DOMINION OF CANADA
DEPARTMENT OF AGRICULTURE
DOMINION EXPERIMENTAL FARMS

EXPERIMENTAL STATION

STE. ANNE DE LA POCATIÈRE, QUEBEC

INTERIM REPORT OF THE SUPERINTENDENT

JOS. BEGIN

FOR THE YEAR ENDING MARCH 31, 1921

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EXPERIMENTAL STATION, STE. ANNE DE LA POCATIÈRE, QUEBEC

REPORT OF THE SUPERINTENDENT, JOS. BEGIN

CHARACTER OF THE SEASON

On the whole, the winter of 1919-20 was more rigorous in this district than that of 1917-18, which had been the most severe for a number of years. The beginning of the winter was marked by a fairly abundant precipitation and a temperature varying from one extreme to the other. The snowfall was fairly considerable at the outset, but the frequent showers and the few days of high temperature during the same period caused the snow to disappear. The unprotected soil, saturated with an excess of water, remained in most favourable condition for the penetration of frost, which reached a depth lower than had been recorded for a number of years. Many springs feeding the water works dried up, disorganizing the water service. The snowfall was especially abundant during the late winter months, particularly in February and March, when a fall of 48 inches was recorded, but the cold persisted during March when, on the 27th, a temperature of -19.2F was registered. April was less cold and dark, but the precipitation was again abundant, 6.07 inches being recorded during this period. The snow disappeared during the latter part of April, but the frost remained in the ground for a long time. The first grain was sown in drained soil on May 9. It was only about the 15th of the same month that it became possible to work the undrained soils of a similar character. Rains were frequent during this period and much difficulty was experienced in sowing the cereals. There was a drought from May 26 to July 10. During this period less than 2 inches of water was recorded. After this date rain fell, which was of great benefit to the crops in general; but the drought had been so prolonged that cereal crops were reduced in yield and quality. Hoed crops did not suffer so much from this drought owing to frequent cultivation, which checked evaporation. The remainder of the season was rainy, but without excessive precipitation. The fruit crop was fairly good on the whole; apple, plum and especially cherry trees giving a large quantity of fruit. The small fruits crop was also very good. The winter months of 1920-21 were remarkable through the mild temperature from the outset, and the thick layer of snow which completely covered the ground. For this reason, the soil practically did not freeze.

METEOROLOGICAL RECORD

Month	Date	Temperature				Precipitation					Hours of Sunshine
		Maximum	Date	Minimum	Mean	Rain	Snow	Total	No. of Days		
1920						In.	In.	In.	Rain	Snow	
April	20	61·0	6	22·6	37·2	4·17	11	6·07	15	4	162·27
May	27	79·8	1	32·2	49·5	1·16	.....	1·16	7	.....	260·18
June	22	81·2	18	34·0	58·0	1·07	.....	1·07	7	.....	232·00
July	30	81·4	27	39·4	61·7	4·47	.....	4·47	11	.....	208·08
August	8	88·2	20	37·6	62·5	1·87	.....	1·87	7	.....	273·48
September	23	82·7	4	33·8	55·3	5·89	.....	5·89	17	.....	149·22
October	9	68·4	15	28·5	46·5	3·69	.....	3·69	12	.....	143·28
November	4	50·8	23	5·2	27·3	0·55	5	1·05	7	5	89·24
December	1	35·0	26	-15·4	15·7	0·35	35	3·85	2	15	52·44
January	2	37·8	19	- 8·2	15·4	.....	16	1·60	.....	10	110·39
February	17	39·8	20	-11·2	13·5	.....	20	2·00	.....	10	128·04
March	27	60·8	5	-14·2	26·6	2·79	23	5·09	6	11	132·14
Total		.....	.....	.....	.....	26·01	110	37·81	91	55	1,940·76

ANIMAL HUSBANDRY

HORSES

During the summer of 1920, twenty-three horses were on hand at the Station, nine of which were grades or cross-breds. In the autumn, four of the oldest of the latter, no longer fit for efficient farm work, were sold. The other grades and cross-breds were wintered, as well as a registered French-Canadian mare and fourteen valuable registered Percherons made up as follow:—One three-year-old stallion, eight mares from three years to twelve years old, weighing from 1,550 to 1,850 pounds, a two and a half year old filly and four spring foals, one male and three females. These young foals ran with their mothers at pasture for periods of from four and a half months to six months. During this time the mothers were given supplementary feed consisting of concentrates composed of six parts of oats, three parts of bran and one part of linseed meal. The foals were carefully weaned and little set-back in their growth resulted. They were put in their winter quarters on October 31, 1920. The following table gives the date of birth of each foal, their weights on going into winter quarters and their weights on March 31, 1921. The first two on the list, the older foals, were wintered outside; the other two were wintered in the stable, and were allowed the run of a large barnyard during the greater part of the day.

WEIGHTS OF PERCHERON FOALS

Name	Date of Birth	Weight and Age Oct. 31, 1920	Weight and Age Mar. 31, 1921	Gain in 211 days	Average daily gain
	lbs. days	lbs. days	lbs. days	lbs.	lbs.
Juliette	Mar. 23, 1920	875 at 211	1,175 at 373	300	1·42
Mercure	May 9, 1920	685 at 164	1,056 at 326	365	1·73
Jaconde	May 13, 1920	725 at 160	1,045 at 322	320	1·51
Mathilde	June 10, 1920	650 at 132	1,000 at 294	350	1·66

Taking into consideration the difference in the ages of the foals and the weights of their sires and dams, the conclusion is reached that the gains of the foals for the winter feeding period were about equal, regardless of the method of housing; and this in spite of the fact that an exceptionally mild winter was experienced, which would be favourable to the ones wintered out-doors. Wintering outside has given just as good results as wintering inside, but at the cost of about one-quarter more feed.

The attention of farmers is becoming more and more attracted towards the raising of Percherons in this district, and already several head of breeding stock have been imported. The success obtained by this Station in acclimatizing this breed of horse, and in the raising of foals, will tend to encourage the farmers of the district in this matter. Numerous inquiries as to the characteristics and care of these horses are being received. Many breeders thought that horses raised in this district would not attain the development which they do in their native countries, on account of the climate; but judging from the results obtained up to the present, it would seem that, if allowed to nurse for six months and then well fed, it is easy to raise horses that are quite as heavy as their parents. Besides the weights of the colts given above, it may be stated that Minette, another colt, at four years old weighed 1,732 pounds, a heavier weight than that of her mother; and the case of Melina might also be cited, who at the age of three years weighs 1,625 pounds.

DAIRY HERD

Owing to the use of choice bulls, and to a careful weeding out of poor producers, the value of the dairy herd at this Station is continually increasing. The herd has already reached a degree of uniformity so apparent as to attract the admiration of visitors. The herd is made up of 67 head, 42 of them being registered Ayrshires, as follow:—1 bull, 17 cows from four to eleven years old, 13 from 1 to 3 years old, and 11 young calves. Seventeen of this herd finished their lactation periods during the year. The highest yields are as follow:—

HIGHEST MILK RECORDS

Name	Lbs. of Milk	Percentage of Fat	Total Fat
Malonie	8,769	3·82	335·9
Marjorie de Ste. Anne	8,421	3·99	335·9
Flavia Spot	7,004	3·52	246·5

The average lactation period for the herd was 205 days, and the average milk yield 5,452 pounds testing 3.93 per cent of butter fat.

The grade herd is made up of 26 head, nine of them being cows from four to eleven years old, eleven from one to three years old, and six young calves. Nine finished their lactation period during the year, the average length of period being 302 days, with an average yield per cow of 3·79 per cent of butter fat. This represents an annual production of butter fat of 192.7 pounds per cow.

In order to avoid too close inbreeding, this Station exchanged its excellent bull "Ottawa Master" No. 52603 for the bull "Gardrum Bold Boy" No. 47138, from the Experimental Station, Lennoxville, Que. The latter's dam has a record of 16,000 pounds of milk. The stock sold during the year consisted of four low-producing cows sold at an average price of $68.77, six cross-bred calves at $13.66 and four registered Ayrshire bulls sold to farmers of the district at an average price of $70 each.

SWINE

The number of swine at present at the Station is 40, made up as follow: 1 boar, 8 sows and 37 spring pigs. During the year 24 swine of an average weight of 175 pounds were sold at a price averaging $18.07 per hundredweight.

In view of the high cost of feeds and the scarcity of some of these, little experimental work with swine was carried on during the year. Data, however, were kept on the feeding value of feeds produced on the Farm, such as dairy by-products, green forage, roots, potatoes, turnips and beets. The figures obtained showed that, if the feeder is to make a profit from his swine feeding operations, he must depend just as far as possible upon feeds produced on the farm.

SHEEP

The flock is made up of pure-bred Shropshires and Shropshire grades. These grades mated with a Shropshire ram are gradually giving offspring in which the Shropshire characteristics are more and more apparent. It is likely that in a couple more generations the characteristics of the original foundation ewes will have entirely disappeared under the Shropshire influence.

The total number of sheep on hand last year, viz., 36, was increased during the year to 79. Forty-one were sold, and the production of wool for the year was 474 pounds.

FIELD HUSBANDRY

Experiments with different rotations at this Station have shown in a very striking manner the benefit to be derived from following a proper rotation of crops to secure the best yields. Intertilled crops (corn, roots, potatoes, etc.) are followed by grain, with the grain seeded down to grass and clover, using 10 pounds of red clover, 2 pounds of alsike, 6 pounds of timothy and 6 pounds of alfalfa seed per acre; the land is left in hay for two years, and then manured and ploughed in the spring for hoed crops.

The yields of the various crops at this Station for the years 1917, 1918, 1919, and 1920 have been considerably above the average yields for the province of Quebec, as shown by the Canada Year Book.

Roots have given an average yield of 22 tons per acre, against 8·7 tons average for the province, being an increase of 13·3 tons per acre.

Wheat gave an average yield of 42 bushels per acre, against 16·2 bushels per acre average for the province, being an increase of 25·8 bushels per acre.

Oats gave an average yield of 65 bushels per acre, against 26·5 bushels per acre for the province, being an increase of 38·5 bushels per acre.

Barley gave an average yield of 33 bushels per acre, against 22·6 bushels per acre for the province, being an increase of 10·4 bushels per acre.

Hay gave an average yield of 2·2 tons per acre, against 1·5 tons per acre for the province, being an increase of 0·7 tons per acre.

The following table gives the yields for each year, the average yield for the four years, and the average yield for the province:—

YIELD SECURED AT STE. ANNE DE LA POCATIÈRE EXPERIMENTAL STATION AND AVERAGE YIELD FOR FOUR YEARS FOR THE PROVINCE OF QUEBEC

—		1920	1919	1918	1917	Average	Average for Province
Roots	tons	32	20	14	22	22	8·7
Wheat	bush.	.....	38	45	43	42	16·2
Oats	"	52	64	78	66	65	26·5
Barley	"	15	36	42	38	33	22·6
Clover Hay	tons	2	2	3	2·7		
Timothy Hay	"	2	1·3	2·5	2·5	2·2	1·5

The above figures show quite conclusively the benefit the farmer can derive from following proper cultural methods and adopting a suitable rotation for his particular branch of farming.

In 1920 an experiment was started to determine the relative value of corn, sunflower, and green feed for ensilage; plots of one acre each were sown, and yielded: Corn, 6½ tons; sunflowers, 11½ tons; green feed, 4½ tons. Until this experiment has run for a number of years it would be unwise to draw definite conclusions.

Experiments are being conducted with various crops on drained and undrained land, to determine the profit to be made on the amount of money expended on drainage. As soon as sufficient reliable data are secured the results will be published.

HORTICULTURE

The horticultural possibilities of the country bordering the lower St. Lawrence are not as limited as might be thought by those not familiar with the conditions there. The great expanse of water has a tempering influence on the climate, and conditions are much more favourable at Ste. Anne de la Pocatière than at Montreal for the production of plums and cherries. The apple also succeeds well. Bush fruits, such

as currants, gooseberries, and raspberries, succeed admirably, and strawberries, which are later in season here than farther up the river, produce good crops. Vegetables succeed well also, as do flowers, many of which, because of the cooler weather, do better here than in the hotter parts of Canada.

Apples

In 1920 there was a good crop of apples in the older part of the orchards, the first trees in which were planted in 1913. One hundred and fifteen named varieties and many cross-bred and open-pollinated varieties originated at Ottawa are under test. A large proportion of the varieties being grown have not been hitherto tested in this part of Canada, and it has been a surprise to find that nearly all the sorts tested have proved hardy so far. It is expected that some varieties will be found in this collection which will take the place of those now most generally grown in this section.

Among the oldest varieties which seem best suited to the district are Yellow Transparent, Duchess of Oldenburg, Wealthy, Fameuse, and McIntosh.

Newer varieties which have fruited and are promising are Melba, Okabena, Trenton, and Rupert. The last-named is the earliest variety tested here. It is somewhat like Yellow Transparent, but is better in quality.

Cherries

The sour cherries do well along the Lower St. Lawrence, most of the trees being grown from suckers or seed. It was decided to test thoroughly many varieties, to find if there was anything more satisfactory than those originated locally, and forty sorts have been grown, of which Montmorency, Early Richmond, and Giotte d'Ostheim have, so far, proved the best.

Plums

The European plum succeeds well in this district, the fruit buds not being killed so frequently as they are at Montreal and other inland parts of the province. Thirty-two varieties are being tested, of which, so far, those which seem most suited to the district are: Damson, Lombard, Washington, Imperial Gage, Green Gage, Reine, Claude de Montmorency, the last one being the variety most generally grown in the district, new trees being obtained from suckers.

Raspberries

The principal varieties have been tested, and the most satisfactory found to be Herbert, Cuthbert, and King.

Gooseberries

English varieties succeed better here than in parts of the province where the summers are warmer and drier, and of all varieties tested, Whitesmith is considered best.

Currants

The leading varieties of currants in different parts of Canada have been tested at Ste. Anne, and the following have given the best results so far: *Red:* Red Grape, Victoria. *Black:* Kerry, Black Champion. *White:* Large White, White Cherry.

Strawberries

Through one cause and another, strawberries have not been thoroughly tested yet, so far as a comparison of varieties is concerned, but the climate is very favourable to the production of this fruit, and good crops are obtained. Some of the varieties which should give good results throughout the district are: Beder Wood (Per.), Senator Dunlap (Per.), Parsons Beauty (Per.), Portia (Imp.)

VEGETABLES AND FLOWERS

There is always much interest shown in the vegetables and flowers at this Station, and the season of 1920 was not an exception. There are so few in the district who have good flower gardens that it is hoped that the display here will be an inducement to improve home surroundings in this regard.

CEREALS

While up to the present it has not been possible to establish a series of test-plots for the study of a large collection of varieties of grain, about a dozen different sorts have been grown for several years in plots varying in size and location, according to the land available. The area intended as a permanent site for the cereal trial plots is being gradually brought into proper condition, and it is expected that before long a rather extensive series of tests of cereals will be inaugurated. The tests made during the season of 1920 and preceding years have given some results of value which may be mentioned here.

The date of sowing of the grain in the variety tests for 1920 was very late, May 26, the spring weather not having been suitable for early seeding.

On account of late seeding and the somewhat unfavourable nature of the summer —July being a very wet and rather cool month—the yields of grain were less than in previous years.

SPRING WHEAT

Three varieties were sown. They gave the following results:—

Variety	Date of harvesting	No. of days maturing	Length of straw	Yield per acre	Yield per acre		Weight per measured bushel after cleaning
			Inches.	Lbs.	Bush.	Lbs.	
Huron, Ottawa 3	Sept. 8	105	32	1,808	30	8	64·0
Marquis, Ottawa 15	" 6	103	36	1,752	29	12	64·0
Ruby, Ottawa 623	" 3	100	28	1,692	28	12	64·6

Taking the average of the returns for five years, it is found that Huron has out-yielded Marquis by one and a quarter bushels to the acre. Marquis has ripened one and a half days before Huron. Ruby is earlier than the other varieties tested, but gives a lower yield. The grain of all three sorts is of excellent appearance.

OATS

Four varieties of oats were tested, with the following results:—

Variety	Date of harvesting	No. of days maturing	Length of straw	Yield per acre	Yield per acre		Weight per measured bushel after cleaning
			Inches	Lbs.	Bush.	Lbs.	
Banner, Ottawa 49	Sept. 4	101	38	1,992	58	20	43·0
Daubeney, Ottawa 47	" 4	101	36	1,778	52	10	35·1
Liberty, Ottawa 480	" 7	104	32	1,546	45	16	50·8
Ligowo	" 10	107	33	1,759	51	25	37·9

Banner has shown itself the highest yielder of all the varieties tried. In a five-year average it has given nearly 70 bushels to the acre. Daubeney ripens a week

before Banner, and gives a very good yield. The Liberty oat, which has been grown for two years here, deserves special attention. Considering that it loses its hull when threshed, its yield, which at first sight may seem rather small, is really good. This variety seems very suitable for the district. The high weight per bushel of both the Liberty and the Banner varieties is noteworthy.

BARLEY

Three kinds of barley were sown. The following table gives some details in regard to them.

Variety	Date of harvesting	No. of days maturing	Length of straw	Yield per acre	Yield per acre	Weight per measured bushel after cleaning
			Inches	Lbs.	Bush. Lbs.	
Albert, Ottawa 54	Sept. 4	101	26	1,152	24 0	
Manchurian, Ottawa 50	" 7	104	32	1,460	30 20	50·5
Success	" 7	104	28	985	20 25	46·5

The Manchurian barley has always given the highest yields, and seems well suited to this region. Albert has shown itself the earliest sort. Success is a hooded variety (without awns). This would be a great advantage were it not associated with low yield and light weight per bushel.

PEAS

The Arthur Ottawa 18 pea is the only variety of field pea grown here. It seems very suitable for this district. This season it required 112 days to mature, grew 50 inches long, and yielded at the rate of 30 bushels (1,800 pounds) to the acre. The weight of a measured bushel was high, 66 pounds.

DIVISION OF FORAGE PLANTS

ENSILAGE CROPS

In order to determine which ensilage crops should preferably be grown in the district, a number of varieties of Indian corn were grown in comparison with Mammoth Russian sunflowers and a mixture of peas, oats, and vetches. As this is the first year that such a comparative experiment has been undertaken at the Station, it is obvious that the results obtained cannot be considered as in any way conclusive. Indications are, however, that a mixture of peas, oats, and vetches will produce, perhaps, the most satisfactory ensilage crop in the district, with sunflowers second and Indian corn third.

SWEDE TURNIPS

Sixteen varieties of swede turnips were sown in duplicate plots on June 1. The following five varieties produced the heaviest yields, viz., Good Luck, Perfection, Sutton's Up-to-date, Purple Top, and Sutton's Hardy White. Of the varieties mentioned, Good Luck seems to be best adapted to the district.

MANGELS

Twenty-seven varieties of mangels were sown in duplicate plots on June 2. When pulled, October 10, the following ten varieties were found to yield the heaviest crops, viz:—

Variety	Yield per acre tons.	Lbs.
Sutton's Devon Yellow Globe	36	450
Sutton's Yellow Intermediate	28	550
Weibull's Cylinder Barres	25	1,350
Ottawa Yellow Intermediate	25	550
Charlottetown Yellow Intermediate	24	650
Sutton's Mammoth Long Red	23	900
Agassiz Yellow Leviathan	23	500
Danish Sludstrup	22	
Charlottetown Yellow Globe	21	750
Ewing's Giant Half Sugar White	20	1,550
Average	25	125

SUGAR BEETS

Two varieties of sugar beets, sown and pulled on the same dates as the mangel varieties, yielded as follows:——

SUGAR BEETS—TEST OF VARIETIES

Variety	Yield per acre tons.	Lbs.
Chatham	17	500
Kitchener	14	900
Average	15	1,700

GRASSES AND CLOVERS

In order to ascertain the agricultural value of the various grasses and clovers grown in Canada and in temperate Europe, many of which are, so far, unknown in the district, some two dozen grasses and leguminous forage plants were sown in small plots. Owing, however, to the weedy condition of the land, the plots had to be ploughed up.

The same had also to be done in the case of a number of other experiments with forage plants.

POULTRY

Two general utility breeds are kept here: Plymouth Rock and Wyandotte. The number of birds in the flock has increased by 165 during the year, the total number being 217 at the present time. The number of eggs given by 100 hens during the year was 11,419, an average of 114·1 for each bird. A yearling bird laid 210 eggs. five gave over 150 and the lowest total was 60 eggs. This indicates the importance of the use of trap-nests for the selection of the best layers.

BEES

Three colonies only were kept here during the summer of 1920. In the fall, four colonies were placed in winter quarters, and they are now in excellent condition. Owing to the small number of colonies kept, no experimental work was undertaken during the summer of 1920.

IMPROVEMENTS

On the whole, the appearance of the Station has greatly improved during the year. Since the inception of the Station, no special building had been erected for

the office staff, but during this year a very comfortable 30 by 30 foot building was put up, and occupied on March 15. An old house near the piggery was torn down and built anew. Many stones were removed in the fields. Levelling work was also performed, which will make for better present and future experimental work.

EXCURSIONS AND EXHIBITIONS

A considerable number of farmers visited the Station during the year. In three days only, 3,000 farmers were welcomed. Several demonstrations and lectures were given during the three-day period on agricultural subjects corresponding to the most urgent needs of our district. As usual, the Station took part in the regional seed fairs of the district, where the finest samples were sent. A considerable number of circulars were distributed at these exhibitions. For the first time the Station had the advantage of exhibiting at the Quebec regional and provincial exhibitions. The best Percheron individuals were entered from the Station, and they won several first prizes, in different classes.