	3	29¼
John Baer	Carter	" 7	3	28¼
Chalks Jewel	0–710	" 22	5	28
Prosperity	Bolgiano	" 10	5	28
Matchless	Graham	" 22	3	27¾
Burbank	0–17–17	" 1	4	27¼
Holders Dreadnought	Littlejohn	" 18	5	26¼
Bonny Best	Carter	" 10	4	26
Gold Medal	Littlejohn	" 10	4	25
Earliest-of-all	Steele Briggs	" 7	5	24¾
Albino	Bruce	" 22	4	24½
Danish Export	0–1862–73	" 7	6	19

TOMATOES—CULTURAL TEST

Pruning tests with tomatoes were again carried on this year. While the season was considerably longer than usual the fruit did not set nearly as well as last season. The following table summarizes the results obtained. Under the first six months the plants require to be set at least a foot apart in the rows, while No. 7 requires 4 feet each way. The test clearly shows the advantage of pruning and staking, but the results this season are not so marked, as the first frost did not come until late September:—

TOMATOES—TEST OF STAKING AND PRUNING

	Yield per plant in pounds of Ripe Fruit			
	Alacrity	Bonny best	Danish Export	Average
1. Plant trained to single stem and stopped at first truss of fruit	1·55	1·45	1·0	1·33
2. Plant trained to single stem and stopped at second truss of fruit	2·05	1·35	2·15	1·5
3. Plant trained to single stem and stopped at third truss of fruit	2·25	1·9	2·45	1·91
4. Plant stopped in hot frame, 3 side shoots allowed to develop and stopped at first truss of fruit on each	3·0	2·3	2·0	2·4
5. Plant stopped in the open, two side shoots allowed to develop and stopped at first truss of fruit on each	3·25	3·0	2·3	2·83
6. Plant stopped in the open, three side shoots allowed to develop and stopped at first truss of fruit on each	2·8	3·35	2·1	2·75
7. Naturally grown	1·75	1·65	1·7	1·66

GARDEN TURNIPS

Four varieties were sown on May 29, with the following results:—

GARDEN TURNIPS

Variety	Source	Ready for use	Weight per 30-ft. row
			lbs.
Golden Ball	Graham	July 20	72
Early Snowball	Graham	" 18	70
Early Purple Milan	McDonald	" 10	60
Red Top Strap Leaf	McDonald	" 12	58

FRUITS

It is nearly ten years since the first fruit trees were set out at the Station. Results obtained have demonstrated quite conclusively that the district is not particularly adapted to the growing of apples or pears on a commercial scale. The hardier varieties should, however, be grown for home consumption. The following sorts have proved the most satisfactory: Wealthy, Yellow Transparent, Rupert, Dudley, Okabena, Charlamoff and Pinto. Of the crab-apples, Hyslop and Transcendent are to be recommended.

SMALL FRUITS

The district has demonstrated in the past that it can produce small fruits in quantity and quality. The season is usually two or three weeks behind the early districts of the province. This is held by some to be a disadvantage, but in this connection it is interesting to note that the top price for red and black currents in Calgary this season was received by a local grower late in August.

RED CURRANTS

Twelve varieties have been tried out for a number of seasons, the present plantation being set out in 1921. The following varieties have been the most prolific and hardy: Fay Prolific, Perfection, Wilder, Rankin.

BLACK CURRANTS

Thirteen varieties have been tested since 1913. In 1921 the present plantation was set out. The varieties recommended in order of merit are: Topsy, Collins Prolific, Naples, Climax, Black Eagle, Victoria.

GOOSEBERRIES

Several varieties of gooseberries have been tried out. The variety best suited to local conditions is the Oregon Champion. This season, very little trouble was experienced with the downy mildew.

RASPBERRIES

Several varieties have been experimented with in the past. The Cuthbert has winter-killed badly some seasons, and is not to be recommended. The King and Herbert are hardier, and will do well for the district. St. Regis, an everbearing variety, winter-killed, but made a strong summer growth and gave a heavy crop in September.

STRAWBERRIES

Numerous varieties have been tried out since 1913. The winter of 1921 was hard on the plants, and severe losses occurred. A new plantation is being set out this coming spring. The following varieties have proved themselves well adapted for the district: Senator Dunlap, Parson Beauty, Magoon, Superb (everbearing).

ORNAMENTAL PLANTS

VARIETIES OF TREES SUITABLE FOR PLANTING

The district is largely coniferous, but the following deciduous trees are to be recommended: Willow, poplar, ash, Manitoba maple.

VARIETY TEST OF HEDGES

The spruce, juniper and Douglas fir hedges are good, but grow slowly. The deciduous hedges which mature more quickly are laurel-leaved willow, common lilac, dogwood and caragana.

VARIETY TEST OF FLOWERING SHRUBS

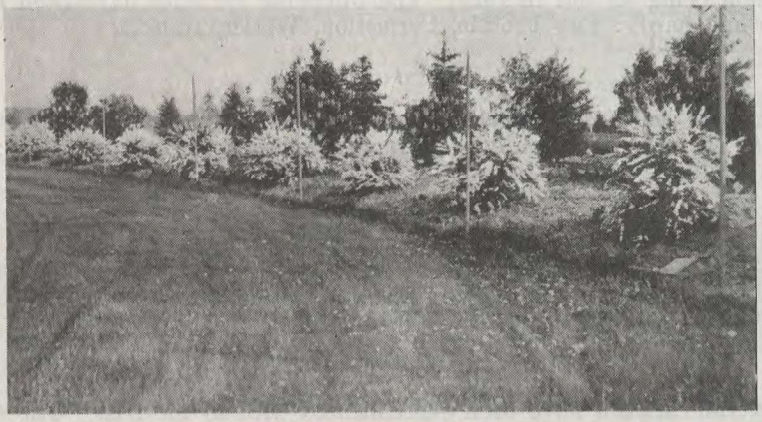
Flowering shrubs require very little care, and improve the appearance of any place. Lilacs, spiraeas, syringas and roses give a great profusion of bloom throughout the season.

VARIETY AND STRAIN TEST OF PERENNIALS

A large number of varieties and strains of perennials were tested last season. The following list is admirably adapted for eastern British Columbia conditions: Perennial Aster, Aquilegia, Campanula, Delphinium, Iris, Gypsophila, Iceland Poppy, Paeony, Phlox, Pink, Sweet William, Rudbeckia, Shasta Daisy.

VARIETY AND STRAIN TEST OF ANNUALS

A great many varieties and strains of annuals were tried out this season. Most of them were started in hotbeds and transplanted during early June.



Spiraea Arguta, 1922.

There was a profusion of bloom throughout the entire season. The following are some of the most satisfactory varieties: Aster, Antirrhinum, Clarkia, Cosmea, Datura, Lobelia, Linaria, Marigold, Nasturtium, Petunia, Phlox, Poppy, Portulaca, Salpiglossis, Stock, Tagetes, Zinnia, Pansy, Sweet Pea.

TEST OF BULBS FROM HOLLAND

A number of varieties of single tulips, Darwins, narcissus and hyacinths were tried again this past season. The tulips and narcissi did very well, but the climate is too severe for hyacinths.

CEREALS

The outstanding characteristic of the growing season of 1922 was the extreme drought that prevailed. As noted elsewhere, the precipitation for the six growing months was 4·56 inches, as compared with the average of 7·48 inches for the past nine years. When rain did come it was late in August, and was of very little use to the grain crops. Variety tests were continued with wheat, oats, barley and peas. As no manure or fertilizer is added to the soil, a five years' rotation is adopted, alternating legumes with cereals, and ploughing a crop of clover and peas under, so as to add humus and plant food to the soil. The rotation is as follows:—

First year.—Peas ploughed under for humus.
Second year.—Cereals seeded down with clover.
Third year.—Clover (second crop ploughed under).
Fourth year.—Peas for grain.
Fifth year.—Cereals.

SPRING WHEAT

Marquis, Huron and Ruby were sown this spring and yielded in the order named. Marquis and Ruby are milling wheats, while Huron is better adapted for feeding purposes. The Ruby wheat has the distinct advantage of being from two to three weeks earlier than the Marquis. Districts that are liable to have early frosts would be well advised to sow Ruby wheat. The following table summarizes the results for the past season: The wheat was on ground that grew peas last year. The growing crop was irrigated twice. The plots were sown on the 8th of May.

VARIETY TESTS OF WHEAT

Variety	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
			inch		lbs.
Marquis Ottawa 15	Sept. 5	120	45	10	3,540
Huron Ottawa 3	" 5	120	42	10	3,080
Ruby Ottawa 623	Aug. 22	106	36	9	2,700

OATS

This season a slight change was made in the varieties tested. Alaska has replaced Daubeney; and Iowa 103, from the U.B.C. was tested. The oats followed peas ploughed under, and were irrigated twice. Liberty oat is a hulless variety, and to compare it with other oats it should be remembered that the average oat is about 30 per cent hull. It will never replace the hulled oat, but it has a distinct value in the feeding of poultry and young stock. The Alaska oat is very early—about two weeks earlier than the Banner Ottawa 49 oat.

The oat plots were sown on May 9 with the exception of the Iowa U.B.C. which was sown on May 27. The following table gives the results with oats during this past season:—

VARIETY TESTS OF OATS

Variety	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
			inch		lbs.
Banner Ottawa 49	Aug. 26	109	40	10	3,060
Iowa, U.B.C.	Sept. 5	101	32	10	2,560
Alaska	Aug. 11	94	36	9	2,300
Liberty Ottawa 480	" 26	109	40	10	1,520

BARLEY

Success, a beardless barley; Himalayan Ottawa 59, a black hulless barley; Gold; and Chinese Ottawa 60, were tried out this past season. Chinese Ottawa 60 is replacing Manchurian Ottawa 50 as a selection from the latter variety. The barleys which followed peas, ploughed under for humus, were irrigated

twice. The barley plots were seeded May 9. The following table shows the results for the past season:—

VARIETY TESTS OF BARLEY

Vareity	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
			inch		lbs.
Chinese Ottawa 60	Aug. 13	96	46	10	2,480
Himalayan Ottawa 59	" 13	96	30	8	2,200
Success	" 8	91	39	10	2,000
Gold	" 14	97	32	9	1,600

FIELD PEAS

Field peas are one of the outstanding crops here. Farmers should give more attention to this crop, as it will give good returns as a grain, as a green feed, or as a soiling crop either alone or with oats. It makes a good silage crop alone or with oats; or in the oats, peas and vetch mixture. Lastly, it is one of the best legume crops for ploughing under to add humus to the soil. The yields this year are not as high as during the past three years, due, no doubt, to the season, and to early attacks of cutworms. The peas followed cereals and were irrigated twice. The pea plots were seeded May 8. The following table shows the results of the past season:—

VARIETY TESTS OF PEAS

Variety	Date of ripening	Number of days maturing	Average length of plant	Yield of grain per acre
			inch	lbs.
Mackay Ottawa 25	Sept. 13	128	57	3,760
Solo	" 9	124	66	3,640
Chancellor Ottawa 26	" 9	124	45	3,500
Prussian Blue	" 9	124	57	3,280
Arthur Ottawa 18	" 9	124	45	2,900

SUMMARY OF VARIETY TESTS WITH WHEAT, OATS, BARLEY AND PEAS

Variety	1917	1918	1919	1920	1921	1922	Average
	bush. lbs.	bush. lbs.	bush. lbs.	bush. lbs.	bush. lbs.	bush. lbs.	bush. lbs.
Wheat—							
Huron Ottawa 3	27 40	12 30	39 20	44 00	41 40	51 20	36 00
Marquis Ottawa 15	24 20	24 40	31 40	34 00	46 20	59 00	36 50
Ruby Ottawa 623	.....	.....	29 00	30 40	33 30	45 00	34 32
Oats—							
Banner Ottawa 49	43 18	35 00	101 06	87 02	80 02	90 00	72 27
Daubeney Ottawa 47	34 24	24 24	67 02	70 20	58 28	.....	51 06
Liberty Ottawa 480	.....	28 28	22 32	35 10	35 10	44 24	33 14
Alaska	.....	.....	.....	.....	.....	67 22	67 22
Iowa U.B.C	.....	.....	.....	.....	.....	75 10	75 10
Barley—							
Gold	45 20	30 20	68 16	50 00	70 20	33 16	49 31
Manchurian Ottawa 50	22 24	20 20	46 32	54 08	52 24	.....	39 12
Success	15 40	14 08	45 40	41 32	50 00	41 32	35 23
Himalayan Ottawa 59	.....	.....	.....	.....	53 46	45 40	49 43
Chinese Ottawa 60	.....	.....	.....	.....	.....	51 32	51 32
Peas—							
Prussian Blue	55 40	23 20	89 20	53 20	70 50	54 40	57 51
Solo	47 40	30 10	70 00	52 00	66 50	60 40	54 34
Arthur Ottawa 18	44 40	30 00	67 20	52 00	67 40	48 20	51 40
Chancellor Ottawa 26	45 00	23 40	67 20	63 20	54 20	58 20	52 00
Mackay Ottawa 25	.....	.....	.....	.....	67 30	62 40	65 05

FORAGE CROPS

Irrigation is absolutely essential in the growing of forage crops in this district. The season was exceptionally dry and it was necessary to irrigate to germinate the root crops. This is never satisfactory, and results in a poor germination and stand. Alfalfa as a permanent crop is steadily increasing in favour throughout the district. It is not so liable to winter kill as the clover, and, when established, will outyield the latter. Experiments with grasses show the advisability of a mixture of grasses and clover, or grasses and alfalfa, to get the best results. Variety tests with corn and sunflowers are being continued, in order to ascertain the best fodder for silage. This season, tests with oats and peas, oats and vetch, and oats, peas and vetch were commenced.

ALFALFA

Alfalfa is the principal hay crop on the Station at the present time. This is seeded at the rate of 12 to 15 pounds per acre, preferably without a nurse crop. It has not been found necessary to inoculate seed on the Station, and one season will see the alfalfa firmly established. Two cuttings of hay are taken, and a third is possible, but is difficult to cure. It should be used for pasturing, or ensiled. Yields running from 3 to 5 tons per acre are harvested. This season, the first cutting on a two-year-old seeding gave three tons to the acre.

RED CLOVER

Red clover has winter-killed badly the past three years, possibly due to going into the winter with the soil too dry. Alsike has not suffered nearly so much. Red clover is practically indispensable in short rotations. It is used alone in rotation J, and in rotation B in a mixture of red clover 10 pounds, western rye 4 pounds, orchard grass 4 pounds, and meadow fescue 4 pounds.

HUBAM—ANNUAL SWEET CLOVER

This has been grown two years and possesses so many desirable features that it should find a place on many farms. Being able to make a rank growth speaks well for its hay and soiling possibilities. The orchardist may find it a convenient cover crop, and, according to experimentalists in the States, it is the best of clovers as a honey plant.

TESTING STRAINS OF WESTERN RYE GRASS

The discovery by Dr. M. O. Malte that western rye grass was normally self-fertilized permits the development of a vast number of distinct varieties, from which improved strains might be selected. A large number of these were developed by him and sent to the various Stations, five strains being sent to this Station to be tried out against commercial stock. These were sown on June 25, 1921, came through the winter, and the first crop of hay was taken this year. The following table illustrates quite clearly the superiority of the selections over the commercial stock, and even shows a wide divergence in the selections themselves. The yields shown are for dry hay:—

TEST OF STRAW OF WESTERN RYE GRASS

Selection	Source	Date cut	Yield per acre	
			Tons	lbs.
Western Rye No. 11	Ottawa	July 14	4	1,744
" No. 4	"	" 14	4	1,396
" No. 6	"	" 14	4	1,048
" No. 5	"	" 14	4	874
" No. 10	"	" 14	4	526
" (Commercial)	"	" 14	4	178

TESTING OF VARIOUS GRASSES

Various commercial grasses were sown in May, 1921, and the first hay crop taken this past season. Tall Oat and orchard grass killed out completely, while practically no winter killing was noticeable in the other grasses. Brome grass gave very good results, but it should be borne in mind that this grass has a running root stock, similar to couch, and is difficult to eradicate. The Kentucky blue, Canada blue and red top, while very seldom sown alone, very often are used in permanent hay and pasture lands. The following table summarizes the results upon a dry hay basis:

TEST OF VARIOUS GRASSES

Grass	Source	Yield per acre	
		Tons	lbs.
Brome grass	Commercial	4	1,048
Western rye	"	4	178
Meadow fescue	"	3	612
Timothy	"	2	1,568
Tall oat	" (Winter killed)		
Orchard grass	" "		
Kentucky blue	"	1	1,480
Canada blue	"	1	1,132
Red top	"	1	436

YIELDS OF BARLEY HAY

Success barley was sown on May 9 and cut on July 14. The yield was at the rate of 3 tons, 560 pounds green, or 1 ton, 800 pounds dry hay. A sample of this hay has previously been analyzed, and the Dominion Chemist states, "I should consider this an excellent forage; palatable and nutritious, and distinctly more valuable for dairy stock than many of the hays from grasses."

CUTTING BARLEY FOR HAY AND THEN PRODUCING GRAIN CROP

After cutting the barley hay referred to in the previous experiment, the plot is irrigated and the barley forced into a second growth and matured as a grain crop. It is essential not to cut the hay crop too close to the crown, as this will naturally affect the second growth. The following were the results obtained, and show the yield of grain from a check plot of Success barley sown for grain alone:—

Plot No. 1 (check) produced 2,000 pounds of grain per acre.
Plot No. 2 produced 1 ton 800 pounds of hay and 900 pounds of grain.

INDIAN CORN

Twelve varieties of corn were tested out this past season. They were sown on May 30, and harvested on September 14. The crop was irrigated and cultivated as required. The following table summarizes the results:—

INDIAN CORN—TEST OF VARIETIES

Variety	Height	Cobs	Yield per 100-foot row	Yield per acre	
	inch		lbs.	Tons	lbs.
Compton Early	78	Few	360	31	640
Bailey	60	None	290	25	1,460
North Dakota	72	Few	287	25	938
Quebec No. 28	65	Fair	284	25	416
Imp. Leaming	85	None	275	23	1,850
Twitchells Pride	72	Well cobbed	273	23	1,502
Longfellow	66	Few	273	23	1,502
Golden Glow	72	None	256	22	544
Wisconsin No. 7	84	None	246	21	804
White Cap Yellow Dent	96	Few	243	21	282
Leaming	90	None	241	20	1,934
Golden Nugget	72	Few	236	20	64

SUNFLOWERS

Six varieties of sunflowers were sown on May 10 and harvested on September 12. The following table summarizes the results:—

SUNFLOWERS—TEST OF VARIETIES

Variety	Height	Heads	Yield per 100 foot row	Yield per acre	
	inch		lbs.	Tons	lbs.
Mammoth Russian (McDonald)	120	Few	316	27	984
" (Dakota Seed Co.)	120	Few	288	25	112
Early Ottawa No. 76	96	50 per cent	254	22	196
Giant Sunflower No. 1288	120	Few	236	20	1,064
Manchurian	72	60 per cent	186	16	364
Mixed Mennonite	72	70 per cenr	92	8	908

OATS, PEAS AND VETCH

A mixture of oats, peas and vetch, in the proportion of 45, 30 and 60 pounds respectively to the acre, was sown on May 29. This was harvested on August 26. The following table shows the results and compares it with a mixture of oats and peas:—

Mixture	Yield per acre	
	Tons	lbs.
Oats—Peas—vetch	13	660
Oats—peas	12	800

FIELD ROOTS

MANGELS

Eleven varieties or strains of mangels were tried out this past season. They were sown on May 31, and harvested October 10-12. Germination was very poor, and this affected the stand. The following table gives the results of the past season:—

MANGELS—TEST OF VARIETIES

Variety	Source	Yield per 200 ft.	Yield per acre		Per cent stand	Yield 100 p.c. stand	
		lbs.	Tons	lbs.		Tons	lbs.
Yellow Ovid V	U.B.C.	584	25	808	90	27	1,888
Uellow Ovid IV	U.B.C.	362	16	1,094	60	27	1,157
Yellow Intermediate	U.B.C.	528	23	936	88	26	1,337
Giant Yellow Gloge	McKenzie	460	20	20	80	25	25
Eclipse	"	455	19	1,585	80	24	1,948
Manitoba Giant	"	468	19	716	81	23	1,797
Peerless	"	412	17	1,844	80	22	805
Long Red	"	402	17	974	80	21	1,717
Yellow Intermediate	Ottawa	280	12	367	60	20	612
Yellow Intermediate	McKenzie	355	15	885	81	19	129
Golden Tankard	"	323	14	101	80	17	1,120

FIELD TURNIPS

Five varieties of field turnips were sown on May 31, and harvested on October 12. The following table summarizes the results. Germination was good and the stand was perfect:—

TURNIPS—TEST OF VARIETIES

Variety	Source	Yield per 200 feet	Yield per acre	
		lbs.	Tons	lbs.
Monarch	Ottawa	632	27	984
Monarch	Nappan	630	27	810
Champion	Sutton	612	26	1,244
Good Luck	St. Annes	590	25	1,330
Bangholm	Charlottetown	522	22	1,414

FIELD CARROTS

One variety—Danish Champion (Ottawa)—was grown this past season. It was sown on May 31, and harvested on October 12, yielding 10 tons 10 pounds to the acre at 100 per cent stand.

SUGAR BEETS

Six strains were tested during the past season. They were sown on May 31, and lifted on October 11. The following table shows the yield at 100 per cent stand:—

SUGAR BEETS—TEST OF VARIETIES

Variety	Yield pe acre 100 p.c. stand	
	Tons	lbs.
Denmark	12	1,665
B. C. Grown	12	882
Sidney	12	54
Vilmorin Improved	12	
Chatham	11	167
Waterloo	10	610

AVERAGE PERCENTAGE OF SUGAR IN JUICE OF SUGAR BEETS GROWN AT THE STATION

The following table briefly summarizes the percentage of sugar in the juice of sugar beets grown at Invermere since 1914. Unfortunately the data for 1917 are unobtainable:—

Year	1914	1915	1916	1918	1919	1920	1921	Average 7 years
Percentage of Sugar in beet	19·04	18·90	21·54	15·14	14·72	19·26	15·78	17·77

CHEMISTRY

FERTILIZER EXPERIMENT

To ascertain the relative efficacy of nitrogen in nitrate of soda applied at different periods, namely, (1) all at planting time; (2) part at planting time and part when the crop shows above ground; (3) part at planting time, part at the appearance of the crop, and part fifteen days later. The plan also permits of a comparison of the different total amounts of nitrate of soda, and the omission of potash and phosphoric acid.

The following table shows the quantities and times of application of the various fertilizers and the yields in pounds of potatoes from one-fortieth of an acre plots. The potatoes were planted on May 27th and lifted on September 29th:—

NITRATE OF SODA APPLIED TO POTATOES

No. of plot	Nitrate of soda (15½N)			Super-phosphate	Muriate of potash	Total yield per plot
	At time of planting	On appearance of crop	At 15 days later	lbs. per acre	lbs. per acre	lbs.
	Pounds per acre					
1	330	–	–	300	150	784
2	220	110	–	300	150	768
3	110	110	110	300	150	746
4	220	–	–	300	150	814
5	110	–	–	300	150	732
6	(Check plot)					640
7	(No nitrogen)			300	150	748
8	220			300	75	770
9	220			300	(No potash)	688
*10	220			(Nil)	(Nil)	759

*Owing to the fact that Plot 10 was located in close proximity to an open water ditch, the yields from this plot can not be considered strictly comparable with the yields from the other plots of the experiment.

POULTRY

Experimental work in the past has been with White Wyandottes and Barred Rocks. On account of the large number of individuals working with Leghorns throughout the district, a beginning was made with the White Leghorn this season. Trap-nesting and pedigree breeding necessarily involve a great deal of additional housing work and care, and the Barred Rocks will in all probability be discontinued this season.

The poultry work this past season was interfered with by a fire that destroyed the large laying house on January 25, 1922. Three pens of the best pullets were lost, and the experimental work on cost of production and range vs. confinement were brought to a sudden end. Instead of purchasing new stock the flock is being built up this season from the old birds.

To give some idea of the loss sustained in the destruction of these birds, the performance of a pen of 25 entered in the R. O. P. test from November 1 up to the time of the fire is shown. The production obtained from these birds is due primarily to maturity, they being early-hatched (late March or early April); and, secondly, to the use of lights both in the morning and evening, thus lengthening the period of feeding and activity of the birds.

RECORD OF 25 PULLETS—NOVEMBER 1-JANUARY 22

	November	December	To Jan. 25
Number of Pullets in pen	25	25	25
Total number of eggs laid	264	566	426
Average eggs per bird	10·6	22·6	17
Average price per doz. eggs	55c	70c	65c
Total value of eggs	$12.10	$33.01	$23.07
Total cost of feed	$ 2.90	$ 2.98	$ 2.67
Profit over feed	$ 9.20	$30.13	$20.38
Net profit per bird	37	1.20	81
Total net profit per bird	–	–	$ 2.38

PEDIGREE WORK

Pedigree work was continued during the past season. Owing to the fire, we have no results from pullets this year, and have had to breed entirely from older birds. A system of marking each hen's eggs, hatching in separate compartments, wing and leg banding the chicks, preserves the identity of each bird, and pedigrees are established in time. "Lady Dot," E.3, which made such an outstanding record last year of 325 eggs, continued the good work and produced 224 eggs during her second year. The following table illustrates her performance to date:—

"LADY DOT'S" EGG RECORD FOR FIRST AND SECOND YEAR.

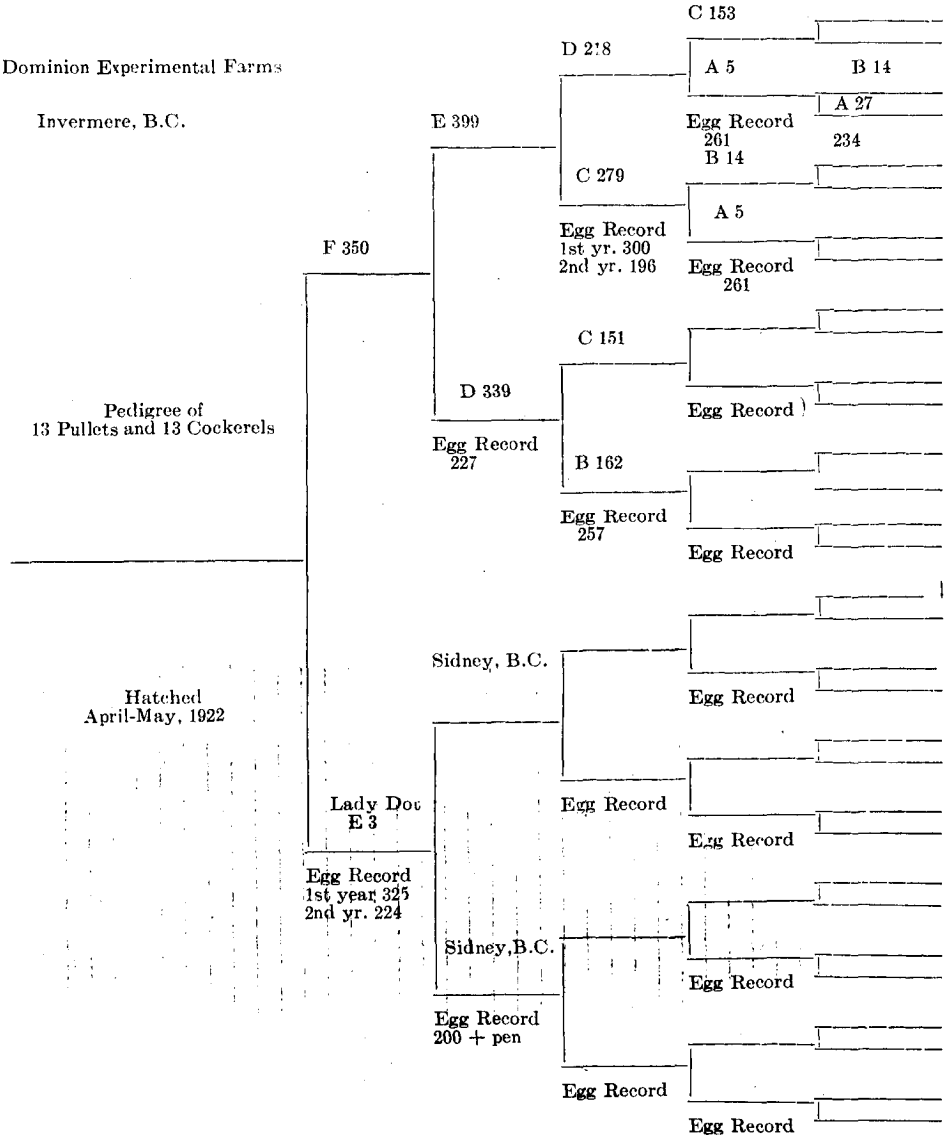
1920–1921

Date	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	10	21	22	23	24	25	26	27	28	29	30	31	Total
November	1	1	1	1	1	1	1	1	1	.	1	1	1	1	1	1	1	1	1	1	.	1	1	1	1	1	1	1	1	1	.	27
December	1	1	1	1	1	1	1	1	1	1	1	1	1	.	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	.	.	27
January	1	.	.	.	1	.	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	27
February	1	1	1	1	1	1	1	1	1	1	1	1	1	.	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	.	.	27
March	1	1	1	1	1	1	1	1	1	.	1	1	1	1	1	1	.	1	1	1	1	1	1	1	1	1	1	1	1	1	1	29
April	.	1	1	.	1	1	.	1	1	1	1	1	.	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	.	1	25
May	1	1	1	.	1	1	1	1	1	1	1	1	.	1	.	1	.	1	1	1	1	1	1	1	1	1	1	1	1	1	1	27
June	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	.	1	1	1	1	1	1	1	1	1	29
July	1	1	1	1	.	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	.	29
August	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	31
September	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	.	30
October	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	M	.	.	.	.	.	.	.	.	.	.	.	.	.	17
Total	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	325

1921–1922

Date	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	21	23	24	25	26	27	28	29	30	31	Total
November	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
December	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
January	.	.	.	.	.	.	.	.	.	.	1	.	1	.	1	1	.	1	.	1	1	.	1	.	1	.	1	1	.	1	.	1	13
February	.	1	.	1	.	1	.	1	1	.	1	1	.	1	.	1	1	.	1	1	.	1	1	.	1	1	1	.	.	.	.	17
March	1	1	.	1	1	.	1	1	1	.	1	1	1	1	.	1	1	1	1	.	.	1	1	1	1	.	1	1	.	.	1	25
April	1	1	1	.	1	.	.	.	.	.	.	.	1	.	.	1	1	.	1	1	.	1	1	1	1	1	1	.	1	.	.	17
May	1	1	1	1	.	1	1	1	1	1	.	1	1	1	1	1	.	1	1	1	.	1	.	1	1	1	1	1	1	1	1	26
June	1	.	1	1	1	1	1	1	1	1	1	1	1	.	.	1	1	1	1	1	1	1	.	1	1	1	.	1	1	1	.	25
July	1	1	.	1	1	1	1	1	.	1	1	1	1	1	.	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	.	26
August	.	1	1	.	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	.	1	1	1	1	1	1	1	.	1	1	27
September	.	1	1	1	1	1	1	1	1	1	1	.	1	1	1	.	1	1	1	1	1	1	1	1	1	1	1	1	1	1	.	27
October	1	1	.	1	1	1	1	1	.	1	1	1	1	.	1	1	.	1	.	1	1	.	1	.	1	.	1	.	.	1	1	21
Total	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	224

Lady Dot, it will be remembered was hatched from eggs obtained from the Sidney, B.C., Experimental Station and during her second year she was mated with a good male obtained from the same Station, and the result of this mating has been that 13 pullets and 13 cockerels have been raised this past season. The following chart shows their extended pedigree in detail:—



The many requests for eggs and stock from this hen have necessarily been refused. Cockerels, however, are being distributed to other Experimental Farms and Stations, and it is hoped in this way to serve best the interests of the poultry fraternity by perpetuating the good qualities of this highly productive hen.

HATCHING

The results this year again confirm previous experience. Early hatching is absolutely essential if the birds are to commence laying by late October or early November. In March the eggs were 88 per cent fertile, but only 38 per cent of these hatched. The long period of confinement during the winter months has a great influence on the vitality of the germ. In June there were 86 per cent of eggs fertile, and over 83 per cent of these hatched. It took 3·2 hens' eggs for a chick as compared with 3·9 pullet eggs, showing a distinct advantage for hatching from older birds. These results, while poor compared with some other districts, can be taken as fairly typical of local conditions.

NATURAL VS. ARTIFICIAL INCUBATION

Larger hatches and stronger chicks can be hatched by hens than by artificial incubation. The big drawback is the small number of eggs that can be set, which eliminates the hen, except as a means of comparison, or in case of occasional choice eggs. On poultry plants where breeding for egg production is the main feature, broodiness disappears to a large extent. Egg production and broodiness do not go together. "Lady Dot," E.3, is now into her third year and has never been broody.

TESTING VARIOUS 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 was a 600-egg machine, and consumed 1½ quarts of kerosene daily. The Prairie State, a 200-egg machine, and the Cyphers, of 150-egg capacity, each consumed a quart of kerosene daily. The Buckeye, the larger machine, gave better hatches and at a lower unit cost.

BROODING

Coal and oil-burning brooders were experimented with, but the coal brooder was discarded early in the season, as, owing to a coal strike, it was impossible to obtain fuel. The Blue Flame oil brooder, 500-chick size, behaved very satisfactorily. One brooder was in operation from March 12 until June 6, averaging one gallon per day from March 12 to April 30, and seven-eighths of a gallon from April 30 to June 6.

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 divided into two and three pens respectively, each pen holding 50 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 absorbs 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

Twenty turkeys were raised during the past season. While no disease was present, the losses this year were heavy, because on one occasion stock overturned the coops that the young pullets were in, killing twenty. Hawks also accounted for quite a few. Numerous males were shipped to other Experimental Stations. A flock of eleven old and ten young hens, and five gobblers are being carried over.

BEES

The past year has, in many ways, been unfavourable for the apiarist. The winter of 1921-22 was long and cold and many beekeepers lost heavily. Four within a two-mile radius of the Station lost their entire stock. Six out of eleven colonies were lost at the Station, but the remaining five gave a very good account of themselves during the season. As most of the nectar comes from non-cultivated plants, the amount of rainfall necessarily influences the native flora to a great extent. The season was very dry, there being only 4·56 inches of precipitation from April 1 to the end of September, as against 7·48 inches, the average of the past nine years. December was very cold, 6·4 degrees below the average mean temperature. During the second week of the month the temperature dropped to less than 30 below zero every night and reached the maximum of 38 below. This cold spell will undoubtedly affect the bees adversely, and losses are to be expected next spring throughout the Kootenay.

RETURNS FROM APIARY

From five colonies, spring count, 465 pounds of honey were taken, an average per colony of 93 pounds, the greatest yield from one colony being 146 pounds. The honey was put up in five-pound containers, selling at 25 cents per pound, netting $116.25, or an average per colony of $23.25. Sugar to the weight of 160 pounds was fed in September and October, valued at $16.80. The apiary goes into winter with two colonies less than a year ago, and, valued at $7 per colony, this is a loss of $14. Thus the net returns from the apiary are:—$116.25 proceeds from honey, less $16.80 cost of sugar fed, and $14 loss of two colonies, giving $85.45, or $17.09 per colony profit. The following table summarizes the results for the past six years:—

APIARY RETURNS, 1917-1922

Year	Number of colonies, spring count	Total honey produced	Weight of honey per hive	Greatest yield from one colony	Selling price per pound	Total value of honey	Total value compared with previous fall		Value of sugar fed	Net production value	
							Increase	Decrease		per apiary	per colony
		lbs.	lbs.	lbs.	cts.	$ cts.	$	$	$ cts.	$ cts.	$ cts.
1917	12	908	81·25	120·0	17	192 00	10	.....	38 25	163 57	13 63
1918	10	1,189	118·9	192·0	28	332 92	.....	20	22 00	290 92	29 09
1919	7	885	126·4	234·0	33	292 05	7	.....	23 40	276 65	39 38
1920	9	810	90·0	199·0	47	380 70	.....	7	46 00	326 70	36 41
1921	8	322	40·3	79·5	35	112 70	7	.....	26 50	93 20	11 65
1922	5	465	93·0	146·0	25	116 25	.....	14	16 80	85 45	17 09

WINTER PROTECTION FOR BEES

Eleven colonies of bees were wintered in Kootenay hive cases. Five died during the winter, and one was very weak and was united in the spring with another colony. This is the first year that such heavy losses have occurred with the Kootenay hive case, but the winter was the coldest experienced in

many years. In the past, the following methods of wintering have been tried out, and the Kootenay hive cases giving the best results, had been adopted as the most satisfactory method of wintering: in a cellar; in a trench; in a double packing case; and in an Ontario wintering case.

FALL FEEDING

The Miller feeder has been used exclusively and good results obtained. Sugar to the weight of 160 pounds was fed this past season, or an average of 17·7 pounds per colony. The syrup is made in the proportion of 2 parts of sugar to one of water. The following table summarizes the feeding of the past six years:

AMOUNT AND COST OF SUGAR FED—1917-1922

Year	No. of hives, fall count	Weight of sugar fed	Average Weight of sugar per colony	Total value of sugar	Value of sugar per colony
		lbs.	lbs.	lbs.	$ cts.
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

SWARM CONTROL

The method adopted at the Station is to go through the brood chamber every week or ten days, and, if queen cells are present, to remove them, at the same time giving the bees more room to work in. Another year it is hoped to simplify the work by using a shallow super over the brood chamber, and giving the queen the run of this. If queen cells are formed they will be nearly always found suspended from the bottom of these shallow frames and can be readily detected by raising one end of the super and glancing along the lower side of the frames. This will do away to a large extent with individual examination of frames in the lower brood chamber.

EXTENSION AND PUBLICITY

EXHIBITIONS

The Station exhibit, or a display of produce from the farm, was shown at six fall fairs, namely, Athalmer, Trail, Boswell, Nelson, Slocan City, and Kaslo. In this way the Station and the educational features in the exhibit were brought to the notice of between seven and eight thousand people.

A display of varieties of potatoes was made at the Provincial Potato Show at Grand Forks; and material was sent to the Experimental Farms exhibit at Vancouver, New Westminster and Victoria.

A greatly increased number of reports, bulletins and circulars was distributed this season and correspondence is increasing.

MEETINGS, ETC.

The Superintendent attended the following meetings during the year:—District Meeting, Farmers' Institute, Cranbrook; British Columbia Dairymen's Convention, Chilliwack; British Columbia Agronomy Conference, Agassiz;

Annual Meeting, C.S.T.A., Vancouver; Annual Meeting, Dominion C.S.T.A., McDonald College, St. Annes, Que.; Western Canadian Irrigation Convention, Maple Creek, Sask., and Brooks, Alta.; Provincial Potato Show and meetings, Grand Forks, B.C. Many meetings of the local Agricultural Association and Farmers' Institute, and the Potato Growers' Association.

The Station is attracting an increasing number of visitors from year to year. On account of the bi-weekly train service it is practically impossible to arrange excursions to the Station.

FARM IMPROVEMENTS

During the year two new laying houses were built measuring 16 feet by 32 feet and 16 feet by 48 feet respectively. One of these replaced the building destroyed by fire. A building 16 feet by 24 feet, divided into two boxstalls, was erected for horses and cattle. The barns, implement shed, ice house and two poultry buildings were painted. Minor repairs were made to various buildings throughout the year.

Many of the original fence posts have rotted off, and considerable fencing is under way. It is interesting to note that the original spruce and fir posts have lasted ten years, which bears out very well the figures given in statistics regarding the life of these.