DOMINION OF CANADA
DEPARTMENT OF AGRICULTURE
DOMINION EXPERIMENTAL FARMS

EXPERIMENTAL STATION

SIDNEY, B.C.

REPORT OF THE SUPERINTENDENT

E. M. STRAIGHT, B.SA.

FOR THE YEAR 1928

Entrance to the superintendent's house.

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DOMINION EXPERIMENTAL STATION, SIDNEY, B.C.

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THE SEASON

The excessive rainfall preceding the winter of 1927-28 was felt throughout the winter. Except for a short time in February the land was waterlogged, and all field work suspended. There was little snow and little frost, however. The soil warmed slowly, hence spring work started later than usual. This lost time was felt during the whole summer. The hay crop was fair throughout the district, and grain an average crop. Potatoes were poor and the price good. Mangels yielded well and were most excellent roots in appearance and quality. The continuous cloudy and misty weather during fruit blossoming time interfered considerably with the set of fruit, especially cherries and plums. In fact, the whole fruit crop was not up to average in either quality or quantity. The autumnal rains, though abundant enough, were not excessive, and much below the average. Ploughing was being done in December, 1928, under ideal soil conditions.

METEOROLOGICAL RECORDS, 1928

Month	High	Low	Mean	Precipitation	Sunshine	Possible sunshine
	°F.	°F.	°F.	in.	hours	hours
January	52·0	22·0	39·9	5·25	47	273
February	50·5	30·0	40·3	0·33	94	286
March	59·5	31·0	44·5	3·49	142	370
April	62·0	32·0	46·3	2·38	172	411
May	79·5	35·0	56·5	0·77	306	473
June	83·5	44·0	58·9	0·84	232	482
July	87·0	49·0	66·6	0·76	335	486
August	81·5	45·0	60·9	0·47	276	444
September	80·0	42·0	56·1	0·68	232	377
October	60·0	35·0	48·6	4·42	78	335
November	55·5	34·0	44·7	1·98	66	276
December	48·0	27·0	39·0	3·27	55	259

PRECIPITATION AT SIDNEY, B.C.

Month	1918	1919	1920	1921	1922	1923	1924	1925	1926	1927	1928	Average 11 years
	in.	in.	in.	in.	in.	in.	in.	in.	in.	in.	in.	in.
January	3·75	4·45	3·28	4·23	1·86	6·80	3·06	5·50	3·92	3·53	5·25	4·14
February	4·78	4·02	0·61	3·97	1·81	3·62	6·00	3·88	3·21	3·91	0·33	3·28
March	4·68	3·42	2·33	1·68	1·20	2·09	0·47	1·46	0·85	1·89	3·49	2·14
April	0·21	2·05	1·45	1·13	0·71	1·68	1·08	1·75	0·93	1·25	2·38	1·33
May	0·44	1·08	1·24	1·57	0·54	1·29	0·16	0·51	1·60	1·08	0·77	0·93
June	0·45	0·77	1·17	1·36	0·27	0·51	0·33	0·37	0·25	0·91	0·84	0·65
July	0·96	0·27	0·67	0·04	0·00	0·92	0·31	0·23	0·08	0·25	0·76	0·40
August	1·41	0·06	2·52	1·02	0·92	0·65	0·77	0·81	1·09	0·49	0·47	0·93
September	0·16	1·85	2·96	2·74	1·96	1·62	3·12	0·59	0·66	2·27	0·68	1·69
October	2·73	1·52	4·03	4·80	2·21	1·95	3·35	1·06	3·91	4·49	4·42	3·13
November	3·34	5·94	3·36	4·40	1·47	2·58	5·80	2·49	3·93	8·54	1·98	3·98
December	6·77	4·75	3·78	3·60	9·08	6·88	4·61	5·43	5·77	2·94	3·27	5·17

Totals

1918—29·68; 1919—30·18; 1920—27·40; 1921—30·54; 1922—22·03; 1923—30·59; 1924—29·06; 1925—24·08; 1926—26·20; 1927—31·56; 1928—24·64. Average, 11 years—27·77.

ANIMAL HUSBANDRY

Livestock feeding and breeding are not carried on extensively on Vancouver Island, hence Animal Husbandry has not been regarded as a major project at this Station, though considerable work has been done in this line during recent years. Dairy cattle are numerous, and among the best found in Canada. Of these the Jersey is the most popular. The mildness of the climate and other conditions, so like those found in the south of England, and on the island of Jersey, have perhaps had much to do with popularizing this breed. The Jersey is the only breed kept at the Farm. Horses are kept for farm work only, hence little experimental work with these has been found possible. As has been pointed out in former reports, abortion has been troublesome, and has given us much concern. During the summer of 1928 it was decided to attack this problem from as many angles as possible. A barn was rented, to which all reactors to the blood test for abortion were taken. A shed at the horse barn was utilized, in which calves from the reacting herd were reared until such time as a negative reaction was assured. Then only were they taken to the dairy barn at the Experimental Station. All of this work has interfered with our milk production and R.O.P. work very seriously. Records of "Milk Production and Value" and "Feed Consumption and Cost" are included herewith, while for the "Mineral Food for Dairy Cattle"—"Minerals for Calves and Heifers and Bulls" and "Relation Between Growth and Age in Dairy Cattle"—phases of work receiving attention at the Farm, see Report for 1927.

MILK PRODUCTION AND VALUE—COWS WHICH HAVE COMPLETED LACTATION PERIOD DURING 1928

Name of Cow	Age	Date of dropping calf	Number of days in milk	Total milk produced in period	Percentage fat in milk	Total fat produced	Value fat when markete	Value skim-milk	Total value received for product	Total value of product with fat at 50 cents per lb.
				lb.		lb.	$	$	$	$
Majesty's Honeymoon Bess	12	April 21-27	352	9,944·7	4·5	449·42	199 65	42 23	241 88	224 71
White Robin's Queen	6	Aug. 28-27	290	4,004·1	6·5	260·14	122 48	15 68	138 16	130 07
White Robin's Buttercup	6	Aug. 28-27	289	5,259·8	6·1	323·05	153 16	20 91	174 07	161 53
Aviator's Bess of V.I.S.	4	July 24-27	295	3,783·5	7·2	272·19	126 84	14 39	141 23	136 09
Aviator's Florence of V.I.S.	4	Nov. 11-27	403	6,380·9	5·8	373·6	209·03	.....	209 03	186 80
Aviator's Queen of V.I.S.	3	Feb. 25-27	327	3,085·1	6·2	191·7	85 33	12 23	97 56	95 85
Aviator's Blossom of V.I.S.	3	Mar. 15-27	392	6,310·0	5·78	365·27	162 00	25 46	187 46	182 63
Aviator's Honeymoon of V.I.S.	3	Mar. 15-27	359	5,288·4	5·5	293·72	130 33	21 54	151 87	146 86
Sidney Golden Friar Queen	2	Sept. 12-27	379	3,715·6	6·33	235·24	122 88	9 77	132 65	117 62
Sidney Aviator Cowslip	2	Jan. 10-27	328	4,210·1	6·2	260·92	155 13	.....	155 13	130 46
Totals	.....	.....	3,414	51,982·2	.....	3,025·25	1,466 83	162 21	1,629 04	1,512 62
Average	.....	.....	341·4	5,198·22	.....	302·5	146 68	16 22	162 90	151 26

FEED CONSUMPTION AND COST
Cows completing lactation period during 1928

Name of cow	Age	Number of days fed	Meal at $50 per ton	Roots and ensilage at $5 per ton	Hay at $20 per ton	Total cost of feed	Cost of 1 pound fat	Actual profit over cost of feed
	yrs.		lb.	lb.	lb.	$ c.	cents	$ c.
Majesty's Honeymoon Bess	12	352	2,411	5,356	2,955*	107 22	23·8	134 66
White Robin's Queen	6	290	1,698	4,408	2,834	81 81	31·0	56 35
White Robin's Buttercup	6	289	1,998	4,364	2,854	89 40	27·7	84 67
Aviator's Bess of V.I.S.	4	295	1,810	4,342	2,696	83 07	30·5	58 16
Aviator's Florence of V.I.S.	4	403	2,545	7,146	4,885	130 35	35·0	78 68
Aviator's Queen of V.I.S.	3	327	1,674	4,044	2,474*	80 70	42·1	16 96
Aviator's Blossom of V.I.S.	3	392	2,377	5,535	3,070*	107 97	29·5	79 50
Aviator's Honeymoon V.I.S.	3	359	2,144	4,826	2,745*	97 12	33·0	54 75
Sidney Golden Friar Queen	2	379	2,035	5,034	3,309	96 56	41·0	36 09
Sidney Aviator Cowslip	2	328	1,827	4,754	3,667	94 24	36·0	60 89
Totals	.....	3,414	20,519	49,809	31,489	968 44	.....	660 70
Averages	.....	341·4	2,051·9	4,980·9	3,148·9	96 84	32·0	66 07

*Add $4 for pasture.

As intimated, contagious abortion, with its various manifestations, has interfered with our breeding work. Control has been sought, and with some measure of success, but the elimination of the difficulty has not been found possible. The best laid schemes have been nullified by abortion, perhaps nearly at the end of the project. With the assistance of Dr. T. H. Jagger, of Vancouver, and Dr. E. A. Bruce, Health of Animals Branch Laboratory, Agassiz, a series of blood tests have been made of all cattle in the herd, regardless of age or sex, during the past two years. At the beginning the tests were made every 60 days, but at present every three months. The arrangement was a very happy one—the Superintendent representing the Experimental Station, Dr. Bruce representing the Health of Animals Branch, and Dr. Jagger, an independent veterinary at Vancouver. Before the test was complete, all three parties had a part of the record, while the animal itself was known only by number to at least two concerned.

As a result of this test, all animals were classed either "positive" or "negative" and were divided, placing the positive ones in the rented barn, and the negative ones at the Station. All calves from the reacting herd were reared in a shed, and came back to the Station barn only when it was thought safe to bring them. The calves so reared were not allowed any of their mother's milk at any time.

The proof of the efficacy of this method as a diagnostic agent with reference to infection of the bacillus abortus, will require time and should be best disclosed by the success attained in eventually raising an abortion free herd. With all reacting breeding cows removed and segregated, with the negative herd subject to periodic tests, and in contact with no cattle of unknown history, and with special care in the scheme of raising calves from reacting cows, as described, a clean junior herd should result.

At this juncture it is thought that a detailed herd history might serve no useful purpose to the reader. On the contrary, it might tend toward confusion and possibly result in unfair deductions as concerning the serological test. It may be of interest to note that besides the herd on this Farm all other herds on the Dominion Experimental Farms system are now subjected to the serological, or blood, test. The results obtained in this way from a large number of cattle, under control, should make possible reliable deductions over a period of time.

With the maintenance of a reacting and a non-reacting herd, the Station has had an excellent opportunity to view the whole matter from many angles. Physical examination (as with reference to ovarian and uterine conditions) has been made from time to time by Dr. Jagger. The laboratory report on the blood samples as made by Dr. Bruce, together with the actual history of the case, as presented to us day by day, has indicated that the condition known as cystic ovaries, one cause of sterility in cattle, has no connection with abortion, in so far as B. abortus infection is concerned.

FIELD HUSBANDRY

The spring of 1928 did not give the best weather conditions for early growth and heavy yields of field crops. The rainfall was plentiful and spread over a long period, but the nights continued cold well into May. Hay and pasture fields made very slow growth, and the crop was below the average. Spring sown wheat and mangels, however, did better than for many years past. The rotations as outlined in former reports have been followed. When considering the cost of production and profit and loss column the high price of land should not be lost sight of, the rental charge being $32.66 per acre.

ROTATION A.—THREE YEARS' DURATION

Wheat (winter),
Timothy and clover hay,
Roots.

This rotation is much used on Vancouver Island. The wheat is usually sown during the latter part of September, at the rate of two to three bushels per acre. The seeding of the timothy is done by the grass seeder attached to the drill at the time of sowing the wheat. Six pounds of timothy is sown at that time, and in February ten pounds of red clover and four pounds of aslike per acre.

SUMMARY OF YIELD—VALUE AND PROFIT OR LOSS PER ACRE

Crop	Year	Yield per acre	Value	Cost of operations	Profit or loss per acre
			$ c.	$ c.	
Wheat, Sun	1922	38 bush.	93 80	66 43	Profit 23 37
Timothy and clover	1923	3·32 tons	83 00	56 69	Profit 26 31
Summer-fallow	1924	.....	.....	45 65	Loss 45 65
Wheat, Sun	1925	42·18 bush.	108 47	54 79	Profit 53 68
Timothy and clover	1926	3 tons	60 00	52 19	Profit 7 81
Potatoes, Sir Walter Raleigh	1927	9·23 tons	230 75	124 41	Profit 106 34
Wheat, Bluestem	1928	37 bush.	69 95	62 00	Profit 7 95

Owing to unfavourable weather conditions in 1924, summer fallow replaced the roots in the rotation, and the cost of operations entered as a loss. The average yield of wheat per acre, for a three-year period on this area, was 39·06 bushels. The profit on the hay crop of 1926 was much less than that of 1923, due to the low value of hay on the market. The average yield for two years was 3·16 tons. The potatoes cost $13.48 per ton to produce. In 1928 spring wheat replaced winter wheat. This was necessary, due to the late harvest of the potatoes and the heavy rains during the fall of 1927, preventing ploughing and preparation of soil.

ROTATION B.—FOUR YEARS' DURATION

Wheat (winter),
Peas,
Corn (manured),
Wheat, oats and vetch (ensilage).

An attempt will be made to maintain the fertility of the soil without grass or clover appearing in the rotation.

SUMMARY OF YIELDS—VALUE AND PROFIT OR LOSS PER ACRE

Crop	Year	Yield per acre	Value	Cost of operation	Profit or loss per acre
			$ c.	$ c.	$ c.
Wheat (Sun)	1923	25·2 bush.	.....	.....	.....
Peas (Maple)	1924	22·0 bush.	59 70	68 34	Loss 8 64
Corn	1925	7·16 tons	42 96	86 69	Loss 43 73
Wheat, oats and vetch	1926	11·93 tons	79 45	81 64	Loss 2 19
Wheat (Sun)	1927	42·08 bush.	.....	.....	.....
Peas (Maple)	1928	26·06 bush.	96 46	62 77	Profit 33 69

If the wheat crops of 1923 and 1927 were valued for the grain only, the cost of production would be very high. The straw, however, always of value, was responsible for a credit balance in both cases.

The high cost of production of the 1924 pea crop was largely due to the fact that the harvesting was done by manual labour. A pea buncher and harvester was used in 1928, resulting in a much lower cost of operation. The corn crop was very light in 1925 due to the dry season. The wheat, oats and vetch mixture no doubt benefited considerably from the manure, as indicated by the yield of 11·03 tons. The yield of winter wheat in 1927 was much greater than that of 1923, due to the abundance of moisture during the growing season, and to the residual effect of the manure applied in 1925. In 1928 Maple peas sold for $2.25 per bushel; they cost $2.11 per bushel to produce.

ROTATION C.—FIVE YEARS' DURATION

Vetch,
Corn,
Peas,
Wheat,
Timothy or rye grass.

SUMMARY OF YIELD—VALUE AND PROFIT OR LOSS PER ACRE

Crop	Year	Yield per acre	Value	Cost of operation	Profit or loss per acre
			$ c.	$ c.	$ c.
Vetch (common spring)	1923	16·7 bush.	83 62	73 20	Profit 10 42
Corn (Longfellow)	1924	9·69 tons	58 14	99 59	Loss 41 45
Peas (Maple)	1925	27·0 bush.	73 20	66 87	Profit 6 33
Oats (replacing wheat)	1926	34·0 bush.	34 23	60 30	Loss 26 07
Peas and oats (replacing timothy)	1927	2·20 tons	50 60	51 98	Loss 1 38
Vetch (common spring)	1928	10·8 bush.	49 51	59 07	Loss 9 56

Rotation C is conducted on an area of two acres, the soil changing from a heavy clay to a light gravelly loam. The average yield of vetch for two years was 14·2 bushels, giving an average profit of only 43 cents per acre. The vetches in 1923 were sown in the fall, and those of 1928 in the spring. This was necessary owing to the unworkable condition of the soil in the fall of 1927.

ROTATION D.—FOUR YEARS' DURATION

Winter wheat,
Timothy and clover hay,
Roots,
Peas.

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

SUMMARY OF YIELDS—VALUE AND PROFIT OR LOSS PER ACRE

Crop	Year	Yield per acre	Value	Cost of production	Profit or loss per acre
			$ c.	$ c.	$ c.
Wheat, Red Rock	1923	26·3 bush.	85 31	67 25	Profit 18 06
Timothy and clover	1924	2·05 tons	49 20	53 64	Loss 4 44
Mangels	1925	12·13 tons	121 30	112 37	Profit 8 93
Peas	1926	20·0 bush.	45 34	61 75	Loss 16 41
Wheat, Red Rock	1927	33·25 bush.	77 04	73 73	Profit 3 31
Timothy and clover	1928	2·51 tons	57 73	49 71	Profit 8 02

The average yield of the hay crop for two years was 2·28 tons. The value placed on the mangels was $10 per ton, mangels finding a ready sale at this price throughout the district. The pea crop for 1926 was much below the average. The price of peas and straw was less than for several years past. These factors were chiefly responsible for the loss shown. The Red Rock wheat in this rotation stood sixty inches high in 1927.

ROTATION E.—FOUR YEARS' DURATION

Wheat, oats and vetch,
Potatoes,
Oats,
Hay.

Potatoes are a crop of great importance in British Columbia. The introduction of this crop in the rotation was intended to clean the ground and keep the soil in good physical condition. The wheat, oats and vetch were sown in the fall and cut for hay or ensilage, and the dairy cattle pastured on the second growth. The rate of seeding was thirty pounds of Sun wheat, forty pounds of Kanota oats and fifty pounds of common spring vetch. It is not advisable to use a bearded wheat in hay or ensilage mixtures.

SUMMARY OF YIELDS—VALUE AND PROFIT OR LOSS PER ACRE

Crop	Year	Yield per acre	Value	Cost of production	Profit or loss per acre
			$ c.	$ c.	$ c.
Wheat, oats and vetch	1924	2·69 tons	61 87	63 38	Loss 1 51
Potatoes	1925	4·39 tons	131 70	137 61	Loss 5 91
Oats	1926	51 bush.	55 70	57 37	Loss 1 67
Timothy clover	1927	2·83 tons	65 09	51 91	Profit 13 18
Wheat, oats and vetch	1928	8·69 tons	85 42	70 91	Profit 14 51

It required 234 pounds of wheat, oats and vetch silage containing 31·64 per cent dry matter to equal 100 pounds of hay in feed value. With hay valued at $23 per ton, silage is worth $9.83 per ton. It cost $8.16 per ton to produce.

DATE OF SEEDING GRAIN CROPS: WHEAT, BARLEY, OATS

This experiment was started in the autumn of 1926. The object was to ascertain the best time to sow winter cereals. Plots of equal size were sown under field conditions one week apart, commencing on September 21 and ending November 2.

DATE OF SEEDING WINTER WHEAT

Plot	Date of seeding	Per cent winter killed	Date ripe	Height when cut	Yield per acre 1928		Average yield for two years	
					Grain	Straw	Grain	Straw
				in.	bush.	tons	bush.	tons
1	Sept. 21	Nil	July 25	58	32·5	3·32	36·9	3·36
2	Sept. 28	Nil	July 25	56	40·0	2·90	38·3	2·87
3	Oct. 5	Nil	Aug. 2	50	35·0	1·95	37·5	2·39
4	Oct. 12	Nil	Aug. 2	50	33·3	1·90	44·1	2·86
5	Oct. 19	Nil	Aug. 2	52	40·0	2·15	48·1	2·94
6	Oct. 26	Nil	Aug. 2	52	41·6	1·75	46·4	2·71
7	Nov. 2	Nil	Aug. 2	50	43·3	1·85	49·3	2·32

Sun wheat was used in this experiment. The above figures would indicate that the best time to sow wheat is from the middle of October to early November.

DATE OF SEEDING BARLEY

Plot	Date of seeding	Per cent winter killed	Date ripe	Height when cut	Yield per acre 1928		Average yield for two years	
					Grain	Straw	Grain	Straw
				in.	bush.	tons	bush.	tons
1	Sept. 21	Nil	July 7	40	39·6	3·35	40·6	2·85
2	Sept. 28	Nil	July 7	38	36·4	2·60	45·7	2·87
3	Oct. 5	Nil	July 7	42	35·4	2·15	44·3	2·53
4	Oct. 12	Nil	July 12	40	39·6	2·40	48·5	2·86
5	Oct. 19	Nil	July 12	40	41·6	2·50	45·8	2·64
6	Oct. 26	5	July 17	38	33·3	2·32	34·1	2·28
7	Nov. 2	5–10	July 17	43	31·2	2·20	29·7	2·05

From the above records it will be noticed that barley does best when seeded early, the last week in September and the first three weeks of October giving the best results.

DATE OF SEEDING OATS

Plot	Date of seeding	Per cent winter killed	Date ripe	Height when cut	Yield per acre 1928		Average yield for two years	
					Grain	Straw	Grain	Straw
				in.	bush.	tons	bush.	tons
1	Sept. 21	Nil	July 9	60	59·2	3·15	56·5	2·94
2	Sept. 28	Nil	July 9	52	53·9	2·40	51·3	2·54
3	Oct. 5	Nil	July 14	54	42·1	1·80	36·9	1·61
4	Oct. 12	Nil	July 14	52	38·1	1·60	33·7	1·48
5	Oct. 19	15	July 18	54	35·5	1·45	28·0	1·17
6	Oct. 26	35	July 18	51	25·0	1·35	23·0	1·19
7	Nov. 2	35	July 18	54	23·7	1·15	21·2	1·07

To obtain the best results from winter oats it is necessary to sow early, just as soon as there is enough moisture in the soil to germinate the seed. By a study of the above table, it will be noticed that the later the seed is sown the smaller are the yields of both grain and straw. This applied to both years during which the test has been under way. As these results are for the short period of two years, they should not be accepted as conclusive.

COMPARATIVE YIELDS OF CORN, SUNFLOWERS, AND WHEAT, OATS AND VETCH

Plots of one-third of an acre in size were used for this work. On September 30, 1927, a mixture of thirty pounds of Sun wheat, 40 pounds of Kanota oats and 50 pounds of spring vetch were sown at the rate of two bushels per acre. Germination was good, and the crop made rapid growth during the fall and early winter. The corn and sunflowers were sown on May 28 in drills 36 inches apart, and thinned to twelve inches apart in the rows. Longfellow corn and Giant Russian sunflowers were used for this test.

YIELDS OF WHEAT, OATS AND VETCH, CORN, AND SUNFLOWERS

Crop	Date of harvest	Average height when cut	Per cent dry matter	Yield per acre 1928		Average yield for two years	
				Green weight	Dry matter	Green weight	Dry matter
		in.		tons	tons	tons	tons
Wheat, oats and vetch	July 3	64	39·75	8·94	3·55	9·84	3·81
Sunflowers	Sept. 7	66	22·05	14·00	3·08	15·26	3·08
Corn	Oct. 10	58	18·80	11·20	2·10	11·32	2·16

COST OF PRODUCING MANGELS

The total cost of producing mangels in 1928 was $107.13 per acre. The yield of 25·81 tons was above the average for this station. The cost per ton amounting to $4.15. In placing a value on the mangels, 600 pounds of mangels are taken as being equal to 100 pounds of hay. With hay selling at $23 per ton, the mangels have a value of $3.83 per ton, and at this price shows that the crop was produced at a loss. Mangels however sell at a much higher price in this district.

STATEMENT OF COST OF PRODUCING MANGELS

Item	Statement	Amount
		$ c.
Rent	Rent or interest on value of land plus taxes	32 66
Fertilizer	50 per cent of 200 pounds nitrate of soda	3 20
Seed	8 lbs. at 50 cents	4 00
Machinery		2 85
Manual labour	160·5 hours at 35 cents	56 17
Horse labour	55 hours at 15 cents	8 25
Yield per acre	25·81 tons	
Cost per ton	$4.15	
	Total cost per acre	107 13

Value per acre 25·81 tons at $3.83	$98 85
Loss per acre	8 28

HORTICULTURE

Average conditions prevailed throughout the winter months when frosts were not severe or long continued. The minimum temperature recorded was 21·0° F., eleven degrees of frost. Much moisture was in evidence during the early spring, rain falling at intervals well on into the month of June giving splendid growth in the garden and elsewhere. During the month of April and early May dull, damp, cloudy weather prevailed, just at the season when the tree fruits were in bloom. A very poor set of fruit resulted, especially of cherries and plums, which amounted to a twenty-five per cent crop of these fruits. Pears also suffered much in this respect.

TREE FRUITS

APPLES—VARIETY EXPERIMENT

The apple orchard consisting of four acres was planted in 1914. Forty-one varieties have been tested out and reported on from year to year with respect to yield. At this station the apple does not do as well as some of the other tree fruits such as pear or cherry. The trees are healthy, fairly vigorous and comparatively free from insect pests and disease. This condition has been obtained through systematic spraying each year with a dormant spray, followed by another spray as soon as the petals have fallen.

The following varieties have done reasonably well and are recommended for planting on Vancouver Island (arranged according to season): Yellow Transparent, Trenton, Melba, McIntosh Red, King of Tompkins, Wagener, Grimes Golden and Winter Banana.

CHERRIES—VARIETY EXPERIMENT

Cherries do well on Vancouver Island. Both sweet and sour varieties give good yields of excellent fruit. Some one hundred and seventy trees are contained in this block of orchard which is located on fairly high well-drained land with an easterly exposure. The sweet cherry is absolutely hardy, does not suffer seriously from gummosis, and the fruit has a ready market. The sour cherry does exceptionally well, bearing heavy crops regularly. There seems to be little demand for this fruit, except in a small way for canning purposes. The Olivet, a semi-sour variety, is the most popular cherry for this purpose. The interplanting of Black Tartarian or some other good pollenizing

variety with the Bing is necessary to insure a set of fruit. The Bing, because of its size and quality, is without doubt the most popular cherry grown. Records, covering fourteen years' work with thirty-four varieties of sweet cherries, would show that the best varieties for this area are Elton, Black Tartarian, Windsor, Royal Ann, Bing and Lambert. The best sour cherries are Olivet (semi-sour), Montmorency and Morello.

PEARS—VARIETY TEST

The pear is probably the most reliable and regular cropper of the tree fruits grown here. The climatic and soil conditions found in the coast region seem to suit this fruit particularly well. Trees are thrifty and clean though the fruit is somewhat subject to scab during certain seasons. During the past season this disease caused serious loss to the crop at this station. A dormant and calyx spray applied each year has kept the trees clean and free from insect pest. Part of the pear orchard was planted in 1914 to varieties on dwarf stocks while the remainder and larger portion was on standard stocks. Varieties were duplicated in both blocks and records kept as to growth of tree and yields of fruit. While for the most part the trees on dwarf stock are smaller yet in many instances there is but little difference in size compared to the same variety on standard stock. Yields have been in favour of standard trees. Some fifty varieties of pears, covering a wide range of seasons, have been tested out. From results obtained the following varieties are recommended for planting: Bartlett, Bosc, Clairgeau and Anjou.

PLUMS

Planted in the spring of 1914 the plum orchard consists of 160 trees covering 45 varieties of plums and prunes. Trees are for the most part thrifty and healthy, those of a few varieties are not making the growth naturally to be expected. Dormant and calyx sprays are applied each year keeping insect pests and diseases under control. Blossom blight, a disease which attacks the bloom, reducing it to a brownish dead mass, causes much loss with several varieties. Brown rot of stone fruits is present each year but has not been as troublesome in plums as in cherries and peaches. The market for plums has been very good for early varieties of good quality but in later season even excellent varieties have brought rather disappointing returns during the past few years. Some of the best varieties for planting in order of season are: Peach, Early Gold, Mallard, Washington, Pond Seedling and Victoria. Of the prunes, while the Italian is of excellent quality it is a poor yielder at this station. The Sugar prune is a good yielder and is also of high quality.

PEACHES

This fruit has been grown under orchard conditions for the past fourteen years. The location has an eastern exposure on high, well-drained soil. One or more trees of fourteen varieties have been tested out during the period, and for the most part trees are thrifty and hardy. Early spring frosts have been the chief cause of low yields of fruit. Leaf curl is very troublesome, in many cases practically defoliating the tree for the time being. Brown rot, while most seasons not serious, causes considerable loss on a few varieties, the Triumph being the most susceptible. While yields in some cases are quite satisfactory under orchard conditions, still with yield and quality both considered, commercial plantings of peaches cannot be recommended. On a wall or side of a building excellent results may be obtained, supplying the needs of the home. Varieties recommended are Hale Early, Alexander, Early Crawford and Rochester.

NECTARINE—VARIETY EXPERIMENT

Grown under orchard conditions here for over ten years this fruit has little to recommend it for further plantings. On the side of a building a good quality of fruit is obtained, but where peaches can be grown nectarines cannot be recommended, hence they have little value.

APRICOT—VARIETY EXPERIMENT

Not any of the five or six varieties grown at this station since the first plantings in 1914 have proven satisfactory. Planted on high, fairly well drained land with an eastern exposure, the trees have failed to thrive and in many cases have died out after a few years. This fruit cannot be recommended for commercial plantings.

QUINCE—VARIETY EXPERIMENT

Of the eight varieties planted in 1912 de Portugal and de Borgeaut have given the best results. This fruit is subject somewhat to scab and also to cracking during wet weather. However, there is little demand for the fruit and because of this the growing of it cannot be recommended.

MADLAR—VARIETY EXPERIMENT

There is little or no demand for this fruit in British Columbia. Introduced at this Station from England in 1914, the trees have made satisfactory growth and have yielded well but the fruit has little or no value here.

FIGS

Trees of this plant have been grown at this Station for the past fourteen years covering fifteen varieties of well-known figs. Results over this period would indicate that there is little chance of this fruit being grown in a commercial way. Many of the varieties are only semi-hardy, considerable winter killing taking place during severe frosts. Some fruit however has been produced. The best varieties over a period of years were Ladero, Doree, Brown Turkey, Black Ischia and Mission.

SMALL FRUITS

STRAWBERRY BREEDING

In 1926 hybridizing work was carried on with a number of leading varieties resulting in 600 or more plants of known parentage. The varieties used and the method of hybridizing is shown as follows with the mother plant being shown first in each case.

RESULTS OF STRAWBERRY HYBRIDIZING

—	Number of resulting hybrids	Retained for further work
Royal Sovereign x Magoon	130	5
Magoon x Royal Sovereign	312	8
Greenville x Mariana	16	7
Paxton x Mariana	96	3
Paxton x Magoon	50	4
Greenville x Magoon	33	1
	637	28

The plants shown in the foregoing table fruited during the past season when all were kept under close observation.

A few plants resulting from each cross have been deemed worthy of being retained for further work while the remainder have been discarded.

Another block of seedling strawberries consisting of 38 plots was planted out in early spring and will be due to fruit in the 1929 season. Each plot consists of the product of one plant resulting from an open cross, only one parent being known. The plants in the entire block are large, vigorous and extremely promising. A further report will be made on these plots after fruiting next season.

LOGANBERRY BREEDING

During the fruiting season of 1925 some 400 young loganberry plants were started from seed and set out in the field the following spring. The object in this work has been two-fold, first, to determine the plants entering into the original cross and, secondly, out of the numerous variations which might result select a berry superior to the commonly grown type.

Types of loganberries raised from seed.

Some of the young seedlings fruited during the 1927 season but not until the 1928 season was cropping general over all the plants. In the fruiting of these plants some interesting variations have been noted, photographs of which have been made. Some of the plants produced fruit closely resembling blackberry types with a great variety of shape, size, degree of acidity, etc. Some plants ripened fruit in early season while others were very late. Many of the desirable types are being retained, the work is being continued and further results will be published from time to time.

GRAPE—VARIETY EXPERIMENT

This project was started in 1915 in order to determine the best variety of grape for the district. Some twenty-two varieties were planted, many of

which were found to be of little use. In 1921 seven new varieties were received from Ottawa for testing, some of these are yielding well and are of good quality. A few of the varieties are too late to have much value. The following varieties have been found to be fairly heavy yielders and also of good quality: Vergennes, Campbell Early, Hartford, Craig and Wilkins. Reed Hybrid, Early Daisy and Delaware are of excellent quality but are not heavy yielders.

FERTILIZER EXPERIMENT IN ORCHARD

In the spring of 1922 two blocks, one of apples and another of pears were set aside for this work. The project was undertaken to determine the effect of various fertilizers on the growth of apple trees and also on the production of fruit. Fertilizers were used at the same rate per tree on both pears and apples and in the same combinations. The amount of terminal growth was recorded at the end of each season and also the diameter of the tree taken. Fertilizers were used in the following manner:—

Range 1. Nitrate of soda, 4 pounds per tree.
Range 2. Muriate of potash, 4 pounds per tree.
Range 3. Acid phosphate, 8 pounds per tree.
Range 4. A mixture of the foregoing fertilizers used at the rate of 8 pounds per tree.
Range 5. Check. No fertilizer.

EFFECT OF FERTILIZER ON GROWTH OF PEAR TREES

Fertilizer used	Season's growth		Total gain in diameter per tree		Total yield of fruit from 6 trees for 7 years
	Average 1928	Per tree for seven years	1928	For seven years	
	in.	in.	in.	in.	lb.
Nitrate of soda	10	12·0	5/32	74/32	6,549·12
Muriate of potash	8	11·4	9/32	63/32	5,195·5
Acid phosphate	9	11·1	2/32	54/32	5,240·4
Mixed fertilizer	8	10·7	5/32	67/32	6,566·8
Check	8	8·5	10/32	60/32	3,000·6

EFFECT OF FERTILIZER ON GROWTH OF APPLE TREES

Fertilizer used	Season's growth		Total gain in diameter per tree		Total yield of fruit from 6 trees for 7 years
	Average 1928	Per tree for seven years	1928	For seven years	
	in.	in.	in.	in.	lb.
Nitrate of soda	6·4	12·1	11/32	117/32	5,250·8
Muriate of potash	5·3	10·3	12/32	96/32	4,047·6
Acid phosphate	5·0	11·0	9/32	100/32	4,277·10
Mixed fertilizer	6·4	9·5	7/32	90/32	2,511·12
Check	3·5	9·1	10/32	97/32	2,397·14

It will be seen that highest yields were obtained on both pears and apples from the nitrate of soda. In the pears too the mixed fertilizer range of trees gave splendid returns. From the standpoint of growth, both terminal and in diameter the nitrate gave greatest increases. This finding is in accordance with what would be expected from a close study of the soil conditions throughout the entire orchard. Further fertilization work from time to time in the orchard area will be planned to supply nitrogen in abundance through direct application of chemicals as well as by manure and cover crops.

VEGETABLES

VEGETABLE SEED—EASTERN VS. B.C. SEED STOCKS

For the past three years British Columbia grown or home grown vegetable seed has been grown beside seed from Eastern Canada. During the past season work was carried on with Stratagem garden pea, seed being secured from James Bros., Salt Spring Island, B.C., and Rennie's. These plots were grown side by side with about equal results. However, over the period of three years, home grown seed has given slightly better results.

THERMOGEN VS. DUST MULCH

For two years Thermogen (a paper mulch) was tried out on beans and garden peas as green vegetable crops with slightly increased yields being obtained through its use. Hence for these crops the conclusion was drawn that thermogen had little value and that the cost made the use of it prohibitive. During the 1928 season muskmelons were planted grown with a thermogen mulch. A plot kept under clean cultivation was grown beside the paper mulch plot, the plants being the same variety and set out in a similar manner.

Thermogen vs. soil mulch. The paper was used at the right; clean cultivation at the left. Three and one-half as many melons on the right as on the left.

RESULTS OF THERMOGEN VS. DUST MULCH TEST

Mulch	Date planted in field	Number of plants	Number of melons	Total weight of crop
				lb. oz.
Thermogen 36 inches wide	May 22	12	121	142 0
Check or dust mulch	May 22	12	26	31 8

Results obtained would show a marked increase in yield in favour of the paper mulch. The plants did better from the date of planting and surpassed those in the check plot at all stages. Further work will be carried out during the next year with Thermogen when it will be tested with other crops as well.

NUTS

WALNUTS—VARIETY EXPERIMENT

The walnut orchard comprises some five acres with an eastern exposure on a very indifferent type of soil, commonly called "red land," somewhat stony and gravelly. In 1916 trees of 18 grafted varieties and many seedlings were planted. Nuts have been produced during the past three years in quantity, the increase in crop each year being quite satisfactory. Some of the grafted varieties are: Franquette, Mayette, Parisienne, Ordinaire, Fertile. The Franquette and Mayette are the two most promising grafted varieties. The many seedlings are of the *Juglans regia* species. Many of these are of high quality though for the most part smaller than nuts from grafted varieties.

The nuts are gathered just at the time they are falling from the trees, washed and dried. Washing at the time of gathering is much easier than after drying when bits of leaves and dirt adhere very closely to the shell of the nuts. Bleaching then takes place. This consists of dipping in a solution of chloride of lime and sal soda to which sulphuric acid is added; this results in the liberation of chlorine gas which does the bleaching.

The bleaching formula, which was given out by the University of California Experimental Station, illustrates the details of the process. "Six pounds of bleaching powder (chloride of lime), twelve pounds of sal soda, fifty gallons of water. Dissolve the sal soda in about four gallons of water, stirring well until dissolved. Dissolve the bleaching powder in about four gallons of water, stirring well until dissolved. Add one solution to the other and stir well. Let the carbonate of lime settle to the bottom and draw off the clear liquid and add water to make a total of fifty gallons. Put the nuts in large dipping box or lath crate, immerse in the fluid, and then add one and one-fourth pounds of 50 per cent sulphuric acid and agitate by raising and lowering the dipping box. The bleach should be reached in five or ten seconds and the nuts are then washed in clear water and put to dry. The liquor can be used with new batches of nuts so long as the proper effect is produced and small additions of acid will prolong the efficiency of the liquor."

ALMONDS—VARIETY EXPERIMENT

A number of varieties of almonds were planted at this station in the spring of 1916. While the trees are apparently hardy here they are short lived and some have died out already. During the past season fruit failed to set, due no doubt to unfavourable weather conditions. Of the varieties tested heaviest yields have been borne by two Texas Prolific trees. Other varieties in order of yield are Paper Shell, Nonpareil and Jordan. There seems to be no future for this fruit as a commercial crop.

FILBERTS—VARIETY EXPERIMENT

This crop continues to do well, though yields are much reduced through the ravages of the Blue Jay. First plantings were made in 1915. Of the twenty-six varieties grown the following are recommended for planting. Fertile de Coutard, Red Hazel, Kentish Cob, Gosford, and Marveille de Bollwiller.

NARCISSUS—FLY CONTROL

Much work has been done during the past few years on the control of the narcissus bulb fly. In 1927 a new line of investigational work was entered upon, namely, that of attempting to destroy the larvae infesting the bulbs by means of a fumigant before planting. A number of lots of bulbs were treated, being exposed to the fumigant under pressure for various lengths of time and with varying quantities of gas. Plots were planted in October.

NARCISSUS FLY CONTROL RESULTS

Lot variety	Time vacuum pump was operated	Time taken introducing gas	Time bulbs were exposed	Pressure in pounds	Rotten in spring
	minutes	minutes	minutes		%
1. Lucifer	4	4	20	10	30
2. Poet Glory	5	5	80	10	100
3. Sir Watkins	4	2	60	10	60
4. Grandis	5	2	40	10	73

Fumigant used: 1 ounce sodium cyanide to 2 ounces of water to which was added ½ ounce sulphuric acid. Fumigation was carried out in a tank containing about 2½ cubic feet.

In all lots of bulbs all larvae were destroyed by the gas, even in lot No. 1, where the bulbs were exposed for only twenty minutes to the fumigant, destruction was complete. The figures showing loss through the rot include loss caused by basal rot as well as through the use of the fumigant.

GREENHOUSE

The work in the greenhouse has followed along lines formerly laid out. It has been found of the greatest aid in supplementing the work in vegetable gardening, the landscape and in floriculture. This demand is almost constant from year to year. Various lines of work, begun in the greenhouse, have been continued in the field. Some of these have been reported on; others are not complete.

GREENHOUSE TOMATOES

The variety tests with greenhouse tomatoes have been continued from year to year, and may now be considered as complete for the present.

TOMATOES—VARIETY TESTS

Variety	Date seed sown	Date planted in house	Date ready for table	Yield per plant	Remarks
				lb.	
Kondine Red—150 plants on bench one foot apart.	20-11-27	22-2-28	5-5-28	3	The plants were set too close, resulting in the drawing of the plants with only three trusses at topping. Area of bench 153 square feet.
Sias-huen-fan-tae on bench one foot apart.	20-11-27	22-2-28	12-5-28	2	The same remarks apply to this variety with the exception of the quality which is small and soft. Area of bench 60 square feet.
Kondine Red Seed grown outside; 40 plants 14 by 24 inches apart.	20-11-27	22-2-28	15-5-28	6	This is our best tomato. Even size, good colour and round in shape.
Kondine Red Seed grown inside; 30 plants 14 by 24 inches apart.	20-11-27	25-2-28	14-5-28	5½	These plants are not so robust as those grown for seed outside.
Kondine Red Seed grown outside; 14 by 24 inches apart (sub-irrigation).	20-11-27	25-2-28	16-5-28	6½	Watered by this method plants are more healthy and fruitful.
Fargo; 8 plants 14 by 24 inches apart.	20-11-27	26-2-28	20-5-28	4	This is an outside variety, being very rough and soft under glass. Seed obtained from North Dakota Agricultural College.
Viking; 8 plants 14 by 24 inches apart.	20-11-27	26-2-28	26-5-28	3	The same remarks apply to this variety as Fargo.

TOMATOES—VARIETY TESTS—*Concluded*

Variety	Date seed sown	Date planted in house	Date ready for table	Yield per plant	Remarks
				lb.	
Sias-huen-fan-tae; 30 plants 14 by 24 inches apart.	20-11-27	20-2-28	21-5-28	5	Medium sized fruit on large trusses, smooth colour variable. Too soft for indoor work.
(1) Kondine Red; (Male) Abbotsford Argo (Female)— 20 plants 14 by 24 inches apart.	20-11-27	20-2-28	21-5-28	5	The foliage on both these crosses exhibited the Kondine Red whilst the fruit was small like Abbotsford Argo. Of no commercial value.
(2) Abbotsford Argo (Male). Kondine Red; (Female) 20 plants 14 by 24 inches apart.	20-11-27	20-2-28	16-5-28	4	
(3) Essex Wonder (Male) Kondine Red (Female) 20 plants 14 by 24 inches apart.	20-11-27	18-2-28	21-5-28	3	Fruit of this cross was soft. Trusses small. No value.
(4) Abbotsford Argo (Male) Essex Wonder (Female) 10 plants 14 by 24 inches apart.	20-11-27	18-2-28	21-5-28	3	Foliage was of Essex Wonder type. Fruit small of Abbotsford type. Trusses small. No value.
(5) Essex Wonder (Male) Abbotsford Argo (Female) 4 plants; 14 by 24 inches apart.	20-11-27	18-2-28	21-5-28	3	

NOTE.—The season being dull was against growth and set of fruit with a consequent late crop.

Kondine Red retains its reputation as our best greenhouse tomato. It will also be notice that Kondine Red seed, produced out of doors, has more vitality, and produces more fruit than that grown under glass. Water applied by the sub-irrigation method seems to have some advantage.

SEED GROWING

For several years seed of many vegetables, especially peas, has been grown in some quantity. At one time twenty-six varieties of peas on the farm could trace their origin to a single plant of the variety. It was not until 1928, however, that an attempt was made to grow "Elite" stock seed of the vegetables assigned to us by the Canadian Seed Growers' Association. All provincial institutions, as well as the experimental farms, have been carrying on with their own select list of vegetables grown for the production of stock seed. The list assigned to us was as follows:—

Beans—Kentucky Wonder Long Pod
Cauliflower—Early Dwarf Erfurt
Lettuce—Hanson
Onion—White Portugal
Peas—Advancer
Spinach—New Zealand

The seed was obtained from many seed houses, and the plots of each variety grown were of considerable size. The plants were studied from the standpoint of size, quality, productiveness, etc., and selection made of one in

each instance. The plant selected was, of course, the best one found, at least from our standpoint. The seed arising from this selection will be sown this coming season, and "Elite" stocks built up for distribution as early as possible. The cauliflower is a very difficult subject to work with. The first year's work with this vegetable was almost a failure, but the problem is being attacked from a slightly different angle, which promises success.

CEREALS

A very favourable season for the wintering of fall sown cereals was experienced during the winter of 1927-1928. In the latter part of December and early January some nine inches of snow fell, giving good protection to the fall seedings. The minimum temperature recorded during the period was twenty degrees above zero. The spring season was long, cool, dull and showery. Frost was recorded in April. The harvesting of the winter grains commenced by the cutting of barley on June 25, followed by the cutting of Kanota oats and Red Rock wheat on July 9 and 18 respectively.

All the variety test work was conducted in rod row plots of three rows each, replicated four times. The rows were sown seven inches apart, and eighteen feet six inches long. At harvest time one foot was cut off either end of the row, leaving a plot one rod in length. By this method the possible error arising from the outside row was eliminated. The yields were based on the centre row only, the other two rows being used as a guard against the effect that the stronger varieties might have over the weaker, and also to prevent the mixing of the varieties in some measure. In addition to the work usually done, one hundred and five varieties and strains of wheat received from the Dookie Agricultural College, Victoria, Australia, were sown in rows one foot apart for observation. Twenty-five of the best varieties were selected for testing in the rod row plots of 1928-29.

SPRING WHEAT—TEST OF VARIETIES

Eight varieties of wheat were sown on April 17. Germination was good and the plants made steady growth throughout the season. The yield of both straw and grain was above the average, but a little below that of the previous year.

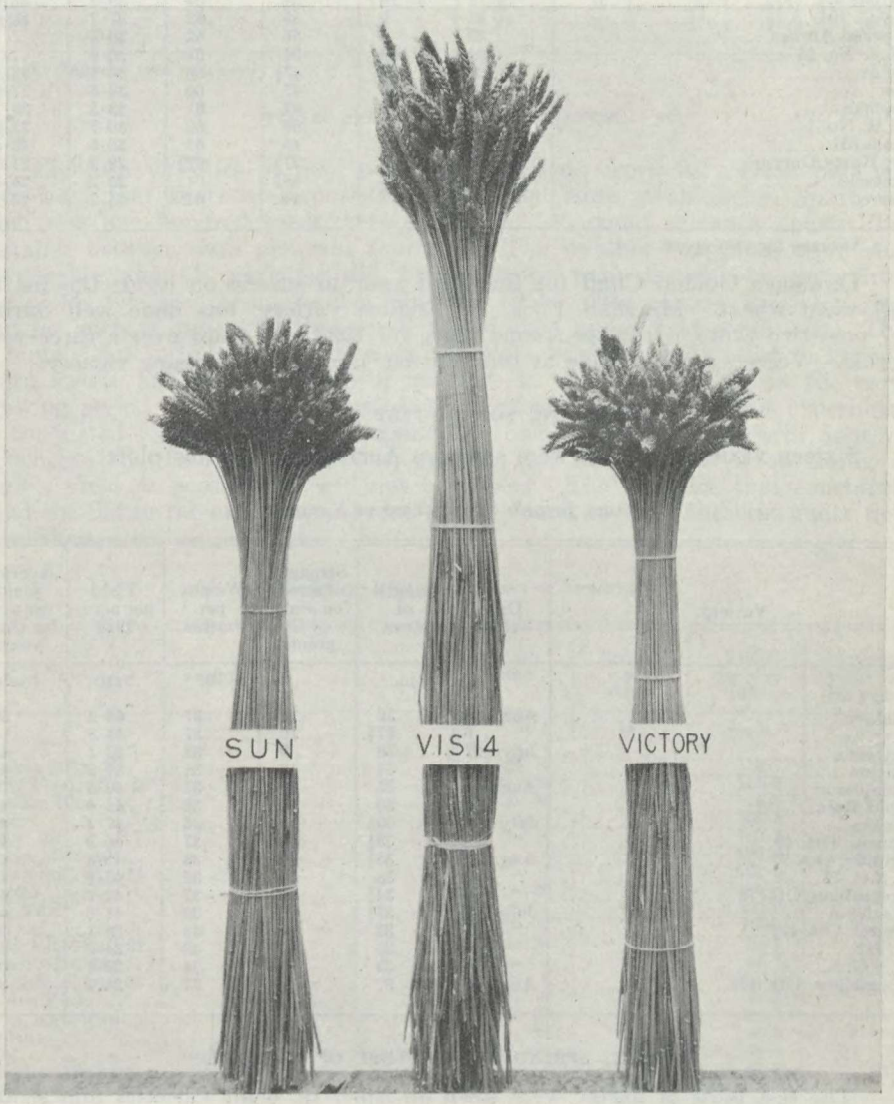
SPRING WHEAT—RESULTS OF TEST OF VARIETIES

Variety	Date ripe	Strength of straw on scale of 10 points	Length of straw	Weight per bushel	Yield per acre	Average for 3 years
			in.	lb.	bush.	bush.
Kitchener	Aug. 22	10	42	62	36·9	27·7
Huron, Ott. 3	" 26	9	38	63	29·8	28·8
Marquis, Ott. 15	" 20	9	37½	63	28·0	27·5
Early Red Fife, Ott. 16	" 16	9	37	63	27·0	30·9
Red Fife, Ott. 17	" 20	9	37	62	26·7	26·7
Bluestem x Marquis	" 16	10	41	61	25·9	
Dicklow	" 28	10	36½	59	25·3	23·9
Red Stone	" 22	9	36½	60	24·1	24·6

Of the varieties tried to date, over a period of three years, Early Red Fife has proved to be the best yielder. Bluestem Marquis, a cross made at this station, is beardless, ripens early, straw of good strength, red chaff, kernels medium sized, hard and of reddish colour.

FALL SOWN WHEAT—TEST OF VARIETIES

Eighteen varieties and strains of wheat were sown on October 4. Owing to the continued rains the soil was in a heavy and sodden condition, consequently seeding was not carried out under the best of conditions. Precipitation during October and November was much above the average.



Types of winter wheat grown on the Sidney Station.

FALL SOWN WHEAT—RESULTS OF TEST OF VARIETIES

Variety	Date ripe	Strength of straw on scale of ten points	Length of straw	Weight per bushel	Yield per acre	Average for 3 years
			in.	lb.	bush.	bush.
Dawson's Golden Chaff	July 23	10	52½	61	52·8	47·9
Marshall Foch	" 30	10	48½	61	48·4	39·9
Velvet	" 26	10	50	62	44·7	43·0
Golden Sun	" 26	10	56	60	42·5	39·0
V.I.S. No. 131	" 24	10	54½	60½	41·8	39·5
Red Rock	" 18	8	52½	61	40·3	37·2
Williamson	" 18	10	54	64	39·5	33·0x
O.A.C. 104	" 23	9	55	62	37·7	36·6
Imperial Amber	" 20	8	56	62	36·9	.....
V.I.S. No. 14	" 24	10	54	61	36·9	.....
Victor	" 28	10	47¼	60	36·1	38·6
Sun	" 30	10	47	60	34·5	37·9
Yeoman	" 30	10	47	61	33·5	33·7
V.I.S. No. 1	" 26	9	56	60	30·7	33·6
Minhardi	" 23	9	49	62	30·5	23·5
Dr. Harts Durum	" 25	8	57	62½	29·9	21·8
Minturki	" 21	8	48½	61	29·3	25·3
Kanred	" 23	7	44	62	24·2	25·2

x Average for two years.

Dawson's Golden Chaff for the third year in succession heads the list of fall sown wheat. Marshall Foch, an English variety, has done well during the past two years. It takes second place for 1928, and third over a three-year period. Velvet, a cross made at this Station, is a very promising variety.

OATS, SPRING SOWN—TEST OF VARIETIES

Sixteen varieties of oats were sown on April 18 in rod row plots.

OATS, SPRING SOWN—TEST OF VARIETIES

Variety	Date ripe	Length of straw	Strength of straw on scale of 10 points	Weight per bushel	Yield per acre, 1928	Average yield per acre for three years
		in.		lb.	bush.	bush.
Victory	Aug. 6	36	10	37	62·4	50·3
Star	" 6	37½	10	37	54·8	.....
Joanette	July 27	38	9	35	52·1	46·3
Garton	" 31	34	10	38	51·0	47·2
Conqueror	Aug. 4	35	10	37	49·5	50·5
Gold Rain	" 4	36	10	38	48·0	44·3
Alaska	July 23	39½	10	36	47·4	41·8
Banner, Ott. 49	" 30	38½	10	37	46·9	41·9
Prolific, Ott. 77	Aug. 1	38½	10	38	45·8	43·6
O.A.C. 72	" 3	38	10	36	43·9	42·8
Columbian, Ott. 78	" 4	34¼	10	37	42·7	40·8
Leader A	July 27	37½	10	33	41·6	42·2
Laurel, Ott. 477	" 25	32	9	43	38·1	29·6
O. 713	" 24	35	10	38	34·9	41·3
O.A.C. 3	" 26	33	10	34	29·1	31·6
Longfellow, Ott. 478	Aug. 7	37	10	37	24·7	39·2

BARLEY, SPRING SOWN—TEST OF VARIETIES

The test plots of barley were sown on April 19, eight varieties and strains being planted.

BARLEY, SPRING SOWN—RESULTS OF TEST OF VARIETIES

Variety	Date ripe	Length of straw	Strength of straw on scale of ten points	Weight per bushel	Yield per acre, 1928	Average yield per acre for three years
		in.		lb.	bush.	bush.
Dean Bros.	July 28	28	10	49	70·8	55·7
Gold	" 30	27	9	54	55·8	58·8x
Manchurian, Ott. 50	" 27	31½	10	48	48·7	49·5
Bearer, Ott. 475	" 30	36½	10	47½	47·1	50·5
Duckbill, Ott. 57	" 30	30	10	53	42·8	43·7
Himalayan, Ott. 59	" 23	26½	8	63	33·0	38·3
Hulless	" 23	29	9	65	31·2	34·2
Barks	Aug. 3	29	10	47	46·8	45·4

x Average for two years only.

FIELD PEAS, TEST OF VARIETIES

Eighteen varieties of field peas were sown on April 23. Each plot was replicated four times and consisted of two rod rows seven inches apart. In each row one hundred seeds were planted at an equal distance apart. The distance between each plot was four feet. The weather conditions were very favourable and all varieties did exceptionally well, as will be seen from the yields per acre given in the following table. The returns are very high and far surpass any yield that could be obtained under field conditions. This is largely due to the distance between the plots, constant cultivation in keeping down weeds, and an abundance of moisture in the form of rain in the early growing period. If the reader will bear in mind the fact that this experiment is conducted for the purpose of comparing one variety of peas with another, under exactly the same conditions, and not for the purpose of obtaining as high a yield as possible, he will not be misled. The varieties that constantly head the list in the experimental plot will be found to yield the best under field conditions.

FIELD PEAS—RESULTS OF TEST OF VARIETIES

Variety	Date ripe	Length of straw	Yield per acre 1928	Average yield for two years
		in.	bush.	
Mackay, Ott. 25	Aug. 9	43	113·7	100·0
Early Feed, Ott. 30	July 24	30	113·3	84·4
Prussian Blue	Aug. 13	52	111·9	97·8
Maple	" 4	42½	105·4	94·7
O.A.C. 181	" 4	44½	103·8	89·3
Cartier, Ott. 19	" 6	42	103·6	78·4
Chancellor, Ott. 26	" 1	44	101·0	78·6
Capital	July 26	32	100·4	77·3
Concordia	Aug. 1	28½	100·0	86·7
Stirling	" 2	41	99·3	82·4
Early Blue, Ott. 21	July 24	26½	99·2	86·4
Arthur, Ott. 18	Aug. 4	37½	97·6	74·2
Champlain, Ott. 32	" 6	42½	93·3	77·5
Golden Vine	" 3	43	93·2	74·5
Early Raymond	July 21	41	88·3	85·6
Gyllen	" 24	27½	86·5	84·8
Solo	Aug. 4	42½	85·4	73·8
Canadian Beauty	" 6	61	82·7	67·4

OATS, FALL SOWN—TEST OF VARIETIES

Eight varieties of oats were sown on October 5, 1927. All varieties came through the winter in splendid condition, making good growth during the early spring. The yields on the whole were a little better than those of the previous year. From experience gained in the past few years we would recommend the seeding of winter oats on light or medium clay loam, providing that it is well drained. Seeding should be done any time between September 21 and October 10. Generally speaking, the winter varieties have a greater weight per measured bushel than the spring varieties.

OATS, FALL SOWN—RESULTS OF TEST OF VARIETIES

Variety	Date ripe	Length of straw	Strength of straw on scale of 10 points	Weight per measured bushel	Yield per acre	Average yield per acre for three years
		in.		lb.	bush.	bush.
Bountiful	July 14	47¾	10	40	57·9	50·2
Grey White	" 20	43	9	39	57·1	52·5
Joanette	" 18	41	9	37	56·0	40·2
Marvellous	" 18	44	10	41½	50·1	47·5
Winter Turf	" 20	37½	9	40	45·2	44·7
Early Ripe White	" 16	46	9	35½	36·8	30·3
Kanota	" 9	39½	10	38	30·7	40·0
O. 713	" 14	38	10	37	23·4	34·7

BARLEY, FALL SOWN—TEST OF VARIETIES

The same varieties of barley as used for spring sowing were also sown on October 1, 1927.

BARLEY, FALL SOWN—TEST OF VARIETIES

Variety	Date ripe	Length of straw	Strength of straw on scale of 10 points	Weight per measured bushel	Yield per acre 1928	Average yield per acre for three years
		in.		lb.	bush.	bush.
Dean Bros	July 2	32½	9	50	64·3	60·4
Gold	June 28	33½	9	55	57·9	.....
Manchurian, Ott. 50	July 5	39½	9	49	54·9	51·1
Himalayan, Ott. 59	June 25	30½	8	64	50·9	33·1
Hulless	" 28	36	8½	65	50·7	48·0
Duckbill, Ott. 57	" 28	40	10	55	40·9	30·2
Barks	July 12	32½	10	47	36·7	50·2
Bearer, Ott. 475	" 2	37	8½	48	36·5	42·1

FORAGE CROPS

Forage crops on the whole, and especially corn and sunflowers, did not do as well as in former years, due, no doubt, to the backward spring and slow maturing weather during the autumn.

ENSILAGE CROPS

INDIAN CORN—VARIETY TEST

Twenty-two varieties and strains of corn for ensilage were sown on May 28 in rod rows, thirty-six inches apart. Each plot was replicated four times. The soil was well manured and deeply ploughed in the fall, and thoroughly cultivated previous to planting.

INDIAN CORN—RESULTS OF VARIETY TEST

Variety	Date cut	Yield per acre green weight		Percentage dry matter	Yield per acre dry matter
		1928	Average for		1928
		tons	tons	%	tons
Longfellow	Oct. 1	13·97	5 years 13·37	21·48	2·99
Northwestern Red Dent	Sept. 28	13·42	4 " 13·42	20·21	2·71
90 day White Dent	Oct. 9	14·96	4 " 15·01	17·48	2·61
Northwestern Dent	Sept. 21	12·21	4 " 12·57	21·19	2·59
Bailey	Oct. 1	13·20	3 " 12·11	17·87	2·36
Pride Yellow Dent	" 1	11·00	.....	21·19	2·33
Northwestern Dent Cookeston strain	Sept. 31	12·21	4 " 12·61	21·19	2·33
Golden Glow	Oct. 5	12·43	5 " 14·39	17·68	2·19
Compton's Early	" 5	11·77	5 " 15·36	17·68	2·08
Wisconsin No. 7	" 11	11·99	5 " 13·99	16·11	1·93
Burr Leaming	" 11	12·10	4 " 14·96	15·53	1·88
Yellow Dent	" 6	10·45	4 " 13·28	17·38	1·82
White Cap Yellow Dent	" 1	10·23	5 " 11·72	16·99	1·73
Hybrid	Sept. 30	9·90	3 " 14·30	17·38	1·72
Northern Prolific	Oct. 6	11·44	3 " 9·42	14·55	1·66
Leaming	" 11	11·22	5 " 12·98	14·84	1·64
North Dakota	" 1	8·36	5 " 10·73	18·04	1·51
Minnesota 13	" 1	7·92	4 " 11·60	15·82	1·25
Twitchels Pride	Sept. 24	10·34	5 " 11·22	21·78	1·25
Stowells Evergreen	Oct. 11	9·02	4 " 9·68	13·57	1·22
Quebec 28	Sept. 17	10·13	5 " 10·36	21·29	1·20
Amber Flint	" 28	6·71	3 " 8·76	16·80	1·13

The above table is arranged according to the yield of dry matter per acre. The late maturing varieties generally speaking give the heaviest yield, but may or may not excel in dry matter. Longfellow is about the best all-round corn to grow on Vancouver Island. It usually matures about the first of October and gives a high percentage of dry matter. If an earlier maturing variety is required it would be well to select North Western Dent. Of the later varieties 90-day White Dent, Golden Glow and Compton's Early are heavy yielders.

SUNFLOWERS—VARIETY TEST

Five varieties of sunflowers were sown on May 28. The same method of planting was followed as with corn.

RESULTS OF SUNFLOWER VARIETY TEST

Variety	Date cut	Yield per acre green weight		Percentage dry matter	Yield per acre dry matter
		1928	Average for		
		tons	tons	%	tons
Giant Russian	Aug. 24	20·02	4 years 22·30	19·14	3·83
Mammoth Russian	" 20	22·77	5 " 25·08	16·50	3·76
Ottawa 76	" 24	16·61	5 " 14·17	16·80	2·79
Mixed Mennonite	" 14	13·75	5 " 12·01	17·09	2·35
Manchurian	" 16	12·34	4 " 12·24	18·36	2·30

GRASSES AND CLOVERS

ORCHARD GRASS—VARIETY TEST

Plots one rod square, or one-one hundred and sixtieth of an acre, were used in this experiment. The seed was sown at the rate of sixteen pounds per acre on April 29, 1927.

ORCHARD GRASS—RESULTS OF TEST OF VARIETIES

Variety	Height April 15, 1927	Height when cut	Date cut	Yield per acre	
				Green	Dry
	in.	in.		tons	tons
Commercial	5	36	June 5	4·62	1·70
Svalof Early	6	40	June 5	4·84	1·67
Mowing Strain	7	40	June 11	6·60	2·38
Grazing strain	6	36	June 14	7·04	2·42

Orchard grass is recommended for use where early pastures are required If used for hay it should be cut before the seeds form. When left too late the hay is very wiry and much waste ensues when fed to stock. Both the mowing and grazing strains give a good thick bottom growth. The stalks of the mowing strain are much coarser than those of the grazing strain.

ALFALFA—VARIETY TEST

Five varieties and strains of alfalfa were sown in duplicate test plots of uniform size. The seed was sown on April 29 broadcast at the rate of twenty pounds per acre. The land was fallowed the previous year, and well cultivated before seeding.

ALFALFA—RESULTS OF VARIETY TEST

Variety	Height when cut	Date cut	Yield per acre		Average yield for four years—dry matter
			Green 1928	Dry 1928	
	in.		tons	tons	tons
Cossack	32	June 11	8·16	2·88	2·88
Registered Grimm	30	June 12	9·84	3·04	2·82*
Variegated	32	June 12	7·44	2·87	2·74
Genuine Grimm	28	June 12	6·40	2·27	2·32
Siberian Yellow Flower	15	June 15	6·32	2·24	1·98

*Average for three years only.

Cossack has done well over a period of four years, giving a good yield of dry matter per acre. Registered Grimm is by far the best strain of this variety ever grown at this station. It gives a high yield of both green and dry fodder. Registered Grimm is of sturdy upright habit, but not coarse. The Siberian Yellow Flower is not a desirable type, being recumbent in habit, and not bearing as many leaves as other varieties.

RED CLOVER—VARIETY TEST

Twelve strains of red clover were sown in duplicate plots one-one hundred and sixtieth of an acre each. The yields were much below the average in most cases.

RED CLOVER—RESULTS OF VARIETY TESTS

Strain	Source	Height when cut	Date cut	Yield per acre 1928		Average yield for 3 years dry matter
				Green	Dry	
		in.		tons	tons	tons
St. Clet	St. Clet, Que	24	June 15	6·16	1·93	2·97
Chateauguay	Chateauguay, Que	30	June 15	6·64	2·29	2·86
Early Swedish	Svalof, Sweden	18	June 17	5·20	1·78	2·67
Dauphin	France, S.E.	24	June 15	6·32	2·21	2·63
Late Swedish	Svalof, Sweden	16	June 23	5·76	1·98	2·49
Kenora	Kenora, Ont.	15	June 20	4·96	1·85	2·33
Altaswede	Alberta	24	July 6	9·28	3·18	2·31
Emilia	Italy, N. Cent.	16	June 17	5·60	1·80	2·22
Umbria	Italy	17	June 12	4·56	1·53	2·10
Marche	Italy, N. Cent.	14	June 19	2·88	1·04	2·07
Southern Italy	Italy S.	17	June 20	5·12	1·70	2·03
Spadone	Italy N.	18	June 12	3·52	1·17	1·91

As in past years, the best results were obtained from the Quebec-grown seed. The early and late Swedish strains were good, but those coming from Italy are to be found at the bottom of the list. The winters on Vancouver Island are not severe enough to cause the winter killing of any of the red clovers. The reason for the poor return from the Italian clovers is largely due to their lack of vigour.

WHITE DUTCH CLOVER—VARIETY TEST

Only three of the usual varieties of White Dutch Clover were sown in 1928. The seed of other varieties arrived too late to be planted.

WHITE DUTCH CLOVER—RESULTS OF VARIETY TEST

Variety	Source	Height when cut	Date cut	Yield per acre		Average yield dry matter for 4 years
				Green	Dry	
		in.		tons	tons	tons
Ladino		14	June 23	4·80	1·58	1·68
Stryno	Danish	9	June 9	3·12	0·85	1·00
Morso	Danish	10	June 9	3·26	1·05	0·89

Ladino has been the heaviest yielder of the white clovers. It has large succulent leaves, and white flowers as large as those of the common red clover. It is much later maturing than the others, but a very promising variety, and can be used to advantage to thicken the bottom.

MISCELLANEOUS FORAGE CROPS OTHER THAN GRASSES AND CLOVERS

The object of this experiment was to determine the relative value of Mammoth White Jerusalem Artichokes compared with other forage crops, such as corn and sunflowers. The test plots used were of equal size and replicated four times. Artichokes were planted in rows four feet apart, the tubers being set three feet from each other in the row. The corn and sunflowers were sown

in drills three feet apart, and thinned to twelve inches apart in the row. The dates of planting were as follows:—

Artichokes, April 7.
Corn and sunflowers, May 23.

Mangels on the Sidney Station.

The following table gives the height, date of harvest, per cent dry matter and yield per acre of green and dry matter, also the average yield of dry matter for two years.

Results with Miscellaneous Forage Crops

Crop	Date when cut	Height when cut	Per cent dry matter	Yield per acre 1928		Average yield dry matter per acre two years
				Green	Dry	
		in.		tons	tons	tons
Jerusalem Artichokes Stalks	Oct. 9	178	27·78	24·86	6·90	6·30
Jerusalem Artichokes Tubers	Nov. 3	.....	23·36	12·87	3·00	3·27
Mammoth Russian Sunflowers	Sept. 8	111	15·70	22·00	3·45	4·65
Longfellow Corn	Oct. 9	86	24·82	15·62	2·97	2·40

The artichokes were cut as soon as they commenced to bloom, the sunflowers when about two-thirds of the flowers were fully opened, and the corn in the dough stage. The artichokes are much easier to handle at the ensilage cutter than the sunflowers. When comparing the value of the artichokes with other forage crops the tubers must also be taken into consideration. The tubers may be lifted with the potato digger with a minimum of labour. They keep best when left in the soil; if lifted, store in small piles covered with sand and protected from the wind by a wall or building.

EXPERIMENTS WITH FERTILIZERS

Work with fertilizers on potatoes and root crops has been continued. Some changes have been made in procedure to meet some particular phase of the fertilizer problem. Chemical fertilizers on Vancouver Island have not given the results that one would look for, nor the results that are obtained in some parts of Canada.

FERTILIZERS FOR THE POTATO CROP

This project was undertaken in the spring of 1923 to determine the influence of nitrogen, phosphoric acid and potash on the yield of potatoes, and has been continued since then. In 1927 and again in 1928 the experiment was made as simple as possible, plots in each case being one rod square ($\frac{1}{160}$ acre), but replicated four times. The plan of the experiment will be clear by referring to the following table:—

PLAN OF EXPERIMENT—FERTILIZERS FOR POTATOES

Plot	Fertilizer material in pounds per acre	Pounds per acre		
		N.	P_2O_5	K_2O
1	Nitrate of soda 400	62		
	Superphosphate 800	.....	128	
	Muriate of potash 250	.....	.....	125
2	Sulphate of ammonia 300	62		
	Superphosphate 800	.....	128	
	Muriate of potash 250	.....	.....	125
3	Superphosphate 800	.....	128	
	Muriate of potash 250	.....	.....	125
4	Nitrate of soda 400	62		
	Superphosphate 800	.....	128	
5	Nitrate of soda 400	62		
	Muriate of potash 250	.....	.....	125
6	Check (no treatment)			

The check plots were well distributed over the field and placed to include any soil variations that might arise. The results follow:—

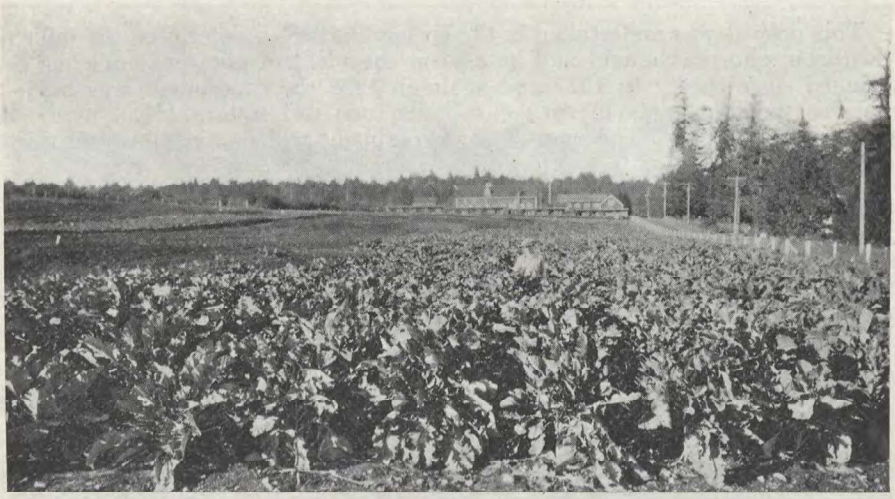
TABLE OF YIELDS—FERTILIZERS FOR POTATOES

	Plot 1	Plot 2	Plot 3	Plot 4	Plot 5	Plot 6
	lb.	lb.	lb.	lb.	lb.	lb.
A	39½	57	71	70½	36	70
B	56	90	64	40	67½	41
C	101	103½	85	49	39	50
D	87½	77	49	106	98	55
Totals for 1928	284	327½	269	265½	240½	216
Average for two years	308	321	290	295¾	289¼	250½

In studying the yields for the various plots it should be noticed that plots 1 and 2 received nitrogen, phosphoric acid and potash, while 3 received no nitrogen, 4 no potash, and 5 no phosphoric acid. No. 6 is check.

RESIDUAL EFFECT OF THE FERTILIZERS APPLIED IN 1927

After the 1927 crop was harvested, the plots were ploughed, thoroughly tilled and sown to winter oats. Timothy was sown along with the oats and clover early in the spring. The oats were carefully cut and harvested by hand, and the total weights of grain and straw recorded. The grain was not threshed owing to the lack of a machine for use on plot work. The hay crop in 1929 will also be recorded.



Thousand headed kale.

RESIDUAL EFFECT OF FERTILIZERS ON OATS

	Plot 1	Plot 2	Plot 3	Plot 4	Plot 5	Plot 6
	lb.	lb.	lb.	lb.	lb.	lb.
A	29½	30½	22½	21	22½	20
B	28	41	42	43½	29	31
C	48	43	39	43	36	34
D	35½	51½	30	44	45½	37
Totals	141	166	133½	151½	133	122

The fertilizer work which has been carried on for a number of years, with varying results, seems to be finding its level in so far as averages are concerned. Sulphate of ammonia, superphosphate and muriate of potash have established their worth during the last few years.

TIME OF APPLICATION OF FERTILIZER

Fertilizers are applied at planting time, for the most part, throughout Canada, but on the Pacific coast considerable emphasis is placed on the time of application, it being thought that, owing to the very dry weather that usually follows the planting season and continues throughout the summer, if the fertilizer was applied a few weeks in advance of planting it would be more readily taken up by the crop. To ascertain the truth of this, the fertilizer in the preceding experiment was applied to A and C plots at the time of planting, and to B and D six weeks before planting time.

FERTILIZER APPLIED BEFORE PLANTING

—	Plot 1	Plot 2	Plot 3	Plot 4	Plot 5
	lb.	lb.	lb.	lb.	lb.
B	56	90	64	40	67½
D	87½	77	49	106	98
Totals	143½	167	113	146	165½
Average for two years	152¾	166¾	126	159¾	159

Grand total 1928—735 pounds. Average grand total for two years—759¼ pounds.

FERTILIZER APPLIED AT TIME OF PLANTING

—	Plot 1	Plot 2	Plot 3	Plot 4	Plot 5
	lb.	lb.	lb.	lb.	lb.
A	39½	57	71	70½	36
C	101	103½	85	49	39
Totals	140½	160½	156	119½	75
Average for two years	155¼	154¾	164½	161	130¼

Grand total 1928—651½ pounds. Average grand total for two years—821¾ pounds.

Fertilizer applied in advance of planting time, on two-year averages, has given much poorer results than when sown and incorporated with the soil immediately before planting.

In 1927 an experiment was undertaken with Ephos Basic Phosphate, to determine its value as a source of phosphoric acid when applied in conjunction with a nitrogenous and potassic fertilizer. The plots were one rod square, replicated four times. For comparison, treatment with superphosphate, basic slag, and ground Nauru rock phosphate were included in the plan. One plot received nitrogen and potash but no phosphoric acid. This work was done with very great care. The planting, digging, and in fact all processes connected with the crop were performed by hand. Two crops, mangels and potatoes, were used; hence two sets of figures. The fertilizers applied to the various plots, and the yields obtained for 1928 and the average for two years, are given in the following table.

EPHOS EXPERIMENT WITH POTATOES AND MANGELS

—	Plot 1	Plot 2	Plot 3	Plot 4	Plot 5	Plot 6
	lb. Nitrate of soda....200 Ephos.....292 Muriate of potash..100	lb. Nitrate of soda....200 Superphosphate....500 Muriate of potash..100	lb. Nitrate of soda....200 Basic slag.....500 Muriate of potash..100	lb. Nitrate of soda....200 Nauru rock.....200 Muriate of potash..100	lb. Nitrate of soda....200 Muriate of potash..100	Check.
Potatoes.....	lb. 51..... A 41½..... B 62½..... C 57½..... D	lb. 50½..... A 49½..... B 55..... C 70..... D	lb. 48..... A 49½..... B 60..... C 64..... D	lb. 47½..... A 40..... B 62½..... C 65..... D	lb. 40..... 48..... 55..... 66.....	lb. 36.... A 53.... B 38½... C 49.... D
Total.....	212½	225	221½	215	209	176¼
Average for two years....	186¼	191	189¼	165½	193½	163½
Mangels.....	104..... A 83..... B 49..... C 135..... D	128..... A 80..... B 184..... C 158..... D	90..... A 132..... B 84..... C 146..... D	88..... A 113..... B 180..... C 66..... D	90..... A 77..... B 148..... C 88..... D	90.... A 95.... B 117.... C 48.... D
Total.....	371	450	452	447	403	350
Average for two years....	507⅓	534¾	508	512¼	509½	434½

Differences are so slight that one hesitates to draw conclusions. No doubt Ephos and Nauru rock phosphate have some value.

RESIDUAL EFFECT ON WHEAT OF FERTILIZER APPLIED THE PREVIOUS YEAR

To determine the residual effect of the fertilizer in the experiment spring wheat was sown for the 1928, and clover for the 1929 crops. The wheat was not threshed for reasons already explained. The yields per plot of grain and straw are as follows:—

	Plot 1	Plot 2	Plot 3	Plot 4	Plot 5	Plot 6
	lb.	lb.	lb.	lb.	lb.	lb.
A	31	28½	48	33½	40	30
B	30	31½	32½	34	27	24½
C	26	30½	26	26½	33½	32½
D	27	32½	41½	39	30½	25½
Total	114	123	148	133	131	112½

SUGAR BEET INVESTIGATION

To determine the suitability of the district for sugar beet production, three varieties of beets were planted. The yield per acre was above the average. The beets were well formed and exceptionally large. The percentage of sugar was only fair, but the purity was high, and especially so considering the size of the beets.

Variety	Per cent dry matter	Yield per acre		Sugar in juice	Coefficient of purity	Average weight of one root	
		Green	Dry				
		tons	tons	p.c.	p.c.	lb.	oz.
Dieppe	22·17	10·08	2·23	17·73	89·56	3	7
Frederickson	20·65	12·48	2·58	16·49	87·80	3	13
Buszczynski	20·55	12·88	2·65	16·25	91·03	2	12

POULTRY

Poultry keeping, in all its branches, receives considerable attention on Vancouver Island, in fact greater attention than in many other parts of Canada. Of all the breeds the White Leghorn is the most popular, followed by White Wyandottes and Barred Rocks. Rhode Island Reds increase in popularity with the years. White Wyandottes only are kept at the station farm. Considerable work is done of an experimental nature covering incubation, breeding, feeding, housing, egg production and costs.

During 1927 the poultry plant was moved to a new location. One quarter of this area was given to the permanent laying houses. These houses have front and back yards, used in alternate years. The remaining part of the field is run in a three-year rotation, viz., roots, grain, hay. The chicks in all cases are reared on the sod. The straw arising on the grain area is used in the poultry department and the roots or kale used as green feed. In this way the chicks are run over the area once in three years, and the whole plant made as complete in itself as may be.

The Egg Laying Contest has been conducted at this Station as heretofore. Chicken-pox invaded the premises for the first time in 1926, and has come in with one or more pens of contest birds each year since. No doubt more or less of this will appear in all future contests, as this disease seems to be well distributed over the country and extremely contagious.

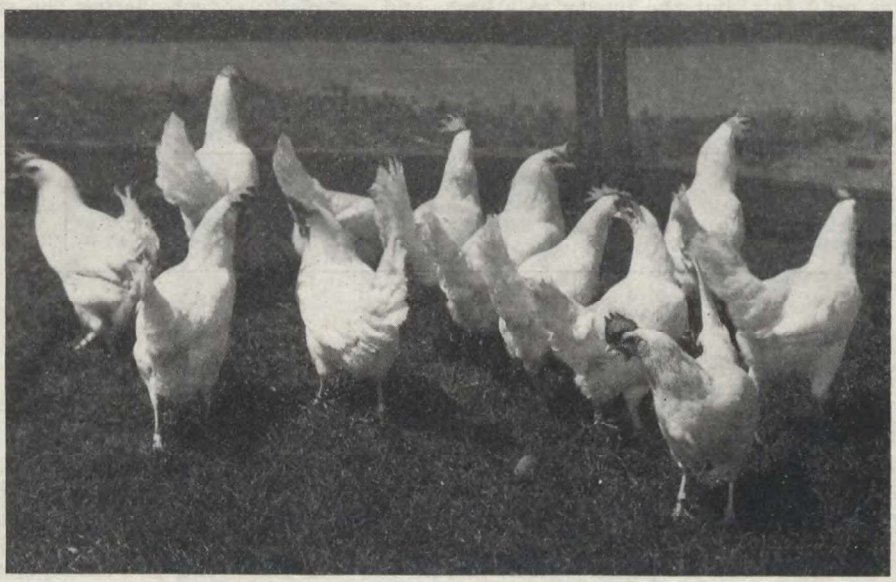
EGG LAYING CONTEST

The Contest has been carried on through its fifth year at this Station. The consistent behaviour of the heavy breeds was marked throughout. Of the thirty-four pens entered, fourteen were of heavy breeds, viz., Barred Rocks, Rhode Island Reds and White Wyandottes. Winter egg production has been in favour of the heavy breeds during 1927-28 contest as in previous contests. For the seventeenth period, ending February 27, 1928, the production by breeds was as follows:—

Rhode Island Reds	60·2	eggs per bird
Barred Rocks	52·3	"
White Wyandotte	52·0	"
White Leghorn	49·7	"

The duration of the contest has been reduced to fifty-one weeks, beginning November 1 and ending October 22, whereas previous contests have continued for the fifty-two weeks.

The Rhode Island Red entry of J. Burgess, Qualicum Beach, has been consistently good for a number of years, and in the last contest finished seven-tenths of a point behind the winning pen of Capt. O. G. Hunt, Victoria. Capt. Hunt's pen came into the contest nine days late. This late start however was overcome in the course of a few weeks, and during the latter part of the year this pen was challenging the leading pen constantly.



Pen of White Leghorns in the Vancouver Island Contest, 1928, owned by J. Smyth, Box 323, Nanaimo. Eggs, 2,273. Points, 2,523.3.

Since registration is the primary purpose of the contest, regulations are drawn up in such a way as to encourage breeders who are paying particular attention to egg size in their breeding flocks. Birds are scored on the size of egg as well as upon production, points being allotted as follows:—

27 ounce egg	1·3	points
26 "	1·2	"
25 "	1·1	"
24 "	1·0	"
23 "	·9	"
22 "	·8	"
21 "	·7	"
20 "	·6	"

Eggs weighing less than 20 ounces to the dozen are not allowed and eggs weighing 27 ounces to the dozen or over are scored as being 27-ounce eggs. In awarding position of merit, placing is decided upon points rather than on eggs.

The winning pens for the 1927-28 contest were:—

1. Capt. O. G. Hunt, R.R.4, Victoria..... R.I.R. 2528·4
2. J. Burgess, Qualicum Beach..... R.I.R. 2527·7
3. J. Smyth, Nanaimo, B.C..... W.L. 2523·3
4. W. A. B. Paul, Comox..... W.W. 2451·9
5. Baiss & O'Farrell, Cobble Hill..... W.L. 2417·7
6. R. B. Jeffery, Langford..... W.W. 2380·7

The following table gives contestants, production, birds registered and 2nd and 3rd generation birds in the 1927-28 contest:—

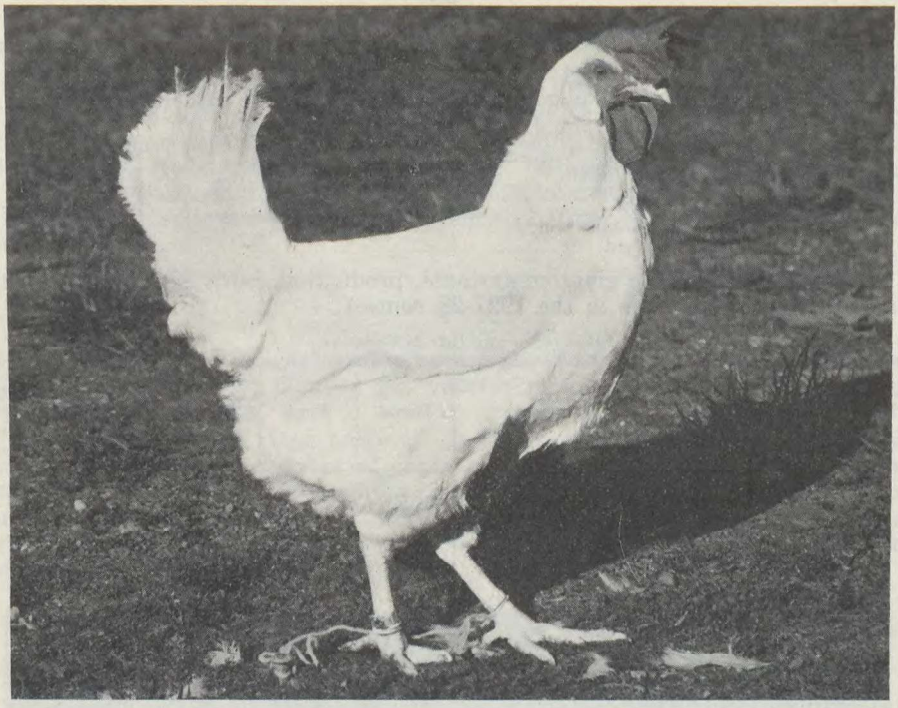
RESULT OF THE 1927-28 CONTEST

Place	Contestant and address	Breed	Eggs	Points	2nd and 3rd generation	Number of birds registered
1	O. G. Hunt, R.R. 4, Victoria, B.C.....	R.I.R.	2,145	2,528·4	—	6
2	J. Burgess, Qualicum Beach, B.C.....	R.I.R.	2,451	2,527·7	6	3
3	J. Smith, Box 323, Nanaimo, B.C.....	W.L.	2,273	2,523·3	—	8
4	W. A. B. Paul, Comox, B.C.....	W.W.	2,160	2,451·9	3	4
5	Baiss & O'Farrell, Cobble Hill, B.C....	W. L.	2,265	2,417·7	—	4
6	R. B. Jeffrey, Langford, B.C.....	W.W.	2,236	2,380·7	—	4
7	Experimental Farm, Agassiz, B.C.....	B.R.	2,170	2,368·1	6	8
8	R. E. Ault, Sandwick, B.C.....	W.L.	2,214	2,341·6	2	7
9	W. Bradley, Langford, B.C.....	W.L.	2,282	2,311·8	9	7
10	W. Robbins, Parksville, B.C.....	W.L.	2,134	2,309·9	10	7
11	J. Reade, Cowichan Station, B.C.....	W.W.	2,140	2,289·9	4	3
12	R. W. Tull, Duncan, B.C.....	W.L.	2,118	2,285·3	5	5
13	A. V. Lang, 7 Oaks P.O., Victoria, B.C.	W.L.	2,056	2,248·1	10	4
14	M. S. Stephens, Courtenay, B.C.....	B.R.	2,093	2,227·4	4	7
15	R. Mackenzie, 3159 Jackson St. Victoria.	W.L.	2,207	2,222·2	9	3
16	D. Edwards, Somenos, B.C.....	W.L.	1,952	2,199·7	—	1
17	A. Georgeson, Albert Head, B.C.....	W.L.	2,034	2,197·2	1	5
18	Miss E. Gwynne, Sidney, B.C.....	W.L.	2,133	2,159·1	2	4
19	N. E. Plaxton, R.R.3, Victoria, B.C....	W.L.	1,914	2,154·4	5	3
20	E. R. Nicholls, Calgary, Alberta.....	W.L.	1,965	2,152·7	—	2
21	Cooke & Mercer, Royal Oak, B.C.....	R.I.R.	1,782	2,128·1	6	1
22	Westwood Poultry Farm, Duncan, B.C..	W.L.	1,861	2,082·8	11	4
23	W. L. Douglas, Saanichton, B.C.....	W.L.	1,849	2,044·7	5	1
24	H. H. B. Cunningham, Shawnigan Lake, B.C.....	W.W.	2,064	2,044·5	8	2
25	A. Adams, Lake Hill, B.C.....	W.L.	1,780	1,939·5	5	2
26	A. D. McLean, Colwood, B.C.....	W.L.	1,863	1,927·7	5	1
27	T. Barclay, Metchosin, B.C.....	W.L.	2,020	1,921·4	—	2
28	Chaplin & Oswald, Salt Spring Island..	B.R.	1,870	1,919·8	3	1
29	C. G. Golding, Qualicum Beach, B.C..	B.R.	1,820	1,871·6	2	3
30	W. J. Gunn, Courtenay, B.C.....	W.L.	1,737	1,863·9	8	3
31	H. G. Scott, Port Washington, B.C.....	R.I.R.	1,939	1,748·5	—	2
32	J. C. Butterfield, Saanichton, B.C.....	W.L.	1,612	1,741·7	2	3
33	H. A. Gilroy, Chemainus, B.C.....	W.W.	1,698	1,719·6	6	—
34	Experimental Station, Sidney, B.C.....	W.W.	1,716	1,660·8	4	1

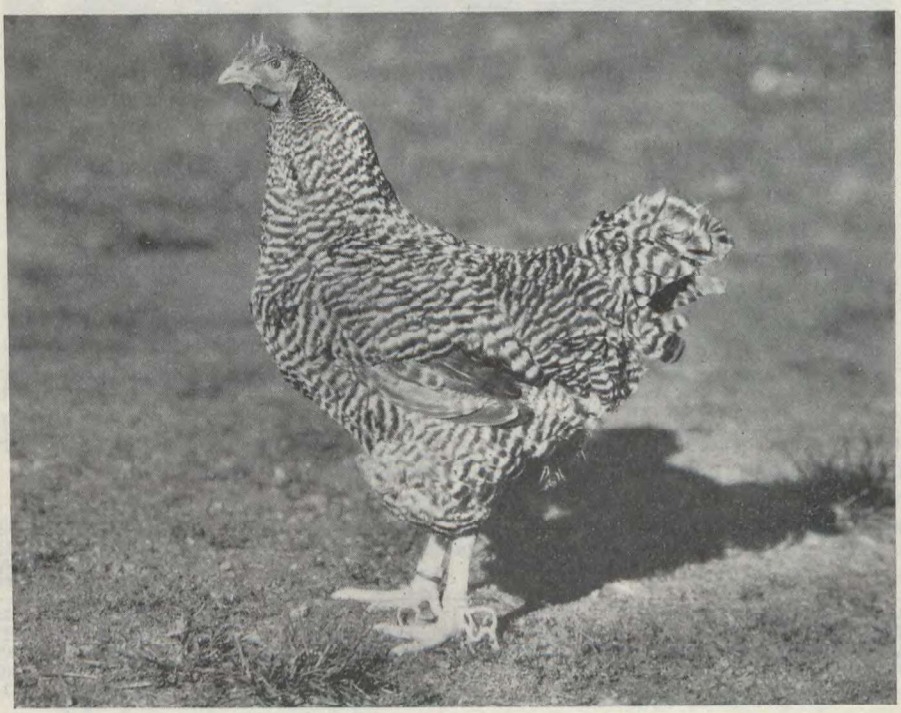
Ten birds constitute a pen with two spare birds, banded as such, and which are used in the event of casualties. These spare birds are eligible for registration whether used in the pen proper or not. In the foregoing table spare birds are considered in showing 2nd and 3rd generation and registered birds.

BREED AVERAGES

—	Eggs per bird	Points per bird
Rhode Island Red.....	207·9	223·3
White Leghorn.....	201·3	215·2
Barred Plymouth Rocks.....	198·8	209·6
White Wyandottes.....	200·2	209·1
All Breeds.....	201·6	214·4



Leading White Leghorn hen at the Vancouver Island Contest, 1928, owned by J. C. Butterfield, Saanichton, B.C. Eggs, 300. Points, 325.



Leading Barred Rock hen at the Vancouver Island Contest, 1928, owned by Chaplin and Oswald, Salt Springs, B.C. Eggs, 318. Points, 326.6.

HIGHEST BIRDS FOR EGGS

			Eggs
1. Pen 1.	Bird 3.	Owned by Chaplin & Oswald	318
2. Pen. 2.	Bird 1.	Owned by J. C. Butterfield	300
3. Pen 5.	Bird 1.	Owned by J. Burgess	292

HIGHEST BIRDS FOR POINTS

			Points
1. Pen 5.	Bird 1.	Owned by J. Burgess	347·7
2. Pen 1.	Bird 3.	Owned by Chaplin & Oswald	326·6
3. Pen 20.	Bird 1.	Owned by J. C. Butterfield	325·1

BREEDING

The breeding of poultry, like the breeding of live stock or the breeding of anything else, is beset with many difficulties. Selection of birds wholly from the standpoint of production, and line breeding same, no doubt will increase the production of the family for a number of years, but the danger of the birds deteriorating in type, size of egg, etc., is very great. Lastly, with egg production bred in them, birds, even though of the proper type, may miserably fail owing to lack of vigour, vitality, or such other term as would indicate lack of strength to carry on the high production bred in them. Pedigree and vitality both are important, but of the two vitality is more so, as poultrymen are fast finding out. The quality of excessive vigour and excessive high production combined in one bird is rare, but is found in individual cases. An outstanding case of production plus vigour was discovered in our male bird G 18 in 1922. Mated in 1923 G 18 proved our best bird. Records of his daughters' achievements follow: G 18 mated with F 234 gave H 2, H 23, H 214, H 218, with records of 225, 246, 202 and 193 eggs all well over 24 ounces to the dozen. Mated to E 604 four daughters with records of 202, 193, 242 and 265 eggs; to F 18 two daughters with 184 and 202 eggs; with E 801 two daughters with 305 and 195 eggs; with F 75 three daughters with 237, 178 and 288 eggs; with F 112 one daughter with 272 eggs; with E 963 one daughter with 220 eggs; with E 617 one daughter with 256 eggs. All these eggs averaged from 24 to 29 ounces to the dozen except one viz., 167, whose average egg weight was 23 ounces to the dozen. Mated in 1924 G 18 produced the following pullets:—

Dam	Dam's record	Dam's egg weight	Daughters	Record	Egg weight
E 963	241	25	I 651	238	24
E 963	241	25	I 721	245	23
E 963	241	25	I 725	180	25
F 112	263	24	I 743	163	24
F 112	263	24	I 748	162	26
F 161	218	24½	I 691	222	27
F 161	218	24½	I 710	220	24
E 604	210	25½	I 755	143	24

The son of a registered hen which had passed through the Ottawa contest was chosen to mate with some of G 18's best daughters. Results of this mating follow. This cockerel is here referred to as D 402.

D 402 MATED TO G 18's DAUGHTERS

Sire	Dam leg band number	Egg record	Egg weight	Leg band number	Daughters' egg record	Egg weight
D 402	A 322	256	26·7	K 131	203	24
D 402	A 322	256	26·7	K 276	252	25
D 402	A 322	256	26·7	H 214	214	24
D 402	B 291	264	26·2	K 46	228	24½
D 402	B 291	264	26·2	K 87	238	25
D 402	B 291	264	26·2	K 138	267	24
D 402	B 291	264	26·2	K 151	259	24
D 402	B 291	264	26·2	K 269	246	24
D 402	B 291	264	26·2	K 270	267	23
D 402	B 291	264	26·2	H 216	210	23
D 402	B 291	264	26·2	H 218	213	23
D 402	B 300	265	26·9	K 18	211	24
D 402	B 300	265	26·9	K 49	207	23
D 402	B 300	265	26·9	K 59	251	22½
D 402	B 300	265	26·9	K 111	222	25½
D 402	B 300	265	26·9	K 157	241	23
D 402	B 300	265	26·9	H 211	260	22

This mating produced 17 hens that laid over 200 eggs, and 6 that laid 250 or better, and two that laid 267 eggs. In other words A 322's daughters averaged 223 eggs, B 291's daughters 241 eggs, and B 300's daughters 232 eggs.

Intestinal parasites have robbed us of the full effect which we had hoped for from this family, but the blood lines still remain. G 18, through these blood lines, is still able to impress his progeny from the standpoint of type and production.

BREEDING FOR EGG SIZE

For a number of years an effort has been made to determine whether the factor "egg size" was carried by the male, female, or both. The procedure in this work was to mate male birds whose dam laid large eggs with hens laying small eggs. In previous years it has been difficult to draw conclusions, for egg size was up at one time and down at another, without apparent reason. In 1928 the male used had three generations of large eggs behind him. Results are more consistent, as will be noticed, with indication pointing to the male as the carrier of the unit character egg size.

BREEDING FOR EGG SIZE

Sire	Dam	Dam's record	Dam's egg weight	Daughters	Record	Egg size
K 51	E 445	185	25·7	L 428	213	25
				L 450	198	23
				L 469	190	25
				L 495	211	24
				L 536	208	26
	B 292	245	23·2	L 404	224	21
				L 515	215	26
				L 548	233	25
				L 633	220	24
	H 55	202	25	L 506	252	23
				L 517	197	25
				L 554	238	26
				L 564	201	23
				L 636	177	27
	E 442	205	23	L 418	187	27
				L 552	260	24
				L 692	202	25
				L 703	194	25

It has been noticed that pullets starting to lay while still very young, usually lay a very small egg and so continue. In 1928 L 469, L 536, L 515, L 636, L 418, L 692 and L 194 all took a rest after a few weeks' laying. Though laying small eggs during the first period, they were large during the second, and so continued until the end of the year. An outstanding case in point would be that of L 515. She started to lay eggs weighing 18 and 20 ounces. She rested thirty-one days. Her next eggs weighed 23 ounces. From then until the end of her pullet year, her eggs averaged 26 ounces to the dozen. Without the rest L 515 would probably have continued to lay small eggs.

BEST DATE FOR INCUBATION

The incubation of chicks on Vancouver Island begins in much earlier season than in many parts of Canada. The date fixed as the best time to incubate in Eastern Canada does not apply on the Pacific Coast. In an effort to determine the best date of incubation to secure maximum hatchability and livability this project was begun in 1922. In a general way it has been noticed, over the whole period, that late hatched chicks lack in vitality and mature slowly, as compared with those hatched in earlier season. The following table sets forth results obtained through the 1928 season:—

BEST DATE FOR INCUBATION

Time set	Total eggs set	Number fertile	% fertile	Number of chicks	% total eggs hatched	% fertile eggs hatched	Number of chicks alive at 3 weeks of age	% alive at 3 weeks of age	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
March	1,130	819	72·4	532	47	64·9	521	97·9	2·1	1·5	2·1
April	610	364	59·6	32(	52·4	87·9	290	90·6	1·9	1·1	2·1

It will be noticed that for 1928 chicks were brought off during March and April only. Results obtained in other years would indicate that during these months best results may be expected.

COST OF EGG PRODUCTION

Detailed statements of costs have been published year by year, determined month by month. The following table gives a summary of this work for eight years:—

—	1925	1927	Average for eight years
Average production per bird	199·1	196·8	190·14
Pounds of grain and mash per dozen eggs	5·16	5·3	5·81
Cost of feed per dozen eggs	18·8c.	14·2c.	18·2c
Month of highest cost	December	July	
Month of lowest cost	April	April	
Month of highest production	April	April	
Month of lowest production	January	January	

FOR 1928 THE FOLLOWING RESULTS WERE OBTAINED

Month	Average	Pounds of grain and mash per dozen eggs	Cost of grain and mash per dozen eggs
November	15·4	8·6	24·0
December	7·1	13·0	35·1
January	5·3	15·6	42·1
February	18·1	4·4	11·8
March	18·0	4·6	12·2
April	18·4	6·1	15·8
May	17·2	6·2	16·1
June	17·0	5·8	15·3
July	16·8	5·8	15·3
August	15·5	6·0	15·9
September	12·6	8·6	22·7
Average, 11 months	161·4	7·7	20·6

It will be noticed that the month of highest production was April, of lowest production January, of highest cost per dozen January, of lowest cost per dozen February.

Two factors influence cost per dozen of eggs, viz., price of feed and total production.

RELATION OF BODY WEIGHT TO EGG PRODUCTION

Fineness in Wyandottes was at one time looked upon as essential to egg production, but poultrymen are getting further from that with the years.

RELATION OF BODY WEIGHT TO EGG PRODUCTION

White Wyandottes	4·5–5·	5·0–5·5	5·6–6·0	6·1-up
	196	199	179	229
	157	199	243	181
	213	151	224	244
	163	192	169	246
	177	148	211	179
	205	178	208	214
	250	206	187	254
	189	218	187	232
	.....	245	154	271
	.....	235	162	256
	.....	176	143	206
	.....	184	245	210
	.....	174	220	263
	.....	189	249	245
	.....	.....	187	233
	.....	.....	214	254
	.....	.....	197	189
	.....	.....	201	177
	1,550	2,694	3,580	4,083
Average eggs	193·75	192·7	199·0	226·8

Greatest production was found, as always, in the heavier birds, white Wyandottes being the birds under consideration.

APIARY

Bees are kept at this station more for the sake of demonstration than as a commercial enterprise. The number of colonies varies from time to time, but the colonies kept in our apiaries, several of these at one time, have been drawn in.

Flowers are everywhere and continuous over a long period, but real honey plants are not in sufficient quantity to carry any great number of colonies. The winters are mild and the springs changeable, bringing about a considerable amount of spring dwindling. It is very easy, in a country like this, to overstock a given area. We are convinced that this locality will not maintain a 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 demonstration mainly.

The colonies at the Experimental Station, Sidney, are all run for extracted honey. All colonies are wintered outside in Kootenay cases. 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.

The mildness of the winter, in some respects, is a great drawback from the beekeeper's standpoint. It is quite impossible to keep the bees in the cluster for any length of time, for every bright day they fly and are chilled before they can return, due to climatic conditions.

The dearth of honey plants on the Saanich peninsula renders spring feeding imperative until the maple trees come into bloom, and from that time onward bees are able to maintain themselves until the time of white clover, when whatever surplus there 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 enough to maintain themselves. Feeding for winter is commenced about September, as October is often very damp and prevents the bees maturing the syrup fed to them, and unmatured stores will result in mildewed combs and loss of bees from dysentery during winter. In 1926 foul brood was discovered in the apiary for the first time. Every effort was made to clean up the difficulty, yet in 1927 a few cells containing diseased brood were found in one hive. Since that time foul brood has been discovered in several places on the Island, both American and European. Though not so common as on the mainland of British Columbia, we are satisfied that the malady is common enough. Beekeepers are advised to be on the look-out, for repeatedly foul brood has made its appearance in the most unlooked-for situations: Among possible sources of contagion may be mentioned discarded honey tins or jars, bee trees, cages that have been repeatedly used, as well as candy and syrup coming with bees purchased by the pound. The future demands greater care on the part of the apiarist if the various brood diseases are to be held in check. During 1928 foul brood was again discovered in two hives, not serious cases, for the difficulty was discovered before the disease had advanced far. The source of contagion is the problem. We are satisfied that the difficulty came to us in the first instance with package bees, but since that time, knowing the care that has been exercised at every step, some outside source of infection must be looked for, but has not been found.

GENERAL NOTES

BUILDINGS.—No new buildings were put up during 1928. Some work was done on the old buildings in the way of painting and repair, and minor changes made in the interests of economy in time and labour.

ROADS AND DRIVES.—The work in the park has been continued. The treed area has been hand dug, levelled and seeded, and is now an asset of real value, making an ideal place for the entertainment of our farm guests and picnic parties.

EXTENSION AND PUBLICITY.—The annual report is a feature of our work each year. This report covers, in some measure, all the activities of the farm. Every effort is made to have this placed in the hands of farmers and others directly concerned. Besides the report a news letter is published one or more times each year, in which some phase of our work is stressed, and given wide publicity at the right moment. This service in one highly appreciated, and might be extended. The press, as heretofore, has given us every consideration, both in the publishing of articles and favourable comment.

PICNICS.—Picnics and excursions have come to us from all over the Island, have been welcomed and entertained. Churches, Sunday schools, institutes, farmers' organizations of many kinds have used our grounds. It may surprise many that the agricultural class at the Victoria High School is the largest connected with any high school in Canada. This class, to the number of several hundred, spend one day at the farm each year, where the practical problems of the Station are put to the test. Demonstrations of cattle judging, communal life as demonstrated by the honey bee; the culture of bulbs; the handling of farm machines; the incubation and breeding of chicks, etc., are given by the farm officials—experts in their own line. This service has been much appreciated and enjoyed by all.

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