DOMINION OF CANADA
DEPARTMENT OF AGRICULTURE
DOMINION EXPERIMENTAL FARMS

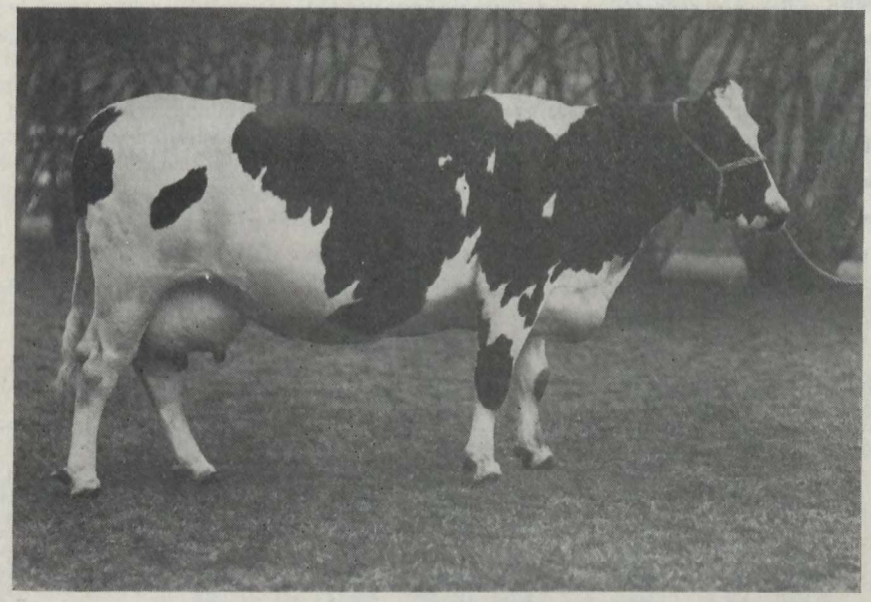
EXPERIMENTAL FARM

AGASSIZ, B.C.

REPORT OF THE SUPERINTENDENT

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

FOR THE YEAR 1928



Agassiz Pietje Inka Sylvia 62535: Sire, Inka Sylvia Beets Posch 5563; dam, Pietje Priscilla Mechthilde 14123. Bred and owned by the Dominion Experimental Farm, Agassiz, B.C. This cow produced, in 365 days, 29,012 pounds of milk and 1,257 pounds of butter-fat and is the highest butter-fat producing Holstein cow in Canada.

Printed by authority of the Hon. W. R. Motherwell, Minister of Agriculture, Ottawa, 1929

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SEASONAL NOTES

The lowest temperature recorded in 1928 was on January 1, when the thermometer registered 13 degrees. The absence of the customary cold windy season, the fact that January's maximum temperature was the highest since 1915, that February had the lowest precipitation on record with plenty of sunshine, that May had the most sunshine ever recorded for the month, that December's sunshine was only beaten in 1914 and 1919 and also that the total precipitation for the year, of 41·06 inches, is the lowest recorded for thirty-six years, all tended to make 1928 one of the most pleasant seasons from a climatic standpoint in the history of this Farm. For crop production 1928 provided very satisfactory conditions. Although the precipitation was twenty-eight inches less than the average for the preceding ten years, the shortage occurred in the non-producing months. For the six months, April to September, the rainfall recorded was 11·72 inches, which was well distributed. March was too wet to allow of early work on the land and April was quite cool with light showers but when seed was sown, the crops grew rapidly and, except that some difficulty was experienced in controlling weeds in June and the fact that hay crops had to be left till possibly a trifle over-ripe, no difficulty was experienced at harvesting time. The pasture fields were ready for grazing earlier than usual and carried a maximum of stock till fall. Roots and corn were good average crops. The cereals grew rapidly and an excellent crop of grain and straw was threshed on August 6 and the balance on August 14 without any discoloration from bad weather. No frost was recorded between April 1 and November 15.

METEOROLOGICAL RECORDS AGASSIZ, B.C., 1928

	Temperature				Precipitation				Sunshine	
	Maximum	Minimum	Mean	Mean 10 years average 1918-1927	Rain	Snow	Total	10 years average 1918-1927	Hours	10 years average 1918-19.7
	F°	F°	F°	F°	inch.	inch.	inch.	inch.	hours	hours
January	53	13	36·43	36·26	4·30	0·15	4·45	9·80	41·8	44·1
February	56	26	41·50	39·05	0·82	.....	0·82	6·76	122·4	71·9
March	74	30	46·31	42·99	5·56	.....	5·56	5·56	89·7	102·5
April	74	32	49·20	49·58	2·81	.....	2·81	4·51	120·6	129·8
May	90	38	60·16	55·02	2·03	.....	2·03	4·38	229·1	164·2
June	86	43	59·98	60·89	1·98	.....	1·98	2·67	105·6	167·4
July	93	48	66·40	65·04	1·41	.....	1·41	1·27	209·4	219·7
August	86	46	64·90	64·25	0·86	.....	0·86	2·57	202·1	181·8
September	87	36	58·46	59·05	2·63	.....	2·63	5·11	148·9	142·2
October	64	33	50·41	50·64	9·12	.....	9·12	8·73	79·5	94·6
November	59	28	43·82	43·48	4·90	.....	4·90	7·79	60·9	57·6
December	52	24	37·70	35·97	4·29	0·20	4·49	9·89	74·9	44·9
Totals	.....	.....	51·27	50·19	40·71	0·35	41·06	69·04	1,484·9	1,420·7

ANIMAL HUSBANDRY

DAIRY CATTLE

On December 31, 1928, the dairy herd numbered sixty-seven head of pure bred Holstein-Friesian cattle composed as follows: one mature bull, four junior bull calves, twenty-one mature cows, four of these being over twelve years old, four three-year-olds, six two-year olds, fourteen yearlings, and seventeen heifer calves. In November the herd sire, Sir Bess Ormsby Fobes 40th, died and at the end of the year there are twenty-five of his daughters in the herd and twelve more cows bred to him. During the year twenty-five cows freshened giving birth to six bull calves and twenty heifer calves, four of the bulls and eighteen of the females are being reared. Due to the very satisfactory increase in heifer calves, and the higher price of beef it was deemed an opportune time to dispose of some stock, particularly some of the older females. Two young bulls were sold for breeding purposes, one aged bull was slaughtered and two bull calves vealed. Nine breeding females were supplied to the Central Farm, two others were sold locally, one cow died and eleven were culled and sold for beef.

ACCREDITED HERD

In June the entire herd successfully passed the double test for tuberculosis and again qualified for full accreditation which had previously been lost in April, 1927.

EXHIBITION WORK

No cattle were exhibited at the summer shows this year. Twelve were shown at the Vancouver Winter Fair where the competition was not particularly strong. Two junior bull calves succeeded in winning first and third in their class, junior champion and reserve grand champion. Other placings secured were: dry cow, first; milking cow, first and second and grand champion; milking two-year-old, second; senior yearling, first; junior yearling, second; senior calf, first and third; junior calf, first and fourth; get of sire, third; progeny of cow, second; and dairy herd, first. Twe females were also included in the Provincial exhibit to the Canadian Royal. Agassiz Walula DeKol won sixth in the four-year-old milking class and Agassiz Queen Re-Echo was unplaced in the dry two-year-old class.

HERD RECORDS

(Projects A36 and A56)

The following list shows the performance of all cows finishing a lactation period during the year 1928. In this table feeds are charged at market value. Butter-fat is computed at 50 cents per pound and skim-milk at 25 cents per one hundred pounds. The average milk production of the twenty-six cows that finished a lactation period during the year was 11,288·59 pounds and the average fat production was 434·18. From the figures in the table it is found that the average feed cost to produce one hundred pounds of milk was $1.15 and to produce a pound of butter-fat was 33·54 cents.

MILKING RECORDS—COWS WHICH HAVE COMPLETED LACTATION PERIOD DURING 1928

Cow No.	Number of period	Number of days in lactation period	Total quantity of milk produced	Percentage of fat in milk	Total quantity of fat in milk	Quantity of butter (80%) produced	Quantity of meal consumed	Quantity of roots and silage consumed	Quantity of hay consumed	Quantity of beet pulp consumed	Pasture at $2.00 per month	Total cost of feed	Total value of product	Profit over feed
			lb.		lb.	lb.	lb.	lb.	lb.	lb.	$	$	$	$
145	6	365	29,012	4·33	1,257·00	1,571·25	5,718	20,880	1,815	3,252	3 00	261 54	693 37	431 83
176	3	365	20,480	3·44	705·00	881·25	5,358	25,260	1,690	781	8 00	213 37	398 58	185 21
226	1	365	16,352	3·55	581·00	726·25	4,640	16,735	1,346	963	7 00	187 14	327 29	140 15
230	1	342	14,361	3·91	561·00	701·25	4,128	12,250	1,680	1,721	.....	179 72	312 81	133 09
126	5	296	12,409	3·30	409·50	511·88	2,230	15,975	750	.....	11 75	100 23	232 67	132 44
178	3	466	14,102	3·46	487·93	609·91	3,414	21,553	1,065	46	14 75	145 88	275 69	129 81
93	9	397	13,227	3·63	480·14	600·18	3,379	22,870	1,130	.....	11 75	140 58	269 58	129 00
154	7	472	14,760	3·20	472·32	590·40	3,670	20,525	927	.....	8 67	140 95	269 37	128 42
77	10	372	13,949	2·94	410·10	512·63	3,139	19,575	863	.....	6 00	125 25	236 44	111 19
135	6	501	15,897	2·83	449·89	562·36	4,208	23,010	840	.....	14 00	161 89	260 71	98 82
192	3	470	14,375	3·20	460·00	575·00	3,937	24,375	1,130	110	13 50	163 99	262 34	98 35
169	4	394	12,099	3·35	405·32	506·65	3,214	20,570	1,000	.....	13 50	136 07	229 88	93 81
225	1	365	14,080	3·32	468·00	585·00	4,568	16,290	1,295	850	7 00	174 36	265 68	91 32
46	11	416	15,505	2·57	398·48	498·10	3,806	20,785	675	.....	14 50	147 91	234 12	86 21
227	1	294	10,240	3·87	396·00	495·00	3,315	13,375	1,075	921	5 00	145 37	221 04	75 67
81	9	389	10,995	3·20	351·84	439·80	3,098	17,945	675	.....	14 25	126 63	200 66	74 03
114	7	342	9,978	3·28	327·27	409·09	2,656	18,655	1,150	.....	12 00	119 04	186 08	67 04
222	1	330	8,132	3·84	312·27	390·34	2,848	18,125	675	.....	13 00	113 34	174 43	61 09
173	4	270	8,102	3·62	293·29	366·61	2,616	15,815	690	.....	9 00	106 08	164 87	58 79
157	3	281	11,115	3·55	394·58	493·23	3,936	23,755	2,280	244	11 00	167 79	222 30	54 51
215	2	344	9,408	3·17	298·23	372·78	2,882	17,705	690	.....	10 50	116 89	170 28	53 39
206	2	400	7,982	3·67	292·94	366·18	2,239	20,145	830	34	12 75	114 48	164 43	49 95
147	6	403	7,798	3·65	284·63	355·78	2,821	17,165	690	.....	8 00	113 49	159 85	46 36
56	10	366	9,357	3·28	306·91	383·64	3,160	18,860	675	.....	16 50	132 78	174 50	41 72
213	2	360	7,599	3·23	245·45	306·81	2,328	17,825	675	.....	14 25	110 55	139 82	29 27
127	7	375	7,802	3·08	240·30	300·38	2,626	25,600	1,600	.....	15 50	141 45	137 75	−3 70
Totals...	.....	9,740	329,116	.....	11,289·39	14,111·75	89,934	505,263	27,911	8,922	271 17	3,786 77	6,384 54	2,605 17
Averages	.....	375	12,659	3·43	434·21	597·04	3,459	19,433	1,074	.....	96 80	145 65	245 56	99 91

LIST OF RECORDS COMPLETED BY COWS IN RECORD OF MERIT DURING THE YEAR 1928

(Project A 57)

Name	Duration of test	Age of cow	Milk	Fat	Butter 80%
	days	y. m. d.	lb.	lb.	lb.
Agassiz Walula DeKol	7	4 5 5	461·0	19·47	24·35
Agassiz Pietje Canary	7	8 7 28	655·0	19·11	23·90
Agassiz Mercena DeKol	7	5 2 2	538·6	15·54	19·43
Agassiz Queen Re-Echo	7	2 1 3	410·5	11·89	14·87

LIST OF RECORDS COMPLETED BY COWS IN THE CANADIAN RECORD OF PERFORMANCE DURING THE YEAR 1928

(Project A 58)

Name	Age at start of test	Month starting test	Duration of test	Number of times milked daily	Amount of milk	Amount of fat	Per-centage of fat
	years days		days		lb.	lb.	%
Agassiz Pietje Inka Sylvia	8 ..	Oct. 1927	365	4	29,012	1,257	4·33
Agassiz Faforit DeKol	5 ..	Mar. 1927	365	4	20,480	705	3·44
Agassiz Pietje Canary Re-Echo	2 75	June 1927	365	4	16,352	581	3·55
Agassiz Queen Re-Echo	2 35	Nov. 1927	342	4	14,361	561	3·91
Agassiz Inka Pietje Twice	2 69	June 1927	365	4	14,080	468	3·32
Agassiz Lina DeKol Pietje	2 40	July 1927	305	4	10,240	396	3·87

MANGELS VERSUS SUGAR BEETS FOR DAIRY CATTLE

This experiment was conducted during the months of February and March. Each cow was fed ten to twelve pounds of grain per day, the mixture being three parts crushed oats, three parts bran, one part oil meal, one part corn meal, and costing 2·1062 cents per pound. Each cow also received 5 pounds of alfalfa hay, 50 pounds of ensilage and 30 pounds of such roots as were being fed. The alfalfa was valued at $30 per ton and the ensilage and roots at $5 per ton.

The experimental procedure was on the three-period plan regularly employed in the case of dairy cattle experiments.

During the first and third periods, one of the two comparative rations is used. During the second or intermediary period, the other ration is used. An average of production is made for the first and third period and this is compared with the results of the second. In this way, a control is established as relating to normal decline in milk flow, a factor making inadvisable the comparison of two periods one immediately following the other. In the following table, only two columns are shown, the figures represented in one of these being the average of two periods.

RESULTS WITH MANGELS VERSUS SUGAR BEETS FOR DAIRY CATTLE

Item		Mangels	Sugar beets
Number of cows on trial		10	10
Total milk produced by all cows	lb.	1,825·9	1,881·8
Number of days on test	days	7	7
Amount of milk produced per cow per day	lb.	26·08	26·88
Per cent of fat in milk produced	"	3·177	3·114
Total fat produced	"	58·02	58·60
Amount fat produced per cow per day	"	·829	·837
Grain consumed per 100 pounds milk produced	"	42·17	41·66
Grain consumed per pound fat produced	"	13·27	13·38
Silage consumed per 100 pounds milk produced	"	191·71	185·99
Silage consumed per pound fat produced	"	60·34	59·73
Mangels consumed per 100 pounds milk produced	"	115·03	111·60
Mangels consumed per pound fat produced	"	36·19	35·83
Sugar beets consumed per 100 pounds milk produced	"	115·03	111·60
Sugar beets consumed per pound fat produced	"	36·21	35·84
Alfalfa hay consumed per 100 pounds milk produced	"	19·17	18·60
Alfalfa hay consumed per pound fat produced	"	6·034	5·973
Total cost of feed	$	36 10	36 10
Feed cost to produce 100 pounds milk	$	1 977	1 918
Feed cost to produce 1 pound butter-fat	cts.	62 2	61 6

The results obtained in this test are very slightly in favour of the sugar beets. During the week the ten cows were getting mangels they gave 55·9 pounds of milk less than the week they were fed on sugar beets. The test, however, was slightly less in the latter instance so that the beets produced a half pound more butter-fat than the mangels. There was very little difference in the cost of milk or fat in either case. Sugar beets do not yield as well as mangels and are more difficult to harvest; so that unless they give better results from a feeding standpoint than in this trial they are not profitable to grow for feeding purposes.

CONTAGIOUS ABORTION

(Project A94)

Further satisfactory improvement has taken place in the herd as far as sterility and abortions are concerned. Only two abortions were recorded, No. 126 (a positive reactor and one of the bad actors in the herd) aborted a seven months fetus in January, and No. 225 aborted an eight months fetus on July 3. This latter cow had always given negative reactions to the blood test until she aborted, and since then always positive. Only twenty-five cows freshened during the year and from them twenty-four calves were reared, as one cow gave birth to twins, thus helping to offset the loss of two abortions. The reason for fewer cows freshening than ordinarily was not because more difficulty was experienced in getting them bred but rather due to the fact that quite a few cows of breeding age were sold. Nine negative females were supplied to the Central Farm, two were sold to local breeders, three cows and three off-type heifers were sold to the butcher, and five positive mature cows were also butchered.

BLOOD TEST FOR ABORTION

Dr. E. A. Bruce, Pathologist (Health of nimals Branch), Agassiz, and Dr. T. H. Jagger of Vancouver have continued in co-operation, with the application of the serological or blood test on the herd during the year. Tests were made of all animals in the herd in January, March, May, July, October and December, and except for two cows, the results were similar for each individual animal as in the preceding year. In every instance the male animals gave negative reactions.

Close study is being made of the results of the test as related to the actual breeding history of each individual in the herd. While this information has been classified, tabulated and summarized, it is considered inadvisable to report it at this juncture, but rather, to withhold until more observation is possible and a still greater mass of data available.

PROGRESS IN BREEDING HOLSTEIN CATTLE

(Project A502)

All of the sixty-seven Holstein cattle composing the herd at the end of the year 1928 were born on the farm and all were bred here except one cow, Agassiz Faforit Posch. The entire herd has been produced from six foundation cows, three of them purchased in 1912 and the remaining three in 1915. During the sixteen years of the herd's existence it probably never looked better or was more valuable than at the present time. Up to within a few years ago it was necessary to retain most of the females to increase the herd to proper size but lately some of the older cows have been disposed of and more severe culling has been practised among the younger stock.

For further information on the breeding of this herd see previous reports of this Farm, particularly for the years 1924 and 1925.

Pietje Family.—Three heifer calves were added to this family during the year while two heifers were sold and one cow died, leaving twenty-one members in the group at the end of the year. To this family went the honour of producing the second highest record of the herd when Agassiz Pietje Inka Sylvia produced 1,257 pounds of butter-fat in a year. Three two-year-old members of the family completed R. O. P. records averaging 535 pounds of butter-fat.

Aurora Family.—Four members of the Aurora family were disposed of and two heifer calves added leaving eight members in the group. Agassiz Mercena DeKol, a great grand-daughter of the foundation cow Aurora Mechthilde, was grand champion Holstein cow at the Vancouver Winter Fair and two of her daughters were respectively first prize senior yearling and first prize junior calf at the same show.

Lina Family.—The Lina family was decreased to eighteen head by the sale of nine females and the addition of seven heifer calves. This family has proved almost as prolific as the Pietje family.

Lady Lyons Family.—This family remains the smallest of the six in the herd. One cow was sold and one heifer calf reared making a total of three on hand the same as last year.

Walula Family.—This family is small with only four members. Two were sold during the year and one heifer calf reared. Agassiz Walula DeKol is a good show cow and made 24·35 pounds of butter in seven days.

Faforit Family.—Agassiz Faforit DeKol produced 20,480 pounds of milk and 705 pounds of fat in a year and afterwards gave birth to twin heifer calves. This makes her twice a 20,000 pound cow. Three females were sold and four calves reared making nine in this group.

The following is a list of bulls with daughters in the herd, all of which were bred on the farm except the first listed:—

BULLS AND NUMBER OF DAUGHTERS IN THE AGASSIZ HERD

Lundenwood Duke	1
Colony Sena Korndyke	1
Sir Natoye Korndyke	3
Inka Sylvia Beets Posch	4
Agassiz Aurora Canary	3
Agassiz Sir Inka Sylvia	1
Maplecrest KeDol Henry	7
Sir Canary Pietje	2
Agassiz Henry Pietje	1
Agassiz Champion Re-Echo	3
Agassiz Sir Canary Faforit	3
Tsussie Rajah	8
Sir Bess Ormsby Fobes 40th	25

SHOW RING ACCOMPLISHMENTS

It has not been the custom with the Agassiz Experimental Farm herd to send representatives on the Fair circuit every year. The policy has been rather to show occasionally, and thus demonstrate to the public the quality and type of animals bred, without having the expense of fitting and showing a herd annually. The herd has only been shown at the Class A Fairs in this Province, Vancouver and New Westminster. The exception was in 1927 when five head were sent to the Canadian Royal and in 1928 two accompanied the Provincial exhibit to the Royal. Every year that the herd was exhibited animals of championship calibre were produced except in 1927. The following is a very brief list of major winnings starting with 1918, the first year the herd was shown.

1918—Vancouver.—Grand champion cow, all breeds. First, progeny class.

1919—Vancouver.—First, Exhibitor's herd. First, progeny.
New Westminster.—Grand champion cow.

1922—Vancouver.—First, senior bull calf, junior champion and reserve grand champion; mature cow with record, first and reserve senior champion; senior heifer calf, first, junior champion and reserve grand champion; first for young herd, calf herd and progeny.

1924—Vancouver.—Two-year-old bull, first; junior bull calf, first; junior champion and reserve grand champion; first, young herd and calf herd.
New Westminster.—Junior and reserve grand champion bull; first, dry cow, young herd and calf herd.

1925—Vancouver.—First, mature bull and grand champion; first, senior bull calf, junior champion and reserve grand champion; first, dry cow and reserve grand champion; first, senior yearling heifer and reserve junior champion.
New Westminster.—First, aged bull and grand champion; first, dry cow and reserve grand champion; first, exhibitor's herd.

1926—Vancouver.—First, junior yearling bull; first, dry two-year-old and reserve senior champion.
New Westminster.—First, mature bull and grand champion; first and reserve grand champion cow.

1927—New Westminster.—Aged bull, second to a three times all American bull; first three year-old cow; first, progeny.

1928—Vancouver Winter Fair.—First, junior bull calf; junior champion and reserve grand champion; first, milking cow; senior and grand champion; first, dry cow; first, dairy herd.

PRODUCTION

Private production records are kept of all cows in the herd at all times; The Canadian Record of Performance, however, is the unit by which each cow's production is measured. Every cow in the herd over two years of age has qualified under R.O.P. rules. Since starting R.O.P. testing in 1915, forty-eight two-year-old, eight three-year-old, four four-year-old and twenty-eight mature records have been completed. During the first nine years of the work only forty-five per cent of the records completed showed a test of over 3·5 per cent. During the last four years seventy-three per cent of the forty-one records made tested over 3·5 per cent, while six of these were over four per cent.

The first 20,000 pound milk record was completed in 1922; to date the total is ten, two of the cows repeating this year. One 30,000 pound record has been made. Ten other records between 18,000 and 20,000 have been completed, four of them by cows under maturity. Of the forty-eight two-year-old records completed twenty-one were over 14,000 pounds of milk and seventeen were over 500 pounds of butter-fat.

BEST PRODUCERS IN AGASSIZ EXPERIMENTAL FARM HERD

Year	Name of cow	No.	Age	Milk	Fat
				lb.	lb.
1919	Agassiz Pietje Korndyke	26407	4	19,935	747
1919	Agassiz Segis May Echo	41302	2	19,302	674
1922	Agassiz Priscilla Korndyke	32145	Mature	20,399	751
1923	Agassiz Segis May Echo	41302	5	30,886	1,345
1923	Walula Artis	37234	Mature	21,071	687
1924	Agassiz Pietje Priscilla Korndyke	40720	Mature	24,567	849
1924	Agassiz Faforit DeKol	93272	2	21,343	801
1925	Agassiz Faforit Posch (305 days)	39321	Mature	20,138	880
1926	Agassiz Pietje Inka Sylvia	62535	Mature	23,646	819
1927	Agassiz Aurora Sylvia	58519	Mature	20,047	654
1928	Agassiz Faforit DeKol	93272	5	20,480	705
1928	Agassiz Pietje Inka Sylvia	62535	Mature	29,012	1,257

This list contains two cows each with records of over 1,255 pounds of butter-fat. These cows were both born and developed, and one was bred, by the Agassiz Experimental Farm. In no other herd in the world has such a feat been accomplished, and of the 151 Holstein cows on the American continent which have produced over 1,000 pounds of butter-fat in a year, Agassiz Segis May Echo stands in second place and Agassiz Pietje Inka Sylvia in fifth place. The latter cow has the highest butter-fat record of any living Holstein cow in Canada.

ADVANCED REGISTRY

The herd has been subjected to inspection under the Advanced Registry rules of the Canadian Holstein-Friesian Association, the bulls since 1925 and the females since 1927. During that time five XX bulls have qualified from this herd. For females, seven "Gold Medal", seven "Excellent" and twenty "Good" certificates have been secured since 1927.

DAIRY WORK

CHEESEMAKING

The manufacture of English Stilton and Cheshire cheese was carried on from January to October. A few Stiltons were made half size, weighting five pounds each when ripe. These, though slower to mature, turned out eventually to be typical in flavour and of good quality. Some customers find the ten pound size too large so it was thought that if a smaller cheese could be brought to perfection it would in many cases be more saleable.

Some experiments were also made which aim at an improved Pont l'Evêque. The objective is twofold, first to obtain a cheese weighing when ripe one pound instead of thirteen ounces, the weight of the original cheese, while still keeping it characteristic flavour and texture; second, to prevent the coagulation of the coat during the ripening process, which consumers complain of as being wasteful. To attain this latter point the cheese is wax coated when seven or eight days old. This prevents shrinkage due to excessive evaporation in the maturing process which is largely responsible for the thickening of the rind. This air-tight coating affects the cheese in a way which necessitates some changes in the character of the curd in its early stage. The experiment has not as yet been worked out to the point of obtaining a uniform quality of cheese but the degree of success obtained gave promise of improvement.

In the manufacture of Cheshire cheese a starter made from Ericsson's culture has been substituted for the Bulgaricus hitherto used, resulting in an improvement both in texture and flavour.

Weekly shipments of cream cheese were made to Vancouver, a total of 1,729 being sold during the year.

MILK AND CREAM TESTS

Milk testing of cows in the Experimental Farm herd has been continued and many samples of milk and cream were sent in by dairymen for testing. Four seven-day Record of Merit tests were supervised.

HORSES

The horses on December 31, 1928, totalled eighteen head; all are pure bred Clydesdales excepting one gelding and a pony and all were bred on the farm except four foundation mares and the pony. One mare was sold during the year. Bell raised a good horse colt this year. Of the four foundation mares and Topline Bute, which were bred to Music Hall, all are in foal. The average feed cost for the year of the eight horses doing most of the work was $110.74 for an average of 1,977 hours work accomplished, or 5·6 cents per hour. The average feed cost of maintaining two two-year-old and three yearling fillies was $56.69.

HORSE-RECORDS OF FEED AND LABOUR FROM JANUARY 1, 1928 TO DECEMBER 31, 1928

Name	Date of birth	Oats consumed	Bran consumed	Hay consumed	Roots consumed	Pasture at $2.00 per month	Total cost of feed	Hours of labour	Weight Dec. 31, 1927	Weight Dec. 31, 1928
		lb.	lb.	lb.	lb.	$	$		lb.	lb.
Diana	May, 1918	3,860	523	5,856	328	.....	117 20	2,576	1,660	1,790
Bob	May, 1923	3,804	523	5,758	306	.....	115 43	2,459	1,740	1,770
Mike	April 1922	3,680	523	5,856	306	.....	117 32	2,370	1,610	1,675
Buck	June, 1921	3,550	483	5,408	306	2 00	110 70	2,013	1,520	1,575
Glen	April 1924	3,818	523	5,506	304	2 00	116 20	1,845	1,690	1,760
Madge	June, 1915	3,153	523	3,992	172	4 00	85 44	1,626	1,630	1,750
Heather	June, 1918	3,447	523	5,510	298	4 00	112 64	1,512	1,600	1,875
Bute	April, 1924	3,148	523	6,000	298	2 00	100 96	1,410	1,505	1,725
Mac	April, 1924	3,150	523	5,506	304	10 00	113 99	1,180	1,720	1,900
Harry	May, 1925	3,023	474	4,617	251	6 00	97 98	1,140	1,630	1,700
Bell	June, 1916	2,196	523	1,474	142	14 00	72 92	.....	1,920	1,900
Heather Bell	Feb., 1926	1,622	361	2,140	257	14 00	61 07	.....	1,380	1,660
Sunbeam	May, 1926	1,552	351	1,360	104	14 00	57 30	.....	1,160	1,490
Carillon Chimes	April, 1927	1,538	328	1,136	143	14 00	55 20	.....	900	1,320
Belle of Music Hall	Feb., 1927	1,538	323	1,136	149	14 00	55 21	.....	1,000	1,425
Rosegay	May, 1927	1,510	316	1,136	149	14 00	54 67	.....	880	1,380

The two-year-old filly Heather Bell and the yearling fillies Rosegay and Belle of Music Hall were exhibited at Vancouver Exhibition in August. Rosegay won first and each of the others won second. At New Westminster Exhibition in September besides the three previously mentioned Doune Lodge Bell Heather and her yearling filly were shown. The mature mare won second in the yeld class, the yearlings won first, third and fifth, with Belle of Music Hall in first place and Carillon Chimes in the lower position. Heather Bell won the two-year-old class and the grand championship and with her sister were placed second in the progeny class.

SHEEP

The sheep on hand December 31, 1928, totalled seventy-five head consisting of two imported rams, one wether lamb, forty-eight ewes, twenty shearlings and four young lambs. Of the forty-eight ewes on hand at the close of the year 1927 one died before lambing and another gave birth to two dead deformed lambs. The remaining forty-six produced eighty-seven lambs and raised seventy-seven to maturity or lambed 190 per cent and reared 167 per cent. A keen demand for breeding stock was experienced during the year. The flock ram, five ram lambs, eight ewes and eleven ewe lambs were sold for breeding

purposes. Due to the low price offered for Easter lambs last year the ewes were not bred for early lambs. The first lot of market lambs, a group of twenty-five, were sold in June, one in July and the balance of fourteen in August.

Late in the year a new importation was received from Dorset, England, consisting of two rams and two ewes, each of the ewes with a strong pair of lambs. This new blood was urgently needed in the flock as too close breeding has been practised. Difficulty was also experienced by other Dorset breeders in the Province in securing unrelated rams. It is hoped that this new importation will relieve this situation.

VALUE OF SILAGE FOR PREGNANT EWES

(Project A559)

On December 17, 1927, forty-six pregnant ewes were divided into two equal groups. Lot one was given the run of the fields and when the weather was unsuitable for pasture the ewes were fed hay in the barn. They were given a half a pound of grain per ewe per day. From December 17 to January 14 they received four pounds of mangels per ewe per day and then as the snow began to disappear they received three pounds each till lambing time. They did not receive silage. Lot two was kept confined to bare paddocks and fed the same grain as Lot 1 with hay all the time. They did not receive roots but were given plenty of clover silage. Starting with 5 pounds of clover silage per ewe per day they were increased to 9 pounds in four weeks and continued on that amount till lambing time.

The lambing results from the two groups were almost as uniform as it was possible to be. The twenty-three ewes in Lot 1 gave birth to forty-three lambs and raised thirty-nine, their average weight at birth being 7·96 pounds. The silage fed group gave birth to forty-four lambs, raised thirty-eight with an average weight at birth of 7·55 pounds.

CO-OPERATIVE WOOL SELLING

(Project A342)

The 1928 wool clip consisted of 60 fleeces, 482 pounds making an average of 8·03 pounds per fleece.

Wool Clip

Number of fleeces	Grade	Pounds	Value	Amount
			cts.	$
3	Medium staple (¾ blood staple), Bright	21	35	7 35
2	Medium staple (¾ blood staple), Semi-bright	10	32	3 20
42	Low medium staple (¼ blood staple), Bright	357	34	121 38
10	Low medium staple (¼ blood staple), Semi-bright	66	32	21 12
3	Low staple (¼ blood staple), Bright	28	32	8 96
60		482	.....	162 01

It cost $27.70 for grading, selling, freight and membership leaving $134.31 for 482 pounds of wool, just under 28 cents per pound or $2.24 per sheep. The added service given by the Association of individual fleece grading was taken advantage of for the first time and proved of value.

RESULTS OF INDIVIDUAL WOOL GRADES 1928 CLIP

½ staple, bright		¼ staple, semi-bright	⅜ staple, bright	⅜ staple, semi-bright	Low ½ staple, bright
595	662	257	408	538	Empy 424
573	660	616	491	360	580
410	661	433	695		619
588	562	577			
4,041	563	483			
367	534	415			
608	583	436			
597	449	401			
450	552	517			
435	456	414			
575	599				
556	455				
624	638				
549	569				
633	482				
620					
432					
457					
509					
672					
669					
677					
652					
601					
657					
646					
659					
42		10	3	2	3 Total 60

SWINE

The swine on hand December 31, 1928, totalled forty-three head, all pure Yorkshires, consisting of two two-year-old boars, fourteen breeding sows and twenty-seven feeders. During the year fifty-six market hogs, thirty-three weaners, three old cull sows, one old boar, two young registered sows and four young boars were sold. A new herd boar bred by McClughan Bros., Port Kells, B.C., was purchased in August. This boar, Springdale Major 10, was Grand Champion at the Vancouver Exhibition in August.

SKIM-MILK VERSUS FISH MEAL FOR MARKET HOGS

(Project A571)

Continuing some experimental work conducted during the last two years, another comparison was made between edible fish meal and skim-milk as supplements to the grain ration for fattening hogs. The test was carried on in duplicate with six hogs in each pen. Lots 1 and 2 were fed a ration consisting of one part bran, one part corn meal, two parts shorts and seven per cent fish meal. This ration was fed wet as a slop; the hogs were given all they would consume. The cost of the meal mixture was 2·069 cents per pound. Lots 3 and 4 were fed a similar basic grain ration except that no fish meal was included and the cost was 1·93 cents per pound. They were given in addition, however, six pounds of skim-milk per pig per day, the milk being charged at 25 cents per 100 pounds. The trial lasted 64 days and was planned to show a direct comparison between fish meal and skim-milk. The fish meal was charged at $80 per ton and grain at market price.

SKIM-MILK VERSUS FISH MEAL

		Fish Meal Groups		Skim-Milk Groups	
		Lot 1	Lot 2	Lot 3	Lot 4
Initial weight, February 4	lb.	655	647	660	655
Final weight, April 7	"	1,035	1,060	1,055	1,100
Gain in weight in 64 days	"	380	413	395	445
Number of pigs	No.	6	6	6	6
Average daily gain per pig	lb.	0·989	1·076	1·029	1·160
Total value of gain at 9 cents	$	34 20	37 17	35 55	40 05
Amount of meal consumed, fish meal included	lb.	1,851	1,838	1,201	1,395
Value of meal consumed, fish meal included	$	38 30	38 03	23 18	26 92
Amount of milk consumed	lb.	.....	.....	2,150	2,304
Total cost of feed	$	38 30	38 03	28 55	32 68
Difference in value of gain and feed costs	$	−4 10	−0 86	7 00	7 37
Cost of feed per 100 lb. gain	$	10 08	9 21	7 23	7 34

The results secured are in favour of skim-milk, only slightly as a gain producer, but quite distinctly for producing cheaper gains. The results secured from this experiment and previous ones show that skim-milk at 25 cents per 100 pounds will produce cheaper pork than fish meal at from $70 to $80 per ton.

ADVANCED REGISTRY OF SWINE

A Board for the Advanced Registry of Swine in Canada was formed early in 1928, as the result of recommendations from those who were in a position to make a special study of the Danish system of hog breeding. Before the project was launched in its entirety the Board felt that some preliminary work should be attempted in a few of the swine herds. Previous to spring farrowing four sows were selected from the Agassiz Farm herd for study, from which the following data were secured. It is of interest to note that the young pigs in these four litters were all sired by Ottawa Warrior 33, that the four sows were each sired by the imported boar Rogerfield Masterpiece and that the dams of these four sows were all half sisters by Pine Grove Jock 2nd. Hence the breeding of the thirty-five hogs raised was very similar and one would expect little variation in results directly traceable to heredity. The four sows were born in the spring of 1925 and these were their fourth and fifth litters.

FEEDING AND GRADING DATA

Spring Litters					
Sow number		23	51	86	43
Date farrowed		Mar. 4	Mar. 19	Mar. 21	Mar. 28
Number of pigs farrowed		10	14	16	11
Number of pigs alive at 10 days		10	9	9	9
Number of pigs finished October 1		10	9	7	9
Date weaned		April 23	May 8	May 8	May 17
Age at weaning	days	50	51	49	50
Average weight at weaning	lb.	26·5	26·0	28·0	21·0
Total weight of litter October 1	"	2,030	1,730	1,428	1,620
Average weight per pig October 1	"	203	192	204	180
Average daily gain per pig weaning to finish	"	1·103	1·14	1·21	1·16
Total amount of milk consumed	"	3,290	2,688	4,291	4,389
Total amount of grain consumed	"	6,357	5,624	4,408	4,911
Total cost of feed	$	145 53	126 38	95 63	117 35
Average cost of feed per pig	$	14 55	14 04	13 66	13 04
Grading Results					
Number of selects		7	5	5	5
Number of thicks		1	4	2	.....
Number of lights		2	.....	.....	4
Per cent selects		70·00	55·6	71·4	55·6
Autumn Litters					
Date farrowed		Aug. 20	Sept. 4	Sept. 4	Sept. 15
Number of pigs farrowed		10	15	15	12
Number of pigs reared		7	6	7	7
Date weaned		Oct. 16	Oct. 24	Oct. 24	Nov. 9
Age at weaning	days	57	60	60	55
Total weight Dec. 31, 1928	lb.	515	422	430	330
Average weight Dec. 31, 1928	"	73·6	70·3	61·4	47·1

Although sow number 86 farrowed the largest litter she lost the most pigs during the first ten days, then just previous to weaning another was hurt by accident and on June 22 another died from pneumonia leaving only seven. Allowance was made for the feed consumed by the June casualty in making up the totals. The litter from sow number 43 was twenty-four days younger than the oldest group which was a handicap at the time of grading. They only scored five selects whereas had their feeding period been extended another three weeks it is believed that they would have scored one hundred per cent elegible for premium.

All the sows and young pigs were fed skim-milk. The sows from farrowing to weaning of the pigs were fed grain composed of equal parts bran, shorts and ground oats. The young pigs at weaning were fed besides milk equal parts shorts and crushed oats with twelve per cent oilmeal added. All the hogs were finished on a grain ration of 200 pounds shorts, 200 pounds ground oats, 100 pounds corn meal, 25 pounds oilmeal and 35 pounds fish meal. All hogs for slaughter were sold live weight for 10½ cents per pound.

FIELD HUSBANDRY

The rotation carried on at this farm is a four-year one and consists of: first year, hoed crop; second year, grain seeded down; third year, hay; fourth year, pasture. (Project F. 20.)

HOED CROPS

The crops grown in this section were corn and mangels. The entire area had been fall ploughed and ploughed again in the spring, barnyard manure at the rate of 12 tons per acre having been applied broadcast and turned under

with the spring ploughing. The portion reserved for mangels also received, at time of seeding, an application of commercial fertilizer in the proportion of one part nitrate of soda, two parts of superphosphate of lime and one part muriate of potash, at the rate of 500 pounds per acre.

The mangel seed was sown at the rate of 10 pounds per acre in drills set up 30 inches apart with a double mould-board plough, the varieties grown being Danish Sludstrup and Half Sugar White. The total mangel crop amounted to 110 tons 375 pounds from six acres.

Some of the corn was sown in hills three feet apart each way and the remainder in drills three feet apart. The varieties grown were Golden Glow, Longfellow and Northwestern Dent, and from 25 acres there were 255 tons 1,760 pounds harvested.

GRAIN

The grain (oats) was grown on land that had been in hoed crop the previous year, the area having been ploughed in the spring. The grain was seeded down with a grass and clover mixture of 9 pound red clover, 3 pounds alsike clover, 2 pounds White Dutch clover, 2 pounds Italian rye grass and 2 pounds orchard grass per acre. The total crop of grain harvested amounted to 34 tons 580 pounds from 35 acres.

HAY

From 20 acres 218 tons 650 pounds of clover silage and 17 tons 220 pounds first cutting of hay were harvested. The second cutting yielded 28 tons 912 pounds hay. From a second year's crop of 28 acres 1 ton 795 pounds of hay per acre were harvested.

PASTURE

The past season was satisfactory. The stock were turned out early and the pasture carried a maximum number throughout the year.

SUMMARY OF YIELDS, VALUE AND PROFIT AND LOSS PER ACRE—FOUR-YEAR ROTATION

Rotation year	Crop	Yield per acre, 1928	Value of crop, 1928	Cost of production, 1928	Profit or loss per acre, 1928
			$	$	$
1	Mangels	18 tons	60 30	121 06	−60 76
	Corn	10 "	66 50	78 37	−11 87
2	Grain (oats)	57 bush.	38 50	47 94	− 9 44
3	Hay	5 tons	100 00	39 45	60 55
4	Pasture	.....	8 40	21 79	−13 39

COST OF PRODUCTION

The following table shows the cost prices and return values in determining the cost of producing the various crops of the four-year rotation:—

Cost Prices

Rent including taxes	$16 00 per acre
Manure—	
The cost of the manure as distributed as follows: 40 per cent to the first crop of the rotation, 30 per cent to the second, 20 per cent to the third and 10 per cent to the fourth.	
Manual labour	0 27½ per hour
Teamster labour	0 30 "
Horse labour	0 15 "
Machinery	2 85 per acre
Twine	0 20 per pound
Threshing	0 04¼ per bushel
Oats	0 85 "
Corn	0 08 per pound
Mangel seed	0 50 "
Red clover	0 33 "
Alsike clover	0 27 "
White Dutch clover	0 47 "
Italian rye grass	0 12 "
Orchard grass	0 22 "

Return Values

Oats	$ 0 50 per bushel
Hay	20 00 per ton
Oat straw	10 00 "
Corn silage	6 65 "
Roots	3 35 "

The following tables show the details of the cost per acre for producing mangels, ensilage, corn, oats, hay and the profit obtained or loss incurred:—

COST PER ACRE OF PRODUCING MANGELS

Item	1928	Average 1924–1928
	$	$
Rent and taxes	16 00	20 00
Manure	17 16	19 26
Seed	5 00	5 00
Machinery	2 85	2 90
Manual labour	67 75	58 97
Horse labour	12 30	10 70
Total cost per acre	121 06	116 83
Yield per acre ..... tons	18·00	19·00
Value per acre ..... $	60 30	63 54
Loss per acre ..... $	60 76	53 29

COST PER ACRE OF PRODUCING ENSILAGE CORN

Item	1928	Average 1924–1928
	$	$
Rent and taxes	16 00	20 00
Manure	9 60	9 60
Seed	1 60	1 60
Machinery	2 85	2 90
Manual labour	36 87	29 50
Horse labour	10 65	10 35
Twine	0 80	0 80
Total cost per acre	78 37	74 75
Yield per acre ..... tons	10·00	10·50
Value per acre ..... $	66 50	86 26
Profit or loss per acre ..... $	−11 87	11 51

COST PER ACRE OF PRODUCING OATS

Item	1928	Average 1924–1928
	$	$
Rent and taxes	16 00	20 00
Manure	11 32	9 78
Seed	2 55	2 55
Machinery	2 85	2 90
Twine	0 60	0 60
Manual labour	7 25	7 05
Horse labour	4 95	4 15
Threshing	2 42	2 39
Total cost per acre	47 94	49 42
Yield per acre, grain bush.	57	55
Yield per acre, straw ton	1	1·25
Value per acre, grain $	28 50	25 63
Value per acre, straw $	10 00	9 50
Total value $	38 50	34 13
Loss per acre $	9 44	15 29
Cost per bushel $	0 63	0 72

COST PER ACRE OF PRODUCING HAY

Item	1928	Average 1924–1928
	$	$
Rent and taxes	16 00	20 00
Manure	6 18	6 52
Seed	2 70	2 68
Machinery	2 85	2 90
Manual labour	9 47	6 75
Horse labour	2 25	1 93
Total cost per acre	39 45	40 78
Yield per acre tons	5	3·75
Value per acre $	100 00	68 18
Profit per acre $	60 55	27 40

HORTICULTURE

The year 1928 has given, generally speaking, better weather conditions than usual, with a total precipitation of 41·06 inches as compared with 69·04 inches for the previous ten-year average. This year's total establishes a minimum record since climatological data were first taken, in 1892. Weather conditions at fruit blossom time were however as usual adverse to a heavy fruit crop. During April there are as a rule many cloudy and wet days with cool nights, and this year was no exception. These conditions adversely affect the maximum setting of tree fruits.

The garden area was largely given over to testing of varieties of different vegetables, with some cultural experiments. The trees and shrubs, herbaceous perennials and annual flowers are grown to test their suitability to this climate and for demonstrational value for the many visitors to the farm. There is no doubt that this feature of the work has a very considerable educational value.

Further work was done on the production of foundation stock seed and to those kinds of vegetables grown in 1927 for this purpose, there were added this year, Masterpiece beans, Copenhagen Market cabbage, Danvers Half Long carrots, New York lettuce and Green Trailing vegetable marrow. Foundation

seed production requires a large area of ground, entails a lot of work and results are obtained slowly, but the production of pure varieties of vegetables should prove of considerable benefit as there is much left to be desired from the average commercial seed.

Variety testing of fruit and vegetables has for several years past been the main feature of the horticultural work. With the majority of vegetables it has been fairly conclusively shown which of the few of the many kinds tested are the most suitable. In the future it is proposed to discontinue much of this work but from time to time to check new kinds with the accepted standards. By so doing more time and land will be available for cultural experiments. With this policy in mind the more suitable varieties of each kind of vegetable as grown here during recent years are herewith recommended.

VEGETABLES

ARTICHOKES

Artichokes, though frequently grown as a fodder crop, may also be considered as a horticultural crop. Large yields of tubers of good eating quality can be obtained. Tubers are best left in the ground until used as they shrivel considerably when dug. Freezing causes no injury. They may be cultivated as perennials, small tubers left in the ground acting as sets for the next crop.

The following yields were recorded this year from a middle row 30 feet long: tubers, 54 pounds, tops 45½ pounds, representing a yield per acre of 15 tons 1,363 pounds of tubers and 13 tons 426 pounds of tops.

BEANS DWARF

Green varieties—Masterpiece, Early Red Valentine, Early Bountiful, Best of All, and for a late variety Refugee.

Wax varieties—Davis White Wax, for a late variety Hodson Long Pod. (Project H. 61).

BEETS

Detroit Dark Red, Early Flat Egyptian. (Project H. 68).

BRUSSELS SPROUTS

Heavy yields of Brussels sprouts are not ordinarily obtained. Sprouts and leaves should be picked off as they mature. Best varieties are Barr Little Gem, Dwarf Improved, Paris Market. (Project H. 70.)

CABBAGE

Early varieties—Golden Acre, Copenhagen Market.

Midseason varieties—Copenhagen Market, Dala, Glory of Enkhuizen.

Late varieties—Brunswick, Danish Roundhead, Danish Ballhead.

Red varieties—Blood Red.

Savoy varieties—Green Globe. (Project H. 77.)

CARROTS

Chantenay is good in quality and a high-yielding variety. Nantes or Scarlet Horn are a little superior in quality but lower in yield. (Project H. 63.)

CAULIFLOWER

Cauliflowers are best produced as an early summer or a fall crop. For the former seed should be sown either in the open or in a hotbed, early in February, and for the latter about the middle of April in the open. Good early varieties are Early Snowball, Early Dwarf Erfurt, and Fordhook. Late varieties, Veitch Autumn Giant and Danish Perfection. The early varieties are also very adaptable for fall crops. (Project H. 88.)

CELERY

Easy Blanching, Golden Self Blanching, and White Plume are the most satisfactory varieties to grow, though they do not yield as heavily as Winter King, Giant Pascal and other late green varieties. (Project H. 94.)

CELERIAC

Turnip-rooted celery or celeriac has few strains or varieties. That known as Prague is most popularly known. Celeriac grows moderately well, the roots being used as a cooked vegetable.

CITRON

Citrons yield abundantly but are little in demand. Colorado Preserving is a satisfactory variety. (Project H. 309.)

CORN

Early varieties—Pickaninny, Banting, Sixty Day Golden.
Main crop varieties—Golden Bantam, Golden Giant, Groff Golden, Early Malcolm.
Late varieties—Howling Mob. (Project H. 102.)

CUCUMBERS

Table varieties—White Spine, Davis Perfect, Early Fortune.
Pickling varieties—Snow Pickling. (Project H. 106.)

KOHL RABI

This is a vegetable which yields well, is of good quality and should be better known. It closely resembles turnips and is of easier cultivation, being more immune to attacks of flea beetles and root maggots. Either White or Purple Vienna are satisfactory varieties to grow. (Project H. 110.)

LEEK

Giant Carentan, Musselburgh. (Project H. 112.)

LETTUCE

Leaf varieties—Grand Rapids.
Head varieties—New York, Hanson, Iceberg.
Cos varieties—Paris White. (Project H. 126.)

MUSKMELON

Much depends on the season and locality in producing this crop. Unless given an early start, and this followed by a warm summer and a late fall, little ripe fruit will be produced. Emerald Gem has proved the most satisfactory variety. (Project H. 122.)

ONIONS

Onions may be divided into four groups. First, yellow onions, of which the best are Yellow Globe Danvers and Southport Yellow Globe.

The second group is best represented by Ailsa Craig and Prizetaker, which are of lighter colour, milder flavour, and are higher yielding than the above.

The third group, red onions, is best represented by Wethersfield and Southport Red Globe.

The fourth group, white onions, is best represented by Southport White Globe. (Project H. 138.)

PARSLEY

Two excellent varieties are Imperial Curled and Champion Moss Curled. (Project H. 140.)

PARSNIPS

Hollow Crown has proved itself to be the most satisfactory variety. (Project H. 144.)

PEAS

Peas can be divided into three groups, according to their length of vine: dwarf up to three feet, intermediate up to four feet six inches, and tall up to approximately seven feet.

The first group is best represented by Alaska and Little Marvel, which are early varieties; Lincoln and Stratagem, a midseason and a late variety. The second group is best represented by Thomas Laxton for an early variety and Bruce, a late variety, a production of the Dominion Experimental Station, Invermere. The third group is best represented by two late varieties, Duke of Albany and Golden. The latter is also a production of the Dominion Experimental Station, Invermere. (Project H. 153.)

PEPPERS

Large fruited and mild—Earliest, Neapolitan, Ruby King, Hamilton Market.

Small fruited and hot—Long Red Cayenne.

The last-named variety requires a longer season in which to mature. (Project H. 157.)

POTATOES

Early varieties, white—Early St. George, Epicure, Eureka, Extra Early.

Early varieties, rose or pink—Bliss Triumph, Early Rose, Early Ohio, Vicks Extra Early.

Main crop varieties treated as early potatoes have not been in any way comparable for yield and earliness. In the main crop varieties there are several groups, the three most important are the Burbank, Green Mountain, and Up-to-Date.

The two most important varieties of the first group are Burbank and Netted Gem. Neither of these varieties have succeeded here due probably to the soil being too light and dry during the growing season. Both are, however, important varieties in certain parts of the province.

The leading varieties in the Green Mountain group are Green Mountain, Gold Coin, and Wee McGregor.

The leading varieties in the Up-to-Date group are Up-to-Date, Eureka, Jones White, and Table Talk. (Project H. 186.)

PUMPKINS

Small Sugar or Pie pumpkin is a good variety and adaptable for home use on account of its moderate size. (Project H. 188.)

RADISH

French Breakfast, olive shaped, and Scarlet Turnip White Tipped, round shaped, are two very satisfactory varieties. (Project H. 192.)

RHUBARB

McDonald, a variety recently introduced by McDonald College, is a very promising kind of exceptional vigour. (Project H. 195.)

SALSIFY

Also known as Vegetable Oyster, variety Sandwich Island. This vegetable does moderately well but is not in popular demand.

SPINACH

Noble Gaudry, King of Denmark, and Juliana are three good varieties. (Project H. 199.)

SQUASH

The Green Hubbard and Golden Hubbard are the two best varieties and keep well until winter. Summer Crookneck is an early, high quality variety but lower in yield. The perfect Gem or Cream variety is of good quality, yields less than the Hubbards but is of a very convenient size for home use, fruits averaging about one pound. (Project H. 201.)

SWISS CHARD

This is a satisfactory summer green and yields well until late in the fall. Lucullus is a light green and Fordhook Giant a dark green variety. (Project H. 203.)

TOMATOES

There are many varieties and strains of tomatoes listed in catalogues but when classified as to any appreciable difference the number can be cut down to comparatively few. Three important features of a good tomato are, earliness, type and yield. The earliest varieties grown here have been the Earliana and Alacrity or strains of these. They are, however, rough but, by selection, improved strains are to be obtained. Best of all is a smooth fruited, medium-sized variety, which has yielded well but is one of the later maturing kinds. Bonny Best is rather similar but is more subject to blossom end rot. Victoria Whole Salad is a comparatively small fruited, smooth variety, maturing approximately the same time as Best of All. It is a very high yielding variety and produces a maximum amount of clean marketable fruit. (Project H. 211.)

TURNIPS

Good varieties are Purple and White Milan, Snowball and Red Top Strap Leaf. (Project H. 214.)

VEGETABLE MARROW

Vegetable marrows are of two main kinds, green and white bush and green and white trailing. The former varieties are more economical of space but do not give as high an average yield per hill as the trailing varieties (Project H. 216.)

CULTURAL EXPERIMENTS

The following table gives the comparative result between fall, spring, and hotbed-sown seed. The different seedings of cabbage, cauliflower, and Brussels sprouts were all transplanted.

Project H. 640—Fall versus spring-sown seed.

Project H. 74—Cabbage. Seed sown in open versus seed sown in hotbed.

Project H. 84—Cauliflower. Seed sown in open versus seed sown in botbed.

PROJECTS H 640, H 74, AND H 84

Vegetable	Variety	Date sown, 1928	Where sown	Per cent germinated	Ready for use	Yield	Remarks
Beets	Detroit Dark Red	Feb. 3	Open	65	June 13	85 roots	Bolted when roots were one inch in diameter.
"	" "	Mar. 19	"	60	" 25	55 "	
"	" "	May 1	"	80	" 30	44¼ pounds	The best sowing date.
Brussels sprouts	Dalkeith	Feb. 3	"	75	Sept. 15	6½ "	Seedings of Aug. 13 and 30, 1927 germinated but young plants were winter killed.
" "	"	" 27	"	95	" 15	3¾ "	
" "	"	April 25	"	80	" 17	1½ "	
" "	"	Feb. 27	Hot bed	95	Aug. 30	12 "	
Cabbage	Flower of Spring	" 3	Open	85	July 31	41¾ "	Seedings of Aug. 13 and 30, 1927 were winter killed.
"	" "	" 27	"	95	Aug. 5	31¼ "	
"	" "	Mar. 19	"	85	" 27	35 "	
"	" "	April 25	"	65	Sept. 15	15½ "	
"	Copenhagen Market	Feb. 3	"	30	July 13	38 "	Seedings of Aug. 13 and 30, 1927, were winter killed.
"	" "	" 27	"	95	" 31	60 "	
"	" "	Mar. 19	"	30	" 25	35½ "	
"	" "	April 25	"	75	Sept. 7	26½ "	
"	" "	Feb. 27	Hot bed	95	June 27	57¼ "	
Carrots	Chantenay	" 3	Open	90	" 5	155 roots	
"	"	Mar. 19	"	90	" 15	105 "	
"	"	May 1	"	80	July 3	56½ pounds	
Cauliflower	Early Snowball	Feb. 3	"	75	Aug. 24	25 "	
"	" "	" 27	"	95	" 31	26¼ "	
"	" "	April 25	"	65	Sept. 20	24 "	
"	" "	Feb. 27	Hot bed	95	June 27	27½ "	
Onions	Red Wethersfield	" 3	Open	75	.....	.....	Neither seeding produced a crop.
"	"	Mar. 19	"	40	.....	.....	
Turnips	Purple Milan	Feb. 3	"	60	.....	.....	Bolted.
"	"	Mar. 19	"	60	June 10	.....	Yielded a fair crop, ran to seed quickly.
"	"	April 19	"	85	" 25	85¼ pounds	

LETTUCE

Fall, Spring and Hotbed Sown Seed, Project H 640 and H 113.—Variety Big Boston. Seeded on August 13 and 30, 1927, young plants did not attain edible size and were winter killed. A few seeds germinated in spring and heads were ready for use on June 22. Seedlings of February 2 and March 19 were ready for use, June 13 and June 23 respectively, with little difference in quality or yield, both ran quickly to seed. Seeds sown in a hotbed and transplanted and seeds sown in the open on February 27 were ready for use on May 31 and June 18 respectively. Seed sown in the open on April 17 was ready for use on June 25, this is the average date for the main crop seeding. The chief difference in the various dates of early spring sowing, lies in the earliness of maturity. There was a tendency for the earlier sowings to run to seed more quickly. Similar comparative results were obtained with the Grand Rapids variety.

ONIONS

Sown in Hotbed versus Sown in Open, Project H 137.—Three varieties, Ailsa Craig, Prizetaker, and Red Wethersfield, were sown in the hotbed on February 27 and transplanted to the open on April 21. On this date the same three

varieties were sown in the open in thirty-foot rows. Each variety sown in the hotbed outyielded the check, the totals for the three varieties being 117 pounds as compared to 63 pounds. The transplanted varieties produced large onions with somewhat thickened necks and several doubles.

EARLY POTATOES

Fertilizers versus No Fertilizer.—During the past three years early potatoes have been fertilized with a commercial fertilizer of the formula 7-4-9 applied at the rate of 500 pounds per acre. This mixture consists of 259 pounds of nitrate of soda, 142 pounds of superphosphate of lime and 99 pounds of muriate of potash. The fertilizer was scattered over the drills after covering the potatoes. Each year the test was conducted in triplicate with rows thirty feet long. The following table gives the results obtained.

EARLY POTATOES—FERTILIZER TEST

Variety	1926		1927		1928		Total yield	
	Yield fertilized rows	Yield unfertilized rows	Yield fertilized rows	Yield unfertilized rows	Yield fertilized rows	Yield unfertilized rows	Fertilized rows	Unfertilized rows
	lb.	lb.	lb.	lb.	lb.	lb.	lb.	lb.
Bermuda	58	37¾	67½	43	47	39½	172	117¼
Early Ohio	54	43½	51¼	39¾	33	31½	175½	120
Vicks extra early	60	36	56½	37¼	36¼	32¼	116¼	103
Price received per pound	8½ cents		2 cents		6 cents			

Total average yield per acre... lbs.	Fert. rows	Unfert. rows	Fert. cost per acre	Average value of increase
	9,970	7,319	$13.65	$145.80

1927—Lowest price ever received for new potatoes.
1928—Soil conditions poor, worst for fertilized plots.

SPINACH

Fall versus Spring Sowing, Project H 640.—Variety King of Denmark. Three fall sowings were made on August 15, August 30 and September 26. The first two grew and were partly killed back, and the third sowing did not germinate. Five and one-half pounds were harvested on May 22 from the August 15 sowing. A sowing of February 2 yielded 10 pounds on May 30, a sowing of March 19 gave very poor results. A seeding on April 17, the approximate date of sowing for the main crop, yielded 21½ pounds on June 11. Similar results were obtained with the Winter Prickly variety which was however earlier and lighter in yield than the King of Denmark with the exception of the first seeding, which yielded a little more.

TOMATOES

Project H 207.—The following table gives the results obtained from different methods of pruning:—

TOMATO PRUNING RESULTS

Variety	Pruned to	Yield of marketable fruits to								Green	
		July 30	Aug. 7	Aug. 14	Aug. 24	Sept. 8	Sept. 22	Oct. 9	Ripe fruit culled		
		lb. oz.	lb. oz.	lb. oz.	lb. oz.	lb. oz.	lb. oz.	lb. oz.	lb. oz.	lb.	oz.
Alacrity	2 stems	6 7	15 10	16 12	24 4	72 8	86 8	90 12	12 5	6	0
"	1 stem	12 0	29 15	34 7	42 5	94 2	113 6	118 14	14 7	5	0
"	3 trusses	13 15	35 5	40 7	46 15	70 15	70 15	71 15	13 5	0	0
"	2 trusses	8 4	24 8	25 12				25 12	1 13	0	0
Best of All	2 stems	1 0	5 12	7 7	12 8	56 5	95 2	106 14	15 1	2	8
"	1 stem	2 2	8 10	10 14	17 1	68 15	103 7	112 15	20 12	4	0
	3 trusses	0 12	11 7	15 1	18 10	59 3	64 11	67 7	13 12	0	0
"	1 truss	2 2	12 11	13 1				13 1	0 9	0	0

PAPER MULCH

As an artificial mulch this year ordinary tar paper was used. This material proved quite unsatisfactory compared to thermogen paper, manufactured for this purpose, for within a few weeks it had disintegrated from weathering. It was used as a mulch in eighteen-inch strips, through which cabbage plants were set. (Project H. 613).

FRUITS

CRANBERRIES

A small patch of cranberries was planted this year, three varieties, Howes, Early Black, and Holburton, covering an area sixty feet by thirty feet. The conditions as afforded on this farm are by no means the ideal requirements for this crop, but it is hoped nevertheless, to obtain some information as to their adaptability under such conditions. The spot selected is a muck soil covering, to a depth of six inches, a clay subsoil. All vegetative growth was stripped off and then a layer of sand three inches thick spread on top of the soil. The vines were planted on June 7. There is not in this location a sufficient amount of moisture during the summer for the requirements of this crop, and the soil dries out and has a marked tendency to bake. Due to late planting and dry conditions the vines made very little growth. Approximately seventy-five per cent rooted and lived.

SMALL FRUITS

Test of Varieties.—Several varieties of currants, gooseberries, blackberries, raspberries, strawberries, and grapes are under test. No new varieties have been recently added, and those which have yielded have been previously reported and their respective merits pointed out. Strawberries did better than usual this year, due largely to control of weevil with poison bait. Considerable damage had been done to the patch before bait was applied, which prevented a fair comparison being made between varieties.

TREE FRUITS

Test of Varieties.—The orchard is planted to apples, pears, and plums. Apple trees in particular have been subject to anthracnose and much loss of young and bearing trees has been caused by this disease. In the spring of 1926, thirty-six young trees were set out. By spraying in the fall with a 4-4-40 Bordeaux mixture, these, as well as older trees, have all been maintained in good condition. None of the new varieties of tree fruits planted have as yet come into bearing. The orchard was clean cultivated and sprayed twice.

NUTS

Variety Tests.—None of the recent plantings of filberts or walnuts have yet come into bearing. Walnut trees are making slow growth.

FLOWERS

A considerable quantity of perennial seed of kinds or varieties not being grown here at present were planted in the spring. The majority of these germinated and grew well. Their adaptability will be reported on when they are of flowering age.

Bulbs.—Varieties of Muscari planted in the perennial border in the fall of 1927 blossomed this spring. This small flowering bulb is a worthwhile addition to any bulb collection and may be placed to advantage in a perennial border for early spring colouring. Heavenly Blue is the choicest variety of the seven grown. Varieties of Muscari planted in October, 1927, included *Botry-*

oides coeruleus, Azureus, Amethystinus, Botryoides alba, Heavenly Blue, *Plumosus,* and *Racemosus.*

Sixteen varieties of narcissus were planted out this fall which should blossom in the spring of 1929. The following is the list of varieties planted: Jonquil Golden Scepter, King Alfred, Emperor, Sulphur Beauty, Duke of Bedford, Queen of the North, Incomparablis Bedouin, Barri Masterpiece, Berri Albatross, Jonquil Campernelle Od Giganteum, Jonquil Campernelle Rugulosus, Jonquil Campernelle Orange Queen, and Jonquilla Simplex.

The following varieties of montbretias were planted in the perennial border in May and flowered in September and October: Pottsii, George Davidson, Etoile de Feu, Germania, Rosea, Crocusmaeflora, Vulcan, Lord Nelson, Hereward, Drap d'Or, Prometheus, Aurea, Croesus, Ernest Davidson, Fire King and Westwick.

The following roses were added to the collection either replacing varieties of which there were several being grown or varieties which were not considered worthy of cultivation: Una Wallace, Louise Catherine Breslau, Betty Uprichard, Mme. Ed. Herriot, Shot Silk, and Lamia.

CEREALS

LAND AND TREATMENT

The land on which the cereal plots were located was not altogether very favourable. This accounts to some extent for the rather low yields the results show. The soil is of an unkindly clayey nature and does not lend itself easily to cultivation.

This area had been in sugar beets the previous season. Before sowing, all cereal grains were treated with formalin as a smut preventive. Seeding commenced on April 23 and harvesting of barley commenced on July 24.

OATS—VARIETIES OR STRAINS

Sixteen varieties of oats were sown in quadruplicate rod-row plots. Each plot consisted of five rows of which the three inside rows were harvested, the two outside rows having been discarded. Only fourteen varieties are being reported on, as two hulless varieties, Laurel and Liberty, were apparently unduly affected by the formalin treatment, the yields being altogether misleading, as a consequence. In point of yield, Prolific came first, with Star second and Victory third. Alaska, as in former years, was the earliest. (Project Ce. 5.)

OATS—RESULTS OF TEST OF VARIETIES OR STRAINS

Name of variety	Number of days maturing	Average length of straw including head	Strength of straw on scale of 10 point	Yield of grain per acre	Weight per measured bushel after cleaning
		in.		lb.	lb.
Alaska	101	36	8	1,650	39
Banner (Ott. 49)	104	39	9	1,937	34
Columbian (Ott. 78)	106	39	9	2,115	36
Gerlach (Sask.)	106	42	9	1,849	35
Gold Rain (Swedish)	107	40	8	1,973	43
Irish Victor P. (Ott. Sel)	106	43	8	2,162	40
Longfellow (Ott. 478)	107	46	9	2,117	38
Legacy (Ott. 678)	106	30	8	2,069	37
Leader A. (Ott. Sel)	106	44	8	1,863	36
Leader B. (Ott. Sel)	106	42	8	2,268	36
Lincoln	107	48	9	2,366	39
Prolific (Ott. 77)	107	46	9	2,708	43
Star (Swedish)	105	42	9	2,633	39
Victory	107	45	9	2,501	38

BARLEY—VARIETIES OR STRAINS

Fourteen varieties of barley were sown between April 23 and April 26, and under the same conditions as the oats. Bearer (Ott. 475) gave the highest yield. (Project Ce. 6.)

BARLEY—RESULTS OF TEST OF VARIETIES OR STRAINS

Name of variety	Date of ripening	Number of days maturing	Average length of straw including head	Strength of straw on scale of 10 points	Yield of grain per acre	Weight per measured bushel after cleaning
			in.		lb.	lb.
Albert (Ott. 541) (6)	July 24	91	36	7	1,167	44
Barks (Don Barks) (6)	Aug. 7	105	31	9	1,425	39
Bearer (Ott. 475) (6)	" 1	99	42	8	1,786	44
Charlottetown No. 80 (Charlottetown) (2)	" 3	101	34	7	1,390	50
Chinese (Ott. 60) (6)	July 27	94	39	8	1,298	45
Duckbill (Ott. 57) (2)	Aug. 3	101	41	7	1,174	49
Early Chevalier (Ott. 51) (2)	July 27	94	44	8	1,414	52
Feeder (Ott. 560) (6)	" 27	94	40	7	1,129	45
French Chevalier (2)	Aug. 3	101	44	8	1,104	53
Gold (Swedish) (2)	" 3	101	36	7	1,324	50
Hannchen (Sask. 229) (2)	July 31	98	40	7	1,603	50
Himalayan (Ott. 59) Hulless (6)	" 27	94	30	8	1,302	62
O.A.C. 21 (O.A.C.) (6)	Aug. 2	100	42	7	1,602	47
Success	July 24	91	36	6	1,541	45

SPRING WHEAT—VARIETIES OR STRAINS

Seven varieties of spring wheat were sown on April 25 under the same conditions as the oats and barley. The yields were exceedingly poor, due partly to soil conditions but largely to the ravages of the wheat midge. The wheat grains were practically blasted by this pest, the resulting crop being more or less a failure. (Project Ce. 1.)

WHEAT—RESULTS OF TEST OF VARIETIES OR STRAINS

Name of variety	Number of days maturing	Average length of straw including head	Strength of straw on scale of 10 point	Yield of grain per acre	Weight per measured bushel after cleaning
		in.		lb.	lb.
Crown (Ott. 353)	107	40	8	813	61
Early Red Fife (Ott. 16)	106	47	8	621	57
Garnet (Ott. 652)	107	37	6	860	62
Huron (Ott. 3)	107	46	7	510	53
Marquis (Ott. 15)	107	43	8	420	54
Red Fife (Ott. 17)	108	48	9	600	56
Reward (Ott. 928)	107	39	8	960	63

Owing to the weather conditions, peculiar to this locality, which are unfavourable to the successful growing of spring wheats as evidenced by the results of several years with tests of varieties carried on at this Farm, it does not seem feasible that this work should be continued. Spring wheat in the true sense of the term apparently cannot be grown here.

In conjunction with the cereal plots, one plot of Marquis wheat was sown for the Chemistry Division. Seed is received annually from this Division, and a sample of the resulting crop returned after harvest to Ottawa, where tests are made to ascertain the influence of seasonal and soil conditions on the yield and composition of wheat. (Project C. 11.)

This year's plot yielded at the rate of 1,200 pounds per acre. This is in keeping with results of previous years, yield of spring wheat always being low at this Farm.

PEAS—VARIETIES OR STRAINS

Four varieties of field peas were tested but yields were unsatisfactory. (Project Ce. 7.)

PEAS—RESULTS OF TEST OF VARIETIES OR STRAINS

Name of variety	Number of days maturing	Average length of plant	Average length of pod	Yield of seed	Weight per measured bushel after cleaning
		in.	in.	lb.	lb.
Arthur (Ott. 18)	94	48	2	1,185	63
Chancellor (Ott. 26)	94	54	1¾	1,808	64
Golden Vine	94	57	2¼	1,330	64
Solo	94	54	2¼	1,269	63

BEANS—VARIETIES OR STRAINS

Five varieties of beans were tested. Yields were poor. One variety, Carleton, was a failure as a result of blight. (Project Ce. 8.)

BEANS—RESULTS OF TEST OF VARIETIES

Name of variety	Date of ripening	Number of days maturing	Average length of plant	Average length of pod	Yield of seed per acre	Weight per measured bushel after cleaning
			in.	in.	lb.	lb.
Beauty (Ott. 712)	Aug. 20	108	12	4	1,254	64
Large White (Ott. 713)	" 20	108	15	4	1,198	64
Navy (Ott. 74)	" 20	108	8	3	1,086	64
Norwegian (Ott. 710)	" 20	108	10	5	1,452	63

FORAGE CROPS

Conditions throughout the season were favourable for the growth of forage crops with the exception of annual hays, such as millets and kindred crops.

Variety tests were carried on with corn, sunflowers, mangels, carrots, sugar beets, swede turnips, soy beans, and annual hays. The turnip crop was badly affected by the flea-beetle while all the annual hays were so poor that they had to be ploughed under to check the growth of weeds.

From all plots harvested green-weight samples were taken in order to calculate therefrom the yield of dry matter per acre.

SOIL AND TREATMENT

The area reserved for forage crops had been ploughed the previous fall and reploughed in the spring and well worked. Well rotted manure was applied in the spring at the rate of 16 tons per acre to the portion for roots and ensilage crops and turned under with the spring ploughing. Prior to seeding, commercial fertilizer was applied at the rate of 600 pounds per acre to the area for roots.

CORN FOR ENSILAGE

The corn, of which there were ten varieties, was sown in hills three feet apart each way. Yields were only fair.

The following table gives, in order of yield per acre dry matter, the results of corn varieties tested. (Project A. 1.):—

CORN—TEST OF VARIETIES

Name of variety	Yield per acre green weight		Yield per acre dry matter	
	tons	lb.	tons	lb.
White Cap Yellow Dent	15	1,510	3	18
Burr Leaming	17	1,707	2	1,676
Golden Glow	12	322	2	1,148
North Dakota	15	935	2	810
Longfellow (Duke)	12	1,472	2	686
Compton's Early	11	1,287	2	419
Ninety-Day White Dent	11	885	2	238
Wisconsin No. 7	9	342	1	1,389
Northwest Red Dent	8	962	1	1,273
Twitchell's Pride	5	600	1	749

Twitchell's Pride is a consistent low yielder at this Farm.

SUNFLOWERS FOR ENSILAGE

Three varieties of sunflowers were grown in hills three feet apart each way. Mammoth Russian, as in former years, came first in order of yield. (Ag. 76.)

SUNFLOWERS—TEST OF VARIETIES

Name of variety	Yield per acre green weight		Yield per acre dry matter	
	tons	lb.	tons	lb.
Mammoth Russian (Disco)	36	105	5	476
Ottawa 76 (C.E.F.)	11	425	1	233
Rosthern	6	1,340	..	1,470

Mammoth Russian has regularly outdistanced all other varieties in point of yield year after year at this Farm.

MANGELS

Twenty-two varieties of mangels were sown on May 14 in drills 30 inches apart and harvested on October 27.

MANGELS—TEST OF VARIETIES

Name of variety	Yield per acre green weight		Yield per acre dry matter	
	tons	lb.	tons	lb.
Yellow Intermediate-McDonald College (Victoria)	39	593	3	1,647
Half Sugar White (Steeves)	37	1,285	3	1,265
Giant White Feeding Sugar (Steele Briggs)	36	1,080	3	1,161
No. 1 Sludstrup (Victoria)	42	483	3	927
Long Red Mammoth (Ewing)	39	813	3	896
Yellow Intermediate (C.E.F.)	31	1,126	3	754
No. 3 Sludstrup (Victoria)	39	1,439	3	588
Yellow Intermediate-U.B.C. (Victoria)	37	925	3	436
Giant Yellow Intermediate (McDonald)	34	1,465	3	280
Danish Sludstrup (Steeves)	39	120	3	226
Red Top ½ Sugar (H. Hartmann)	28	1,267	3	219
Barres Sludstrup (Gen Swedish Co.)	37	340	3	36
No. 5 Yellow Intermediate (Victoria)	36	828	2	1,971
Giant Yellow Globe (Ewing)	37	1,411	2	1,830
Yellow Eckendorfor (Gen. Sewdish Co.)	35	1,001	2	1,793
Barres Rosted (H. Hartmann)	33	1,536	2	1,618
Yellow Leviathan O.A.C. (Victoria)	30	1,929	2	1,394
Yellow Globe (Rennie)	35	875	2	1,230
Long Yellow (Ewing)	22	163	2	968
Barres Fjerritslen	30	1,929	2	211
Barres Oval (Gen. Swedish Co.)	33	1,284	2	211
No. 2 Gatepost Intermediate (Victoria)	30	480	2	112

The foregoing group of mangels shows an average production of 35 tons per acre green weight, the Yellow Intermediate, which includes Danish Sludstrup, being possibly the most satisfactory.

CARROTS

Eight varieties of carrots were sown in drills 30 inches apart on May 14 and harvested on October 29. (Project Ag. 36.)

CARROTS—TEST OF VARIETIES

Name of variety	Yield per acre green weight		Yield per acre dry matter	
	tons	lb.	tons	lb.
Improved Intermediate White (Ewing)	28	1,015	2	943
White Belgian (Hartmann)	25	400	2	782
Large White Belgian (Rennie)	23	1,250	2	484
White Belgian (Trifolium)	24	825	2	443
White Belgian (Ewing)	25	460	2	389
Mammoth Short White (Rennie)	27	1,440	2	8
White Intermediate (Summerland)	21	1,470	1	1,768
New Yellow Intermediate (Ewing)	22	887	1	1,227

Of the carrot varieties the Intermediates are the most desirable.

SUGAR BEETS

Six varieties of sugar beets were grown. The yields were fair. Analyses were made by the Chemistry Division. (Project Ag. 66.)

SUGAR BEETS—TEST OF VARIETIES

Name of variety	Yield per acre green weight		Yield per acre dry matter	
	tons	lb.	tons	lb.
Dippe	15	555	2	1,930
Buszczynski	16	256	2	1,909
Ramon (1E)	14	476	2	895
Frederiksen	11	491	2	41
Kalnik	9	585	1	1,739
Niemertche (5N)	9	522	1	1,385

SUGAR BEETS—TEST OF VARIETIES

Name of variety	Co-efficient of purity	Sugar in juice	Average weight of one root	
	per cent	per cent	lb.	oz.
Dippe	84·84	16·41	2	4
Buszczynski	84·63	16·37	2	8
Ramon (1E)	84·10	15·59	2	4
Frederiksen	86·58	16·74	1	13
Kalnik	85·59	16·21	1	15
Niemertche (5N)	83·66	15·84	1	15

SWEDES

Six varieties of swedes were grown the yields being considerably diminished by the attacks of the flea-beetle. (Project Ag. 51.)

SWEDES—TEST OF VARIETIES

Name of variety	Yield per acre green weight		Yield per acre dry matter	
	tons	lb.	tons	lb.
Bangholm (M'Kenzie)	16	1,075	1	1,423
Bangholm (Kentville)	16	1,201	1	1,293
Bangholm (Nappan)	12	1,174	1	517
Purple Top (C.E.F.)	13	775	1	468
Best of All-Purple Top (Victoria)	13	19	1	458
Magnum Bonum (Graham)	11	1,731	1	272

Apart from the fact that swedes generally have a hard fight with the flea-beetle in this locality, the quality, as far as taste is concerned, is always decidedly lacking and entirely different from the peculiar flavour characteristic of a good swede. This deficiency in quality of taste applies to all varieties.

HAY MIXTURES

A series of plots in quadruplicate consisting of grasses and clovers alone and in combination for hay were seeded down with a nurse crop of oats. (Project Ag. 264.)

There are four ranges of 12 plots in a range, or 48 plots in all. Particulars as to how these came through the winter and results of yields recorded when plots are harvested next spring.

MISCELLANEOUS

Ten different perennial grasses were sown in replicated rows. (Project Ag. 255.)

Records will be kept as to the suitability of these for local conditions.

MISCELLANEOUS LEGUMES

Eighteen varieties of legumes were sown in replicated rows. (Project Ag. 256.)

Results will be recorded as to their suitability for conditions in the Agassiz district.

SOY BEANS

Two varieties of soy beans were tested as to their value for forage. Yields were rather light due in large measure to soil conditions. (Project Ag. 181.)

SOY BEANS—TEST OF VARIETIES

Name of variety	Yield per acre green weight		Yield per acre dry matter	Yield per acre hay
	tons	lb.	lb.	lb.
Early Wisconsin Black	2	410	1,360·9	1,601
Ito San	2	977	1,360·7	1,600

ANNUAL HAY CROPS

To determine their relative value as annual hays several varieties of millets and other grasses were sown in quadriplicate 1/100 acre plots on May 10. (Project Ag. 241.)

These plots met with disaster. Seeding was followed by a period of wet and cool weather which, although not favourable to the growth of these annnals, was apparently ideal for rapid growth of weeds such as corn spurrey. The latter practically swamped the grasses and in order to prevent the spurrey from going to seed thereby breeding more trouble for future years, the whole crop was ploughed under.

By sowing later in the season it is hoped to avoid the rainy period and provide these grasses, which have characteristics apparently peculiar to dry-climate plants, with conditions more favourable for their development.

TOBACCO

The tobacco crop of 1928 was the best that has been grown here during the past three years. The season was very favourable for this crop, particularly at the time of transplanting and harvesting. Three one-hundred foot rows of each of the following varieties were grown: Greenwood, Broadleaf Burley, Belge, Connecticut Havana, Station Standup Burley, and Judy Pride Burley. Seed was sown in a cold frame on April 4 and transplanted to the open on May 26. Connecticut Havana and Belge were the two earliest varieties, being ready for harvesting on August 22, the remaining varieties being ready on September 13. These early varieties are also the lightest yielding in dried leaves. There is, in this district, a decided advantage for an early maturing variety, due to less possible damage from fall rains and winds. The quality test of the tobacco is not available at the time of writing.

POULTRY

The farm flock, consisting entirely of Barred Plymouth Rocks, totalled, on December 31, 1928, five hundred and eighty-eight birds, including six cocks, 64 cockerels, 216 hens and 302 pullets. The six cock birds were D494, the sire of F397, a 321-egg hen, L1 and L8, two of her sons, E72 a full brother to F400, a 326-egg hen, L3 the son of J101, a 300-egg hen, and L9 a son of E332, a 325-egg hen. Most of the cockerels and pullets were sired by these mature males. As usual, the demand for hatching eggs and breeding stock was greater than the supply. Thirty-nine cockerels hatched in 1927 were sold for breeding purposes, and 106 settings, or 1,590 eggs, were sold for hatching purposes. In June, twenty hens and four male birds were sold, for shipment to Japan, for twenty-five dollars each.

INCUBATION

The first hatch was taken off March 22, and the last one May 10. This did not include a later hatch for experimental purposes. During this time, 1,379 chicks were hatched, 123 being from registered hens and 1,255 from the balance of the breeders. All chicks were pedigreed. Of the total 2,749 eggs set, 2,282 or 83 per cent were fertile, and of the fertile eggs, 60 per cent hatched and 87·8 per cent of the chicks hatched were reared.

HATCHING RESULTS

In comparing results of hatches set in March and April, the following data show little advantage to either month.

Month eggs set	Total eggs	Per cent fertile	Per cent of fertile hatched
March	1,518	82·4	62·0
April	1,231	83·6	60·4

1928 HATCHING RESULTS FROM F397 AND F400

F397, a 321-egg hen, laid forty-two eggs during the hatching season, all of which were set in five hatches. Twenty-nine chicks were hatched, but when the autumn culling was completed, only six pullets were put in the laying house and two cockerels kept for breeding purposes. The hen was mated to her son and apparently the offspring lacked vitality.

F400 laid four eggs during the hatching season, each for a separate hatch, and none produced a chick.

BREEDING AND PRODUCTION OF AGASSIZ EXPERIMENTAL FARM BARRED ROCK PEN IN VANCOUVER ISLAND CONTEST, 1927-28

Contest band No.	Sire	Dam of sire's eggs	Dam	Dam's eggs	Dam's egg weight	Number of eggs laid	Average egg weight	Total points	Qualified for registration
					oz.		oz.		
E 21	F 363	325	F 400	326	28	192	22·44	168·9	no
E 22	F 363	325	F 400	326	28	182	24·0	179·8	no
E 23	F 363	325	F 397	321	26	239	25·0	276·3	yes
E 24	F 363	325	F 397	321	26	224	26·0	272·4	yes
E 25	F 362	299	J 272	299	24	228	25·0	250·0	yes
E 26	F 362	299	J 272	299	24	235	25·0	261·4	yes
E 27	F 363	325	J 55	262	24	159	25·82	183·1	no
E 28	F 363	325	J 55	262	24	228	24·0	235·5	yes
E 29	F 362	299	J 101	300	24	238	24·0	244·6	yes
E 30	I 56	250	L 229	192	25	245	27·0	296·1	yes
E 403	F 363	325	F 397	321	26	214	24·0	235·3	yes
E 404	F 363	325	F 400	326	28	196	25·0	216·9	no

A study of this chart reveals the fact that not one of the three daughters of F400, the 326-egg hen, qualified for registration; on the other hand, all three of the daughters of F397 qualified. E21, whose dam only laid 192 eggs, and whose sire's dam produced 250 eggs, gave the best production with 245 eggs and 296·1 points.

BACILLUS PULLORUM (Project P. 191)

In February and March, 1928, fifteen cockerels to be used in the breeding pens were tested for bacillus pullorum, and came through one hundred per cent clean. Of the one hundred and nineteen hens hatched in 1927 and previously untested, eighteen reacted, or 15·13 per cent. The reactors were slaughtered.

FEEDING LAYING PULLETS

A series of feeding experiments was conducted from November 8, 1927, to August 31, 1928. Eight pens were included, consisting of 120 birds in all. The number of birds in an experiment varied from ten to thirty and final results were worked out on the basis of one bird.

The following outline describes the various experiments and the rations used in each:—

(1) Project P. 81—Relative value of different mashes.

This pen was fed a mash composed by weight of 75 parts crushed wheat and 25 parts crushed oats in contrast to the mash (standard) described hereafter. The scratch grain (standard), which consisted by weight of equal parts wheat, oats and cracked corn, was the same in all pens. Skim-milk, green feed and oyster shell, were also available and were on hand in other pens, except where mentioned to the contrary.

Prices per 100 pounds: grain, $2.25; mash, $2.28; skim-milk, 25 cents; green feed, 25 cents; shell, $1.60.

(2) Project P. 82—Beef scrap versus skim-milk.

The mash fed consisted by weight of 100 parts bran, 100 shorts, 100 cornmeal, 75 crushed oats, 25 alfalfa meal, 60 beef scrap, 10 bonemeal, 10 charcoal, 5 oil-cake meal, scratch grain (standard), green feed and shell were available, but no skim-milk was fed.

Prices per 100 pounds: grain, $2.25; mash, $2.40; green feed, 25 cents; shell, $1.60.

(3) Project P. 82—Skim-milk versus beef-scrap.

This experiment was conducted similarly to the previous one except that skim-milk but no beef scrap was fed.

Prices per 100 pounds: grain, $2.25; mash, $2.18; skim-milk, 25 cents; green feed, 25 cents; shell, $1.60.

(4) Project P. 87—Fish meal versus beef scrap.

The birds in this pen were fed similarly to those in experiment No. 2, apart from the fact that they received fish meal instead of beef scrap, the proportion of each, viz., 12 per cent, being the same in each case.

Prices per 100 pounds: grain, $2.25; mash, $2.36; green feed, 25 cents; shell, $1.60.

(5) Project P. 87—Fish meal plus beef scrap versus beef scrap.

This group was handled similarly to the previous one, except that equal parts fish meal and beef scrap were fed, 6 per cent in each case, the total combination of these being the same as either the beef scrap or fish meal in projects 82 and 87, viz., 12 per cent.

Prices per 100 pounds: grain, $2.25; mash, $2.38; green feed, 25 cents; shell, $1.60.

(6) Project P. 107—Methods of feeding layers.

Grain in litter versus grain in hopper.

The grain mixture (standard) consisted of equal parts wheat, oats and cracked corn. The mash (standard) was composed by weight of 100 parts bran, 100 shorts, 100 cornmeal, 75 crushed oats, 25 alfalfa meal, 75 beef scrap, 10 bone meal, 10 charcoal, 5 oilcake meal. Skim-milk, green feed and oyster shell were also available.

Prices per 100 pounds: grain, $2.25; mash, $2.45; skim-milk, 25 cents; green feed, 25 cents; shell, $1.60.

(7) Project P. 107—Control pen.

This pen was fed exactly the same as the previous one, prices of feed being also the same.

(8) Project P. 107A—Grain in hopper versus grain in litter.

The only difference between the handling of the birds in this group and in the two immediately preceding was that the grain was fed in a self-feeding hopper instead of in the litter. Prices of feed were the same.

EXPERIMENTS IN FEEDING—RESULTS FROM LAYING PERIOD NOVEMBER 1, 1927 TO AUGUST 31, 1928

Group	Eggs per bird	Value of eggs per bird	Cost of feed per bird	Profit over cost of feed per bird
		$	$	$
1. Basal ration using fish meal instead of beef scrap	196	4 90	2 20	2 70
2. Basal ration without beef scrap plus skim-milk	197	4 92	2 26	2 66
3. Basal ration with 6% each of fish meal and beef scrap	189	4 72	2 16	2 56
3. P. 107A—Grain in hopper	189	4 72	2 16	2 56
4. P. 107—Grain in litter	183	4 57	2 09	2 48
P. 107—Grain in litter	183	4 57	2 21	2 36
5. Basal ration—Control Pen (beef scrap)	187	4 67	2 26	2 41
6. P. 81—Mash:—75 parts crushed wheat and 25 parts crushed oats by weight	175	4 37	2 17	2 20

The following summary gives an indication of the foregoing experiments in order of profit over cost of feed per bird. This refers only to the results of one year.

The group which received fish meal instead of beef scrap and no skim-milk, gave best results. This would suggest that a good brand of fish meal has its place in a poultry mash.

Skim-milk with no beef scrap came a close second in order of profit, this indicating the value of skim-milk in a poultry ration.

The fish meal plus beef scrap lot, but no skim-milk and those receiving grain in hopper, tied for third place. The results from the former of these suggest that a combination of fish meal and beef scrap may be preferable, under certain conditions, to the use of beef scrap alone. The results from the group receiving grain in hopper are unexpected in that they are better than those from birds fed grain in litter.

Beef scrap with no skim-milk, gave results lower than any of the former. This indicates that when skim-milk is available or a desirable brand of fish meal, good results are possible, even without beef scrap.

The group receiving a mash composed by weight of 75 parts crushed wheat and 25 parts crushed oats, gave the poorest results, due to the fact possibly that the mash was incomplete in its composition.

EGG-LAYING CONTEST

October 22, 1928, brought the eighth British Columbia Egg-Laying Contest to a close. The contest contained forty-six pens of ten pullets in each, two spare birds being also sent in with each original pen. Mortality was quite heavy, notwithstanding the fact that there was no serious outbreak of sickness to contend with, as was the case in the previous year. This was due in great measure to lack of vitality. As a result, numerous spares had to be introduced from time to time to keep the pens up to full strength. Final results show an average production of 205 eggs per bird, 168 birds registered, and two that laid over 300 eggs each.

In the contest there were five breeds represented as follows:—

	Pens
Barred Plymouth Rocks	3
Rhode Island Reds	3
White Wyandottes	3
Black Minorcas	1
S.C. White Leghorns	36

BRITISH COLUMBIA EGG-LAYING CONTEST

DOMINION EXPERIMENTAL FARM, AGASSIZ, B.C.

Summary of final results, 1927-1928

Total number of eggs laid	94,318
Average number of eggs per bird	205
Winning pen (by points), Simpson & Holland (W.L.)	2,551
Winning bird (by points; also registered) No. 9, M. H. Ruttledge (W.L.)	341·7
Highest pen according to egg-production—	
A. W. Schofield, McKay, B.C. (W.L.)	2,524
Highest bird according to egg-production—	
Smith Bros., No. 5 (W.L.; not registered)	310 eggs
2nd, highest bird by eggs (not registered)—	
Smith Bros., No. 6	304 "
Highest registered bird (by eggs)—	
McKim Poultry Farm No. 8	292 "
2nd, highest registered bird (by eggs; second generation)—	
A. W. Schofield No. 8	286 "
Number of birds laying 200 to 225 eggs	119
Number of birds laying 225 to 250 eggs	107
Number of birds laying 250 to 275 eggs	60
Number of birds laying 275 to 300 eggs	7
Number of birds laying 300 and over	2

BEES

The greater part of the work in the apiary this year, as in 1927, consisted in increasing the number of colonies. In the spring there were thirty-five colonies, and during the season this number was increased to sixty by division, and nuclei from the old colonies. This is the approximate number of hives that will be maintained for experimental work.

Due to the frequent manipulation of many colonies, little experimental work could be carried out. Numerous observations, however, were made on the season's work in regard to European Foul Brood, queen raising, queen mating and introducing queens and queen cells into queenless and queenright colonies.

European Foul Brood was first observed on April 4, in one hive, and during the season spread to seven more colonies. Two methods of cleaning up this disease were tried out. Hives which were dequeened and requeened did not clean up any faster than the hives in which the old queens were allowed to remain. Colonies fed sugar syrup cleaned up more rapidly than those fed diluted honey. None of the above methods were effective in entirely eradicating this disease. It is probably necessary to adopt more drastic methods of cleaning up as under unfavourable weather conditions this disease will again most likely manifest itself.

Frequently in the spring it is difficult to successfully introduce a queen in a mailing cage to a colony that has become queenless during the winter. A system which has proved satisfactory here is to take a frame of bees with the queen from a strong colony and introduce this to the queenless hive and place a mailing cage and queen into the colony from which the frame was taken. During the past spring two colonies treated in this manner accepted the queen, while two colonies which had overwintered queenless would not accept a queen from a mailing cage. Later in the season queen introduction is not so difficult a problem.

In order to increase the number of colonies from thirty-five to sixty a considerable amount of work was done with queen raising this year. Generally speaking, the raising of queens proved satisfactory, especially during June and July, when approximately 45 per cent of queen cells in wooden cups were accepted. The queens on an average were not as large as imported ones; there were, however, many excellent specimens. Of forty-two queens raised and introduced to colonies, five were hybrids. Observations on first cross hybrid bees as compared to Italians gave results in favour of the former. On May 2, two hives were requeened from the same mating; each one was given two frames of brood and six pounds of honey and there were six frames of bees in each colony. One queen produced hybrid bees and the other pure Italians. On the last examination of the season the hybrid colony covered seven frames and had thirty pounds of stores. The second hive covered only six frames and required sixteen pounds of honey and fifteen pounds of sugar syrup to have stores equivalent to thirty pounds. Beyond a first generation cross, hybrids became small and difficult to manage.

The problem in queen raising is largely in getting the young queens mated and returned to the right colony. The wooden cup cells proved a satisfactory way in raising the queens. Three different methods of handling these queen cells were tried: introducing ripe queen cells to dequeened colonies, placing queen cells in a mating box, and placing a queen cell above a super clearer with a small entrance at the back, over an established colony with two frames of brood from the colony below. With the two first methods 60 per cent of the young queens were lost on the mating flight. Two cases were observed on the lighting board of established colonies where young queens were being balled up. Previous examination of nuclei in both instances had shown virgin queens and examination of colonies which balled up the young queens showed them to be queenright. It is presumed that the young queens returning, become lost and took to the wrong hive. During the past year the hives have been placed closer together than is ordinarily advocated. The third system, though not tried till later in the season, proved quite satisfactory. Using this method only nine young queens were raised, but in each case they were successfully mated and returned to the proper hive.

A top-entrance hive was tried out this year at the request of the provincial apiarist. The hive so treated was the only one in the apiary to swarm. There was no congestion in the hive at the time of swarming. The queen and the bees did not leave the top super, although there were three supers below, the second being filled with drawn comb. The bees were inclined to fill the entrance with comb honey and drone brood. During the hot weather there was no clustering at the entrance of the hive, which was evident in most of the stronger colonies throughout the apiary. With the exception of one other colony used as a check for this hive, all the other strong colonies in the apiary were divided for increase, which lessened any inclination they might otherwise have shown for swarming. The top-entrance hive gave a surplus of 1½ pounds of honey, covered ten frames on the last fall examination and gave a swarm which covered seven frames on the last fall examination, and required one 5-pound tin of sugar syrup for winter

stores. The check hive gave a surplus of 22 pounds of honey and covered twelve frames on the last examination.

In the winter of 1927 and 1928 twelve colonies were for the first time wintered in quadruple cases. When placed in these cases details of each hive, such as number of frames covered by bees, amount of stores and age of queen were not recorded. On the first examination in the spring, however, these colonies were stronger than those wintered in Kootenay cases. Throughout the summer they continued to manifest this greater strength and vigour, and it was from these colonies that the greatest number of divisions for increase was made. Eight of these colonies were divided for a total of twenty-one times, gave two nuclei for a mating box, and four were used for raising queen cells. These hives gave a surplus of 114 pounds of honey in one of the poorest years ever recorded at this farm.

FIBRE PLANTS

One crop of flax and one of hemp, each one-tenth acre in area, were grown for fibre. The flax crop gave a satisfactory yield of dry straw but the hemp crop was not worth cutting. These plots were located on the same area as the cereals. This area, on account of its low-lying location lacking in free drainage, coupled with soil of a clayey nature very unresponsive to cultivation, was seemingly unfavourable to the success of the hemp crop, but apparently the flax was not affected adversely.

The flax crop gave a yield of 4,260 pounds dry straw per acre.

GENERAL NOTES

Although production in the egg-laying contest was not as satisfactory as in some previous years, the average of 205 eggs per bird was greater than in any other Canadian contest.

The outstanding butter-fat record completed by Agassiz Pietje Inka Sylvia, of 1,257 pounds in a year, places this herd at the top of the ladder by having developed two cows each with over 1,250 pounds of fat. In no other herd in the world has this production been accomplished. By Agassiz Mercena DeKol winning the Holstein-Friesian female championship at the Vancouver Winter Fair further publicity was secured for the herd. The winning of the grand championship, with the two-year-old Clydesdale filly Heather Bell, at the Provincial Exhibition, New Westminster, attracted attention to the horse-breeding operations of this farm. The head teamster was again adjudged the champion ploughman at the Chilliwack Annual Ploughing Match. This is the third time he has won this honour without a defeat. The superintendent, besides attending the Class A Fairs at which the stock was shown, judged Holsteins at the Saskatoon Exhibition. Considerable time was given to directorate work of the Dairymen's Association, Stock Breeders' Association, Holstein Association, Exhibition Associations and others. An inspection was made of the Illustration Stations in Central British Columbia during September. A couple of addresses on agricultural subjects were broadcast over the radio. The superintendent and assistants addressed many farmers' meetings, and attended several conventions, conferences, fairs and poultry meetings. The assistants acted as judges of horticultural and field crops at several fairs.

During the year the main barn, horse barn, horticultural building, poultry feedroom and office were painted outside. The floors of the latter were done over and a partition with additional shelf space was added upstairs. The assistant's cottage was redecorated inside and the upstairs of the superintendent's house was refloored. The basement of the herdsman's cottage was enlarged and a new furnace installed.

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