DOMINION OF CANADA
DEPARTMENT OF AGRICULTURE
DOMINION EXPERIMENTAL FARMS

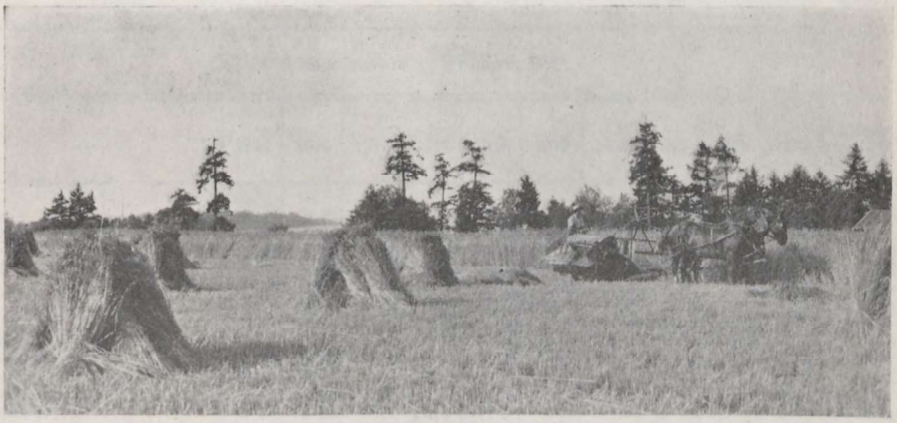
EXPERIMENTAL STATION

SIDNEY, B.C.

REPORT OF THE SUPERINTENDENT

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

FOR THE YEAR 1924



Cutting Red Rock wheat on July 8 at the Dominion Experimental Station, Sidney, B.C.

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F. A. ACLAND
PRINTER TO THE KING'S MOST EXCELLENT MAJESTY
1925

EXPERIMENTAL STATION FOR VANCOUVER ISLAND
SIDNEY, B. C.

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

SEASONAL NOTES

The winter of 1923-24 was remarkable for its mildness and absence of snow. The fall-seeded cereals suffered more, however, than usual, owing, no doubt, to the fact that there was complete absence of snow at time of greatest frost.

Work on the land began early. All crops were seeded under the best of conditions, but the growing season was practically without rainfall, hence failure of some crops, especially spring-seeded cereals. Many fields of oats were cut for hay.

Plums were almost a failure, and cherries partially so, owing to frost at fruit blossoming time. Pears, as usual, were a big crop, and apples fair.

METEOROLOGICAL RECORDS

Month	Highest temp.	Lowest temp.	Mean temp.	Precipitation	Sunshine	Possible Sunshine
	Degrees F	Degrees F	Degrees F	Inches	Hours	Hours
January	53·5	17·5	37·9	3·03	46	273
February	53·0	31·0	43·1	6·0	79	286
March	54·0	27·0	42·8	0·47	170	370
April	70·5	29·0	46·5	1·08	179	411
May	84·0	36·0	56·4	0·16	309	473
June	86·5	42·0	59·5	0·33	294	482
July	89·0	46·0	62·6	0·31	310	486
August	84·0	43·0	60·5	0·77	268	444
September	77·0	40·0	56·0	3·12	230	377
October	62·0	36·0	49·6	3·35	128	335
November	53·0	30·0	41·3	5·50	73	276
December	57·0	15·0	35·5	4·51	78	259
Totals				28·63	2,164	4,472

PRECIPITATION AT SYDNEY, B.C.

—	1914	1915	1916	1917	1918	1919	1920	1921	1922	1923	Average 10 years
January	8·47	2·77	2·51	4·07	3·75	4·45	3·28	4·23	1·65	6·81	4·20
February	3·21	1·66	5·49	2·97	4·78	4·02	1·61	3·97	1·79	3·62	3·21
March	1·26	1·65	4·85	2·72	4·68	3·42	2·33	1·67	1·20	2·09	2·59
April	1·63	1·65	1·52	4·09	0·21	2·15	1·45	1·13	0·71	1·68	1·62
May	0·28	2·06	0·73	0·70	0·44	1·18	1·24	1·57	0·54	1·29	1·00
June	2·14	0·74	0·55	1·06	0·45	0·77	1·17	1·36	0·27	0·51	0·90
July	0·13	1·30	1·72	0·18	0·96	0·27	0·67	0·04	0·00	0·92	0·62
August	0·14	0·03	0·32	0·44	1·41	0·06	2·52	1·02	0·82	0·65	0·74
September	1·97	0·30	0·66	1·35	0·16	1·85	2·96	2·74	1·96	1·62	1·56
October	3·63	4·17	2·01	0·61	2·73	1·30	4·03	4·80	2·21	1·95	2·74
November	8·20	4·82	3·18	1·85	3·34	5·94	3·32	4·00	1·47	2·58	3·87
December	1·21	6·89	6·59	9·21	6·77	4·75	3·68	3·60	9·06	6·88	5·86
Totals	32·27	28·04	30·13	29·25	29·68	30·16	27·26	30·13	21·68	30·60	28·91

ANIMAL HUSBANDRY

Some of the best cows in Canada may be found on Vancouver island. The mildness of the climate and other conditions, so like those found on the island of Jersey, have perhaps had something to do with popularizing the Jersey, the only breed kept at the Farm.

The intensive type of farming carried on by the majority of farmers, and the smallness of the holdings, are factors which preclude the possibility of developing live stock farming on a very large scale on Vancouver island.

DAIRY CATTLE

MILK PRODUCTION

The breeding herd of Jerseys at the Farm consists of seven mature cows, three two-year-olds and five yearlings. Individual records are kept of milk production and feed consumed. The cost of milk production and profit over feed is thus accurately gauged. Some slight changes have been made in the meal mixture fed the cows during the past year. In fact, changes are made to fit the various animals in the herd. The following may be regarded as a basic mixture for the cows in full milk:

	lbs.
Bran	500
Ground oats	400
Gluten meal	100
Cottonseed meal	100
Oilcake meal	100

This mixture is fed at the rate of about one pound of meal to four pounds of milk. No reference is made to straw for bedding, manure, or value placed on the calves produced.

MILK PRODUCTION AND VALUE

Name of Cow	Age, years	Date of dropping calf	Number of days milking	Total pounds milk	Total pounds fat	Value of fat	Value skim-milk	Total Value of product
						$ cts.	$ cts.	$ cts.
Plashe's Model Jessie	10	Nov. 25, '22	382	16,144·4	794·0	388 44	39 88	428 32
Lakeview Royal Blossom	5	Oct. 29, '22	426	16,069·0	771·68	389 70	40 49	430 19
Fairburn Rioter's Lucile 2nd	2	April 13, '23	299	4,346·4	232·14	98 66	10 72	109 38
Majesty's Honeymoon Bess	7	Mar. 25, '23	342	11,445·0	531·79	226·11	29 12	255 23
Elizabeth Fields Moresby	7	Mar. 5, '23	364	10,303·4	539·01	228 98	25 52	254 50
White Robin's Buttercup	2	Nov. 7, '23	295	6,426·2	370·81	157 60	15 57	173 17

FEED CONSUMPTION AND COST

Name of Cow	Age, years	Date of dropping calf	Meal consumed	Root and ensilage	Hay	Green feed	Months on pasture	Total cost feed	Feed, cost to produce 1 pound fat	Profit over feed on cow
								$ ct	$ cts.	$ cts.
Plashe's Model Jessie	10	Nov. 25, '22	5,429	10,614	3,820	2,550	2	201 19	0 26	226 13
Lakeview Royal Blossom	5	Oct. 29, '22	5,143	1,292	4,260	2,650	2	199 40	0 25	230 79
Fairburn Rioter's Lucile 2nd	2	April 13, '23	2,123	4,431	2,538	2,090	2	91 68	0 39½	17 70
Majesty's Honeymoon Bess	7	Mar. 25, '23	3,943	7,213	3,315	1,550	2	149 13	0 28	106 10
Elizabeth Fields Moresby	7	Mar. 5, '23	3,860	7,988	3,630	1,750	2	151 91	0 28	77 07
White Robin's Buttercup	2	Nov. 7, '23	2,840	6,848	2,950	1,200	.....	113 77	0 37	59 40

HERD BULL

Our herd bull, Naikiki Avaitor (18201), being transferred to the Summerland Station, Hamilton's Golden Friar was temporarilly secured from C. H. Matson of the Glamorgan Farm, North Saanich. This bull is a large animal of outstanding type and should be of much service in the herd.

MINERAL FOOD FOR DAIRY CATTLE

Quite recently breeders have given much attention to mineral feeds as a part-ration for dairy cows. The mineral drain on the animal's body, in producing milk and carrying a calf, is very great, greater than the amount supplied in the meal and roughage. An attempt is being made to meet this deficiency by a mineral ration composed as follows:—25 pounds bone meal; 25 pounds charcoal; and 3 pounds sulphur.

This 53 pounds of mineral is being fed mixed with 1,200 pounds of meal, varying the amount with the amount of meal fed. The work has not been carried far enough to speak definitely concerning this project.

FEEDING MINERALS TO CALVES AND HEIFERS

What has been said concerning mineral feed for cows applies, in some measure, to calves. With calves there is not the daily drain of mineral through the milk pail as with cows. It has also been argued that resistance to some diseases, such as abortion, may be built up by feeding the proper mineral food to calves and heifers and cows when dry. For this purpose the following mixture is being used:—10 pounds calcium phosphate; 10 pounds sodium phosphate; 10 pounds Epsom salts; 4 ounces potassium iodide; 10 pounds bonemeal; 10 pounds sulphur; 4 pounds Glauber salts.

RELATIONSHIP BETWEEN GROWTH AND AGE OF DAIRY CALVES

Everyone has noticed that calves do not make regular and consistent gains. At one time they gain rapidly, at another time they apparently stand still on the same feed. Is such behaviour expected from dairy calves of certain age? The weights month by month are being recorded from birth to the freshening period. No outstanding point has developed during the first few months of the investigation. Any slight variations may be accounted for by change in feed.

ABORTION

On March 5, 1924, Elizabeth Fields Moresby, bred July 27, 1923, aborted. All the cows and heifers in the herd had calved normally once after coming to the Station, so that it was not easy to determine the manner that infection was brought to the barn. Before undertaking any treatment, a blood sample was taken from all the animals, except a few calves, and forwarded to Dr. Bruce of the Health of Animals Branch at Agassiz, for examination. This work was completed April 12, 1924. The report showed almost half the cows affected as will be seen by the table.

BLOOD TEST—ABORTION

Name of Cow	Dilution 1/50	Dilution 1/100	Dilution 1/200	Dulution 1/500	Dilution 1/1000	Dilution 1/2000	Dilution 1/3000
Plashe's Model Jessie							
Lakeview Royal Blossom	x	x	x	x	x	x	x
Fairburn Rioter's Lucile							
Majesty's Honeymoon Bess							
Waikiki's Aviator							
Elizabeth Fields Moresby	x	x	x	x			
White Robin's Queen	x	x	x				
Lily of White Robin	x	x	x				
White Robin's Buttercup	x	x	x	x	x		
Aviator's Bess of V.I.S	x						
Aviator's Lucile of V.I.S							

The Bowman Abortion Cure was being widely advertised at the time as a specific for abortion. It was thought well to give the remedy a trial. Hence all animals in the herd, except a few calves, were treated as per directions, April 30, 1924. Even the calves were given the remedy in some quantity. All cows that showed infection by blood test were treated a second time, and a few were treated a third time.

On August 21, 1924, White Robin's Buttercup aborted, the second case. In the meantime it was found increasingly difficult to get the cows in calf. In fact it looked as if fifty per cent of them were becoming sterile, while the periods of heat were more and more irregular. At this time Dr. Jagger, a specialist in cases of sterility in cattle, was called. On September 12, 1924, his first visit, he reported as follows:—

Honeymoon Bess—Cyst in right ovary. Left ovary small and hard.

Buttercup—Uterus thickened, some pus. Right ovary shows inflamation, enlarged. Left ovary hard.

Queen—Uterus normal, or nearly so. Ovaries normal.

Blossom—Uterus slightly enlarged, walls thickened. Right ovary very large, containing a small cyst.

Elizabeth—Uterus hard. Walls thickened. Cyst in right ovary. Left ovary small, hard.

Lucile 2nd.—Walls of uterus thickened.

Aviator's Bess—Uterus O.K. Cyst in right ovary.

Dr. Jagger made several visits to the farm at intervals of two weeks. By massaging the ovaries and disinfecting the parts, the cows improved, so that by the beginning of the new year the most of the original cases were pronounced pregnant.

On November 7, 1924, a third abortion occurred, this time a heifer, born April 13, 1923, bred May 29, 1924. It will be noticed that in this case the blood test did not show the infection, but it is possible that she may have contracted the disease after the test was made.

HORSES

Horses are maintained at the Station for work purposes only, no breeding or experimental work being conducted.

SHEEP

A small flock of Southdown sheep has been established. A good demand for lamb and mutton is constant.

FIELD HUSBANDRY

The rotations as outlined in former reports have been followed. They fit the general scheme of things on the Saanich peninsula, and usually give satisfactory crop returns. All field operations are carried on under the serious handicap of high-priced land, too high for farm purposes. In addition to this is the fact that land on the island is not easily worked, the depreciation of implements is excessive and the price of labour high. All of these facts point to the small holding, intensively farmed, as the most promising line of endeavour agriculturally on the island. Since the areas given the rotations are small, it was found that the

division of the field in three, four or five plots was not convenient, so the rotation field in question produces one crop only in one year, and the rotation is completed only at the end of the three, four or five years, as the case may be.

It should also be noticed that arbitrary values have been assigned some items, such as the proportion of lime or fertilizer used, which modifies values, cost, etc., as found in some other years.

ROTATION A. (THREE YEARS' DURATION)

1922—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. The field consists of 5.5 acres and varies somewhat in type of soil, but for the most part is heavy. The winter wheat, usually Sun, is sown during September. The seeding of the timothy is done by the grass seeder, attached to the drill at the time of seeding the wheat. Six pounds of timothy is sown per acre, and in February ten pounds of red clover and four pounds alsike clover are sown broadcast per acre. The rotation has much to recommend it. The soil is always well stocked with humus and comparatively clean.

ROTATION SUMMARY

Summary of yields, value and profit or loss per acre

Crop	Yields per acre average, one year	Year	Value	Cost of production	Profit or loss
			$ cts.	$ cts.	$ cts.
Wheat (Sun)	38 bush.	1922	93 80	66 43	Profit 27 37
Timothy and clover hay	3·32 tons	1923	83 00	54 24	" 28 76
Summer-fallow	.....	1924	.....	45 65	Loss 45 65

Owing to unfavourable conditions, summer-fallow replaced the roots in the rotation, and the cost of fallowing entered as a loss.

ROTATION B (FOUR YEARS' DURATION)

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

An attempt will here be made to maintain the fertility of the soil without hay or grass appearing in the rotation. After the peas have been harvested some such crop as dwarf Essex rape or rye will be sown as a green manure, to supply humus, etc.

ROTATION SUMMARY

Summary of yields, value and profit or loss per acre

Crop	Yield per acre	Year	Value	Cost of production	Profit or loss
			$ cts.	$ cts.	$ cts.
Wheat (Sun)	25·2 bush.	1923	84 86	67 10	Profit 17 76
Peas (Maple)	22·0 "	1924	59 70	68 34	Loss 8 64

If the wheat is valued for the grain only, it will be noticed that the cost of production for 1923 was very high. The straw, however, always scarce and high in price, gave us a credit balance of $17.75. Large quantities of straw are imported each year, for use in the strawberry fields, and find ready sale at from twenty to twenty-five dollars per ton. The high cost of production on the 1924 pea crop is largely due to the fact that the harvesting was done by manual labour. A pea buncher and harvester would have accomplished the work at approximately one-fifth the cost. The yield of 22 bushels is below the average, which also adds to the cost of production.

ROTATION C. (FIVE YEARS' DURATION)

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

ROTATION SUMMARY

Summary of yields, value and profit or loss per acre

Crop	Yield per acre	Year	Value	Cost of production	Profit or loss
			$ cts.	$ cts.	$ cts.
Vetch	16·7 bush.	1923	83 68	73 20	Profit 10 48
Corn	9·69 ton	1924	58 14	99 59	Loss 41 45

It will be noticed that vetch seed cost 4.38 per bushel to produce, and sells wholesale at 8 cents per pound. The feed value of corn ensilage is about one quarter that of hay; with hay selling around $24 per ton the value of the corn ensilage is $6 per ton. This figure was used in computing the value of the crop. The cost of producing one ton of ensilage was $10.26.

ROTATION D. (FOUR YEARS' DURATION)

1923—Winter wheat. 1925—Roots.
1924—Timothy and clover hay. 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 men without a silo. Three acres are given to this work.

ROTATION SUMMARY

Summary of yields, value and profit or loss per acre

Crop	Yield per acre	Year	Value	Cost of production	Profit or loss
			$ cts.	$ cts.	$ cts.
Wheat (Red Rock)	26·3 bush.	1923	85 31	67 23	Profit 18 08
Timothy and clover	2·05 ton	1924	49 20	53 64	Loss 4 44

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

Owing to the very dry season, the 1924 hay was much below the average, and the cost per ton, $26.17, is consequently greater than usual.

ROTATION E. (FOUR YEARS' DURATION)

1924—Wheat, oats and vetch (hay)
1925—Potatoes.
1926—Oats.
1927—Hay.

Potatoes continually become a crop of greater importance in British Columbia. The introduction of this crop is intended to clean the ground, and to keep the soil in a good mechanical condition, taking the place of roots in the rotation. The wheat, oats and vetch are sown in the fall, cut for hay or ensilage, and the dairy cattle pasture on the second growth.

ROTATION SUMMARY

Yields, value and profit or loss

Crop	Yield per acre	Year	Value	Cost of production	Profit or loss
			$ cts.	$ cts.	$ cts.
Wheat oats and vetch	2·69 tons	1924	61 87	63 38	Loss 1 51

The cost of producing one ton of wheat, oats and vetch hay was **$23.56.**

HORTICULTURE

No part of the Dominion is better suited to horticulture than is Vancouver island. The mildness of the climate makes it possible to grow many things that cannot be grown elsewhere in Canada. If horticulture should fail here, the whole farm structure would crumble, for the holdings are small and not well suited to general agriculture.

The great drawback is the lack of water. Contrary to the opinion of many, Vancouver island, during the growing season, is one of the driest sections in Canada. So far as the Saanich peninsula is concerned, where is situated the Experimental Station, adequate supplies of water for irrigation would double the crop and double the population.

The work of the year has followed lines similar to other years. Some projects have been completed, others continued. A new greenhouse has been built, and new work undertaken in that department.

TREE FRUITS

While pears, plums and cherries, as a rule, do exceptionally well at this Station, the two latter were practically crop failures this past season. Pears were a particularly heavy crop, while apples were below the average. All trees were pruned during the winter months of January and February.

SPRAYING

Application of spray materials was made as follows:—

1. Dormant spray, consisting of commercial lime-sulphur 1-9 applied to all tree fruits.

2. Pink spray, consisting of sulphocide 1-160 applied to sweet cherries, plums and peaches.

3. Calyx spray, consisting of self-boiled lime-sulphur 16-16-100; black leaf 40, 1 pint to 100 gallons; soap 4 pounds to 100 gallons; and arsenate of lead (powdered) 4 pounds to 100 gallons. For apples and pears commercial lime-sulphur was used 1-40. Applied to all tree fruits.

Owing to the prevalence of brown rot among the stone fruits during the previous season, a pink spray was applied this year with the hope of checking this disease which attacks the blossom clusters. As soon as the petals had fallen, another spray was applied in order to check the further attack and spread of brown rot disease amongst sweet cherries, plums, peaches and apricots. Another spray was applied to a few rows of sweet cherries and plums, varieties most susceptible to the disease, and consisting of self-boiled lime-sulphur 8-8-50, and applied about eighteen days after the calyx spray. This seemed to have a further beneficial effect and at the same time the fruit was not stained by coming in contact with the spray.

Whether due to increased thoroughness in spraying or to seasonal conditions, the disease, brown rot of stone fruits, was reduced during the past season to a minimum.

APPLES—VARIETY EXPERIMENT

Apples of many varieties have been bearing for five years or more at the Station Farm. These varieties have been secured from over a wide range. Records of their behaviour have been kept as heretofore, and some interesting information obtained. All varieties have been sprayed, pruned and given treatment throughout the year.

APPLES—VARIETY EXPERIMENT

Variety	When planted	Number of trees	Yield per tree, 1924		Total Yield per tree for six years		Season
			lbs.	oz.	lbs.	oz.	
Alexander	1915	2	59	4	127	9	Sept.-Nov.
Black Ben Davis	1916	2	..	..	..	..	
Blenheim Orange	1916	2	..	..	12	2	Nov.-Jan.
Caroline Red June	1916	3	..	..	15	2	Aug.
Charles Ross	1914	2	106	0	286	0	Sept.-Oct.
Cox Orange Pippin	1914	12	8	12	68	8	Dec.-Jan.
Duchess of Oldenburg	1914	9	30	7	122	13	Aug.-Sept.
Early Colton	1916	2	22	2	83	12	Aug.
Goal	1916	1	3	0	3	0	
Gravenstein	1914	10	9	7	58	6	Sept.-Oct.
Grimes Golden	1914	13	26	13	218	4	Jan.-Feb.
Jonathan	1914	12	22	0	63	16	Nov.-Feb.
King David	1914	2	168	9	399	12	Dec.-Feb.
King of Tompkins Co	1914	10	97	6	174	6	Oct.-Jan.
Linton	1941	1	34	8	173	8	Aug.-Sept.
Lowland Raspberry	1914	7	12	3	82	11	Aug.
McIntosh Red	1914	6	100	0	223	12	Nov.Jan.
Melba	1921	2	6	2	6	2	Aug.-Sept.
Melba	1914	1	..	..	160	15	
Monsieur Gladstone	1914	2	8	0	40	8	Sept.-Oct.
Missing Link	1919	2	18	14	61	14	Dec.-Jan.
Newtown Pippin	1916	2	3	12	26	7	Jan.-Apr.
Peasgood Nonsuch	1916	1	10	12	26	12	Sept.-Oct.
Northern Spy	1916	2	..	..	2	0	
Red Astrachan	1914	11	14	14	81	1	Aug.
Percival	1914	1	84	0	202	10	Sept.
Petrel	1914	1	21	8	156	8	Aug.-Sept.
Ribston Pippin	1916	1	..	..	..	..	Nov.-Dec.
Rome Beauty	1917	2	86	15	194	7	Jan.-Mar.
Saint Germain	1914	3	2	12	22	6	
Spitzenburg	1916	2	13	12	28	0	Dec.-Jan.
Sweet Bough	1914	2	..	..	34	0	Aug.
Transparent de Croncels	1914	2	11	3	117	11	Sept.
Trenton	1914	1	77	0	257	10	Aug.
Vanderpool	1914	2	20	4	40	12	Nov.-Jan.
Wagener	1914	10	12	7	174	5	Dec.-Feb.
Wealthy	1914	4	24	0	137	3	Sept.-Oct.
Winter Banana	1914	2	41	15	288	1	Jan.-Feb.
Winterstein	1919	2	..	..	..	..	
Wisiner Dessert	1914	2	30	10	96	11	Oct.-Nov.
Yellow Transparent	1914	10	33	15	162	5	Aug.
York	1916	1	..	..	17	0	Sept.-Oct.

The six highest yielding varieties in order are:—King David, Winter Banana, Charles Ross, Trenton, McIntosh Red and Grimes Golden. King David, though prolific, is an apple of only fair quality and is not recommended for general planting.

METHODS OF ORCHARD SOIL MANAGEMENT WITH APPLES

Three systems of management have been in vogue in the orchard for a number of years, viz., sod mulch, clean cultivation and a cover crop. Up to the present time, a satisfactory crop combining all that one looks for in a cover crop has not been found. Clean cultivation is the only system that we have found satisfactory for conditions obtaining on Vancouver Island.

CLEAN CULTIVATION VS. SOD WITH APPLES

Variety	When Set	Average seasons growth for six years		Total yield per tree for six years			
		Clean cul.	Sod	Clean cul.		Sod	
		inch	inch	lb.	oz.	lb.	oz.
Cox's Orange Pippin	1914	15·3	5·4	48	8	43	0
Duchess of Oldenburg	1914	15·5	10·7	127	10	76	12
Gravenstein	1914	16·6	11·0	108	1	43	2
Grimes Golden	1914	18·4	10·3	98	10	92	12
Jonathan	1914	13·2	12·0	124	8	29	6
King of Tompkins Co	1914	23·1	20·0	200	10	174	0
Red Astrachan	1914	12·7	10·2	143	1	73	2
Wealthy	1914	15·0	12·1	149	12	60	6

Grass grown on the sod area has not been removed but cut and placed around trees with the hope of retaining moisture. Trees in this area lack vitality, and are more or less stunted in growth, and while in some cases the amount of fruit from the trees in sod has been relatively good, it has been almost wholly unmarketable.

APPLE FERTILIZER EXPERIMENT

In the spring of 1922 an experiment was undertaken to determine the effect of various fertilizers on growth of apples. The following fertilizers were used separately:—

1. Nitrate of soda—2 pounds per tree.
2. Muriate of potash—2 pounds per tree.
3. Acid phosphate—4 pounds per tree.
4. The three foregoing mixed together and used at the rate of 4 pounds per tree. In the 1924 application of fertilizer the above amounts were doubled.

The following varieties of apples occur in the range under fertilizer test: King of Tompkins Co., Gravenstein, Red Astrachan, Lowland Raspberry, Grimes Golden, Cox Orange Pippin and Wagener.

EFFECT OF FERTILIZERS ON GROWTH OF APPLE TREES

Fertilizer used	Season's growth		Gain in diameter		Total yield fruit for 3 years	
	1924	For 3 years	1924	For 3 years		
		inches	inches	inches	lb.	oz.
Nitrate of soda	8	19	24/32	21/32	761	–
Muriate of potash	7¼	16	18/32	16/32	786	8
Acid phosphate	7¼	17	19/32	18/32	935	–
Mixed fertilizer	7¼	14	19/32	17/32	569	12
Check	8	15	19/32	19/32	474	6

The measurements of diameter have been taken 10 inches from the ground in all cases. Just why the check row has made such a favourable showing is for conjecture, though evidently some other factor is at work. It will be noticed that while the nitrate of soda gave the greatest amount of growth it did not give the greatest amount of fruit. The check row is very much lower in yield of fruit than any of the fertilizers used. Potash and acid phosphate while tending toward the checking of the growth have given the highest yields of fruit.

PLUMS—VARIETY EXPERIMENT

With the exception of a few varieties, the plum crop for the season was a failure. Many varieties did not bear a single fruit, while in other cases only a pound or two. Killing frosts during the blooming season were responsible for the very poor set of fruit. Brown rot, prevalent in other years, has been materially checked during the past season through special spraying methods. Of the better plums, the variety Victoria has shown a greater infection than any other.

PLUMS—VARIETY EXPERIMENT

Variety	When planted	Number of trees	Yield per tree, 1924		Total yield per tree, six years		Season
			lb.	oz.	lb.	oz.	
Apple	1922	1					
Bartlett	1922	1					
Black Diamond	1914	2	177	8	850	9	Sept. 5
Bradshaw	1914	2	47	6	309	11	Aug. 26
Burbank	1914	1	11	0	40	0	Sept. 8
Columbia	1914	1	5	2	199	14	Aug. 27
Combination	1916	1	10	0	30	3	Aug. 21
Conquest	1915	1	..	..	42	6	
Drap d'Or	1914	2	3	0	67	7	Aug. 10
Early Gold	1916	1	3	10	444	8	Aug. 16
Damson	1914	2	..	15	26	7	Sept. 20
First (Jap)	1916	1	..	..	1	4	Aug. 17
Formosa	1914	2	2	2	3	6	Aug. 18
Gaviota	1914	1					
Gold	1916	2					
Giant	1916	3	20	15	48	27	Sept. 16
Green gage	1914	2	5	6	188	11	Sept. 22
Jaune Hative de Thoisey	1914	2	1	6	70	14	Aug. 4
Le Plus Précoce de Tous	1914	1	..	..	1	12	Aug. 1
Mallard	1914	2	176	5	562	9	Aug. 20
Mammoth Gold	1916	.....	..	..	6	10	Aug. 18
Peach	1914	11	6	11	156	7	Aug. 10
Pond Seedling	1914	2	77	9	482	11	Sept. 15
Reine Claude de Bavay	1914	7	6	1	270	12	Sept. 18
Shippers Pride	1916	1	20	4	59	7	Sept. 7
Satsuma	1916						
Shropshire Damson	1914	15	10	3	120	11	Sept. 27
Sauta Rosa	1914	1	..	..	14	..	Aug. 15
Victoria	1914	2	29	2	307	..	Sept. 7
Washington	1914	2	29	8	405	7	Sept. 3
Yellow Egg	1914	2	94	..	363	..	Sept. 17

PRUNES—VARIETY EXPERIMENT

Variety	When planted	Number of trees	Yield per tree, 1924		Total yield per tree, six years		Season
			lb.	oz.	lb.	oz.	
Dosch	1916	2	..	..	3	3	Sept. 30
German	1914	3	9	15	237	12	Sept. 21
Golden	1916	2	..	..	21	0	Sept. 12
Imperial Epineuse	1919	2					
Italian	1914	17	8	2	177	14	Sept. 22
Quetsche de Létricourt	1914	2	2	5	166	2	Sept. 20
Quetsche précoce d'Ebersweier	1914	4	..	..	31	..	Aug. 25
Quetsche précoce de Buhlerthal	1914	4	10	6	179	6	Aug. 26
Quetsche précoce de Zimmer	1914	2	22	8	269	0	Aug. 22
Quetsche Minôt	1914	1	..	..	67	14	Sept. 20
Sugar	1914	2	..	..	266	10	Aug. 24
Standard	1915	2	15	0	61	14	Sept. 16
Silver	1914	1	..	..	66	8	Sept. 22
Tennant	1916	2	..	..	14	10	Aug. 28
Tragedy	1914	1	11	13	190	11	Aug. 13
Pacific	1916	2	9	2	83	14	Aug. 15
Miracle	1916	2	..	..	12	5	Aug. 23

The six heaviest yielding plums for six years in order are: Black Diamond, Mallard, Ponds Seedling, Early Gold, Washington and Yellow Egg. These have all appeared among the best yielding six for a number of years.

The six best yielding prunes in order are: Zimmer, Sugar, German, Tragedy, Buhlerthal and Italian. Of these the Italian prune is undoubtedly the best, and Tragedy the earliest.

CHERRIES—VARIETY EXPERIMENT

Brown rot has been especially troublesome among sweet cherries in past years. With special attention being paid to spraying during the past season the ravages of this disease have been reduced to a minimum. A few of the most susceptible varieties are: Black Tartarian, Fruhest de Mark, Beauty of Ohio and Empress Eugenie.

SWEET CHERRIES—VARIETY TEST

Variety	When set	Number of trees	Yield per tree, 1924		Total yield per tree, six years		Season
			lb.	oz.	lb.	oz.	
Abbesse d'Oignies	1914	1	3	12	29	15	July 17
Abundance	1915	1	..	..	6	4	Aug. 3
Belle de Choisy	1914	2	..	..	15	1	July 15
Bing	1914	10	28	3	75	3	July 16
Black Hawk	1914	1	15	4	73	11	July 14
Black Tartarian	1914	2	7	7	97	..	July 8
Black Republic	1916	1	14	4	20	4	July 24
Beauty of Ohio	1914	2	43	4	179	1	July 2
Belle of Orleans	1914	1	32	11	121	12	June 28
Choque	1914	1	24	2	180	8	July 10
Deacon	1914	1	31	8	54	14	July 19
Elton	1914	3	4	12	66	4	July 5
Empress Eugenie	1914	4	6	14	84	15	July 10
Emperor Francois	1914	1	36	2	69	3	July 18
Fruhest der Mark	1914	1	12	8	74	7	June 10
Garrafal	1916	1	18	4	28	11	July 12
Garrafal Grand	1916	1	16	10	22	11	June 28
Gros Blanc	1914	1	..	..	1	2	July 5
Gros Noire	1914	1	..	..	2	2	July 7
Guigne d'Annonay	1916	1	12	..	23	4	June 16
Guigne Pourpre Hâtive	1914	1	55	5	243	9	July 12
Guigne de Tarascon	1914	1	2	..	34	8	July 6
Guigne précoce Rivers	1914	1	49	9	166	5	June 24
Jaboulay	1914	1	3	..	15	11	June 30
Jeffrey Duke	1914	1	1	2	25	2	July 10
Lambert	1914	2	25	15	162	6	July 22
Marjolet	1914	2	4	0	22	11	July 12
Napoleon	1914	6	21	11	82	10	July 18
Pelissier	1914	1	8	12	53	13	July 17
Reverschon	1914	1	27	..	109	8	July 10
Reine Hortense	1914	2	10	15	55	4	July 18
Reine Hortense Hâtive	1914	2	..	..	1	10	
Tardif de Lade B. Agathe	1914	2	..	..	57	..	Aug. 26
White Heart	1916	1	19	6	43	6	July 16
Windsor	1914	6	5	3	53	13	

SOUR CHERRIES—VARIETY TEST

Variety	When set	Number of trees	Yield per tree, 1924		Total yield per tree, six years		Season
			lb.	oz.	lb.	oz.	
A. Brindilles	1914	3	..	..	9	10	Aug. 25
Baldwin	1914	1	..	..	16	..	July 13
Belle de Françonville	1914	1	1	..	37	3	Aug. 7
Belle Magnifique	1914	3	2	1	63	11	Aug. 12
De Belleu	1914	1	3	2	20	12	July 2
Early Richmond	1914	15	7	9	86	13	July 11
English Morello	1916	1	4	14	17	4	July 19
Gros Gobert	1914	2	..	..	73	7	July 17
Griotte Archer	1914	1	11	10	69	12	July 25
Late Duke	1916	3	2	0	8	9	Aug. 3
May Duke	1914	2	12	12	128	0	July 19
Montmorency	1914	20	20	14	200	4	July 22
Montmorency Bretteneau	1914	3	5	3	107	12	July 14
Montmorency Pleureur	1914	2	3	8	57	1	July 10
Morello	1914	15	18	10	182	6	July 19
Nouvelle Royale	1914	2	2	5	44	10	July 15
Olivet	1914	17	3	0	108	13	Aug. 5
Ostheim	1917	.....	38	14	66	14	Aug. 19

Late spring frosts during the blooming season reduced the crop to a point much below the average. Trees are in good condition, there being no serious pests or diseases other than brown rot of stone fruits.

PEARS—VARIETY EXPERIMENT

Out of the large number of varieties tested at this Station, a few have come to the top and are outstanding as to yield and quality. Some of the best in order of ripening are: Bartlett, Clapp Favourite, Boussock, Souvenir du Congress, Bosc, Clairgeau, Beurre Bachlier, and Passe Crassane. Bartlett is a summer pear, while Passe Crassane is prime in January.

STANDARD AND DWARF PEARS—TEST OF VARIETIES

Variety	When set	Standard				Dwarf				Season
		Yield per tree 1924		Total yield per tree six years		Yield per tree 1924		Total yield per tree six years		
		lb	oz.	lb.	oz.	lb.	oz.	lb.	oz.	
André Desportes	1914	108	12	201	11	48	6	117	3	Aug.
Anjou	.....	26	15	123	5	..	..	..	..	Nov.-Dec.
Barry	1914	..	..	..	..	..	..	10	0	Oct.-Nov.
Bartlett	1914	47	10	338	12	72	6	312	6	Aug.
Belle Lucrative	1914	..	..	193	2	..	..	..	..	Oct.
Besi de Chaumontel	1914	..	..	1	8	..	..	40	12	Dec.
Beurré d'Amanlis	1914	291	2	1,022	14	8	4	227	12	Oct.
Beurré Bachelier	1914	216	4	775	12	18	6	150	0	Dec.
Beurré Diel	1914	143	15	697	15	71	10	288	0	Nov.-Dec.
Beurré Giffard	1914	11	4	143	12	14	4	86	12	Aug.
Beurré d'Hardenpont	1914	5	13	113	9	6	0	258	8	Dec.-Jan.
Beurré Hardy	1914	..	..	37	5	..	..	37	8	Oct.
Beurré d'Avril	1914	121	9	391	8	..	..	..	..	Mar.
Beurré de Naghin	1914	143	12	468	12	2	2	88	2	Feb.
Bon Chrétien	1916	40	6	183	12	..	..	..	..	
Bosc	1914	75	1	224	14	..	..	..	..	Oct.
Boussock	1914	96	0	446	11	63	11	86	8	Sept.
Charles Ernest	1914	10	11	67	11	..	..	29	0	Nov.-Dec.
Clairgeau	1914	112	7	352	14	..	..	..	..	Nov.
Crocker Bartlett	1914	134	4	238	12	..	..	..	..	Sept.
De Curé	1914	84	2	430	10	154	2	538	12	Dec.
Doyenne d'Alençon	1914	9	10	168	6	33	3	154	11	Jan.
Doyenne du Comice	1914	..	..	27	0	8	0	54	0	Nov.
Doyenne d'Hiver	1914	20	15	213	3	3	15	9	7	Jan.
Duchess d'Angouleme	1914	..	..	118	12	..	..	..	..	Nov.
Dr. Jules Guyôt	1914	61	2	244	3	57	15	238	3	Sept.
Favourite de Clapp	1914	105	8	484	15	70	14	305	4	Sept.
Flemish Beauty	1914	159	4	430	12	77	5	153	5	Sept.-Oct.
Easter Beurré	1914	6	4	213	14	..	..	..	..	Jan.-Feb.
Emile d'Heyst	1914	57	5	208	9	..	..	..	..	Oct.
Fondante Thirriot	1914	101	4	288	0	23	6	304	2	Nov.
Forelle	1914	..	..	..	..	1	8	1	8	Nov.-Dec.
Howell	1919	..	..	..	..	29	0	29	0	
Jargonelle	1914	16	3	91	11	..	..	..	..	Aug.
Koonce	1916	37	8	81	8	..	..	..	..	Aug.
Le Lectier	1914	56	11	240	11	..	..	..	..	Dec.-Jan.
Lincoln Coreless	1914	57	8	316	7	..	..	..	..	Feb.
Louise Bonne de Jersey	1914	58	5	299	4	..	..	..	..	Oct.
Louise Bonne d'Avanches	1914	..	..	..	..	34	4	116	8	Sept.
Madame Baltet	1914	45	10	89	10	76	4	110	12	Jan.
Madame Ernest Baltet	1914	..	..	70	12	61	4	276	4	Sept.-Oct.
Marguerite Marrillat	1914	89	4	291	10	..	..	..	..	Sept.
Nouvelle Fulvie	1914	19	12	102	0	..	..	..	..	Jan.
Passe Crassane	1914	29	9	131	4	55	12	209	8	Dec.-Jan.
Pitmaston Duchess	1914	4	4	198	8	..	..	..	..	Oct.
President Deviolaine	.....	2	0	14	8	..	..	133	10	Nov.
Princess	1914	2	0	14	6	..	..	..	..	Oct.
Rossney	1914	..	..	29	8	..	..	..	..	Sept.
Royale Vendée	1914	104	6	156	4	9	4	9	4	Jan.
Souvenie du Congrès	1914	207	0	664	8	38	8	249	9	Sept.
Seckel	1914	..	..	..	..	3	15	9	7	Oct.
Triomphe de Vienne	1914	80	0	358	8	90	0	204	0	Sept.
Virginie Baltet	1914	176	1	642	9	99	9	298	13	Nov.-Dec.
Wilder Early	1914	17	10	71	4	..	..	..	..	Aug.
Winter Bartlett	1914	18	8	74	11	..	..	..	..	Dec.-Jan.
Winter Nellis	1914	..	..	..	..	27	2	27	10	Dec.
Worden Seckel	1914	13	4	71	12	..	..	..	..	Sept.-Oct.

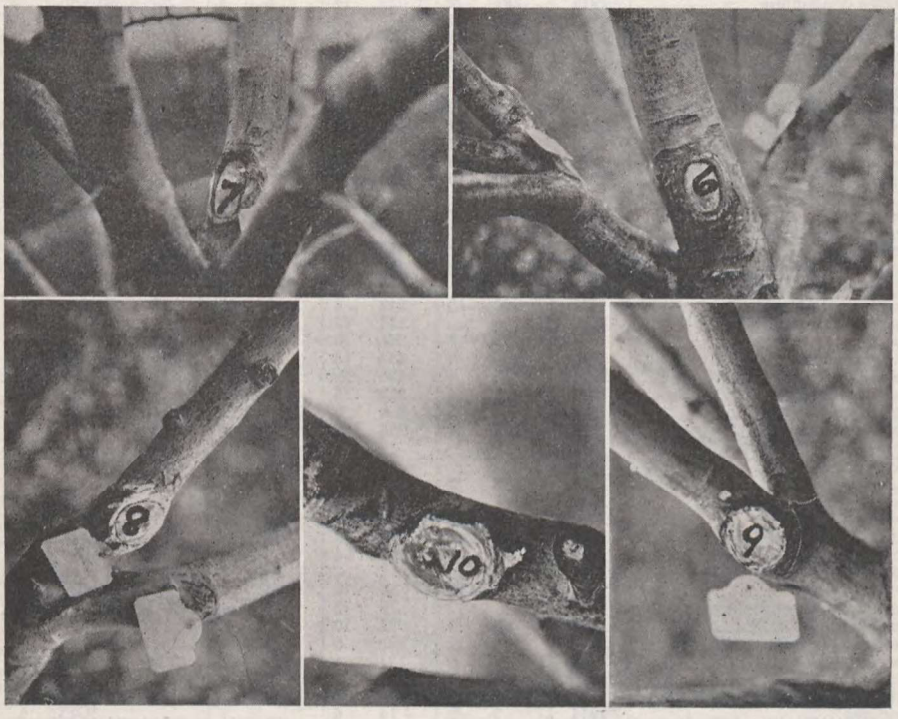
The six best yielding pears are: Beurré d'Amanlis, Beurré Bachelier, Beurré Diel, Souvenir du Congrès, Virginie Baltet, and Clapp Favourite.

The six lowest yielding pears are: Seckel, Barry, Besi de Chaumontel, Forelle and Rosney.

FERTILIZER EXPERIMENT—PEARS

The method of procedure in this experiment is the same as that in our work with fertilizers in the apple orchard. Chemicals were used singly and in combination as follows:—

1. Nitrate of soda—2 pounds per tree.
2. Muriate of potash—2 pounds per tree.
3. Acid phosphate—4 pounds per tree.
4. The three foregoing mixed and applied at the rate of 4 pounds per tree.
5. Check, no fertilizer.



Photographs taken in March, 1924, of pear trees, showing scars made by pruning.

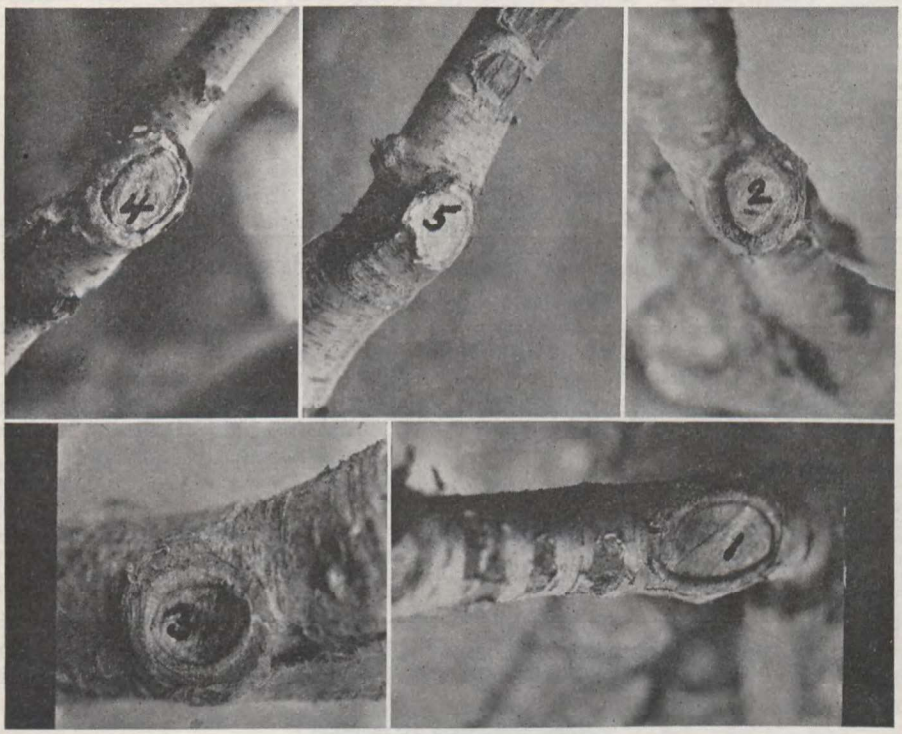
Fig. 6.—Pruned January, 1923.
" 7.—Pruned March, 1923.
" 8.—Pruned May, 1923.
Fig. 9.—Pruned August, 1923.
" 10.—Pruned October, 1923.

The following varieties are found in the range to which the fertilizers were applied: Anjou, Clairgeau, Bosc, Dr. Jules Gûyot, Bartlett and Boussock.

EFFECT OF FERTILIZERS ON GROWTH OF PEAR TREES

Fertilizer used	Average season's growth 1924	Average growth for 3 years	Gain in diameter in inches 1924	Average gain in diameter for 3 years	Total yield fruit for 3 years
	inches	inches	inches	inches	inches
Nitrate of soda	7⅓	16	13/32	14/32	2,126 10
Muriate of potash	7⅙	17	18/32	10/32	1,640 10
Acid phosphate	9⅔	16	6/32	9/32	1,885 12
Mixed fertilizer	8	16	11/32	12/32	1,788 8
Check	5½	13½	10/32	7/32	766 0

While growth varies from year to year, nitrate of soda over a period of years has given greater growth in diameter. Also the total production of the nitrate of soda row over a period of three years is greater than that from any other fertilizer used. During 1924, and following, double the quantity of fertilizer was used in all cases.



Photographs taken in March, 1924, of cherry trees, showing scars made in pruning.

Fig. 1.—Pruned in February, 1923.
" 2.—Pruned in March, 1923.
" 3.—Pruned May, 1923.
Fig. 4.—Pruned July, 1923.
" 5.—September, 1923.

PRUNING EXPERIMENT

This experiment was carried out on pear, cherry and plum trees. Branches were removed each month in the year and observations made as to rate of healing of wounds.

So far as can be determined there is little difference as to what time in the year pruning is done. As is shown in the accompanying illustrations, wounds made in mid or later season do not heal readily until the next season, at which time the process of healing goes on just the same as though the wounds had been made in February or March.

PEACH—VARIETY EXPERIMENT

Spring frosts during the blooming season wrecked the crop on those varieties from which we usually expect to get fruit. The peach trees are in the main orchard and under the same conditions as other fruit trees.

PEACH—TEST OF VARIETIES.

Variety	When set	Number of trees	Yield per tree 1924		Total yield per tree for 6 years		Average date of picking
			lb.	oz.	lb.	oz.	
Admiral Dewey	1919	1	11	8	14	0	Aug. 6
Alexander	1914	1	..	..	57	11	Aug. 17
Alton	1918	1	2	0	2	0	Aug. 30
Early Crawford	1914	2	..	..	..	..	
Early Elberta	1916	1	..	..	..	..	
Early Imperial	1919	1	..	..	..	..	
Fitzgerald	1914	1	..	..	..	..	
Hale Early	1914	2	..	..	150	9	Aug. 15
Krummel October	1916	1	..	..	..	..	
Mayflower	1919	2	10	2	10	2	Aug. 4
Muir	1919	2	..	..	9	0	Sept. 24
Red Bird	1916	1	4	6	4	6	July 28
Royal George	1919	1	..	..	34	0	Sept. 24
Triumph	1914	1	70	8	123	0	July 31
Triumph	1916	1	7	8	40	2	July 31

Triumph and Hale Early are the two most promising varieties.

QUINCE—VARIETY EXPERIMENT

Variety	When set	Number of trees	Yield per tree 1924		Total yield per tree for 6 years	
			lb.	oz.	lb.	oz.
Champion Orange	1914	7	18	8	52	9
De Bereczki	1914	4	60	4	205	8
De Bourgeant	1914	4	87	0	248	8
De Portugal	1914	3	63	6	278	2
De Fabre	1914	4	33	10	94	4
De Vranja	1914	1	7	8	15	0
Ordinaire	1914	3	17	0	26	5
Pineapple	1914	3	34	9	63	6

De Portugal still remains the best yielder over a number of years. The demand for this fruit is quite local. Cracking was not so prevalent as in former years.

MEDLAR—VARIETY EXPERIMENT

Variety	When set	Number of trees	Yield per tree 1924		Total yield per tree for 6 years	
			lb.	oz.	lb.	oz.
De Hollande	1914	4	3	0	30	8
Large Dutch	1919	1	..	..	4	12
Ordinaire	1914	2	4	0	163	0
Sans Pepin	1914	3	4	0	16	7

This fruit is not popular and while trees do well most years, there is no market for the fruit.

APRICOT—VARIETY TEST

The apricot cannot be grown in the open, unprotected. Of the varieties tried, Moorpark seems to be the most promising.

NECTARINE—VARIETY TEST

This fruit has not been successful in the open. The trees are subject to mildew, and the fruit crop is light. Lord Napier and Stanwick are the two most promising varieties. Fairly satisfactory results are obtained when grown on the side of a building.

FIGS—VARIETY EXPERIMENT

Of the many varieties grown at this Station, Ladero seems to be the most promising. Black Ischia, Doree, Mission, Brown Turkey and Dauphin have some value. Trees are quite hardy, ripen some fruit, but we think, commercially, have no place here.

SMALL FRUITS

STRAWBERRY—HILL SYSTEM VS. MATTED ROWS

The hill system is the one in vogue on Vancouver island. Other systems are practically unknown. The hedge row, the half-matted row, and the full-matted row are used in many parts of America. Work was undertaken to secure definite information as to the merits of each of these systems. Plants were secured from three of the best growers in the district, and set early in the spring of 1923, and so arranged that each of the four systems was on trial in triplicate test plots.

Straw was applied to a portion of each of the plots, and cultivation discontinued two months previous to harvesting. On the remaining portion, cultivation was continued at regular intervals of about one week up to within a week of the first ripe berries, when this area was strawed. The following table gives a summary of results obtained:—

HILL SYSTEM VS. MATTED ROW

Method of Growing	Cultivated Area				Early-Strawed Area			
	Yield crate berries	Yield jam berries	Total yield	Percentage crate berries	Yield crate berries	Yield jam berries	Total yield	Percentage crate berries
	lbs. per acre	lbs. per acre	lbs. per acre		lbs. per acre	lbs. per acre	lbs. per acre	
Hill	3,826	1,618	5,444	69·6	2,490	2,075	4,326	57·5
Hedge row	3,878	1,693	5,571	65·9	2,839	2,075	4,913	57·7
Half-matted row	3,391	1,751	5,142	60·0	3,386	1,975	5,361	63·1
Full-matted row	1,510	1,002	2,512	.....	2,029	1,141	3,170	64·0

Yields were much better in the cultivated area in the hill and hedge rows. These were the highest yielding of all the plots, and also gave the highest percentage of crate berries as compared to jam. There seems to be very little difference between these two systems the first year. The full-matted row was practically a failure.

In the early-strawed area the best results were obtained from the half-matted row with the hedge and hill rows next in order. The strawing, as has been pointed out, was done early in the season with the object of studying its effect on evaporation and weed control. In the latter case it was fairly successful, while the efficiency of this method in the prevention of evaporation can best be seen in studying the table with respect to yields. This work is being continued and it may be that greater differences between the various systems will be indicated when the results of two years are averaged.

It is interesting to note that on another plot planted early in the spring, 1923, where the plants were allowed to fruit the first season as well as the second, the aggregate yield was less than on plants allowed to fruit only the second season.

STRAWBERRY—RUNNERS AND YIELD CORRELATION

This project was begun during the season of 1923, when first, second, and third generation plants were staked from plants producing one runner, two runners and three runners. Early in the spring of 1924 generation plants one, two and three were set separately, and cared for during the season, all runners being kept off. These plants will produce their first crop during the season of 1925 when careful records will be taken of their behaviour.

CURRANT—VARIETY EXPERIMENT

Of the thirteen varieties of black currants that have been under test at this Station for ten years, Boskoop Giant and Buddenborg are the two outstanding. Plants of these two varieties were taken in 1922, and set out in a new location and further records kept of their performance.

CURRANT—VARIETY EXPERIMENT

Variety	When planted	Yield per acre
		lb. oz.
Boskoop Giant	1912	543 12
Buddenborg	1922	522 0

BLACKBERRY—VARIETY EXPERIMENT

The thornless varieties tried have proved to be a complete failure, in that they are fruitless. A new plantation of Himalayan and Erie blackberries was set out in 1922 and yields for the season 1924 recorded below. These two varieties gave the best results of seven tried over a period of five years. The Himalayan is outstandingly the heaviest yielding blackberry known.

BLACKBERRY—VARIETY EXPERIMENT

Variety	When planted	Yield per acre
		lb.
Himalayan	1922	8,845
Erie	1922	633

Some twelve hundred seedlings of the Himalayan blackberry are being grown. These were planted out during the summer of 1923. A large amount of growth was made during the season of 1924, but no fruit borne. All plants have been

studied closely and considerable variation in leaf and habit noted. More definite information as to the character of these seedlings will be available when the fruit ripens next season.

GRAPE—VARIETY EXPERIMENT

While the vines set big crops each year, the fruit lacks in flavour even when fully ripe, owing no doubt to a deficiency in sugar. A few of the varieties do not ripen at all, remaining green at the close of the season.

Lindley and Hartford are among the best early grapes while Vergennes, Winchell and Delaware, though later, are of outstanding quality.

GRAPE—VARIETY EXPERIMENT

Variety	When set	Number of vines	Yield per vine 1924		Yield per vine for six years		Remarks
			lb.	oz.	lb.	oz.	
Black Hamburg	1918	2	6	12	27	12	Not recommended.
Black Prince	1916	1	..	..	9	0	Poor.
Brant	1915	7	29	4	105	4	Sour.
Brighton	1915	2	8	0	38	2	Promising.
Buckland, Sweet Water	1915	1	3	0	18	0	Sour.
Campbell Early	1915	2	27	4	107	8	One of the best.
Canada	1915	5	18	5	106	9	Sour.
Concord	1916	1	14	8	59	8	Not recommended.
Chasselas de Fontainbleau	1915	2	17	10	48	10	Too late.
Dattier de Beyreuth	1915	1	..	..	1	0	
Delaware	1916	2	9	0	26	12	Sweet, small.
Foster Seedling	1915	1	24	0	106	5	Very late.
Flame Tokay	1917	2	..	..	..	..	
Gros. Colman	1915	2	19	8	120	0	Too late.
Hartford	1915	5	15	9	80	0	Ripen very unevenly.
Lindley	1915	3	22	4	134	0	One of best.
Moor Early	1915	1	..	..	5	8	Sweet low yielder.
Peabody	1915	4	12	0	100	11	Good.
Rose of Peru	1916	1	11	0	62	4	Good.
Trentham Black	1915	1	18	0	23	0	Poor.
Vergennes	1915	3	18	3	80	14	One of our best.
Winchell	1915	3	3	10	12	14	Very sweet.
Grapes from Ottawa 1921—							
Brighton	1921	2	..	..	..	..	
Craig	1921	2	..	..	11	4	Very promising.
Early Daisy	1921	2	..	..	..	..	
Mary	1921	2	..	..	4	12	Sweet.
Moyer	1921	2	..	..	..	..	
Read Hybrid	1921	2	..	..	..	..	
Wilkins	1921	2	..	..	6	0	Very sweet.

CO-OPERATIVE EXPERIMENTS

Co-operating with the Entomological Branch, plantings of raspberries, currants and loganberries have been made. These plots were planted in 1924 and have been set aside for work in insect control.

VEGETABLES

POTATO—DATES OF PLANTING AND YIELD

Two varieties were used in this work, Early St. George and Sir Walter Raleigh. The first planting was made April 16, and successive plantings every two weeks until June 11, when the last planting was made, 66 sets were used with each planting.

POTATO—DIFFERENT DATES OF PLANTING

Variety	Date of planting	Date of harvest	Yield marketable	Yield unmarketable	Yield per acre
			lb. oz.	lb. oz.	tons lb.
Early St. George	April 16	Sept. 7	48 ..	15 ..	8 632
	April 30	Sept. 7	32 ..	14 8	6 276
	May 14	Sept. 7	40 ..	16 ..	7 784
	May 28	Sept. 7	34 ..	12 ..	6 144
	June 11	Sept. 7	24 ..	10 8	4 976
Sir Walter Raleigh	April 16	Nov. 9	82 ..	13 ..	12 1,080
	April 30	Nov. 9	84 ..	12 ..	12 1,344
	May 14	Nov. 9	78 ..	13 ..	12 24
	May 28	Nov. 9	72 ..	8 8	10 1,252
	June 11	Nov. 9	54 ..	10 ..	8 896

It will be noticed that plantings made after May 14, dropped off in yield.

POTATO—VARIETY EXPERIMENT

All planting in this experiment was done May 23. Potatoes did very well on the location selected, considering the extreme drought during the growing season. Varieties are arranged in order of yield per acre. Plots were harvested October 24.

POTATO—VARIETY EXPERIMENT

Variety	Source	Yield per acre
		Tons lb.
Netted Gem	Kamloops	20 920
Wee McGregor	Windermere	19 170
Eureka	U.B.C.	17 1,970
Early Rose	Ladner	16 1,660
Early St. George	Chilliwack	15 1,460
Irish Cobbler	Kelowna	13 1,940
Green Mountain	Courtenay	13 400
Burbank	Courtenay	12 1,630
Sutton Reliance	Atchelitz	12 1,190
Up-to-Date	Parksville	11 990
Oregon Beauty	Armstrong	11 220
Arran Rose	Royal Oak	10 1,560
Jersey Royal	U.B.C.	8 830
Sir Walter Raleigh	Gordon Head	7 1,290
Early Ohio	Surrey Centre	6 1,640
Golden Wonder	Royal Oak	6 1,420
Gold Coin	U.B.C.	6 540
St. John	Royal Oak	4 1,020
Climax	Royal Oak	1 1,740
Midlothian Early	Royal Oak	1 1,080

SOURCE OF SEED

Co-operating with the provincial Potato Specialist, certified seed was secured from various districts and planted side by side, under as similar conditions as it was possible to obtain, in order to ascertain as nearly as possible those districts most suited to the production of seed in the province. Certified seed was used in this work, so that a high class of tubers would be insured. Results of plot inspection for disease and yields are here given.

POTATO—CERTIFIED SEED

Variety	Source of seed	Diseases in field				Yield per acre	
		Mosaic	Leaf roll	Wilt	Weak plants		
		p.c.	p.c.	p.c.	p.c.	tons	lb.
Netted Gem	Kamloops	3	.....	.....	3	20	920
Netted Gem	Grand Forks	20	.....	.....	.....	20	480
Wee MacGregor	Windemere	3	.....	1	3	19	170
Early Rose	Ladner	3	.....	.....	.....	16	1,660
Early St. George	Chilliwack	3	1	2	.....	15	1,460
Netted Gem	Malakwa	.....	.....	.....	1	15	910
Early St. George	Langford	17	.....	3	.....	14	1,150
Green Mountain	Courtenay	3	2	2	7	13	400
Burbank	Comox	5	.....	3	27	12	1,630
Green Mountain	Comox	25	.....	.....	10	12	860
Netted Gem	Lulu Island	3	1 B. Leg	1	4	11	1,980
Netted Gem	Atchelitz	3	.....	.....	7	11	1,870
Netted Gem	Windemere	4	.....	.....	11	11	1,320
Up-to-Date	Parksville	4	.....	3	8	11	990
Netted Gem	Grand Forks	14	6	.....	5	11	1,210
Green Mountain	Victoria	81	.....	3	.....	10	1,230
Irish Cobbler	Koksilah	4	.....	1	2	9	1,690
Irish Cobbler	Kelowna	8	1	4	2	8	280
Sir Walter Raleigh	Victoria	10	.....	.....	14	7	1,290
Early Ohio	Surrey Centre	6	.....	12	1	6	1,640

POTATO—NON-CERTIFIED SEED

Variety	Source of seed	Diseases in field			Yield per acre	
		Mosaic	Wilt	Weak plants		
		p.c.	p.c.	p.c.	tons	lb.
Sutton Reliance	Atchelitz	7	18	4	12	1,190
Oregon Beauty	Armstrong	25	60	7	11	220
Eureka	Royal Oak	9	3	.....	17	1,970
Arran Rose	Royal Oak	16	1	.....	10	1,560
Climax	Royal Oak	100	.....	.....	8	1,270
Midlothian Early	Royal Oak	100	.....	.....	1	1,080

We were desirous of securing seed that would be as nearly disease-free as it is possible to obtain in Canada for a further study of mosaic in potatoes. After careful search a small lot of suitable stock was secured from Prince Edward Island of two varieties, Green Mountain and Irish Cobbler. As grown here this year field inspection revealed Irish Cobbler as being free from disease while Green Mountain contained one per cent mosaic and a similar amount of wilt.

Six healthy, vigorous, growing hills were selected and staked during the growing season, also six diseased hills of the same variety (Burbank) and practically side by side with the healthy ones. The produce from the six healthy hills weighed twenty-three pounds, while that from the diseased hills weighed ten pounds. The diseased hills were selected as being infected with mosaic.

NORTHERN VS. SOUTHERN-GROWN SEED

This experiment was undertaken to determine from the standpoint of production which is the better seed, that grown in the northern or southern portion of the province. Three varieties were selected for this test, Early St. George, Irish Cobbler and Green Mountain. Originally this seed was sent out by the Provincial Department of Agriculture, Victoria, to several districts including Smithers, situated along the line of the Grand Trunk Pacific Railway, and to

Kamloops. It was from this source that seed of each variety was obtained for this experiment, the southern seed coming from Kamloops, and the northern from Smithers. The same cultural methods were used on each variety, planting being done on May 23, and harvesting being completed October 27. The following table furnishes a comparison in yield per acre:—

NORTHERN VS. SOUTHERN GROWN SEED

Variety	Source seed	Marketable		Unmarketable		Total yield per acre		Percentage marketable
		tons	lb.	tons	lb.	tons	lb.	
Early St. George	North	5	1,000	..	1,320	6	320	89·2
Early St. George	South	6	1,640	..	440	7	80	96·8
Irish Cobbler	North	8	1,380	1	90	9	1,470	89·2
Irish Cobbler	South	6	980	2	200	8	1,180	75·5
Green Mountain	North	10	1,670	..	1,320	11	990	94·2
Green Mountain	South	15	360	..	1,540	15	1,900	95·1

In two cases out of three the seed from the south produced a better crop than did that from the north. The superiority is most noticeable in the Green Mountain variety, there being a difference of about 4½ tons in favour of the southern seed. There is no virtue in "North" or "South" but tremendous virtue in good seed wherever obtained. If potatoes from the south contain less disease than those from the north one may look for better yields from seed obtained from the south. Probably the idea that northern-grown seed had some special merit arose from the fact that disease may be less prevalent in some northern districts.

POTATO—SPROUTED VS. UNSPROUTED

Sixty-six sets of each of two varieties were planted, after having been exposed in subdued light at a temperature of about 50 degrees for six weeks, beside those that had not been exposed at all.

POTATO—SPROUTED VS. UNSPROUTED

Variety	Date planted	Date harvested	Marketable per plot 1924		Unmarketable per 1924		Yield per acre	
			lb.	oz.	lb.	oz.	tons	lb.
Early St. George—								
Sprouted	May 14	Oct. 31	68	..	15	4	10	1,978
Unsprouted	May 14	Oct. 31	58	..	14	8	9	1,140
Sir Walter Raleigh—								
Sprouted	May 14	Nov. 10	106	..	5	8	14	1,436
Unsprouted	May 14	Nov. 10	84	..	4	..	11	1,232

Results for two years at this Station would strongly indicate that sprouted seed has considerable advantage over the unsprouted.

POTATO—SPAYING EXPERIMENT

To determine the relative value of dust and liquid spray mixtures, plants were dusted and sprayed. Two hundred feet of row was sprayed with Bordeaux mixture 4-4-40 on January 17 and July 4. Two hundred feet of row was dusted with 9 parts ground sulphur to 1 part arsenate of lead.

POTATO—SPRAYING EXPERIMENT

Spray used	Date planted	Variety	Marketable per plot	Unmarketable per plot	Yield per acre
			lb. oz.	lb. oz.	tons lb.
Bordeaux Mixture 4-4-40	May 14	Burbank	65 ..	15 ..	9 480
Sulphur 9 parts, Arsenate of lead 1 part	May 14	Burbank	48 ..	10 ..	7 1,312
No treatment	May 14	Burbank	42 ..	12 ..	7 256

The Bordeaux mixture gave better results than the dust in yield and in general appearance of the plants. This holds good over a period of the two years during which this experiment has run.

POTATO—DIFFERENT DATES OF PLANTING TO SECURE BEST SEED

In 1923 plots of Irish Cobbler and Carman No. 3 were planted on five successive dates two weeks apart, beginning April 16. Seed from each of these plots was saved, and planted on April 16, 1924, with the results as tabulated. Irish Cobbler plots were harvested August 5, and Carman No. 3 plots on November 11.

POTATO—DIFFERENT DATES OF PLANTING TO SECURE BEST SEED

Variety	Planted	Harvested	Yield per acre, 1924
	1923	1923	tons lb.
Irish Cobbler Plot 1	April 16	Sept. 16	8 1,160
2	May 1	Sept. 16	7 388
3	May 15	Sept. 16	6 1,464
4	May 29	Sept. 16	5 1,616
5	June 12	Sept. 16	3 996
Carman No. 3. Plot 1	April 16	Nov. 2	7 1,840
2	May 1	Nov. 2	10 1,648
3	May 15	Nov. 2	12 288
4	May 29	Nov. 2	12 1,476
5	June 12	Nov. 2	11 1,628

BUSH BEAN VARIETY EXPERIMENT

Sixteen varieties of beans were planted in drills on May 22. Pods were weighed from 15 feet of row and date when ready to use recorded. Varieties are given in order of yield.

BUSH BEAN—VARIETY EXPERIMENT

Variety	Source seed	Ready for use	Height	Yield per 15 feet	Quality
			inches	lb. oz.	
Improved Refugee	Steele Briggs	Sept. 4	12	17 4	Good.
Refugee or 1000 to 1	O. 1631	Aug. 29	10	14 0	Good.
Hodson Wax	Harris	Sept. 4	10	14 0	Excellent.
Masterpiece	O. 2746	Aug. 29	13	13 0	Fair.
Hodson Long Pod	O. 2748	Aug. 24	12	13 0	Good.
Red Hidatsa	Will	Sept. 4	11	12 14	Fair.
Henderson Bountiful	D. & F	Aug. 22	10	11 8	Fair.
Bountiful French	O. 2824	Aug. 22	12	11 6	
Bountiful Green French	O. 2825	Aug. 22	12	10 12	
Ex Early Valentine	O. 1479	Aug. 22	11	10 8	Green.
Pilot Navy	Will	Sept. 2	10	9 6	
Round Pod Kidney Wax	O. 5232	Aug. 29	10	8 4	
Davis Wax	O. 2772	Aug. 22	12	8 0	Good.
Davis White Wax	McDonald	Aug. 29	11	8 0	Excellent.
Hodson Long Pod Wax	Rennie	Sept. 4	11	6 12	Good.
Yellow Eye Yellow Pod	O. 2821	Aug. 29	10	6 0	

The whole season was very dry and hence yields of green beans for table use were much reduced.

BUSH BEAN—DIFFERENT DISTANCES IN PLANTING

The object in this experiment was to determine the relative earliness, quality and yield of beans as a green vegetable when planted 2 inches, 4 inches and 6 inches apart in the row. The varieties used were Round Pod Kidney Wax and Stringless Green Pod.

BUSH BEAN—DIFFERENT DISTANCES IN PLANTING

Variety	Distance apart	Amount sown	Date sown	Ready for use	Yield	
	inches	feet			lbs.	oz.
Round Pod Kidney Wax	2	30	April 25	July 9	18	..
	4	30	April 25	July 9	11	12
	6	30	April 25	July 17	8	15
Stringless Green Pod	2	30	April 25	July 11	14	12
	4	30	April 25	July 11	10	6
	6	30	April 25	July 14	7	12

Over a period of two years these varieties have given best results when planted 2 inches apart, the next best when planted 4 inches and the poorest when 6 inches apart.

PEA—DIFFERENT DISTANCES IN PLANTING

This project was started with the object in view of determining the relative earliness, quality and yield of peas as a green vegetable when planted 1 inch, 2 inches and 3 inches apart in the rows. Three varieties, English Wonder, Thos. Laxton and Stratagem were used, sown in rows 30 inches apart. Records were kept on 30 feet of row for each variety, and weights given in the following table. All varieties were seeded March 29.

PEA—DIFFERENT DISTANCES IN PLANTING

Variety	Distance apart	Ready for use	Height	Pods per pound	Yield per 30 feet	
	inches		inches		lbs.	oz.
English Wonder	1	June 12	14	120	14	12
	2	June 16	16	120	11	4
	3	June 19	17	98	10	4
Thos. Laxton	1	June 18	26	80	12	8
	2	June 21	38	51	11	12
	3	June 24	48	43	11	..
Stratagem*	1	June 30	22	58	6	8
	2	June 30	24	54	7	6
	3	June 30	24	48	7	2

*Very poor in germination.

Planting distances of 1 inch apart in rows gave best results from the standpoint of yield.

CELERY—BLANCHING EXPERIMENT

A comparison of the different methods of blanching was made in this experiment to determine relative earliness, crispness, blanching and flavour. Golden Self Blanching was the variety used, the plan of procedure being as follows:—

1. Planting in a bed 6 feet by 6 feet. Plants 6 inches by 6 inches apart.
2. One row 15 feet long, plants 6 inches apart, grown on the level, earthed up as usual.

3. Two rows 15 feet long. Plants 6 inches apart. Blanched with roofing paper.
4. One row 15 feet long. Plants 6 inches apart started in trench 6 inches deep and gradually earthed up.
5. One row 15 feet long. Plants 6 inches apart grown on the level and blanched with boards.

Weights were taken of 12 plants, trimmed for market.

CELERY—BLANCHING EXPERIMENT

Cultural Methods	Earliness	Flavour	Crispness	Blanching	Weight 12 plants, average, two years	
					lb.	oz.
1. Bed 6 feet by 6 feet. Plants 6 inches by 6 inches	Fourth	Fifth	Fifth	Third	11	0
2. One row 15 feet long. Plants 6 inches apart grown on level and earthed up	Fifth	First	Second	Fifth	22	0
3. Two rows 15 feet long. Plants 6 inches apart blanched with roofing paper	First	Third	Fourth	First	24	12
4. One row 15 feet long. Plants 6 inches apart, started in trench 6 inches deep, gradually earthed up	Third	Second	First	Fourth	30	13
5. One row 15 feet long. Plants 6 inches apart grown on level. Blanched with boards	Second	Fourth	Third	Second	26	8

The weights given in the table give the average for two years. The advantage in weight is obtained from starting plants in trench and gradually earthing up. Blanching with roofing paper increases earliness but with some gives a loss in flavour.

CABBAGE—DIFFERENT DATES OF SEEDING FOR STORAGE PURPOSES

In order to determine the best date for sowing cabbage seed for storage purposes, seed was sown on six different dates about ten days apart. Danish Ballhead and Copenhagen Market were the varieties used. Ten heads resulting from each date of seeding were weighed and placed in storage, and conditions noted from time to time.

CABBAGE—DIFFERENT DATES OF SEEDING FOR STORAGE PURPOSES

Variety	Seeded	Transplanted	Stored	Weight of 10 heads	Days kept in good condition
				lb.	days
Danish Ballhead	April 10	May 12	Oct. 6	75	73
"	April 21	May 22	Oct. 18	56	61
"	April 30	June 5	Nov. 2	35	50
"	May 10	June 17	Nov. 8	54	44
"	May 20	July 10	Dec. 8	38	43
"	May 29	Aug. 3	Dec. 15	32	36
Copenhagen Market	April 21	May 22	Sept. 8	47	52
" "	May 1	June 5	Sept. 22	43	47
" "	May 10	June 17	Oct. 13	38	42
" "	May 20	July 10	Dec. 15	32	36
" "	May 29	Aug. 3	Too dry		
" "	June 10		Too dry		
" "	June 20		Too dry		

Heads from early-planted plants remained in good condition in storage longer than heads from later plantings. This work is being continued.

BEET—DIFFERENT DATES OF SEEDING

Detroit Dark Red was the variety used in this work. The object was to determine relative earliness, quality and yield as a green table vegetable and also as a ripened crop, when grown at different dates. Seed was sown at ten-day intervals one row on each date, 30 feet long. Fifteen feet of row was used to determine earliness, quality and yield as a green vegetable, and fifteen feet left until the end of the season. The heaviest yield of marketable beets resulted from the sowing on April 8.

CARROT—DIFFERENT DATES OF SEEDING

The same line of procedure was followed in this project as with a similar test with beets. Seed was sown on different dates. Variety used was Chantenay (McDonald Selected). The heaviest total yield resulted from the April 18 sowing and best yield of early carrots from the sowing on April 8.

PARSNIPS—DIFFERENT DATES OF SEEDING

This project differs from the work undertaken with beets and carrots in that all the parsnips were left until the end of the season when they were lifted on December 1, 30 feet of row being used with each date of seeding.

PARSNIPS—DIFFERENT DATES OF SEEDING

Variety	Date seeded	Marketable		Unmarketable		Quality
		Number of bunches	Weight	Number of bunches	Weight	
			lb.		lb.	
Hollow Crown	Mar. 28	27	120	6	10	Good.
	April 8	27	108	5	9	Good.
	April 18	16	74	12	18	Fair.
	April 28	19	60	12	16	Fair.
	May 8	16	58	10	15	Poor.
	May 19	10	39	11	20	Poor.
	May 29	10	24	11	8	Very poor.
	June 7	12	32	10	12	Very poor.

Results for two years show that parsnips should be sown in early season in order to secure both yield and quality.

CORN—SUCKERING EXPERIMENT

Suckers on plants were removed to determine effect on earliness, yield and ear development. This work was carried out with two varieties, Early Malcolm and Golden Bantam. On plot No. 1 all suckers were removed as they appeared. On plot No. 2 suckers were left on. Seed was sown May 13 in hills 3 feet apart in row, and rows 3 feet apart. Three plants were left to each hill.

CORN—SUCKERING EXPERIMENT

Variety	Date planted	Height	Ready for use	Yield per plot	Remarks
		inches		lb. oz.	
Early Malcolm—					
Plot 1, suckers removed	May 13	54	Aug. 25	19 10	
Plot 2, suckers left on	May 13	48	Aug. 30	24 14	
Golden Bantam—					
Plot 1, suckers removed	May 13	42	Sept. 1	19 8	
Plot 2, suckers left on	May 13	42	Sept. 5	18 14	Poor soil conditions.

Results for two years show that sucker removal tends to hasten maturity, but slightly lessens the yield.

TOMATO—METHODS OF TRAINING

The object in this experiment was to determine earliness, yield of total ripe, green, marketable and unmarketable fruit when plants were (1) not headed back, (2) stopped at third truss, (3) stopped at second truss, (4) stopped at first truss. Rows were 2 feet apart, and plants 1 foot apart in the row. Twenty-five plants were used in each test. Varieties used: Alacrity and Bonny Best. Seed was sown in hotbed March 19, and trained to single stem.

TOMATO—METHODS OF TRAINING

Variety	Stopped at	First ripe fruit	Average Yield for Two Years			
			Marketable ripe fruit	Unmarketable	Green	Total
			lb. oz.	lb. oz.	lb. oz.	lb. oz.
Alacrity	1st truss	July 31	23 8	6 10	2 2	32 4
Bonny Best	1st truss	July 31	25 12	1 8	2 6	29 10
Alacrity	2nd truss	July 31	43 2	7 0	8 5	58 7
Bonny Best	2nd truss	July 31	53 4	3 6	9 4	65 14
Alacrity	3rd truss	July 31	46 7	10 0	12 6	68 13
Bonny Best	3rd truss	July 31	62 8	4 8	14 1	81 1
Alacrity	Not stopped	July 31	45 8	6 1	10 2	61 9
Bonny Best	Not stopped	July 31	66 14	3 14	17 0	87 12

FALL VS. SPRING SEEDING

Seed from a number of vegetables was seeded in the fall of 1923, and of the same vegetables, in 1924 in order to determine the effect of autumn seeding on earliness and yield. Thirty feet of row was seeded in each case.

VEGETABLES—FALL VS. SPRING SEEDING

Vegetable	Fall			Spring		
	Date sown	Ready for use	Quantity harvested	Date sown	Ready for use	Quantity harvested
						lb. oz.
Beet—Blood Red Ball	Oct. 26		Killed	Mar. 18	July 18	51 4
Cabbage Copenhagen Market	Oct. 26		Killed	Mar. 18	July 14	55 ..
Carrot—Chantenay	Oct. 26		Killed	Mar. 18	June 14	36 12
Lettuce—Hanson	Oct. 26		Killed	Mar. 18	Aug. 29	4 4
Onion—Red Wethersfield	Oct. 26		Killed	Mar. 18	May 5	12 12
Radish—16 days	Oct. 26		Killed	Mar. 18	May 23	6 (bunches)
Spinach—Viroflay	Oct. 26	April 24	9 lb. 10 oz.	Mar. 18	June 18	6 8
Turnip	Oct. 26		Killed	Mar. 18		8 4

Radishes were badly attacked with root maggot. Spinach was the only vegetable that came through the winter and gave a crop. All others killed out.

MISCELLANEOUS EXPERIMENTS

STUDIES IN SWEET PEA SEED PRODUCTION

During 1923 much investigational work was done with respect to sweet pea seed production. Additional investigation has been carried out during the season of 1924 with one variety, Constance Hinton. This variety broke up badly in 1923, giving 12 per cent colour rogues. After having been carefully rogued, seed from the remaining plants was saved and sown, with the result that the number of rogues increased about fifty per cent over the previous year.

This may mean either that cross-pollination has taken place or that the variety is breaking up. Attempts will be made during the next year or two to prove conclusively whether cross-pollination by natural means is possible in the sweet pea, and if it is possible what agencies are employed in bringing this about.

It has been the theory of certain growers for some time that it might be possible to determine in the seedling stage whether a plant would be a rogue or not by means of a dark-coloured area in the axils of the leaves; those showing this colouration would be rogues. Some 500 seedlings of Constance Hinton variety were grown and carefully examined frequently up to the time of planting in the open, and no such dark areas were noticed. On flowering, these same plants produced about 25 per cent rogues. Results would therefore show that it is impossible to distinguish rogues in the seedling stage by this means, at least in some varieties.

WALNUTS—VARIETY EXPERIMENT

The nut orchard at the Station consists of six acres set out in 1916 and comprising eighteen grafted varieties and five seedling varieties. Up to the present few nuts have been borne. Of all the varieties under test, Franquette and Mayette are the most promising. Trees are developing slowly.

ALMONDS—VARIETY EXPERIMENT

While the trees have done very well, practically no fruit has resulted. A considerable amount of bloom was produced in the early spring season, but no fruit set. Several varieties are under test.

FILBERTS—VARIETY EXPERIMENTS

The first plantings of nut trees were made in 1915. A few of the varieties set out at that time are doing well. Additional plantings have been made since that time, and a considerable area is now in Filberts and Cob Nuts. The following table gives a complete list of varieties being grown, with yield and merit.

FILBERTS—VARIETY EXPERIMENT

——	When set	Number of trees	Yield per tree since planted	Merit
			lb. oz.	
Corylus Avellana	1918	1	Nil	
" Calyculata	1918	1	"	
" Colurna	1918	1	"	
" Common	1918	1	"	
" California Purple	1916	1	"	
" Barcelona Filbert	1916	2	1 2	
" du Chilly	1916	2	2 13	Good.
" English Filbert	1916	2	.. 12	Good
" Kentish Cob	1916	2	3 14	Excellent
" Merveille de Bollwiller	1915	6	27 14	Good
" Nottingham Gilbert	1915	7	21 7	Fair
" Red Hazel	1916	1	6 8	Good
" Spanish Purple	1916	1	1 10	
" Macrocarpa	1915	5	7 10	Fair
" Macrocarpa Daviana	1918	1	4 8	Fair
" " a feuille pourpre	1916	2	18 12	Excellent
" " a feuille lacinae	1916	1	.. 11	Fair
" " d'Angleterre	1915	2	7 4	Poor
" " du Provence	1915	2	12 14	Excellent
" " Emperor	1915	1	11 ..	Good
" " du Bearn	1916	1	2 7	Good
" " Gosford	1916	2	.. 11	Fair
" " pellicule rouge	1916	1	3 4	Fair
" " Prolific	1915	1	16 ..	Good
" " Fertile de Coutard	1915	7	53 6	Excellent
" " Fertile	1915	2	8 11	Good

Fertile de Coutard is the best nut not only from the standpoint of yield, but also because of size and quality. Merveille de Bollwiller is also good.

CHESTNUTS—VARIETY EXPERIMENT

Of three species of chestnuts grown at this Station, the European Chestnut (Castanea Sativa) is the only one that has borne. Planted in 1918 this nut has given 27 pounds 14 ounces per tree.

CHESTNUTS—VARIETY EXPERIMENT

Variety	When set	Number of trees	Condition of trees	Yield per tree since planted
				lb. oz.
Constanea Sativa	1918	3	Good	27 14
" Mollissimo	1916	1	Good	Nil.
" Deulata	1920	4	Fair	Nil

CHRYSANTHEMUMS—VARIETY EXPERIMENTS

Some one hundred and fifty varieties of chrysanthemums were received at this Station in the spring of 1922 from the Central Experimental Farm, Ottawa. Many of these were greenhouse varieties. All have been grown here with the object of determining the value of each when grown out of doors on Vancouver island. Records have been kept as to date of blossoming, diameter of flower, colour, height and quality. Many varieties produced a wealth of bloom early in the season, while others bloomed too late to have any real value. We are giving below six of the best and six poorest varieties in pompoms, singles and doubles.

CHRYSANTHEMUMS—VARIETY EXPERIMENT

—	Pompom	Single	Double
Best	Baby Doll	Alex. Rowbottom	Mrs. F. Calliar.
	Buena	Mrs. U. P. Hedrick	Henry Vincent.
	Beth	Irene Craig	Oconto.
	Florence Huckvale	Jessie Curtis	Gaston Quineaux.
	Little Tot	Kitty Bourne	Rose Perfection.
	Mrs. Nellie Clevis	Kitty Connell	O. H. Broomhead.
Poorest	Ouray	Mrs. Filkins	Smith Imperial.
	Margaret Clark	Polly Duncan	Solomon Gold.
	Klondike	Josephine	October Herald.
	Button Rose	E. V. Godfrey	Victory.
	Fire Bird	Golden Star	Wells Late Pink.
		Sea Shell	White Chieftain.

CEREALS

The work in the Cereal Division, though not extensive, is receiving more attention with the years. For several seasons the area allocated to this work has been cropped following a definite rotation, twenty-five per cent to spring-sown cereals; twenty-five per cent to roots; twenty-five per cent to fall-sown cereals, and twenty-five per cent to summer-fallow. The twenty-five per cent given to the roots is used for work in the Forage Crop Division.

Fall-sown cereals consistently yield better than those sown in the spring. The mildness of the climate on the Saanich peninsula permits of much latitude in fall sowing, since many of the spring cereals are hardy enough to survive the winter on Vancouver island. Nearly all the wheats are hardy. So far

as this grain is concerned, the fall sowing of spring wheat has advanced beyond the experimental stage, for many farmers have adopted this method. Several barleys appear hardy, and work with these is being continued. More work is being given to the oats in this connection than in any other line, since they approach the danger point, so far as hardiness is concerned, more closely than do others. Many so-called winter oats have been obtained from various sources. These have been sown beside standard Canadian oats, together with volunteer oats gathered at the Station.

We have found that early seeding is the great secret of success with all fall-sown material, especially with oats. Oats should not be seeded later than October first, earlier if possible, for they must have advanced much beyond the seedling stage to stand the test of winter.

WHEAT—TEST OF VARIETIES

Many varieties of wheat were spring-sown in duplicate test plots one-eightieth of an acre each, on August 28, 1924. The seed, originally obtained from the Central Farm, Ottawa, from local seed houses and from the Experimental Station, Sidney, was practically all taken from seed plots grown at the Station Farm, Sidney, in 1923.

WHEAT—SPRING-SOWN—TEST OF VARIETIES

Variety	Length of straw	Date ripe	Yield per acre	Remarks
	inches		bush. lb.	
V. I. S. No. 14	29	Aug. 18	18 40	Trace of Stem Rust.
V. I. S. Bluestem X Marquis	30	" 16	19 40	Trace of Stem Rust.
Red Stone	34	" 15	21 40	Small hard grain.
Red Fife	30	" 20	17 20	Very free from rust.
Early Red Fife	32	" 18	17 40	
Huron	27	" 16	28 0	
Kitchener	34	" 16	16 40	Thin stand.
Purple Marquis	32	" 20	20 20	Purple straw.
Marquis	36	" 12	21 20	Normal stand.

Red Stone is a new wheat of some promise introduced by a local man, while the V. I. S. wheats are introductions of this Station.

WHEAT, FALL-SOWN—TEST OF VARIETIES

Several varieties of wheat were sown in duplicate in uniform test plots an eightieth of an acre in size on October 9, 1923. The soil 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	Length of straw	Date ripe	Yield per acre	Remarks
	inches		bush. lb.	
Red Rock	58	July 8	42 0	One of the best winter growers
Golden Sun	54	" 19	44 0	
V. I. S. No. 131	48	" 19	42 0	
Sun	56	" 22	53 20	Solft, plump.
Red Stone	50	" 19	42 40	
Dr. Hart	60	" 17	40 0	
V. I. S. Velvet	52	" 15	42 40	Chaff white, covered with soft hair.
V. I. S. No. 14	49	" 17	47 0	
V. I. S. Bluestem X Marquis	44	" 17	36 0	
V. I. S. No. 1	52	" 17	36 0	

Red Rock is one of the earliest winter wheats we have. On April 1, 1924, this wheat was 24 inches high. Sun is a very popular soft wheat, yielding as a rule slightly better than Red Rock, but of poorer quality.

OATS, SPRING-SOWN—TEST OF VARIETIES

Ten varieties of oats were sown in duplicate in uniform test plots on April 28. The season was very unfavourable for spring-sown oats, hence the crop was light.

OATS—SPRING-SOWN—TEST OF VARIETIES

Variety	Length of straw	Date ripe	Yield per acre	Remarks
	inches		bush. lbs.	
Garton's Abundance	30	Aug 7	41 6	
O. 713	30	July 13	47 2	
Garton	26	Aug. 7	39 14	
Banner	32	Aug. 7	42 12	
O. A. C. 72	24	Aug. 7	30 20	
Conqueror	34	Aug. 7	44 24	Obtained from Brackman Ker Co.
Victor	26	Aug. 7	49 14	
Longfellow	35	Aug. 4	52 32	
Early White Ripe	28	July 31	40 0	
Joanette	24	Aug. 5	41 26	

The yield of many of these varieties is not more than half that of the same variety the year before.

OATS, FALL-SOWN—TEST OF VARIETIES

Eighteen varieties of oats were sown in duplicate in uniform test plots on October 5. Our work as usual demonstrated that some varieties when sown in early season on well-drained land would winter successfully and yield well.

OATS—FALL-SOWN—TEST OF VARIETIES

Variety	Length of straw	Date ripe	Yield per acre	Remarks
	inches		bush. lb.	
Kanota	48	June 25	61. 6	Strong grower, height, April 1, 16 inches.
V. I. S. Winter White				Winter killed.
Winter Turf	48	July 8	57 22	Low spreading habit.
Grey Winter	44	July 8	54 4	Height April 1, 4 inches.

Many varieties that had formerly been sown in the fall were discarded, and only those that had proven their worth sown in the eightieth-acre plots. Many other varieties were under test in rod rows, some of which are promising.

BARLEY, SPRING-SOWN—TEST OF VARIETIES

Four varieties of barley were sown in duplicate on April 28, at rate of 2½ bushels per acre.

BARLEY—SPRING-SOWN—TEST OF VARIETIES

Variety	Length of straw	Date ripe	Yield per acre	Remarks
	inches		bush. lb.	
Barks	25	Aug. 7	43 16	Barks is perhaps the most promising barley tried at this Station.
Chinese	28	Aug. 5	18 36	
Hulless	20	Aug. 5	11 32	
Manchurian	34	July 31	30 40	

BARLEY, FALL-SOWN—TEST OF VARIETIES

Many of the barleys showing failure from the standpoint of hardiness have been eliminated from the eightieth-acre plots, and only three sown on October 9 in duplicate.

BARLEY—FALL SOWN—TEST OF VARIETIES

Variety	Length of straw	Date ripe	Yield per acre	Remarks
	inches		bush. lb.	
Barks	44	July 2	58 16	Seed from U.B.C.
Chinese	40	June 30	32 24	Injured by birds.
Manchurian	37	June 30	28 16	Injured by birds.

It has been noticed that in some cases barley is more hardy than wheat.

FIELD PEAS, SPRING-SOWN—TEST OF VARIETIES

Field peas were sown in uniform test plots on March 28, 1924. Fairly large quantities of these peas are produced in the district and sold on eastern market for seed.

FIELD PEAS—SPRING-SOWN—TEST OF VARIETIES

Variety	Length of straw	Date ripe	Yield per acre	Remarks
	inches		bush. lb.	
Solo	39	July 25	26 40	
Stirling	38	July 17	22 20	Seed very large, excessive amount of straw.
New Zealand Maple	32	July 25	20 40	Popular in district.

FIELD PEAS—FALL-SOWN

The fall sowing of peas has been abandoned on this farm. Though success is not unusual, the percentage of failures is too great to permit of favourable recommendation.

FORAGE CROPS

The returns from forage crops during 1923 were much below the average. Roots, grasses, clover and hay mixtures gave only about sixty-six per cent of their average yield. Corn and alfalfa, however, gave abundant crops, the former being favoured with the hot, dry summer, the latter, by its deep rooting system, was able to withstand the drought that affected the shallower-rooting grasses and clovers. Alfalfa continued to grow well into the month of November, the fourth cutting was made in the last week in October.

INDIAN CORN—VARIETY TEST

Twenty-five varieties and strains of corn for ensilage were sown on May 14, in one rod row plots, 36 inches apart. Each plot was replicated four times. The plants were thinned to twelve inches apart in the row.

INDIAN CORN—VARIETY TEST FOR ENSILAGE PURPOSES

Variety	Per cent stand	Height of plant	Height of Ear		Date cut	Yield per acre, 1924	Per cent dry matter	Yield per acre dry matter
			Upper	Lower				
		ft. ins.	inches	inches		ton lb.		ton lb.
Yellow Dent	93·4	6 0	16	13	Oct. 2	14 600	14·83	2 241
Yellow Dent	93·4	8 4	37	33	Oct. 2	21 1,120	17·81	3 1,680
Twichell	100·0	6 0	20	18	Sept. 17	15 1,680	22·55	3 1,144
Early N. W. Dent	96·8	7 8	26	23	Sept. 15	17 100	29·38	5 19
N. West. Red Dent	96·8	6 6	30	25	Sept. 24	19 720	25·97	5 56
N. West Dent	96·8	6 0	22	19	Sept. 15	13 180	23·54	3 163
N. West Dent	100·0	5 8	27	23	Sept. 15	13 180	29·16	3 1,634
Longfellow 1099	96·8	7 10	28	25	Sept. 24	20 700	16·32	3 642
Longfellow	93·4	7 6	28	22	Sept. 24	16 780	16·87	2 1,530
Amber Flint	100·0	6 0	17	14	Sept. 15	12 640	20·18	2 972
Quebec 28	100·0	5 6	18	14	Sept. 13	13 620	27·51	3 1,323
Hybrid	90·6	8 2	42	36	Oct. 2	22 1,540	19·68	4 962
Golden Glow	96·8	8 8	46	39	Oct. 2	23 640	13·34	3 222
Comptons Early	100·0	7 10	34	28	Sept. 29	24 1,720	14·77	3 1,344
90 Day White Dent	90·6	7 6	49	44	Oct. 6	19 1,380	18·19	3 1,163
Wisconsin No. 7	96·8	8 2	44	39	Oct. 2	22 440	20·34	4 1,047
Wisconsin No. 7	68·7	7 9	38	34	Oct. 2	16 1,440	22·33	3 1,467
Leaming	96·8	7 6	36	30	Sept. 29	17 320	14·15	2 856
Leaming	84·3	7 3	42	36	Sept. 29	13 840	16·37	2 394
Stowell's evergreen	71·8	6 0	34	28	Oct. 6	12 1,740	14·39	1 1,704
Minnesota No. 13	93·4	6 4	28	24	Oct. 12	14 1,700	16·37	2 862
King Phillip	90·6	6 0	24	18	Sept. 24	15 360	14·94	2 536
North Dakota	93·4	5 9	25	18	Sept. 24	14 1,700	20·23	3 8
Burr Leaming	84·3	7 6	45	38	Oct. 10	17 1,420	13·89	2 920
White Cap Yellow Dent	84·3	6 2	38	34	Sept. 24	15 140	18·96	2 1,715

The corn was somewhat slow to germinate, but when once up made rapid growth. The yield was above the average. Game birds caused considerable damage to the ears growing less than 24 inches from the ground. They also destroyed much seed before and immediately after germination.

SUNFLOWERS—VARIETY TEST

Sunflowers are not popular in the district, yet they are grown along with corn by some—one row of sunflowers to two or three of corn. By this method a considerable increase in tonnage per acre is brought about. The same method of planting was followed as with the corn.

SUNFLOWER—VARIETY TEST

Variety	Per cent stand	Height of plant	When cut	Yield per acre		Per cent dry matter	Yield per acre dry matter
				1924	Average for 2 years		
		ft. ins.		tons lb.	tons lb.		tons lb.
Mammoth Russian	100·0	8 9	Sept. 11	36 160	26 1,240	16·26	5 1,733
Mammoth Russian	96·8	5 9	Sept. 13	18 1,180	.. ..	21·28	3 1,912
Russian Giant	93·4	8 4	Sept. 13	35 180	.. ..	18·30	6 843
Ottawa 76	81·2	5 10	Sept. 13	12 200	13 400	17·37	2 204
Mixed	93·4	5 6	Sept. 4	19 940	.. ..	16·48	3 417
Black	90·6	5 4	Sept. 2	17 1,640	.. ..	13·89	2 950
Manteca	100·0	5 0	Aug. 30	16 1,880	.. ..	15·38	2 1,211
Mixed Mennonite	96·8	3 4	Aug. 29	8 500	10 1,340	18·36	1 1,029
Manchurian	84·3	5 3	Sept. 13	18 520	.. ..	20·84	3 1,611
Manchurian	100·0	5 2	Sept. 2	14 1,480	13 70	16·21	2 779

The late-maturing varieties of sunflowers are the better adapted for planting with corn. Those ripening early become too dry and woody by the time they are ready for the silo.

TIMOTHY BREEDING

Four strains of timothy were sown in test plots one eighty-eighth of an acre in size.

TIMOTHY—VARIETY TEST

Variety	Date of seeding	Height April 15	Date cut	Height when cut	Yield per acre green	Per cent dry matter	Yield per acre dry matter
	1923	inches	1924	inches	tons lb.		tons lb.
Commercial	May 10	4	June 25	44	4 272	42·58	1 1,522
Ohio Commercial	May 10	3½	June 25	40	3 336	42·00	1 661
Ohio 3937	May 10	4	June 25	36	2 576	40·51	0 1,854
Boon (Ottawa)	May 10	3	June 25	46	3 1,304	41·30	1 1,017

Both strains of commercial timothy were subject to rust, the Ohio in a lesser degree than the other. Boon, the tallest of the four varieties, was entirely free from rust. The stalks were not as coarse, giving a much better quality hay. The yield was somewhat lessened by the thinness of the stand.

ORCHARD GRASS—VARIETY TEST

Several varieties have been seeded in duplicate plots, with results as follows:—

ORCHARD GRASS—VARIETY TEST

Variety	Date of seeding	Height April 15	Date cut	Height when cut	Yield per acre green	Per cent dry matter	Yield per acre dry matter
	1923	inches	1924	inches	tons lb.		tons lb.
Commercial	May 7	7	June 4	42	5 824	30·15	1 1,263
Skandia Lot 7	May 7	10	June 4	46	4 1,328	35·61	1 1,322
Skandia Lot 11	May 7	4½	June 4	40	5 1,264	38·64	2 352

Skandia Lot 11 was furnished with more foliage than the other varieties. It has also a much higher percentage of dry matter than the other two. Orchard grass will provide an early pasture, but its subsequent growth is so rank and coarse as to render it undesirable as hay.

ALFALFA BREEDING

Seven varieties of alfalfa were sown in uniform test plots on May 11th, 1923. All wintered well and commenced to grow early the following spring.

ALFALFA—VARIETY TEST

Variety	Height April 15, 1924	Height when cut	Yield per acre green	Per cent dry matter	Yield per acre dry matter
	inches	inches	tons lb.		tons lb.
Turkestan	7	18	3 1,260	39·85	1 893
Genuine Grimm	6	27	4 536	35·17	1 100
Shoobut	5	15	3 424	35·22	1 26
Cossack	7½	22	5 648	36·05	1 183
Variegated	11	28	5 1,088	37·32	2 1
Siberian Yellow	1½	14	2 1,632	33·62	0 18
McCannus	9	29	8 1,864	29·33	2 12

The McCannus strain proved to be far superior to any other. It gave a very good second crop, not suffering from the drought as much as did other varieties.

WHITE DUTCH CLOVER BREEDING

This project was begun in 1922 and is being continued. Seed of Commercial, Kentish, Danish Morso, Scottish, Danish Strino and Ladino is sown in uniform test plots each year and the crop harvested the following season.

WHITE DUTCH CLOVER—VARIETY TEST

Strain	Date cut	Height when cut	Yield per acre green	Per cent dry matter	Yield per acre dry matter
		inches	tons lb.		tons lb.
Kentish					
Danish Morso	June 4	7	2 136	25·13	.. 1,039
Scottish	June 4	6	2 840	26·79	.. 1,297
Danish Strino	June 4	8½	2 1,984	23·26	.. 1,392
Ladino	June 4	10	4 1,064	30·59	1 773

The Ladino from the start was most vigorous and its yield indicates its value. The Commercial and Kentish strains did not make growth enough to permit cutting.

ALFALFA BROADCAST VS. ROWS FOR HAY PRODUCTION

The row system permits of cultivation and is a success. The broadcast system has some advantages in that it holds the weeds in check, and the crop is easier to mow and rake. Considerable dirt and dust is gathered along with the crop harvested from the cultivated area.

ALFALFA CULTIVATED VS. BROADCAST

System	Number of cuttings	Average yield per acre, green	Average yield per acre, hay
		tons lb.	tons lb.
Cultivated	4	11 1,970	3 1,732
Broadcast	3	7 1,240	2 916

MANGELS—BREEDING OF PURE STRAIN

The seed of mangels and other field roots, as offered commercially, varies much. The object of this experiment is to develop superior varieties of desirable commercial types. For this purpose three varieties were grown, Sutton's Special Yellow Globe, Sutton's Devon Yellow Globe, Sutton's Golden Globe.

The ideal roots were selected in the fall of 1923, stored, and planted the following spring. The seed produced by these roots will be sown in 1925, and a careful record kept of the uniformity in colour, shape and quality of the progeny from each root. The yields from uniform test rows of each will also be kept. This work will be continued for generation after generation, until, through repeated and proper selection and family breeding, the desired improvements have been attained.

EXPERIMENTS WITH FERTILIZERS

Work was again undertaken during the past year with fertilizers, with the hope that progress might be made toward determining the fertilizer needs of the district.

In project C. 50 the relative effect of different fertilizers on the potato crop was to be studied, following the same lines of procedure as in 1923. The summer of 1924 was practically without rainfall. Some plots failed wholly or in part, hence reported results would lead to confusion. No report on this phase of our work is possible for the year, but the project is being continued for 1925.

SUGAR BEET INVESTIGATION

To determine the suitability of the district for sugar beet production, several varieties of beets were planted in 1923. The growth was slow, and the yield per acre below average. The roots were forwarded to Ottawa for analysis, and "sugar content," "Coefficient of purity" etc. determined as follows:—

SUGAR BEETS—1924

Lab. No.	Variety	Weight per root		Sugar in juice	Coefficient of purity	Yield per acre		Remarks
		lb.	oz.	p.c.	p.c.	ton	lb.	
762 49	Henning & Harving..	1	6	14·97	90·69	9	920	Fair shape, not uniform.
50	Kitchner...	1	4	15·44	90·28	9	1,360	Poor shape, not uniform.
51	Dieppe.....	1	5	16·30	91·05	11	440	Poor shape, not uniform.
52	Schreiber...	1	5	14·51	87·94	11	0	Fair shape, fairly uniform.
53	Sluice Bros.	2	3	14·73	91·52	4	360	Poor, not uniform.
54	Horning....	1	15	14·21	87·20	12	1,960	Fair.
55	Burgman...	1	7	14·53	91·41	11	880	Fair shape, fairly uniform.
56	Vilmorins...	1	5	14·57	88·35	11	0	Poor shape, not uniform.
57	Chatham...	0	13	14·89	90·24	10	240	Fair shape, small.

"It will be noticed that the sugar in juice is low, somewhat lower than the average for this Station, due, presumably in a large measure to the wet autumn weather conditions being unfavourable to a proper ripening of the beet and sugar production. The coefficient of purity is high throughout the series, a favourable feature from the standpoint of the sugar manufacturer."

It is not probable that the sugar beet industry will ever become a matter of economic importance on Vancouver island, except for cattle feeding.

SULPHUR AS A FERTILIZER

The results obtained from experiments, already conducted, would indicate that sulphur has some value as a fertilizer for some crops, especially the legumes. To obtain data on this point, sulphur was applied to plots of alfalfa one-thirtieth of an acre in extent in 1923 at rates of 100 and 300 pounds per acre. No sulphur was applied to the remainder of the field. The yields from the plots for three cuttings were harvested and weighed as follows:—

SULPHUR EXPERIMENT

Quantity sulphur applied per acre	First cut May 29		Second cut July 22		Third cut Sept. 13		Total yield per acre	
lb.	tons	lb.	tons	lb.	tons	lb.	tons	lb.
300	2	890	0	540	0	1,670	2	1,100
100	2	1,340	0	780	0	1,905	4	25
Check, no sulphur	2	800	0	660	0	1,815	3	275

One hundred pounds of sulphur to the acre seem to increase the yield of alfalfa, but larger amounts are under the conditions at this experiment worse than useless, retarding rather than encouraging growth.

GYPSUM EXPERIMENT

The objects of this experiment were: first, to determine the value of gypsum as a fertilizer; second, to ascertain if it may be profitably used as a substitute for lime in the production of farm crops. The plots were in duplicate, one square rod in extent, and the crop, field peas, sown March 25, 1924.

GYPSUM EXPERIMENT

Plot 1 — Sulphur 200 lbs. per acre.	Plot 2 — Lime 700 lb. per acre.	Plot 3 — Sulphur 200, lime 700.	Plot 4 — Gupsum 1,100 lb.	Plot 5 — Check, no applications.
Plot 6 — Sulphur 200, lime 700.	Plot 7 — Gypsum 1,100 lb.	Plot 8 — Check	Plot 9 — Lime 700 lb.	Plot 10 — Sulphur 200 lb.

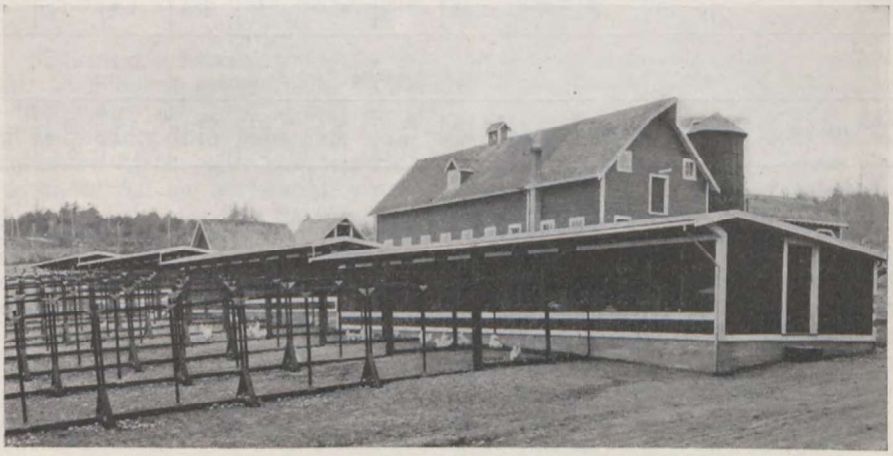
Average yield per acre from two plots:—

	Peas	Straw
Lime	34 bush. 50 lb.	1 ton 490 lb.
Check	31 "	1 " 320 "
Sulphur and lime	29 "	1 " 60 "
Gypsum	29 "	1,920 "
Sulphur	22 " 20 "	1,720 "

The lime and sulphur were applied to their respective plots in the same proportion as they are found in gypsum. Gypsum contains approximately 18 per cent sulphur and 32 per cent calcium oxide, or quick lime. Therefore, 1,100 pounds of gypsum contains about 200 pounds of sulphur and 350 pounds of lime as calcium oxide, or 700 pounds as agricultural lime, usually a mixture of hydrate and carbonate. It will be noticed that lime has a distinct value in the production of crops, especially the legumes, and that sulphur and gypsum have not demonstrated their value as fertilizers for field peas.

POULTRY

No division of the Station work has received more attention than that of poultry. With the development of the industry there has been a growing demand for information dealing with practical problems along all lines of the work.



Where the "contest" birds are housed.

November, 1923, saw the beginning of our contest work for Vancouver island breeders. A house consisting of thirty-four pens and feed room was built and equipped to accommodate 340 birds. The birds made a very creditable showing, averaging 199·8 eggs. This average is based on the full 340, but a few hens died before the finish and were not replaced. The production for the various breeds was as follows:—

White Lehgorns	207·91 eggs per bird.
White Wyandottes	187·53 " "
Barred Rocks	201·9 " "
Rhode Island Reds	184·1 " "
Leading Birds, Light Breeds:—	
R. T. Vyvyan	300 eggs.
R. S. A. Jackson	292 "
C. G. Golding	282 "
W. Bradley	280 "
R. H. W. Clowes	273 "
Leading Birds, Heavy Breeds:—	
Experimental Station, Sidney	285 eggs.
Reade & King	277 "
Elderton Bros	266 "

White Wyandottes are kept exclusively at Sidney. All the birds are trapnested and records kept of their subsequent behaviour.

COMPARISON OF VARIOUS SYSTEMS OF INCUBATION

For the incubation work of 1924, three incubators, Jubilee, Queen and Electric were tested. The natural method of incubation by hens was also used to some extent.

COMPARISON OF SYSTEMS OF INCUBATION

Incubator	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 at 3 weeks old	Per cent chicks alive at 3 weeks old	Total eggs required for 1 chick hatched	Total fertile eggs for 1 chick hatched	Total eggs required for 1 chick when 3 weeks old
Jubilee	2,123	1,598	75·2	1,077	50·7	67·3	956	88·6	1·9	1·4	2·2
Queen	143	111	77·6	89	62·2	80·1	68	76·6	1·6	1·2	2·1
Electric	100	80	80·	42	42·0	52·5	38	90·4	2·3	1·9	2·6
Hens	97	79	81·4	64	66·0	81·0	56	87·5	1·5	1·2	1·7
Average for three years											
Jubilee	5,987	4,518	75·4	3,008	50·2	66·5	*1,831	*86·2	1·9	1·5	*2·2
Hens	486	321	66·0	256	52·6	79·7	*197	*91·1	1·8	1·2	*2·0

*Average for two years.

HENS VS. PULLETS.—The Experimental Station at Sidney has consistently obtained better results, from the incubation standpoint, from mature hens rather than from pullets. For 1924 the pullets made a more favourable showing, but we are still of the opinion that pullets do not give the best results as breeders, and should be used only when necessity demands.

HATCHING RESULTS—HENS VS. PULLETTS

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 at 3 weeks old	Per cent chicks alive at 3 weeks old	Total eggs required for 1 chick hatched	Total fertile eggs required for 1 chick hatched	Total eggs required for 1 chick alive when 3 weeks old
Hens	2,171	1,635	75·3	1,122	51·6	68·6	990	88·2	1·9	1·4	2·1
Pullets	292	235	79·7	150	51·3	64·3	128	85·3	1·9	1·5	2·2
Average for Three Years											
Hens	7,623	5,847	76·7	3,850	50·6	65·8	*1,955	*87·7	1·9	1·5	*2·1
Pullets	1,101	747	67·8	372	33·7	49·8	*179	*63·9	2·9	2·0	*3·4

*Average for two years only.

DATES FOR SETTING.—The wording of this project was changed in 1923 from "Time Hatched" to "Time Set", which appears to move all dates back to the extent of three weeks. This should be borne in mind in comparing figures with those in reports for years previous to 1923.

BEST DATES FOR INCUBATION

Time set	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 at 3 weeks old	Per cent chicks alive at 3 weeks old	Total eggs required for 1 chick hatched	Total fertile eggs required for 1 chick	Total eggs for 1 chick when wing-banded
February	111	88	79·2	47	42·3	53·4	45	95·7	2·3	1·8	2·4
March	1,177	847	71·9	598	50·8	70·6	514	85·9	1·9	1·4	2·2
April	1,175	933	79·4	627	53·3	67·2	559	89·1	1·8	1·4	2·1
	2,463	1,868	75·8	1,272	51·6	68·0	1,118	87·8	1·9	1·4	2·2

NOTE.—The seasons vary much on Vancouver island. The dates for incubation, viz.—February, March, April are not nearly so important in 1924 as in 1923.

FISH-MEAL VS. BEEF-SCRAP

Fish-meal is becoming popular with an ever-increasing number of poultrymen. It is not so expensive as beef-scrap, so that if it gives results equivalent to beef-scrap, fish-meal should be used. Some of the earlier products were said to produce fishy eggs, but more recently this has been overcome by the elimination of the oils. During 1923 birds fed on fish-meal laid fewer eggs 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.

Results for 1924 follow. Ten birds were used in each pen in this experiment, and the test continued for eleven months.

FISH-MEAL VS. BEEF-SCRAP

Month	Weight of birds		Number of eggs laid		Weight of eggs per dozen		Pounds of feed used		Pounds feed for 1 doz. eggs		Cost of feed		Feed cost 1 doz. eggs	
	Beef-scrap	Fish-meal	Beef-scrap	Fish-meal	Beef-scrap	Fish-meal	with Beef-scrap	with Fish-meal	Beef-scrap	Fish-meal	Beef-scrap	Fish-meal	Beef-scrap	Fish-meal
	lbs.	lbs.			oz.	oz.					$ cts.	$ cts.	c.	c.
December	48·5	48·3	54	34	22·0	22·0	63	61	14·0	21·5	1 51	1 38	33·5	48·7
January	49·1	49·2	131	115	23·5	22·5	73	73	6·6	7·6	1 78	1 66	16·6	17·3
February	50·7	49·6	175	132	24·0	23·0	80	64	5·5	5·8	1 96	1 98	13·4	18·0
March	51·0	49·8	222	156	24·0	22·5	85	108	4·6	8·3	2 07	2 35	11·2	18·0
April	50·8	49·8	250	180	24·5	22·7	81	72	3·8	4·8	1 98	1 62	9·4	10·8
May	51·2	50·0	201	161	24·0	23·0	67	69	4·0	5·1	1 33	1 67	8·0	12·4
June	51·7	51·0	158	170	26·0	22·5	82	74	6·2	5·2	1 63	1 48	12·3	10·4
July	51·5	50·9	171	145	25·0	23·0	82	67	5·7	5·4	1 65	1 33	11·5	11·0
August	51·8	50·7	151	172	26·0	23·0	80	72	6·3	5·0	1 59	1 43	12·6	9·9
September	51·6	50·6	153	144	26·0	23·0	66	68	5·1	5·7	1 73	1 64	13·5	13·6
October	50·9	51·0	139	137	25·5	23·0	66	65	5·8	5·6	1 73	1 64	14·9	14·4
	.....	.....	1,805	1,546	24·6	22·7	825	793	6·1	7·2	18 96	18 18	14·2	16·7

It will be noticed that the production on beef-scrap was considerably higher than that on fish-meal; the size of eggs noticeably larger; and though the fish-meal cost somewhat less per hundred pounds, the cost of producing one dozen eggs, when fish-meal was used, was more than two cents greater.

METHODS OF HANDLING FOR EGG PRODUCTION

To many poultrymen the production of eggs is of first importance. Our method of feeding is practically the same as that practised by others, while the care of the laying stock is standard for Vancouver island.

The pullets are brought in from the range two or three weeks before they are expected to lay. All birds lacking development or vigour, as well as those not conforming to type, are placed at once in fattening crates and prepared for market. The pullets are given from the start the following ration:—

Hopper Mash:
400 lb. bran.
300 lb. ground oats.
200 lb. beef-scrap.
200 lb. shorts.
100 lb. corn-meal.
6 lb. fine salt.

Scratch Feed:—
100 lb. whole wheat.
60 lb. cracked corn.
40 lb. oats.

The hopper mash is before the birds all the time. The scratch is fed in deep litter twice daily, at the rate of twelve pounds per hundred birds in winter, and ten pounds per hundred birds in summer, given one-third in the morning, and two-thirds at the evening meal. An abundance of green feed should be fed throughout the year. Thousand-headed kale may be fed throughout the year, but mangels usually take the place of the kale during frosty weather.

Thirty birds were placed in the contest, occupying three pens of ten birds each. The production of pen one was 2,077 eggs, of two 2,111 and three 2,086, a total of 6,274 eggs. This gives an average of 209 eggs per bird, there were no deaths during the year, or serious cases of sickness.

CONFINEMENT OR RANGE FOR POULTRY

Many poultrymen have felt that range was essential from the standpoint of production, yet others have been equally successful when birds were confined. The question of confinement or range has been on trial at this Station for three years. During 1922 the confined birds did better than those on range. In 1923

the two systems were almost on a par. For the 1924 pen the confined pullets were bred from the confined pen of the previous year. Note should be made that here is the danger point. Chickens bred from hens confined, lack in vitality, perhaps the biggest factor in egg production.

CONFINEMENT VS. RANGE IN EGG PRODUCTION

Month	Weight of birds		Number of eggs laid		Weight of eggs per dozen		Pounds of feed used		Pounds feed per dozen eggs		Cost of feed		Feed cost one dozen eggs	
	Range	Confined	Range	Confined	Range	Confined	Range	Confined	Range	Confined	Range	Confined	Range	Confined
	lb.	lv.			oz.	oz.	lb.	lb.	lb.	lb.	$	$	c.	c.
December	48·5	49·0	54	47	22·0	23·0	63	63	14·0	16·0	1 51	1 51	33·5	38·5
January	49·1	51·5	131	93	23·5	24·0	73	75	6·6	9·6	1 78	1 83	16·6	24 0
February	50·7	52·0	175	130	24·0	25·0	80	64	5·5	5·9	1 96	1 47	13·4	13·5
March	51·0	51·5	222	182	24·0	25·0	85	85	4·6	5·6	2 07	2 07	11·2	13·6
April	50·8	51·2	250	180	24·5	24·5	81	85	3·8	5·7	1 98	2 07	9·4	13·8
May	51·2	51·4	201	125	24·0	24·5	67	75	4·0	6·2	1 33	1 69	8·0	16·3
June	51·7	52·0	158	105	25·0	23·0	82	79	6·2	9·0	1 63	1 57	12·3	15·7
July	51·5	51·6	171	71	25·0	25·0	82	84	5·7	14·2	1 65	1 68	11·5	28·4
August	51·8	52·0	151	97	26·0	25·0	80	77	6·3	9·6	1 59	1 55	12·6	19·1
September	51·6	51·8	153	109	26·0	25·0	66	59	5·1	6·4	1 73	1 56	13·5	17·1
October	50·9	52·1	139	76	25·5	24·5	66	68	5·8	10·5	1 73	1 75	14·9	27·6
			1,805	1,215	24·6	24·4	825	814	6·1	8·9	18 96	18 75	14·2	20·7

NOTE.—Each pen at the beginning of the experiment contained 10 birds, but there were several deaths among those confined, one in January, one in May and one in July. The great falling off in production among the confined birds is evidently due to lack of vitality.

COST OF EGG PRODUCTION

The cost of producing one dozen eggs has been determined month by month for six years. Details year by year have been published. The following is a summary for six years:—

SUMMARY COST OF EGG PRODUCTION

—	1919	1920	1921	1922	1923	1924	Average for 6 years
Average Production	179·1	200·8	219	188·2	160·2	177·8	187·5
Pounds of grain and mash to 1 doz. eggs	6·29	5·81	4·61	6·1	5·4	7·7	5·98
Cost of all feed for 1 doz. eggs.	23·4 cts	25·2 cts.	16·2 cts.	16·7 cts.	13·5 cts.	17·9 cts.	18·8 cts.
Month of highest cost per doz. eggs	Nov.	Dec.	Nov.	Oct.	Dec.	Jan.	Nov. and Dec.
Month of lowest cost per doz. eggs	June	Feb.	April	May	June	June	June
Month of highest production	March	March	March	March	April	March	March
Month of lowest production	Nov.	Nov.	Oct.	Nov.	Nov.	Nov.	Nov.

In considering cost of producing one dozen eggs, two factors must be taken into account, the cost of feed and the number of eggs produced.

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? The answer is being determined.

SUMMARY OF WORK WITH MARCH, APRIL AND MAY—HATCHED PULLETS

	1924			Average for three years		
	March	April	May	March	April	May
Eggs per bird	171·8	194·2	167·5	176·1	182·6	181·8
Average cost of feed ... $	2 16	2 16	2 10	2 22	2 24	2 28
Value of eggs per bird ... $	4 99	5 28	4 55	4 94	4 94	5 03
Profit over cost of feed ... $	2 83	3 12	2 45	2 73	2 72	2 79

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

BREEDING FOR FERTILITY, HATCHABILITY AND LIVABILITY

The breeder of poultry has many disappointments awaiting him, as well as some successes. Even when selection has been made from breeders of known production, and arising from lines of high producers, dating back for many generations, the offspring may fail in size, production, or suffer from some defect which will classify them as culls.

The breeding of the ideal in poultry, like the breeding of other stock, is most elusive. Only by study of individual males and females, generation after generation, may we hope to attain results. To pedigree hundreds of birds is no easy matter, yet it is done faithfully and consistently at the Sidney Experimental Station. It has been found that some hens lay practically all infertile eggs, others 100 per cent fertile. The percentage of fertile eggs gathered promiscuously from a flock is an average of those hens whose eggs are one hundred per cent fertile, those one hundred per cent infertile, and those ranging somewhere between. We are attempting to ascertain why this should be. We are of the opinion that very often in our anxiety to make egg records, hens are not given the necessary rest period between the completion of their pullet year and the commencement of their laying for hatching purposes. For this reason, many birds were broken up in November, regardless of their egg records, with the hope of improvement in hatchability and livability of future generations. We are endeavouring to show that increased production and size of eggs are more often reached through the males than the females. Our best bird mated in 1923 was G.18. Some record of his daughters' achievements is here given.

Sire	Dam	Dam's record	Eggs weight	Daughters	Record	Egg weight
			oz.			oz.
G. 18	F. 234	195	24	H. 2	225	25
G. 18	F. 234	195	24	H. 23	246	25
G. 18	F. 234	195	24	H. 214	201	26
G. 18	F. 234	195	24	H. 218	193	24
G. 18	E. 604	210	25½	H. 13	202	28
G. 18	E. 604	210	25½	H. 49	193	28
G. 18	E. 604	210	25½	H. 215	242	24
G. 18	F. 188	192	24½	H. 5	184	25
G. 18	F. 188	192	24½	H. 28	202	24
G. 18	E. 801	270	24	H. 106	305	25
G. 18	E. 801	270	24	H. 116	195	29
G. 18	E. 75	238	20	H. 101	237	24
G. 18	E. 75	238	20	H. 144	178	24
G. 18	E. 75	238	20	H. 167	229	23

Average for 14 birds—216·5 eggs.

Some of the birds had not finished their pullet year when this report was made up.

All cockerels are kept over for one year. Those whose daughters make the best winter records are again mated to the dam of the high producing daughters.

CONFINEMENT VS. RANGE IN BREEDING

In project P. 55 the laying results obtained from birds in confinement and on range, have been tabulated. In this experiment, the hatching results obtained from the confined and range birds have been determined as follows.

Six hens were selected from those that had been confined during the year November, 1922, to October, 1923. These birds were given free range in November, 1923, and then mated the following February, along with six birds from the 1922-1923 range pen. Table showing hatching results follows:—

HATCHING RESULTS—CONFINEMENT *vs* RANGE

Pen	Number of eggs	Per cent fertile	Number of chicks	Per cent total eggs hatched	Number of chicks alive in 3 weeks	Per cent chicks alive in 3 weeks	Chicks alive July 1	Eggs required for 1 chick July 1
Range.....	70	67·0	42	60·0	34	80·9	28	2·5
Confined.....	70	47·1	24	34·2	21	87·5	14	5·0

The birds after having been given free range for a period, did not recover vitality lost through confinement.

RELATION OF BODY WEIGHT TO EGG PRODUCTION

In order to determine the relation between weight at end of laying year and production, the following experiment was conducted, beginning in 1921, and has been continued since:—

RELATION BETWEEN WEIGHT AND PRODUCTION

Weight	Number of birds 1921	Average production	Number of birds 1922	Average Production	Number of birds 1923	Average production	Number of birds 1924	Average production
Under 4½ pounds.....	33	204	8	176·6	2	161·5	1	212
4½ to 5 pounds.....	54	205·1	18	188	14	205	13	206
5 to 5½ pounds.....	46	216·8	39	200·8	23	202·4	25	194
5½ to 6 pounds.....	20	214·2	22	179·8	16	189·5	6	226
6 pounds and over.....	15	209·7	7	211·7	10	203·9	4	201

Average results obtained over a period of four years would indicate that the heavier Wyandottes were better layers than the lighter ones.

STANDARD GRAIN AND MASH VS. COMMON GRAIN AND MASH

During 1922 commercial grain and mash put up by the Brackman-Ker Milling Company was on trial 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 were used. See report for 1923. In 1924 the Vernon & Buckerfield feeds were used and are here spoken of as "Commercial".

STANDARD GRAIN AND MASH VS. SIDNEY GRAIN AND MASH

Month	Weight of birds		Number of eggs laid		Weight of eggs per dozen		Pounds of feed used		Pounds feed per dozen eggs		Cost of feed		Feed cost one dozen eggs	
	Home-mixed feed	Commercial	Home-mixed feed	Commercial	Home-mixed feed	Commercial	Home-mixed feed	Commercial	Home-mixed feed	Commercial	Home-mixed feed	Commercial	Home-mixed feed	Commercial
	lb.	lb.			oz.	oz.					$ cts.	$ cts.	c.	c.
December...	48·5	50·1	54	47	22·0	21·5	63	64	14·0	16·3	1·51	1·41	33·5	35·21
January.....	49·1	51·0	131	97	23·5	23·0	73	76	6·6	9·4	1·78	1·67	16·6	20·5
February....	50·7	51·3	175	174	24·0	23·0	80	63	5·5	4·3	1·96	1·47	13·4	10·1
March.....	51·0	51·2	222	200	24·0	23·2	85	75	4·6	4·5	2·07	1·65	11·2	9·9
April.....	50·8	51·0	250	185	24·5	23·2	81	67	3·8	4·3	1·98	1·47	9·4	9·0
May.....	51·2	51·6	201	182	24·0	23·4	67	76	4·0	5·0	1·33	1·67	8·0	11·0
June.....	51·7	51·8	158	168	26·0	25·3	82	83	6·2	5·9	1·63	1·82	12·3	13·0
July.....	51·5	51·9	171	152	25·0	24·7	82	75	5·7	6·0	1·65	1·65	11·5	13·0
August.....	51·8	51·8	151	166	26·0	25·2	80	79	6·3	5·7	1·59	1·73	12·6	12·5
September..	51·6	52·0	153	158	26·0	25·5	66	74	5·1	5·6	1·73	1·62	13·5	12·3
October.....	50·9	52·5	139	117	25·5	25·0	66	70	5·8	7·1	1·73	1·54	14·9	15·7
	.....	.....	1,805	1,646	24·6	23·9	825	802	6·1	6·7	18·96	17·70	14·2	14·7

In 1923 we said that the outstanding thing as determined by results for two years was the fact that hens laid more eggs on the Sidney ration than on the commercial, but that the cost of the Sidney ration was somewhat greater. Again we are able to show greater production on the Sidney ration, and a lessened cost of producing per dozen eggs. The eggs, as usual, coming from pen fed the Sidney ration are larger, as they have always been.

FATTENING ROASTERS

The object of the experiment was to determine the best method of fattening roasters, and whether the process of fattening was one that could be profitably carried on.

FATTENING ROASTERS

Method	Weight of 10 birds at commencement	Total gain in 3 weeks	Amount of meal consumed	Amount of skim-milk consumed	Pounds of meal for 1 lb. gain	Pounds of skim-milk for 1 lb. gain	Total cost of 1 lb. gain	Market price per pound
	lb.	lb.	lb.	lb.	lb.	lb.	cts.	cts.
Crates.....	60·2	8·7	50½	105	5·9	12·0	22·5	32
Colony-house, range.....	61·9	11·1	65	137	5·8	12·3	22·6	32
Colony-house, confined..	60·8	13·8	63	140	4·6	10·1	17·89	32

The ordinary methods of feeding were employed. Owing to a very cold spell during the time of the experiment, the gains were not as rapid as they would have been. This bad weather adversely affected all the birds, but the effect was greater on those in the crates than elsewhere. The greatest cost of putting on a pound of flesh was 22.6 cents and the amount received for it 32 cents. Beside the gain in weight, the added value given the entire bird must be considered.

APIARY

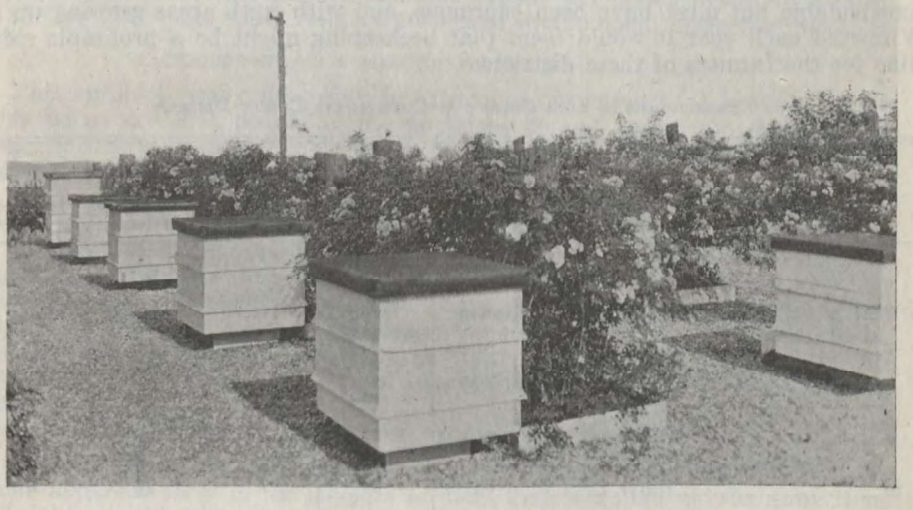
The season, from the beekeeper's standpoint, has been better than that of 1923. The winter was mild and the spring changeable, bringing about a considerable amount of spring dwindling, but the bees had built up to fair-sized colonies by the time of White Dutch clover bloom, and when not used for the making of nuclei, made a surplus.

It is very easy, in a country like this, to overstock a given area. We are convinced that this locality will not carry any great number of colonies, until the amount of pasturage is increased. It is our intention to use the apiary at the Station for study, and to provide for increase to stock out-apiaries in more favourable locations.

RETURNS FROM APIARY

The colonies at the Experimental Station, Sidney, are all run for extracted honey. All colonies are wintered outside in Kootenay cases, with but one exception, that of a double-walled hive built by a local concern.

As soon as weather conditions permit in the spring, colonies are examined, and strength, quantity of stores and condition of brood nest are noted. Thirty-three per cent sugar syrup is fed where needed, and weak colonies are strengthened by frames of brood and bees from stronger colonies. All colonies are examined about every nine days, watch being kept for queen cells, and every facility given to induce the queen to lay. Pollen commences to come in as early as the first week in February, and small quantities of syrup, fed about the middle of this month, will enable the queen to be laying fairly well by the time the dandelion comes into flower. Feeding at that time may help to keep the bees in the vicinity of the apiary, and lessen loss of bees by chilling while in search of nectar.



The apiary, Experimental Station, Sidney, B.C.

The dearth of honey plants on the Saanich Peninsula renders spring feeding imperative, until the maple trees come into blossom, and from that time onward bees are able to maintain themselves until the time of white clover, when whatever surplus that may be is gathered. If extracting is done in July and the bees are deprived of their stores close observation must be maintained, as from this time onward they will not be able to do much more than gather to maintain themselves. Feeding for winter is commenced about September, as October is often very damp and prevents the bees from maturing the syrup fed to them, and unmatured stores will result in mildewed combs and loss of bees from diarrhœa during winter.

In November, colonies are packed, entrances contracted and everything possible done to make the bees snug for the winter. The winters usually experienced at this Station are of a somewhat trying nature for bees. Spells of weather sufficiently cold to confine the bees to their hives alternate with spells when the midday hours are warm and sunny, and many bees are lost through chilling. We are convinced that the mildness of our winter climate is a drawback rather than an aid from the standpoint of the beekeeper.

The season 1924, though somewhat better than 1923, was, however, below the average for the last six years. The bees wintered well, and although numbers of bees were lost through chilling in the early spring, the colonies had built up fairly well by June 1, when the nectar flow might have been expected. The weather, however, was extremely dry and the quantity of nectar-bearing flowers was much curtailed by the drought, which continued with hardly a shower from May to September, resulting in a reduced yield of nectar.

The small out-apiaries started last year at Sooke, Sluggetts and Resthaven were discontinued, and a number of colonies were placed near Merville in the Courtenay-Comox district. Owing to pressure of work these colonies were not put out until rather late in the season. Notwithstanding the long journey by road and the advanced honey flow, the colonies made a very good showing and produced a quantity of honey remarkable for its clarity and good flavour. The Merville and several other districts towards the Northern end of Vancouver Island have in recent years been swept by fire and now carry good stands of Fireweed and seem to be a promising field for the apiarist for years to come. The quantity of honey left ungathered this year in the Merville area alone is incalculable but must have been enormous, and with fresh areas growing up to Fireweed each year it would seem that beekeeping might be a profitable sideline for the farmers of these districts.

PARTICULARS OF EACH COLONY AT COURTENAY—COMOX DISTRICT

No. of colony	Kind of hive	Kind of bees	Kind of colony	Was colony divided or did it swarm?	Weight of extracted honey produced	Number of sections produced
					lb.	
C 1	10 fr. L.	Italian	Over wintered	No.	30	None
2	10 fr. L.	"	"	"	50	"
3	10 fr. L.	"	"	"	42	"
4	10 fr. L.	"	"	"	50	"
5	10 fr. L.	"	"	"	40	"
6	10 fr. L.	"	"	"	35	"
7	10 fr. L.	"	"	"	45	"
8	10 fr. L.	"	"	"	40	"
9	10 fr. L.	"	"	"	55	"
10	10 fr. L.	"	"	"	42	"

COMPARISON OF WINTERING

The only comparison of wintering was made between a double-walled hive manufactured by a local concern, and Langstroth and Jumbo hives protected by Kootenay cases.

Results are inconclusive, both have some drawback. The double-walled hive seems to be liable to dampness, and the Kootenay case when packed with straw offers a warm nesting place for mice and makes it necessary to protect the entrances against this pest, to the inconvenience of the bees.

COMPARISON OF WINTERING, 1923 TO 1924

No. of colony	Kind of winter protection given	Size of hive	Condition before wintering				Condition after wintering				Number of frames of brood	Surplus for season
			Number of combs covered by bees	Eggs	Sealed brood	Date last autumn exam.	Date of first spring exam.	Eggs	Larvae	Sealed brood		
1	Kootenay Cs.	10L	10	Yes...	Yes...	Aug. 20	Mar. 5	Yes...	Yes.....	Yes.....	2	25
2	"	10L	10	.....	.....	" 20	" 5	" ..	"	"	2	30
3	"	10L	10	.....	.....	" 20	" 5	" ..	"	"	2	23
4	"	10L	10	.....	.....	" 20	" 5	" ..	"	"	2	20
5	Double wall.	10L	10	.....	.....	" 20	" 5	" ..	"	"	2	20
6	Kootenay Cs.	10L	10	.....	.....	" 20	" 5	No...	No.....	No.....	0	Queenless
7	"	10J	10	.....	.....	Oct. 26	" 5	Yes...	Yes.....	Yes.....	1	25
8	"	10J	10	.....	.....	" 26	" 5	" ..	"	"	2	42
9	"	10L	10	.....	.....	" 26	" 5	" ..	"	"	2	20

METHODS FOR DETECTING PREPARTIONS FOR SWARMING

Colonies with a single brood chamber were examined regularly and any queen cells found were removed. Several hives were equipped with shallow supers added to the regular brood chamber, and these were examined by the tipping method. No queen cells were found on the lower edges of the shallow comb. No swarms issued from these hives. As far as our experience goes in this method it appears to be reliable.

SWARM CONTROL

The colonies at this Station did not evince any great desire to swarm, and the few that built queen cells were checked by the usual inspection methods.

PACKAGE BEES AS A METHOD OF STARTING A COLONY

This project was discontinued. Previous experience, however, would enable us to say that providing the packages do not arrive too early in the spring, and do not suffer from inclement weather during transportation, this method of starting colonies is satisfactory.

COMPARISON OF DIFFERENT SIZES OF HIVES

In this project the Jumbo hive was compared with double brood-chamber Langstroth. Difficulty was again experienced in getting colonies to work on Jumbo frames. Our experience so far, would not justify us in condemning the Jumbo, but they have given us no reason for commending it. One point to be considered by the beekeeper is, that the use of Jumbo frames for extracted honey requires a larger-sized extractor basket than the one used for the Hoffman frame.

NUMBER OF COLONIES TO STOCK A GIVEN LOCATION

The colonies at this Station were increased during 1923 to forty-two. It became apparent early in the summer of 1924 that this number was more than the locality could support profitably. The area of cultivated land is small, and only a small portion of this is producing honey plants. The wild honey-secreting plants are few, and of these the maple tree, the fire weed and the willows are the principal, for although the white clover and dandelion come under the head of wild flowers, they are seldom found far from cultivated land. There are few locations on the south end of Vancouver island that will support more than ten colonies of bees. Northward, however, the situation is altogether different. From Chemainus north and westward are large areas of burnt-over lands, bearing heavy crops of fireweed, and still larger areas recently burnt over that will be covered with fireweed in due time. The combined area of these tracts is hard to estimate, but must run into hundreds of thousands of acres, and is practically unexploited.

DATES OF BLOSSOMING OF POLLEN AND NECTAR BEARING PLANTS

Name	Date of first Blossom	Remarks
Corylus (Hazel)	Feb. 1	Pollen only.
Alpus	" 12	Pollen noly.
Salix	" 19	Pollen and later nectar.
Ornamental apricots	" 25	
Dandelion	March 1	
Ribes Sanguineum	" 1	
Nuttali Ceresimiformis	" 1	
Brassica	April 1	
Acer Macrophyllum	" 8	
Plum and Cherry	" 12	
Pears	" 12	
Apples	" 15	
Wild cherry	" 20	
Broom	May 1	Pollen only.
Raspberry	" 20	
Wild blackberry	" 20	
White clover	" 15	
Red clover	" 20	
Fireweed, thistle, dandelion	June 18	

GENERAL NOTES

VISITORS AND EXCURSIONS

The groups of visitors have increased in number, and have included Sunday schools, women's institutes, gardeners, workmen, soldier organizations, teachers, scholars, and farmers' organizations. The flow of callers seeking advise and information along many lines has been constant.

THE PRESS

The press is kept in touch with our work. All new phases of the Station's activities are promptly brought to the attention of the public in this way. Our latest endeavour in this line is a News Letter, mimeographed in the office and sent definitely addressed to many people on Vancouver island. This News Letter has to do with experimental projects, completed or in progress, and agricultural topics in general, such as contest work, boys' and girls' clubs, the feeding of live stock, etc.

MEETINGS

Meetings have been attended and addresses given at Sidney, Deep Cove, Keating, Sluggets, Lake Hill, Shawnigan Lake, Metchosin, Cedar, and Nanaimo. There is an ever increasing demand for this sort of work. Several conventions were attended on the Island and elsewhere.

EXHIBITIONS

Comprehensive exhibits were staged at Metchosin and Cobble Hill and a smaller exhibit set up at Saanichton.

BUILDINGS

A greenhouse has been erected consisting of two units, each measuring 20 by 75 feet, a furnace room and potting shed. A new bull-pen has been built and minor changes made in the buildings.

ILLUSTRATION STATIONS

A full report of the work of the Illustration Stations on Vancouver island will be found in the 1924 report of the Chief Supervisor, Western Illustration Stations.