DOMINION OF CANADA
DEPARTMENT OF AGRICULTURE
DOMINION EXPERIMENTAL FARMS

EXPERIMENTAL STATION

SIDNEY, B.C.

REPORT OF THE SUPERINTENDENT

E. M. STRAIGHT, B.S.A.

FOR THE YEAR 1923

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OTTAWA
F. A. ACLAND
PRINTER TO THE KING'S MOST EXCELLENT MAJESTY
1924

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EXPERIMENTAL STATION FOR VANCOUVER ISLAND, SIDNEY, B. C.

REPORT OF THE SUPERINTENDENT E. M. STRAIGHT, B.S.A.

THE SEASON

The winter of 1922-23 like 1921-22 was cold and unusually disagreeable for Vancouver island. Snow, though seen in some quantity every year, was present in such quantity as to hold up all traffic for a few days. Many of our tender plants were greatly frost injured. The spring was fine, however, and the sodden soil rapidly dried and warmed up. Conditions for growth were good, and the crops responded. Though the spring was favourable, our former observations were confirmed concerning the fall seeding of many crops.

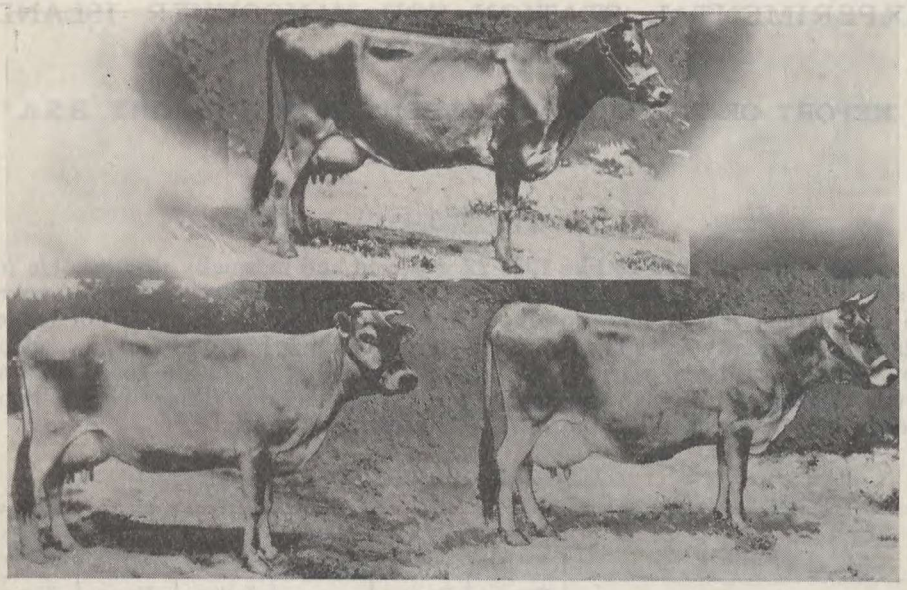
METEOROLOGICAL RECORDS

Month	Highest temp.	Lowest temp.	Mean temp.	Precipitation	Sunshine	Possible Sunshine
	Degrees	Degrees		Inches	Hours	Hours
January	47·0	20·0	37·5	0·92	55	273
February	49·0	11·0	35·2	3·62	97	286
March	60·5	29·0	41·5	2·09	173	370
April	68·0	36·0	48·6	1·68	162	411
May	71·5	36·0	51·8	1·29	188	473
June	85·0	44·0	59·7	0·51	265	482
July	83·5	51·0	63·7	0·92	328	486
August	86·0	49·0	63·9	0·65	315	444
September	80·0	38·0	57·6	1·62	248	377
October	76·0	34·0	51·1	1·95	158	335
November	54·5	32·0	44·2	2·58	88	276
December	48·0	19·0	39·2	6·88	52	259
Totals	.....	.....	.....	24·71	2129	4472

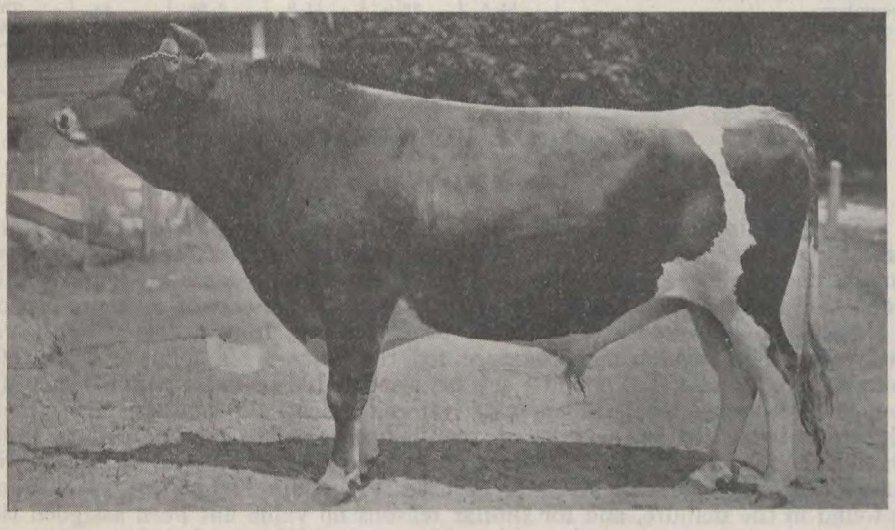
ANIMAL HUSBANDRY

MILK PRODUCTION

The breeding herd of Jerseys at this Farm consists of five mature cows, three three-year-olds in milk, two two-year-olds not in milk; one yearling, two females under one year, and several calves. Individual records are kept of milk production and feed consumed. From these records, the cost of milk production is obtained, together with the possible profit realized from a Jersey herd over feed cost. The regular meal mixture fed the cows is as follows: bran, 500 pounds; ground oats, 400 pounds; soy bean meal, 100 pounds; gluten meal, 100 pounds; cottonseed meal, 100 pounds; oil cake meal, 100 pounds. This meal mixture is being fed at the rate of one pound meal to four pounds of milk. Though the feed cost has been high, a profit has been obtained in all cases. No charge has been made for straw to be used for bedding, since this straw must be found in the manure, and for similar reasons no value has been assigned the manure, even though it may be sold at $5 per ton. The one is left to offset the other. A value has been given the skim-milk of 20 cents per hundred, a very low wholesale price, but the same value as given it when charged to the Poultry



Three of the Herd at the Sidney Station. Top: Fairburn Rioters Florence, 14,133 pounds milk; 613 pounds fat. Left. Lakeview Royal Blossom, 14,967 pounds milk, 728 pourds fat. Right: Plashe's Model Jessie, 16,018 pounds milk, 794 pounds fat.



The Herd Bull. Waikiki's Aviator 18201.

Division. The value of the calf at birth is another item of profit, yet its value is not easily arrived at. The offspring of a high-producing cow, if a heifer, may be valued at $100 or more. Very often the owner will not sell at any price. Attention is called to the fact that in the calf is a credit item that has not been considered in the figures given, yet it is one of distinct worth and one upon which the future of the dairy industry depends.

MILK PRODUCTION AND VALUE

Name of Cow	Age, Years	Date of dropping Calf	Number of days Milking	Total pounds of Milk	Average per cent Fat	Total pounds of Fat	Value of Fat	Value skim Milk	Total value of of Product
				lbs.	%	lbs.	$	$	$
Fairburn Rioter's Florence	6	Sept. 16 1922	365	14,133	4·34	613	312 14	23·72	335 86
Lakeview Royal Blossom	4	Oct. 29 1922	365	14,967	4·86	728	367 64	24 69	392 33
Plashe's Model Jessie	9	Nov. 25 1922	365	16,018	4·96	794	400 97	26 13	427 10

FEED CONSUMPTION AND COST

Name of Cow	Age, years	Date of dropping Calf	Meal consumed	Roots and Ensilage	Hay	Green Feed	Months on Pasture	Total cost of feed	Cost to to produce 1 lb. fat	Profit on cow
			lbs	lbs.	lbs.	lbs.		$	$	$
Fairburn Rioter's Florence	6	Sept. 16, 1922	4101	10,181	3700	2330	2	165 40	0·27	170 46
Lakeview Royal Blossom	4	Oct. 29, 1922	4742	10,426	3650	2400	2	179 81	0·247	212 52
Plashe's Model Jessie	9	Nov. 25, 1922	5312	10,254	3650	2500	2	195 88	0·245	231 22

SHEEP

A small flock of Southdown sheep has been established, there being a good demand for lamb and mutton on the island. Disposal of the wool to date, however, has not been so advantageous, owing to the expense of shipment to a distant grading centre, and consequent high freight charges.

FIELD HUSBANDRY

The rotations as outlined in the report for 1922 have been followed. They fit the general scheme of things on the Saanich peninsula, and have given better field crops than have heretofore been grown on the Farm.

DESCRIPTION OF ROTATIONS

The following are the rotations undertaken at Sidney:—

ROTATION A—THREE YEARS' DURATION

1922—Winter wheat.
1923—Timothy and clover hay.
1924—Roots.

This rotation is one that appeals to the dairyman and one that is used to a considerable extent.

SUMMARY OF YIELDS, VALUE AND PROFIT AND LOSS PER ACRE

Crop	Yields	Value	Cost of Production	Profit or Loss
		$	$	$
Wheat (Sun)	38 bush. (1922)	93 80	66 43	Prof. 27 37
Timothy and clover hay	3·32 tons (1923)	83 00	54 24	Prof. 28 76

ROTATION B—FOUR YEARS' ROTATION

1923—Winter wheat.
1924—Peas (green manure).
1925—Corn (manure).
1926—Wheat, oats and vetch (ensilage).

SUMMARY OF YIELDS, VALUE, PROFIT AND LOSS

Crop	Yield	Value per acre	Cost of production per acre	Profit or Loss per acre
Wheat (Sun)	25·2 bush.	$84 86	$67 10	Prof. $17 76

If the wheat is valued only for the grain, it will be noticed that the cost of production for the year 1923 was very high. The straw, however, always scarce and high priced, gave us a credit balance of $17.76. Large quantities of straw are imported each year for use in the strawberry fields, and find ready sale at from $20 to $25 per ton.

ROTATION C—FIVE YEARS' ROTATION

1923—Vetch.
1924—Corn.
1925—Peas.
1926—Wheat.
1927—Timothy or western rye.

The island offers considerable inducement to the seed grower. The rotation was planned to secure information concerning the culture and cost of producing seed for farm crops, and incidentally to provide the Farm and public with a seed supply of such strains of seed as have been found of value at the Station farm. The area given to this rotation amounts to two acres.

SUMMARY OF YIELDS, VALUE AND PROFIT AND LOSS

Crop	Yield	Value per acre	Cost of Production per acre	Profit or Loss per acre
Vetch	16·7 bush.	$83 68	$73 20	Prof. $10 48

It will be noticed that vetch seed costs $4.38 per bushel to produce and sells at wholesale at 8 cents per pound.

ROTATION D—FOUR YEARS' ROTATION

1923—Winter wheat.
1924—Timothy and clover hay.
1925—Roots.
1926—Peas.

This rotation, similar to rotation B, provides for the turning down of a sod, the return of vegetable fibre and fertility to the soil, and furnishes roots for the dairy cattle instead of an ensilage crop. This rotation is popular with the men without a silo. Three acres are given to this work.

SUMMARY OF YIELDS, VALUE AND PROFIT AND LOSS

Crop	Yield	Value per acre	Cost of Production per acre	Profit or Loss per acre
Wheat (Red Rock).....	26·3 bush.	$85 31	$67 23	Prof. $18 08

The cost of production is nearly as great as in rotation B, but with the market value of straw considered, the credit return per acre is $18.08.

ROTATION E—FOUR YEARS' ROTATION

1922—Oats.
1923—Hay.
1924—Vetch, wheat, oats (ensilage).
1925—Potatoes.

HORTICULTURE

Vancouver island makes a great appeal to the horticulturist.

Water.—The summers are exceptionally dry. The yield of small fruits is cut fifty per cent in many years from this cause alone.

The Marketing Problem—To produce a crop is one thing, to market it another. The future will see more canning establishments, a better express and freight rate, and a greater co-operation on the part of the people.

TREE FRUITS

Among the tree fruits, apples do fairly well, pears, plums and cherries exceptionally well. Peaches are a success only in protected situations, and apricots a failure.

APPLES—VARIETY EXPERIMENT

Many varieties of apples are now under test. These varieties have been secured over a wide range including Ontario, California and British Columbia. All varieties have been sprayed and pruned and given standard treatment throughout the year. Though all the trees are young they are beginning to bear well. Records as to their behaviour have been kept as heretofore, and some interesting information obtained.

APPLES—VARIETY EXPERIMENT

Variety	Number of Trees	Yield per tree, 1923		Total yield per tree five years	
		lbs.	oz.	lbs.	oz.
Alexander	2	26	8	68	5
Black Ben Davis	2				
Blenheim Orange	2	9	2	12	2
Charles Ross	2	5	0	180	
Caroline Red June	3	2	9	15	2
Cox Orange Pippin	12	24	11	59	12
Duchess of Oldenburg	9	33	12	92	6
Early Colton	2	18	8	61	10
Goal	1				
Gravenstein	10	33	4	48	15
Grimes Golden	13	120	7	191	7
Jonathan	12	10	8	41	15
King David	3	148	7	231	3
King of Tompkins	10	21	4	77	
Linton	1	30		139	
Lowland Raspberry	7	42	7	70	8
McIntosh Red	6	31	4	123	12
Melba	1	115		160	5
Monsieur Gladstone	2	10	12	32	8
Missing Link	2	43		43	
Newtown Pippin	2	20	12	22	11
Peasgood Nonsuch	1	10		16	
Northern Spy	1	2		2	
Red Astrachan	14	28	9	66	3
Percival	1	11		118	10
Petrel	1	63	8	135	0
Ribston Pippin	1	12	8	15	0
Rome Beauty	2	77	8	107	8
Saint Germaine	3	7	12	19	10
Spitzenburg	2	10	4	14	4
Sweet Bough	2	22	8	34	0
Transparent de Croncels	2		10	106	8
Trenton	1	100	12	180	10
Vanderpool	2	13	8	20	8
Wagener	11	81	5	161	14
Wealthy	4	48	9	113	13
Winter Banana	2	131	6	246	2
Winterstein	2				
Wismer's Dessert	2	19	0	66	1
York	1	17		17	
Yellow Transparent	10	63	11	128	6

Among the apples so far tested, the following are outstanding: Cox Orange Pippin, Grimes Golden, McIntosh Red, Melba.

METHODS OF ORCHARD SOIL MANAGEMENT

Three systems of management have been in vogue in the orchard for a number of years, sod mulch, clean cultivation, and a cover crop. Clean cultivation is the only system that we have found satisfactory, under conditions obtaining on Vancouver island.

PLUMS—VARIETY EXPERIMENT

The yield of plums on Vancouver island is wonderful. The crop is so great that there is a yearly surplus, and consequent lowering of price. This abundant crop obtains with numerous varieties, secured from many sources, Japan, Europe, California and other states, in addition to Canada. Brown rot is common and destructive at times, but not all of the plum insects have yet found their way to the Island. Many of the varieties tested below are well known to the district, and among them may be found some of our best yielders, yet others of supreme quality, and near the top from the standard of yield, are practically unknown.

PLUMS—VARIETY EXPERIMENT

Name of Variety	When Planted	Number of trees	Yield per tree 1923		Total yield per tree five years		Season	Remarks
			lbs.	oz.	lbs.	oz.		
Apple	1919	2	..	..	..	..	.....	
Bartlett	1919	3	..	..	..	..	.....	
Beauty	1919	2	..	..	..	..	.....	
Black Diamond	1914	2	338	3	673	1	Sept.	Preserving.
Bradshaw	1914	2	22	1	262	5	Aug.....	
Burbank	1914	1	2	12	32	0	Sept.....	
Columbia	1914	1	56	0	194	12	Sept.....	
Combination	1916	2	10	0	20	3	Aug.....	
Conquest	1916	1	30	8	42	6	Sept.....	
Climax	1919	4	..	..	..	..	.....	
Drap d'or	1914	2	22	10	64	7	Aug.....	Dessert.
Early Gold	1916	1	266	0	440	14	Aug.....	Excellent.
Damson	1914	2	1	4	25	8	Sept.....	Popular.
First (Jap.)	1916	1	..	..	1	4	.....	
Formosa	1916	2	1	4	1	4	Aug.....	
Gaviota	1914	1	..	..	..	..	.....	
Gold	1916	2	..	..	..	..	.....	
Giant	1916	2	23	3	25	15	.....	
Greengage	1914	2	12	13	183	5	Sept.....	Good.
Jaune Hâtive de Thoisey	1914	2	14	2	69	8	Aug.....	
Le Plus Précoce de tous	1914	1	..	..	1	12	July.....	Earliest.
Mallard	1914	2	111	4	386	4	.....	Good cropper.
Mammoth Gold	1916	1	4	0	6	10	.....	Good.
Morris White	1919	1	..	..	..	..	.....	
Peach	1914	10	42	4	149	12	.....	
Pond Seedling	1914	2	77	2	405	2	Sept.....	Fair quality.
Reine de Claude de Bavay	1914	7	37	8	264	11	Sept.....	
Shippers Pride	1916	1	12	8	39	3	Oct.....	
Satsuma	1916	1	..	..	..	..	.....	
Shiro	1919	1	..	..	..	..	.....	
Shropshire Damson	1914	15	79	11	110	8	Sept.....	
Suika Moma	1919	1	..	..	..	..	.....	
Sultan	1916	1	..	..	..	..	.....	
Santa Rosa	1914	1	8	0	14	0	.....	
Victoria	1914	2	120	12	277	14	Sept.....	Good.
Washington	1914	2	72	12	375	15	Sept.....	Good.
Yellow Egg	1914	2	10	7	269	0	Sept.....	Excellent.

The six heaviest yielding plums for five years in order: Black Diamond, Early Gold, Pond Seedling, Mallard, Washington, Victoria. Black Diamond, Pond Seedling, Mallard and Washington have appeared among the best yielding six for three successive years, while Early Gold has made its appearance for the first time and Victoria for the second time.

PRUNES—VARIETY EXPERIMENT

Name of Variety	When set	Number of Trees	Yield per tree 1922		Total yield per tree for five years		Remarks
			lbs.	oz.	lbs.	oz.	
Dosch	1916	2	..	4	3	3	
German	1914	2	177	13	227	13	Good, small.
Giant	1916	2	84	0	181	8	Very like Pond Seeding.
Golden	1916	2	14	11	21	9	Poor quality.
Imperial Epineuse	1919	2	..	..	..	..	
Italian	1914	17	38	9	169	12	Most popular.
Quetsche de Létricourt	1914	2	45	15	163	13	
Quetsche précoce d'Ebersweier	1914	4	22	12	31	0	Good cropper, poor quality.
Quetsche précoce de Buhlerthal	1914	4	77	7	169	0	
Quetsche précoce de Zimmer	1914	2	138	13	246	8	
Quetsche Minôt	1914	1	51	0	67	14	
Sugar	1914	2	130	6	266	10	Popular.
Standard	1915	2	32	10	46	14	
Silver	1914	1	6	0	66	8	
Tennant	1916	2	8	9	14	10	
Tragedy	1914	1	12	8	178	14	
Pacific	1916	2	48	2	74	10	
Miracle	1916	2	..	..	12	5	

CHERRIES—VARIETY EXPERIMENT

The variety test with cherries has been conducted along similar lines to other fruits. Other things being equal, the average yield per tree for 1923 added to the total yield, running over a period of years, is the best criterion by which a tree may be judged. Brown rot of stone fruits is especially troublesome among the sweet cherries. Some varieties are more seriously attacked than are others, but all of the heavy yielding sorts are bad enough.

SWEET CHERRIES—VARIETY TEST

Name of Variety	When set	Number of Trees	Yield per tree 1923		Total yield per tree five years		Season
			lbs.	oz.	lbs.	oz.	
Abbesse d'Oignies	1914	1	11	12	26	3	Aug. 20
Abundance	1915	1	4	0	6	4	Aug. 4
Bing	1914	10	18	7	47	0	Aug. 10
Belle de Choisy	1914	2	2	9	15	1	July 15
Black Hawk	1914	1	30	7	58	7	July 10
Black Tartarian	1914	2	51	14	89	9	July 28
Black Republic	1916	1	6	0	6	0	July 22
Burbank	1915	1	10	6	17	8	June 20
Choque	1914	1	58	8	161	6	July 10
Deacon	1916	1	2	5	23	7	July 19
Elton	1914	3	33	8	127	11	July 3
Empress Eugénie	1914	4	11	11	78	1	July 4
Empereur François	1914	1	9	15	33	1	July 16
Fruhest der Mark	1914	1	45	3	61	15	June 12
Garrafal	1916	1	6	8	10	7	July 12
Garrafal Grand	1916	1	4	11	6	1	June 22
Gros Blanc	1914	1	..	..	1	2	July 15
Gros Noire	1914	1	1	10	2	2	July 6
Guigne d'Annonay	1916	1	10	8	11	4	June 20
Beauty of Ohio	1914	2	76	6	135	13	June 25
Belle of Orleans	1914	1	55	6	89	2	June 25
Guigne Pourpre Hâtive	1014	1	79	0	188	4	July 8
Guigne de Tarascon	1914	1	1	8	32	8	June 30
Guigne précoce Rivers	1914	1	97	0	116	12	June 20
Jaboulay	1914	2	2	12	12	11	June 20
Jeffrey Duke	1914	1	4	12	24	0	July 8
Lambert	1914	3	81	8	136	7	July 24
Lambert	1917	2	3	6	7	6	July 24
Marjolet	1914	2	10	4	18	11	July 16
Napoleon	1914	6	21	15	60	15	July 17
Pelissier	1914	1	22	3	45	1	July 15
Pleureur	1914	1	1	13	1	0	July 10
Reverschon	1915	1	72	4	82	0	July 12
Reine Hortense	1914	2	2	0	44	5	July 17
Reine Hortense Hâtive	1914	2	..	..	1	10	
Tardif de Lade B. Agathe	1914	2	19	0	57	0	Aug. 26
White Heart	1916	1	..	..	24	0	July 16
Windsor	1914	7	22	4	48	11	July 15

SOUR CHERRIES—TEST OF VARIETIES

Name of Variety	When set	Number of Trees	Yield per tree 1923		Total yield per tree five years		Season
			lbs.	oz.	lbs.	oz.	
A. Brindilles	1914	3	4	0	9	10	Aug. 25
Anglaise Hâtive	1914	3	7	4	33	10	July 1
Belle de Françonville	1914	1	4	3	36	3	Aug. 15
Belle Magnifique	1914	3	20	3	61	10	Aug. 4
Baldwin	1916	1	13	12	16	0	July 13
De Belleu	1914	1	6	8	17	10	July 3
Early Richmond	1914	15	20	9	79	4	July 8
English Morello	1916	1	5	8	12	6	Aug. 1
Gros Gobert	1914	2	14	6	73	7	July 17
Griotte Archer	1914	1	18	4	58	2	July 28
Griotte du Nord	1914	1	17	0	59	12	July 3
Late Duke	1916	3	3	9	6	9	Aug. 10
May Duke	1915	2	58	15	115	4	July 19
Montmorency	1915	15	50	8	179	6	Aug. 20
Montmorency Bretteneau	1914	3	42	7	102	9	July 6
Montmorency Pleureur	1914	2	29	13	53	12	July 10
Morello	1914	14	35	13	163	12	July 15
Nouvelle Royal	1914	2	..	..	42	5	July 15
Olivet	1914	16	18	11	105	13	Aug. 10
Ostheim	1917	3	13	7	28	0	July 15

The cherry is at its best on Vancouver island. Big crops of first rate fruit are harvested every year. Brown rot of stone fruits and slight frosts at fruit blossoming time sometimes adversely affect the yield, but the crop is usually heavy enough.

PEARS—VARIETY EXPERIMENT

Pears constitute a crop of great importance on Vancouver island. The trees flourish and bear crops that probably cannot be beaten in any other locality. A large number of varieties are grown at the Station, and their behaviour, from every standpoint, is watched closely and careful records kept, with the hope that in time the question of varieties most suitable to the district will be definitely decided.

TEST OF STANDARD PEAR VARIETIES

Name of Variety	When set	Number of Trees	Yield per tree 1923		Total yield per tree for five years		Season
			lbs.	oz.	lbs.	oz.	
Andre Desportes	1914	2	14	6	92	15	Aug.
Anjou	1914	19	64	14	96	6	Dec.
Bartlett	1914	18	92	12	291	2	Aug.
Belle Lucrative	1914	2	22	8	193	2	Nov.
Beurre d'Hardenpont	1914	2	28	8	107	12	Nov.-Dec.
Besi de Chaumontel	1914	1	..	..	1	8	Dec.
Beurre Bachlier	1914	1	189	8	559	8	Jan.
Beurre Amanlis	1914	2	357	4	730	12	Oct.
Beurre Diel	1914	2	271	8	554	12	Dec.
Beurre Giffard	1914	2	82	12	132	8	Aug.
Beurre Hardy	1914	2	25	8	37	5	Oct.-Nov.
Beurre de Naghin	1914	2	131	8	325	0	March.
Bosc	1914	20	38	15	149	13	Oct.
Boussock	1914	11	101	9	350	11	Sept.
Beurre d'Avril	1914	2	51	0	269	15	Feb.
Bon Chrétien	1916	1	28	14	143	6	Nov.
Charles Ernest	1914	2	6	8	57	0	Nov.
Clairgeau	1914	20	63	0	240	7	Nov.
Crocker Bartlett	1916	1	68	0	104	8	Sept.
Conference	1919	2	8	6	13	14	Oct.-Nov.
De Cure	1914	2	130	8	346	8	Dec.
Dr Jules Guyôt	1914	20	57	18	183	1	Sept.
Doyenne d'Alencon	1914	2	43	12	158	12	Jan.
Doyenne de Merode	1914	2	91	1	183	5	Sept.-Oct.
Doyenne d'Hiver	1914	2	99	8	192	4	Jan.
Doyenne du Comice	1914	1	13	0	27	0	Nov.
Duchess d'angouleme	1914	2	72	0	118	12	Nov.
Emile d'Heyst	1914	2	72	12	151	4	
Easter Beurre	1914	2	105	8	207	10	March.
Favourite de Clapp	1914	2	134	5	379	7	Sept.
Flemish Beauty	1914	3	112	13	271	8	Sept.-Oct.
Fondante Thirriot	1914	2	3	12	186	12	Nov.
Jargonelle	1914	2	28	8	75	8	Aug.
Koonce	1916	1	20	0	44	0	Aug.
Le Lectier	1914	2	55	12	184	0	Nov.
Lincoln Coreless	1914	2	13	0	258	15	Feb.
Madame Ernest Baltet	1914	1	43	12	70	12	Sept.-Oct.
Louise Bonne de Jersey	1914	18	83	5	240	15	Oct.
Madame Baltet	1914	1	23	0	44	0	Sept.-Oct.
Marguerite Marillat	1914	2	79	1	202	6	Sept.
Nouvelle Fulvie	1914	1	56	8	158	8	Jan.
Passe Crassane	1914	2	21	8	131	4	Feb.
Pitmaston Duchess	1914	2	53	8	194	4	Oct.
President Deviolaine	1914	1	..	..	14	8	Nov.
Princess	1914	2	1	8	14	6	Oct.
Rosney	1914	1	18	8	29	8	Sept.
Royale Vendée	1914	1	23	8	51	14	Jan.-Feb.
Souvenir du Congres	1914	1	227	6	457	8	Sept.
Triomphe de Vienne	1914	1	49	0	278	8	Sept.
Vicar of Winkfield	1914	2	32	4	190	12	Dec.
Virginie Baltet	1914	1	183	0	466	8	Nov.
Williams (Bartlett)	1914	2	127	8	329	0	Sept.
Wilder Early	1914	2	14	12	53	10	Aug.
Winter Bartlett	1914	1	..	..	56	3	Dec.-Jan.
Worden Seckel	1916	1	34	0	58	8	Sept.-Oct.

VARIETY TEST WITH DWARF PEARS

Name of Variety	When set	Number of Trees	Yield per tree 1923		Total yield per tree for five years		Season
			lbs.	oz.	lbs.	oz.	
Andre Desportes	1914	2	8	8	68	13	Aug.
Anjou	1919	2	..	..	..	..	Dec.
Barry	1919	1	10	0	10	0	
Beurre Bachlier	1914	2	57	0	131	10	Dec.
Beurre Amanlis	1914	1	95	0	219	8	Sept.-Oct.
Beurre Diel	1914	1	70	0	216	6	Dec.
Beurre Giffard	1914	2	36	14	72	8	Aug.
Beurre Hardy	1914	1	..	..	37	8	Oct.-Nov.
Besi de Chaumontel	1914	2	7	8	40	12	Dec.
Beurre de Naghin	1914	2	40	8	86	0	Dec.
Beurre d'Hardenpont	1914	2	55	0	258	8	Nov.
Charles Ernest	1914	1	..	..	29	0	Nov.
De Curé	1914	2	110	0	348	10	Dec.
Dr. Jules Guyot	1914	2	57	8	180	4	Aug.
Doyenné de Merode	1914	2	1	8	22	13	Feb.
Doyenné d'Alencon	1914	2	59	4	121	8	Sept.
Doyenné du Comice	1914	2	8	0	46	0	Nov.
Doyenné d'Hiver	1914	1	100	0	333	0	Jan.
Favourite de Clapp	1914	2	43	8	234	6	Sept.
Flemish Beauty	1914	2	52	0	176	0	Sept.
Fondante Thirriot	1914	2	126	4	280	12	Nov.
Forelle	1919	2	..	..	..	..	
Madame Ernest Baltet	1914	2	119	0	215	0	Oct.-Nov.
Madame Baltet	1914	1	22	0	34	8	Jan.-Feb.
Howell	1919	2	5	8	8	0	
Louise Bonne d'Avranches	1914	1	..	..	85	0	Oct.
Nouvelle Fulvie	1914	1	20	8	82	4	Nov.
Passe Crassane	1914	2	85	4	153	12	Feb.
President Deviolaine	1914	2	26	8	133	10	Nov.
Royale Vendee	1914	1	..	..	..	..	
Seckel	1914	2	5	8	5	8	Oct.
Souvenir du Congrès	1914	1	132	0	211	0	Sept.
Triomphe de Vienne	1914	1	..	..	114	0	Sept.
Virginie Baltet	1914	2	54	8	199	4	Nov.
Williams (Bartlett)	1914	1	89	0	240	0	Sept.
Winter Nellis	1919	2	..	..	0	8	

The Souvenir du Congres is the largest pear grown at the Station; the Bartlett one of the most popular; the Bosc one of the best flavoured; Beurre d'Amanlis one of the heaviest yielders, and Duchess d'Angouleme one of the poorest.

PEACH—VARIETY EXPERIMENT

Commercially the peach is not grown on Vancouver island. It has seemed impossible to maintain the tree in a healthy condition, even though it may escape frost injury. To many people the peach has been a great disappointment. Many varieties have been grown at the Station, however, and records kept.

PEACH—VARIETY EXPERIMENT

Name of Variety	When set	Number of trees	Yield per tree 1923	Total yield per tree for five years	Season
			lb. oz.	lb. oz.	
Admiral Dewey	1919	1	.. ..	2 8	Aug. 8
Alexander	1914	1	11 2	57 11	Aug. 17
Alton	1914	2	.....	.....	.....
Early Crawford	1914	2	.....	.....	.....
Early Elberta	1916	1	.....	.....	.....
Early Imperial	1919	2	.....	.....	.....
Fitzgerald	1914	1	.....	.....	.....
Hale Early	1914	2	56 0	150 9	Aug. 15
Krummel's October	1916	1	.....	.....	.....
Mayflower	1919	2	.....	.....	.....
Muir	1919	2	9 0	9 0	Sept. 24
Persica	1916	1	.....	.....	.....
Red Bird	1916	1	.....	.....	.....
Royal George	1919	2	17 0	17 0	Sept. 24
Triumph	1914	2	25 0	42 9	Aug. 8

Hale Early and Triumph are more promising than others, both from the standpoint of resistance against disease in tree and fruit.

QUINCE—VARIETY EXPERIMENT

The quince is not greatly prized on Vancouver island. The fruit is subject to cracking. Usually there is little sale for the quince even when at its best.

De Portugal, the highest yielder for 1923 is also the highest yielder over a period of five years.

MEDLAR—VARIETY EXPERIMENT

This fruit may be grown, and though liked by a few is not popular. The medlar has no future in Canada.

APRICOT—VARIETY EXPERIMENT

The variety test with apricots proves only one thing—that unprotected, the fruit is a failure. The greater number of trees have died, while those remaining are not bearing.

FIGS—VARIETY EXPERIMENT

Twenty-eight varieties of figs have been under test. Some of these varieties date back to 1914. Fig trees are comparatively hardy; they produce fruit, but we think that, commercially, they have no place here. No horticultural problem presents greater difficulty than does the culture of this fruit.

SMALL FRUITS

All of the small fruits do well on Vancouver island. Strawberries from Gordon Head and Keating have long since made a name for themselves. The business has been developed in these districts until they are better known for their strawberries than for any other product. Other fruit areas are being located and developed farther up the island, and though comparatively new, promise to be successful localities. Raspberries and loganberries are being planted extensively. The loganberry awaits only the coming of jam factories, drying plants, etc. in order to expand enormously in acreage, for it is quite at home on the island.

STRAWBERRIES—VARIETY EXPERIMENT

Records on yield and behaviour of strawberries have been kept for five years at the Station. The yield during 1923, owing to dry weather and an attack of strawberry root weevil, was small. The average yield for five years only is here considered.

	Pounds per acre
Mariana—The heaviest yielder	6,175
Paxton—The largest berry	3,747
Magoon—The best shipper	4,689
Patagonia—The poorest yielder	377

STRAWBERRY—INSECT AND DISEASE CONTROL

Strawberry root weevil is particularly troublesome on Vancouver island. Several soil fumigants have been used with the hope of finding some satisfactory control measure. Vaporite has been found quite satisfactory, but the cost of the preparation forbids its use on the strawberry fields. The weevil barrier has been advocated, and is now in use by a few growers.

CURRANTS—VARIETY EXPERIMENT

Name of Variety	Average yield per acre 1914 to 1917	Average yield per acre 1917 to 1920	Average yield per acre 1920 to 1923
	pounds	pounds	pounds
Boskoop Giant L	6,201·4	6,765·15	4,860·2
Buddenborg	6,332·2	7,737·2	3,710·10
Boskoop Giant O	4,048·5	7,496·15	5,250·15
Magnus	4,638·5	4,240·0	6,765·15
Climax	4,461·14	4,789·6	6,372·10
Topsy	3,959·2	3,887·2	5,949·2
Eagle	3,912·5	3,892·2	5,949·2
Victoria	3,323·2	6,801·3	3,307·0
Kerry	5,374·6	2,909·0	5,142·8
Saunders	4,396·5	2,747·11	5,767·10
Clipper	4,315·10	2,510·10	5,646·9
Eclipse	3,680·6	3,025·0	4,117·6
Collins Prolific	3,578·9	2,288·15	4,194·10
Red Currants—			
Red Cross	12,108·7	13,884·12	10,264·13
Cumberland	9,417·13	13,552·0	9,438·0
Rankin's Red	6,534·10	13,785·3	10,022·10
Grape	8,686·12	12,185·11	9,317·0
Greenfield	6,755·13	13,531·13	6,584·6
Wilder	6,609·10	13,310·0	8,655·0
Victoria	6,917·0	9,646·10	8,436·8
Perfection	6,903·5	9,155·10	5,848·5
Red Dutch	6,660·15	7,219·5	2,107·5
Chautauqua	3,236·12	4,592·0	2,715·13
Cherry	1,714·2	3,156·1	3,407·9
White Grape	8,268·5	10,409·0	6,755·13
White Cherry	6,191·2	11,585·13	6,855·10
Large White	6,402·5	10,043·0	7,219·10

It will be noticed that our currant variety work has been under test for nine years, and that, on the whole, the varieties were yielding less fruit during the last period of three years than during the early period. The order has been reversed in the case of a few of the poorer yielding sorts, for they have yielded better at the end of the nine years than at the start. The yield figures are based on six plants of each variety.

GOOSEBERRY—VARIETY EXPERIMENT

Gooseberries are not largely grown, neither are they of great importance. They may be grown with comparative ease, but are difficult to pick and the demand for the fruit limited. The European varieties are here subject to mildew, as elsewhere, but not to the same extent as in other parts of Canada. The plants were obtained from the Layritz Nursery Company in 1913, and planted in rows 6 feet apart, and plants set 5 feet apart in the row.

Whitesmith among the English varieties and Champion among the American sorts, are outstanding.

BLACKBERRY—VARIETY EXPERIMENT

Blackberries, with or without cultivation, grow luxuriantly. The fact that a plant or two of Himalayan blackberry is sufficient to supply fruit for a family, destroys any local demand that there otherwise would be. The Himalayan is the most marvelous yielder among bush fruits, but does not ship well.

The Himalayan blackberry—most prolific among small fruits.

The Himalayan, over a period of five years, has yielded three times as much fruit as any other, and during later years has done better than that.

Thornless blackberries are now possible. Our experience with the thornless varieties would indicate that they are also fruitless. Wood of greater age is being left on the plant than heretofore, with the hope of determining what is bearing wood. In view of the fact that the Himalayan blackberry is such a marvelous yielder, and its close relationship to the raspberries, it was considered important to determine what seedlings, arising from this plant, might do. Accordingly very large numbers of blackberry seeds were planted in cold frames during the autumn of 1922. These seeds germinated well and were pricked out in flats during the spring of 1923. Later they were transferred to the field, in number approximately twelve hundred. These little plants made wonderful

growth during the summer of 1923. Some variation is noticed in leaf and habit. Of the twleve hundred plants, one is a distinct raspberry. The young plants will be closely watched during the season of 1924. Some things of interest and distinct worth are looked for, arising from this project.

LOGANBERRY—TRAINING EXPERIMENT

The Loganberry is at its best on Vancouver island. The plant is a heavy yielder, but does not ship any too well. Several methods of training loganberries have been tried successfully, but no systematic attempt has been undertaken to determine the best system to be followed.

GRAPE—VARIETY EXPERIMENT

Cool nights and moisture laden atmosphere are not conducive to the culture of grapes, yet the vines set big crops each year. The fruit lacks somewhat in flavour, even when fully ripe, owing no doubt to a deficiency in sugar.

GRAPE—VARIETY EXPERIMENT

Name of Variety	When set out	Number of Vines	Yield per vine 1922		Yield per vine 1923		Yield per vine for 5 years		Remarks
			lb.	oz.	lb.	oz.	lb.	oz.	
Black Hamburg.....	1918	2	Nil		21	0	21	0	Not recommended
Black Prince.....	1916	1	Nil	..	9	0	9	0	
Brant.....	1915	7	22	10	40	0	86	0	Poor
Brighton.....	1915	2	4	8	18	4	30	2	Promising
Buckland Sweetwater.....	1915	1	4	0	11	0	15	0	Very Sour
Campbell Early.....	1915	2	11	0	32	10	80	8	Promising
Canada.....	1915	5	22	14	31	2	88	4	Poor
Concord.....	1916	1	15	0	24	0	45	0	Fair
Chasselas de Fontainebleau.....	1915	2	1	8	29	8	31	0	Too late
Dattier.....	1915	1	Nil		1	0	1	0	Poor
Delaware.....	1916	2	Nil		17	12	17	12	Good
Foster's Seedling.....	1915	1	Nil		49	0	82	5	Very late
Flame Tokay.....	1916	2	Nil		Nil		Nil		
Gros Colman.....	1915	2	14	0	49	12	101	6	Very late
Hartford.....	1915	5	11	13	26	14	64	8	Good
Lindley.....	1915	3	23	9	37	10	112	0	Good
Moore Early.....	1915	1	Nil		4	8	5	8	Promising
Peabody.....	1915	4	17	10	26	11	88	11	Good
Rose of Peru.....	1916	1	10	8	40	12	51	4	Very good
Trentham Black.....	1915	1	Nil		5	0	5	0	Poor
Vergennes.....	1915	3	14	8	28	13	62	11	Very good
Winchell.....	1915	3	2	10	6	10	9	4	Very sweet

GRAPES

Several additional varieties of grapes have been received from Ottawa and planted in 1921, viz.: Brighton, Craig, Early Daisy, Mary, Moyer and Wilkins. These have not been under test for sufficient time to permit of report.

Lindley is perhaps the earliest among our better grapes, and with Hartford is among the best. We have no wish to change our recommendation concerning earliness, but since the fruiting of some of the vines recently planted, we are satisfied that the older ones must step back from the standpoint of quality. We would especially mention the Delaware, Vergennes and Winchell, as being comparatively of outstanding quality.

VEGETABLE GARDENING

Very superior vegetables in great variety are produced all over the island, but there is not nearly so much attention given to this line of horticulture as to fruit growing.

The vegetable gardening industry is largely in the hands of Orientals, not only the growing end but also the trading. Growing under glass still interests many people. Tomatoes and similar products are shipped to the prairies in large amounts, and at good prices. The Station will give more attention to this phase of the work in the future. Potatoes receive more attention year by year, largely because of the advertising given certified seed and the resulting demand. Much of our variety testing work with vegetables has been discontinued, since the more desirable varieties have been well established, and because of the urgent need for information along other lines.

POTATO—VARIETY EXPERIMENT

Burbank Special has been at the top for two years and is a potato of some worth.

POTATO—COST OF PRODUCTION

In this project the cost of producing an acre of potatoes is being investigated. The figures are based on a scheme outlined by the Dominion Field Husbandman. So far as manure is concerned, charge is made for the time of applying only, and horse labour is based on the number of work hours in the life of the horse, and the actual cost to the farmer.

Cost of Producing Potatoes at Sidney, 1923

Item	Statement	Amount
		$ cts.
Rent and taxes	$500 per acre at 6 per cent, taxes, $4.20 per acre	34 20
Manure	50 per cent value of 15 tons at $1	7 50
Fertilizer	50 per cent value of 1,600 lb. at $47.50	19 00
Seed	1,360 lb. at $25 per ton	17 00
Machinery		3 00
Manual labour	245 hours at 35cents per hour	85 75
Horse labour	74·5 hours at 19 cents per hour	14 15
	Total cost per acre	180 60
Yield per acre	11·1 tons at $25 (marketable)	
	3·3 tons at $5 (unmarketable)	
	14·4 tons	295 16
	Profit per acre	114 56

N.B.—Planted May 22, harvested Oct. 30. Area one acre. Distance between rows, 34 inches. Of the 3·3 tons graded for feed 1·1 tons were tubers that had been damaged by pheasants.

This project was repeated on a smaller area, and under garden conditions, where work cost was based on one twelfth of an acre. It is interesting to note that here the cost was $209.28 per acre, but that the cost of production per bushel was not greater.

POTATO—DIFFERENT DATES OF PLANTING

The proper planting date is difficult to arrive at, and is dependent on many factors, such as location, soil, warmth, moisture content, etc.

It is significant that with the early potato, Irish Cobbler, and the late Carman No. 3, the heaviest yields were obtained when planting was done May 15.

POTATO—SPROUTED VS. UNSPROUTED EXPERIMENT

Is there any gain in earliness or yield by sprouting potatoes? Experimental evidence on this point is not clear, and conclusions arrived at not always convincing. During the season of 1923 the Irish Cobbler and Carman No. 3 were used with the hope of determining this point. Sixty-six sets of each variety were planted after having been exposed to subdued light for six weeks, at a temperature of from 40 to 50 degrees, beside those that had not been exposed at all.

SPROUTED VS. UNSPROUTED POTATOES

Variety	Number sets	Date Planted	Marketable		Unmarketable		Yield per acre	
			lb.	oz.	lb.	oz.	tons	lb.
Irish Cobbler—								
Sprouted	66	May 29	44	12	20	0	17	94
Unsprouted	66	May 29	28	8	18	8	12	408
Carman No. 3—								
Sprouted	66	May 29	97	8	20	8	28	512
Unsprouted	66	May 29	76	0	16	8	24	420

Results for one year at this Station would indicate that sprouted seed has considerable advantage over the non-sprouted.

POTATO—SPRAYING EXPERIMENT

The dust preparations are in some measure supplanting the standard spray mixtures. To determine their relative value on the potato crop, plants were dusted and sprayed. Two hundred feet of row were sprayed with Bordeaux mixture 4-4-40 on June 5 and June 27. The dust preparation (the only one available) was composed of sulphur 9 parts, and arsenate of lead 1 part.

POTATO—SPRAYING EXPERIMENT

Variety	Date planted	How treated	Yield marketable		Yield unmarketable		Total yield	
			lb.	oz.	lb.	oz.	lb.	oz.
Carman No. 3	May 17	Bordeaux Mixture	264	0	56	0	320	0
Carman No. 3	May 17	Dusted	261	0	33	0	294	0

BEAN, BUSH—VARIETY EXPERIMENT

Twenty-one varieties of beans were planted in some quantity, May 15, 1923, in drills 3 feet apart. Many new varieties were introduced at the Station brought in from other Farms of the system.

The Yellow Eye as a baker is well thought of and yields well.

PEA—VARIETY EXPERIMENT

One year ago much work was done in our variety test plots, based on green pods per acre. During 1923 comparative yields were taken based on dry seed per acre as follows: The plots, twenty in number, were seeded April 27.

It is noteworthy that some of our heaviest yielders of pods are the poorest yielders in seeds. For example "Pioneer", at the top last year as a producer of pods, is almost at the bottom from the standpoint of dry seed. "Sutton Excelsior" at the top this year was almost at the bottom last year.

CELERY—BLANCHING EXPERIMENT

In this project a comparison of the different methods of blanching celery with respect to earliness, crispness, blanching and flavour was made. The variety used was Golden Self Blanching. The plan of procedure was as follows:—

1. Planting in a bed 6 feet by 6 feet, plants 6 inches by 6 inches.

2. One row 15 feet long, plants 6 inches apart, grown on the level and earthed up.

3. Two rows each 15 feet long, plants 6 inches apart. Plants in one row alternating with those in the other. Blanched with roofing paper.

4. One row 15 feet long, plants 6 inches apart. Plants started in a trench 6 inches deep and gradually earthed up.

5. One row 15 feet long, plants 6 inches apart. Plants grown on the level and blanched with boards. Weights were taken of 12 plants trimmed for market.

Celery culture methods.

Celery grown in beds is certainly self blanching, but very lacking in flavour; Earthed up loses something in appearance, but gains in weight; Blanched with paper gains in earliness but loses in flavour. It is not easy to find any method of growing celery that combines all the good things.

TOMATO—METHODS OF TRAINING

Our experience over many years with tomatoes would indicate that so far as culture in the open air is concerned, pruning of any description is a waste of time. Our experiment in this connection during 1923, though scarcely covering the point, would indicate that any mutilation of the tomato vine results in less fruit; and the greater the mutilation the greater the loss. Twenty-five plants were stopped at the first truss, twenty-five plants at the second truss, twenty-five at the third truss, and twenty-five to a single stem, but not headed back at all. Results are found in the accompanying table:—

Variety	Stopped at	Picking Dates										Ripe	Green	Total	Un-mktble
		Aug. 8	Aug. 10	Aug. 14	Aug. 17	Aug. 20	Aug. 24	Aug. 28	Sept. 5	Sept. 14	Oct. 13	Nov. 3				
		lb.	lb.	lb.	lb.	lb.	lb.	lb.	lb.	lb.	lb.	lb.	lb.	lb.	lb.	lb.
Alacrity	1st truss	5·14	1·12	2·2	3·15	2·8	4·5	3·4	4·6	2·4	.....	.....	30·6	.....	30·6	6·3
Bonny Best	1st truss	3·2	1·8	4·5	2·10	1·14	3·6	5·8	2·10	0·7	.....	4·4	29·10	.....	29·10	.....
Alacrity	2nd truss	0·12	0·13	2·6	6·8	11·18	10·12	8·12	9·8	3·2	0·10	3·4	57·15	11·8	69·7	5·8
Bonny Best	2nd truss	0·2	0·8	4·10	3·10	8·12	10·2	10·12	10·0	5·10	8·12	6·5	69·4	10·8	79·12	.....
Alacrity	3rd truss	1·8	1·14	2·12	7·9	8·0	13·12	6·12	9·12	6·0	1·8	5·6	64·13	20·8	85·5	2·12
Bonny Best	3rd truss	0·0	0·0	1·12	2·8	8·12	12·1	16·0	12·12	9·4	8·12	4·4	71·1	16·0	87·1	0·0
Alacrity	Not stopped	.....	1·8	0·14	5·12	9·2	8·0	7·5	9·8	5·4	4·3	5·10	57·2	14·0	71·2	1·14
Bonny Best	Not stopped	.....	0·9	2·4	5·4	3·8	10·0	11·12	12·8	9·0	9·12	10·12	75·5	22·0	97·5	0·12

The plants not headed back yielded best and were later by only a few days. Supplementing this work some plants were grown under all systems, with and without water. The water in all cases greatly increased the yield.

SEED GROWING

Vegetable and flower seeds are produced to great perfection on Vancouver island. This industry has become one of considerable importance and will, no doubt, assume greater proportions with the years. The quality of the seed produced is such that the seed houses are willing to pay a premium for Vancouver island-grown seed.

Many lines of investigation were suggested by the work done with sweet peas last year. Accordingly the work was continued and enlarged.

STUDIES IN SWEET PEA SEED PRODUCTION

In order to get the proper setting for the investigation of 1923, a résumé of work accomplished in 1922 is inserted.

(*a*) Cost of Production—

Cost of growing one acre	$ 335 30
Yield per acre	748 pounds
Cost per pound	$ 0 45

(b) Acid vs. no acid—
Variety used, Clara Curtis
Fifty seeds under test in each case—

Soaked in sulphuric acid 25 minutes	36 germinated
Soaked in sulphuric acid 18 minutes	31 "
Soaked in sulphuric acid 10 minutes	36 "
Check	46 "

The acid is used to hasten germination. Seeds did germinate more quickly to the extent of twenty-four hours, but all advantage was lost at end of first week, while a considerable percentage was killed outright.

(*c*) Culture vs. No Culture—

Culture	774 lb., 12 oz per acre
No culture	606 lb., per acre

(*d*) Lime vs. no Lime—

Limed	810 lb. 12 oz. per acre
Unlimed	606 lb. per acre

Lime applied at the rate of one ton to the acre

(*e*) Distance apart in row—
Plants set 4" apart yielded 829 lb. per acre
Plants set 8" apart yielded 701 lb. per acre
Plants set 12" apart yielded 606 lb. per acre
Every advantage found by the closer planting

(*f*) Sticking vs. No Sticking—

Sticking	889 lb. per acre
No sticking	606 lb. per acre

Sticks were obtained in the bush and placed in row every 8 inches. The vines were trained on the sticks. A larger yield and a finer sample of peas were produced by sticking, while the extra cost of procuring sticks was not determined.

(*g*) Hilling vs. No Hilling—

Hilling	606 lb. per acre
No hilling	810 lb. per acre

It has been noticed that hilling injuriously affects garden peas. That this applies to sweet pea seed growing is evident from the experiment.

(*h*) Harvesting—
Plot 1—Hand picked yielded 44 pounds
Plot 2—Reaping and threshing yielded 48 pounds.
Plot 1 took forty hours to harvest, while Plot 2 took ten hours. Handpicking is a very expensive method of gathering seed, but the only one possible in a wet season.

The effect of water was very clearly demonstrated on sweet pea seed production during the summer.

An old cedar drain ran across the plots. Though no water was apparent, the peas directly over, kept on flowering until late season, but practically no seed was produced. Water in early season may be of great value to the peas, but ruinous in midsummer and late season. Excess nitrogen also influences peas in the same way as water, causing them to flower well. Sweet pea seed production is an industry quite distinct from that of the florist. In the one case seeds are wanted, while in the other flowers. The earlier the peas can be planted and matured, the greater the promise from the standpoint of seed.

Variety Tests.—In 1923 twenty-five varieties were purchased from one of our seed growers, in quantities of one hundred seeds to the package. In some cases the count was out to the extent of one or two seeds; or a seed may have been lost in one of the various manipulations as will be noted.

Royal Scot.—A brilliant cerise scarlet, equalling a soldier's tunic. It does not fade, or burn in hottest sunshine.

Glory.—A particularly bright glowing salmon-cerise. The flowers are of enormous size and great substance. The plant is vigorous and bears an abundance of four-flowered sprays on extra long stout stems.

Le Mahdi.—A fine, large, well waved flower of a soft purple shade. Vigorous plants bearing a profusion of fine blooms carried four on a stem.

Hawlmark Cerise.—A lovely delicate cerise self-coloured sweet pea. The flowers are of extraordinary size, of glowing pale rose-cerise on cream ground, beautifully waved and borne invariably four to a stem in great profusion.

Felton's Cream.—An exceedingly fine cream, the flowers being large and well frilled.

Picture.—This is as big as anything we have in Sweet Peas. The flowers are well waved and exquisitely frilled. The colour is a blend of cream and pink shades, having a deeper flush on the wings. A strong grower, carrying four large flowers to a stem.

Charity.—A magnificent flower in size as well as in form. The blooms are a rich brilliant crimson which does not burn in the sun. The plants make a vigorous growth and bloom freely.

Commander Godsal.—A lovely shade of violet blue. The flowers are very waved and of ideal form.

Splendor.—A magnificent deep rose self. The rich rosy carmine colour is accentuated by the distinct white blotch at the base of standard and wings. The flowers are of great size, usually borne in fours on very long stems. The vines are strong and vigorous and they are covered with long stemmed flowers.

Moscott's Helio.—A lovely lavender, shaded bronze.

Constance Hinton.—A well-known and popular black-seeded white flowered variety, the flowers are of large size, and come at times with a blush tinge, the vines made a strong and vigorous growth, producing a wealth of four-flowered sprays.

Annie Bownass.—Deep pure pink, flushed salmon, a striking and lovely variety.

Bridesmaid.—This is a magnificent new cream-pink variety of immense size and rich colouring, being a pleasing shade of rich pink on a buff or ivory cream ground, resembling almond blossoms. Blooms profusely.

Dobbie's Orchid.—A vigorous growing lavender, the flowers are very large, and beautifully waved.

Bunty.—The standard is orange salmon, wings rosy salmon. A strong grower, producing plenty of fours.

Gloriosa.—This is an outstanding new English variety with large, well formed flowers of a bright and glowing orange scarlet self.

Caress.—Immense well formed flowers which are beautifully frilled and produced on long stems. The colour is soft, rich shell-pink, deeply toned and suffused with cream-buff.

King Mauve.—A giant rosy mauve. Invaluable for cut blooms or exhibiting.

Austin Frederick Improved.—A flower of immense size beautifully placed on very long stiff stems, with fours predominating. The colour is a most pleasing shade of lavender, the standard being slightly deeper in shade.

Conquest.—A distinct and unusually attractive variety valuable for exhibition and cutting purposes. The flowers are large, much waved, flushed and heavily suffused with salmon pink on a glistening pure white ground. A strong grower, with plenty of blooms carried in fours on long and heavy stems.

Giant White.—An exceedingly fine dark seeded white. Flowers very large and beautifully waved.

Colne Valley.—A giant lavender-blue self, exquisitely frilled, and borne in fours on fine stems. A vigorous grower and free bloomer.

Mrs. Tom Jones.—Bright Delphinium-blue. The flowers are very large and of great substance, beautifully waved, and usually borne four on a stem of great length. A first class rich blue which comes quite close to Burpee's New Wedgewood.

Hawlmark Pink.—This most beautiful sweet pea is unsurpassed for either exhibition or general cutting purposes. The colour is a most beautiful shade of rich rose pink, deeply flushed and shaded with salmon. The wings are bright rose pink whereas the standard is somewhat lighter in colour and slightly toned down with salmon. Large well-waved blooms.

Valentine.—This is a newer variety of great merit. The plants make a strong vigorous growth and bear large flowers of a most pleasing shade of light pink. Beautifully waved and well placed on the long stout stems. It is one of the best of this colour.

Germination.—From the work done with one variety in 1922 it would appear that the use of acid in attempting to hasten germination, or to make possible the germination of certain seeds that otherwise would fail was worse than useless. Many growers, however, use acid and believe that its use is of distinct advantage for the purpose mentioned. The seeds are placed in commercial sulphuric acid from ten to twenty minutes, washed clean and planted at once. It is claimed that the acid so softens the seed coat that the seed germinates more quickly, and that the percentage of germinating seeds is greater than it otherwise would be if acid had not been used. In order to determine this point the hundred seeds of each variety were divided into two lots, one half treated with acid for twenty minutes and the other half left without treatment. The seed was planted in flats, in sifted soil under exactly uniform conditions and set in cold frames in order that all might be directly under control. The seeds were planted on March 28. The resulting seedlings were counted on April 10, and at intervals of four days as follows:—

SWEET PEAS—GERMINATION TEST

First Count		Second Count		Third Count		Fourth Count	
Acid	No. Acid	Acid	No Acid	Acid	No Acid	Acid	No Acid
Seedlings		Seedlings		Seedlings		Seedlings	
557	569	668	904	789	994	798	1,032

From start to finish the peas that were non-treated germinated more readily, and in larger numbers than those that had received the acid, when all varieties were considered together, but the reverse was true when considered singly, in a few cases, at the end of the season.

A study of varieties revealed the fact that there is no relationship between the colour of the seed coat and the thickness of the same. It may be black and thin, or it may be light and thick. Further study would indicate that the relationship between the thickness of the seed coat and effect of the acid was quite constant. If the coat were very thin the acid either partially or wholly destroyed the seed, while in a few cases where the seed coat was especially thick, the acid softened it permitting of the more rapid intake of water and more perfect germination.

Rogues.—One of the most perplexing things in the production of sweet pea seed is the rogues in type and colour usually found in the best seed. The growers may take every precaution, and may be in a position to say that all rogues have been removed during the growing season, yet the resulting seed may throw as many flowers off type and colour as before. This has more often wrecked the hope of growers than any other one factor. Insects have been blamed for crossing the varieties, but since the pea itself is self fertile, the

occurrence must be rare if it ever happens. The newer varieties have been formed by crossing in many cases, and are often put on the market before the colour or type is well fixed. The Grandiflora and the Spencer, distinct enough, gradually approach each other until sometimes one is perplexed concerning a variety, for it carries some characteristics of both. In order to determine how fast the newer varieties break up, if they break up at all, the same twenty-five sorts were studied from the standpoint of colour and type rogues. We had every reason to believe that the seed was good, and that the field had been perfectly rogued the year before.

Yields.—The Grandiflora Sweet Peas yield much better from the standpoint of seed than the Spencers as a rule; but we find that the variation in yield among the Spencers is almost as great as that between the two classes.

The yields were based on the number of plants that matured, spaced 4 inches apart in the row. Due consideration was given the fact that a number of rogues were removed, so that in this connection yield is based on perfect stand.

ORNAMENTALS

At the end of the season 1922 some quantity of bulbs was sent from this Station to all other Experimental Farms and Stations in Canada. Great quantities of bulbs are imported from Europe every year. Vancouver Island should supply Canada's needs in this respect, and it was with the hope of demonstrating the excellence of Vancouver Island tulips that we asked that they should be grown beside the best of the imported stock, across all Canada. The questions sent the Superintendents of the various Farms were as follows: (1) How do the Sidney bulbs compare in size and appearance with the imported bulbs on their arrival at your Farm? (2) How do the Sidney bulbs compare with Holland grown bulbs, (*a*) as to yield and vigour, (*b*) as to size and quality of bloom, (*c*) as to height, (*d*) as to intensity of colour and flower? (3) In your opinion have the Sidney grown bulbs given you as good, better or poorer results than imported bulbs?

REPLIES TO QUESTIONAIRE *Re* SIDNEY BULBS

Replies to questions by Experimental Farms and Stations.	How do Sidney bulbs compare in size and appearance with the imported bulbs on their arrival at your farm?	How do Sidney bulbs compare with Holland grown bulbs (*a*) as to yield and vigour (*b*) as to size and quality bloom (*c*) as to height (*d*) as to intensity of colour and flower	In your opinion have the Sidney grown bulbs given you as good, better or poorer results than imported bulbs?
Scott, Sask.	Larger and of much better appearance	A. All varieties did not grow, but where strong growth, broad leaves. B. Much larger 3½" across, and 3" deep as compared with 2½". C. 14" as compared with 8-10". D. Colours more intense.	Sidney bulbs that grew gave much better results than Holland grown bulbs. Holland bulbs did not do as well as usual
Kentville, N.S.	Much better in appearance and size	Those grown a few years ago were better than similar varieties of Holland bulbs	Better
Summerland, B.C.	Very favourably	No appreciable difference noted	Perhaps not quite as good
Indian Head Sask.	Sidney bulbs were slightly larger and firmer than the average of the imported bulbs	Sidney bulbs were much superior to Holland grown bulbs as to vigour and yield of bloom and also to size and quality of bloom, and colouring was also much superior to Holland grown bulbs	With the single drawback that, with the exception of the Duchesse de Parma, all the Sidney bulbs were later than the imported bulbs in flowering, averaging a week later than the imported. Sidney bulbs were in every way superior to Holland grown bulbs

REPLIES TO QUESTIONAIRE *Re* SIDNEY BULBS—*Continued*

Kapuskasing, Ont	Sidney bulbs small and lighter	A. Better in yield and vigour. B. Bloom larger and purer. C. In height taller. D. Intensity of colour better	Better
Morden, Man	British Columbia bulbs somewhat larger and equally attractive	A. 50 per cent varieties superior. B. Some greater some less. C. Somewhat shorter. D. Better colour, deeper shades	On the whole British Columbia bulbs somewhat less uniform than Holland grown
Nappan, N.S	Larger and lighter in colour than Dutch bulbs	Sidney bloom larger and taller. Not so true to colour as the Dutch	In some particulars better
Fredericton, N.B	Not quite so large, but just as clear and bright in appearance	Sidney bulbs gave equally as good results as Holland grown in three varieties	Equally as good.
Lennoxville, Que	Sidney bulbs larger and stronger	Sidney bulbs were more even in growth and the shades more intense	Sidney bulbs on the whole, superior.
St. Anne de la Pocatiere	Very favourably	A. Just as good. B. Slightly larger and quality of bloom equal. C. Same height. D. Equal to Holland grown	As good if not better than those coming from Holland
Invermere, B.C	Appearance would have been equal to Holland bulbs if they had been packed in chaff	In all cases equal to Dutch	As good, and in some cases better
Cap Rouge, Que	No difference in size or appearance	No difference in yield or vigour. Intensity of colour the same. Size of bloom 25 per cent larger than Holland bulbs	As good and in some varieties better
Agassiz, B.C	In size equal to Holland grown, in appearance brighter and smoother	The yield of Sidney grown bulbs was better. The Sidney blooms were larger. Sidney blooms taller. Sidney blooms equal in intensity of colour to the Dutch	Sidney grown bulbs as a whole are superior to Holland grown bulbs
Brandon, Man	Sidney bulbs are larger and firmer	Sidney bulbs produce more vigorous plants. Bloom is decidedly larger and better. They are several inches taller. Not much diffsrence in colour	Decidedly better than Holland bulbs
Lethbridge, Alta	No variation	No variation	No variation
Charlottetown, P.E.I	Rather larger	Well in all particulars. 100 per cent stronger and larger. Bloom large and very fine. Taller than Holland grown sorts	As good and in some varieties better
Rosthern, Sask	Sidney bulbe much lighter in colour and thin skinned	Sidney bulbs appeared to be equally good with those from Holland	

From the replies received, it would appear that the Sidney bulbs were equal to, or superior to those grown in Holland, and without the danger of importing disease, which must be constantly guarded against.

MISCELLANEOUS

FILBERT—VARIETY EXPERIMENT

Many varieties of filberts, cobs, etc. (Corylus) have been under test for several years. Bluejays in great numbers have attacked our trees so that records of yield would be very misleading. The trees do well, and yield nuts of excellent quality. During 1923 birds were not so troublesome as in other years.

ALMONDS—VARIETY EXPERIMENT

The test of the almond as an orchard crop was begun 1915. Only one variety, a hard shell, *Amagdalus communis,* has fruited so far. The quality was very good, but the trees seem subject to mildew under our moist conditions. The future for the almond on the island would seem to be very uncertain. (See Bulletin 49, also for pecans and hickories).

CHESTNUTS—VARIETY EXPERIMENT

Many varieties of chestnuts are under test. Growth has been satisfactory They are beginning to bear, but have not reached a stage where a satisfactory report is possible.

WALNUTS—VARIETY EXPERIMENT

The walnuts at the Station continue to make progress, but have not yet reached the productive stage. The walnut develops slowly, and does not stand transplanting well. Seedlings, when young, transplant without serious check. Many grafted varieties and seedlings are under test.

NUT BREEDING

Seedlings to the number of 255 were taken from the nursery and set in hedge row in the autumn of 1922. We hope that out of the mass we may save some varieties of superior merit.

Many other projects of minor importance have again received attention, but concerning these there is little new to report. (For information relative to Olives, Persimmons, Lavender, Cascara, etc., see report for 1922.)

CEREALS

The cereal work of the Station is receiving more attention with the years. During the autumn of 1921 a range consisting of several acres was allocated to the Cereal Division. On this range a definite rotation will be followed, viz: twenty-five per cent to fall-sown cereals; twenty-five per cent to spring sown cereals; twenty-five per cent to roots, and twenty-five per cent to summer-fallow. This rotation will help to keep the varieties separate and free from weeds. It is intended to use the root area in conjunction with that of the Forage Crops Division, in so far as root work is concerned.

WHEAT

WHEAT SOWN IN THE SPRING

Variety	Date Cut	Average length of straw	Actual yield per acre	Remarks
		Inches	Bu. lbs.	
V.I.S. No. 1	Aug. 11	43	26 20	
V.I.S. No. 14	" 11	46	Destroyed	by pheasants.
Purple Marquis	" 11	40	24 –	Heavy yield Straw.
Bluestem X Marquis	" 11	44	20 20	
Marquis	" 11	37	33 20	
Kitchener	" 11	38	18 20	
Huron	" 11	48	33 40	
Red Fife	" 11	48	16 40	
Early Red Fife	" 11	48	20 40	
Marquis	" 11	42	24	
Golden Sun				Did not head.
Sun				Did not head.
V.I.S. No. 131				Did not head.
V.I.S. Velvet				Did not head.
Red Rock				Did not head.

Red Rock is a promising bearded wheat introduced by Professor Sprague, of Michigan, U.S.A. V.I.S. Velvet is a selection from a cross between Burbank Super and a plant found at Dean Bros., at Keating. Golden Sun is a selection from a cross between Golden Chaff and Sun. Purple Marquis is a selection from Marquis made in 1916. Marquis X blue stem is a cross made in 1916. Other V.I.S. wheats are introductions of the Experimental Station.

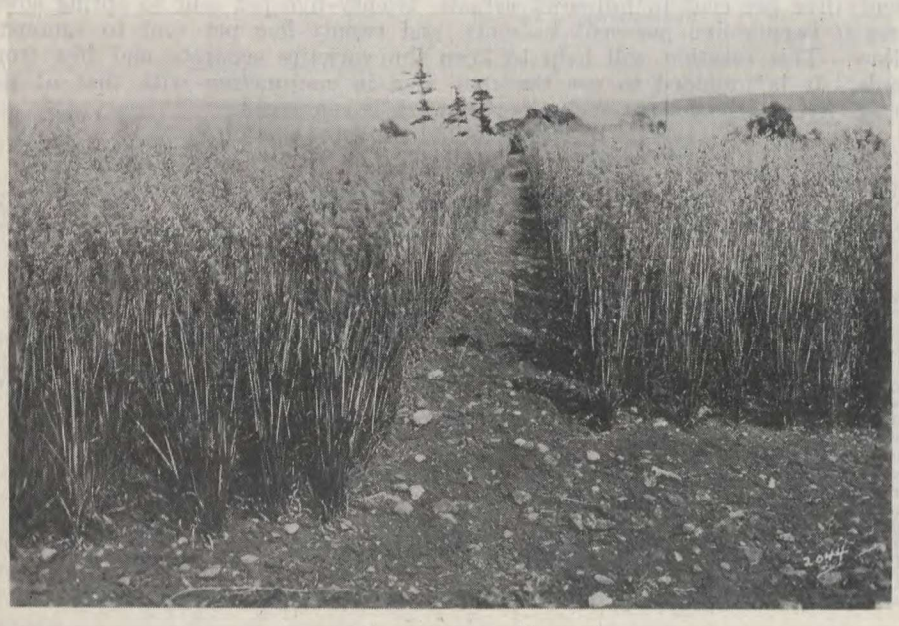
Wheat Sown in the Fall

Several varieties of wheat were sown in duplicate test plots, one eightieth of an acre each, on September 23, 1922. The soil, as over the entire range, was a fairly heavy clay, somewhat subject to winter-washing. The seeding was at the rate of two bushels to the acre.

Wheat Fall Sown—Test of Varieties

Variety	Date Cut	Average length of Straw	Actual Yield per acre		Remarks
		inches	Bu.	lbs.	
V.I.S. Golden Sun	June 23	50	36	–	
Sun	July 23	54	48	40	Very soft.
V.I.S. Velvet	June 23	52	29	20	Badly attacked by
Red Rock	" 16	50	29	20	Bearded. (birds)
V. I. S. 131	" 23	50	42	–	
Purple Marquis	" 23	48	27	20	
Bluestem x Marquis	" 23	48	–	–	
Kitchener	" 23	50	29	40	
V.I.S. No. 14	" 23	54	39	–	
V.I.S. No. 1	" 23	54	34	–	

It will be noted that Red Rock when Autumn sown is the earliest wheat we have, and Sun the latest. Both are very outstanding in their season. Red Rock is a bearded wheat and very hard for this country, while Sun is fit only for feed.



Kanota oats—Fall seeded.

OATS

OATS SPRING SOWN—TEST OF VARIETIES

Many varieties of oats were sown in duplicate in uniform test plots on April 26-28 on plots one eightieth of an acre in extent. The season was favourable for spring-sown oats, hence the crop was heavy in many instances.

OATS SPRING SOWN—TEST OF VARIETIES

Variety	Date Cut	Average length of straw	Actual Yield per acre		Remarks
		Inches	Bu.	lbs.	
Victor	Aug. 2	46	81	6	
Fulghum	" 2	30	21	26	
Winter Turf	" 2	46	30	20	
Liberty	" 2	30	13	18	
Longfellow	" 2	43	49	14	
Victor	" 2	33	28	28	
Early White Ripe	July 23	34	32	32	
0 713	" 23	49	70	20	
Joanette	Aug. 2	38	44	4	
Conqueror	" 2	51	97	22	Obtained from Brackman Ker Co
Banner 0·49	" 2	32	46	16	
O.A.C. 72	" 2	40	70	20	
Garton's Abundance	" 2	34	48	8	
Columbian	" 2	41	96	16	Central Ex. Farm.

The Conquerer oat obtained from the Brackman-Ker Seed Company, Victoria gave the heaviest yield, followed closely by Columbian with 96 bushels and 16 pounds to the acre. Both varieties have much to recommend them.

OATS FALL SOWN—TEST OF VARIETIES

Fourteen varieties of oats were sown in duplicate in uniform test plots one eightieth of an acre in size, on September 23. These oats germinated well, and though the winter was severe, yielded a moderate amount of straw.

OATS FALL SOWN—TEST OF VARIETIES

Variety	Date Cut	Average length of straw	Actual Yield per acre		Remarks
		Inches	Bu.	lbs.	
Early Ripe White	July 5	51	47	2	MacDonald College.
0·713	" 5	44	60	0	MacDonald College.
Joanette	" 16	40	52	12	MacDonald College.
Banner	" 12	42	82	32	Ottawa C.E.F.
O.A.C. 72	" 5	35	61	6	Ottawa C.E.F.
Conqueror	" 12	42	87	2	Brackman-Ker.
Grey Winter	" 12	30	51	26	Port, Seed Co.
Garton	" 12	34	70	20	
Garton's Abundance	" 5	38	69	14	Brackman-Ker
Victor	" 12	42	75	28	
V.I.S. Winter White	" 12	50	57	22	Ex. Stat. Sidney.
Winter Turf	" 12	40	63	18	Vermont.
Fulghum	" 5	36	62	12	Vermont.
Kanota	" 5	36	71	6	Kansas.

Much of America has been combed in getting this collection of oats together. Conquerer is again at the top, as it was when spring sown, despite the fact that it is a regular spring oat.

The difference between spring and winter oats is not so well defined as between the two great classes of wheat. Winter oats are more prostrate in habit than the regular sorts, but when sown in the spring, head in season, and forget that they are supposed to behave in a different way.

BARLEY

Barley Spring Sown—Test of Varieties

Five varieties of barley were sown in duplicate, April 25 at the rate of 2½ bushels per acre.

Barley Spring Sown—Test of Varieties

Variety	Date Cut	Average length of Straw	Yield per acre	
		Inches	Bu.	lbs.
O.A.C. 21	July 23	36	18	16
Chinese	" 23	31	16	12
Manchurian	" 23	43	33	36
Hulless	" 23	28	11	0
Himalayan	" 23	33	28	36

Barley Fall Sown—Test of Varieties

Six varieties of barley were sown in duplicate plots measuring one-eightieth of an acre, September 30.

Barley Fall Sown—Test of Varieties

Variety	Date Cut	Average length of straw	Yield per acre	
		Inches	Bu.	lbs.
O.A.C. 21	June 14	40	27	34
Manchurian	" 14	44	28	37
Himalayan	" 14	38	23	16
Albert	" 14	26	13	26
Chinese	" 22	46	55	40
Duckbill	" 14	44	29	28

It has been noticed that barley is often more hardy than wheat. In some cases when wheat will perish outright during the winter, barley will persist and probably yield more heavily than when spring sown.

FIELD PEAS

Field Peas Spring Sown

Field peas were sown in uniform plots in duplicate at the rate of 2½ bushels per acre on April 28. New Zealand Maple and Solo were used for the purpose. Both varieties are popular in the district. These plots were attacked by droves of crows and pigeons and later by pheasants, causing total loss.

Field Peas Fall Sown

The fall sowing of peas is practised by a few farmers. Though success is not unusual, the percentage of failure is too great to permit of favourable recommendation. The Solo and Maple are among the best, while the Arthur often winter kills.

FORAGE CROPS

The returns from many forage crops on Vancouver island are small Swedes, because of plant lice and dry weather, have practically been abandoned, and owing to cool nights corn is not at its best. Sunflowers are not popular.

Following success achieved in the cereal department from fall seeding, some work has been attempted along similar lines in forage crop production, but without marked success except in ensilage mixtures. A mixture of oats, wheat and vetch, fall-sown, for ensilage, remains popular. Alfalfa does well on some soils and is cut three times during the season. Peas and vetch are much used by all dairy farmers. Timothy and clover yield abundant crops and furnish standard hay crops throughout the district.

Indian Corn—Variety Test

Sixteen varieties and strains of corn for ensilage were sown on May 8, in rows 36 inches apart, and thinned so that plants stood 12 inches apart in the rows. The yield records were taken from four rods cut from four distinct places in each row.

Indian Corn—Variety Tests for Ensilage Purposes

Variety	Per cent Stand	Date Tassel	Date Silk	Height Plant	Height Ear		Date Cut	Yield Acre		Dry Matter
					Up	Lower				
					inches	inches		tons	lbs.	"
Que. 28	80	July 24	Aug. 1	5′ 6″	26	20	Spet. 12	10	10	35·3
N. W. Dent 15-772	85	July 24	Aug. 1	5′ 4″	27	23	Sept. 12	6	980	32·9
N. W. Dent Lot A. B.	90	July 24	Aug. 1	6′10″	41	35	Sept. 12	15	800	20·2
Longfellow	60	Aug. 8	Aug. 18	6′ 6″	26	19	Sept. 12	8	60	25·5
Longfellow Lot 1099	85	Aug. 8	Aug. 18	6′ 9″	28	25	Sept. 12	9	1,860	24·4
Wis. No. 7	90	Aug. 8	Aug. 22	7′ 6″	48	39	Sept. 12	15	1,680	24·8
Wis. No. 7	85	Aug. 8	Aug. 22	7′ 0″	46	42	Sept. 12	12	640	23·8
90 Day W. Dent	75	Aug. 14	Aug. 22	7′ 3″	50	44	Sept. 12	12	420	22·4
Gold Glow	80	Aug. 14	Aug. 22	7′ 4″	47	38	Sept. 12	12	200	24·4
Leaming	75	Aug. 18	Aug. 24	7′10″	45	41	Sept. 12	13	840	23·0
Leaming	80	Aug. 18	Aug. 24	7′ 7″	35	28	Sept. 12	12	1,520	23·1
Yel. Dent Lot 1015	100	Aug. 1	Aug. 8	6′ 3″	32	26	Sept. 12	16	120	26·8
Comp. Early	60	Aug. 12	Aug. 18	6′ 6″	27	21	Sept. 12	12	1,300	21·8
Wh. Cap Yel. Dent	80	July 12	Aug. 18	6′ 7″	44	35	Sept. 12	10	20	24·8
N. Dakota	80	Aug. 1	Aug. 8	6′ 0″	26	20	Sept. 12	10	680	26·7
Twitchell	70	July 24	Aug. 1	5′ 0″	.....	.....	Sept. 12	11	1,320	29·2

The corn grew very well during the season, but growth was somewhat checked by dry weather. All varieties were early enough for ensilage. Some sorts would have ripened seed much before end of season.

Field Roots—Dates of Planting Field Root Seed

Field roots are not at their best when spring sown on Vancouver island. Is it feasible to sow field root seed in the autumn, and if so at what time? To determine this point mangels, kale, sugar beets, carrots, turnips and rape were sown in quadruplicate on three dates, viz., October 5, October 16 and November 10, 1922. The behaviour of these roots when fall-sown may be gathered from the following tables:—

MANGELS

Date of Seeding	——	Remarks
October 5	All winter-killed.	
October 16	All winter-killed.	
November 10	All winter-killed.	

KALE

October 5	No killing	Plants made 8″ growth by April 17, 1923.
October 16	No killing.	
November 10	30% killed	Growth stunted.

SUGAR BEETS—(VARIETY WATERLOO)

October 5	90% killed	Remaining 10% weak.
October 16	90% killed	Remaining 10% weak.
November 10	All killed.	

CARROTS—(DANISH CHAMPION)

Date of Seeding	——	Remarks
October 5	No killing	Plants 2″ high April 1, 1923.
October 16	No killing	Diminishing growth.
November 10	20% killed.	

TURNIPS—(KANGAROO)

October 5	20% killed	Plants 4″ high, April 17, 1923, and in flower.
October 16	20% killed	Plants 3″ high, April 17, 1923, and in flower.
November 10	50% killed	Remaining plants very stunted.

RAPE

October 5	No killing	Plants 6″ high and in flower, April 17, 1923.
October 16	No killing	Plants 4″ high and in flower, April 17, 1923.
November 10	30% killed	Very stunted.

Nothing is to be hoped for from the fall-sowing of mangels. Kale is very hardy and may be seeded at any time except in very late season. Sugar beets promise better. Carrots are worthy further trial. Turnips, if hardy enough to winter, go to seed in early spring, while rape, though not promising, may have possibilities.

The most of the field roots if sown too late are sure to winter kill, and if sown too early they throw up a flower stalk and go to seed before they have reached sufficient size to make them of any value from the feeding standpoint.

SUNFLOWERS—VARIETY TEST FOR YIELD AND PURITY

Sunflowers are not popular in the district, yet they are well thought of by some. The seed was sown on May 7, in rows 36 inches apart and thinned to

12 inches apart in row. The yield figures were taken from weights obtained from cutting a rod of sunflowers in four distinct places in the row and averaging results.

SUNFLOWER—VARIETY TESTS

Variety	Stand	Date of Maturity	Height at Harvest	Yield per Acre	Dry Matter
	%			Tons lbs.	%
Mixed Mennonite	100	Aug. 27..	5'6"	13 180	22·2
Ear. Ottawa 76	95	Sept. 1..	5'2"	14 600	20·6
Manchurian	100	Sept. 15..	5'	10 260	20·0
Mammoth Russian	100	Sept. 15..	6'	17 320	23·2

The yields of sunflowers are only moderate on Vancouver island, but heavier than corn. If the dry weights are considered, however, corn is slightly the better yielder.

TIMOTHY—VARIETY TESTS

Four strains of timothy were sown in test plots one eighty-eighth of an acre in size on May 10. These were seeded broadcast. The following varieties were used: Commercial, Ohio Commercial, 3937 Ohio and Boon-O. Superior and uniform strains are looked for, but no report is yet available.

ALFALFA—VARIETY TEST

Eight varieties of alfalfa, viz:, Turkestan, Genuine Grimm, Shoobut, Cossack, Variegated, Siberian, Yellow Flower, McCannus, were sown in uniform test plots on May 11.

WHITE DUTCH CLOVER—VARIETY TEST

This project was begun in 1922 and is being continued. Seed of Commercial, Kentish, Danish Morso, Scottish, Danish Strino and Ladino were sown in uniform test plots on April 27. The first crop was harvested in 1923 as follows:—

WHITE DUTCH CLOVER BREEDING

Strain	Date of Seeding	Date Cutting	Yield per Acre Dry Weight
	1922	1923	Tons lbs.
Commercial	April 27....	June 21....	1 640
Kentish	April 27....	June 21....	1 80
Danish Morso	April 27....	June 21....	1 1,800
Scottish	April 27....	June 21....	2 ..
Danish Strino	April 27....	June 21....	1 1,800
Ladino	April 27....	June 21....	2 200

The Ladino from the start was most vigorous, and the yield indicates its value.

ALFALFA BROADCAST *vs.* ROWS FOR HAY PRODUCTION

Alfalfa has been and is grown in rows at this Station. The row system permits of cultivation and is a success. We think, however, that the broadcast system has some advantages in that the alfalfa broadcast may hold all weeds in check, and cultivation will not be necessary. Accordingly another field was seeded to alfalfa broadcast adjacent to that of the row system in 1923. No yield comparison is yet possible.

ORCHARD GRASS—VARIETY TEST

Several varieties have been seeded in duplicate test plots, part in 1922 and others in 1923. Results for the 1922 seeding are now available.

ORCHARD GRASS—VARIETY TEST

Variety	Height April 1	Height June 4	Date Bloom	Date of Cutting	Yield	
		"			Tons	lbs.
Commercial	15½	38	May 24	June 4	5	648
Danish Hunde Grass	13	36½	May 31	June 4	4	272
Skandia Lot 7	.....	.....	.....	.....	..	..
Skandia Lot 11	.....	.....	.....	.....	..	..

Since Skandia Lot 7, and Skandia Lot 11 were sown in 1923, no report concerning these is possible.

RECOMMENDED ENSILAGE CROP

The ensilage crop grown and recommended by the Station is a mixture of vetch, oats and wheat sown about the first of October. Practically all of the farmers use a mixture, the same or similar to this when a crop is grown for the silo. The proportions in the mixture have varied with us from year to year, hoping thus to find the ideal ensilage for Vancouver Island. The essentials are these: first, the crop must yield well; second, the crop must be one that may be economically harvested by machine; third, the ensilage must be relished by cattle. The greater the percentage of vetch, the greater the yield and the greater the difficulty connected with harvesting. The wheat, of lesser value from the feed standpoint, is essential in helping to hold the crop from the ground until the harvest. At present we are using per acre: Vetch, 50 pounds; oats, 40 pounds; wheat, 30 pounds. The vetch is the common spring vetch, the oats usually "Gartons Abundance" and the wheat "Sun." It has been found to produce 14 tons of green feed to the acre and at a cost of $3.79 per ton. These figures vary of course from year to year, but are as near correct as may be.

SUGAR BEET INVESTIGATION

To determine the suitability of district for sugar beet production, several varieties of beets were planted in 1923. These roots grew well, and were forwarded to Ottawa for analysis. They were found to contain:—

SUGAR BEETS—1923

Laboratory No.	Variety	Sugar in Juice	Co-efficient of Purity	Average weight of one root	
		%		lbs.	oz.
68776	Kitchener	16·76	85·61	1	12
68777	Chatham	16·58	87·04	1	6

BOTANY

Comparatively little work has been attempted in co-operation with the botanical department, and yet something has been accomplished of distinct value. In a country like this with mild winters and much rainfall, lawns are greatly troubled with moss. It is not easy to accomplish the destruction of the moss without destroying the lawn.

Rose mildew, possibly because of the same climatic condition as before mentioned, is especially troublesome. Entire plantations are sometimes destroyed by the fungus. Its control is not easy. In a land of roses the problem is a real one, and its solution sought by many. During 1923 both problems were investigated.

DESTRUCTION OF MOSS ON LAWNS

The problem was to find some method that would kill the moss, save the grass, and to stimulate it to more active growth. Accordingly contiguous plots were laid out on the lawn adjoining the Park area and a different treatment applied to each as follows:—

Plot 1.—Moss raked out.
Plot 2.—Moss raked out; plot reseeded to lawn grass.
Plot 3.—Manure plus lime.
Plot 4.—Lime only.
Plot 5.—Guano.
Plot 6.—Sulphate of iron followed by nitrate of soda.

The accompanying table shows the results:

DESTRUCTION OF MOSS ON LAWNS, 1923

Date	Plot 1 — Moss raked out	Plot 2 — Moss raked out, lawn reseeded	Plot 3 — Manure and Lime	Plot 4 — Lime only	Plot 5 — Guano	Plot 6 — Iron Sulphate 5% solution, followed by Nitrate of Soda
May 12.....	Strong growth no new moss.	New seed growing well no new moss.	Strong growth grass and clover, moss not active.	Slow growth grass and clover, moss not active.	Strong growth grass, clover and moss.	Strong growth grass and clover, moss dead.
June.....	Strong growth grass and clover, no new moss.	Grass growing well. no new moss.	Grass growing well. Moss not active.	All growth very slow.	Strong growth grass, clover and moss.	Strong growth grass and clover, moss dead.
July.....	No moss appearing.	No moss. Appearance fair.	No effect on moss.	All growth very slow.	Strong growth grass clover and moss.	No new moss. Appearance excellent.

It will be noticed that the moss raked out remained out for the year and that manure stimulated the grass and had a similar effect on the moss. That lime retarded the growth of grass and moss, and that a 5 per cent solution of iron sulphate killed the moss outright and did not injure the grass. A weak solution of nitrate of soda following stimulated the remaining grass to such an extent that the plot so treated was clearly marked all summer because of its green colour. Iron sulphate, 5 per cent solution, is a remedy that we recommend with confidence.

All of the plots in April at the beginning were so covered with moss that the grass was scarcely noticeable. The May, June and July reports were made one, two, and three months after application of the various treatments, fertilizers or chemicals.

ROSE MILDEW CONTROL

The object of this experiment begun in 1923 was to determine the most feasible way of combating Rose Mildew. Plants in plots 1, 2, 3, 4, 5, and 6 were treated in different ways, as follows:—

Plot 1.—Sulphur 90 parts, arsenate of lead 10 parts.
Plot 2.—Lime sulphur (summer strength).
Plot 3.—Bordeaux mixture (summer strength).
Plot 4.—Potassium sulphide, 1 ounce; water, 3 gallons.
Plot 5.—Flowers of sulphur, dusted.
Plot 6.—Ammoniacal copper carbonate.

The results are summarized in the accompanying table:—

CONTROL OF ROSE MILDEW

Chemical Used	*Remarks*
Lime sulphur	Mildew controlled, leaves discoloured.
Bordeaux mixture	Foliage greatly injured, mildew not controlled.
Potassium sulphide 1 oz.; water 3 gallons	Mildew partially controlled, no apparent injury to foliage.
Sulphur	Mildew not controlled. No injury to foliage.
Ammoniacal copper carbonate	Mildew not controlled. No injury to foliage.

NOTE.—Ammoniacal copper carbonate is made as follows: Copper carbonate, 6 ounces; ammonia, 3 pints; water, 50 gallons.

Lime sulphur was quite effective, but since the rose has value only because of its beauty, the discolouring of the foliage is a great drawback. Bordeaux mixture, though a failure, is worthy of another trial. Potassium sulphide was partially effective, but nothing that we have yet found is wholly so. A remedy that will control rose mildew and not discolour the foliage is badly wanted, but to our knowledge, not yet found.

POULTRY

No division of the Station work has received more attention than that of poultry. The problems connected with the industry are attacked from many standpoints, and the results obtained year by year added to the sum total of our knowledge.

White Wyandottes are kept exclusively. All the birds on the Farm are trap-nested and records kept of all chicks hatched. A very complete system of pedigreeing is followed, so that our breeding pens contain blood lines of outstanding merit.

COMPARISON OF VARIOUS SYSTEMS OF INCUBATION

Results obtained at the Station would point to the value of the simpler and smaller incubators as a system of incubation. During the past year hens were used to a greater extent than heretofore. They are, and will continue to be, satisfactory to the farmer and the smaller breeders.

COMPARISON OF SYSTEMS OF INCUBATION—YEAR 1923

Method	Total eggs set	Number fertile	Per cent fertile	Number of chicks hatched	Per cent total eggs hatched	Per cent fertile eggs hatched	Number of chicks alive in three weeks	Per cent chicks alive in three weeks	Total eggs required for one chick hatched	Total fertile eggs required for one chick hatched	Total eggs required for one chick alive at end of three weeks
Hens	311	179	57·5	151	48·5	84·3	141	93·3	2·0	1·1	2·2
Jubilee	2,064	1,723	83·4	1,046	50·6	60·7	875	83·6	1·9	1·6	2·3

The per cent total eggs hatched was slightly better under artificial conditions, but the per cent fertile eggs hatched and the per cent chicks aliye at the end of three weeks was in favour of natural incubation. It will also be noted that there is very little difference in the number of eggs required for one chick at the end of three weeks.

AVERAGE FOR TWO YEARS

Method	Total eggs set	Number fertile	Per cent fertile	Number of chicks hatched	Per cent total eggs hatched	Per cent fertile eggs hatched	Number of chicks alive in three weeks	Per cent chicks alive in three weeks	Total eggs required for one chick hatched	Total fertile eggs required for one chick hatched	Total eggs required for one chick alive at end of three weeks
Hens	399	242	60·6	192	48·1	79·3	x141	x93·3	2·0	1·2	x2·2
Juhilee	3,864	2,920	75·5	1,931	49·9	66·1	x875	x83·6	2·0	1·5	x2·3

xAverage for one year only.

BREEDING FOR FERTILITY, HATCHABILITY AND LIVABILITY

The Experimental Station at Sidney has consistently obtained better results, from the incubation standpoint, from mature hens than from pullets. This has been so outstandingly the case at the Farm for several years, that breeding from pullets' eggs is conducted at present more for the sake of experiment than any other reason.

HATCHING RESULTS—HENS VS. PULLETS

Ages	Total eggs set	Number fertile	Per cent fertile	Number of chicks	Per cent total eggs hatched	Per cent fertile eggs hatched	Number of chicks alive in three weeks	Per cent chicks hatched alive in three weeks	Total eggs required for one chick hatched	Total fertile eggs required for one chick hatched	Total eggs required for one chick alive in three weeks
Hens	2,044	1,737	84·9	1,105	54·0	63·6	965	87·3	1·8	1·5	2·1
Pullets	331	165	49·8	92	27·7	55·7	51	55·4	3·5	1·7	6·4

AVERAGE FOR TWO YEARS

Hens	5,452	4,212	77·2	2,728	50·0	64·7	*965	*87·3	1·9	1·5	*2·1
Pullets	809	514	63·5	222	27·4	43·1	*51	*55·4	3·6	2·3	*6·4

*Averages for one year only.

It will be noticed, that it takes three times as many pullet eggs to secure one live chick at three weeks, as from hens. This is quite in keeping with results previously obtained.

DATES FOR INCUBATION

Date Set	Total eggs set	Number fertile	Per cent fertile	Number of chicks hatched	Per cent total eggs hatched	Per cent fertile eggs hatched	Number of chicks alive in three weeks	Per cent chicks alive in three weeks	Total eggs required for one chick hatched	Total fertile eggs required for one chick hatched	Total eggs required for one chick alive at end of third week
February	157	122	77·7	44	28·0	36·0	26	59·0	3·5	2·7	6·0
March	952	796	83·6	527	55·3	66·2	443	85·0	1·8	1·5	2·1
April	1,266	984	77·7	626	49·4	63·6	542	86·5	2·0	1·5	2·3

The seasons vary greatly on Vancouver island. Deductions may be made, but conclusions are often faulty. What is true for the one year may not be true for the next.

FISH MEAL VS. BEEF SCRAP

Beef scrap is used by many poultrymen, but is a very expensive food, and hence a costly method of furnishing protein. During the last few years, fish meal has been on the market, and offered as a poultry food. Some of the earlier makes were said to produce fishy eggs, but more recently this has been overcome by the elimination of the oils. During 1923 Fish Meal was on trial. Tabulated results are shown in the accompanying table.

FISH MEAL VS. BEEF SCRAP

	Weight of ten birds when test started	Weight of ten birds at end of test	Total number of eggs laid	Average weight of eggs per dozen	Pounds of feed consumed	Cost of feed consumed	Pounds of feed per dozen eggs	Feed cost of one dozen eggs	Remarks
Beef Scrap....	41·6	46·8	1,777	23·6	863	$21 42	5·8	14·4	One bird died in May and was replaced by another.
Fish Meal.....	41·3	45·8	1,615	22·2	858	18 86	6·3	14	

The birds fed on fish meal laid 152 eggs less than those fed on beef scrap, yet with this handicap, the cost of producing one dozen eggs was less on fish meal than on beef scrap, by nearly one half cent per dozen. Careful tests were made by several persons as to flavour. No indication of bad flavour was found in any instance.

HASTENING MATURITY OF LATE PULLETS

Every year the poultryman has a number of pullets, which, from their breeding, should go in the laying houses, and yet they are not mature enough for best results. With the hope that maturity might be hastened, and consequently the laying period, this project was undertaken. In 1922 the results shown in the accompanying table were obtained:—

EFFECT OF CRATE FEEDING ON PULLETS

Method of feeding	Number of birds	Weight at start of preparation period	Weight at end of preparation period	Weight when first egg laid	Date first egg laid	Days from start of preparation to first egg laid	Winter record	Years record	Loss or gain in weight	Average number of days from start of preparation to first egg laid
		lbs.	lbs.	lbs.					lbs.	
Dry mash.....	201	3·5	3·7	5·3	Jan. 12....	94	28	184	Plus 2	
	202	3·4	3·7	4·9	Dec. 16...	67	52	244	" 3	
	203	3·5	4·0	5·0	Dec. 20...	71	47	232	" 5	
	204	3·7	4·3	5·0	Nov. 14..	35	45	162	" 6	
	205	3·4	4·1	4·8	Nov. 23..	44	56	248	" 4	
	208	4·0	4·4	5·0	Feb. 12...	125	11	183	" 4	72·6
Total.....	.....	.....	.....	.....	.....	.....	239	1,253		
Average.....	.....	.....	.....	.....	.....	.....	39·5	208·8		
		lbs.	lbs.	lbs.						
Crate fed.....	51	3·5	3·8	3·8	Nov. 28..	49	36	217	Plus 3	
	52	3·4	3·8	4·2	Dec. 29...	80	47	153	" 4	
	53	3·6	4·1	4·7	Dec. 14...	65	30	160	" 5	
	54	3·7	4·0	4·9	Dec. 30...	81	24	164	" 3	
	55	3·7	4·1	5·1	Jan. 11....	93	25	135	" 4	
	56	4·0	4·7	5·4	Nov. 27..	48	52	172	" 7	69·3
Total.....	.....	.....	.....	.....	.....	.....	214	1,001		
Average.....	.....	.....	.....	.....	.....	.....	35·6	166·8		

In 1923 the project was made more comprehensive by introducing a wet mash, so that we have crate feeding and wet mash as in comparison with the normal or dry mash feeding of late pullets as follows:—

HASTENING MATURITY OF LATE PULLETS

Method of Feeding	Average winter production	Average year's production	Average days in preparatory period to first egg	Remarks
Dry mash	29·0	174·5	50·0	Check.
Wet mash	14·0	124·5	92·3	Two birds died July.
Crate Feeding	24·3	168·1	64·4	One bird died March.
Average for Two Years				
Dry mash	34·4	191·6	61·3	
Wet mash	*14·0	*124·5	*92·3	
Crate feeding	30·0	167·5	66·8	

*Average for one year only.

Results obtained over a period of two years are not encouraging, for it will be noticed that the chicks fed normally on the dry mash did better than those forced by wet mash or crate feeding.

CONFINEMENT VS. RANGE FOR EGG PRODUCTION

The objects of this experiment were to compare the egg production of birds kept confined entirely, with that of those allowed range in the usual way. During 1922, the confined birds did better than those on range, while during the past year, the two systems were almost on a par, as is indicated by the accompanying table:—

CONFINEMENT VS. RANGE

Month	Weight of birds		Number eggs laid		Weight eggs per doz		lbs. feed used		lbs. feed doz. eggs		Cost feed		Feed cost doz. eggs	
	conf.	range	conf.	range	conf.	range	conf.	range	conf.	range	conf.	range	conf.	range
	lbs.	lbs.			oz.	oz.					$	$	cts.	cts.
December	41·4	41·6	47	50	21·	19·5	84	71	21·4	17·	2 15	1 81	54·0	43·00
January	47·1	44·6	123	133	22·5	22·5	75	80	7·3	6·7	1 84	1 96	17·88	17·64
February	49·3	54·8	130	201	23·	23·5	68	83	6·2	4·9	1 68	2 04	14·76	12·12
March	50·5	55·	183	252	23·	24·	77	94	5·0	4·4	1 86	2 26	12·19	10·56
April	48·5	52·5	160	204	24·5	24·	73	84	5·4	4·9	1 72	1 97	12·84	10·92
May	45·5	51·3	138	174	24·5	24·	68	72	5·9	4·9	1 67	1 76	14·52	12·12
June	46·	49·	197	210	24·5	24·	72	79	4·3	4·5	1 85	2 05	11·26	11·71
July	46·5	46·7	203	163	24·2	24·5	81	73	4·7	5·3	2 11	1 88	12·46	13·84
August	45·3	46·4	214	73	24·	24·	96	85	5·3	13·9	2 55	2 24	14·29	36·81
September	46·6	47·0	155	146	23·	24·	70	70	5·4	5·7	1 74	1 74	13·46	14·29
October	46·3	46·8	166	171	24·	24·	68	72	4·9	5·0	1 67	1 71	12·07	12·00
			1,716	1,777	23·64	23·64	832	863	5·8	5·8	20 84	21 42	14·56	14·46

COST OF EGG PRODUCTION

The cost of producing a dozen eggs has been determined month by month for five years. Details covering this work have been printed in previous reports. The following is a summary for five years:—

SUMMARY—Cost of Egg Production

	1919	1920	1921	1922	1923	Average for five years
Average production	179·1	200·8	219	188·2	160·2	189·4
Pounds of grain and mash to one dozen eggs	6·29	5·81	4·61	6·1	5·4	5·64
Cost of all feed per one dozen eggs...cts.	23·40	25·2 cts.	16·02 cts.	16·7 cts.	13·5 cts.	18·9 cts.
Month of highest cost per dozen eggs	Nov.	Dec.	Nov.	Oct.	Dec.	Nov.
Month of lowest cost per dozen eggs	June	Feb.	April	May	June	June
Month of highest production	March	March	March	March	April	March
Month of lowest production	Nov.	Nov.	Oct.	Nov.	Nov.	Nov.

BEST HATCHING DATE FOR EGG PRODUCTION

Eggs may be hatched at nearly any time during the winter on Vancouver island. Should pullets be hatched in March, April or May for best results as future layers? Results for 1923 and average for two years are shown in the accompanying table:—

SUMMARY OF WORK WITH MARCH, APRIL AND MAY HATCHED PULLETS

	1923			Average for two years		
	March	April	May	March	April	May
Eggs per bird	184	165·5	192·2	178·3	176·8	189
Average cost of feed	$2.05	$2.11	$2.19	$2.25	$2.29	$2.37
Value eggs per bird	$4.69	$4.32	$5.10	$4.92	$4.82	$5.28
Profit over cost of feed per bird	$2.64	$2.21	$2.91	$2.68	$2.52	$2.96

Results for two years would indicate that birds may be hatched too early for best results from the standpoint of egg production.

CONFINEMENT VS. RANGE IN BREEDING

The laying results obtained from birds in confinement and on range has already been given; in this experiment, the hatching results obtained from the confined and range birds have been determined as follows:—

CONFINEMENT VS RANGE IN BREEDING

Pen	Number of eggs set	Per cent fertile	Number of chicks	Per cent total eggs hatched	Number of chicks alive in three weeks	Per cent chicks alive in three weeks	Number of chicks alive July 1	Number eggs required for one chick July 1
Confined	70	70·0%	26	37·1	13	50%	8	8·75
Range	90	61·2%	30	33·3	15	50%	13	6·92

It will be noticed that the hatching results obtained, though not good in either case from the two pens in question, is somewhat better with the range birds than with those confined.

Six hens were selected from those that had been confined during the year November, 1921, to October, 1922. These birds were given free range in November, 1922, and then mated in the following February along with six birds from the 1921-22 range pen to a vigorous young cockerel. Results follow:—

CONFINEMENT VS RANGE IN BREEDING

Pen	Number of eggs set	Per cent fertile	Number of chicks	Per cent total eggs hatched	Number of chicks alive in three weeks	Per cent chicks alive in three weeks	Number of chicks alive July 1	Number eggs required for one chick July 1
Confined.....	40	85·0	22	55·0	21	95·4	21	1·9
Range.....	40	64·5	15	37·5	14	93·3	11	3·6

After three months free range the birds that had been kept for one year in confinement gave better fertility, hatchability and livability than did the hens that had always been on range. The results obtained are for one year only and cannot be regarded as final.

STANDARD (HOME MIXED) GRAIN AND MASH VS. COMMERCIAL GRAIN AND MASH

During 1922 commercial grain and mash put out by the Brackman-Ker Milling Company was on trial in comparison with that in common use at Sidney. For results see report for 1922. In 1923 "Scratch" and "Mash" as sold by the Vancouver Milling Company was used. Results follow:—

STANDARD GRAIN AND MASH VS COMMERCIAL GRAIN AND MASH

Kind of Feed	Weight of ten birds start of feeding period	Weight of ten birds end of feeding period	Total number of eggs laid	Average weight of eggs per doz.	Pounds of feed consumed	Total cost of feed	Pounds of feed per doz. eggs	Feed cost of one doz. eggs
	lbs.	lbs.		oz.	lbs.	$	lbs.	cts.
Home mixed feed.	41·6	46·8	1,777	236·	863	$21.42	5·8	14·4
Commercial feed..	41·2	46·5	1,732	22·5	823	20.29	5·7	13·9

When results are combined for two years we find as follows:—

—	Sidney	Commercial
Total number of eggs laid	3,431	3,332
Average weight eggs per dozen oz.	23·5	22·6
Pounds feed consumed lbs.	1,658	1,597
Total cost of feed $	43.62	37.89
Pounds feed per dozen eggs lbs.	5·7	5·7
Total cost per dozen eggs cts.	15·2	13·6

In 1922 we said that the outstanding thing as determined by results for one year was the fact that hens laid more eggs on the Sidney ration, that they eat more feed in doing so, and that the cost was greater than on the commercial. Our results for 1923 confirm the observation. At the Station we feed beef scrap which costs more money than some other forms of protein, which may eventually take its place. Birds fed the Sidney ration laid eggs which averaged larger by nearly one ounce to the dozen than those fed the commercial. To explain this is not easy, but it appears more than a coincidence since it has been constant for two years.

APIARY

The season of 1923, from the standpoint of honey production, was somewhat disappointing. The bees for the most part wintered well, climatic conditions were favourable and honey plants were as abundant as usual; in spite of this, however, very little nectar was gathered. This peculiar condition was constant throughout the extreme West.

Heretofore our work with bees has not been extensive, but satisfactory in so far as the small number of colonies would permit. Bees on the Saanich peninsula are somewhat limited for pasturage on account of the sea on one side, and extensive forests of conifers on the other. Spring and autumn honey plants are not abundant enough to supply enough nectar for the bees, consequently, during these two periods the bees have to be fed. The only considerable surplus honey comes from clover, and during this flow the gain is quite marked.

Many parts of the island are, we think, much superior to the Station farm for honey production. To ascertain if this is correct and for the purpose of later on mapping the island from the beekeeper's standpoint, three out-apiaries were started during the past season at Sooke, Resthaven and Sluggetts.

COMPARISON OF WINTERING, 1922-1923

Number of Colony	Kind of Winter protection given	Size of hive	Condition before wintering				Condition after wintering						
			Number of combs covered by bees	Eggs	Sealed Brood	Date of last Autumn exam.	Date of first Spring exam.	Eggs	Larvae	Sealed Brood	Number of frames of brood	Surplus for Season	Remarks
1.....	Kootenay Case.	10 fr. L...	8	No record		Nov. 8.	Mar. 27..	Yes	Yes	Yes	3		
3.....	Kootenay Case.	10 fr. L...	8½	"		" 8.	" 27..	"	"	"	3	15 lbs.	
4.....	Kootenay Case.	10 fr. L...	8	"		" 8.	" 27..	"	"	"	4	15½ lbs.	Damp, some mildew
5.....	Double Wall....	10 fr.....	7½	"		" 8.	" 27..	"	"	"	3	28½ lbs.	
6.....	Kootenay Case.	10 fr. L...	8	"		" 8.	" 27..	"	"	"	3	23 lbs.	
8.....	Spring P. Top...	8 fr. L...	8	"		" 8.	" 27..	"	"	"	3		
9.....	Kootenay Case.	10 fr. L...	7	"		" 8.	" 27..	"	"	"	3	24 lbs.	
10.....	None.....	10 fr. L...	5½	"		" 8.	" 27..	"	"	"	1		

WINTERING 1922-23

Five colonies were wintered during 1922-23 in Kootenay cases with excellent results. One colony was wintered in a double-walled hive, one was wintered with top protection only and another without protection. All colonies were sheltered from wind by wind-breaks. The accompanying table summarizes the condition of the colonies when they were prepared for the winter and their condition in the following spring.

The colonies wintered in the Kootenay cases were in the best condition in the spring but the greatest yield was from the colony in the double-walled hive and the smallest crop from the colony that wintered without protection. It has been well demonstrated that outdoor wintering on the whole is more satisfactory than indoor wintering.

THE VALUE OF HONEY BEES IN CROSS POLLENATION

This experiment was continued on a much larger scale during 1923. Four apple trees (Jonathan) were selected and used, as follows:—

Tree 1.—This was covered with a cage which excluded all insects and a colony of bees placed inside during the period of bloom.

Tree 2.—Tree covered with cage so that all insects were excluded during period of bloom.

Tree 3.—Tree covered with a cage that excluded honey bees but allowed access to insects smaller than bees.

Tree 4.—Check tree not covered at all.

To draw conclusions from an experiment like this is dangerous for there are many factors which may bear on the problem and which need further study. We think it safe to conclude that the Jonathan is self-sterile. Even with bees confined inside the cage and with free access to the flowers, the apples did not mature even though 40 per cent of the blooms set.

GENERAL NOTES

PICNICS AND EXCURSIONS

The farm is always popular with picnic parties and visitors. Large numbers visited the place during 1923, including several dairymen's and other associations. The Vancouver Island Beekeepers' Association meets every month at the Farm. There was a steady flow of callers throughout the year seeking information on the various agricultural and horticultural problems. To these was given all the information and help possible. The Station was, as usual, visited by the heads of the various divisions at Ottawa.

PRESS

The press is kept in touch with our work. Numerous articles have been supplied for publication throughout the year. All new phases of our work being promptly brought to the notice of the public in this way.

MEETINGS

A number of meetings, Farmers' Institutes, Women's Institutes, Fruit Growers and Dairymen's conventions, etc., were attended, at which addresses, demonstrations and lantern shows were given. There is an ever increasing demand for this sort of work, which is difficult at times to meet.

BUILDINGS

A poultry contest house was built containing 34 pens. The building measures 216 feet by 14 feet. The demand for pens was heavy, and all would-be contestants could not be accommodated. The running of this contest has necessitated the visiting of most of the poultrymen on the Island and many on the adjacent islands.

DRAINS AND ROADS

The roads running through the Farm were kept in repair, and considerable gravel was hauled. Some draining was done in the field husbandry and cereal divisions, also in the horticultural division, with most satisfactory results. Considerable work was done on the V. & S. right of way, which is now practically cleared and ready for the plough.

EXPERIMENTAL PROJECTS UNDER WAY

ANIMAL HUSBANDRY

PROJECT No. — TITLE

A 56—Cost milk production.
A 58—Milk production—R. O. P. Records.
A 216—Establishing herds of dairy cattle.
A 219—Feeding minerals to calves and heifers.
A 268—Mineral food for dairy cattle.
A 269—Relationship between growth and age of dairy calves.

FIELD HUSBANDRY

ROTATION EXPERIMENTS

F 9—Three-year rotation—Roots; winter wheat; hay.
F 21—Four-year rotation—Corn; wheat oats and vetches; winter wheat; peas.
F 22—Four-year rotation—Roots; peas; winter wheat; clover.
F 23—Four-year rotation—Potatoes; oats; hay; wheat oats and vetches.
F 24—Four-year rotation—Potatoes; wheat oats and vetches; wheat; clover.
F 38—Five-year rotation—Corn; peas; wheat; timothy or western rye; vetches.

CULTURAL EXPERIMENTS

F 60—Rates of seeding silage crops.

FARM MANAGEMENT EXPERIMENTS

F 91—Cost of producing farm crops.

HORTICULTURE

SMALL FRUITS

H 1—Blackberry, breeding.
H 2—Blackberry, variety.
H 327—Blueberry, variety experiment.
H 348—Currant, spraying experiment.
H 4—Currant, variety experiment.
H 328—Dewberry, variety experiment.
H 6—Gooseberry, variety experiment.
H 347—Loganberry, spraying experiment.
H 325—Loganberry, training experiment.
H 11—Raspberry, variety experiment.
H 13—Strawberry breeding.
H 15—Strawberry, hill system, vs. matted row.
H 354—Strawberry, insect and disease control.
H 20—Strawberry, runners and yield correlation.
H 21—Strawberry, variety experiment.

TREE FRUITS

H 352—Almond, variety experiment.
H 22—Apple, breeding.
H 26—Apple, fertilizer and cover crop experiment.
H 33—Apple, variety experiment.
H 323—Apricot, training experiment.
H 334—Apricot, variety experiment.
H 340—Broussonetia, variety experiment.
H 349—Cascara, growing.
H 353—Chestnuts, variety experiment.
H 343—Eleagnus, variety experiment.
H 337—Fig, variety experiment.
H 338—Filbert, variety experiment.
H 326—Fruit trees, digging vs. blasting holes for planting.
H 40—Grape, variety experiment.
H 346—Lavender growing.
H 342—Loquat, variety experiment.
H 336—Medlar, variety experiment.
H 322—Nectarine, training experiment.
H 333—Nectarine, variety experiment.

H 320—Nut breeding.
H 344—Olive growing.
H 331—Orchard soil management; methods of,
H 43—Pear, breeding.
H 329—Pear, fertilizer experiment.
H 355—Pear, pruning experiment.
H 44—Pear, variety experiment.
H 321—Peach, training experiment.
H 332—Peach, variety experiment.
H 345—Persimmons, variety experiment.
H 45—Plum, breeding.
H 48—Plum, variety experiment.
H 339—Pomegranate, variety experiment.
H 335—Quince, variety experiment.
H 341—Tea, growing.
H 351—Walnut, variety experiment.

VEGETABLE GARDENING

H 60—Bean, broad, variety experiment.
H 61—Bean, bush, variety experiment.
H 55—Bean, breeding for immunity to anthracnose.
H 65—Beet, different dates of sowing.
H 75—Cabbage, protection from root maggot.
H 72—Cabbage, different dates of sowing for storage purpose.
H 83—Carrot, variety experiment.
H 79—Carrot, different dates of sowing.
H 88—Cauliflower, variety experiment.
H 90—Celery, blanching experiment.
H 309—Citron, variety experiment.
H 101—Corn, suckering experiment.
H 106—Cucumber, variety experiment.
H 107—Egg plant, variety experiment.
H 119—Melon, hotbed or hothouse, vs. Cold frames or outside sowing.
H 122—Melon, variety experiment.
H 138—Onion, variety experiment.
H 142—Parsnip, different dates of sowing.
H 153—Pea, variety experiment.
H 154—Pea, variety experiment for yield of green.
H 156—Peanut growing.
H 157—Pepper, variety experiment.
H 160—Potato, cost of producing.
H 170—Potato, harvesting at different dates for seed.
H 162—Potato, different dates of planting to obtain best yield.
H 186—Potato, variety experiment.
H 171—Potato, hill selection for seed.
H 182—Potato, spraying experiment.
H 183—Potato, sprouted vs. Unsprouted for seed.
H 188—Pumpkin, variety experiment.
H 193—Rhubarb, breeding.
H 356—Rhubarb, development from seed.
H 194—Rhubarb, forcing.
H 199—Spinach, variety experiment.
H 201—Squash, variety experiment.
H 207—Tomato, methods of training.
H 208—Tomato, mulching experiment.
H 214—Tomato, variety experiment.
H 216—Vegetable marrow, variety experiment.

ORNAMENTAL GARDENING

H 300—Holly, variety experiment.
H 275—Hyacinth, variety experiment.
H 278—Narcissus, variety experiment.
H 324—Rose, propagation.
H 330—Sweet pea, seed production: Different methods of,
H 357—Sweet pea, seed production: Studies in,
H 290—Tulip, variety experiment.

CEREAL.

Ce. 1—Wheat—Test of varieties.
Ce. 4—Winter wheat—Test of varieties.
Ce. 5—Oats—Test of varieties.
Ce. 6—Barley—Test of varieties.
Ce. 7—Field Peas—Test of varieties.
Ce. 66—Oats—Fall sowing of spring.
Ce. 67—Barley—Fall sowing of
Ce. 68—Fall sowing of spring peas.

FORAGE CROPS

Ag. 1—Indian Corn, variety tests for ensilage purposes.
Ag. 22—Dates of planting mangel seed.
Ag. 76—Sunflowers, variety tests for yield and purity.
Ag. 129—Alfalfa broadcast vs. rows for hay production.
Ag. 236—Orchard grass, variety tests for yield and suitability.

CHEMISTRY

C. 10—Sugar beet investigation.
C. 50—Experiment with potatoes, 1923.
C. 80—Sulphur experiment, 1923.

POULTRY

P. 1—Best make of incubator (Queen, Buckeye, Jubilee).
P. 3—Best date for incubation.
P. 17—Natural vs. artificial incubation.
P. 18—Best type of brooder.
P. 22—Brooding costs. Exp. (*a*) Feed costs.
P. 30—Hastening maturity of late pullets. Exp. (*a*) By crate feeding.
P. 43—Costs and gains in fattening roasters.
P. 55—Methods of handling for egg production. Exp. (*a*) Confinement vs. range.
P. 57—Relation of body weight to egg production.
P. 58—Best hatching date for egg production.
P. 62—Costs of egg production. Exp. (*a*) per dozen.
P. 66—Best type of laying house.
P. 76—Standard (home mixed) vs. commercial grain.
P. 79—Standard (home mixed) vs. commercial mashes.
P. 108—Costs of feeding layers. Exp. (*a*) Monthly amount of feed.
P. 111—Breeding for fertility, hatchability and livability. Exp. (*a*) Hens vs. pullets.
P. 120—Confinement vs. range in breeding.
P. 153—Types of trapnests.

APIARY

Ap. 1—Control of swarming by dequeening and requeening.
Ap. 5—Methods of detecting preparations for swarming.
Ap. 10—Wintering in single colony cases.
Ap. 20—Returns from apiaries.
Ap. 21—Comparison of different sizes of hives.
Ap. 22—Package bees as a means of starting colonies.
Ap. 27—The value of honey bees in cross pollenation.
Ap. 37—Comparison of methods for building up colonies in the spring.
Ap. 41—Number of colonies sufficient to stock a given location.
Ap. 42—Protected versus unprotected hives during summer.