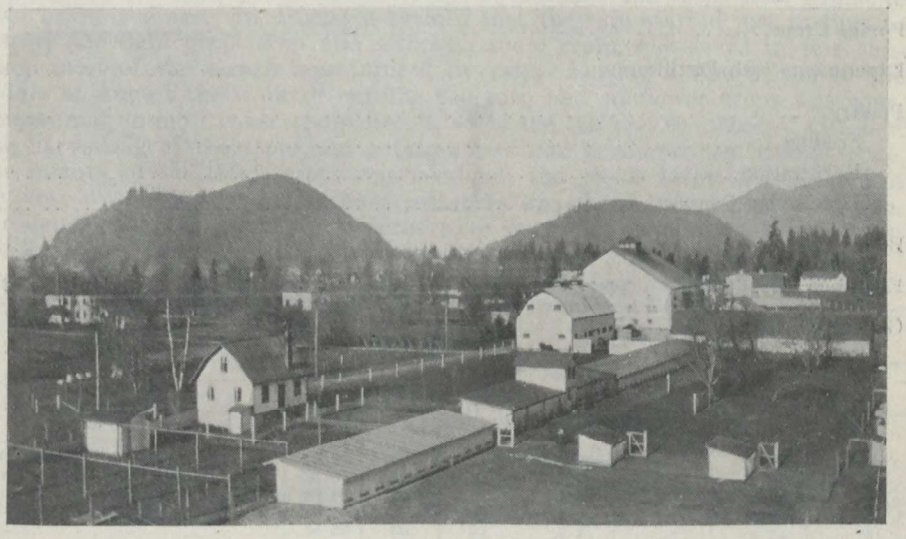
DOMINION OF CANADA
DEPARTMENT OF AGRICULTURE
DOMINION EXPERIMENTAL FARMS

EXPERIMENTAL FARM
AGASSIZ, B.C.

REPORT OF THE SUPERINTENDENT

W. H. HICKS, B.S.A.

FOR THE YEAR 1922



The Buildings, Agassiz Experimental Farm.

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

EXPERIMENTAL FARM, AGASSIZ, B.C.

Report of the Superintendent, W. H. HICKS, B.S.A.

SEASONAL NOTES

The year 1922 opened with very severe weather, producing rather more than the usual amount of high winds and consequent small precipitation right from the beginning of January well up to the end of March. February in particular was unusually cold. Frost remained in the ground almost continuously throughout this period but a small amount of ploughing was done late in March. The month of April and the first ten days of May were wet, the precipitation being well distributed, making it impossible to accomplish any great amount of work on the land, thus causing one of the most backward springs on record. The grass and trees were very late. From May 10 the weather was excellent and on May 30 a maximum temperature of 90 degrees was recorded. June weather was the warmest experienced for twenty-two years and beat all records for low precipitation. July was the driest for thirty years and quite hot. During the entire month the whole district was obscured in smoke from numerous forest fires. Had it not been for this smoke, the crops would have suffered very much from the drought and heat. From August 10 to the end of October, there was the usual amount of rain with dry periods interspersed. The weather during November was delightful, with only 2·23 inches of precipitation, the least ever recorded here. December, on the contrary, was exactly the reverse. The first snow to fall on the level arrived on the second and from then till the eighteenth very severe, windy weather prevailed. The balance of the month was wet and Christmas weather was delightful.

With weather conditions such as these, it was impossible to have bumper crops. With the late spring and the very dry summer the crops were bound to yield below average. In August it seemed that the rain started just in time to destroy the light grain crop and although some grain was saved in fair condition most of the cereals was injured by rain. During a fine period in the middle of August the work of ensiling the corn and sunflower crops was commenced and, in most cases, completed between the 5th and the 22nd of October. The harvesting of the roots and potatoes was also accomplished at that time. The quality of the latter crops was good but the yields below average. The hay crop was very light but in most instances was saved in excellent condition. Throughout the dry summer, pastures were poor but were revived in August and were good from then till the close of November.

METEOROLOGICAL RECORDS AT AGASSIZ, B.C., 1922

Month	Temperature F.			Precipitation			Sunshine
	Mean	Highest	Lowest	Rain	Snow	Total	
	°	°	°	Inches	Inches	Inches	Hours
January	32·16	45	11	3·26	18	5·06	75·0
February	31·35	52	14	2·76	18¼	4·01	88·7
March	39·93	59	27	5·93	10½	6·98	75·9
April	46·23	67	32	4·8	.....	4·8	103·8
May	54·36	90	31	4·74	.....	4·74	195·5
June	61·71	93	42	1·23	.....	1·23	211·6
July	64·19	90	45	0·02	.....	0·02	135·9
August	63·51	91	42	3·62	.....	3·62	124·9
September	58·6	84	41	5·07	.....	5·07	140·9
October	53·2	77	34	10·41	.....	10·41	115·4
November	41·1	56	28	2·23	.....	2·23	93·6
December	30·08	51	9	6·19	14	7·59	37·0
Totals	.....	.....	.....	50·26	55	55·76	1398·2

ANIMAL HUSBANDRY

DAIRY CATTLE

On December 31, 1922, the dairy herd numbered sixty-four head of pure-bred Holstein-Friesian cattle, as follows: Three mature bulls, one bull calf, twenty-three mature cows, nine three years old, five two years old, nine yearlings and fourteen heifer calves.

Owing to the fact that the grade cattle were disposed of and only pure-bred cattle were kept, the number of cows completing lactation periods during the year was decreased. Another fact influencing this point was that the herd had not recovered from the abortion disease. Except for this trouble, the health of the herd was excellent and another year was passed under the Accredited Herd scheme. Of the sixteen cows that finished a lactation period during the year, eleven, or almost seventy per cent, gave birth to heifer calves. The average production of these cows was 10,370 pounds of milk and 356 pounds of fat for an average lactation period of 322 days. Six of the sixteen records completed were made by two-year-old heifers.

DAIRY HERD RECORDS

The following list shows the performance of all cows finishing a lactation period during the year 1922. In this table feeds were charged at market value. Butterfat is computed at 55 cents per pound and skim-milk at 25 cents per one hundred pounds. All cows, except the last two listed, made a fair showing. No. 87 is a cow eleven years old and is of little value now as a milker, but she has been a breeder of such excellent merit that she will be retained in the herd as long as she will reproduce. No. 158, a two-year-old, seemed unable to produce milk, although she was a fine-looking and well-bred heifer.

COWS WHICH HAVE COMPLETED LACTATION PERIODS DURING 1922

Number of Cow	Number of Lactation Period	Number of days in Milk	Total amount of Milk produced	Average Yield of milk per day	Average percentage of Fat in Milk produced	Pounds of Fat for Period	Pounds of Butter for Period	Total amount of Meal consumed	Total amount of Roots and Silage consumed	Total amount of Hay consumed	Months on pasture at $2.00 per month	Total cost of Feed for Periods	Total value of Product	Profit on Product	Cost to produce 100 lbs. of milk	Cost to produce 1 lb. of Butter	Sex of Calf
			lbs.	lbs.				lbs.	lbs.	lbs.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	
70	5	365	20,399·0	55·88	3·68	751·00	938·75	6,472	34,193	1,941	4 90	250 52	458 95	208 43	1 22	26 68	F
145	1	365	15,179·0	41·59	3·28	498·00	622·50	5,383	27,131	622	2 41	191 44	308 05	116 61	1 26	30 75	M
151	1	305	14,016·0	45·95	3·25	456·00	570·00	4,809	24,795	940	2 05	170 15	282 34	112 19	1 21	29 85	M
93	4	343	11,714·0	34·15	3·72	435·92	544·90	4,684	24,089	901	7 94	158 05	266 11	108 06	1 34	29 00	F
153	1	438	12,573·6	28·70	3·47	436·33	545·41	5,169	25,019	937	5 70	166 75	268 27	101 52	1 32	30 57	F
137	2	365	13,712·0	37·56	3·48	478·00	597·50	6,521	31,626	1,864	1 00	230 31	293 75	63 44	1 68	38 54	F
139	2	242	7,851·1	32·44	3·44	270·35	337·93	3,071	18,134	829	3 10	110 86	166 35	55 49	1 41	32 80	M
143	2	269	8,411·3	31·26	3·35	281·82	352·27	3,682	19,826	814	4 43	124 49	173 92	49 43	1 48	35 53	F
56	5	316	9,599·5	33·77	3·63	348·93	436·16	4,453	26,152	538	11 28	169 10	213 39	44 29	1 76	38 77	M
95	3	445	9.972·6	22·41	3·43	341 08	426·35	5,137	25,574	904	10 88	170 90	210 03	39 13	1 71	40 08	F
127	2	319	7,829·0	24·54	3·50	273·96	342·45	3,948	19,904	844	6 56	129 36	168 10	38 74	1 65	37 77	F
149	1	365	12,193·0	33·40	3·03	370·00	462·50	5,682	28,706	765	2 75	193 27	230 93	37 66	1 58	41 76	M
154	1	303	8,034·7	26·51	3·56	286·37	357·96	4,423	25,632	696	3 00	157 95	175 58	17 63	1 96	44 12	F
138	2	197	4,377·5	22·22	3·38	148·23	185·29	2,136	14,515	889	.....	79 95	91 37	11 42	1 82	43 14	F
87	11	296	4,849·1	16·38	3·27	158·92	198·65	3,118	20,004	877	4 86	116 98	98 31	−18 67	2 41	58 88	F
158	1	230	5,218·7	22·69	3·20	167·09	208·86	3,603	11,819	1,249	2 00	123 04	103 64	−19 40	2 35	58 91	F

COMPARISON OF THE PERFORMANCE OF THE BEST AND POOREST COW AND THE FIVE MOST PROFITABLE AND FIVE LEAST PROFITABLE COWS

	Most profitable cow	Least profitable cow	Average fivs most profitable cows	Average five least profitable cows
Duration of lactation period..... days	365·0	230·0	363·2	278·2
Yield of milk..... lbs.	20399·0	5218·7	14776·32	6934·6
Yield of butterfat..... lbs.	751·0	167·09	515·45	226·12
Cost of food consumed..... $	250·52	123·04	187·38	134·24
Profit over food consumed..... $	208·43	−19·40	129·36	5·73

LIST OF RECORDS COMPLETED BY COWS IN THE CANADIAN RECORD OF PERFORMANCE DURING THE YEAR 1922

Name	Age at start of test	Month starting test	Duration of test	Amount of milk	Amount of fat	Per cent of fat
	years days		days	lbs.	lbs.	
Agassiz Priscilla Korndyke	6	July, 1921..	365	20,399	751	3·68
Agassiz Pietje Inka Sylvia..	2 105	Feb. 1921..	365	15,179	498	3·28
Agassiz Walula Canary.....	2 107	July 1921..	305	14,016	456	3·25
Agassiz Sylvia Mechthilde	3 167	Oct. 1921..	365	13,712	478	3·48
Agassiz Ottile Inka Sylvia..	2 170	Aug. 1921..	365	12,193	370	3·03

LIST OF RECORDS COMPLETED BY COWS IN THE HERD IN RECORD OF MERIT DURING THE YEAR 1922

Name	Duration of test	Age of cow	Milk	Fat	Butter
	days	y.m.d.	lbs.	lbs.	lbs.
Agassiz Segis May Echo.....	7	5 10 11	798·4	29·32	36·65
Agassiz Segis May Echo.....	30	5 10 11	2887·1	111·96	139·96
Agassiz Mechthilde Sylvia.....	7	3 3 23	497·6	18·88	23·60
Agassiz Mechthilde Sylvia.....	7	4 2 24	707·3	21·76	27·21
Walula Artis.....	7	6 6 28	654·2	21·25	26·57
Agassiz B.C. Mechthilde.....	7	4 5 10	439·1	12·71	15·90
Agassiz Aurora Faforit.....	7	2 3 27	347·3	12·61	15·77
Agassiz Pietje Inka Sylvia.....	7	2 3 11	317·8	10·19	12·75
Agassiz Pietje Inka Sylvia (8 months after calving).....	7	2 3 11	319·0	10·14	12·68
Agassiz Lulu Sylvia Dekol.....	7	2 4 19	293·6	10·33	12·92
Agassiz Inka Lina.....	7	2 4 17	321·6	9·98	12·48
Agassiz Aurora Ormsby.....	7	2 2 15	292·0	9·48	11·85

SUNFLOWER SILAGE VERSUS CLOVER SILAGE

This experiment was conducted during the months of January and February. The cows were fed twelve pounds of grain per cow per day throughout the experiment, the mixture being four parts crushed oats, four parts bran, one part oil meal and one part corn meal, costing 1·575 cents per pound. They were also fed twenty pounds of mangels, five pounds of clover hay and forty-five pounds of ensilage per day.

		Sunflower silage	Clover silage
Number of cows in experiment		4	4
Total milk produced by all cows	lbs.	627·75	641·9
Amount of milk produced per cow per day	"	22·42	22·92
Percentage of fat in milk produced	"	3·65	3·81
Amount of fat produced per cow per day	"	0·8183	0·8732
Sunflower silage consumed per 100 pounds milk produced	"	201·414	.....
Clover silage consumed per 100 pounds milk produced	"	.....	267·17
Sunflower silage consumed per 1 pound fat produced	"	55·144	.....
Clover silage consumed per 1 pound fat produced	"	.....	70·111
Grain consumed per 100 pounds milk produced	"	53·71	52·344
Grain consumed per 1 pound fat produced	"	14·704	13·736
Roots consumed per 100 pounds milk produced	"	89·577	87·241
Roots consumed per 1 pound fat produced	"	24·736	22·893
Total cost of food	$	11·240	12·380
Cost to produce 100 pounds milk	$	1·790	1·920
Cost to produce 1 pound fat	c.	49·185	50·610
Cost to produce 1 pound butter	c.	39·345	40·488

The results obtained are slightly in favour of the sunflower silage in economical production. Although the cows gave more milk and tested better when the clover was fed, they ate less sunflowers and charging each silage at five dollars per ton, this made a difference of just over one cent per pound for butter in favour of sunflowers.

DRIED BEET PULP VERSUS MANGELS

Dried beet pulp is the by-product from beet sugar refineries. It is recognized as an excellent succulent feed for dairy cattle and is widely fed by dairymen in the United States. It is somewhat expensive here, costing in carload lots from forty to fifty dollars per ton; it is brought in from the State of Washington. The cost prohibits the use of this product in a regular commercial herd, particularly where roots and silage are obtainable, but beet pulp is valuable in cow testing work.

A comparison of beet pulp with mangels was obtained by feeding two cows for three periods of two weeks each. The cows were fed twelve pounds per day of a grain ration composed of four parts bran, four parts oat chop, one part oilcake and one part corn meal. They were also fed sixty pounds of clover silage per cow per day and five pounds of mixed hay. During the mangel period pulped mangels were fed at the rate of fifteen pounds per day and charged at $5 per ton. In comparison, the beet pulp was fed at the rate of six pounds (dry weight) per day and cost $44 per ton. Thus the difference in cost of these two feeds was considerable, in favour of the mangels.

DRIED BEET PULP VS. MANGELS

		Mangels	Beet Pulp
Number of cows in experiment		2	2
Total milk produced by all cows	lbs.	1119·95	1168·5
Amount of milk produced per cow per day	"	39·99	41·73
Percentage of fat in milk produced	"	3·39	3·46
Amount of fat produced per cow per day	"	1·355	1·443
Grain consumed per 100 pounds milk produced	"	30·1	28·754
Grain consumed per 1 pound fat produced	"	8·902	8·302
Silage consumed per 100 pounds milk produced	"	150·503	143·774
Silage consumed per 1 pound fat produced	"	44·513	41·512
Hay consumed per 100 pounds milk produced	"	12·541	11·981
Hay consumed per 1 pound fat produced	"	3·709	3·459
Mangels consumed per 100 pounds milk produced	"	78·36	.....
Mangels consumed per 1 pound fat produced	"	23·665	.....
Beet pulp consumed per 100 pounds milk produced	"	.....	14·377
Beet pulp consumed per 1 pound fat produced	"	.....	4·151
Total cost of feed	$	13·02	14·58
Cost to produce 100 pounds milk	c.	117·19	124·69
Cost to produce 1 pound fat	c.	34·78	35·77
Cost to produce 1 pound butter	c.	27·824	28·616

The results show that the cows produced more milk when fed six pounds of beet pulp per day than when fed fifteen pounds of mangels. There was not sufficient difference, however, to pay for the extra cost of the beet pulp. One hundred pounds of milk cost 7½ cents more and a pound of butter ·792 cents more when the beet pulp was fed. Thus the mangels produced most economically with the prices as charged and the amounts fed. Probably a more just comparison could be made by feeding between fifty and sixty pounds of roots per day and thus bringing the daily total cost of feed to about the same in each instance. The cows fed that amount of mangels would certainly increase their production.

PEANUT MEAL VERSUS CORN MEAL

Peanut meal, a by-product from a peanut factory, was placed on the market in limited quantities and recommended as an economical addition to the grain ration for dairy cows. To get some data on the value of this feed an equal quantity of it was substituted for the corn meal in a ration composed of four parts oat chop, three parts bran, one part oil meal and one part corn meal. Twelve cows were experimentally fed these two rations during three periods of two weeks each. The cows were kept in the barn during the day and fed forty pounds of clover silage per cow daily. They were pastured by night. Twelve pounds of concentrates in two feeds daily per cow were also fed. The peanut meal cost $32 per ton and the corn meal $43. The grain mixture containing the peanut meal cost 1·72 cents per pound and the other grain ration 1·784 cents per pound.

PEANUT MEAL VS. CORN MEAL

		Peanut Meal	Corn Meal
Number of cows in experiment		12	12
Total milk produced by all cows	lbs.	2288·1	2338·9
Amount of milk produced per cow per day	"	27·24	27·84
Percentage of fat in milk produced	"	3·4	3·42
Amount of fat produced per cow per day	"	0·924	0·952
Grain consumed per 100 pounds milk produced	"	44·1986	43·097
Grain consumed per 1 pound fat produced	"	13·021	12·6014
Silage consumed per 100 pounds milk produced	"	147·24	143·65
Silage consumed per 1 pound fat produced	"	43·4167	42·0047
Pasturage consumed per 100 pounds milk produced	"	12·2775	11·9714
Pasturage consumed per 1 pound fat produced	"	3·1643	3·5
Total cost of feed	$	28·54	29·18
Cost to produce 100 pounds milk	c.	125·1411	124·7595
Cost to produce 1 pound fat	c.	36·875	36·479
Cost to produce 1 pound butter	c.	29·495	29·1832

The cows, while being fed the corn meal ration, produced over half a pound of milk per cow per day more than when fed the peanut meal ration and also tested slightly better. Owing to the difference in the cost of the two meals, the actual cost of a pound of butter produced was only slightly in favour of the corn meal, i.e., just under a third of a cent.

SUNFLOWER SILAGE VS. CORN SILAGE

		Sunflower Silage	Corn Silage
Number of cows in experiment		10	10
Total milk produced by all cows	lbs.	1653·4	1829·8
Amount of milk produced per cow per day	"	23·62	26·14
Percentage of fat in milk produced	"	3·33	3·18
Amount of fat produced per cow per day	"	0·7869	0·8329
Grain consumed per 100 pounds milk produced	"	50·927	45·906
Grain consumed per 1 pound fat produced	"	15·254	14·407
Silage consumed per 100 pounds milk produced	"	198·936	191·27
Silage consumed per 1 pound fat produced	"	59·587	60·029
Roots consumed per 100 pounds milk produced	"	79·574	76·511
Roots consumed per 1 pound fat produced	"	23·834	24·011
Hay consumed per 100 pounds milk produced	"	39·786	38·255
Hay consumed per 1 pound fat produced	"	11·914	12·005
Total cost of feed	$	30·85	32·06
Cost to produce 100 pounds milk	c.	187·05	175·21
Cost to produce 1 pound fat	c.	56·02	54·98
Cost to produce 1 pound butter	c.	44·82	43·98

In this test the roughage fed consisted of a mixture of 500 pounds of silage, 200 pounds pulped mangels and 100 pounds of cut mixed hay. These feeds were mixed together the day previous to being fed, and fed at the rate of 75 pounds per cow per day in the case of the sunflower mixture and 80 pounds of the corn silage mixture. The grain ration fed was four parts oats, four parts bran, one part oil cake meal and one part corn meal. Each cow got 12 pounds of concentrates daily, which cost 1·525 cents per pound.

From the above figures it will be noted that the cows produced two and one-half pounds of milk more daily when fed the corn silage but the milk did not test so well as when the sunflower silage was fed. Owing to the fact that the cows would not eat as much of the sunflower mixture as of the corn, the cost of production is lessened somewhat. Nevertheless, one hundred pounds of milk cost 11·84 cents less and a pound of butter ·84 cents less, when corn silage was fed.

CONTAGIOUS ABORTION

Gradually recovery from abortion appears to be taking place in the herd. Twenty-six cows freshened during the year and only seven, or twenty-seven per cent, aborted. Very few afterbirths were retained and the cows cleaned up rapidly. Good, sanitary methods were employed and the aborters were isolated till all discharge ceased. The greatest difficulty appeared to be in getting the cows in calf. A large percentage of the females were bred several times before they eventually held and there are a few cows in the herd that must soon be classed as sterile if improvement is not forthcoming soon.

Of the twenty-two cows referred to in the previous report as "having been vaccinated," two of the three that were seven months pregnant and apparently normal, aborted; while both of the young heifers reported as "just bred" had normal calvings. Thus, of seventeen left after five were sold, four were sterile, four aborted, and nine were normal, or just over fifty per cent were healthy. At the time of vaccination, three of the aborters, three of the sterile cows and four that calved normally reacted to the blood test. Two others of the latter class were not blood tested. These results do not coincide with the opinion that the blood test is entirely reliable.

On May 23, 1922, the following cows were blood tested, by the agglutination method, just previous to vaccination with the Health of Animals Branch vaccine—86, 157, 158, 159, 173, 175, 176, 177, 178, 179; only numbers 86 and 158 showed a reaction. The last six listed were virgin heifers and the others were milking. At date of writing, the last three heifers and No. 159 had not been bred, No. 86 was four months pregnant but nothing definite could be stated regarding the pregnancy of the remainder.

DAIRY

STILTON CHEESE

Stilton cheese was made from February 1st to the middle of May and was sold during the autumn and for the Christmas market at fifty cents per pound. A slight variation was made in the method of manufacture. No artificial starter was used, but greater opportunity was given for spontaneous formation of acidity during the first twenty-four hours. These Stiltons averaged a higher quality than formerly, with a better growth of blue vein, and the improvement seems to be attributable to the above change.

AGASSIZ WENSLEYDALE CHEESE

The manufacture of Agassiz Wensleydale cheese in limited quantities was continued. All manufactured was sold readily at a remunerative figure.

CREAM CHEESE

Cream cheese was manufactured regularly, approximately six dozen being marketed weekly.

CHESHIRE CHEESE

Cheshire is a variety which had not previously been tried here. It is a medium-ripening cheese, maturing in summer in from five to six weeks and in colder weather requiring a week longer. The size made here averages six pounds when ready for market, but there is no standard size, as in the case of Stilton, and this point would be regulated by the requirements of the market to be served. It would not, however, be advisable to make anything weighing less than five pounds when ripe. This cheese is usually coloured.

Points of a good Cheshire cheese—

Texture, open and loose.
Flavour, mild and rich.
Proportions similar to those of a small cheddar (rather taller than wide).
Shape, straight sides, neither contracting nor bulging.
Coat, smooth and free from cracks.

The cheese should be firm, but, owing to the characteristic open texture, will be more pliant than a cheddar.

It finds a market locally and also in Vancouver at about 35 cents per pound. Eighty-five pounds of milk testing 3·5 per cent will make a seven-pound mature cheese; this figures out at over 82 cents per pound butterfat.

Starter sufficient to give an acidity of ·19 to ·2 at time of rennetting is satisfactory. The quantity used here for 85 pounds of milk is four to six drams according to conditions. Heat the milk to 86°F., adding enough commercial rennet to coagulate in ninety minutes; nine c.c. is usually required. When the coagulum is formed, cut with cheddar knives, using both the vertical and horizontal, lengthwise and across the vat cuts. The acidity in the whey at this stage should be ·13 to ·15. Stir then for ten minutes and gradually raise the temperature to 90°, stirring continually until the curd is firm. Allow the curd to pitch, which will take from one-half to three-quarters of an hour. When the acidity in the whey reaches from ·17 to ·19, the whey may be drawn. Roll the mass of curd up to the end of the vat and put in a draining rack to hold it in place while the whey is run off. Cut the curd into large squares and remove to a draining rack. The curd must be kept warm while draining; the temperature varies according to conditions, from 74° to 88°. An average of 80° gives good results. The curd is cut twice again into cubes and turned. When ready for vatting it will be free from visible whey but not as tough as cheddar curd. If the quantity to be dealt with is large, it may be ground in a curd mill, but, where possible, it is advisable to break it by hand, this avoiding the loss of fat sometimes caused by machine milling.

For a cheese such as described, salt at the rate of one ounce to three pounds of curd is added, after milling, and mixed in. The hoop used here measures nine and one-half inches deep and seven inches in diameter. It is lined with a cheese cloth bandage and the curd is put in loosely; the form will probably be quite full. The temperature of the curd when milling and vatting should not be higher than 74° or there will be loss of fat. If necessary, allow it to cool to that degree before milling. After vatting, the cheese is left to drain at a temperature of 80°. No pressure is put on Cheshire cheese for the first twenty-four hours in order to ensure the correct texture. Turn the cheese the same evening and keep up the temperature till ready for the press. The pressure necessary for a seven-pound cheese will be, for the first day in press, 250 pounds, and for the second, 350 pounds. After removing from the press, the cheese should be well rubbed with lard and bandaged, but no caps are put on a Cheshire. When the coat is dry, the cheese is taken to the curing room and turned daily till ready for market.

MILK TESTING

Milk testing consisted of the weekly test for each cow in the herd; testing of samples for such farmers as cared to submit them; and the supervision of seven and thirty-day Record of Merit tests.

HORSES

The horses on hand December 31, 1922, total nineteen head. They consist of seven mature mares, one three-year-old filly, one two-year-old gelding, one

yearling stallion, one yearling filly, three horse foals, all pure-bred Clydesdales; also two grade geldings, one grade mare, one horse foal and one driver. The grade mare and the five pure-bred mares are in foal. From the five mares that were in foal last year four good colts were reared; they averaged in weight on December 31, 1922, 794 pounds. The fifth mare lost her colt at time of foaling by smothering.

RECORDS OF FEED AND LABOUR FROM JANUARY 1, 1922, TO DECEMBER 31, 1922

	Date of birth	Oats consumed	Bran consumed	Hay consumed	Roots consumed	Pasture at $2 per month	Total cost of feed	Hours labour performed	Weight Dec. 31, 1921	Weight Dec. 31, 1922
		lbs.	lbs.	lbs.	lbs.	$ c.	$ c.		lbs.	lbs.
Pete	May, 1915	3,471	422	5,278	663	70	118 63	1,995	1,660	1,760
Paul	May, 1915	3,549	368	5,124	886	70	118 21	2,450	1,560	1,650
Lorne	May, 1913	1,876	436	4,198	1,034	5 46	84 43	1,000	1,800	1,850
Nellie	May, 1911	2,259	480	5,044	1,076	1 45	98 34	1,730	1,720	1,790
Melita	June, 1909	3,349	457	5,110	1,006	70	116 18	2,050	1,750	1,730
Madge	June, 1915	437	337	2,658	644	12 00	51 00	375	1,585	1,730
Bell	June, 1916	3,034	474	5,166	1,076	1 00	112 22	1,786	1,565	1,720
Heather	June, 1918	1,887	618	4,589	999	13 50	99 25	.....	1,616	1,730
Diana	May, 1918	675	331	2,756	665	13 65	57 41	425	1,620	1,690
Princess Melita	Aug., 1918	3,333	457	5,128	1,055	70	116 13	2,065	1,500	1,530
Melita Pride	Aug., 1919	1,656	611	3,833	900	11 00	84 02	.....	1,545	1,750
Scotty	May, 1920	877	450	2,724	524	15 00	62 54	.....	1,360	1,730
Topline Buchlyvie	June, 1921	1,765	485	2,620	376	11 00	72 72	.....	700	1,335
Topline Chosen	May, 1921	1,220	464	2,354	417	11 00	60 14	.....	835	1,320

These figures show a cost of from sixty to seventy dollars for feeding a yearling or a two-year-old for a year. Melita Pride was not broken to harness but was exhibited at two fairs, which put her cost of keep high. Madge and Diana were late in foaling; they worked all spring and were in the barn very little from then till the end of the year as they are being wintered outside. Heather raised an early colt and so was not worked before foaling, neither was she worked after weaning the colt as she was fitted for the shows. Lorne (the grade mare) worked until foaling time in the spring; the foal was weaned early, and the mare again worked regularly. The other six horses did most of the heavy work, Paul doing 2,450 hours in the year . In his case the feed cost of one hour's work was a little less than five cents. The average feed cost per hour's work done by the six horses, that each worked over seventeen hundred hours during the year, was over five and one-half cents.

SHEEP

The flock at the close of the year 1922 numbered three pure-bred Dorset rams, sixty pure-bred Dorset breeding ewes, thirty grade Dorset ewes and eleven grade Oxford ewes, making a total of one hundred and one breeding sheep. They were in good condition, a large number of the ewes being due to lamb early in the new year. Excellent pasture was available during the early part of the season, but the summer was dry and pasture rather bare. During the fall, rains freshened the pastures and they were excellent to the end of November. Owing to the bad weather, the sheep were fed practically all of December.

The lambing results for the past year were the least successful for some time. Trouble occurred from goitre, while scours, rheumatism and general weakness were more prevalent than usual. Fifty ewes gave birth to seventy-five lambs; three were born dead, eleven died and sixty-one, or 122 per cent, were raised.

Owing to the grading experimental work undertaken here with Dorset and Oxford rams, four different classes of lambs were raised, and the following information is available:—

STATEMENT OF LAMBS RAISED

Lot No.	Description of Lambs	Number of lambs	Average weight at birth	Average age	Average weights	Average daily gain per lamb
			lbs.	days	lbs.	lbs.
1	Second Cross Oxfords	6	9·63	74·5	61·83	0·700
2	Pure Bred Dorsets	25	8·07	84·4	66·0	0·686
3	Dorset-Oxford Cross	10	8·65	85·8	67·2	0·682
4	Third Cross Dorsets	20	7·68	76·65	59·25	0·673

Lot No. 1 are lambs resulting from two crosses of pure-bred Oxford rams on the old foundation ewes. These lambs were large at birth and vigorous growers. The pure-bred Dorsets in lot No. 2 averaged a good weight at birth and made rapid gains. Lot No. 3 lambs had pure-bred Dorset ewes for dams and were sired by a pure-bred Oxford ram. Lot No. 4 were the lightest at birth and made the poorest gains.

BREEDING EWE LAMBS VERSUS BREEDING AS SHEARLINGS

Some work was started with the object in view of getting some information regarding the advisability of breeding Dorset ewe lambs or of holding them over and not breeding until they were shearlings. Ewe lamb No. 290, born February 10, 1920, was bred when eight months old, at a weight of 100 pounds. The spring of 1921 she produced 9·9 pounds of wool and, in 1922, 7·7 pounds. Her weight in November, 1922, when thirty-three months old, was 181 pounds as compared to 194 pounds, the average weight of fourteen ewes the same age that had not been bred as lambs. The ewe lamb from No. 290, which was born March, 1921, weighed 119 pounds when eight months old and when twenty months old weighed 183 pounds, as compared to 178 pounds, the average weight of five shearlings the same age.

Following up this work, five lambs were bred in the autumn of 1921 and compared with five unbred lambs with results as shown.

BREEDING EWE LAMBS VS. BREEDING AS SHEARLINGS

Number of lamb	Ewe Lambs Bred Autumn, 1921						Ewe Lambs Not Bred				
	Date of birth, 1921	Date of breeding, 1921	Weight Nov. 1, 1921	Yield wool, 1921	Weight Nov. 1, 1922	Number of lambs raised	Number of lamb	Date of birth, 1921	Weight Nov. 1, 1921	Yield wool, 1921	Weight Nov. 1, 1922
			lbs.	lbs.	lbs.				lbs.	lbs.	lbs.
337	Jan.	Nov.	130	8·6	154	1	349	Jan.	140	10·2	190
340	"	"	111	8·6	152	died	353	"	126	11·7	177
347	"	"	142	9·1	165	2	358	"	120	21·7	156
348	"	Aug.	125	8·5	158	1	360	"	129	7·9	182
367	"	Nov.	141	8·3	180	1	377	March	119	9·5	183
Average			129·8	8·62	161·8				126·8	10·4	177·6

The ewes that were bred raised five lambs, three of which were sold at Easter time for $27.90. The remaining two ewe lambs averaged 112 pounds in weight November 1, 1922. The unbred ewes averaged 1·78 pounds more wool

in 1921 and weighed an average of 15·8 pounds more in November, 1922, than the group that were bred as lambs.

EARLY VERSUS LATE SHEARING

In order to get some information regarding the difference in the wool yields when shearing early and late, some mature ewes were shorn in February when pregnant, while others were shorn in May after lambing. The same treatment was given the unbred shearlings, with the following results:—

Description of ewes	Number of ewes	Date shorn, 1922	Average weight per fleece
			lbs.
Mature ewes that had lambed in March or April	10	May 20	8·77
Mature pregnant ewes	4	Feb.	7·35
Shearlings	15	May 20	10·43
Shearlings	3	Feb.	8·6

This shows the May shorn mature ewes producing an average of 1·42 pounds and the shearlings 1·83 pounds more than the February shorn sheep.

Another point of interest in connection with wool yields is the fact that there was no difference in the yield from ewes lambing in December and January and being dried at Easter, from those that continued to suckle their lambs up to shearing time in May. Each group averaged 8·6 pounds per fleece.

WOOL YIELDS FROM DIFFERENT GROUPS OF SHEEP

The grading work with the pure-bred Dorset and Oxford rams is being continued. Below are given the 1922 wool yields of the Dorset ewes and the different crosses:—

SHEARLINGS

Description	Number of ewes	Average weight per fleece
		lbs.
Pure-bred Dorsets	8	10·0
Dorset Third Cross	5	10·54
Oxford Second Cross	2	11·25

[MATURE EWES

Pure-bred Dorsets	34	7·85
Dorset Second Cross	17	8·85
Dorset Third Cross	1	11·70
Oxford First Cross	6	9·98

These results show both the Dorset and Oxford grades as shearlings and mature ewes giving better yields of wool than the pure-bred Dorsets.

CO-OPERATIVE WOOL SELLING

The 1922 wool clip was 86 fleeces, 680 pounds, or an average of 7·9 pounds per fleece. It was sold through the Canadian Wool Growers.

Grade	Pounds	Value	Amount
		cts.	$ cts.
Medium clothing	10	26	2 60
Low medium staple	613	22½	137 93
Low staple	57	19	10 83
Total	680	.....	151 36

Of this amount it cost $43.35 for selling, grading, sacks, freight ,etc., leaving $108.01 net for 680 pounds of wool or almost 16 cents per pound or just over $1.25 per sheep.

All the ewes in the flock that would breed were bred to lamb from late in December on. The result was that on April 10 there were thirty-five lambs weighing 2,385 pounds sold for the Easter market for $405.45, an average weight of over 68 pounds bringing over $11.58 per lamb. Although this was an excellent price to obtain for young lambs, owing to the long winter feeding period they were the least profitable group of lambs turned off from here for the Easter trade.

SWINE

There were fifty-eight pure-bred Yorkshire swine on this Farm on December 31, 1922. They consisted of the following: Two aged boars, eight brood sows, three bred gilts, three fat, aged, cull sows and forty-two experimental feeders.

The demand for young breeding stock during the year was as good as usual, but owing to certain experimental work carried on, the supply was of necessity limited.

The question often being asked as to when a young sow may be bred for her first time, it was decided to make a comparison of two methods of procedure, either of which has its good features, the purpose being ultimately to form an idea as to which method left the respective sows in better physical development on attaining maturity.

Six young sows were selected, three of which were bred at eight months of age so as to farrow when about one year old. These sows were given six months rest and bred the second time so as to have second litters at two years of age. The other three sows were bred for the first time six months later than the first lot, farrowing therefore at one and one-half years of age. At a later stage, for a further comparison, a third group of sows was selected, to farrow for the first time at one year old and to have second litters at a year and one-half. After all sows have had second litters, they will be bred to have two litters yearly thereafter.

BREEDING EXPERIMENT WITH SWINE

Lot No.	Numbers of Sows in Group	Farrowing ages	Average weight Dec. 31, 1922
		months	lbs.
1	1, 5, 40	12, 24, 30	580
2	3, 10, 50	18, 24, 30	450
3	51, 55 (dead)	12, 18	475

The six sows in the first two lots were farrowed the spring of 1920. They are all sired by the same boar and most of their dams are also related. At time of weighing, lot No. 1 had a slight advantage in condition, but, nevertheless, in equal condition they are larger sows than lot No. 2. All except sow No. 5 were due to farrow in March, 1923. The difference in size in these lots is not entirely due to the different dates of breeding, although some of it no doubt is. It is regrettable that sow No. 55 in lot 3 died, as these two sows developed well and No. 51, although a year younger than No. 50, weighed exactly the same, they were each in about equal condition and due to farrow March 8, 1923. They are maternal sisters. Two more young sows, Nos. 30 and 33, farrowed their first litters when about eighteen months old and will be included in lot 2 in the future.

FISH MEAL VS. SOYBEAN MEAL, VS. OILCAKE, VS. CHECK

On December 4, 1921, four lots, of six pigs each, were started on a feeding experiment, which lasted eleven weeks, to determine the relative value of fish meal, soybean meal and oilcake for fattening hogs. Each lot received equal quantities of skim-milk and cooked potatoes. The grain ration fed to lot No. 1 consisted of equal parts screening sand shorts. Lots 2, 3 and 4 received the same grain ration plus eleven per cent of fish meal, oilcake meal and soybean meal respectively. Each group was given all they would eat readily and fed three times daily.

FISH MEAL VS. SOYBEAN MEAL VS. OILCAKE

	Lot 1	Lot 2	Lot 3	Lot 4
Number of pigs in lot	6	6	6	6
Duration of feeding periods....days	77	77	77	77
Weight at beginning of experiment....lbs.	357·0	383·0	387·0	384·0
Weight at finish of experiment....lbs.	1,062·0	1,051·0	1,180·0	1,178·0
Average weight per pig at beginning....lbs.	59·5	63·83	64·5	64·0
Average weight per pig at finish....lbs.	177·0	175·166	196·66	196·33
Average daily gain per pig....lbs.	1·52	1·445	1·716	1·718
Food consumed per 100 pounds gain				
Skim-milk at 50c. per 100 lbs....lbs.	611·47	645·21	543·5	542·821
Potatoes at 25c per 100 lbs....lbs.	37·3	39·371	33·165	33·123
Screenings at $25 per ton....lbs.	143·44	126·51	129·71	127·595
Shorts at $35 per ton....lbs.	143·44	126·51	129·71	127·595
Fish meal at $5 per 100 lbs....lbs.	.....	31·62	.....	.....
Oilcake meal at $58 per ton....lbs.	.....	.....	32·43	.....
Soybean meal at $66 per ton....lbs.	.....	.....	.....	31·9
Total cost of feed....$	52·80	58·34	60·63	61·63
Cost to produce 100 lbs of gain....$	7·48	8·73	7·64	7·76

The results obtained show oilcake and soybean meal about equal in making gains, and better than the ration where they were eliminated. The fish meal lot made the least gains, which may have been due to the percentage of fish meal being too great. The pigs did not appear to relish this product nor were they apparently able to handle any quantity. With the prices as shown above, lot one, receiving equal parts screenings and shorts, made the most profitable gains, followed by the oilcake, soybean and fish meal groups in the order named.

WINTERING BROOD SOWS IN PORTABLE CABINS IN THE BUSH VS. BROOD SOWS IN THE PIGGERY

To determine the best method of wintering brood sows, four were kept in clean quarters in the piggery and allowed exercise in yards when the weather permitted. Four others were allowed the run of a bush and slept in portable

cabins. The groups were divided as evenly as possible regarding age, breeding, etc. They all farrowed between March 5 and 16 and were fed the same ration, which consisted of four parts screenings and one part each of bran and shorts. The piggery lot ate 96 pounds more of this mixture than the other lot, in the period from November 13, 1921, to February 18, 1922. Each lot got mangels and some skim milk but very little of the latter. On February 19, the bush sows were placed in the piggery to get accustomed to their farrowing quarters and received the same treatment from that time till weaning.

MATURING EXPERIMENT WITH SOWS

	Lot 1 sows wintered in cabins	Lot 2 sows wintered in piggery
Number of sows in each lot	4	4
Total number of pigs farrowed	39	47
Average number of pigs farrowed	9·75	11·75
Total number of pigs raised	29·0	29·0
Average number of pigs raised	7·25	7·25
Total weight of pigs raised when 6 weeks old ..lbs.	685·0	738·0
Average weight of pigs raised when 6 weeks old ..lbs.	23·62	25·45

Each group raised the same number of pigs, although the sows wintered in the piggery farrowed eight more than did the other lot. One sow in lot 1 lost eight pigs, while another sow only had four and raised them. An aged sow in lot 2 farrowed seventeen and lost eleven of them by starvation. It is hardly likely that this sow's shortage of milk was due to wintering in the piggery but to the fact that the sow was old and had udder trouble. The young pigs farrowed by lot 2 averaged slightly heavier weights than those farrowed by lot 1, when six weeks old.

PURE-BRED VERSUS CROSS-BRED PIGS

A common criticism of pure-bred swine is that they do not mature sufficiently early to make profitable market hogs. This criticism is made more frequently of bacon hogs than of those of lard type. In November, 1921, four pure-bred Yorkshire sows were bred to a pure-bred Duroc-Jersey boar, while four other Yorkshire sows were bred to a pure-bred Yorkshire boar, the plan being to keep the offspring from each group of sows separate until such time as they were ready for the market, at the same time keeping records of the cost of feed consumed. It is regrettable that sow No. 5 (one of the group bred to the Yorkshire boar) did not hold to the service and hence could not be included in the experiment. This left four sows in the cross-bred lot and only three to compare with in the pure-bred lot. The seven sows farrowed between March 9 and 25 and in most cases had good litters.

PURE-BRED VS CROSS-BRED PIGS

	Lot 1 cross-bred	Lot 2 pure-bred
Number of sows in group	4	3
Total number of pigs farrowed	47	31
Average number of pigs farrowed	11·75	10·33
Total number of pigs raised	31·0	25·0
Average number of pigs raised	7·75	8·33
Total weight of pigs raised when 6 weeks old ..lbs.	772·0	572·0
Average weight of pigs raised when 6 weeks old ..lbs.	24·9	22·88
Average age when completely weaned, May 15 ..days	61·8	63·8
Average weight May 15 ..lbs.	41·29	36·8

From farrowing time up to May 15, the young pigs were nursed by their mothers but were fed what little extra they would eat of shorts and milk. The cost of each pig up to that time, for all practical purposes, was equal. Although the cross-breds averaged more pigs per litter farrowed, they had more casualties, which made the average number raised greater in the pure-bred group. What lot No. 1 lost in numbers they made up in weight, as when six weeks' old they averaged two pounds more than the pure-breds and three weeks later had increased this to almost four and one-half pounds. On May 15 they were taken from the piggery and run in two large groups in grass paddocks and fed a grain ration of screenings, barley and shorts. They also got considerable skim-milk, particularly during their first feeding period. The day the pigs were transferred to the paddocks one of the pure breds got injured and was killed; a few days later another one of the group died, leaving only twenty-three in the pure-bred group.

PURE-BRED VS. CROSS-BRED PIGS

——		Lot 1 Cross-bred	Lot 2 Pure-bred
Number of pigs in experiment 1st period, 92 days		31	23
Total weight of pigs May 15	lbs.	1,280	847
Total weight of pigs Aug. 15	"	4,946	3,295
Total gain of pigs, 1st period	"	3,666	2,448
Average gain per pig per day, 1st period	"	1·28	1·158
Weight of 3 pigs, each lot, used for exhibition, Aug. 15 and sold	"	600	475
Feed consumed 1st period—			
Pounds of milk at ¼c. per pound		8,446	6,770¾
Pounds screenings at $20 per ton		2,127	1,417
Pounds barley at $45 per ton		4,254	2,834
Pounds shorts at $30 per ton		8,508	5,668
Total cost of feed 1st period	$	265·72	179·88
Cost of 100 pounds gain	c.	724·8	734·8
Number of pigs in experiment 2nd period, 27 days		28	20
Total weight of pigs Aug. 15	lbs.	4,346	2,820
Total weight of pigs Sept. 11	"	5,308	3,450
Total gain of pigs, 2nd period	"	962	630
Average gain per day per pig	"	1·24	1·17
Feed consumed 2nd period—			
Pounds of milk at ¼c. per pound		1,160	1,060
Pounds screenings at $20 per ton		1,338	1,020
Pounds shorts at $30 per ton		1,338	1,020
Pounds barley at $45 per ton		1,338	1,020
Total cost of feed consumed 2nd period	$	96·56	74·06
Cost of 100 pounds gain, 2nd period	c.	1,003·74	1,175·55
SUMMARY			
Total gain both periods	lbs.	4,628	3,078
Total value of gain at 11c. per pound	$	509 08	338 58
Total cost of feed	$	362 28	253 94
Total profit over cost of feed	$	146 80	84 64
Average profit per pig	$	4 74	3 68

On August 15, three hogs were taken from each group and shown at the Vancouver exhibition as two pens of three bacon hogs. In making the selection for these exhibits, the three best hogs were taken from each group. The pure-bred pen won second prize in strong competition and the cross-breds were not placed. The cross-breds were fat, chunky, heavy pigs, while the other pen were of much better quality, even though somewhat light.

Throughout the entire feeding trial, the cross-bred pigs were the better feeders. They ate more, gained more and made the greater profit. Although the pure-breds were the best bacon hogs, they all sold for the same price on September 15, 1922.

FIELD HUSBANDRY

ROTATION WORK

The four-year rotation work carried on here since 1911 has continued to give good results. It consists of: first year, hoed crop; second year, grain seeded down; third year, hay; fourth year, pasture.

HOED CROPS

The crops grown in this section were roots, potatoes, sunflowers and corn. The land was given a twelve-ton-per-acre application of barnyard manure during the fall and winter on the sod. That portion set aside for the root crop was ploughed in the fall, reploughed in the early spring and well worked. The varieties of mangels sown were Yellow Intermediate and Danish Sludstrup. The seed was sown with a hand planter on drills set up with a double mould board plough thirty inches apart. At the same time commercial fertilizers composed of 200 pounds of nitrate of soda and 400 pounds of superphosphate of lime per acre were applied. The roots were thinned early and kept well weeded, but the exceedingly dry, hot weather experinced during the summer, particularly in June and July, was the direct cause of a crop lighter than average.

The ensilage crop section of the hoed-crop field included a portion of land that is of poor quality because of gravel. The crop on this part was very light. The balance of the field is good soil but the corn was not as good as usual. The varieties grown were Longfellow, Golden Glow and a variety supposed to be Northwestern Dent but which proved to be incorrectly named.

GRAIN

The grain was grown on land that had been in hoed crop the previous year, and had been ploughed in the fall after the hoed crop was harvested. The field was well worked in the spring, sown during the last of April and harvested early in August. The yield secured was light and rains injured the quality of the grain before it was threshed. The same grass and clover mixture was used for seeding down as in previous years, viz., 9½ pounds of Red clover, 3½ pounds of Alsike clover, 1½ pounds of white Dutch clover, 2 pounds Italian rye grass and 2 pounds of orchard grass per acre. Considering the very dry summer the catch was a good one.

HAY

The first cutting from the forty acre hay field produced 318 tons, 1,645 pounds of clover silage and 18 tons of hay. The dry weather injured 24 acres of the field to such an extent that it was deemed advisable to convert it into pasture. A very light second crop was cut in August from the remaining 16 acres and only about half of it was saved in good condition, the balance being of little value except for bedding.

PASTURE

Up to the middle of June, the pasture crop was a good one. For the next two months it was short and dry but it was then greatly revived by the rains, and excellent pastures resulted till late in the fall. Twenty acres of the pasture section were reserved for the purpose of growing a hay crop, harvesting of which started June 7, the yield being over one ton per acre. A month elapsed before there was sufficient aftermath on this area for pasturing.

YIELDS OF CORN VERSUS SUNFLOWERS FOR ENSILAGE PURPOSES

To secure data upon the yielding capacity of corn and sunflowers, each crop was grown in drills and in check rows under field conditions. Sown in drills, sunflowers yielded 11 tons and corn 9 tons 1,720 pounds per acre. The check row sunflowers produced 17 tons 701 pounds and corn 13 tons, 325 pounds. Giant Russian Sunflowers and Longfellow corn were the varieties grown.

VALUE OF WIZARD MANURE (A) FOR GRAIN

Five half-acre plots of grain were grown to test the value of Wizard manure. This is a dried stock yard manure received from Chicago and comes under the distinctive process names of "Shredded", "Pulverized" and "Phosphated". The land used for this test received the same treatment as the general grain field. The seed was sown the last of April and the harvesting done early in August. On May 3 well rotted barnyard manure was applied on Plot 1 as a topdressing at the rate of 16 tons per acre. The different brands of Wizard manure were applied at the same time at the rate of 800 pounds per acre.

VALUE OF WIZARD MANURE FOR GRAIN

Plot No.	Type of Manure	Yield per Acre			
		Grain		Straw	
		tons	lbs.	tons	lbs.
1	Barnyard	1	590	1	1,330
2	Phosphated	..	1,710	1	200
3	Shredded	1	100	1	220
4	Pulverized	1	130	1	70
5	Check, no manure	1	210	1	420

The results obtained show Wizard manure of no value for grain. The barnyard manure gave considerably heavier yields and even the check plots gave better returns.

VALUE OF WIZARD MANURE (B) FOR MANGELS

Eight one-fifteenth-acre plots of mangels were grown to test the value of Wizard manure. They were planted under the same conditions as the field crop. The variety of mangels grown was Danish Sludstrup. The commercial fertilizers and dried manures were applied at time of planting the mangel seed, the fertilizer mixture being at the rate of 400 pounds of superphosphate of lime and 200 pounds nitrate of soda per acre. The crop was harvested the middle of October.

VALUE OF WIZARD MANURE FOR MANGELS

Plot No.	Type of Manure, Pounds per Acre	Yield per Acre	
		tons	lbs.
1	Commercial fertilizers	33	118
2	No fertilizer or dried manure, check	7	834
3	Commercial fertilizers and 800 pounds phosphated	29	125
4	No fertilizer, 800 pounds phosphated	21	626
5	Commercial fertilizer and 800 pounds pulverized	20	250
6	No fertilizer, 800 pounds pulverized	15	429
7	Commercial fertilizer and 800 pounds shredded	25	950
8	No fertilizer, 800 pounds shredded	16	670

The check plot yielded 7 tons, 834 pounds, while the average of plots 4, 6 and 8 was 17 tons 1,242 pounds, which shows an increase due to Wizard manure of over 10 tons per acre. However plot No. 1, with commercial fertilizer alone, yielded more than the average of plots with fertilizers plus Wizard manure.

VALUE OF COMMERCIAL FERTILIZERS FOR MANGELS

Four plots of mangels were grown under field conditions to determine the value of nitrate of soda and superphosphate of lime alone and in combination. The superphosphate of lime cost $37 and the nitrate of soda $82.50 per ton f.o.b. Agassiz. The variety of mangels grown was Danish Sludstrup.

VALUE OF COMMERCIAL FERTILIZERS FOR MANGELS

Plot No.	Amount of Fertilizer per Acre	Cost of fertilizer per acre	Yield	
		$ cts.	tons	lbs.
1	Superphosphate of lime, 700 pounds	12 95	21	1,871
2	Nitrate of soda, 300 pounds	12 38	14	1,092
3	Mixed-superphosphate, 400 pounds; nitrate, 300 pounds	15 65	27	605
4	Check, no fertilizers		7	834

The combination of superphosphate and nitrate gave the best results in yield and profit. Superphosphate at the rate of 700 pounds per acre gave greater returns than 300 pounds per acre of nitrate.

HORTICULTURE

The horticultural work this year consisted of the usual variety tests of potatoes, vegetables, fruit, flowers and bulbs and experiments in the culture of the same. Most of the cultural experiments were along the lines of fertilization with artificial manures.

The season was not favourable for producing large crops, particularly of potatoes, the long dry spell in June and July causing lack of moisture at the most important period of growth; tubers were small and fruit was also smaller than usual. A dry autumn enabled quite a lot of well ripened seed to be collected.

Insect and fungous pests were not so bad as usual.

COMMERCIAL FERTILIZER APPLIED TO EARLY POTATOES

An experiment was made with early potatoes to determine the value of commercial fertilizer in growing early potatoes for the market when the best prices are obtainable.

The number of varieties used in the experiment was eight. All the seed had been sprouted before being planted. Thirty sets of each variety were planted in drills 30 inches apart and sets 14 inches apart in the rows. The ground was manured with barnyard manure at the rate of 16 tons to the acre and then ploughed. Sets were planted 2 inches deep and then slightly hilled to throw off any surplus moisture. All seed was planted on April 5 and potatoes were dug on June 20. Cultivation was carried on in the usual way throughout the period and the fertilizer was applied on May 2 when the potatoes were well up.

In the following table No. 1 represents seed treated with 500 pounds superphosphate of lime per acre; No. 2 represents seed treated with 150 pounds nitrate of soda and 350 pounds superphosphate of lime per acre; No. 3, check row, no fertilizer.

TEST OF COMMERCIAL FERTILIZERS ON EARLY POTATOES

Name of Variety	No. 1			No. 2			No. 3		
	Date of flowering	Size of top	Yield per acre	Date of flowering	Size of top	Yield per acre	Date of flowering	Size of top	Yield per acre
			lbs.			lbs.			lbs.
Agassiz Special	June 12	Medium	3,250	June 12	Medium	6,500	June 12	Small	2,500
Bermuda Early	May 31	Medium	7,750	May 31	Large	12,500	June 2	Small	6,250
Early Hero	May 31	Medium	5,750	May 31	Medium	9,250	June 2	Small	3,125
Early Rose	June 4	Medium	5,250	June 4	Large	8,625	June 4	Small	4,500
Early Ohio	June 2	Medium	6,375	June 4	Large	10,750	June 4	Small	3,375
Eureka Extra Early	June 2	Medium	7,500	June 2	Medium	8,750	June 4	Small	4,625
Irish Cobbler	June 7	Small	5,625	June 7	Medium	7,750	June 7	Small	3,625
Vick Extra Early	May 31	Small	6,625	May 31	Medium	10,125	June 2	Small	4,625
Totals	.....	.....	48,125	.....	.....	74,250	.....	.....	32,625
Average yield per acre	.....	.....	6,016	.....	.....	9,281	.....	.....	4,078

Fertilization with mixture of nitrate of soda and superphosphate of lime gave more than fifty per cent better yield than superphosphate of lime only and the latter almost fifty per cent better yield than non-fertilization; the foliage was strongest and most vigorous in the same ratio.

The price of early potatoes on June 20 was 10 cents per pound.

The cost of fertilizer for No. 1 plot was $9.25 per acre.

The cost of fertilizer for No. 2 plot was $12.66 per acre.

POTATOES—TEST OF VARIETIES, 1922-23

Name of Variety	Size	Season	Date of planting	Date of digging	Yield per acre marketable		Yield per acre not marketable		Form and Colour
					tons	lbs.	tons	lbs.	
Dreer Standard	Medium	Late	May 18	Sept. 20	8	1,922	1	262	Round, white.
Early St. George	"	Early	" 18	" 20	8	1,574	1	958	Round, white.
U. B. C.	Large	Late	" 18	" 20	8	1,226	2	2	Round, white.
Table Talk	Medium	"	" 18	" 20	8	978	1	1,306	Oblong, white.
Dalmeny Beauty	Large	"	" 18	" 20	8	978	1	958	Oblong, white.
Jones White, U.B. C.	"	"	" 18	" 20	8	356	1	1,306	Round, white.
Ormandy	Medium	"	" 18	" 20	7	1,486	–	1,740	Oval, round, white.
New Queen	Large	Medium	" 18	" 20	7	964	–	1,740	Round, pink.
Agassiz Special	Medium	Early	" 18	" 20	7	964	–	1,218	Long, white.
American Wonder	Large	Late	" 18	" 20	7	616	–	1,566	Long, white.
Late Puritan	"	"	" 18	" 20	7	442	1	1,132	Long, white.
Rawlings Kidney	"	"	" 18	" 20	7	286	1	262	Round, white.
Morgan Seedling	"	"	" 18	" 20	7	94	1	88	Oval, white.
Empire State	"	"	" 18	" 20	6	1,746	–	1,740	Long, white.
Green Mountain	"	"	" 18	" 20	6	1,572	1	436	Round, white.
Wee McGregor	"	"	" 18	" 20	6	354	–	1,740	Oblong, white.
Vick Extra Early	Small	Early	" 18	" 20	5	1,832	1	88	Round, whitish pink.
Gold Coin	Medium	Medium	" 18	" 20	5	1,310	–	870	Round, white.
May Queen	"	Early	" 18	" 20	5	962	1	1,132	Oblong, white.
Early Rose	"	"	" 18	" 20	5	266	–	1,914	Long, rose.
Houlton Rose	"	"	" 18	" 20	4	1,744	–	1,566	Round, rose.
Sutton Reliance	"	Late	" 18	" 20	4	1,570	2	350	Oblong, white.
Early Hero	Small	Early	" 18	" 20	4	1,570	–	1,914	Oblong, rose.
Early Ohio	Medium	"	" 18	" 20	4	1,048	–	1,392	Round, pink.
Gold Coin	"	Medium	" 18	" 20	4	1,048	–	1,218	Round, white.
Bermuda Early	Large	Early	" 18	" 20	4	874	–	1,566	Round, red.
Jessica	Medium	Medium	" 18	" 20	4	874	–	1,392	Oblong, rose.
Arran Chief	Large	Very late	" 18	" 20	4	700	1	784	Oval, white.
Sir Walter Raleigh	Medium	Late	" 18	" 20	4	178	–	522	Flat, round, white.
Eureka Extra Early	"	Early	" 18	" 20	4	4	1	958	Flat, round, white.
Early White Prize	"	Medium	" 18	" 20	3	1,830	1	610	Round, white.
Irish Cobbler	Large	Early	" 18	" 20	3	1,656	–	1,740	Round, white.
Carman No. 1	"	Late	" 18	" 20	3	1,134	1	436	Round, white.
Manitoba Wonder	Medium	Medium	" 18	" 20	3	438	–	1,914	Round, pink.
Netted Gem	Small	Late	" 18	" 20	2	872	2	1,220	Round, russet.
Dakota Red	Large	"	" 18	" 20	2	872	1	610	Round, red.

Dreer Standard is the leading potato in point of yield this year; it is a good white potato, a fairly good cooker and a good keeper; its skin is rather rough but its shape is good. Early St. George was a close second and this is especially meritorious as early potatoes are not supposed to yield as heavily as late ones; it is universally recommended as the best early potato for British Columbia. Dakota Red, last year's leader, failed completely. U. B. C., a potato brought out by the University of British Columbia, did well and is a good potato.

The season was too dry for the production of big potato crops, a large number of small or unmarketable tubers being in evidence.

TEST OF SOIL INSECTICIDE

In order to determine the value of Soil Insecticide in the growing of potatoes, four plots were planted with Gold Coin potatoes, one plot being treated

with 300 pounds and one plot with 600 pounds Soil Insecticide, and two plots without treatment of Soil Insecticide being used as check plots.

Amount of Soil Insecticide per acre	Insecticide Plot				Check Plot			
	Yield per acre marketable		Yield per acre unmarketable		Yield per acre marketable		Yield per acre unmarketable	
	tons	lbs.	tons	lbs.	tons	lbs.	tons	lbs.
300 pounds	3	1,260	..	1,056	3	204	..	660
600 pounds	3	1,392	..	1,056	3	1,260	..	792

Only a very slight additional increase of yield was made by the treating of the plots with Soil Insecticide when the larger amount of insecticide was used, but a 17 per cent increase over no application was made when 300 pounds insecticide was used which made that application profitable.

TEST OF NITRATE OF SODA

In order to determine the value of nitrate of soda as a fertilizer of main crop potatoes, first, when applied at time of planting and, secondly, when applied after the potato tops are above the ground. Variety planted, Gold Coin.

300 Pounds Nitrate Applied at Time of Planting				Check, no Nitrate				300 Pounds Nitrate applied when Tops are above Ground				Check, no Nitrate			
Marketable		Not marketable		Marketable		Not marketable		Marketable		Not marketable		Marketable		Not marketable	
tons	lbs.	tons	lbs.	tons	lbs.	tons	lbs.	tons	lbs.	tons	lbs.	tons	lbs.	tons	lbs.
3	732	..	660	4	184	..	660	3	732	..	924	3	72	..	1,065

From the above table it appears that it is immaterial whether the fertilizer is applied at the time of planting or after the tops are above ground. Again the application of nitrate has made no improvement in the yield of the whole as compared with no application of nitrate and, as the 300 pounds nitrate cost $12.40 per acre the application is not warranted in any case.

SUPERPHOSPHATE OF LIME

To determine the value of superphosphate of lime as a fertilizer for main crop potatoes. Amount of superphosphate, 600 pounds per acre applied at time of planting. Variety planted, Gold Coin.

600 Pounds Superphosphate Lime				No Superphosphate of Lime			
Yield per Acre				Yield per Acre			
Marketable		Not marketable		Marketable		Not marketable	
tons	lbs.	tons	lbs.	tons	lbs.	tons	lbs.
3	1,788	..	1,452	2	1,280	..	1,320

The application of 600 pounds superphosphate of lime increased the yield by 47 per cent, the cost of fertilizer being $11.10 per acre. In a normal season, i.e., not an exceptionally dry one, as this was, the extra cost of the fertilizer would according to this experiment be fully justified.

BEANS—TEST OF VARIETIES

Name of Variety	Date of sowing	Date ready for use	Height	Yield per 30-foot Row			
				Green		Seed	
			In.	lbs.	ozs.	lbs.	ozs.
Pencil Pod Black Wax 0·1642	May 5	July 3	12	23	4	3	8
Hodson Long Pod 0·1635	" 5	" 19	14	22	4	4	4
Masterpiece 0·1916	" 5	" 6	12	20	8	2	14
Extra Early Red Valentine 0·1632	" 5	" 10	15	20	..	2	8
Davis White Wax 0·1636	" 5	" 5	12	19	12	3	14
Plentiful Franch 0·1639	" 5	" 6	13	18	8	3	8
Refugee 1000 to 1·01631	" 5	" 19	14	18	..	3	10
Canadian Wonder	" 5	" 6	13	17	12	5	12
Bountiful Green Bush 0·1633	" 5	" 6	14	16	4	3	10
Wardwell Kidney Wax 0·1634	" 5	" 6	12	14	12	..	..
Challenge Black Wax 0·1915	" 5	" 3	12	14	..	2	8
Round Pod Kidney Wax 0·1638	" 5	" 8	12	14	..	3	4
Fordhook Favourite 0·1641	" 5	" 9	13	12	8	2	10
Fordhook Favourite	" 5	" 11	13	12	8	..	..
Grenell Rustless 0·1638	" 5	" 8	12	12	4	2	4
Stringless Green Pod 0·1630	" 5	" 8	13	12	4	3	..
Yellow Eye 0·1643	" 5	" 6	12	12	..	2	4
Yellow Eye A609	" 5	" 12	12	7	..	..	..
Kentucky Wonder 0·1689	" 5	" 19	14	5	4	..	..

All the varieties of beans grown this year, with three exceptions, were from Ottawa-grown seed, all of which germinated well and gave good results. The dry season seemed to suit all beans.

In point of earliness, Pencil Pod Black Wax and Challenge Black Wax were the best, as was the former in point of yield. Hodson Long Pod again was well to the fore; it is a most consistent yielder. Masterpiece, Refugee and Canadian Wonder are also excellent varieties.

BEETS—TEST OF VARIETIES

Name of Variety	Date of sowing	Date ready for use	Yield per 30-ft. row
			Lbs.
Cardinal Globe	April 19	July 10	57
Black Red Ball	" 19	" 10	49
Detroit Dark Red Turnip	" 19	" 15	45
Sutton Globe	" 19	" 3	40
Crosby Egyptian	" 19	" 10	35
Brand Exhibition	" 19	" 10	28
Blood Red	" 19	" 20	20

All beet seed was commercial-grown and germinated well. Cardinal Globe was the heaviest yielder but Black Red Ball was the best in point of shape, colour and flavour. Sutton Globe was far the earliest in maturing; it is a good-shaped beet and of good flavour.

BRUSSELS SPROUTS—TEST OF VARIETIES

Two varieties, Lulu Island and Sutton Matchless, were sown, but failed completely owing to the drought in the summer months.

CABBAGE—TEST OF VARIETIES

Name of Variety	Date of sowing	Date of trans-planting	Date ready for use	Yield per 30-foot row
				lbs. oz.
Extra Amager Danish Ball Head 0934	April 8....	June 5....	Sept. 14....	59 ..
Danish Ball Head	" 8....	" 5....	" 14....	43 8
Early Jersey Wakefield	" 8....	" 5....	Aug. 21....	35 12
Flat Dutch	" 8....	" 5....	" 28....	32 4
Glory of Enkuizen	" 8....	" 5....	" 25....	25 8
Sutton Earliest	" 8....	" 5....	" 17....	18 4
Drumhead Perfection Savoy	" 8....	" 5....	Oct. 10....	16 ..

Both the Ball Head varieties did very well, that grown from Ottawa seed being better than that grown from commercial seed. Of the early varieties, Early Jersey Wakefield was the best, though not quite so early in maturing as Sutton's Earliest.

Cabbage in general were not troubled so much with the cabbage root maggot as they have been in previous years.

CABBAGE—CULTURAL TEST

To determine whether it is better to sow cabbage in hot-bed and transplant to open or to sow in open and transplant.

SOWN IN HOT-BED

Name of Variety	Date sown	Date trans-planted	Date ready for use	Yield per 30-ft. row
				lbs. oz.
Early Jersey Wakefield	Mar. 29....	May 20....	Aug. 2....	22 8
Sutton's Earliest	" 29....	" 20....	" 2....	15 ..

SOWN IN OPEN

Early Jersey Wakefield	April 8....	June 5....	Aug. 21....	35 12
Sutton's Earliest	"	" 5....	" 17....	18 4

The result of above experiment shows that seed sown in the open produces a larger crop, while seed sown in the hotbed produces earlier maturing cabbages.

TEST OF BARRETT'S SOIL INSECTICIDE

TREATED WITH BARRETT

Name of Variety	Date sown	Date trans-planted	Date ready for use	Yield per 30-foot row
				lb. oz.
Early Jersey Wakefield	Mar. 29....	May 20....	Aug. 1....	24 ..
Sutton's Earliest	" 29....	" 20....	July 19....	18 ..

NOT TREATED WITH BARRETT

Farly Jersey Wakefield	Mar. 29....	May 20....	Aug. 2....	22 8
Sutton's Earliest	" 29....	" 20....	" 2....	15 ..

Cabbage treated with Barrett gave a slightly better yield and was somewhat earlier in maturing than that not so treated.

TEST OF NITRATE OF SODA ON CABBAGE

TREATED WITH NITRATE OF SODA

Name of Variety	Date sown	Date transplanted	Date ready for use	Yield per 30-foot row
				lb. oz.
Sutton's Earliest	Mar. 29	May 20	Aug. 5	24 ..
Early Jersey Wakefield	" 29	" 20	" 5	21 8

NOT TREATED WITH NITRATE OF SODA

Sutton's Earliest	Mar. 29	May 20	Aug. 2	15 ..
Early Jersey Wakefield	" 29	" 20	" 2	22 8

In this experiment, in one instance, nitrate of soda increased the yield and in the other reduced the yield and in both cases cabbages treated with the nitrate were later in maturing than when not so treated.

CAULIFLOWERS—TEST OF VARIETIES

Name of Variety	Date of sowing	Date transplanted	Date ready for use	Yield per 30-foot row
				lb. oz.
Early Snowball	April 8	June 8	Sept. 1	10 12
Early Walcheren	" 8	" 8	" 13	7 ..
Veitch Autumn Giant	" 8	" 8	" 20	6 8

In point of yield and earliness in maturing, the Early Snowball variety was the best.

CAULIFLOWERS—CULTURAL TEST

To determine the value of bichloride of mercury as a preventive against the cabbage root maggot.

TREATED WITH BICHLORIDE OF MERCURY

Name of Variety	Date sown	Date transplanted	Date ready for use	Yield per 30-foot row
				lb. oz.
Early Snowball	April 8	June 8	Aug. 25	17 12
Veitch Autumn Giant	" 8	" 8	Sept. 20	14 ..
Early Walcheren	" 8	" 8	" 13	7 4

NOT TREATED WITH BICHLORIDE OF MERCURY

Early Snowball	April 8	June 8	Sept. 1	10 12
Early Walcheren	" 8	" 8	" 13	7 ..
Veitch Autumn Giant	" 8	" 8	" 20	6 8

From the above tables it is manifested that the treatment with bichloride was the means of increasing the yield in all cases and, in the case of the Early Snowball variety, of producing an earlier crop.

CARROTS—TEST OF VARIETIES

Name of Variety	Date sown	Date ready for use	Yield per 30-foot row	
			lb.	oz.
Market Garden	April 19	July 15	86	..
Half Long Scarlet	" 19	" 15	53	..
Chantenay 0·206–9	" 19	" 15	50	..
Half Long Scarlet Nantes	" 19	" 12	48	..
New Red Intermediate	" 19	" 15	43	..
Champion Scarlet Horn	" 19	" 3	30	..

Market Garden was the best in point of yield; it is also a good table carrot. Chantenay is also an excellent table variety and Champion Scarlet Horn is always worth including in a carrot crop as it is so much earlier than any other variety.

CELERY—TEST OF VARIETIES

Name of Variety	Date sown	Date trans-planted	Date ready for use	Yield per 30-foot row	
				lb.	oz.
Sutton Solid White	April 12	June 20	Oct. 16	82	8
Winter Queen	" 12	" 20	" 16	81	..
Giant Pascal	" 12	" 20	" 21	67	8
Early White Plume	" 12	" 20	Sept. 20	54	8
Golden Self Blanching 0·229–30	" 12	" 20	" 20	52	8
Easy Blanching	" 12	" 20	Oct. 3	41	..

Sutton Solid White was the best, followed closely by Winter Queen in point of yield; the quality of both of these varieties is good. All celery this season suffered severely from rust and this has been noticeable throughout the district; the earliest harvestings of Early White Plume were clean and free from rust but the later harvestings suffered badly.

TABLE CORN—TEST OF VARIETIES

Name of Variety	Date of planting	Date ready for use	Size of cob	Height		Yield per 10 hills	
				ft.	in.	lb.	oz.
Golden Giant	May 10	Aug. 25	Large	8	6	48	..
Extra Early White Cory	" 10	" 16	Large	7	..	33	4
Howling Mob	" 10	" 25	Large	8	..	31	4
Country Gentleman	" 10	" 31	Medium	8	6	30	4
Sweet Squaw 0·1445-7-6-2	" 10	" 11	Large	6	..	25	..
Golden Bantam	" 10	" 17	Medium	6	..	22	4
Early Malcolm	" 10	" 16	Small	6	6	21	..
Early Malcolm 6-12 0·1718	" 10	" 14	Medium	6	6	20	10
Stowell Evergreen	" 10	" 19	Large	8	6	17	..
Picaninny 54-20 0·1395	" 10	July 27	Small	3	6	13	4

Golden Giant, an improvement on the Golden Bantam, was by far the best yielder, more than doubling the yield of the latter. Its flavour compares very favourably with Golden Bantam. Picaninny and Sweet Squaw, Ottawa varieties, were the earliest, the former being fifteen days earlier than any other variety; its cobs appeared to be larger than those grown last year. Other varieties which did well were Early Cory, Howling Mob and Golden Bantam.

A good succession crop would be Picaninny, Sweet Squaw and Golden Bantam or Golden Giant.

CORN—CULTURAL TEST

To determine the value of commercial fertilizer when applied to corn, one variety, Picaninny, was treated with commercial fertilizer and produced 16 pounds 10 ounces, and was three days earlier in maturing, as against 13 pounds 4 ounces when not treated with fertilizer. This shows an improvement in yield of 25 per cent when treated with fertilizer.

CITRONS—TEST OF VARIETIES

Two varieties were tried viz., Colorado Preserving and Red Seeded, the former yielding 54 pounds 8 ounces, the latter 27 pounds 12 ounces to one hill of three plants. Colorado Preserving is the better variety, the fruit being large and the yield nearly one hundred per cent greater.

CUCUMBERS—TEST OF VARIETIES

Name of Variety	Date sown	Date ready for use	Yield from one hill, three plants	
			lb.	oz.
Snow Pickling	May 6	July 22	45	12
Early White Spine	" 6	" 14	36	..
Giant Pera	" 6	" 17	28	8
Prize Pickle	" 6	Aug. 3	20	8
Fordhook Famous	" 6	July 28	16	8
Davis Perfect	" 6	" 28	13	..

The cucumber crop was light this year, probably owing to the dry weather of June and July. Snow Pickling was the best yielder and is of good quality. Fordhook Famous and Davis Perfect, the leaders last year, were at the bottom of the list.

LETTUCE—TEST OF VARIETIES

Name of Variety	Date sown	Date ready for use	Yield per 30-foot row	
			lb.	oz.
New York	April 17	July 3	33	12
Iceberg	" 17	" 3	27	..
Grand Rapids Forcing	" 17	June 24	24	..
Hanson	" 18	July 3	22	..
All Heart Cos	" 17	" 17	21	4
All the Year Round	" 17	June 26	14	8
Big Boston	" 17	July 10	14	..

The New York variety was the best of the lettuce tried this year both for yield and quality. It heads up well, is firm and crisp, and is a general favourite; Hanson and Iceberg are the next best of the cabbage varieties. Grand Rapids is the earliest and, when forced, supplies a demand for early green food.

In order to determine the value of lettuce from seed sown in frame and transplanted and that sown in the open, two varieties, Grand Rapids Forcing and All the Year Round, were sown in frames and transplanted to open and their yields compared with those of the same varieties sown in the open, with the result that Grand Rapids yielded 15 pounds 8 ounces compared to 24 pounds sown in open and All the Year Round 16 pounds to 14 pounds 8 ounces sown in the open. Results were contradictory as they were last year.

MELONS—TEST OF VARIETIES

Two varieties, Montreal Green Nutmeg and Spicy Cantaloupe, were sown in hot bed April 15 and transplanted to open May 19, three plants of each to one hill. The Montreal Green Nutmeg ripened August 24 and yielded 10 pounds, the Spicy Cantaloupe September 8 and yielded 3½ pounds. The Montreal melon is the best variety in yield and earliness.

ONIONS—TEST OF VARIETIES

Name of Variety	Date sown	Date ready for use	Yield per 30-foot row	
			lbs.	oz.
Long Keeping	April 18....	Aug. 28....	9	
Yellow Globe Danvers (Ottawa)	" 18....	" 28....	4	6
Large Red Wethersfield (Ottawa)	" 18....	" 28....	3	12
Southport Yellow Globe	" 18....	" 28....	3	12
Red Globe Prizewinner	" 18....	" 28....	3	4
Giant Yellow Prizetaker	" 18....	" 28....	3	..
Yellow Globe Danvers	" 18....	" 28....	2	8
Large Red Wethersfield	" 18....	" 28....	2	..
Australian Brown	" 18....	" 28....	1	12

Onions this season were almost a total failure owing probably to the dry season. Long Keeping was the best of a poor lot. All the onions in the above were sown in the open.

ONIONS—CULTURAL

A test was made to determine the value of commercial fertilizer in the growing of onions, one pound fertilizer being used to a 30-foot row. All seed was sown April 18, crop harvested August 28.

ONIONS—CULTURAL TEST

Name of Variety	Commercial fertilizer, yield per 30-foot row		No fertilizer yield per 30-foot row	
	lb.	oz.	lb.	oz.
Large Red Wethersfield (Ottawa)	11	12	3	12
Yellow Globe Danvers	11	12	2	8
Southport Yellow Globe	11	8	3	12
Large Red Wethersfield	11	..	2	..
Red Globe Prizewinner	11	8	3	4

A 300 per cent gain was made by using commercial fertilizer. All onions were sown in the open.

TRANSPLANTING VS. SOWING IN OPEN

To determine whether it is better to sow onions in the hotbed and transplant to open or sow in open and thin out.

Name of Variety	Sown in Hotbed		Sown in Open	
	Date of sowing	Yield per 30-foot row	Date of sowing	Yield per 30-foot row
		lb. oz.		lb. oz.
Yellow Globe Danvers	Mar. 29....	4 14	April 18....	2 8
Long Keeping	" 29....	4 12	" 18....	9 ..
Australian Brown	" 29....	4 8	" 18....	1 12

In two of the three varieties, the yield was favourable to the sown in the hotbed system, while the third variety was vastly better in yield when sown in open.

SOME OF THE STOCK EXHIBITED DURING 1922

CLYDESDALE HORSES AND DORSET SHEEP AT NEW WESTMINSTER, B.C., AND AT THE PACIFIC INTERNATIONAL LIVE STOCK EXPOSITION, PORTLAND, OREGON, U.S.A.

HOLSTEIN-FRESIAN CATTLE AND YORKSHIRE SWINE AT VANCOUVER, B.C.

All except numbers 1, 2, 8 and 14 bred on the Farm. (See corresponding numbers on next page.)

No. 1. PETE. First Prize Gelding, New Westminster; First Prize Gelding, Portland; Hitched with No. 2 was Third Prize Draught Pair and Leaders of the First Prize 6-Horse Team, Portland.

No. 2. DOUNE LODGE BELL HEATHER (43611). First Prize Brood Mare, New Westminster; First Prize Mare and Foal, Portland; Second Prize Mare, 4 years and under 8 years, Portland. See No. 1.

No. 3. MELITA PRIDE (45641). First Prize 3-year-old and with Nos. 4 and 5 Second Prize Get of Sire, New Westminster and Portland; Reserve Grand Champion, New Westminster; Senior and Grand Champion, Portland.

No. 4. TOPLINE CHOSEN (48252). First Prize Year Old, New Westminster; Second Prize Year Old, Portland.

No. 5. TOPLINE BUCKLYVIE (23408). First Prize Year Old Stallion, New Westminster and Portland; Junior Champion and Reserve Grand Champion, Portland.

No. 6. TOPLINE CROSS. First Prize Foal, New Westminster; First Prize Stallion Foal and with No. 2 First Prize Mare and Foal, Portland.

No. 7. AGASSIZ HENRY PIETJE (52060). First Prize Senior Calf, Junior Champion, Reserve Grand Champion, Head of First Prize Young Herd, Head of First Prize Calf Herd. With full sister First Prize Produce of Cow with Yearly Record, Head of Second Prize Get of Sire, Vancouver.

No. 8. WALULA ARTIS (37234). First Prize Cow with Yearly Record, Vancouver.

No. 9. AGASSIZ PRISCILLA SYLVIA (60784). Second Prize Three-year-old, Vancouver.

No. 10. AGASSIZ QUEEN DEKOL (94508). First Prize Senior Calf; Junior Champion and in First Prize Calf Herd and First Prize Young Herd and Second Prize Get of Sire, Vancouver.

No. 11. First Prize Young Herd and with rear calf out, Second Prize Get of Sire, Vancouver.

No.12. First Prize Calf Herd, Vancouver.

No. 14. SPRINGDALE MAKEPEACE (58720). Second Prize Mature Yorkshire Boar, and Head of Second Prize Herd, Vancouver.

No. 15. AGASSIZ DUNCAN (2632). First Prize and Champion, New Westminster; Second Prize Mature Ram, Head of First Prize Flock, and First Prize Get of Sire, Portland.

No. 16. AGASSIZ FULLER (2879). Second Prize Ram Lamb, and one of First Prize Pen of Lambs, New Westminster; First Prize Lamb, Champion Ram, Head of First Prize Pen of Lambs, Second Prize Flock, and Second Prize Get of Sire, Portland.

No. 17. AGASSIZ CURLY (2298). First Prize Ewe, Champion in First Prize Flock; First Prize Get of Sire, and First Prize Produce of Ewe, New Westminster and Portland.

No. 18. First Prize Flock, and First Prize Get of Sire, Portland.

No. 19. First Prize Pen of Lambs, New Westminster and Portland; Second Prize Get of Sire, Portland.

No. 20. AGASSIZ EFFIE (2765). First Prize Shearling, and in First Prize Flock and Get of Sire, New Westminster and Portland.

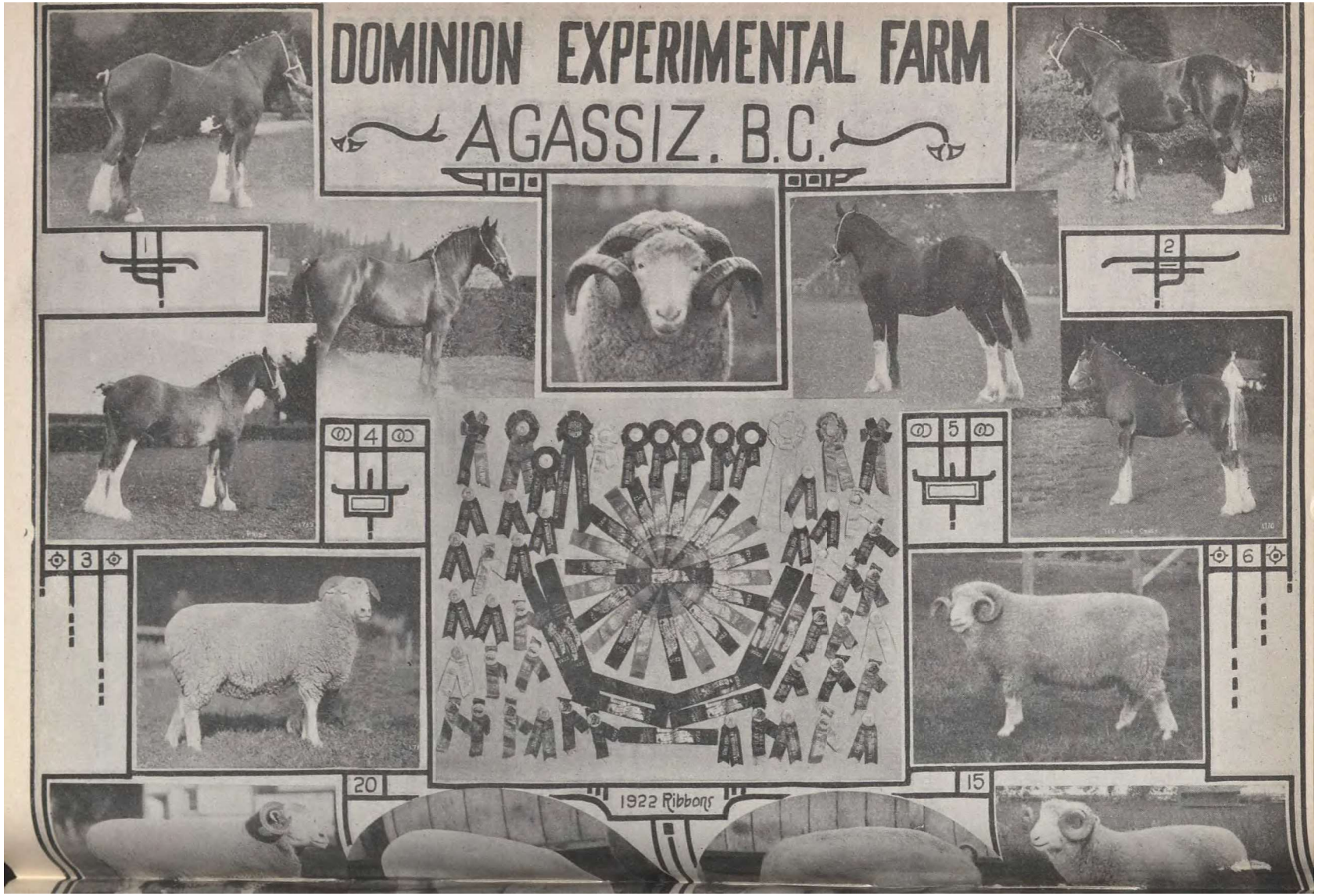
No. 21. AGASSIZ FLOSS (2888). First Prize Ewe Lamb, in the First Prize Flock and Pen of Lambs, New Westminster and Portland, also in Second Prize Get of Sire at Portland.

No. 22. AGASSIZ EVA (73365). Second Prize Mature Sow, and in Second Prize Herd, Vancouver.

No. 23. AGASSIZ ASTHORE (77427). First Prize 1-year-old Sow, and in Second Prize Herd, Vancouver.

No. 24. Some of the Buildings.

No. 25. Some of the Ribbons Won.


DOMINION EXPERIMENTAL FARM
AGASSIZ. B.C.
1
2
3
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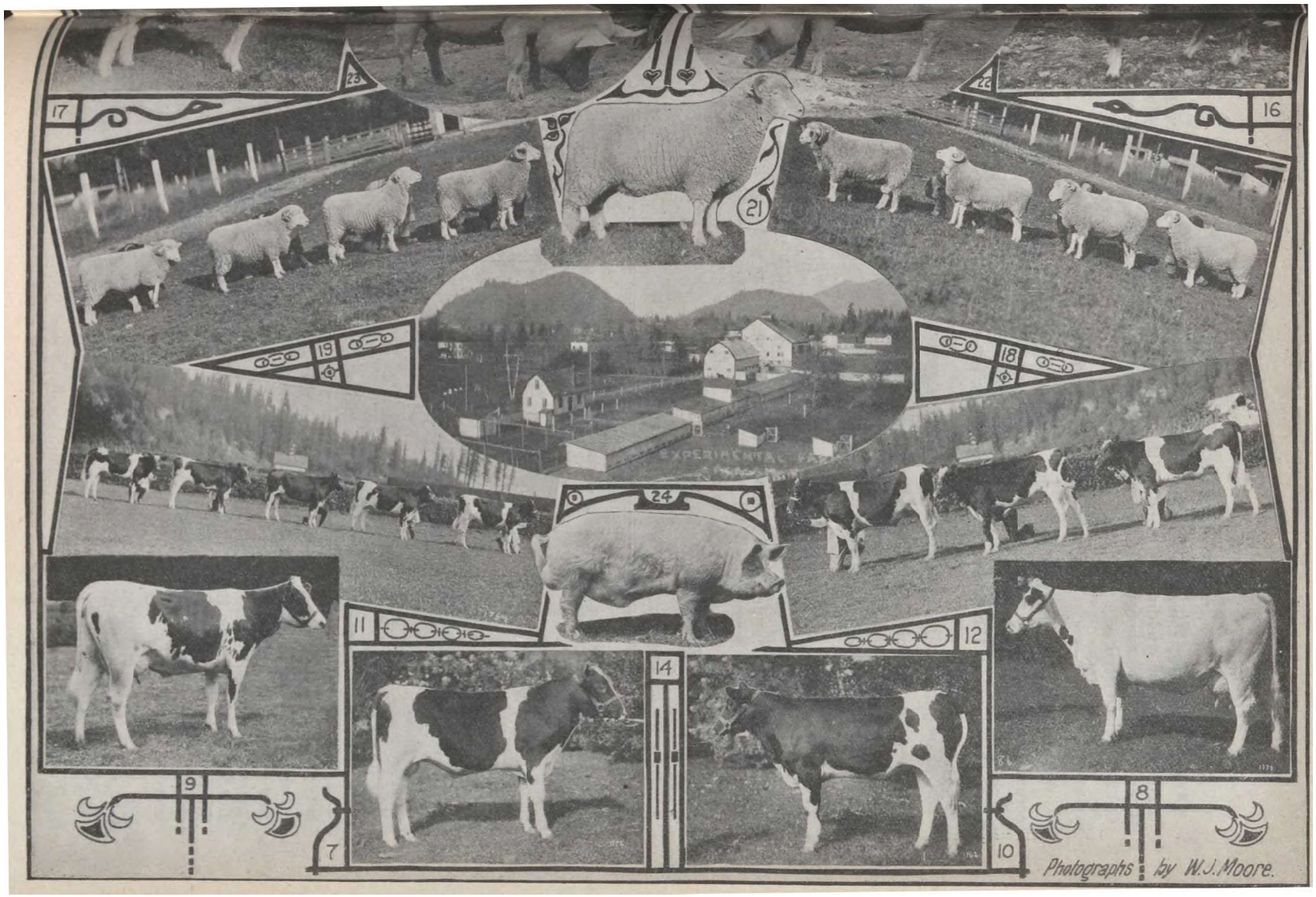
1922 Ribbons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Photographs by W.J. Moore.

ONION SETS—TEST OF VARIETIES

Two varieties, Large Red Wethersfield and Yellow Globe Danvers, were tried, the former yielding 8½ pounds, the latter 7¾ pounds to a 30-foot row. There is little to choose between the two varieties. Both were grown from Ottawa raised seed.

PARSNIPS—TEST OF VARIETIES

Two samples of the Hollow Crown variety, one Ottawa seed and the other commercial seed, were sown. The commercial seed yielded 85 pounds and the Ottawa seed 74 pounds to the 30-foot row. The Ottawa roots were somewhat more shapely than the commercial roots though the yield was smaller.

PARSLEY—TEST OF VARIETIES

Two samples of Extra Tripled Curled were tried, one grown from commercial seed and one from Agassiz-grown seed; both yielded good crops and there was nothing to choose between them either in quanity or quality.

PEPPERS—TEST OF VARIETIES

Only one variety of pepper, viz., Harris Early, was tried, the seed of which was grown at the Summerland Experimental Station.

The seed was sown in hotbed April 12 and transplanted to open June 21 and the fruit was ready for use, in the green state, July 13, a few ripening on August 28; total yield, ripe, 9¼ pounds.

GARDEN PEAS—TEST OF VARIETIES

Name of Variety	Date sown	Date of blooming	Date ready for use	Height	Yield per 30-ft. row
				ft. in.	lbs. oz.
Lincoln (Invermere Sta.)	April 13	June 12	July 3	3 6	23 –
Telephone	" 13	" 12	" 4	4 –	22 12
Kerr Dwarf	" 13	" 2	June 24	1 6	18 4
The Stevenson (Agassiz)	" 13	" 2	" 26	1 6	14 12
American Wonder	" 13	" 1	" 24	1 6	14 4
Gradus	" 13	" 1	" 27	3 6	13 4
Stratagem	" 13	" 9	July 2	3 –	11 12
Laxtonian	" 13	" 1	June 22	1 3	9 12
Duke of Albany	" 13	" 12	July 6	4 6	9 8
The Pilot	" 13	May 29	June 18	3 –	8 12
Harrison Glory (Invermere)	" 13	June 12	July 5	2 –	8 –
Extra Early Blue Bantam	" 13	May 30	June 22	1 6	4 2
Thos. Laxton	" 13	" 30	" 22	1 6	3 12

Lincoln was the best yielder, with Telephone a good second; the latter always does well here and is the most reliable of the later peas. Kerr Dwarf and Stevenson were the best of the dwarf peas, both having large, well-filled pods with peas of good flavour; Laxtonian also has large pods. The Pilot justifies its name in being the first ready for use. All peas, with the exception of Lincoln and Harrison Glory, both of which came from the Invermere Experimental Station, and the Stevenson, Agassiz-grown seed, were grown from commercial seed.

PEAS—CULTURAL TEST

To determine the best time at which to sow peas by sowing at intervals of two weeks between sowings.

Name of Variety	Date sown	Date of blooming	Date ready for use	Height	Yield per 30-ft. row
				ft. in.	lb. oz.
Thos. Laxton	April 13	May 3	June 22	1 6	3 12
Thos. Laxton	" 27	June 2	" 24	1 6	4 4
Thos. Laxton	May 12	" 15	" 29	1 6	2 12
Thos. Laxton	" 24	July 3	July 19	1 6	6 ..

Contrary to previous trials, the latest sowing gave the best results.

RADISH—TEST OF VARIETIES

Two varieties, French Breakfast and Early Snowball Turnip, were grown in frame and protected with a cheesecloth covering; both of these gave a good yield and escaped the ravages of the cabbage root maggot. French Breakfast is the better of the two in yield and quality.

All radishes sown in the open and unprotected failed completely from the effects of the maggot, although Barrett's soil insecticide was used.

SQUASH—TEST OF VARIETIES

Two varieties, Hubbard and Golden Hubbard, were tried.

Name of Variety	Date sown	Amount sown	Date ready for use	Yield
				lb. oz.
Hubbard	May 11	1 hill, 3 p.	July 31	55 4
Golden Hubbard	" 11	1 hill, 3 p.	Aug. 9	44 8

Hubbard squash led Golden Hubbard this year in yield; Golden Hubbard, however, is of better flavour and a better keeper.

VEGETABLE MARROW—TEST OF VARIETIES

Name of Variety	Date sown	Amount sown	Date ready for use	Yield
				lb. oz.
Long Green vegetable marrow	May 11	1 hill, 3 p.	July 19	303 8
Long White vegetable marrow	" 11	1 hill, 3 p.	" 24	241 12
White Bush vegetable marrow	" 11	1 hill, 3 p.	" 24	103 12

Long Green and Long White vegetable marrows made much larger yields than White Bush marrow, but these varieties take up considerably more room than the bush variety, which would be more suitable for small holdings.

TOMATOES—TEST OF VARIETIES

Name of Variety	Date sown	Date of planting out	Date of blooming	Date of ripening	Yield	
					Ripe	Green
					lb. oz.	lb. oz.
Crimson Canner 0,707	March 30.	May 22..	June 2..	Aug. 5..	77 12	12 ..
Victoria Whole Salad	April 13.	" 22..	" 12..	" 15..	72 12	30 ..
Sutton Best of All	March 30.	" 22..	May 31..	" 5..	71 4	14 8
Chalks Early Jewel	" 30.	" 22..	June 2..	" 12..	68 8	12 ..
Sutton Earliest of All	" 30.	" 22..	May 31..	" 2..	66 ..	7 ..
Alacrity 0,18–15–29	" 30.	" 22..	June 2..	" 5..	63 8	11 8
Bonny Best	" 30.	" 22..	" 2..	" 12..	60 10	13 4
Sunnybrook Earliana	April 13.	" 22..	" 15..	" 19..	53 8	7 8
Danish Export 10,1862–73	March 30.	" 22..	" 2..	July 31..	47 12	8 ..
Danish Export, Agassiz 921	" 30.	" 22..	" 4..	" 31..	38 ..	21 ..

Number of plants of each variety, five.

All varieties did remarkably well this year; the dry June and July seemed to suit them and they ripened well, only a small percentage remaining green at the end of the season.

Crimson Canner from Ottawa grown seed came out on top for yield; it is a fine tomato of good colour and flavour. Of the smaller tomatoes, Victoria Whole Salad was the best yielder and had the seed not been late in arriving, thereby delaying the sowing, it would probably have headed the list of ripe fruit.

Sutton Best of All, tried here for the first time, is a very promising tomato of medium size, smooth and excellent flavour, is free of rot and is also one of the earliest to ripen. Danish Export though the first to ripen, is too small. Crimson Canner, Chalk's Early Jewel and Bonny Best are the best (this year) of the larger varieties.

Seed was saved from Victoria Whole Salad, Best of All, Earliest of All, Danish Export, Bonny Best, Crimson Canner and Chalk's Early Jewel.

TOMATOES—CULTURAL TEST OF NITRATE OF SODA

TEST OF NITRATE OF SODA ON TOMATOES

Name of Variety	Treated with Nitrate of Soda				Not treated with Nitrate of Soda			
	Date of blooming	Date of ripening	Yield		Date of blooming	Date of ripening	Yield	
			Ripe	Green			Ripe	Green
			lb. oz.	lb. oz.			lb. oz.	lb. oz.
Bonny Best	June 2	Aug. 3	85 4	15 ..	June 2	Aug. 12	60 10	13 4
Chalk's Early Jewel	" 4	" 12	81 8	13 8	" 2	" 12	68 8	12 ..
Alacrity	" 4	" 12	78 12	49 8	" 2	" 5	63 8	11 8
Best of All	May 31	" 5	72 8	16 ..	May 31	" 5	71 4	14 8
Crimson Canner	June 5	" 3	70 ..	14 ..	June 2	" 5	77 12	12 ..
Earliest of All	" 2	" 2	46 12	9 ..	May 31	" 2	66 ..	7 ..

Number of plants, five.

Date of sowing, March 30. Date of transplanting to open, May 22.

From the above table it will be seen that in four out of six instances the treatment with nitrate of soda was beneficial, the yield being largely increased thereby and in three instances the tomatoes ripened earlier when treated with the fertilizer.

TURNIPS—TEST OF VARIETIES

Name of Variety	Date sown	Date ready for use	Yield per 30-ft. row
			lb. oz.
Early Snowball	April 20....	July 10....	35 4
Sutton Garden Swede	" 20....	Oct. 19....	19 ..

The Early Snowball turnip was the largest yielder, but the cabbage root maggot had gone into them badly and very few roots were really fit for use; the swedes, though they did not yield so well, were more free of maggots.

TURNIPS—CULTURAL TEST

To determine the value of Barrett's Soil Insecticide as a preventive against the cabbage root maggot in turnips, a 30-foot row was treated with Barret and checked with a 30-foot row not so treated.

Name of Variety	Treated with Barrett		Not treated with Barrett	
	Date ready for use	Yield per 30-ft. row	Date ready for use	Yield per 30-ft. row
		lb. oz.		lb. oz.
Early Snowball	July 6....	44 4	July 10....	35 4
Sutton Garden Swede	Oct. 19....	36 ..	Oct. 19....	19 ..

Date of sowing, April 20.

The treatment of the turnips with Barrett was the means of increasing the yield considerably and the maggots were not nearly so bad where it was used.

ORCHARD

With the Northern Spies bearing fruit for the first time, all the varieties are now producing and most of them very well indeed. The trees, with few exceptions, are thrifty, and, especially the Spies, making good growth.

The Belle de Boskeep trees yielded very big crops of very large, fine-looking apples but every apple was diseased inside and not marketable. This is probably the effect of the dry summer or some other physiological trouble.

The Wagener trees are about exhausted, from overbearing when too young; they yielded a large crop but the fruit was very small and of poor colour.

The whole orchard was sprayed twice with lime sulphur solution.

EARLY SUMMER APPLES

Variety	Number of trees	Date first ripe fruit	Yield	Remarks
			lbs.	
Yellow Transparent	1	July 24..	309	All No. 1 fruit.
Duchess of Oldenburg	2	Aug. 17..	231	95% No. 1 fruit.
Wealthy	3	" 26..	203	All No. 1 colour, not good.
Gravenstein	2	Sept. 1..	30½	All No. 1 fruit, very large.
Lowland Raspberry	1	Aug. 8..	17½	80% small; tree unthrifty.

Yellow Transparent yielding nearly 8 boxes of apples to one tree was by far the best early apple; it is also as nearly immune from scab as possible and always prolific.

For a succession of early apples the first four in the table above are most suitable.

LATE OR WINTER APPLES

Variety	Number of trees	Date first fruit ripe	Yield	Remarks
			lbs.	
Belle de Boskoop	6	Oct. 8..	504	Fruit large and clean but diseased inside.
Ontario	5	" 6..	451	Fruit all No. 1, large.
Wagener	5	" 8..	434	15% No. 1, trees unthrifty.
Jonathan	2	Sept. 30..	272	85% No. 1, fruit large.
Grimes Golden	5	Oct. 3..	195	All No. 1 fruit.
Cox Orange Pippin	5	" 6..	158	Fruit large and good.
King	5	" 3..	114	All No. 1 fruit.
Delicious	2	" 8..	62	90% No. 1.
McIntosh Red	2	Sept. 30..	50	No No. 1 fruit, scabby.
Northern Spy	6	Oct. 8..	27	All No. 1, very large.
Winter Banana	2	" 3..	37	80% No. 1.

Jonathan was the heaviest yielder of the late apples, averaging 136 pounds to the tree. The fruit was nearly all No. 1 and of large size and very good colour; a dry season seems to suit this variety.

Ontario was most prolific, the apples being very large; it is a great favorite for cooking purposes.

Delicious gave a smaller yield than last year but the fruit was good; it is undoubtedly the best flavoured of all varieties tried here, Grimes Golden being a good second.

PEARS—TEST OF VARIETIES

Variety	Number of trees	Date first fruit ripe	Yield	Remarks
			lbs.	
Dr. Jules Guyot	3	Aug. 22..	183	All No. 1.
Bartlett	3	" 26..	115½	All No. 1.
Boussock	3	Oct. 13..	100	All No. 1.
Bosc	3	" 3..	49	Good quality.
Princess	3	" 6..	36	Large, all No. 1.
Emile D'Heyst	2	" 6..	28	All No. 1.
Clairgeau	3	" 13..	17½	Small, No. 1.
Clapp Favourite	3	Aug. 26..	13	All No. 1.

With the exception of Dr. Jules Guyot, Bartlett and Boussock, all the pears were more or less of a failure. The fruit of most of the later varieties not setting well although there was a good show of bloom.

Of the early varieties, Dr. Jules Guyot and Bartlett are very good and most suitable to the locality, seldom failing to yield well. Boussock is the best of the late varieties.

PLUMS—TEST OF VARIETIES

Most of the varieties of plums suffered from a severe attack of brown rot which completely ruined the crop. The yellow varieties suffered more severely than the brown and blue varieties. The Damson, usually a very heavy yielder,

was a failure, the fruit setting very badly. Willard was the best yielder, giving 237 pounds to three trees, fine, sound fruit of excellent flavour; it is always in great demand. Italian Prune yielded 100 pounds to three trees; this variety is almost rot proof. Washington, an excellent yellow plum, yielded 100 pounds to three trees and this represented only about thirty per cent of the crop, the rest being destroyed by brown rot.

CHERRIES—TEST OF VARIETIES

The sweet cherry crop was large this season and the fruit large and well flavoured, but the sour cherries were only fair; great damage was done to the crop by crows and other birds, those trees nearest the windbreak losing most of the fruit in this way. Bing, Lambert and Windsor, of the red varieties, were the best and Royal Anne of the Whitehearts English Morello was the best of the sour varieties.

CHERRIES—TEST OF VARIETIES

Variety	Number of trees	Date first ripe fruit	Yield	Remarks
			lb.	
Sweet—				
Bing	3	June 27	662	Fruit all No. 1.
Windsor	3	July 3	558	Fruit all No. 1.
Royal Anne	3	June 29	249	Fruit all No. 1.
Lambert	3	July 10	182½	Fruit all No. 1.
Black Tartarian	3	June 24	30	Fruit small, birds got nearly all.
Sour—				
Belle Magnifique	3	July 15	92	Fruit No. 1.
Morello	2	" 10	83	Fruit No. 1.
Montmorency	2	" 10	46½	Fruit very small.

The best varieties both for yield and marketing are the Bing, Lambert and Windsor; they all ship well and sold freely. Most of them were shipped to Calgary and brought top prices. They also, in the order named, make good succession crops. Royal Anne does not ship so well as the before-mentioned varieties. Morellos always command ready sale.

SMALL FRUITS

STRAWBERRIES—TEST OF VARIETIES

The dry weather of June militated against a large yield of strawberries this year, the crop being only a medium one and the individual berries being very small and shrivelled. The following table shows the results of this year's crop.

Variety	Date began to bloom	Date in full bloom	Number of plants	Date first fruit ripe	Size of fruit	Total yield
Paxton	May 12	May 23	100	June 19	Large	49
Magoon	" 9	" 20	100	" 13	Very small	49½
Sharpless	" 9	" 20	100	" 12	Small	46½
Royal Sovereign	" 9	" 20	100	" 12	Small	22½
The Dollar	" 7	" 17	100	" 10	Very small	10

The Magoon is the best berry commercially and the universal favourite among growers. Royal Sovereign is the best for home consumption; it is by far the best flavoured berry. Dollar is the first to ripen but is a small yielder.

PROTECTION OF STRAWBERRIES FROM STRAWBERRY WEEVIL

The strawberry plot was surrounded with one-inch by twelve-inch boards bolted together and the upper three inches of the boards were smeared with tanglefoot from time to time; this work was done during the previous season. The result this year was that the weevil was kept under control to a considerable extent and little damage was done by it, no apparent loss of plants took place and only a few weevils were found among the plants.

FERTILIZING STRAWBERRIES

A cultural experiment was made with Magoon and Sharpless varieties of strawberries to determine the value of applying commercial fertilizer to strawberry plants.

A mixture of one part nitrate of soda to two parts of superphosphate of lime was applied to the plants at the rate of 450 pounds to the acre, in the spring, and a check plot was compared with the fertilizer plot.

Variety used	Yield of fertilized plot of 100 plants	Yield of unfertilized plot of 100 plants
	lb.	lb.
Magoon	32½	49½
Sharpless	37½	46½

In both cases the yield was less when fertilizer was applied than when no fertilizer was applied but the foliage was much more abundant in the former case.

BLACK CURRANTS, RED CURRANTS AND WHITE CURRANTS

The bushes in the new plantation are not yet yielding any fruit.

RASPBERRIES—TEST OF VARIETIES

This is the first season for the new plantation to bear fruit and the results were fairly satisfactory, considering the drought in the fruit-setting and fruiting season.

Cuthbert yielded 34½ pounds of fruit to a 100-foot row and Fillbasket 22½ pounds, the fruit was large for this season when most growers complained of the small size of their berries.

BLACKBERRIES—TEST OF VARIETIES

Snyder blackberry was the only variety to bear this year, a yield of 34½ pounds being obtained from 50 feet of a row. Erie was badly injured during the severe weather last winter and, though it bloomed and set fruit, died in the autumn; it is not a suitable variety for this district, the changes of weather being too severe.

LOGANBERRIES

Owing to very severe winter injury, the loganberries did not yield any fruit this year.

GOOSEBERRIES

No yield was obtained from the gooseberries, but the young bushes are doing well and making good growth.

FLOWERS

ROSES—TEST OF VARIETIES

The dry weather of June seemed to suit the roses this year and the display was better than usual; though the blooms did not last very long there was a good succession of them.

Of a very good lot the best were Margaret Molyneaux, Hugh Dickson, Frau Karl Druschki, White Mamam Cochet, James Coey, Captain Christy, Mrs. W. K. Waddell and the climbing Papa Gontier and Gloire Dijon. Some few rose bushes were killed by the severe winter weather and will be replaced.

SWEET PEAS—TEST OF VARIETIES

This was a good year for sweet peas. Though some varieties failed to germinate and had to be resown, there was a great showing of blooms and they were very much admired. Constance Hinton was the best white variety and bloomed profusely. Mrs. Tom Jones (blue), Royal Purple, Hercules (pink), Barbara (salmon orange), Maud Holmes (crimson), and Jean Ireland (cream edged with rose), were the best of a good collection.

ANNUALS—TEST OF VARIETIES

Half of the annual plots were sown with commercial seed and half with seed saved from the same varieties obtained last year from the same seedsmen. The Agassiz seed compared very favourably with the new seed, in many cases excelling it.

The best of the varieties tried were the Portulacas, Zinnias, Salpiglosois, Cosmos, Linaria, Godetia and Perilla.

All varieties of antirrhinums did well, Fire King and Rosy Queen being the best.

Asters were again a failure owing to the same fungoid complaint which ruined them last year.

Early varieties of tulips were very good, the best being Artus and Keiser Kroon.

Of the flowering tulips, Gesneriana spathulata and Clara Butt (Darwin) were the best.

The Germanica were the best of the irises, Johan de Witt and Honorabilis being the best of that class.

BULBS, OTHER THAN TULIPS—TEST OF VARIETIES

Gladioli, the best of this class, were not as good as usual; they are nearly exhausted and some new varieties are being planted this autumn to improve the stock.

PERENNIALS

The perennial border was very brilliant this year and a succession of colour was kept up throughout the season. Doronicum, Irises, Delphiniums, Aquilegias, Rudbeckia and poppies making a great showing in their seasons.

SHRUBS—TEST OF VARIETIES

Flowering shrubs were very good this year. Rhododendrons, Azalea Mollis were the best; Ceanothus, Silver Bell, Philadelphus and the Syringas were also good. The blue hydrangeas were killed down to the roots during the winter and consequently there was no bloom on them this year. They have since made a good growth and these most beautiful shrubs should make good showing next year.

ORNAMENTAL TREES

The best of the flowering trees this year were the Japanese dogwoods, Japanese crab apples and cherries, Laburnum, *Peterostyrax hispida* and *Stewartia pentagina.*

Of the shade trees, the cutleaved beeches, copper beeches, the weeping birches and the lindens and basswood were the best; the Yellow wood tree bloomed for the first time and was much admired.

HEDGES

Of the ornamental hedges the Deutzia and Caragana were the best, and of the more serviceable varieties the Holly, European Maple, Hawthorn and Norway Spruce were superior.

CEREALS

LAND AND TREATMENT

The land upon which the cereals plots were located is a rich, chocolate, sandy loam. It had grown a good crop of roots the previous year, was fall ploughed and well worked in the spring. All grains were treated with formalin as a smut preventive before sowing. The first seeding was done April 29. The barley varieties were sown May 6 and the beans May 23. Most of the harvesting was done in late July and early August.

VARIETY AND STRAIN TESTS OF OATS

Sixteen varieties of oats were tested. Victory and Irish Victor were in first and third places respectively with a new variety, Prolific Ottawa 77, in second place. Two strains of Banner and one of Gold Rain, usually good-yielding varieties, did not do well. Laurel and Liberty, two hulless varieties had a very poor stand, the germinations being greatly weakened by the formalin treatment, and hence the yields obtained do not do these varieties justice. The plots were one-sixtieth acre in size and were sown April 29.

OATS—TEST OF VARIETIES

Name of variety	Date of ripening	Number of days maturing	Average length of Straw including head	Strength of Straw on a scale of 10 points	Actual yield of grain per acre	Weight per measured bushel after cleaning
			inches		lbs.	lbs.
Banner Ottawa 49	Aug. 4	97	36	10	1,680	41·2
Banner U.B.C	" 4	97	36	10	2,040	42·5
Columbian, Ottawa 78	" 4	97	37	8	1,890	45·0
Daubeney, Ottawa 47	July 25	87	36	9	1,500	42·0
Gold Rain	" 28	90	36	9	1,470	44·2
Iowa 103, U.B.C	" 28	90	31	8	1,290	39·2
Irish Victor	Aug. 3	96	37	10	2,220	44·5
Laurel, Ottawa 477	" 7	100	30	8	810	38·5
Legacy, Ottawa 678	July 28	90	34	8	1,500	42 0
Liberty Ottawa 480	Aug. 7	100	34	8	480	42 8
Lincoln	" 2	95	42	10	2,190	44·2
Longfellow, Ottawa 478	July 31	93	41	9	2,160	42·0
O.A.C. No. 72	Aug. 2	95	37	10	2,130	42·8
Prolific Ottawa 77	" 3	96	42	8	2,280	43·2
Swedish Select	" 2	95	38	10	2,040	46·2
Victory	" 5	98	42	9	2,670	43·2

VARIETY AND STRAIN TESTS OF BARLEY

Thirteen varieties of barley were tested. The six-row varieties made an unusually good showing. Manchurian and O.A.C. 21 gave the best yields, both being good six-row sorts, as are also Stella and Odessa C. Gold and Danish Chevalier were the best two-row varieties and are recommended for this district. The plots were one-sixtieth acre in size and were sown on May 6.

BARLEY—TEST OF VARIETIES

Name of Variety	Date of ripening	Number of days maturing	Average length of Straw including head	Strength of Straw on a scale of 10 points	Actual yield of grain per acre	Weight per measured bushel after cleaning
			inches		lbs.	lbs.
Albert Ottawa 54 (6)	July 25	80	30	8	630	53·0
Bark's Excelsior (6)	Aug. 14	100	34	9	1,680	51·8
Chinese Ottawa 60 (6)	July 28	83	46	8	1,410	55·2
Danish Chevalier (2)	Aug. 9	95	47	7	1,770	56·0
Duckbill Ottawa 57 (2)	" 14	100	40	8	1,320	56·4
Gold (2)	" 9	95	40	7	1,890	57·2
Himalayan Ottawa 59 (6)	July 28	83	27	7	1,200	64·8
Manchurian Ottawa 50 (6)	Aug. 5	91	48	8	2,250	53·0
O.A.C. No. 21 (6)	" 2	88	45	7	1,980	54·0
Oderbrach (6)	July 28	83	43	7	1,620	56·0
Odessa C (6)	Aug. 5	91	36	8	1,800	53·2
Stella Ottawa 58 (6)	" 5	91	42	7	1,860	52·4
Success (6)	July 25	80	42	7	1,020	56·0

VARIETY AND STRAIN TESTS WITH PEAS

Three varieties of peas were sown but, owing to weather and soil conditions, the crop was a failure. Solo and Arthur are the recommended varieties for this district.

VARIETY AND STRAIN TESTS WITH BEANS

Five varieties of beans were tested. They were sown in drills 28 inches apart. Navy and Norwegian gave the best yields. The plots were $\frac{1}{25}$ acre in size and were sown on May 23.

BEANS—TEST OF VARIETIES

Name of Variety	Date of ripening	Number of days maturing	Actual yield of grain per acre	Weight per measured bushel after cleaning
			lbs.	lbs.
Beauty Ottawa 712	Aug. 30	99	1,058	65·0
Carleton Ottawa 718	" 30	99	920	60·2
Large White Ottawa 713	" 30	99	1,150	63·4
Navy Ottawa 711	" 30	99	1,564	64·0
Norwegian Ottawa 710	" 30	99	1,242	59·2

VARIETY AND STRAIN TESTS WITH WHEAT

Only one variety of wheat was grown, i.e. a small plot of Marquis for the Influence of Environment work. The plot yielded at the rate of 1,230 pounds of grain per acre. It was sown on April 29 and was harvested August 14.

VARIETY AND STRAIN TESTS OF OATS FOR HAY

Five varieties of oats for hay were grown in plots. A new variety, Columbian, was the best yielder, followed by Daubeney which variety, as a rule, does not yield well.

OATS—TEST OF VARIETIES FOR HAY

Variety	Date of Sowing	Date of Cutting	Weight per acre—cured
			lbs.
Banner, Ottawa 49	April 29..	July 13..	4,800
Columbian, Ottawa 78	" 29..	" 13..	6,258
Daubeney, Ottawa 47	" 29..	" 13..	5,709
Longfellow, Ottawa 478	" 29..	" 13..	4,884
Prolific, Ottawa 77	" 29..	" 13..	3,960

MIXED VARIETIES OF PEAS AND OATS

A mixture of Arthur peas and Banner oats was compared with a mixture of Solo peas and Banner oats, the former giving the better yield.

MIXED GRAINS—TEST OF VARIETIES

Name of variety	Date of sowing	Date of ripening	Number of days maturing	Actual yield of grain per acre
				lbs.
Arthur Peas and Banner Oats	April 29..	Aug. 5..	98	2,280
Solo Peas and Banner Oats	" 29..	" 5..	98	2,190

FORAGE CROPS

The severe drought during the growing season of 1922 handicapped the growth of all forage crops. The hay crop was a very light one. The hoed crops yielded much better than was expected, owing probably to the fact that they were kept well cultivated and clean. A severe wind and rain storm lodged the sunflowers so badly that considerable difficulty was experienced in harvesting them. The roots were harvested in excellent condition during a dry period in October.

SOIL AND MANURING

The forage crops were grown on land that had been in pasture the previous year. The root land was ploughed in the fall, reploughed in the spring and well worked. Barnyard manure was applied in the fall and an application of commercial fertilizer consisting of 200 pounds nitrate of soda and 400 pounds of superphosphate of lime per acre was given at time of planting the seed in the spring. The corn and sunflower land was ploughed in the spring only and well worked previous to planting.

CORN FOR ENSILAGE—TEST OF VARIETIES

Of the fifteen plots of corn tested, White Cap Yellow Dent and a so-called North Western Dent gave the greatest yields. They were not sufficiently matured to make good ensilage. Longfellow, Golden Glow and North Dakota

gave good yields and are recommended as suitable varieties for the locality. The corn was grown in one-hundredth-acre plots, sown in hills three feet apart each way.

INDIAN CORN FOR ENSILAGE—TEST OF VARIETIES

No.	Name of Variety	Date of sowing	Date of cutting	Average Height	Condition when cut	Weight per acre grown in hills
				Inches		Tons Lbs.
1	North Western Dent (not true to type)	May 23...	Sept. 25..	112	Cobs forming...	30 60
2	White Cap Yellow Dent	" 23...	" 25..	112	Early Milk.....	30 60
3	Leaming (Imp.)	" 23...	" 25..	118	Early milk.....	29 1·280
4	Wisconsin No. 7	" 23...	" 25..	114	Early milk.....	24 920
5	North Dakota	" 23...	" 25..	94	Glazed.....	23 800
6	Bailey	" 23...	" 25..	96	Early milk.....	22 1,240
7	Leaming	" 23...	" 25..	118	Early milk.....	22 460
8	Golden Glow	" 23...	" 25..	106	Late milk.....	21 900
9	Quebec 28	" 23...	" 25..	84	Glazed.....	21 900
10	Longfellow	" 23...	" 25..	94	Glazed.....	20 1,340
11	Golden Glow (Duke)	" 23...	" 25..	106	Late milk.....	20 560
12	Compton's Early	" 23...	" 25..	96	Glazed.....	18 1,440
13	Longfellow (Duke)	" 23...	" 25..	94	Glazed.....	15 1,980
14	Twitchell's Pride (Fredericton)	" 23...	" 25..	82	Ripe.....	10 1,840
15	Gold Nugget (U.B.C.)	" 23...	" 25..	62	Glazed.....	10 60

SUNFLOWERS FOR ENSILAGE—TEST OF VARIETIES

Nine varieties or strains of sunflowers were grown under identical conditions to those of corn. The Giant and Mammoth Russian varieties gave the highest yields.

SUNFLOWERS FOR ENSILAGE—TEST OF VARIETIES

Variety	Date of sowing	Date of cutting	Yield per acre	Remarks
			Tons Lbs.	
Giant Russian (Rennie)	May 23...	Sept. 5...	27 600	Tremendous growth-stalks up to 12 ft. and over in height.
Mammoth Russian (McDonald)	" 23...	" 5...	23 800	Similar to Giant Russian but scarcely so rank in growth.
Mammoth Russian (Dakota Imp. Seed Co.)	" 23...	" 5...	20 1,340	Similar to previous two but little less rank in growth.
Early Ottawa 76	" 23...	" 5...	20 1,340	Earlier than previous three.
Mammoth Russian (Early Ottawa	" 23...	" 5...	19 1,000	Fairly early.
Mixed Mennonite (Rosthern)	" 23...	" 5...	17 1,100	Early—high per cent of heads ripe, stalks 6 and 7 ft. high.
Brook's Dwarf (Rosthern)	" 23...	" 5...	16 760	Not quite so early as Mennonite.
Prolific white (Rosthern)	" 23...	" 5...	13 520	Early—high per cent heads ripe—stalks 6 and 7 ft. high.
Manteca (Rosthern)	" 23...	" 5...	10 1,060	Low in yield.

VARIETY AND STRAIN TESTS OF MANGELS

Thirty-two varieties or strains of mangels were grown in uniform one one-hundredth-acre plots. Three Rennie varieties gave heavy yields. The quality of mangel seed is so variable that as much importance should be placed on the quality of the seed as on the variety. The seed was sown on May 11 and the crop harvested October 10.

MANGELS—TEST OF VARIETIES

No.	Variety	Yield per acre		Remarks
		tons lbs.	bush. lbs.	
1	Giant White Feeding Sugar Beet (Rennie)	31 500	1,250	Not particularly well shaped.
2	Giant White Sugar (Rennie)	31	1,240	Fairly well shaped.
3	Jumbo Sugar Beet (Rennie)	30 500	1,210	Majority of roots too long and spindly.
4	Mammoth Long Red (Steele Briggs)	30	1,200	Uniform in shape, too hard to pull.
5	Y. O. (University of B.C. 5)	28 1,400	1,148	Uniform in shape.
6	Danish Sludstrup (Vancouver Milling and Grain Co.)	28	1,120	Not particularly uniform in shape.
7	Yellow Leviathan (Rennie)	28	1,120	Not a uniform crop, too many spindly roots.
8	Giant Yellow ½ Long	27 1,500	1,110	Varied in type, not uniform in shape.
9	Red skinned Leviathan Sugar Beet (Rennie)	27 1,500	1,110	Fairly prongy, varied in shape and type.
10	Giant White Sugar (Steele Briggs)	27 1,500	1,110	Too many spindly roots.
11	Long Red (Vancouver Milling and Grain Co	27 900	1,098	Uniform in shape but too many spindly, too hard to pull.
12	Danish Sludstrup (Steeves)	27 300	1,086	Very good crop of evenly shaped roots, free from cracks.
13	Y. I.IIII (University of British Columbia)	27 200	1,084	Several roots very nicely shaped and free from prongyness.
14	Royal Giant Sugar Beet (Steele Briggs)	26 1,100	1,062	Off in type and not uniform in shape.
15	Giant White Sugar (Brackman and Ker)	26 500	1,050	Far too many narrow and spindly roots.
16	Y.I. 4911 (University of British Columbia	26 300	1,046	Rather many small roots.
17	Jumbo Sugar Beet (Vancouver Milling and Grain Co)	26	1,040	Uniform crop of well shaped roots.
18	Perfection Mammoth Long Red (Rennie)	25 1,800	1,036	Uniform in shape, prongy and too hard to pull.
19	Improved Giant Sugar Beet (Vancouver Milling and Grain Co	25 700	1,014	Too many small roots.
20	Giant Yellow Globe (Steele Briggs)	24 1,500	990	Nicely shaped root, very uniform. typical Globe.
21	Yellow Intermediate (Ottawa)	24 700	974	Uniform crop of smooth, well-shaped roots.
22	Y.O. (University of B.C. 6)	24	960	Fairly uniform in shape.
23	Mammoth Long Red	22 1,500	910	Too prongy and too hard to pull.
24	Prize Mammoth Long Red (Steele Briggs)	22 1,500	910	Decidely too prongy.
25	Royal Giant Sugar Beet(Steele Briggs)	22 600	892	Off in type and colour, majority too small.
26	Giant Yellow Intermediate (Brackman and Ker)	22 200	884	Not so desirable a crop as Yellow Intermediate (Ottawa).
27	Giant Yellow Globe (Rennie)	21 1,800	876	Mostly Intermediate in shape.
28	Giant Yellow Globe (Brackman and Ker)	21 1,000	860	Uniform crop of real Globe-shaped roots.
29	Improved Giant Sugar Beet (Rennie)	20 1,000	820	Fairly well-shaped.
30	Giant Yellow Oval (Steele Briggs)	20 800	816	Very few typically oval in shape
31	Giant Yellow Intermediate (Steele Briggs)	19 1,500	790	Not nearly so uniform as Yellow Intermediate (Ottawa)
32	Golden Tankard (Brackman and Ker)	18 1,500	750	Not particularly desirable, high percentage small roots.

VARIETY AND STRAIN TESTS OF CARROTS

Nine varieties or strains of carrots were grown in uniform test plots of one one hundredth acre each. The Short White and White Intermediate varieties gave the best yields and are satisfactory varieties to grow. The seed was sown May 11 and the crop harvested October 10.

CARROTS—TEST OF VARIETIES

No.	Variety	Yield per acre		Remarks
		Tons Lbs.	Bush.	
1	Improved Short White (Brackman and Ker)	30 1,500	1,230	Large smooth carrot, very uniform in shape, very good crop.
2	Improved Short White (Steele Briggs)	27 1,400	1,108	Large smooth carrot, very uniform in shape, very good crop.
3	Mammoth Short White (Rennie)	27	1,080	Not quite so uniform in shape as previous two.
4	Mammoth White Intermediate (Rennie)	25 200	1,004	Good crop, uniform in type.
5	Large White Belgian (Rennie)	23	920	Very well shaped.
6	Danish Champion (Ottawa 1920)	22 1,500	910	Smooth and of good type.
7	Belgian White (Brackman and Ker)	22 1,000	900	Poorly shaped, long, spindly, undesirable.
8	White Intermediate (Vancouver Milling and Grain Co.)	21 1,400	868	Rather too much evidence of badly shaped carrots.
9	Large White Belgian (Steele Briggs)	21 1,200	864	Large spindly, badly shaped, very poor carrot.

VARIETY TESTS OF SUGAR BEETS

Five varieties of sugar beets were grown, to determine their yields and factory value for sugar purposes. British Columbia produced the best yield, repeating its performance of last year. Vilmorin's Improved was next in yield and contained the highest percentage of sugar in juice. The size of plot was one one-hundredth acre. The seed was sown May 11 and the crop pulled October 11.

SUGAR BEETS—TEST OF VARIETIES

Number	Variety	Yield per Acre		Remarks
		tons lbs.	bush.	
1	British Columbia	18 1,000	740	Rough, prongy, very hard to pull, small roots.
2	B. Vilmorin's Improved (France)	17 1,700	714	" " "
3	Waterloo	17 1,000	700	" " "
4	Chatham	17	680	" " "
5	Denmark	17	680	" " "

SUGAR VALUE OF BEETS

Variety	Sugar in juice	Solids in juice	Coefficient of purity
	p.c.	p.c.	p.c.
British Columbia	16·53	18·88	87·54
Chatham	16·96	19·48	87 08
Denmark	16·64	19·08	87·22
Waterloo	16·36	18·48	88·53
Vilmorin's Improved	17·00	19·28	88·16

VARIETY TESTS WITH SWEDE TURNIPS

Two varieties of swede turnips, Bangholm and Monarch, were tried. The aphis completely destroyed the crop and as this result has been obtained so often, turnips are not recommended for this district.

ANNUAL HAY CROPS

The following annual hay crops were sown in one one-hundredth-acre plots; Sand vetch, Hungarian grass, spring rye, Japanese millet, Common millet, Common vetch and Hubam sweet clover. The dry season retarded the growth of these crops and the weeds got such a start that only spring rye gave any success. It yielded at the rate of three tons per acre of cured hay, but the quality was coarse and wiry.

VARIETY AND STRAIN TESTS OF GRASSES AND CLOVERS

For the purpose of securing data regarding the winter hardiness of certain strains of clover and timothy, seed samples were secured from Europe as well as from different points in Canada. The seed was sown with a nurse crop of oats, in duplicate plots one one-hundredth-acre in size and included fifty-one plots. Combined with these strain tests are some inoculation experiments. In all instances a good catch was secured and the degree of hardiness for the first winter will be noted with interest.

DROPPING MANGEL SEED EVERY TWELVE INCHES IN DRILLS VERSUS CONTINUOUS DROPPING

In order to determine the advisability of using an attachment on the hand planter for dropping a few seeds every twelve inches apart in drills, it was compared with the usual method of planting. The seed was planted in drills similar to the main crop. The idea being that thinning and weeding should be less difficult than with the continuous method. The seed sown twelve inches apart yielded 20 tons 217 pounds of roots per acre while the other method yielded 19 tons 209 pounds per acre . The roots spaced twelve inches apart were large and gave the best yields. They may not do this another year if more moisture is available.

EXPERIMENTS WITH FERTILIZERS

EXPERIMENT E 21

The fertilizer experiment E 21 commenced last year was continued, the object being to determine the most profitable combination and quantity of a fertilizer mixture, as measured by its influence in relation to cost, throughout a three years rotation. The rotation consists of mangels, grain and hay. The results of the second crop (oats) are given below.

HISTORY OF LAND

The experiment is conducted on a comparatively new piece of good, clean, fairly uniform soil. The land is a heavy, sandy, chocolate loam with a gravel subsoil. It was cleared of heavy firs, birch, alder, maple, etc., in 1914; grain crop, 1915; pasture, 1916; corn, 1917; grain, 1918; hay, 1919; pasture, 1920 and mangels, 1921.

Ten tons of barnyard manure were applied in the fall of 1920 and the land ploughed; ploughed again in the spring of 1921 and well worked. It is fairly rich land and hence the improving power of fertilizers was handicapped. The field was laid out in plots one-fortieth of an acre in size and fertilizers applied broadcast just previous to seeding. Drills were set up with the double mould board plough and the seed sown May 5 and 6 with a hand planter. The field was kept well cleaned and the roots harvested October 6 and 7 after which it was fall ploughed. In the spring the area received a good discing and harrowing, the oats were sown April 21 and harvested July 31.

SUMMARY OF RESULTS OF CROP YIELDS (OATS) 2ND YEAR OF ROTATION

In each of the series 1 to 9 nitrate of soda is applied at different times, on the A plot all in the first year; on the B plot half in the first year and half in the second year; while on C plot the nitrate is distributed over the three years. The nine A plots average 1 ton 675.5 pounds of grain per acre, while the B plots average 1 ton 1,300 pounds, or an average of greater production of 624.5 pounds per acre in favour of adding half the total nitrate of soda each spring. In every instance when only one-half the total nitrate of soda was applied in 1921 (first year) and the other half in 1922 (second year) the yields of grain were greater than when the nitrate of soda was all applied in 1921 (first year.) Referring to C plots of each series we find some irregular yields. The C plots average two pounds more grain per acre than the B plots, although they got less fertilizer. The C plots obtained their advantage in series 1, 2 and 5, 2C yielding 480 pounds more per acre than 2B. Had it not been for this one plot the B plots would have given the greatest yield. What has been said of the grain is also true of the straw except that although the same C plots outyielded B plots in straw, the average of the B plots was 338 pounds per acre greater than the C plots.

Comparing series 6 with series 9 the results are unexpected as the barnyard manure applied on the latter decreased the yields of grain. In comparing series 12 with 14 the same results are found.

Plot 10 without nitrate of soda yielded a fair crop.

In series 16 and 17 (superphosphate versus basic slag as a source of phosphoric acid) the influence of the basic slag is pronounced. Half the amount of basic slag combined with an equal amount of superphosphate did not give as good yields as the basic slag alone.

In series 18 half the nitrogen and in series 19 all the nitrogen was furnished in the form of tankage. In series 20 half the nitrogen was furnished in the form of dried blood and half in the form of tankage. The yields are irregular.

SODA NITROGEN VERSUS NITRATE OF SODA

Upon inquiry of the Vancouver agents regarding soda nitrogen, a reply was received to the effect that the manufacturers found it unprofitable to manufacture this article in competition with the Chilean nitrate of soda and consequently had withdrawn it entirely from the market for the present.

VALUE OF COMMON SALT (SODIUM CHLORIDE) AS A FERTILIZER FOR MANGELS

The object of this test was to determine the value of common salt for growing mangels. The salt was applied in combination with superphosphate of lime and nitrate of soda. The variety of mangels grown was Danish Sludstrup. The land received an application of barnyard manure at the rate of twelve tons per acre and was well cultivated.

Plot No.	Fertilizers applied per acre in pounds	Yield per acre	
		tons	lbs.
1	Superphosphate 400, nitrate 200	28	1,872
2	Superphosphate 400, nitrate 200, salt 800	25	1,338
3	Superphosphate 400, nitrate 200, salt 400	26	1,516
4	Superphosphate 400, nitrate 200, salt 200	23	920

These results show salt of no value as a fertilizer in combination with superphosphate and nitrate.

EXPERIMENT—E21

YIELD OF OATS for the year 1922—The *second* year of three year rotation: 1st yr. mangels; 2nd yr. Oats 3rd yr. hay

Plot No.	Nitrate of soda in lbs. per acre applied April 24, 1922	Barnyard manure* in tons per acre applied in 1921	Fertilizers in pounds per acre applied May 5, 1921						Yields per acre 1922 (Oats)			
			Nitrate of soda	Superphosphate of lime	Muriate of potash	Basic slag	Tankage	Dried blood	Grain		Straw	
									tons	lbs.	tons	lbs.
1A			400	500	200					1,960	1	880
1B	200		200	500	200				1	800	1	1,680
1C	150		100	500	200				1	880	1	1,860
2A			200	500	200				–	1,940	1	780
2B	100		100	500	200				1	600	1	1,880
2C	75		50	500	200				1	1,080	2	240
3A			400	250	200				1	820	1	1,780
3B	200		200	250	200				1	1,600	3	1,760
3C	150		100	250	200				1	1,440	2	640
Check									1	600	1	1,680
4A			200	250	200				1	680	1	1,580
4B	100		100	250	200				1	1,400	2	440
4C	75		50	250	200				1	1,240	2	340
5A			400	500	100				1	840	1	1,800
5B	200		200	500	100				1	1,700	2	620
5C	150		100	500	100				1	1,880	2	1,040
6A			200	500	100				1	1,420	2	420
6B	100		100	500	100				1	1,640	2	960
6C	75		50	500	100				1	1,480	2	560
7A			400	250	100				1	760	1	1,580
7B	200		200	250	100				1	1,360	1	1,960
7C	150		100	250	100				1	1,200	1	1,860
Permanent Check									1	600	1	1,540
8A			200	250	100				1	840	1	1,800
8B	100		100	250	100				1	1,360	2	320
8C	75		50	250	100				1	1,320	2	220
9A		10	200	500	100				1	820	1	1,700
9B	100	10	100	500	100				1	1,240	2	80
9C	75	10	50	500	100				1	1,200	1	1,900
10				500	100				1	660	1	1,380
11A			400	500	100				1	840	1	1,740
11B			300	375	75				1	680	1	1,860
11C			200	250	50				1	400	1	1,080
12A			200	500	100				1	700	1	1,400
12B			150	375	75				1	880	1	1,800
12C			100	250	50				1	840	1	1,680
13A			400	250	100				1	1,100	2	240
13B			300	188	75				1	600	1	1,660
13C			200	125	50				1	600	1	1,660
14A		10	200	500	100				1	720	1	1,600
14B		10	150	375	75				1	440	1	1,380
14C		10	100	250	50				1	320	1	1,180
15A		10	200	250	100				1	480	1	1,540
15B		10	150	188	75				1	580	1	1,460
15C		10	100	125	50				1	360	1	1,040
16A			400	250	100	250			1	40	1	480
16B			300	188	75	188			–	1,900	1	500
16C			200	125	50	125			1	240	1	620
17A			400		100	500			1	200	1	620
17B			300		75	375			1	320	1	820
17C			200		50	250			1	240	1	880
Check									1	320	1	880
18A			200	360	100		384		1	140	1	580
18B			150	270	75		288		1	240	1	1,000
18C			100	180	50		192		1	680	1	880
19A				282	100		768		1	660	1	1,460
19B				212	75		576		1	600	1	1,560
19C				141	50		384		1	660	1	1,620
20A				306	100		384	280	1	840	2	240
20B				230	75		288	210	1	480	1	1,240
20C				153	50		192	140	1	560	1	1,160
21A		15							1	360	1	880
21B		10							1	300	1	740

*Barnyard manure was applied to whole area in the fall of 1920 at the rate of 10 tons per acre.

POULTRY

A considerable addition to the housing equipment was made during the year. A number of pens in the original contest house are being used for experimental feeding purposes while the remainder will be used as breeding pens and for other purposes required.

The 1922-23 contest is being carried on in a new house, part of which was built in the fall of 1921 and the remainder in 1922. This house follows the same general plan as the original contest house described in a previous report, and is divided into thirty-six pens, each pen being 6 feet in width by 16 in depth, the entire length of the house being, therefore, approximately 220 feet. This style of house is proving very satisfactory for climatic conditions in this district.

The stock on hand at the end of the year consisted of the following: Two hundred and six Barred Plymouth Rocks and two hundred and twenty-six S.C. White Leghorns, or a total of four hundred and thirty-two birds. All hens were trapnested, accurate record being kept of all eggs laid by each individual bird.

INCUBATION

The first chicks were hatched on March 25 and the last on May 17, the incubator used being the mammoth "Candee."

The average fertility was 92 per cent, but the number of chicks hatched was 40 per cent of the total eggs or 43 per cent of the fertile eggs. Sixty per cent of the chicks lived to maturity.

A considerable amount of custom hatching was done at a charge of three cents per egg. Indications are that custom hatching could be carried on with success if it were taken up commercially at convenient centres.

EGGS SOLD FOR HATCHING

The demand for Barred Rock hatching eggs continues to increase. Seventy settings were sold as compared to fifty or so of S. C. White Leghorns. The Barred Rock hatching eggs supplied did not meet half the demand. In the case of the Leghorns, however, all the settings of eggs asked for were supplied.

BREEDING STOCK SOLD

For breeding purposes, thirty Barred Rock cockerels and ten S.C. White Leghorn cockerels were sold. In this respect again, only about fifty per cent of the demand for Barred Rock cockerels was met while the demand for White Leghorns was very little.

The request for Rocks in both hatching eggs and cockerels was principally from farmers, who evidently demand a dual-purpose bird.

PEDIGREE BREEDING

All hens are trapnested. Pedigree and mating records are kept. Two main objects are sought for and these are Production and Reproduction, selection being for high production on the one hand with strict adherence to standard type on the other.

EGG RECORDS—YEARLING AND OLDER BIRDS

Breed	Total yearlings	Number of hens older	Number of hens laying 150–200 eggs		Number of hens laying 201–225 eggs		Number of hens laying 226–250 eggs		Number of hens laying over 250 eggs	
			Yearlings	Older	Yearlings	Older	Yearlings	Older	Yearlings	Older
Rocks	53	33	12	5	16	16	12	6	14	5
Leghorns	47	30	.....	.....	15	18	11	9	19	5

Egg production on the Farm has been raised considerably during recent years until at the present time 80 per cent of the Barred Rock breeders are over the 200 egg standard with individuals up to 277, 286 and 299 in the pullet year. All the White Leghorn breeders are over the 200 egg standard.

Subjoined is a copy of the egg yield and pedigree of Barred Rock pullet No. 201, that took highest honours in the pen which led the 1921-22 British Columbia Egg Laying Contest. This bird's success is largely due to her breeding:—

DOMINION EXPERIMENTAL FARMS—EGG AND BREEDING RECORDS

Pen No. Hatched March 24, 1921. Chick Band No. F. 34.

Variety—B.R. Out of Mating Adult Band No. 201.

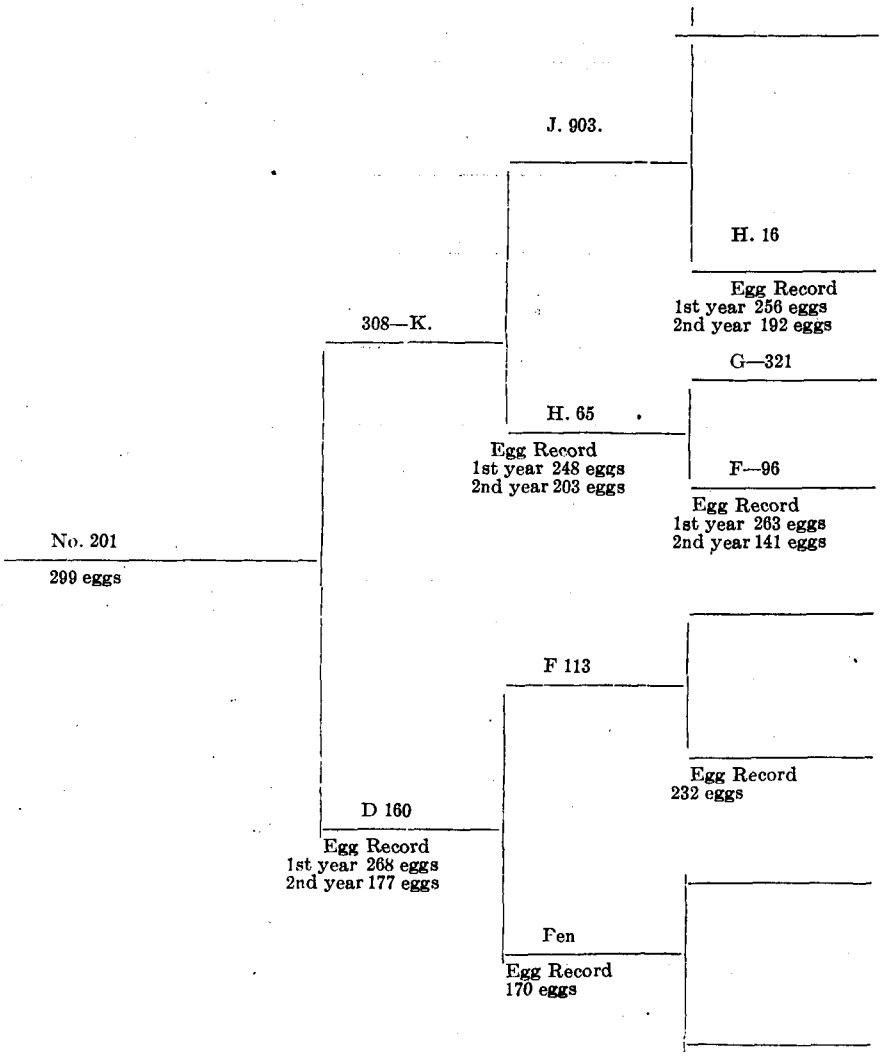
Date	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	Totals	
November	1	..	..	1	..	..	..	..	—	1	..	..	1	1	..	x	1	1	1	1	1	1	1	1	1	1	1	x	1	1	..	21	....
December	..	..	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	27	....
January	1	1	1	1	1	1	1	1	1	..	1	..	1	1	..	1	1	1	1	..	..	1	1	1	1	1	1	1	1	1	1	26	....
February	1	..	1	1	1	1	1	1	1	1	1	..	1	1	1	1	1	1	1	..	1	..	1	..	1	1	1	1	..	..	..	24	98
March	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	29	....
April	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	..	1	1	1	1	..	1	..	1	1	1	1	1	..	27	....
May	1	1	..	1	1	1	1	1	1	1	..	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	29	85
June	x	1	1	1	1	1	1	1	..	1	1	1	1	1	1	1	..	1	..	1	1	1	1	1	1	1	1	..	1	1	..	26	....
July	1	1	1	1	1	1	1	1	1	1	1	1	..	1	1	1	..	1	..	1	1	1	1	1	1	1	1	1	..	1	1	27	....
August	1	1	1	1	..	1	1	1	1	1	..	1	1	1	1	1	..	1	1	1	1	1	1	..	1	1	1	1	1	1	1	26	79
September	..	1	..	1	..	..	..	..	1	1	1	..	1	..	1	1	1	..	1	1	1	1	1	..	1	1	1	..	1	1	..	20	....
October	..	..	..	1	..	..	..	1	..	1	..	x	1	1	x	1	..	1	1	1	1	..	1	..	..	1	..	x	1	..	..	17	37

Body weight 6½ Egg color—Brown. Egg shape—round. .. 1st Egg. Egg weight— 25 oz. per Doz.

Year	Egg Record		Hatching Record					Mating	Daughters					
	Winter	Year	Eggs Set	Inf.	D.G.	Hatch	Mort.							
1	96	299												
2														
3														
4														
5														

B—Broody. T. Transferred X—Egg Broken.
N—On Nest M—Moult Begun. D—Died.

PEDIGREE OF B.R. PULLET NO. 201



FEEDING

COMMERCIAL FEEDS VERSUS HOME MIXTURE

Commencing November 29, 1921, and continuing until July 10, 1922, an experiment was carried on comparing a commercial scratch food and mash with the home-mixed scratch and mash generally used on the plant.

In this experiment, two pens of Barred Rocks and two White Leghorns were used, there being ten birds in each of the Barred Rock pens and fifteen in each of the Leghorn pens. Furthermore, the commercial mixtures were fed to one pen of Rocks and one of Leghorns and similarly with the home mixture.

The following table shows the results obtained from the various pens:—

Pen	Number of birds	Grain	Mash	Oats short sprouted	Milk	Grit	Shell	Green feed	Total cost feed	Eggs laid	Value	Cost per doz.	Lbs. feed per doz. eggs	Fertile and hatch-ability	Gain per bird
		lbs.	lbs.	lbs.	lbs.	lbs.	lbs.	lbs.	$ cts.		$ cts.	cts.			$ cts.
B.R. Home Mixt.	10	290	192	87	336	8·0	13·5	336	14 30	858	21 45	20	17·65	{F. 90% H. 40%}	71
B.R. Comm. Mixt.	10	311	145	87	336	9·5	11·25	336	14 80	825	20 60	30	18·0	{F. 90% H. 40%}	58
W.L. Home Mixt.	15	338	301	94	336	5·0	42·0	336	18 00	1,597	39 90	13	11·0	{F. 90% H. 40%}	1 46
W.L. Comm. Mixt.	15	384	213	71	294	1·5	38·45	294	17 95	1,520	38 00	30	10·25	{F. 90% H. 40%}	1 35

Prices:—Mixed grain: Home mixture, $43; Commercial mixture $40; Mash: Home mixture, $38; Commercial mixture, $57; Oats, short sprouted, $33. Milk, $10. Grit, $30. Shell, $42, Green feed, $5.

The home mixture consisted of grain: equal parts wheat and oats. Mash: bran, 100; shorts, 100; crushed oats, 100; corn meal, 100; soybean meal, 50.

No definite conclusions can be arrived at from any one experiment such as the foregoing. Especially is that the case in the present instance owing to the fact that the birds used were breeders. Were pullets available, a different home mixture would have been used when more definite results might have been possible.

With each breed, however, it may be noted that results are in favour of the home mixture. Commercial mixtures are not always constant, the quality of the ingredients apparently varying from time to time, according, possibly, to market conditions.

There were no deaths during the experiment, the health and condition of the birds being equally good in all pens. All eggs were above standard weight.

Experiments such as the foregoing will be continued for a length of time with a view to determining something conclusive concerning various commercial poultry feeds on the market.

CONFINEMENT VERSUS RANGE

Commencing November 29, 1921, and continuing until November 15, 1922, a comparison was made of birds confined against an equal number of birds on range. By "range" is meant not absolutely free range but access to range or yards similar to that allowed the rest of the flock.

For this experiment two pens of Barred Rocks and two of White Leghorns were chosen, comprising thirty-five pullets in each pen of Rocks and forty pullets in each pen of Leghorns. A continuation of this experiment will be carried on for five or more years, to determine the effect on birds so handled and the effect on their progeny.

From the following table, results are shown for the first year of the experiment:—

Pen	Grain	Mash	Oats short sprouted	Milk	Grit	Shell	Green feed	Total cost of feed	Eggs laid	Value	Cost per doz.	Lbs. feed per doz. eggs	Health and condition of birds	Death rate	Gain per bird
	lbs.	lbs.	lbs.	lbs.	lbs.	lbs.	lbs.	$ cts.		$ cts.	cts.				$ cts.
B.R. Range	1,717	1,057	348	1,628	13·5	118	1,650	83 85	6,270	182 85	16	12·5	Excellent	11%	2 80
B.R. confined	1,744	796	348	1,628	11 95	101	1,650	77 75	5,855	170 75	16	12·	Fair	20%	2 65
W.L. Range	1,649	1,153	348	1,628	14·5	138	1,650	85 10	7,678	223 95	13	10·5	Excellent	5%	3 47
W.L. confined	1,618	1,370	348	1,628	16·5	157	1,650	90 05	7,808	227 40	14	10·45	Good	2·5%	3 43

Prices:—Mixed grain, $44; mash, $48; oats, short sprouted, $33; milk, $10; grit, $30; shell, $42; Green feed, $5.
Grain consisted of equal parts cracked corn, whole wheat and oats.
Dry mash consisted of bran, 100 parts, shorts, 100; crushed oats, 100; corn meal, 100; beef scrap, 50; charcoal, 25.

Results for the first year of this experiment are in favour of range conditions, though not nearly so pronounced in the case of the Leghorns as in that of the Barred Rocks. All through the season it was apparent, even if merely judging by the eye, that confinement, to a type of bird such as the Barred Rock, was not likely to be conducive to best results. Also with the Leghorns it would appear from the foregoing figures that confinement does not make for such congenial conditions as the general run of opinion would indicate. It is true that the Leghorn, with its more sprightly characteristics, can tolerate confinement better than the Barred Rock can, but it remains to be seen whether the Leghorn will do as well when confined all the time as when allowed access to range.

Especially during the hottest and driest part of the season, note could be taken of the fact that the feathering, drooping condition and general attitude of the confined birds, particularly the Barred Rocks, but including the Leghorns, indicated that life was not such a pleasure to them as to their mates on range.

The weight of eggs did not appear to be influenced as there was an equally high percentage of standard eggs in either case.

As the foregoing experiment continues from year to year very interesting results are expected.

RECORD OF PERFORMANCE "A" AND "AA"

One hundred and fifty pullets were entered in Record of Performance "A." These included seventy Barred Rocks and eighty White Leghorns. Of the Barred Rocks, forty-one qualified for certificates of Record of Performance while seven qualified for certificates of Advanced Record of Performance. In the case of the Leghorns, forty-nine qualified for certificates of Record of Performance while eighteen qualified for certificates of Advanced Record of Performance.

With reference to Record of Performance "AA," certificates of which are obtained through the medium of the Egg Laying Contest, out of ten Barred Rocks entered one qualified for certificate of Record of Performance with nine qualifying for certificates of Advanced Record of Performance. Out of ten Leghorns entered, three qualified for Record of Performance certificates and two for Advanced Record of Performance certificates.

REGISTRATION

Out of ten Barred Rocks entered in the contest, nine qualified for registration (200 eggs or over) and of the ten Leghorns in the contest, five qualified for registration.

EGG LAYING CONTEST

October 30, 1922, completed the second British Columbia Egg Laying Contest conducted at Agassiz by the Experimental Farms Branch. Successful though the first contest carried on during the previous year may have been, the second was equally so.

Twenty-nine pens of ten pullets each, representing nine of the various utility and egg-laying breeds, were entered. These were as follows:—

	Pens
S.C. White Leghorns	11
Brown Leghorns	1
Anconas	1
Blue Andalusians	2
Rhode Island Reds, Rose Comb	1
Rhode Island Reds, Single Comb	1
Buff Orpingtons	2
Barred Plymouth Rocks	3
White Plymouth Rocks	1
White Wyandottes	6

The birds were housed in one long house and confined for the most part of the year. During the hottest part of the summer, however, the pens were opened up allowing the birds to go out and in at will to individual runs for each pen. These runs were of the same width as each pen, viz., six feet, and fifty feet in length. As the season advanced, the birds were allowed out more seldom until they were confined entirely again towards the latter part of the year.

The following method of handling and feeding the birds is the one adopted. Inside and near the front door of each pen a box of earth (dust bath) is placed. Straw is used for litter and the scratch grains are fed in this litter. The grain mixture consists of equal parts cracked corn, whole wheat and whole oats, and is fed twice a day care being taken not to have too much grain in the litter at any time. The dry mash is composed of bran 100 parts, shorts 100, crushed oats 100, corn meal 100, beef scrap 50, charcoal 25. Being fed from a wall self-feeding hopper, the mash is kept before the birds at all times. Grit and oyster shell are similarly supplied from a small hopper of two compartments, one containing oyster shell, the other containing grit. Green feed is provided in the form of kale, chard, cut clover or mangels. Skim milk is fed daily while water is before the birds practically all the time.

The following results compare well with those of the previous contest.

BRITISH COLUMBIA EGG LAYING CONTEST.—DOMINION EXPERIMENTAL FARM, AGASSIZ, B.C.

SUMMARY OF FINAL RESULTS OF CONTEST, 1921-22.

Total number of eggs	52,553
Average number of eggs per pen	1,812·17
" " " bird	181·21
Best pen, No. 20 (Agassiz Experimental Farm, Rocks) eggs	2,601
Average number of eggs per bird in best pen	260
Best bird, number 8 pen 28 (Reade and King) eggs	307
Number of birds laying 150 eggs and over and less than 175	51
" " 175 " " " 200	57
" " 200 " " " 225	51
" " 225 " " " 250	28
" " 250 " and over	15

Breed Average per Bird.

	Eggs
Barred Plymouth Rocks	197·0
White Leghorns	187·7
White Wyandottes	181·9
Rhode Island Reds	181·7
Blue Andalusians	177·7
Anconas	172·4
Buff Orpingtons	170·8
White Plymouth Rocks	155·0
Brown Leghorns	119·6

List Of Pens According To Egg Production

No.	OWNER AND ADDRESS	Breed	Total number of eggs
1	Dominion Experimental Farm, Agassiz	B.R.	2,601
2	Dominion Experimental Farm, Agassiz	W.L.	2,253
3	Surry W. L. Farm, Burnaby	W.L.	2,229
4	Dominion Experimental Farm, Summerland	W.W.	2,107
5	R. H. Grahame, Langley Prairie	W.L.	2,068
6	M. H. Rutledge, Sardis	W.L.	2,050
7	E. Yale Smith, Chilliwack	W.L.	2,024
8	Reade & King, Cowichan Station	W.W.	2,014
9	R. S. A. Jackson, Duncan	W.L.	2,000
10	C. P. Metcalfe, Hammond	W.L.	1,974
11	H. Sweatman, Agassiz	R.C.R.I.R.	1,966
12	H. C. Cooke, Victoria	W.W.	1,909
13	M. S. Stephens & Son, Courtenay	B.R.	1,850
14	T. H. Braim, Sardis	B.A.	1,815
15	W. Bradley, Langford	W.W.	1,785
16	R. Johnstone, Kelowna	B.O.	1,779
17	Sturgeon & Wells, Yennadon	B.A.	1,739
18	Geo. Nurse, Agassiz	Anc.	1,724
19	W. D. Bruce, Pitt Meadows	W.L.	1,678
20	D. Russell, Jubilee	S.C.R.I.R.	1,668
21	C. W. Robbins, Chilliwack	B.O.	1,638
22	A. Cant, Appledale	W.W.	1,610
23	A. Unsworth, Sardis	W.L.	1,593
24	Glen Bros., Armstrong	W.P.R.	1,551
25	A. S. Huntingford, Agassiz	W.W.	1,490
26	H. W. Bratt, Crofton	W.L.	1,481
27	H. Wilkinson, South Vancouver	B.R.	1,460
28	P. Darbey & Son, Hammond	W.L.	1,301
29	Mrs. S. Raby, Sardis	B.L.	1,196

List Of First Twenty Leading Birds

Total Number of Eggs	Breed	Owner
307	W.W.	Reade & King.
297	B.R.	Dom. Experimental Farm, Agassiz.
284	B.R.	Dom. Experimental Farm, Agassiz.
276	B.R.	Dom. Experimental Farm, Agassiz.
272	B.R.	Dom. Experimental Farm, Agassiz.
270	W.L.	W. D. Bruce.
267	B.R.	M. S. Stephens & Son.
266	B.R.	Dom. Experimental Farm, Agassiz.
265	W.L.	Dom. Experimental Farm, Agassiz.
255	W.L.	Surry White Leghorn Farm.
253	B.R.	Dom. Experimental Farm, Agassiz.
253	B.R.	Dom. Experimental Farm, Agassiz.
253	W.L.	Dom. Experimental Farm, Agassiz.
252	W.L.	W. D. Bruce.
250	W.L.	R. H. Grahame.
248	R.C.R.I.R.	H. Sweatman.
247	W.W.	Dom. Experimental Farm, Summerland.
244	B.R.	Dom. Experimental Farm, Agassiz.
243	W.W.	A. Cant.
241	W.W.	W. Bradley.

Average No. of eggs per bird for first 20 birds—262.

Note.—B.R.—Barred Plymouth Rock. W.L.—White Leghorn. W.W.—White Wyandotte.—R.C.-R.I.R.—Ross Comb Rhode Island Red. S.C.R.I.R.—Single Comb Rode Island Red. B.A.—Blue Andalusian. B.O.—Buff Orpington. Anc.—Anconas. W.P.R.—White Plymouth Rock. B.L.-Brown Leghorns.

PENS IN ORDER OF PROFIT

Pen	Owner and Address	Breed	Total value of Eggs	Total Cost of Feed	Total gain
			$ cts.	$ cts.	$ cts.
1	Dom. Exp. Farm, Agassiz	B.R.	75 56	29 79	45 77
2	Dom. Exp. Farm, Agassiz	W.L.	64 36	23 02	41 34
3	Surray W. L. Farm, Burnaby	W.L.	60 79	24 10	36 69
4	R. H. Grahame, Langley Prairie	W.L.	55 43	21 39	34 04
5	Dom. Exp. Farm, Summerland	W.W.	58 94	26 18	32 76
6	R. S. A. Jackson, Duncan	W.L.	55 2-	22 95	32 25
7	M. H. Rutledge, Sardis	W.L.	56 60	25 13	31 47
8	W. D. Bruce, Pitt Meadows	W.L.	48 52	18 30	30 22
9	E. Yale Smith, Chilliwack	W.L.	55 33	25 54	29 79
10	H. C. Cooke, Victoria	W.W	54 65	25 04	29 61
11	H. Sweatman, Agassiz	R.C.R.I.R.	53 28	24 42	28 86
12	Reade & King, Cowichan Sta.	W.W.	53 93	25 78	28 15
13	W. Bradley, Landford	W.W.	51 23	24 44	26 79
14	C. P. Metcalfe, Hammond	W.L.	51 62	25 27	26 35
15	Geo. Nurse, Agassiz	Anc.	46 28	20 64	25 64
16	Sturgeon & Wells, Yennadon	B.A.	47 04	23 21	23 83
17	A. S. Huntingford, Agassiz	W.W.	43 04	21 67	21 37
18	A. Cant, Appledale	W.W.	41 38	20 59	20 79
19	T. H. Braim, Sardis	B.A.	46 07	25 54	20 53
20	A. Unsworth, Sardis	W.L.	42 01	22 28	19 73
21	M. S. Stephens & Son, Courtenay	B.R.	46 62	26 99	19 63
22	C. W. Robbins, Chilliwack	B.O.	44 77	25 92	18 85
23	Glen Bros., Armstrong	W.P.R.	40 53	21 74	18 79
24	D. Russell, Jubilee	S.C.R.I.R.	45 51	26 74	18 77
25	H. W. Bratt, Crofton	W.L.	38 55	20 26	18 29
26	R. Johnstone, Kelowna	B.O.	45 72	28 43	17 29
27	P. Darbey & Son, Hammond	W.L.	36 12	18 87	17 25
28	H. Wilkinson, South Vancouver	B.R.	37 70	24 39	13 31
29	Mrs. S. Raby, Sardis	B.L.	28 55	19 50	9 05

SUMMARY OR RESULTS OF INDIVIDUAL BIRDS AND EACH PEN FOR THE PERIOD OF 52 WEEKS FROM NOVEMBER 1, 1921

X—Leading Pen. X—Leading Bird. D—Dead. *Substitute.

Pen	Breed	1	2	3	4	5	6	7	8	9	10	Floor	Total
1	W.L.	206	219	219	188	211	236	265	253	216	218	22	2,253
2	W.L.	D45	106	194	190	63	166	148	168	179	216	6	1,481
3	W.L.	165	D134	119	D79	252	D101	229	270	D108	191	30	1,678
4	W.L.	D61	183	73	106	D112	211	206	82	D63	180	24	1,301
5	W.L.	226	196	179	239	193	224	162	172	203	250	24	2,068
6	W.L.	*179	191	175	162	238	*186	199	203	212	204	51	2,000
7	W.L.	214	188	113	202	227	238	154	200	196	227	15	1,974
8	W.L.	*244	*219	195	222	219	*217	66	232	196	202	38	2,050
9	W.L.	235	189	143	220	,229	*188	181	209	155	220	55	2,024
10	W.L.	225	206	238	203	255	228	232	171	204	237	30	2,229
11	W.L.	155	229	118	209	175	158	75	164	188	73	49	1,593
12	B.L.	107	89	*121	189	131	83	146	12	96	155	67	1,196
13	Anc.	138	*149	223	*227	86	128	179	190	*208	174	22	1,724
14	B.A.	219	157	188	185	138	189	163	157	211	193	15	1,815
15	B.A.	139	171	186	151	221	147	131	213	191	153	36	1,739
16	R.I.R.	195	196	214	231	*145	248	142	173	174	196	52	1,966
17	B.I.R.	213	*129	158	127	195	173	167	131	131	210	34	1,668
18	B.O.	151	180	176	217	143	238	101	92	213	212	56	1,779
19	B.O.	112	203	222	145	156	202	168	181	142	56	51	1,638
20	B.R.	297	193	266	284	230	244	253	276	253	272	33	X2,601
21	B.R.	213	165	*203	113	209	*140	267	165	177	149	49	1,850
22	B.R.	156	155	161	138	146	150	172	117	109	D134	22	1,460
23	W.P.R.	172	192	113	149	155	113	163	156	165	163	10	1,551
24	W.W.	136	181	241	*160	203	158	165	183	186	130	42	1,785
25	W.W.	146	148	194	215	D'	229	243	59	179	168	29	1,610
26	W.W.	231	199	198	153	188	186	180	180	195	163	36	1,909
27	W.W.	237	175	35	225	D112	172	D8	D157	234	124	11	1,490
28	W.W.	180	180	177	190	159	202	235	X307	203	157	24	2,014
29	W.W.	247	217	225	*232	205	*140	156	206	185	216	78	2,107
													52,553

Out of the total number of birds entered in the contest, ninety-three qualified for certificates of Record of Performance "AA" and twenty-seven for certificates of Advanced Record of Performance "AA," while fifty-five are eligible for registration.

The keen interest shown by the public in their attitude towards the first British Columbia Egg Laying Contest was intensified as far as the contest just ended is concerned. The final results, whereby a Barred Rock pen led by a margin of 348 eggs above the second pen, while a White Wyandotte bird took highest honours with 307 eggs to her credit, go to show that excellent layers may be developed in a general purpose breed as well as in a specialized egg-laying breed.

In the province of British Columbia, where the poultry industry is of great importance, keen interest would naturally be expected in the egg laying contest but this interest is developing into enthusiasm.

BEES

The spring of 1922 found the apiary composed of three colonies of bees. Numbers one and two were in excellent condition, having wintered well, but number three was weak, as it sustained a loss of about sixty per cent of its bees from bad wintering.

The month of April was very unfavourable for honey production owing to the wet, cold, late spring and hence the absence of early bloom in any appreciable quantity. The hive on the scales showed a net loss of nine pounds during the month. During the first ten days of May, similar conditions to those of April prevailed, but for the next three months one of the best honey seasons on record was experienced. This period was unusually dry, warm and free from winds. In fact, by the end of July the drought had affected the bloom to such an extent that the honey flow came to an end earlier than usual. The season, taken as a whole, was one of the best on record. The three colonies produced 633 pounds of extracted honey, sixteen sections of comb honey and a new colony. Seventy-six pounds were fed back to the bees in preparation for wintering. During the month of June one colony produced 130 pounds and on one day (May 15) produced 15 pounds.

SINGLE WALL HIVE VERSUS KOOTENAY HIVE

The continued comparison of the single wall hive with the Kootenay hive verified the previous good record of the latter. The value of the Kootenay hive appears to be more from the fact that it provides good winter quarters rather than that it has much advantage during the summer season. There was very little loss of bees during winter from the Kootenay cases while the other type lost approximately sixty per cent and consumed 13 pounds more stores. The bees in the single wall hive were quite restless during five days in mid-winter, while those in the Kootenay remained quiet. The single wall hive with slip-over case will not winter bees successfully out-of-doors here. Even with the heavy loss, this hive recovered rapidly during early summer, and, if properly wintered, there would probably not be the difference in production. The Kootenay hives averaged 157 pounds more honey than the single wall hives. By giving more adequate winter protection in the form of a wintering case and plenty of packing to the single wall hives this year, this project will be continued and the production noted next season from colonies well wintered.

CONTROL OF EUROPEAN FOUL BROOD

There has been no sign of foul brood in the apiary since May, 1921. The methods followed in combatting this disease are proving successful. Plenty of

wholesome stores are supplied the bees for the winter and care is exercised in seeing that each colony is always headed with a good, purely mated Italian queen.

METHODS OF INTRODUCING QUEENS

On July 22, two queens were received from the Central Experimental Farm apiary. Both were successfully introduced, one by the "push in the comb" method and the other by "mailing cage" method. During the season of heavy honey flow, there is less difficulty in introducing queens than at other times and each of the following methods is recommended. The "push in the comb" method consists of placing the queen in a small wire cage about two inches square and forcing the cage into the comb near the top bar. This was done in a super above a queen excluder as introduction is less difficult in the super than in the lower chamber. On the third day the queen was let run on the combs and two days later, on being located, was put in the brood chamber. Ten days after the introduction of the queen large quantities of eggs and larvæ were found in the lower chamber.

The "mailing cage" method consists of placing the mailing cage on top of the brood chamber frames, wire cloth side down. The cardboard covering the candy hole was removed, the queen was released by the bees on the second day and five days later eggs and larvae were found.

INFLUENCE OF WEATHER CONDITIONS ON THE HONEY FLOW

For the purpose of securing data on the influence of weather conditions on the honey flow, a hive was kept on the scales for another season. The heavy honey yields secured are to a large extent attributable to the weather conditions. From May 10 to August 9 the total precipitation was only 3.05 inches. This unusually dry season, coupled with the fact that there were 527.5 hours of bright sunshine during the period and seventeen days so smoky that the sun could not shine, besides being unusually warm, bears out the fact that weather conditions have a great influence on honey production.

EARLY BROOD REARING

A system of early brood rearing was attempted, in order to have the colonies built up, ready to take advantage of dandelion, maple, fruit and other bloom. Hive No. 1 was treated by adding small amounts of uncapped stores weekly. No. 3 was given fifteen pounds of sugar syrup and No. 2 was left as a check, it being, if anything, the strongest colony. Early brood rearing was successfully stimulated as brood appeared ten days earlier in those colonies fed than in the check colony. Owing to the cold, wet spring, the actual production results of this experiment were spoiled, as, later, all colonies had to be fed. It would appear, however, to be good management to do early rearing when possible, as on May 15 one colony was so strong that it collected 15 pounds in one day.

PRODUCTION OF COMB HONEY

During the month of June, an attempt was made to have the bees provide comb honey in small sections. A section super was placed in the hive between a top super and the brood chamber with poor results. The bees, instead of going up to the super above, crowded the brood chamber. To get over this difficulty, the top bar of an ordinary Langstroth frame was adjusted so that eight sections fitted into it. These frames were then alternated with the ordinary frames in the super and some excellent comb honey was produced.

METHOD OF PLACING SUPERS

Observations here show that, in adding supers, it is advisable to place them next the brood chamber, putting partly filled ones on top, as when the supers are placed on top of full ones the bees are inclined to loaf in front of the hive. Care should be exercised in adding supers, especially if only foundation is used, to see that there are sufficient young bees or emerging brood in the hive so as to have enough young bees to draw out the comb. Otherwise the old or field bees will have to do the work and thus curtail production at a time when the honey flow is at its height.

EXTENSION AND PUBLICITY

Except the showing of live stock, little exhibition work was done by this Farm during 1922. A good exhibit of flowers was made at the local flower show held June 28. Some material was supplied to assist in making an Experimental Farm exhibit at Vancouver and New Westminster exhibitions, the display being in charge of the Summerland Superintendent.

Never before in the history of this Farm was such success met with in exhibiting live stock. Thirteen Holstein-Friesian cattle, five Yorkshire swine and six bacon hogs were exhibited at Vancouver exhibition. The following are some of the prizes won: Senior bull calf, first, junior champion and reserve grand champion; mature cow with record, first and reserve senior champion; cow three years, second; cow two years, second; senior heifer calf, first, junior champion and reserve grand champion; young herd, first; calf herd, first; get of sire, second; produce of dam, first; and produce of dam with a yearly record, first. In swine the mature boar got second; mature sow, second; yearling sow, first; mature pen, second; and three bacon hogs second.

For illustration of Exhibits, see Pages 32, 33.

Eight Clydesdale horses were shown at New Westminster. Six first prizes were won in the following classes: Yearling stallion, brood mare, three-year-old mare, yearling filly, 1922 foal, and agricultural gelding. The three-year-old was reserve grand champion being beaten only by the long famous Peggy Pride. The Dorset sheep did well also at New Westminster as they won one championship, ten first, three seconds and two third prizes. The mature ram and ram lamb won only second prizes.

Seven Clydesdale horses and nine Dorset sheep were shipped in November to the Portland International Live Stock Exposition, acknowledged to be the greatest show west of the Rockies. The stock did exceedingly well and won the following placings: Yearling stallion, first, junior champion and reserve grand champion; stallion foals, first and second; mare between four and eight years old, second; mare three years old, first, senior champion and grand champion; yearling filly, second; mare and foal, first; get of sire, second; produce of dam, third; display of five animals, first; draft gelding, first; draft team, third; and the draft team was shown as leaders of the first prize six-horse-team, there being seven six-horse-teams in the ring.

The Dorset sheep did even better than the horses as they won ten first prizes, seven second prizes and both championships with three other flocks competing. They won $210 out of a possible $212, the mature ram having to take second place in his class, but the ram lamb won the championship.

The superintendent, besides attending the exhibitions at which the stock was shown, visited the local and Chilliwack fairs and also acted as judge of Ayrshire and Holstein cattle at Victoria. While returning from Portland a call was made at the Puyallup Experiment Station and also the Hollywood Experiment Station and also the Hollywood Poultry Farm. Addresses were delivered at the Western Canada Live Stock Union Convention, Brandon, meetings of

dairymen at East Chilliwack and Fairfield island, and also to the members of the Chilliwack boys' and girls' pig club. Other meetings attended were the Calgary Horse Show and Bull Sale, Kamloops Bull Sale, British Columbia Dairymen's Convention at Chilliwack, directorate meeting of the Delta-Richmond Horse Breeders Club and meetings of the Chilliwack Agassiz Horse Breeders Club, which club the superintendent was secretary of. He was also supervisor of the Agassiz boys' and girls' pig club, which won first prize for the best club in the province and some of the members of which won high places at the Vancouver exhibition with their swine.

The assistant to the superintendent besides attending the larger fairs, inspected about fifty poultry flocks throughout the province for the Egg Laying Contest.

The exhibiting of the live stock, the good showing made in the Second Egg Laying Contest and the marvellous record made by Agassiz Segis May Echo in Record of Performance did much to popularize the work of the Farm and no doubt attracted many new visitors.

GENERAL FARM NOTES

An extension was built on the end of the poultry house erected last year, making a structure 216 feet long and 16 feet wide. This building is used to house the contest birds and accommodates thirty-six pens with ten birds in each. The work of building the cement floor in the office cellar was completed. Little land clearing was done other than blowing some stumps on about three acres of land in an attempt to complete the clearing on the eastern portion of the farm, south of the centre road. Some land draining at the base of the mountain was done and also considerable repair work on fences, necessary because of the havoc wrought by high winds. The only new permanent fence erected was a small one around the boarding house.