DOMINION OF CANADA

DEPARTMENT OF AGRICULTURE

DOMINION EXPERIMENTAL FARMS

# EXPERIMENTAL STATION

## FREDERICTON, N.B.

## INTERIM REPORT OF THE SUPERINTENDENT

W. W. HUBBARD

FOR THE YEAR ENDING MARCH 31, 1921

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# EXPERIMENTAL STATION, FREDERICTON, N.B.

## INTERIM REPORT OF THE SUPERINTENDENT, W. W. HUBBARD

### THE SEASON

During the winter of 1919-20 the ground was fairly well covered with snow from November 19, when winter set in, until March 27. January brought very cold, dry weather which was hard on fruit trees, though there was generally enough snow covering to prevent root injury. February brought a snowfall of fifty-two inches and an ice storm which coated trees and made roads impassable for days, and even weeks in some localities. It did not, however, do very much damage to fruit trees. March was slightly milder and drier than the average, and winter held steady until the 27th, when a heavy rain dissipated the snow and broke up roads and streams. April was cooler than average and with almost twice the average rainfall. Bright days and frosty nights seriously damaged the fall grains and threw out a large proportion of clover roots. Vegetation kept backward, and up till May 1 no swelling of fruit tree buds occurred. May, with only one-quarter of an inch of rainfall, made a record for dryness. Frosty nights continued until the 6th. After that date the weather warmed up and conditions for seeding could not have been better. Apple bloom began on the 26th, with full bloom on the 31st. June continued dry with rather cold nights. All crops except grass, however, seemed to have enough moisture. Fruits set well. July continued dry, with an average mean temperature, all crops except hay making good growth. August had a mean temperature of 58·6 degrees, five degrees higher than the average, with normal rainfall and more than usually warm, misty periods, very favourable to the growth of fungous diseases. September brought heavy rains and a gloomy, saturated atmosphere that destroyed a great deal of grain in the stook and caused potato blight from tops to tubers. In October very fine, warm weather prevailed with but three slight frosts and enough rain to keep soil conditions right. November was cold, with a freeze-up on the ninth and seven below zero on the thirtieth. There were light flurries of snow, but the ground was practically bare until the twenty-fifth, when three inches of snow covered the ground permanently and made good roads. The winter months following were free from bad storms, and mild, with only an occasional cold dip. Pleasant winter conditions continued until March 10, when mild weather began taking off the snow, and the ground was not again covered.

The seeding season of 1920 was rather late. Turnip stecklings were not set out till May 5. First early potatoes were planted May 8, and first wheat sown May 13. Fall wheat was cut on August 7. First potatoes were dug August 11. First spring grain was cut on August 19.

METEOROLOGICAL RECORDS

| Month | Temperature F | | | Precipitation | | | Sunshine Hours |
|---|---|---|---|---|---|---|---|
| | Mean | Highest | Lowest | Rainfall | Snowfall | Total | |
| 1920 | | | | | | | |
| April | 38·5 | 64·5 | 15·0 | 3·98 | 6·5 | 4·63 | 159·70 |
| May | 53·1 | 83·0 | 28·0 | 0·23 | ..... | 0·23 | 263·85 |
| June | 61·3 | 84·5 | 36·0 | 1·67 | ..... | 1·67 | 228·75 |
| July | 66·6 | 89·0 | 42·5 | 2·07 | ..... | 2·07 | 247·35 |
| August | 68·6 | 93·0 | 43·0 | 3·74 | ..... | 3·74 | 206·50 |
| September | 57·1 | 87·0 | 31·5 | 3·43 | ..... | 3·43 | 124·55 |
| October | 51·2 | 72·0 | 28·0 | 3·04 | ..... | 3·04 | 179·90 |
| November | 29·3 | 59·5 | − 7·0 | 0·98 | 5·0 | 1·48 | 108·40 |
| December | 22·2 | 44·5 | −12·0 | 2·18 | 19·0 | 4·08 | 80·25 |
| 1921 | | | | | | | |
| January | 16·2 | 47·0 | −17·0 | 1·12 | 11·5 | 2·27 | 105·40 |
| February | 15·3 | 45·0 | −19·0 | 0·13 | 17·0 | 1·83 | 136·00 |
| March | 33·7 | 66·0 | 4·0 | 4·32 | 8·5 | 5·17 | 141·60 |
| Totals from April 1st, 1920, to Mar. 31, 1921 | ..... | ..... | ..... | 26·89 | 67·5 | 33·64 | 1,977·25 |

## ANIMAL HUSBANDRY

### HORSES

The stock at the Station during the year has consisted of three pure-bred Clydesdale mares, one pure-bred Clydesdale stallion, three grade Clydesdale mares, three grade Clydesdale geldings, two grade Percheron mares; one pure-bred Clydesdale filly, two years old; one grade Clydesdale gelding, two years old; one grade Clydesdale filly, one year old; two general purpose mares by standard-bred sires.

Ten draught horses were worked daily from April 1 to December 1 at such farm work as the regular routine required, and also at making hay on an island and an upland meadow a few miles from this farm. For the remainder of the year these teams were utilized for hauling hay and straw from neighbouring farms, in hauling barnyard manure, and in storing ice on the farm. Pulpwood was hauled by three of the teams for one month.

With the object of ascertaining the cost of horse labour and also that of rearing colts, weights of the daily rations consumed were recorded.

Four draught horses, weighing from 1,300 to 1,600 pounds each, and at daily work throughout the year, were fed a total ration of 18,698 pounds of grain and 21,510 pounds of hay, or an average daily ration per head of 12·8 and 14·7 pounds respectively. In addition to the above, each horse was fed an average daily ration of about 6·5 pounds of roots during the winter. One feed of green feed was given daily throughout the summer.

Nine horses working from April 1 to October 31 received 24,003 pounds of grain and 23,500 pounds of hay, an average daily ration per head of 12·7 pounds and 12·4 pounds respectively. During the remaining 151 days they consumed a daily ration of 7·3 pounds of grain and 11·3 pounds of hay. In addition they consumed 235 pounds of roots per head.

The weight of these horses on April 1 was 13,175 pounds, and on October 31 it was 13,325 pounds, an average gain of 60 pounds per head. One mare was carrying a foal when weighed on April 1, and this may account to some extent for the fact that the latter weight was not greater.

Three 3-year-old colts were on pasture for five months, and during the remaining seven months, while in the stable, they received an average daily ration of 5·4 pounds of grain and 10·2 pounds of hay. They also received 200 pounds of roots per head for the period. Their weight at the beginning of the fiscal year averaged 1,140 pounds, and at the end of the year averaged 1,318·3 pounds, an average gain of 178·3 pounds.

One 2-year-old colt was pastured for five months, and for the remaining seven months was given an average daily ration of 4·3 pounds of grain, 10·8 pounds of hay, and 3·4 pounds of roots. His weight at the end of the year was 1,425 pounds, a gain of 395 pounds for the year.

Two yearling colts were also pastured for five months. During the remainder of the year they each received an average daily ration of 3·2 pounds of grain, 11·3 pounds of hay, and 3·4 pounds of roots. These two colts weighed 1,370 pounds at the beginning of the year. Their combined gains at the end of the year were 590 pounds, or an average gain per head of 295 pounds.

COST OF RAISING COLTS FROM BIRTH TO THREE YEARS OF AGE

| Feed Consumed | No. of Colts | Oats at 75c. bush. | Bran 2½c. per lb. | Hay 35c. per cwt. | Roots 8c. per bush. | Pasture $1 per month | Total Cost |
|---|---|---|---|---|---|---|---|
| | | Bush. | Lbs. | Lbs. | Bush. | Mos. | |
| Colt from birth to one year of age | 1 | 24·0 | 426·0 | 2,840·0 | 10·0 | ..... | $40 14 |
| Colts from one year to two years of age | 2 | 30·0 | 524·0 | 5,520·0 | 30·0 | 10·0 | 67 32 |
| Colt from two years to three years of age | 1 | 20·4 | 346·0 | 2,604·0 | 15·0 | 5·0 | 39 26 |
| Total feed consumed by one colt from birth to three years of age | 1 | 60·4 | 1,034·0 | 8,200·0 | 40·0 | 10·0 | 113·06 |
| Average yearly consumption | 1 | 20·1 | 344·6 | 2,733·3 | 13·3 | 3·3 | 37·68 |

## DAIRY CATTLE

There were milking, on March 31, two Holstein cows, three Holstein 2-year-old heifers, two Shorthorn cows, two Shorthorn 2-year-old heifers, one Ayrshire cow, one Ayrshire 2-year-old heifer, four grade cows and six grade 2-year-old heifers. On the same date there were on the farm two 2-year-old heifers, fifteen yearling heifers, twenty-two heifer calves, fourteen bull calves, two old bulls, four steer calves, and six dry cows.

The young bulls are sent out as breeders at about eleven months of age, and the heifers are brought into the dairy herd.

The following figures show very creditable records made by three Ayrshire heifers raised on the farm, one Holstein cow, and three dual-purpose Shorthorn cows:—

MILK RECORDS

| Name of Cow | Age | Breed | Lactation Period | Lbs. of Milk produced | Lbs. of Butter Fat produced |
|---|---|---|---|---|---|
| | yrs. | | days | | |
| Starlight of Fredericton | 2 | Ayrshire | 365 | 13,280·0 | 621·0 |
| Pansy of Fredericton | 2 | " | 425 | 10,116·3 | 484·9 |
| Morning Light of Fredericton | 2 | " | 351 | 8,799·5 | 412·0 |
| Lee Keyes Korndyke | 3 | Holstein | 365 | 12,403·5 | 406·0 |
| Molly | 10 | Dual purpose Shorthorn | 359 | 11,836·0 | 439·0 |
| Princess | 10 | " | 348 | 10,882·0 | 460·3 |
| Betty | 10 | " | 282 | 10,509·0 | 442·9 |

The pasture on the farm is practically all on land that has not been brought under cultivation, and, therefore, to keep up the milk flow it was necessary to continue stable feeding throughout the summer months, ensilage and green feed being fed with a small grain ration. In the fall, turnip tops and white turnips were fed, and swede turnips and corn silage later.

### FEEDING EXPERIMENT

When the young stock were brought to the barn in the fall, a feeding experiment was carried on as follows:—

Lot 1 was fed on hay, roots and meal.

Lot 2 was fed on hay, ensilage and meal.

Lot 3 was fed on straw, roots and meal.

The meal in all cases was composed of the same feeds, namely, equal parts by weight of bran and screenings.

Lots 1 and 2 were fed the same amount of hay and equal weights of roots or ensilage and the same amount of meal, 6 pounds of hay, 20 pounds of either roots or ensilage, and 5 pounds of meal.

The heifers in lot 3 were a little older than the heifers in lots 1 and 2 and were fed more roughage and less concentrates, namely 10 pounds of straw, 30 pounds of roots and 4 pounds of meal. The heifers were weighed on January 10, the day the experiment was started, and on the 10th and 25th of each month thereafter. The following table shows the results of the experiment:—

HEIFER FEEDING EXPERIMENT

| Feed | | Lot I Roots, Hay and Meal | Lot II Ensilage, Hay and Meal | Lot III Roots, Straw and Meal |
|---|---|---|---|---|
| Number of animals in group | | 4 | 5 | 6 |
| Initial weight, gross | lbs. | 2,499·0 | 3,233·5 | 5,262·5 |
| " average | " | 624·7 | 646·7 | 877·0 |
| Finished weight, gross | " | 2,971·0 | 3,767·0 | 2,969·0 |
| Finished weight, average | " | 742·7 | 753·4 | 994·8 |
| Number of days in experiment | | 105 | 105 | 105 |
| Total gain for period | lbs. | 472·0 | 533·5 | 706·5 |
| Average gain per animal | " | 118·0 | 106·7 | 117·7 |
| Average daily gain for group | " | 4·51 | 5·08 | 6·72 |
| Average daily gain per animal | " | 1·12 | 1·01 | 1·12 |
| Quantity of meal fed to lot for period | " | 400·0 | 400·0 | 320·0 |
| " hay " | " | 480·0 | 480·0 | |
| " ensilage fed to lot for period | " | ..... | 1,600·0 | |
| " roots " | " | 1,600·0 | ..... | 2,400·0 |
| " straw " | " | ..... | ..... | 1,000·0 |
| Total cost of feed | $ | 56·32 | 70·40 | 84·60 |
| Cost of feed per head for period | $ | 14·08 | 14·08 | 14·10 |
| Cost of feed per head per day | cts. | 13·4 | 13·4 | 13·42 |
| Cost to produce 1 lb. gain | cts. | 11·9 | 13·1 | 11·9 |

### SUNFLOWER SILAGE FEEDING RESULTS

A quantity of sunflowers was grown and put in the silo as silage. Corn silage was put in the silo on top of the sunflower silage and a certain amount of the juice of the corn silage permeated the sunflower silage. As a consequence, the palatability and nutritive value of the sunflower silage could not be accurately ascertained, but it was noticeable that the farther down into the sunflower silage the feeding went, the less it was relished by the cattle. Two animals vomited their rations and thereafter could not be induced to eat the sunflower silage. There was a decided shrinkage in the milk flow after the cows had been on the sunflower silage for a week, by which time the influence of the juice of the corn silage was pretty well eliminated.

1. The foundation cows were representative of the average grade dairy cows in the district.

2. The first table gives the average of the mature grade cows for three years while on the Experimental Station.

3. The second table gives the records of the first cross Holstein heifers at two years of age; and by comparing these records with the three-year average records of their mature dams, it will be noted that there is a difference of only 7·7 per cent in favour of the mature cows over the two-year-old heifers as far as milk production is concerned, and 14 per cent more butter.

4. Table three gives the records of the first cross Holsteins as three-year-olds.

5. Table four gives the records of the first cross Holsteins as four-year-olds. It is to be noted that the three cows, Brindle 1-H, Brownie 1-H and Madge 1-H, have not as yet completed their lactation period, but already have produced 1,201·7 pounds more milk and 28·6 pounds more butter than did their mature dams in the same length of time.

6. Table five shows the start the second cross Holstein heifers have made, but they are not far enough advanced in their period to make any comparisons, excepting that Hannah 1-H-1 as a two-year-old has already produced 2,517·9 pounds more milk and 92·4 pounds more butter than her mother did in her lactation period at the same age.

7. Table six gives the three-year average of the mature grade cows with the exception of Shannon and Queenie, who just milked two periods and one period respectively.

8. Table seven gives the records of the first cross Shorthorns as two-year-old heifers; and by comparing these records with the records of their dams, it is seen that the mature cows produced only 211·8 pounds more milk and 15·5 pounds more butter than did the two-year-old heifers in one lactation period.

9. In table eight it is to be noted that some of the cows have not completed their lactation period, but, as they stand at present, they are in a fair way to out-yield their dams as three-year-old heifers.

TABLE I.—AVERAGE OF MATURE GRADE COWS FOR THREE YEARS

| — | No. of days Milking | Lbs. of Milk | Per cent Fat | Lbs. of Butter |
|---|---|---|---|---|
| Brindle | 282 | 5,272·1 | 4·3 | 273·1 |
| Bessie | 242 | 5,054·6 | 4·0 | 237·7 |
| Brownie | 261 | 4,581·2 | 4·0 | 214·5 |
| Madge | 239 | 4,472·8 | 4·0 | 211·9 |
| Tiny | 284 | 4,662·2 | 3·6 | 199·8 |
| Hannah | 235 | 5,518·0 | 3·7 | 247·3 |
| Average for six head | 257 | 4,926·8 | 3·9 | 230·7 |

TABLE II.—FIRST CROSS FROM GRADES AND HOLSTEIN SIRE, AS TWO-YEAR OLDS.

| — | No. of days Milking | Lbs. of Milk | Per cent Fat | Lbs. of Butter |
|---|---|---|---|---|
| Brindle 1-H | 355 | 6,179·1 | 4·1 | 294·78 |
| Bessie 1-H | 290 | 3,337·2 | 4·5 | 179·18 |
| Brownie 1-H | 366 | 5,497·8 | 3·6 | 229·21 |
| Madge 1-H | 287 | 4,493·6 | 3·2 | 159·20 |
| Tiny 1-H | 289 | 3,528·9 | 3·6 | 148·17 |
| Hannah 1-H | 301 | 4,234·3 | 3·6 | 180·70 |
| Average for six head | 314 | 4,545·2 | 3·8 | 198·37 |

TABLE III—FIRST CROSS FROM GRADES AND HOLSTEIN SIRE, AS THREE-YEAR-OLDS

| — | No. of days Milking | Lbs. of Milk | Per cent Fat | Lbs. of Butter |
|---|---|---|---|---|
| Brindle 1-H | 377·0 | 3,990·2 | 3·6 | 170·22 |
| Bessie 1-H | 342·0 | 3,645·5 | 3·9 | 165·59 |
| Brownie 1-H | 350·0 | 7,816·5 | 3·2 | 295·81 |
| Madge 1-H | 370·0 | 3,610·8 | 3·3 | 122·52 |
| Tiny 1-H | 322·0 | 4,074·0 | 3·4 | 165·36 |
| Hannah 1-H | 419·0 | 4,234·4 | 3·6 | 180·7 |
| Average for six head | 363·3 | 4,561·9 | 3·5 | 183·36 |

TABLE IV.—FIRST CROSS FROM GRADES AND HOLSTEIN SIRE, AS FOUR-YEAR-OLDS

| — | No. of days Milking | Lbs. of Milk | Per cent Fat | Lbs. of Butter |
|---|---|---|---|---|
| Brindle 1-H | 320·0 | 9,525·6 | 4·1 | 458·89 |
| Bessie 1-H | 232·0 | 4,580·3 | 3·9 | 204·27 |
| Brownie 1-H | 337·0 | 10,439·4 | 3·7 | 376·55 |
| Madge 1-H | 335·0 | 5,902·2 | 3·4 | 235·7 |
| Tiny 1-H | 303·0 | 4,641·8 | 3·4 | 187·85 |
| Hannah 1-H | 362·0 | 7,666·6 | 3·7 | 331·04 |
| Average for six head | 314·3 | 7,126·9 | 3·2 | 299·0 |

TABLE V.—SECOND CROSS FROM GRADES AND HOLSTEIN SIRE AS TWO-YEAR-OLDS

| — | No. of days Milking | Lbs. of Milk | Per cent Fat | Lbs. of Butter |
|---|---|---|---|---|
| Brindle 1-H-1 X | 102·0 | 4,175·2 | 3·8 | 173·01 |
| Bessie 1-H-1 X | 162·0 | 4,406·3 | 3·6 | 188·7 |
| Brownie 1-H-1 X | 97·0 | 4,169·5 | 3·3 | 164·6 |
| Madge 1-H-1 | Not yet in milk | | | |
| Tiny 1-H-1 | " | | | |
| Hannah 1-H-1 | 254·0 | 7,112·3 | 3·4 | 282·51 |
| Average for four head | 153·7 | 4,965·7 | 3·5 | 202·2 |

Cows with "X" after name have not completed their periods.

TABLE VI.—AVERAGE OF MATURE GRADE COWS FOR THREE YEARS

| — | No. of days Milking | Lbs. of Milk | Per cent Fat | Lbs. of Butter |
|---|---|---|---|---|
| Sally | 263·0 | 5,363·0 | 4·1 | 261·9 |
| Brindle | 282·3 | 5,272·1 | 4·3 | 273·1 |
| Maggie | 294·3 | 6,099·7 | 4·0 | 286·3 |
| Shannon for two periods | 260·0 | 5,170·1 | 4·1 | 253·2 |
| Blossom | 318·6 | 6,687·9 | 3·7 | 296·4 |
| Queenie for one period | 254·0 | 6,428·7 | 3·5 | 265·7 |
| Average for six head | 278·7 | 5,836·9 | 3·9 | 272·7 |

TABLE VII.—FIRST CROSS FROM GRADES AND SHORTHORN SIRE, AS TWO-YEAR-OLDS

| —— | No. of days Milking | Lbs. of Milk | Per cent Fat | Lbs. of Butter |
|---|---|---|---|---|
| Sally 1-S | 388·0 | 7,062·3 | 3·8 | 323·06 |
| Brindle 1-S | 371·0 | 3,747·6 | 3·6 | 161·42 |
| Maggie 1-S | 359·0 | 3,790·3 | 4·2 | 187·76 |
| Shannon 1-S | 395·0 | 5,530·0 | 4·4 | 288·93 |
| Blossom 1-S | 366·0 | 6,052·6 | 3·4 | 244·94 |
| Queenie 1-S | 384·0 | 7,545·1 | 3·7 | 336·55 |
| Average of six head | 373·8 | 5,625·1 | 3·8 | 257·11 |

TABLE VIII.—FIRST CROSS FROM GRADES AND SHORTHORN SIRE, AS THREE-YEAR-OLDS UP TO DATE

| —— | No. of days Milking | Lbs. of Milk | Per cent Fat | Lbs. of Butter |
|---|---|---|---|---|
| Sally 1-S | 309·0 | 8,314·5 | 3·8 | 366·96 |
| Brindle 1-S | 325·0 | 7,095·3 | 3·7 | 306·23 |
| Maggie 1-S | 282·0 | 5,433·9 | 3·9 | 247·27 |
| Shannon 1-S X | 187·0 | 5,253·4 | 4·2 | 258·72 |
| Blossom 1-S | 320·0 | 6,818·0 | 3·7 | 292·90 |
| Queenie 1-S X | 212·0 | 5,750·0 | 3·9 | 261·38 |
| Average of six head | 272·5 | 6,444·1 | 3·8 | 288·9 |

Cows with "X" after name have not completed their periods.

## EFFECT OF DEHORNING ON MILK FLOW

| Name of Cow | Before Dehorning | | | After Dehorning | | | | | Remarks |
|---|---|---|---|---|---|---|---|---|---|
| | Lbs. milk in 7 days | Lbs. milk per day (average) | % Fat | Lbs. milk in 7 days | Lbs. milk per day (average) | % Fat | Lbs. milk 7 days | | |
| | | | | | | | Gain | Loss | |
| Queenie 1-S | 273·1 | 39·0 | 3·6 | 191·5 | 27·3 | 3·6 | ..... | 8·16 | Did not recover. |
| Blossom 1-S | 253·1 | 36·1 | 3·5 | 260·3 | 37·2 | 3·5 | 7·5 | ..... | Gained. |
| Brownie 1-S | 189·5 | 27·0 | 4·3 | 179·0 | 25·5 | 4·3 | ..... | 10·5 | Did not recover. |
| Shannon 1-S | 314·3 | 44·9 | 4·0 | 289·1 | 41·3 | 4·0 | ..... | 25·3 | Recovered fully. |
| Maggie 1-S | 251·5 | 36·9 | 3·9 | 238·1 | 34·1 | 3·9 | ..... | 12·4 | " |
| Madge 1-S | 57·5 | 8·2 | 4·0 | 18·5 | 2·6 | 4·0 | ..... | 39·0 | Dried off. |
| Brindle 1-S | 254·2 | 36·3 | 3·4 | 199·0 | 28·4 | 3·4 | ..... | 55·2 | Did not recover. |
| Sally 1-S | 295·3 | 42·2 | 3·7 | 237·8 | 33·9 | 3·7 | ..... | 57·5 | Recovered in 10days |
| Flecky 1-A | 299·9 | 42·8 | 3·8 | 330·6 | 47·2 | 3·8 | 30·7 | ..... | Continued gaining. |
| Hannah 1-H-1 | 285·7 | 40·2 | 3·4 | 150·8 | 21·5 | 3·4 | ..... | 34·9 | Recovered in 3 weeks. |
| Average | 247·41 | 35·3 | ..... | 209·59 | 29·9 | | | | |

## BEEF CATTLE

Among the animals sold for beef during the year was a grade Shorthorn steer from a pure-bred Shorthorn bull. The dam of this steer was out of a cow of mixed breeding and by a pure-bred Shorthorn bull. As a three-year-old in 320 days she produced 6,818 pounds of milk testing 3·7 per cent fat. This steer won first in his class and also championship at the Maritime Winter Fair for the best beef animal sired by a pure-bred Shorthorn bull.

This steer was shown as a senior calf at the Winter Fair at Amherst, N.S., in 1919, and won first in his class and also championship for the best beef animal from a grade cow and sired by a pure-bred Shorthorn bull. In 1920 he won first in his class as a senior yearling, also championship for the best beef animal from a grade cow and pure-bred Shorthorn bull, reserve championship for the best beef animal on exhibition and also first in the dressed carcass class.

He was one year and ten months of age when slaughtered and had consumed:—

| | | |
|---|---|---|
| 650 lb. | of whole milk | $ 7 50 |
| 4,510 " | skim-milk | 18 00 |
| 3,060 " | meal | 68 87 |
| 2,660 " | hay | 15 00 |
| 2½ tons | roots and ensilage | 6 75 |
| | Total cost of feed | $116 12 |

This steer dressed 710 pounds (about 60 per cent of his live weight) and was sold at 21 cents a pound, or $149, giving a profit of $22.88, labour and manure not considered.

On March 29, two steers, of a lot of six of last February's calves that had been fed alike since birth, were slaughtered. To that date they had consumed on the average the following feeds: new milk, 300 pounds; skim-milk, 1,440 pounds; oil cake, 37 pounds; bran, 830 pounds; crushed oats, 315 pounds; screenings, 525 pounds; ensilage or roots, 1,050 pounds, and hay, 1,200 pounds, the whole costing $53.09.

## SHEEP

On April 1, 1920, the flock consisted of sixty in all (pure-bred and grade Shropshires and Cheviots), fifty-two of which were breeding ewes. From these fifty-two ewes a very uniform crop of lambs was raised, sixty-six in all, giving an average of 1·2 lambs per ewe.

All grade ram lambs were castrated. All lambs were docked and the entire flock dipped before going to pasture. On June 11 the dry ewes and ewes with single lambs were put on an upland pasture at Springhill, and the remaining sixty-one were put on rough bushy pasture on the farm until August 14, when the lambs were put on a piece of second crop clover and the ewes were taken to Springhill pasture.

Of the lamb crop, eleven pure-bred rams were sold as breeders, eighteen pure-bred ewes were retained on the farm as breeders, ten grade wethers were run in a feeding experiment, and the remaining grades and pure-breds, unfit for breeding purposes, were sold.

### FEEDING EXPERIMENT

To determine the relative fleshing ability and dressing percentage of grade lambs sired by a pure-bred Shropshire ram and grade lambs sired by a pure-bred Cheviot ram, five wethers of each breed were selected, of even weights and as nearly as possible in the same fleshing condition, and put on the same feed the first day of December. They were weighed on the third day of December and every week thereafter and their range of weights was as follows:—

WEIGHTS OF SHROPSHIRE WETHERS

| Tag No. | Dec. 3rd | Dec. 10 | Dec. 17 | Dec. 24 | Dec. 31 | Jan. 7 | Jan. 14 | Jan. 21 | Jan. 28 | Feb. 4 | Starved Weight Feb. 11 | Dressed Weight |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | lbs. | lbs. | lbs. | lbs. | lbs. | lbs. | lbs. | lbs. | lbs. | lbs. | lbs. | lbs. |
| 137 | 113 | 111 | 112 | 116 | 116½ | 124½ | 124½ | 127½ | 127½ | 133 | 122 | 59·0 |
| 146 | 83½ | 87 | 89 | 87 | 91½ | 96½ | 96½ | 102 | 101½ | 105 | 101½ | 48·5 |
| 91 | 104 | 102 | 105½ | 107½ | 109½ | 115½ | 117½ | 122½ | 121½ | 122½ | 118 | 56·0 |
| 142 | 87½ | 91½ | 90½ | 91½ | 93½ | 100½ | 100½ | 104½ | 104½ | 109 | 102 | 48·0 |
| 139 | 86½ | 86½ | 88½ | 86½ | 87½ | 92 | 89½ | 94½ | 94½ | 103½ | 93 | 47·0 |
| Total | 474½ | 478 | 485½ | 488½ | 498½ | 529 | 528½ | 551 | 549½ | 573 | 536½ | 258·5 |

WEIGHTS OF CHEVIOT WETHERS

| Tag No. | Dec. 3 | Dec. 10 | Dec. 17 | Dec. 24 | Dec. 31 | Jan. 7 | Jan. 14 | Jan. 21 | Jan. 28 | Feb. 4 | Starved Weight Feb. 11 | Dressed Weight |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | lbs. | lbs. | lbs. | lbs. | lbs. | lbs. | lbs. | lbs. | lbs. | lbs. | lbs. | lbs. |
| 124 | 90 | 91 | 94½ | 90 | 92 | 96 | 96 | 100 | 100 | 101½ | 96 | 50 |
| 132 | 91 | 90 | 91 | 89½ | 91 | 96 | 99½ | 103 | 103 | 107 | 102 | 52 |
| 118 | 81½ | 81½ | 84 | 82½ | 93 | 96½ | 90 | 91½ | 90 | 93 | 92 | 42 |
| 131 | 94 | 94½ | 95 | 95 | 95 | 98½ | 100 | 103 | 102½ | 105 | 100 | 53 |
| 102 | 100½ | 92 | 103 | 102½ | 102½ | 106½ | 113½ | 114 | 116 | 119 | 119 | 55 |
| Total | 457 | 449 | 467½ | 459½ | 463½ | 483½ | 499 | 511½ | 511½ | 525½ | 509 | 252 |

The Shropshire lambs gained 98.5 pounds in the period.
The Cheviot lambs gained 68 pounds in the period.
The Shropshire lambs gave a dressing percentage of 48.18 per cent.
The Cheviot lambs gave a dressing percentage of 49.5 per cent.

FINANCIAL STATEMENT

Feed consumed by both lots (10 wethers). Equal quantities were eaten by each lot.

| | | |
|---|---|---|
| Hay, 490 lb. at $7 per ton | | $ 1 71 |
| Roots, 1,360 lb. at $3 per ton | | 2 04 |
| Grain, 1,060 lb. at $30 per ton | | 26 50 |
| | | $30 25 |
| Dec. 1—Shropshire wethers, weighing 450½ lb. at 7c. | $31 53 | |
| Cost of feed | 15 13 | |
| Feb. 11—Sold the above, weighing 536½ lb. at 9c. per lb. | .... | $48 28 |
| Profit (manure and labour omitted) | 1 62 | |
| | $48 28 | $48 28 |
| Dec. 1—Cheviot wethers, weighing 434 lb. at 7c. | $30 38 | |
| Cost of feed | 15 12 | |
| Feb. 11—Sold the above, weighing 509 lb. at 9c. | .... | $45 81 |
| Profit (manure and labour omitted) | 31 | |
| | $45 87 | $45 87 |

The ewes came through the winter in excellent condition and to-day have given a very uniform crop of good, smart lambs. When they were brought to the farm last fall they were fed what hay they would clean up, 1½ pounds of pulped roots and half a pound of grain per day (equal parts by weight of bran and screenings). This ration was changed two weeks before lambs were due to a mixture in the proportions of 100 pounds of bran, 50 pounds crushed oats and 50 pounds of oil cake, the daily ration being gradually brought up to 2 pounds each per day.

From December 1 to March 31, each ewe on the average consumed:—

| | |
|---|---|
| Grain, 135 lb. at 2.3c. per lb. | $ 3 10 |
| Hay, 242 lb. at $7 per ton. | 84 |
| Roots and ensilage, 242 lb. at $3 per ton. | 36 |
| | $ 4 30 |

For the same period each yearling ewe on the average consumed:—

| | |
|---|---|
| Grain, 90 lb. at 2c. per lb. | $ 1 80 |
| Hay, 242 lb. at $7 per ton. | 84 |
| Roots and ensilage, 242 lb. at $3 per ton. | 36 |
| | $ 3 00 |

The returns from the flock for the year were as follows:—

| | | |
|---|---|---|
| Pure-bred ram lambs sold. | | $260 00 |
| Mutton and lamb sold. | | 285 27 |
| Wool sold. | | 145 21 |
| Sheep skins sold. | | 7 50 |
| | | $697 98 |
| Food cost for winter months. | $177 00 | |
| Rent of pasture. | 50 00 | |
| | $227 00 | 227 00 |
| Profit (labour and manure omitted). | | $470 98 |

To date (March 31) sixteen ewes have lambed, with but two single lambs, and one lamb died, which leaves twenty-nine living lambs. The flock at the end of the fiscal year consists of: sixteen Cheviot ewes, twenty-five Shropshire ewes, one Shropshire ram, twenty-nine lambs and ten ewes to lamb.

## ANGORA GOATS

These goats were brought through the winter economically, but in very good condition, on one pound of whole oats per day and what hay they would clean up until the kidding season, when they were given roots and a half pound of bran as well. Ten kids were reared, seven of which were dropped in January and three in March.

During the summer of 1920, this flock of goats was put on the rough bush pasture to demonstrate their ability in brushing land. They made a very good showing on the bushes near the gate but it was difficult to see just what they were actually accomplishing as they had a very large pasture. This summer the goats will be enclosed on a two-acre block at a time to secure definite information along this line.

On March 31 the flock consisted of twenty-one old goats and ten kids. The male kids will, if possible, be sold as breeders and the females brought into the breeding flock.

## SWINE

In the spring of 1920, seven litters were farrowed, five pure-bred Yorkshires and two grade Yorkshires, and averaged eight pigs per sow. All these young pigs, excepting four, retained as breeders, were sold at six weeks of age. The sows ran on pasture until November.

Two fall litters of seven each were farrowed, five of which were sold as breeders and nine fed through the winter. Five sows were bred to farrow in April, 1921, and came through the winter in excellent condition in portable cabins with free range of the barnyard.

The average cost per head of wintering these sows from December 1 to March 31 was as follows:—

| | |
|---|---|
| 1,446 lb. of potatoes, cooked, at 50c. per brl. | $ 4 00 |
| 484 lb. of meal at 2c. per lb. | 9 68 |
| 600 lb. of mangels at 10c. per bush. and a little clover and hay. | 2 00 |
| | $15 68 |
| Return from sale of pigs. | $270 00 |
| 2,869 lb. of pork at from 11c. to 14c. per lb. | 334 67 |
| | $604 67 |

Two aged, pure-bred Yorkshire sows were shipped to the Experimental Farm at Nappan, N.S. On March 31 there were on the farm five pure-bred Yorkshire sows, two pure-bred Yorkshire boars and nine fall pigs feeding for pork.

## FIELD HUSBANDRY

As the field areas of this Station have only recently been cleared from the forest, definite crop rotation work has not yet been undertaken. A three-year rotation of roots, potatoes or corn, followed by grains seeded to clover and grasses has resulted in the increase of the crop-producing capacity of the soil. To increase the hay supply, a change will be made to a four-year rotation.

YIELDS PER ACRE OF FIELD CROPS IN 1920

| | |
|---|---|
| Barley | 28.6 bushels per acre |
| Oats | 44.0 " " |
| Hull-less oats | 21.25 " " |
| Spring wheat | 14.5 " " |
| Timothy and clover hay | 2.25 tons per acre |
| Mixture of oats, peas, vetches, wheat and rye for ensilage | 4.1 " " |
| Ensilage corn | 12.9 " " |
| Mangels | 25.9 " " |
| Swede turnips | 12.5 " " |

### FALL WHEAT

In 1919 an excellent crop of Dawson's Golden Chaff fall wheat which came through the preceding winter in almost perfect condition was harvested, and a yield of thirty-four bushels per acre obtained. However, in 1920, as a result of severe winter-killing, very poor yields were received from fall wheat.

### SPRING WHEAT

One acre of White Fife wheat was sown on May 13, on land which the previous year had grown a crop of potatoes. Glume Spot and scab were quite prevalent and the crop failed to fill satisfactorily. Harvesting was finished on August 24, and on account of the prevalent wet weather, the crop was badly damaged and considerable grain lost in handling. The yield on the acre was fourteen and a half bushels. The cost of production on this acre was as follows:—

| | |
|---|---|
| Manure and fertilizer chargeable to this crop | $ 6 00 |
| Ploughing, 5 hours at 51c. | 2 55 |
| Harrowing, 4 hours at 51c. | 2 04 |
| Seeding, 1 hour at 51c. | 51 |
| Two bushels of seed at $2.25. | 4 50 |
| Cutting, 1 hour at 51c. | 51 |
| Stooking, 2 hours at 37c. | 74 |
| Hauling in, 3 hours at 51c. | 1 53 |
| Hauling in, 5 hours at 37c. | 1 85 |
| Threshing, 4 hours at 37c. | 1 48 |
| Rent of land. | 3 00 |
| Cost of production per acre. | $24 71 |

Yield per acre, 14½ bushels.
Cost of production per bushel, $1.70.

### BARLEY

Barley was sown on May 20, on 1·89 acres of land which the previous year had grown a crop of turnips. The total yield was 54 bushels. The cost of production per acre was as follows:—

| | |
|---|---|
| Manure | $ 7 50 |
| 5¼ hours ploughing at 51c | 2 68 |
| 5 hours harrowing at 51c | 2 55 |
| 1 hour seeding at 51c | 51 |
| 2 bushels seed at $1.50 | 3 00 |
| 3 hours cutting and hauling at 51c | 1 53 |
| 6 hours hauling at 37c | 2 22 |
| 1¼ hours threshing, 4 men at 37c | 2 22 |
| Rent of land | 3 00 |
| Cost of production per acre | $25 21 |

Yield per acre, 28.6 bushels.
Cost of production per bushel, 88 cents.

### OATS

Twenty-nine acres of Banner oats were sown from May 19 to 27. The cost per acre of growing this crop was as follows:—

| | |
|---|---|
| Manure | $ 6 00 |
| Ploughing, 6 hours at 51c | 3 06 |
| Harrowing, 3.9 hours at 51c | 1 99 |
| Seeding, 1.2 hours at 51c | 61 |
| 3.3 bushels of oats at $1 | 3 30 |
| Harvesting, 1.7 hours at 51c | 87 |
| Stooking, 2.5 hours at 37 cents | 93 |
| Hauling in, 3 hours at 51c | 1 53 |
| Hauling in, 6 hours at 37c | 2 22 |
| Threshing, at 7c. per bushel | 3 08 |
| Rent of land | 3 00 |
| Cost of production per acre | $26 59 |

Yield per acre, 44 bushels.
Cost of production per bushel, 60 cents.

On account of very heavy rain and fifteen days cloudy weather when the harvesting was in progress, all the grain was injured and some was over-ripe before cutting. It is estimated that at least 25 per cent of the crop was lost by shelling and sprouting. The average yield per acre was 44 bushels.

Two acres of Liberty oats, which is a hull-less variety, were sown on May 26. Although the seed was treated for smut in the usual way, the treatment proved only partly effective, and the crop was badly infected. Forty-two and a half bushels were threshed, which equals twenty-one and a quarter bushels per acre. Under similar conditions Banner would have yielded from 35 to 40 bushels. It must be borne in mind, however, that while the Liberty is all oat, the Banner is 30 per cent hull.

### MANGELS

One acre was seeded with Yellow Intermediate mangels in May, and a yield of 25 tons 1,790 pounds was secured.

### SWEDE TURNIPS

Fourteen acres of swedes were grown. Part of the land was newly cleared, uneven and undrained bog land which was dry at seeding time but later was inundated. About three acres out of the fourteen were practically destroyed by wet weather. The total crop was approximately 5,500 bushels, of which 800 bushels, it is estimated, were frozen in the fields and in pits. These frozen swedes were useless for feeding. Seeding began on June 25 and finished July 6. The average yield per acre for 14 acres was 9 tons 1,640 pounds, or 392·8 bushels. The average yield per acre for 11 acres was 12 tons 1,000 pounds, or 500 bushels.

ENSILAGE CORN

The area devoted to this crop was ten acres. White Cap Yellow Dent, Wisconsin No. 7, and Bailey were the varieties used. The ground was fall ploughed, manured during the winter, and 600 pounds of fertilizers were put on one acre of the ground. Planting was done with a two-row seeder in drills 3½ feet apart. Four-fifths of a bushel of seed was planted per acre. The crop was cultivated every ten days with a two-row cultivator, and considerable hand hoeing was also necessary. The crop was cut from the 4th to the 9th of October before being damaged by frost. It lay in the field an average of twenty-four hours before weighing and hauling to the silo. The yield was 12 tons 1,820 pounds per acre.

The cost per acre of growing and putting this crop into the silo was as follows:—

| | |
|---|---|
| Team labour | $31 30 |
| Manual labour | 21 21 |
| 7½ tons manure | 7 50 |
| 60 lb. fertilizer (average) | 1 50 |
| 45 lb. seed at $4 per bushel | 3 21 |
| Rent of land | 3 00 |
| Cost of production per acre | $67 72 |

Yield per acre, 12.9 tons.
Cost of production per ton was $5.25.

HAY

Forty-five acres of timothy and clover hay gave a yield of 102 tons as weighed from the field, an average of 2¼ tons per acre. The cost of making and storing was $2.65 per ton. Rent of land was $1.34. The total cost per ton was $3.99.

OATS, PEAS AND VETCHES, WHEAT AND RYE

On June 25 eight acres of freshly ploughed pasture land were sown with a mixture of two bushels oats, one bushel of peas, half bushel of vetches, and a peck each of wheat and rye. Due to lodging, much of the crop could not be properly cut. Heavy rains in September drowned out a considerable portion of the crop and put the land into such a condition that harvesting operations were difficult and expensive.

The yield secured from the eight acres was only 32 tons 1,500 pounds, and the total cost was $447.71, making a cost under the exceptionally unfavourable circumstances of approximately $14 per ton.

## HORTICULTURE

### ORCHARDS

In spite of the deep snow, ice crusts and extreme cold of the past winter, the apple orchards came through in very good condition and with a minimum of winter injury. A few trees were girdled by mice, three or four being completely girdled. In April the apple orchard was gone over and lightly pruned. Early in the same month an application of manure was placed around each tree in order to hold the frost in the ground and retard the bloom until danger of night frosts was past. This was later worked into the soil by forking around each tree.

Three sprays were applied during the season. The first was applied on May 26 and 27 and consisted of:—

| | |
|---|---|
| Copper sulphate | 3 lb. |
| Hydrated lime | 10 " |
| Arsenate of lime | 1½ " |
| Water | 40 gallons |

The second spray was applied on June 9 and 10 and was made up as follows:—

| | |
|---|---|
| Soluble sulphur | 1 lb. |
| Arsenate of lime | ½ " |
| Hydrated lime | 5 " |
| Black leaf 40 | 3/10 pint |
| Water | 40 gallons |

The third application was made on June 24 and 25 and consisted of:—

| | |
|---|---|
| Copper sulphate | 3 lb. |
| Hydrated lime | 10 " |
| Arsenate of lime | 1½ " |
| Black leaf 40 | 3/10 pint |
| Water | 40 gallons |

Tent caterpillars were plentiful, but were kept in control by the sprays used. The crop of fruit produced was very free from both insect and fungous injury.

### CULTURAL ORCHARD

Part of this orchard has been under a three-year rotation—namely, potatoes, grain, and hay. Manure is applied to the hoed crop in the rotation. This section of the orchard grew two crops of clover hay during the year, which were both removed. The remainder of the orchard is in sod. On one-half of this the grass is cut and allowed to remain on the ground. On the other half it is cut and made into hay and removed. No manure is applied to this sod section of the orchard.

In the above sod sections, Fameuse and McIntosh trees are planted in alternate rows. At the time of planting the holes for the Fameuse trees were blasted, while those for the McIntosh were not. During the year the Fameuse made a slight gain in growth over the McIntosh.

The majority of the trees in this orchard bloomed in season and an increase in the amount of fruit over 1919 was recorded. The McIntosh variety averaged about a fifty per cent bloom for the trees which bloomed, but the set of fruit was small. Fameuse, with about one-third of this bloom, bore on the average two and one-half times as much fruit as the McIntosh. Dudleys, averaging thirty-eight per cent bloom, yielded 2·27 pecks of fruit per tree on the average. Wealthies, averaging six per cent bloom, gave an average yield of 0·37 pecks per tree. For the Fameuse, Wealthy, and Dudley varieties, the amount of fruit borne followed about the same order and proportion as their bloom percentages. The results as recorded for the season are shown in the following table:—

CULTURAL ORCHARD—BLOOM AND YIELD

| Variety | Number of trees | Number trees bore fruit | Amount of fruit produced | Average per cent bloom for trees which bloomed | Average yield per bearing tree |
|---|---|---|---|---|---|
| | | | pecks | | pecks |
| Dudley | 30 | 24 | 54·6 | 38 | 2·27 |
| Fameuse | 34 | 32 | 33·3 | 15 | 1·04 |
| McIntosh | 55 | 30 | 12·6 | 52 | 0·42 |
| Wealthy | 59 | 27 | 10·0 | 6 | 0·37 |
| Crimson Beauty | 7 | 5 | 1·1 | 12 | 0·22 |

### COMMERCIAL ORCHARD

This orchard remained in sod and a crop of hay was cut and removed in July. During the latter part of September, a top dressing of barnyard manure was applied. Approximately sixty per cent of the trees bore fruit, the average yield being one peck

per bearing tree. A number of trees are not coming true to name. Trees planted for Yellow Bellflower are proving to be Alexanders, and in a few other instances trees planted for one variety are proving to be some other. All the trees of the New Brunswick variety bore fruit, with the highest average yield per tree of any variety. From both last year's and this year's results, it would seem as if this variety were an earlier cropper and a heavier bearer when young than the Duchess, which resembles it very much. The yields for the season were as follows:—

COMMERCIAL ORCHARD—YIELDS

| Variety | Number of trees | Number of trees bore fruit | Amount fruit produced | Average Yield per bearing tree |
|---|---|---|---|---|
| | | | pecks | pecks |
| New Brunswick | 13 | 13 | 23·6 | 1·80 |
| Dudley | 23 | 14 | 18·6 | 1·33 |
| Milwaukee | 30 | 24 | 31·31 | 1·29 |
| Alexander | 22 | 13 | 15·0 | 1·15 |
| Wealthy | 24 | 19 | 21·75 | 1·14 |
| Duchess | 30 | 21 | 21·7 | 1·03 |
| Crimson Beauty | 30 | 23 | 16·7 | 0·72 |
| Fameuse | 26 | 16 | 8·25 | 0·51 |
| McIntosh | 13 | 3 | 1·0 | 0·33 |
| | | | apples | apples |
| Golden Russet | 15 | 2 | 25 | 12 |
| Bethel | 15 | 2 | 8 | 4 |
| Salome | 4 | 2 | 6 | 3 |
| Canada Baldwin | 5 | 2 | 4 | 2 |
| R. I. Greening | 5 | 0 | 0 | 0 |
| Wolf River | 14 | 0 | 0 | 0 |

VARIETY ORCHARD

The variety orchard came through the severe winter in comparatively good condition and made fair growth during the season. The orchard was continued in sod and a crop of hay was cut and removed. During the early part of October an application of barnyard manure was made. A few more varieties bore their first fruit, and from the results of the first two years of production, several varieties may be considered as promising.

PLUM, PEAR AND CHERRY ORCHARD

The deep snow and crusts of ice during the winter were responsible for many of the trees being broken down or split. Consequently, this orchard presented a more irregular appearance than in 1919. An application of eighteen tons of manure per acre was made in the spring and ploughed under. The space between the trees was then seeded to corn, which was cut for ensilage.

*Pears.*—The Lawrence, Bartlett and Anjou varieties are in very poor condition. Clapp Favourite has grown well and the trees are thrifty. Flemish Beauty trees are not as good as Clapp Favourite but are in fair condition. No bloom was produced.

*Plums.*—A number of trees were more or less injured by snow and ice during the winter. Omaha Red June, Burbank and Moore Arctic bloomed abundantly, but very little fruit was set except on Moore Arctic, which yielded a very fair crop.

*Cherries.*—A number of trees were broken during the winter. Considerable bloom was produced, but the amount of fruit set was small. A small quantity was produced by English Morello, Empress Eugenie and Heart-shaped Weichsel, but before this was ripe enough to pick and be recorded it was mostly destroyed by birds.

## BUSH FRUITS

Late in the fall of 1919 the bush fruit plantation was gone over and pruned. In December an application of barnyard manure was made. This was further spread in the spring and incorporated with the soil by cultivation during the early season.

### BLACK CURRANTS

These came through the winter in good condition, and the crop as shown below was somewhat heavier than in 1919. The yield is estimated from six bushes in all cases, except Lee Prolific, of which there are five. The box is the four-fifths quart standard box.

BLACK CURRANTS—TEST OF VARIETIES

| Variety | Estimated Boxes per Acre |
|---|---|
| Kerry | 13,068 |
| Lee Prolific | 12,035 |
| Saunders | 11,253 |
| Collins Prolific | 10,285 |
| Eclipse | 10,164 |
| Topsy | 9,256 |
| Climax | 9,196 |
| Buddenborg | 8,954 |
| Magnus | 8,228 |
| Eagle | 7,623 |
| Boskoop Giant | 4,598 |
| Victoria | 3,993 |
| Clipper | 3,872 |
| Black Champion | 968 |

The very severe winter and the drouth in the early season seemed to have a bad effect on the crop of red currants. The fruit was small and the yields below those of 1919. The results of the last two years would indicate that Perfection, Red Dutch, and Red Cross, in the order mentioned, were the best yielding varieties. The yield is estimated from six bushels of all varieties except Wilder, of which there are five. The box is the four-fifths quart standard box.

RED CURRANTS—TEST OF VARIETIES

| Variety | Estimated Boxes per Acre |
|---|---|
| Red Dutch | 5,082 |
| Red Cross | 3,630 |
| Perfection | 3,146 |
| Diploma | 3,146 |
| Wilder | 2,175 |
| Victoria Red | 1,452 |
| Chautauqua | 1,331 |
| Red Grape | 1,331 |
| Greenfield | 1,008 |
| Rankin Red | 847 |

### WHITE CURRANTS

The yield in 1920 was small. White Cherry gave 1,450, White Grape 1,331, and Large White 726 boxes per acre. This yield is in the same order as the two-year average.

### GOOSEBERRIES

The yield of the European varieties was very small, in many cases being below that of the previous season. They seemed to come through the winter in good condition, but the early season was very dry and the set of fruit was small. Apparently

they are not so well adapted to our conditions as the American varieties. The yields for the season were as follows:—

GOOSEBERRIES—TEST OF VARIETIES

| Variety | Estimated Boxes per Acre |
|---|---|
| Oregon Everbearing | 7,260 |
| Pearl | 4,961 |
| Downing | 2,702 |
| Catherine | 2,420 |
| May Duke | 1,866 |
| Crown Bob | 1,450 |
| Industry | 968 |
| Careless | 968 |
| Surprise | 880 |
| Lancer | 871 |
| Leader | 726 |
| Ocean | 622 |
| Lancashire Lad | 622 |
| Victoria | 622 |
| Keepsake | 414 |
| Whitesmith | 207 |

RASPBERRIES

The heavy snow and ice during the winter resulted in the plantation being badly broken down. Many of the tips were also killed back. As a result of this and of an infection of cane borers, the crop, as shown below, was small.

RASPBERRIES—TEST OF VARIETIES

| Variety | Estimated Boxes per Acre |
|---|---|
| Newman Seedling 24 | 1,016 |
| Newman Seedling 23 | 877 |
| Herbert | 467 |
| Newman Seedling 1 | 423 |
| Sarah | 385 |
| Brighton | 288½ |
| King | 247 |
| Marlboro | 192 |
| Ruby | 192 |
| Newman Seedling 6 | 121 |
| Older | 110 |
| Count | 110 |
| Golden Queen | 96 |
| Newman Seedling 20 | 60½ |

GRAPES

The vines were laid down early in December and covered with strawy manure. This was removed in the spring and spread between the rows. During the summer this space was intercropped with vegetables. All vines came through the winter well and a fairly good quantity of fruit was set. The grapes were picked on October 1st and although some varieties were a little green most of them matured.

GRAPES—TEST OF VARIETIES

| Variety | No. of Vines | Yield in Lb. |
|---|---|---|
| Wilkins | 2 | 38½ |
| Beta | 3 | 49 |
| Lindley | 2 | 31 |
| Vergennes | 2 | 26½ |
| Salem | 2 | 25½ |
| Mary | 2 | 23 |
| Hartford | 2 | 21½ |
| Merrimac | 2 | 20 |
| Rogers | 4 | 39½ |
| Delaware | 2 | 18 |
| Peabody | 4 | 29½ |
| Florence X Potter | 2 | 12 |
| Brighton | 2 | 12 |
| Moore Diamond | 2 | 11 |
| Early Daisy | 3 | 13 |
| Moore Early | 2 | 7 |
| Canada | 2 | 6½ |
| Brant | 2 | 5 |

### STRAWBERRIES

Thirty-seven varieties of strawberries were set out in the spring of 1919. Ten of these were received from a Nova Scotia nurseryman, were good plants, and arrived in good condition. Four varieties obtained locally were also good plants. Eleven varieties obtained from an Ontario nurseryman consisted largely of old plants, and so many of them died that some varieties did not make over thirty-three per cent stand. Of the lot received from the Central Experimental Farm there were only about thirteen plants of each variety and the plots were not sufficiently large for a satisfactory test. While the yields were recorded as below, when consideration is given to the lack of uniformity in the vigour of the plants, and the irregularity of the stand, they are practically of no comparative value. On June 7 and 8 a new plantation was set out duplicating the old one, and comparative results may be expected next year.

STRAWBERRIES—TEST OF VARIETIES

| Variety | Source | Estimated Boxes per Acre (Box ⅛ quart) |
|---|---|---|
| Sample | Nova Scotia | 8,811 |
| K. Premier | " | 8,749 |
| Bederwood | " | 7,732 |
| Senator Dunlap | " | 7,676 |
| Glen Mary | " | 6,947 |
| Bubach | " | 6,907 |
| Jersey Giant | " | 6,732 |
| Dr. Burrill | " | 6,501 |
| Portia | " | 6,100 |
| Warfield | " | 5,470 |
| Commonwealth | New Brunswick | 6,322 |
| Parsons Beauty | " | 4,604 |
| Ozark | " | 3,195 |
| New York | " | 1,950 |
| Americus (overbearing) | Ontario | 5,681 |
| Grand Prize | " | 4,284 |
| Progressive (everbearing) | " | 4,144 |
| Superb Fall Bearing | " | 3,208 |
| Brandywine | " | 3,183 |
| Rewastico | " | 3,183 |
| Black Beauty | " | 3,182 |
| Witliams Improved | " | 3,156 |
| Premier | " | 3,070 |
| Charles I. | " | 2,227 |
| Billy Sunday | " | 2,154 |
| Diana | Ottawa | 5,848 |
| Mariana | " | 5,765 |
| Julia | " | 4,114 |
| Lavinia | " | 3,728 |
| Cassandra | " | 3,630 |
| Ophelia | " | 3,448 |
| Viola | " | 3,300 |
| Valeria | " | 1,954 |
| Francesca | " | 1,814 |
| Hermia | " | 1,760 |
| Cordelia | " | 1,588 |
| Virgilia | " | 1,155 |

## VEGETABLES

Barnyard manure at the rate of thirty tons per acre was spread in the garden and ploughed under on May 10. The experimental work this season was confined to variety tests of the different vegetables.

### BEANS

Different varieties of seed from numerous sources were planted the last of May and first of June. These were sown in rows 66 feet long and 2½ feet wide. The resultant

crop varied greatly in its vigour and quality, due to anthracnose infection. Unless the seed as received is of a uniform degree of infection the value of the experiment is largely lost. A number of plants were also noted that showed symptoms of mosaic infection. In August an outbreak of soft rot, due to a species of *Sclerontinia,* caused considerable damage in the plots. The varieties grown and the yields were as follows:—

BEANS—TEST OF VARIETIES

| Variety | Source | Green beans per acre | Estimated ripe beans per acre | |
|---|---|---|---|---|
| | | | bush. | lbs. |
| Scarlet Runner | Graham | | 44 | |
| Large White Marrowfat | 0-8973 | | 44 | |
| Masterpiece | 0-8955 | | 33 | |
| Hodson Wax | Harris | | 28 | 56 |
| Plentiful French | 0-8957 | | 27 | 13 |
| Harlington Windsor | Steele Briggs | | 26 | 24 |
| Hodson Long Pod | Rennie | | 26 | 24 |
| Ex. Early Red Valentine | " | | 24 | 45 |
| Bountiful | Gregory | 132 pks. | 24 | 12 |
| Wardwell Kidney Wax | McDonald | | 22 | 33 |
| Grenell Rustless Wax | Graham | 924 pks. | 17 | 36 |
| Stringless Green Pod | Rennie | | 15 | 40 |
| Stringless Green Pod | " | | 15 | 40 |
| Pencil Pod Black Wax | McDonald | | 15 | 7 |
| Refugee | Carter | | 14 | 18 |
| Davis White Wax | McDonald | | 13 | 12 |
| Fordhook Bush Lima | Simmers | | 12 | 22 |
| Kentucky Wonder Wax | Rennie | | 8 | 48 |
| Round Pod Kidney Wax | McDonald | 528 pks. | 6 | 36 |
| Refugee | Carter | | 5 | 30 |
| Fordhook Favourite | Burpee | | 5 | 12 |
| Asparagus Pole | Graham | | 4 | 7 |

BEETS

Eight varieties of beets were sown on May 25 and harvested on October 16. The yields were as follows:—

BEETS—TEST OF VARIETIES

| Variety | Source | Yield per 66 ft. row |
|---|---|---|
| | | lb. |
| Eclipse | McDonald | 198 |
| Crimson Globe | McDonald | 192 |
| Detroit Dark Red B | 0-8888 | 183 |
| Detroit Dark Red A | 0-9520 | 171 |
| Early Wonder | McDonald | 161 |
| Crosby Egyptian | Harris | 150 |
| Black Red Ball | Burpee | 131 |
| Half Long Blood | Ferry | 80 |

BRUSSELS SPROUTS

Three varieties were sown in flats on April 13 and grown in the hot beds. These were transplanted to the garden on June 4. Previous to transplanting, the plot was limed, but in spite of this, the crop was destroyed by club root. The varieties planted were Dalkeith, Amager Market and Paris Market.

### CABBAGE

Twelve varieties from different sources were sown in flats on April 13 and placed in hot beds. They were transplanted in the open on June 3. Although the plot was limed, an infection of club root destroyed all varieties.

### CAULIFLOWER

Two varieties, Early Snowball and Dwarf Erfurt, obtained from Carter, were sown in hot bed, and transplanted on June 3. These were completely destroyed by club root.

### CARROTS

The following varieties were sown in rows 66 feet long on May 25. The smoothest and best roots were obtained from the Kentville Danvers and McDonald Chantenay seed. Yields were as follows:—

CARROTS—TEST OF VARIETIES

| Variety | Source | Yield |
|---|---|---|
| | | lbs. |
| Chantenay | 0–8885 | 131 |
| Danvers | Kentville | 121 |
| Chantenay | McDonald | 104 |
| Nantes Half Long Scarlet | Dupuy & Ferguson | 102 |
| Oxheart | Steele Briggs | 78 |
| Improved Danvers | Dupuy & Ferguson | 73 |
| Early Scarlet Horn | Dupuy & Ferguson | 35 |

### CELERY

Seed was sown in flats on April 13 and grown in the hot bed. Pricking out was done on June 3. Transplanting was done in the open on July 3, 4 and 5. The plants were grown in trenches and the blanching done with earth. While the plants were in the hot beds they were sprayed with Bordeaux for the prevention of leaf spot. After transplanting sprays were applied on July 6, July 13 and August 4. As a result of this treatment a crop perfectly free from leaf spot was produced.

CELERY—TEST OF VARIETIES

| Variety | Source | Weight 25 heads |
|---|---|---|
| | | lb. |
| Evans Triumph | McDonald | 65 |
| Easy Blanching | Graham | 58½ |
| Winter Queen | " | 55½ |
| French Success | Harris | 49 |
| White Plume | Graham | 47 |
| Giant Pascal | " | 46 |
| Paris Golden Yellow | " | 33 |
| " | " | 32½ |
| Golden Self Blanching | 0–8883 | 32 |

### GARDEN CORN

The season was very favourable for the corn crop and all varieties matured sufficiently for table purposes. Planting was done in hills three feet apart on May 31. The following table gives a list of the varieties grown, the dates when first ready for use and the yield per plot:—

GARDEN CORN—TEST OF VARIETIES

| Variety | Source | Ready for use | Yield per 66 ft. row |
|---|---|---|---|
| | | | Ears |
| Early Malcolm | C.E.F. | Aug. 26 | 92 |
| Extra Early Adams | Ferry | " 26 | 56 |
| Early Sweet Kloochman | C.E.F. | " 26 | 62 |
| Early Sweet Pickaninny | C.E.F. | " 26 | 50 |
| Early Mayflower | McDonald | " 31 | 73 |
| Early Sweet Otta | C.E.F. | " 31 | 41 |
| Golden Bantam | McDonald | Sept. 8 | 86 |
| Early Fordhook | Burpee | " 8 | 56 |
| Howling Mob | " | " 10 | 73 |
| Whipple Early | Harris | " 11 | 82 |
| Golden Giant | Burpee | " 15 | 35 |
| Pocahontas | McDonald | " 15 | 22 |
| Early Sweet Squaw | C.E.F. | " 15 | 95 |
| Golden Bantam | Burpee | " 18 | 96 |
| Extra Early Corey | McDonald | " 25 | 56 |
| Black Mexican | Graham | " 27 | 90 |
| Stowell Evergreen | Graham | Oct. 7 | 15 |
| Country Gentleman | Graham | " 7 | 36 |
| Tom Thumb Pop | C.E.F. | " 7 | ripe 98 |

### CUCUMBERS

Seed was sown in hills five feet apart on June 5. A thirty-three-foot row was allowed each variety. During the early summer the striped cucumber and flea beetles made their usual attack. These were kept fairly well under control by applications of poisoned Bordeaux on the following dates: June 23, July 2, July 13, and July 22.

CUCUMBERS—TEST OF VARIETIES

| Variety | Source | Yield per 33 ft. row | |
|---|---|---|---|
| | | lb. | oz. |
| Davis Perfect | McDonald | 136 | 10 |
| Boston Pickling | Ferry | 99 | 8 |
| Fordhook Famous | Dupuy & Ferguson | 89 | |
| Early Russian | Burpee | 81 | 8 |
| Improved Long Green | McDonald | 79 | 6 |
| Davis Perfect | Summerland | 77 | 9 |
| Giant Pera | McDonald | 75 | 12 |
| West Indian Gherkins | Burpee | – | – |

### EGG PLANTS

Two varieties, New York Improved and Black Beauty, were sown in flats on April 13 and grown in the hot bed. These were transplanted in the garden in the middle of June. Throughout the season they were the special prey of the Colorado potato beetle and it was only by frequent dusting and spraying that these were kept in control.

Each variety was grown in a sixty-six-foot row. The season here, however, is hardly long enough or hot enough to develop these in the open. Only a few plants in each row developed fruit, and the total yields, as noted below, were small.

| Variety | Source | Date Picked | Yield |
|---|---|---|---|
| Black Beauty | Carters | Oct. 11 | 2½ lb. |
| New York Improved | " | " 11 | 1 lb. 7 oz. |

LETTUCE

The following list of varieties was grown:—

| Variety | Source |
|---|---|
| Cos or Romaine | Dupuy & Ferguson. |
| Improved Hanson | Ewing. |
| Iceberg | " |
| Grand Rapids | 0–9512. |
| Grand Rapids | Summerland. |
| Immensity | Graham. |
| Black Seeded Simpson | Ewing. |
| All Heart | Dreer (best quality) |
| Crisp as Ice | Will. |
| Big Boston Ferry | Ferry. |

ONIONS

Seed was sown in rows 66 feet long and one foot apart on May 13. The seed germinated evenly and growth was uniform throughout the season except for numbers 116, 117 and 118 where a section including one quarter of the rows was, for some reason or other, unthrifty. On June 10 an application of corrosive sublimate, one ounce to ten gallons of water, was made for the control of root maggots. Further applications were made on June 19 and July 3. As a result of this treatment no damage from root maggots occurred. The crop was harvested on October 4 and even at that late date the bulbs were quite immature. Extra Early Flat Red and Yellow Globe Danvers were the best matured. The yields were as follows:—

ONIONS—TEST OF VARIETIES

| No. | Variety | Source | Yield per 66 ft. row |
|---|---|---|---|
| | | | lbs. |
| | Southport Yellow Globe | Ewing | 47 |
| | Mammoth Silver King | McDonald | 41 |
| | Ailsa Craig | Graham | 40 |
| | Large Red Wethersfield | McDonald | 39 |
| | Giant Prize Taker | " | 38 |
| | Extra Early Flat Red | " | 37½ |
| | Yellow Globe Danvers | Graham | 31 |
| | Yellow Globe Danvers | " | 27½ |
| | Large Red Wethersfield | 0–9518 | 25 |
| | Giant Prize Taker | Graham | 23½ |
| | Australian Brown | McDonald | 22 |
| | Onion Sets (Yellow) | Graham | 20 |
| | White Barletta | McDonald | 19½ |
| 117 | Southport White Globe | Graham | 17½ |
| 116 | Southport Red Globe | " | 14 |
| 118 | Yellow Globe Danvers | 0–9290 | 14 |

### GARDEN PEAS

Seed was sown on May 21 and 22. Germination was even and a uniform stand was obtained. The planting was made in rows three feet apart, and the vines were not staked, but trained to lie in one direction. No difficulty was experienced until the peas began to ripen, when the blackbirds made a vigorous onslaught and shelled out the ripe pods. The yields of green peas and the dates first picked were as follows:—

GARDEN PEAS—TEST OF VARIETIES

| Variety | Source | Date first picked | Yield per 66 ft. row |
|---|---|---|---|
| | | | pecks |
| Thomas Laxton | McDonald | July 26 | 6 |
| Little Marvel | Graham | " 27 | 5 |
| Blue Bantam | Ewing | Aug. 3 | 5 |
| Gradus | Carter | July 25 | 4½ |
| Gregory Surprise | Gregory | " 25 | 3½ |
| Laxtonian | Graham | " 25 | 3 |
| English Wonder | O-9384 | " 31 | 3 |
| Sutton Excelsior | Harris | " 29 | 3 |
| American Wonder | Carter | Aug. 5 | 2½ |
| McLean Advancer | C.E.F. | July 31 | 2½ |
| Stratagem | Carter | " 27 | 2 |
| Early Morn | McDonald | " 26 | 2 |
| Pioneer | Gregory | " 30 | 2 |
| Alaska | Bruce | " 30 | 1½ |
| Early Morn | Gregory | Aug. 2 | 1 |

### PEPPERS

Seed was sown in flats on April 13. The young plants were transplanted in the garden on June 15. The varieties grown and the yields were as follows:—

| Variety | Source | Yield per 66 ft. row |
|---|---|---|
| | | lb. oz. |
| Harris Early | Summerland | 8 15 |
| Neapolitan | " | 5 |
| Pimento | McDonald | 2 |
| Small Red Chili | Carter | 2 |

### PARSNIPS

Only one variety, viz., Hollow Crown, O-9335, was grown. Seed was sown on May 25. The average yield per 66-foot row was 193 pounds. The roots were of good quality and uniform shape.

### PUMPKINS

Five hills of each variety, five feet apart each way, were planted in a 30-foot row on June 1. A uniform stand was obtained. As soon as the plants were nicely up, they were attacked by the striped cucumber beetle and flea beetle. These were kept

in control by frequent applications of poisoned Bordeaux. The varieties grown and their yields were as follows:—

PUMPKINS—TEST OF VARIETIES

| Variety | Source | Yield |
|---|---|---|
| | | lbs. |
| King of Mammoth | McDonald | 626 |
| Small Sugar | " | 348 |
| Winter Luxury | " | 260 |
| Connecticut Field | " | 198 |
| Large Cheese | " | 160 |

RADISHES

The following varieties were grown: French Breakfast, White Icicle, and four strains of Scarlet Turnip White Tip.

SALSIFY

The three varieties listed below were sown on May 25. The yields were as follows:—

| Variety | Source | Yield per 66 ft. row |
|---|---|---|
| | | lb. |
| Long White | Ewing | 82 |
| Mammoth Sandwich Island | 0-9271 | 60 |
| Long White | 0-8891 | 38 |

SQUASH

Five hills of each variety were planted in rows 30 feet long with 10 feet between each row. The seed was sown on June 1. The same insect injury was experienced as with pumpkins and the same control was practised.

SQUASH—TEST OF VARIETIES

| Variety | Source | Yield |
|---|---|---|
| | | lb. |
| Golden Hubbard | McDonald | 309½ |
| Hubbard | " | 283 |
| English Vegetable Marrow | " | 134½ |
| Long White Bush Marrow | " | 127½ |
| Delicious | " | 114 |
| Giant Summer Crook-neck | Graham | 101 |

### TURNIPS

The following varieties were grown:—

| Variety | Source | Remarks |
|---|---|---|
| Golden Ball | McDonald | Best quality. |
| Early Snowball | " | 2nd best quality. |
| Extra Early Purple Top Milan | " | Earliest. |
| Red Top Strap Leaf | " | |
| Yellow Globe | | |

### TOMATOES

The experiment on pruning and staking which was begun in 1919, was again continued in conjunction with the variety test. Seed of the different varieties was sown in flats on April 13. Pricking out was done on May 5, 6 and 9, and transplanting on June 9 and 10. Two rows, and in a few cases three rows of each variety were planted. The plot, which was 66 feet long, was divided into two sections so as to allow for two sets of rows each 33 feet long. One set of rows was devoted to the pruned and staked tomatoes and the other to the unpruned and unstaked. On the pruned and staked plot the rows were three feet apart. On the unpruned and unstaked plot the rows were four feet apart. One row of each variety was pruned to one stem and staked, and in the case of a few varieties a row was pruned to two stems. One row of each variety was left unpruned and unstaked. The results are shown in the table following:—

## TOMATOES—VARIETY AND CULTURAL TEST

| Variety | Source | Treatment | First ripe | Total ripe | Total green | Total green and ripe |
|---|---|---|---|---|---|---|
| | | | | lb. oz. | lb. oz. | lb. oz. |
| Red Head | Langdon | Pruned to 1 stem, staked | Aug. 16 | 36 10 | 30 .. | 66 10 |
| " | " | Pruned to 2 stems, staked | " 16 | 26 6 | 67 .. | 93 6 |
| " | " | Unpruned and unstaked | " 16 | 12 1 | 39 .. | 51 1 |
| Burbank Early | 0-8679 | Pruned to 1 stem, staked | " 16 | 34 11 | 22 .. | 56 11 |
| " | 0-8679 | Unpruned and unstaked | " 19 | 18 12 | 117 .. | 135 12 |
| Earlibell | Simmers | Pruned to 1 stem, staked | " 16 | 33 4 | 25 .. | 58 4 |
| " | " | Unpruned and unstaked | " 21 | 13 14 | 149 .. | 162 14 |
| Alacrity | O-201A | Pruned to 1 stem, staked | " 16 | 29 6 | .. .. | 29 6 |
| " | 0-201A | Unpruned and unstaked | " 19 | 22 8 | 115 .. | 137 8 |
| Acme | Ferry | Pruned to 1 stem, staked | " 16 | 29 6 | 46 .. | 75 6 |
| " | " | Unpruned and unstaked | " 16 | .. .. | 22 .. | 22 |
| Danish Export | 0-8697 | Pruned to 1 stem, staked | " 16 | 28 7 | 24 .. | 52 7 |
| " | 0-8697 | Unpruned and unstaked | " 19 | 12 5 | 147 .. | 159 5 |
| Bonny Best | Stokes | Pruned to 1 stem, staked | " 16 | 27 12 | 33 .. | 60 12 |
| " | " | Unpruned and unstaked | " 19 | 13 11 | 78 .. | 91 11 |
| Alacrity | C.E.F. | Pruned to 1 stem, staked | " 13 | 27 7 | 21 .. | 48 7 |
| " | " | Pruned to 2 stems, staked | " 16 | 30 4 | 31 .. | 61 4 |
| " | " | Unpruned and unstaked | " 16 | 9 14 | 67 .. | 76 14 |
| Langdon Earliana | Summerland | Pruned to 1 stem, staked | " 16 | 26 6 | 40 .. | 66 6 |
| " | " | Pruned to 2 stems, staked | " 16 | 33 4 | 62 .. | 95 4 |
| " | " | Unpruned and unstaked | " 16 | 16 15 | 39 .. | 55 15 |
| Prosperity | Graham | Pruned to 1 stem, staked | " 13 | 26 .. | 14 .. | 40 |
| " | " | Unpruned and unstaked | " 16 | 17 .. | 12 .. | 29 1 |
| John Baer | Carter | Pruned to 1 stem, staked | " 16 | 21 5 | 18 .. | 39 5 |
| " | " | Unpruned and unstaked | " 25 | 6 5 | 54 .. | 60 5 |
| Ponderosa | Ferry | Pruned to 1 stem, staked | " 21 | 19 8 | 48 .. | 67 8 |
| " | " | Unpruned and unstaked | Sept. 10 | .. 8 | 29 .. | 29 8 |
| Matchless | Graham | Pruned to 1 stem, staked | Aug. 16 | 18 8 | 42 .. | 60 8 |
| " | " | Unpruned and unstaked | " 21 | 8 8 | 86 .. | 94 8 |
| Victoria Whole Salad | Burpee | Pruned to 1 stem, staked | " 16 | 17 11 | 25 .. | 42 11 |
| " | " | Unpruned and unstaked | " 16 | 8 13 | 98 .. | 106 13 |
| Chalk Early Jewel | Carter | Pruned to 1 stem, staked | " 16 | 15 9 | 25 .. | 40 9 |
| " | " | Pruned to 2 stems, staked | " 19 | 13 1 | 21 .. | 34 1 |
| " | " | Unpruned and unstaked | " 25 | 4 1 | 78 .. | 82 1 |

# POTATOES

## VARIETY TESTS

The variety potato experiment as conducted for the past seven years was discontinued in part this season. From the most promising varieties a number were selected and, with one or two additions, were again planted in 100-foot rows for further test. Planting was done on May 31. In addition to this, an experiment was inaugurated to determine the value of immature potatoes as compared with mature, for seed purposes in this district. On June 28 a duplicate planting was made of those varieties or strains grown in the variety experiment, for the purpose of obtaining a stock of immature seed. Next season this seed will be grown in comparison with the seed planted May 31. The results for the year were greatly in favour of the May 31 planting, and in view of the fact that plantings are frequently delayed until the middle of June, or even later, some experiments designed to determine the best time for planting would seem advisable.

All seed used was treated with formalin, one pint to thirty gallons of water, for two hours. All seed was planted in uniform soil and in adjacent rows. Barnyard manure at the rate of 18 tons to the acre was applied in the spring, and before planting a 3-7½-6 fertilizer, at the rate of 640 pounds per acre was applied in the rows and mixed with the soil. The plot was frequently cultivated during the early summer, and four applications of poisoned Bordeaux were made at intervals of two weeks, dating from July 14 for the first planting and July 24 for the second planting.

A mosaic infection was apparent, the percentage varying for the different varieties. Opportunity did not permit of making a count for each variety. On October 2 and 4 the plots were harvested. The following table shows yields for the season and results from the late planting:—

VARIETY TEST WITH POTATOES (FIRST PLANTING)

| Variety | Source | Market-able | Small | Rot | Total estimated |
|---|---|---|---|---|---|
| | | bush. per acre | bush. per acre | bush. per acre | bush. per acre |
| Acadia | Selection from Improved Burbank | 323·4 | 26·4 | 44·0 | 393·8 |
| American Wonder | Ottawa | 325·6 | 15·4 | 11·0 | 352·0 |
| Burpee Extra Early | " | 299·2 | 26·4 | 11·0 | 336·6 |
| Black Kidney | Loch Lomond | 44·0 | 28·6 | ..... | 72·6 |
| " | Baribeau | 288·2 | 15·4 | ..... | 303·6 |
| Bliss Triumph | Grand Falls | 356·4 | 11·0 | 2·2 | 369·6 |
| Carman No. 1 | Indian Head | 237·6 | 13·2 | 22·0 | 272·8 |
| Carman No. 3 | Ottawa | 299·2 | 11·0 | 8·8 | 319·0 |
| Dreer Standard | Indian Head | 321·2 | 24·2 | 11·0 | 356·4 |
| Dalmeny Beauty | " | 202·4 | 13·2 | 44·0 | 259·6 |
| Delaware | W. H. Moore | 338·8 | 19·8 | 41·8 | 400·4 |
| Early Nebraska | Ottawa | 250·8 | 15·4 | 70·4 | 336·6 |
| Early Hebron | " | 189·2 | 2·2 | 41·8 | 233·2 |
| Early White Albino | " | 281·6 | 52·8 | 39·6 | 374·0 |
| Early May | " | 180·4 | 24·2 | 46·2 | 250·8 |
| Empire State | Indian Head | 149·6 | 41·8 | 24·2 | 215·6 |
| Eureka Extra Early | Ottawa | 180·4 | 8·8 | 79·2 | 268·4 |
| Factor | " | 151·8 | 8·8 | 48·4 | 209·0 |
| Gold Coin | Charlottetown | 154·2 | 35·2 | 35·2 | 224·6 |
| Green Mountain | Ottawa | 279·4 | 24·2 | 26·4 | 330·0 |
| " | W. H. Moore | 173·8 | 24·2 | 33·0 | 231·0 |
| " | Lowell's | 316·8 | 22·0 | 50·6 | 389·4 |
| " | Fraser | 374·0 | 17·6 | 2·2 | 393·8 |
| Irish Cobbler | Fawcett | 382·8 | 17·6 | ..... | 400·4 |
| Improved Burbank | Charlottetown | 323·4 | 13·2 | ..... | 336·6 |
| Langworthy | Ottawa | 332·2 | 11·0 | 8·8 | 352·0 |
| Morgan Seedling | Charlottetown | 352·0 | 13·2 | 17·6 | 382·8 |
| Morgan Pink Seedling | Ottawa | 202·4 | 22·0 | 17·6 | 242·0 |
| Money Maker | Indian Head | 263·0 | 4·4 | 26·4 | 393·8 |
| Maggie Murphy | Ottawa | 294·8 | 13·2 | 35·2 | 343·2 |
| Markee | " | 173·8 | 30·8 | ..... | 204·6 |
| New Chieftain | " | 369·6 | 15·4 | 24·2 | 409·2 |
| Pierremont Seedling | " | 404·8 | 79·2 | 4·4 | 488·4 |
| Reeves Rose | Indian Head | 147·4 | 26·4 | ..... | 173·8 |
| Rural New Yorker | Charlottetown | 308·0 | 13·2 | 6·6 | 327·8 |
| Snow | Ottawa | 209·0 | 24·2 | 8·8 | 242·0 |
| Sir Walter Raleigh | " | 338·8 | 11·0 | 11·0 | 360·8 |
| Stuart 13660 | Washington | 252·2 | 35·2 | 4·4 | 291·8 |
| Stuart 5727 | " | 169·4 | 28·6 | ..... | 198·0 |
| Table Talk | Charlottetown | 171·6 | 30·8 | 4·4 | 206·8 |
| Gold Coin | Indian Head | 257·4 | 19·8 | 6·6 | 283·8 |
| Whitney No. 1 | St. Stephen | 299·2 | 30·8 | 2·2 | 332·2 |
| Wee MacGregor | Ottawa | 290·4 | 17·6 | 17·6 | 325·6 |

## VARIETY TEST WITH POTATOES (SECOND PLANTING)

For Mature verses Immature Seed Experiment

| Variety | Source | Market-able | Small | Rot | Total estimated |
|---|---|---|---|---|---|
| | | bush. per acre | bush. per acre | bush. per acre | bush. per acre |
| Acadia | Selection from Improved Burbank | 68·2 | 24·2 | 11·0 | 103·4 |
| American Wonder | Ottawa | 22·0 | 8·8 | 15·4 | 46·2 |
| Burpee Extra Early | " | 37·4 | 26·4 | 8·8 | 72·6 |
| Black Kidney | Loch Lomond | 8·8 | 6·6 | ..... | 15·4 |
| " | Baribeau | 125·4 | 15·4 | ..... | 140·8 |
| Bliss Triumph | Grand Falls | 169·4 | 26·4 | 4·4 | 200·2 |
| Carman No. 1 | Indian Head | 81·4 | 28·6 | 4·4 | 114·4 |
| Carman No. 3 | Ottawa | 61·6 | 22·0 | 6·6 | 90·2 |
| Dreer Standard | Indian Head | 85·8 | 30·8 | 8·8 | 125·4 |
| Dalmeny Beauty | " | 83·6 | 19·8 | 19·8 | 123·2 |
| Delaware | W. H. Moore | 81·4 | 17·6 | 24·2 | 123·2 |
| Early Nebraska | Ottawa | 57·2 | 13·2 | 11·0 | 81·4 |
| Early Hebron | " | 48·4 | 17·6 | 17·6 | 83·6 |
| Early White Albino | " | 66 0 | 37·4 | 17·6 | 121·0 |
| Early May | " | ..... | 15·4 | 6·6 | 22·0 |
| Empire State | Indian Head | 57·2 | 30·8 | 94·6 | 182·6 |
| Eureka Extra Early | Ottawa | 28·6 | 19·8 | 13·2 | 61·6 |
| Factor | " | 30·8 | 22·0 | 6·6 | 59·4 |
| Gold Coin | Charlottetown | 52·8 | 30·8 | 11·0 | 94·6 |
| Green Mountain | Ottawa | 44·0 | 68·2 | 13·2 | 125·4 |
| Green Mountain | W. H. Moore | 66·0 | 26·4 | 13·2 | 105·6 |
| Green Mountain | Lowell | 52·8 | 22·0 | 13·2 | 88·0 |
| Green Mountain | Fraser | 127·6 | 26·4 | 19·8 | 173·8 |
| Irish Cobbler | Fawcett | 176·0 | 22·0 | 24·2 | 222·2 |
| Improved Burbank | Charlottetown | 121·0 | 26·4 | 61·6 | 209·0 |
| Langworthy | Ottawa | 136·4 | 30·8 | 8·8 | 176·0 |
| Morgan Seedling | Charlottetown | 140·8 | 26·4 | 17·6 | 184·8 |
| Morgan Pink Seedling | Ottawa | 88·0 | 26·4 | 17·6 | 132·0 |
| Money Maker | Indian Head | 211·2 | 19·8 | 22·0 | 253·0 |
| Maggie Murphy | Ottawa | 81·4 | 6·6 | 35·2 | 123·2 |
| Markee | " | 74·8 | 61·6 | ..... | 136·4 |
| New Chieftain | " | 121·0 | 37·4 | 30·8 | 189·2 |
| Pierremont Seedling | " | 132·0 | 117·8 | ..... | 249·8 |
| Reeve Rose | Indian Head | 110·0 | 13·2 | 52·8 | 176·0 |
| Rural New Yorker | Charlottetown | 70·4 | 26·4 | 22·0 | 118·8 |
| Snow | Ottawa | 114·4 | 30·8 | 13·2 | 158·4 |
| Sir Walter Raleigh | " | 85·8 | 44·0 | 4·4 | 134·2 |
| Stuart 13660 | Washington | 90·2 | 17·6 | 2·2 | 110·0 |
| Stuart 5727 | " | 237·6 | 26·4 | 4·4 | 268·4 |
| Table Talk | Charlottetown | 88·0 | 50·6 | ..... | 138·6 |
| Gold Coin | Indian Head | 176·0 | 30 8 | 17·6 | 224·4 |
| Whitney No. 1 | St. Stephen | 211·2 | 22·0 | 2·2 | 235·4 |
| Whitney No. 3 | " | 215·6 | 35·2 | ..... | 250·8 |
| Wee Macgregor | Ottawa | 123·2 | 26·4 | 26·4 | 176·0 |

### COST OF PRODUCTION

The cost of producing an acre of potatoes for the season showed a large increase over preceding years. The first factor in this increase was the exceptionally high price of seed in the spring of 1920. The item of fertilizer also shows a considerable increase. These two factors, coupled with the high price and poor quality of labour for harvesting, made the cost of production exceptionally high. The charges as noted for the season are as follows:—

| | |
|---|---|
| Fall ploughing and harrowing | $ 4 40 |
| Manure | 22 93 |
| Ploughing and harrowing | 4 59 |
| Fertilizer | 24 00 |
| Seed | 45 61 |
| Cutting and disinfecting | 6 00 |
| Planting | 2 69 |
| Cultivating and horse hoeing | 6 88 |
| Spraying | 10 21 |
| Digging | 8 74 |
| Picking | 36 75 |
| Hauling to cellar | 2 77 |
| Picking up after rake and harrow | 1 02 |
| Rent of land | 3 00 |
| Depreciation of machinery | 4 00 |
| | $183 59 |

A yield of 106½ barrels per acre was produced at a cost of $1.71 per barrel. Local sales were made during the fall at $3 per barrel and on the basis of sales at this price a substantial profit was possible. In the winter, however, the price dropped to $1 per barrel or less, and stock in storage could only be sold at a loss.

## ORNAMENTAL GARDENING

### FLOWERS

Bulbs planted in beds and in the perennial border the previous fall came through the winter in good condition and made a splendid showing during the spring. A number of annuals were planted in the perennial border and a continuity of bloom was thus established throughout the season.

Approximately two hundred varieties and strains of flowering plants were planted in beds for variety test. The majority of these were started in the hot beds in the middle of April and were transplanted in the open from June 10 to 20. Nasturtiums, pansies and sweet peas were planted in the open. In order to determine whether sweet peas started in the hot bed would produce any better flowers than those planted in the open, a number of varieties were planted in flats on April 24. These were transplanted in the open on June 8. The outside planting was made on May 7. No benefit was derived from this method. Very little bloom was produced by any of the plants. The buds developed, but, as in the previous year, dropped off before opening.

Nasturtiums planted on June 4 produced a profusion of bloom. Asters were badly infected with "yellows" and consequently the bloom was inferior. A species of soft rot made its appearance in some of the other flowers but was not so serious as in the previous season. The majority of the varieties bloomed freely and the display was the subject of much favourable comment. On account of the pressure of other work, no notes could be taken during the season on the dates of blooming or the growth of the plants.

A small shipment of bulbs was received from Holland on October 22, and a week later they were planted in beds and a few groups in the perennial border.

### GROUNDS

The main lawn, which was seeded with Kentucky Blue grass the preceding year, developed a fairly uniform growth, and by fall a noticeable turf was in evidence. A

horse lawnmower was added to the equipment. The earth around all hedges and clumps of shrubs was forked over early in the spring and weeds and grass removed. Two hedges, *Retinospora pisifera* and *Juniperus suecica* were partially winter-killed. The other varieties came through the winter in good condition and the flowering varieties bloomed freely during the summer.

## FORAGE CROPS

### ENSILAGE CROPS

#### VARIETY TESTS—CORN

In order to determine the corn varieties best suited for the production of ensilage in this section, ten varieties were tested in 1/20-acre plots. Sown May 31 the yields, when cut on October 11, were as given in the following table:—

VARIETY TESTS—INDIAN CORN

| Variety | Height | Stage of Maturity Sept. 20 | Yield per acre |
|---|---|---|---|
| | ft. | | tons lbs. |
| Longfellow | 9·4 | Kernels forming | 23 320 |
| Compton's Early | 9·4 | Ears forming | 22 1,260 |
| Duke's Golden Glow | 9·9 | Kernels forming | 20 1,890 |
| McConnell's Yellow Flint | 7·2 | Early milk stage | 18 1,720 |
| Wisconsin No. 7 | 9·0 | Early milk stage | 18 1,320 |
| North Western Dent | 8·0 | Late milk to early dough | 17 240 |
| White Cap Yellow Dent | 8·4 | Kernels forming | 16 120 |
| Duke's Improved White Cap | 9·0 | Kernels forming | 15 1,440 |
| Twitchell's Pride (Yellow Flint) | 6·8 | Early to late dough | 11 1,780 |
| Quebec No. 28 | 6·4 | Milk to dough | 9 640 |
| | | Average | 17 873 |

#### SUNFLOWERS FOR ENSILAGE

Two acres of land were utilized to determine the suitability of sunflowers for ensilage in this district. The land had been in pasture for two years, and was not ploughed until the second week in June.

Giant Russian sunflowers were planted in rows 3½ feet apart at the rate of 15 pounds of seed per acre. The crop was harvested October 13, when practically the whole field was well in bloom. It was found that in cutting this crop with the corn harvester it could be cut only against the wind; otherwise the stalks fell on top of machine and horses could not be handled. The yield was 13 tons 1,348 pounds per acre. The cost per ton of growing and putting this crop in the silo was $5.05 per ton.

### FIELD ROOTS

The following tables give yields of types and varieties of field roots under test to determine their relative value and suitability for this district. Seed was obtained from seedsmen supplying this district, from seedsmen in England, and from Experimental Farms.

The land upon which tests were conducted was well worked, and received during the winter 15 tons manure per acre.

### MANGELS

Seven varieties were tested. The following table gives yields per acre:—

TEST OF VARIETIES—MANGELS

| Variety | Source | Yield per acre 1st plot | | Yield per acre 2nd plot | | Average yield per acre | |
|---|---|---|---|---|---|---|---|
| | | tons lbs. | bush. lbs. | tons lbs. | bush. lbs. | tons lbs. | bush. lbs. |
| Ideal | Wm. Rennie | 28 320 | 1,126 20 | 23 1,300 | 946 .. | 25 1,810 | 1,041 10 |
| Danish Sludstrup | Wm. Ewing | 22 1,180 | 903 30 | 28 1,200 | 1,144 .. | 25 1,190 | 1,023 40 |
| Giant White Half Sugar | Wm. Rennie | 26 800 | 1,056 .. | 22 440 | 888 40 | 24 620 | 972 20 |
| Yellow Leviathan | Wm. Rennie | 24 260 | 965 10 | 22 660 | 893 10 | 23 460 | 929 10 |
| Giant Yellow Globe | Steele Briggs | 18 300 | 726 .. | 20 1,360 | 827 10 | 19 830 | 776 30 |
| Giant Yellow Intermediate. | Steele Briggs | 21 1,120 | 862 20 | 17 260 | 685 10 | 19 690 | 773 40 |
| Golden Tankard | Wm. Ewing | 16 900 | 658 .. | 18 520 | 730 20 | 17 710 | 694 10 |
| | | | | | Average | 22 330 | 887 16 |

N.B.—In addition to 15 tons of barnyard manure, plots No. 1 received an application of 3-8 fertilizer at the rate of 600 pounds per acre. Plots No. 2 received an application of 3-8-6 fertilizer at the rate of 600 pounds per acre.

### SWEDE TURNIPS

Twenty-nine varieties were tested. Yields per acre are given in the following table:—

SWEDE TURNIPS—TEST OF VARIETIES

| Variety | Source | Average yield per acre | | | |
|---|---|---|---|---|---|
| | | tons | lbs. | bush. | lbs. |
| Laing's Purple Top | Wm. Ewing | 29 | 520 | 1,170 | 20 |
| Hall's Westbury | " | 27 | 1,660 | 1,113 | 10 |
| Sutton's Green Top | Sutton (England) | 27 | 140 | 1,082 | 40 |
| Kentville Green Top | Kentville | 27 | 20 | 1,080 | 20 |
| Sutton's Caledonia | Sutton (England) | 26 | 580 | 1,051 | 30 |
| Good Luck | Steele Briggs | 25 | 1,000 | 1,020 | |
| Invicta Bronze Top | Wm. Rennie | 25 | 20 | 1,000 | 30 |
| Kangaroo | Steele Briggs | 24 | 1,000 | 980 | |
| Ditmars | Kentville | 24 | 120 | 962 | 20 |
| Sutton's Up-to-date | Sutton (England) | 23 | 1,680 | 953 | 30 |
| Elephant | Wm. Ewing | 23 | 200 | 924 | |
| Jumbo | Steele Briggs | 23 | 120 | 922 | 20 |
| Sutton's Champion | Sutton (England) | 22 | 1,980 | 919 | 30 |
| Good Luck | Fredericton | 22 | 420 | 888 | 20 |
| Garton's Superlative | Wm. Ewing | 22 | 220 | 884 | 20 |
| Best of All | " | 21 | 1,340 | 866 | 40 |
| Champion | Steele Briggs | 21 | 1,220 | 864 | 20 |
| Good Luck | Ste. Anne | 21 | 900 | 858 | |
| Sutton's Magnum Bonum | Sutton (England) | 21 | 320 | 846 | 20 |
| Sutton's Champion | Wm. Rennie | 20 | 420 | 808 | 20 |
| Sutton's Champion | Charlottetown | 20 | 120 | 802 | 20 |
| Canadian Gem | Kentville | 20 | 120 | 802 | 20 |
| Sutton's Champion | Fredericton | 19 | 440 | 768 | 40 |
| Monarch | Ottawa | 19 | 100 | 762 | |
| Sutton's Lord Derby | Sutton (England) | 18 | 1,860 | 757 | 10 |
| Sutton's Crimson King | " | 18 | 1,220 | 744 | 20 |
| Sutton's Hardy White | " | 17 | 1,420 | 708 | 20 |
| Canadian Gem | Wm. Rennie | 17 | 820 | 696 | 20 |
| Hazzard's Improved | Steel Briggs | 17 | 520 | 690 | 20 |
| | Average | 22 | 707 | 894 | 7 |

### FIELD CARROTS

Three varieties were tested. Yields are given in the following table:—

FIELD CARROTS—TEST OF VARIETIES

| Variety | Source | Yield per acre | | | |
|---|---|---|---|---|---|
| | | tons | lbs. | bush. | lbs. |
| Mammoth Short White | Wm. Rennie | 18 | 680 | 733 | 30 |
| Improved Short White | Wm. Ewing | 17 | 980 | 699 | 30 |
| White Belgian French | " | 15 | 1,920 | 638 | 20 |
| | Average | 17 | 527 | 690 | 27 |

### SUGAR BEETS

Two varieties of sugar beets were tested and representative samples forwarded to the Dominion Chemist for analysis.

SUGAR BEETS—TEST OF VARIETIES

| Variety | Source | Yield per acre | | | |
|---|---|---|---|---|---|
| | | tons | lbs. | bush. | lbs. |
| Chatham | Dominion Sugar Co | 13 | 880 | 537 | 30 |
| British Columbia | " | 15 | 620 | 612 | 20 |
| | Average | 14 | 750 | 575 | 25 |

### ROOT SEED RAISING

*Swede Turnips.*—Sutton's Champion turnip stecklings were grown in 1919 and, for storage, placed about fifteen inches deep in the new root cellar. These stecklings kept well until April, when they began to go with crown rot. It was not until May 5 that ground could be got ready for planting them, and there were only enough sound roots for one-third of an acre. Of these, due to rot, not fifty per cent came to the blossoming stage. The seed was harvested on August 31 and threshed out 124 pounds of a very good sample.

*Dwarf Essex Rape.*—From a volunteer crop in the orchard 70 pounds of excellent rape seed was harvested.

*Timothy.*—One acre of fall wheat was sown in 1919 and seeded down with clover and timothy. The fall wheat did not winter well, and practically all the clover was winter killed, but the timothy made excellent growth. At harvest the crop, fall wheat and timothy, was cut with the binder and threshed, the timothy seed being separated in cleaning from the fall wheat. From this acre, 102 pounds of recleaned timothy was obtained.

*Red Clover.*—Five acres of second crop red clover were harvested in September for seed. This was well cured in the field and threshed with a clover huller. After recleaning 250 pounds No. 1, 40 pounds No. 2, and 80 pounds No. 3 were available for use at the Station.

## CEREALS

The experimental work for the season was limited to the testing out of different varieties of wheat, oats, barley and peas. All varieties were grown in triplicate in 1/60th acre plots. The soil was a clay loam. In 1919 it grew a crop of potatoes, for which an application of barnyard manure at the rate of fifteen tons, and 4-8-7 fertilizer at the rate of 750 pounds per acre, was made. For the cereal crops the soil was prepared by spring ploughing and thorough harrowing. Excepting the plots for Early Red Fife 1, and White Russian 1, the soil conditions were as uniform as could be expected. Seeding of all grains was made at the rate of 120 pounds per acre. All varieties of wheat, oats and barley were treated with formalin before seeding, for the control of smut. Germination was good and a satisfactory stand was obtained in all plots. Good growth was made throughout the season and the plots matured evenly. The wheat varieties were more or less infected with Glume Spot and for the first time at the Station the presence of Scab, apparently caused by the fungus *Gibberella Saubinetii*, was noted. Heavy rains and continued dull weather after cutting resulted in the grain sprouting badly in the stook. Conditions were so bad that it became necessary to cut the bundles open in order to dry the grain. The repeated handling of the grain resulted in some loss, the extent of which would be difficult to estimate. On account of the sprouted condition of the grain, no record was obtained of the weights per measured bushel. The varieties grown and the seasonal notes and results are shown in the following table:—

WHEAT—TEST OF VARIETIES

| Name of variety | Date of sowing | Date of ripening | Number of days maturing | Average length of straw including head | Strength of straw on a scale of 10 points | Actual yield of grain per acre | |
|---|---|---|---|---|---|---|---|
| | | | | in. | | bush. | lbs. |
| Huron | May 15 | Aug. 21 | 98 | 45 | 10·0 | 19 | 40 |
| Early Red Fife | " 15 | " 24 | 101 | 44 | 10·0 | 19 | 10 |
| Ruby | " 15 | " 15 | 92 | 39 | 9·5 | 16 | 50 |
| White Russian | " 15 | " 24 | 101 | 47 | 8·7 | 16 | 30 |
| Marquis | " 15 | " 20 | 97 | 40 | 10·0 | 15 | 40 |
| Prelude | " 15 | " 14 | 91 | 37 | 9·6 | 13 | 40 |
| Red Fife | " 15 | " 24 | 101 | 43 | 9·0 | 10 | 15 |

OATS—TEST OF VARIETIES

| Name of Variety | Date of sowing | Date of ripening | Number of days maturing | Average length of straw, including head | Strength of straw on a scale of 10 points | Actual yield of grain per acre | |
|---|---|---|---|---|---|---|---|
| | | | | in. | | bush. | lbs. |
| Daubeney | May 17 | Aug. 14 | 89 | 36·5 | 9·5 | 44 | 4 |
| Ligowo | " 17 | " 18 | 93 | 43·0 | 7·5 | 37 | 32 |
| Liberty | " 17 | " 16 | 91 | 41·0 | 9·9 | 34 | 19 |
| Victory | " 17 | " 21 | 96 | 46·0 | 7·8 | 31 | 26 |
| Banner | " 17 | " 22 | 97 | 40·0 | 7·3 | 27 | 32 |

BARLEY—TEST OF VARIETIES

| Name of Variety | Date of sowing | Date of ripening | Number of days maturing | Average length of straw, including head | Strength of straw on a scale of 10 points | Actual yield of grain per acre |
|---|---|---|---|---|---|---|
| | | | | in. | | bush. lbs. |
| Duckbill | May 17 | Aug. 24 | 99 | 36 | 9·9 | 29 28 |
| O. A. C. 21 | " 18 | " 16 | 90 | 38 | 9·9 | 28 36 |
| Manchurian | " 17 | " 15 | 90 | 34 | 9·3 | 27 44 |
| Stella | " 18 | " 16 | 90 | 38 | 9·9 | 27 4 |
| Early Chevalier | " 18 | " 14 | 88 | 44 | 8·5 | 26 22 |
| Gold | " 18 | " 22 | 96 | 31 | 9·9 | 24 28 |

PEAS—TEST OF VARIETIES

| Name of Variety | Date of sowing | Date of ripening | Number of days maturing | Average length of straw, including head | Actual yield of grain per acre |
|---|---|---|---|---|---|
| | | | | in. | bush. lbs. |
| Canadian Beauty | May 18 | Sept. 4 | 109 | 78 | 18 50 |
| Prussian Blue | " 18 | Sept. 1 | 106 | 82 | 17 20 |
| Arthur | " 18 | Aug. 28 | 102 | 70 | 12 20 |

## POULTRY

Four breeds of fowl were kept during the poultry year beginning November 1, 1919, and the inventory showed the following stock on hand:—

| | | | | | |
|---|---|---|---|---|---|
| Barred Plymouth Rocks | 87 | pullets and | 34 | hens | |
| White Wyandottes | 42 | " " | 32 | " | |
| Rhode Islands Reds | 16 | " " | 17 | " | |
| White Leghorns | 31 | " " | 6 | " | |

Also 37 cockerels of the several breeds.

The hens and pullets were divided into ten flocks, various types of house being used. Data in regard to these houses will be found on another page of this report.

The following statement shows the valuation of stock on hand at the beginning of the year, the revenue from them during the year, and the cost of feed. The inventory at the close of the year showing the stock then on hand completes the data necessary to show the financial aspect of the poultry operations.

| | |
|---|---|
| Stock on hand November 1, 1919— | |
| 37 cockerels at $2 each | $ 74 00 |
| 91 yearling hens at $1.50 each | 136 50 |
| 176 pullets at $1.50 | 264 00 |
| | $ 474 50 |
| The revenue from the flock was as follows— | |
| Breeding stock sold | $ 142 50 |
| Eggs sold | 970 35 |
| Dressed poultry sold | 388 70 |
| Total sales | $1,501 55 |
| The cost of feed was | 885 31 |
| Profit above cost of feed | $ 616 24 |

POULTRY—*Continued.*

| | | |
|---|---|---|
| Stock on hand October 31, 1920— | | |
| 63 cockerels at $2 each | $126 00 | |
| 93 yearling hens at $1.50 | 139 50 | |
| 185 pullets at $1.50 | 277 50 | |
| 4 cocks at $3 | 12 00 | |
| | $555 00 | |
| Stock on hand November 1, 1919 | 474 50 | |
| Increase in stock | $ 80 50 | |
| Feeds on hand— | | |
| 1,000 lb. beef scrap | $ 75 00 | |
| 1,800 lb. corn | 66 60 | $ 222 10 |
| Total profit | | $ 838 34 |

The total profit for the plant above cost of feed was equal approximately to $3.14 per bird for the twelve months. The cost of labour, interest on investment, insurance and management charges are not estimated because these are in a large measure a charge against the experimental and record work upon which most of the poultrymen's time was put. As a commercial proposition, one good poultryman should care for at least 500 laying hens. On this basis the labour charge on 167 laying hens should not exceed $360. The interest on the cost of the portion of the plant utilized by this number of birds at 10 per cent would not be more than $100, with cost of maintenance $50 more. If these estimated costs are deducted from the total profit $838.34 there is still left a net profit for the proprietor of the plant, of $328.34.

In the above revenue returns, no credit was given for the eggs used for hatching on the plant. A Candee incubator with a capacity of about 1,100 eggs was used. During March 1,251 eggs were set. Of these 878 proved fertile and from them 402 chicks were hatched.

During April, 1,297 eggs were set. Of these, 1,043 were fertile and 452 chicks were hatched. In May 530 eggs were set and 485 of these proved fertile, from which 232 chicks were hatched.

### COST OF RAISING CHICKS TO FIVE MONTHS

To determine the cost of growing chickens to maturity, the amount of food eaten by four hundred and twenty-five Barred Rock and White Wyandotte chicks was carefully recorded. These chicks were hatched in the latter part of April. The cost of food per chick was for May, 2·7 cents; for June, 6 cents; July, 12 cents; August, 24·3 cents; and September, 24·3 cents. The cost for the five months was 59·2 cents per chick.

The food consisted at first of finely cracked corn and wheat, rolled oats and bran. Buttermilk was given in their fountains during the first month. As they grew, the feed was changed to dry mash in hoppers, always available, wet mash at noon and scratch feed morning and evening.

COMPARISON OF EGG PRODUCTION FROM PULLETS OF DIFFERENT BREEDS

In order to obtain the comparative egg production of pullets of different breeds, two strains of Barred Rocks, one pen of White Wyandottes and one of White Leghorns were kept intact until the end of June. The average egg production was as shown in the following table:—

COMPARISON OF BREEDS FOR EGG PRODUCTION

| Month | Barred Rocks | | White Wyandottes | White Leghorns |
|---|---|---|---|---|
| November | 0·2 | 2·3 | 4·1 | 7·1 |
| December | 2·7 | 6·0 | 8·0 | 2·8 |
| January | 7·7 | 6·0 | 10·1 | 2·1 |
| February | 8·0 | 12·0 | 10·3 | 8·8 |
| March | 14·1 | 17·3 | 13·5 | 15·5 |
| April | 15·0 | 13·5 | 16·5 | 20·0 |
| May | 15·0 | 16·0 | 15·4 | 22·4 |
| June | 19·7 | 16·1 | 16·1 | 20·2 |
| Average | 10·3 | 11·4 | 11·7 | 12·3 |

The average production by breeds for the four winter months and the four spring months was:—

| — | Average for winter | Average for spring |
|---|---|---|
| Barred Rocks | 5·6 | 15·8 |
| White Wyandottes | 8·1 | 15·3 |
| White Leghorns | 5·1 | 19·5 |

It might be noted that the White Leghorn pullets laid during the month of October. The months of December and January were extremely cold and the average production from this pen was considerably reduced on account of this.

COMPARISON OF EGG PRODUCTION FROM HENS AND PULLETS

In order to obtain data on the egg production of pullets as compared with hens, records were kept of two pens of Barred Rock hens and two pens of Barred Rock pullets, one pen of White Wyandotte hens and one pen of White Wyandotte pullets. The results in average production per bird are shown in the following table:—

HENS vs. PULLETS

| Month | Barred Rocks | | | | White Wyandottes | |
|---|---|---|---|---|---|---|
| | Hens | | Pullets | | Hens | Pullets |
| November | 0·0 | 1·4 | 4·3 | 0·2 | 1·0 | 4·1 |
| December | 0·0 | 0·0 | 6·0 | 2·7 | 1·2 | 8·0 |
| January | 1·3 | 0·6 | 6·0 | 7·7 | 1·0 | 10·1 |
| February | 4·4 | 2·0 | 12·0 | 8·0 | 2·0 | 10·3 |
| March | 12·5 | 9·5 | 17·3 | 14·1 | 8·8 | 13·5 |
| April | 20·1 | 16·0 | 13·5 | 15·0 | 13·8 | 16·5 |
| May | 20·1 | 12·8 | 16·0 | 15·0 | 10·9 | 15·4 |
| June | 13·0 | 17·0 | 16·1 | 19·7 | 11·9 | 16·1 |
| | 8·9 | 7·4 | 11·4 | 10·3 | 6·3 | 11·7 |

**Average for all—hens, 8·1; pullets, 10·8.**

## BREEDING FOR EGG PRODUCTION

In 1918 an attempt was made to determine the value of selection in pedigree breeding for egg production. Twelve pullets of the White Wyandotte flock then existing on the Station were mated with a cockerel of a high record strain raised from eggs procured from the Experimental Station at Sidney, B.C., and in 1920 a cockerel from this mating was used. The pullets were trap-nested throughout the year and the results were as follows:—

| — | Original Flock 1918-19 | Pullets 1919-20 | Pullets 1920-21 |
|---|---|---|---|
| Average number of eggs laid per bird per month, Nov. 1, 1918, to March, 1, 1919 | 5·1 | 5·4 | 7·7 |
| Total average per bird for winter period | 20·4 | 22·6 | 30·8 |

It will be noticed that in the second year of selection there was a fifty per cent increase in the eggs laid per bird during the winter months, over the original flock.

## FOOD COST OF EGGS

Records were kept to determine the food cost of producing one dozen eggs during each month throughout the year. There were three breeds, Barred Plymouth Rocks, White Wyandottes and White Leghorns, with forty pullets of each breed under test. The test began on November 1, 1919, and continued to October 31, 1920.

FOOD COST OF EGGS

| Month | Food Cost per Dozen Eggs Cents |
|---|---|
| November | 71 |
| December | 54 |
| January | 41 |
| February | 32 |
| March | 20 |
| April | 21 |
| May | 22 |
| June | 20 |
| July | 21 |
| August | 24 |
| September | 31 |
| October | 85 |
| Yearly average | 36.7 |

The system of feeding was to give a scratch food composed of cracked corn and whole grains morning and evening, with dry mash in hoppers always available, a mash moistened with skim-milk at noon and containing either some beef scrap or green bone, a turnip, mangel or cabbage daily for green feed, and clean water always available. Charcoal, oyster shell and grit were kept supplied in a hopper.

The quantities of food consumed per bird for the year were as follows:—

| — | Scratch food | Mash | Green bone | Grit | Shell | Beef scrap |
|---|---|---|---|---|---|---|
| | lbs. | lbs. | lbs. | lbs. | lbs. | lbs. |
| Barred Rocks | 56·5 | 25·25 | 4·0 | 1·95 | 3·25 | 2·75 |
| White Wyandottes | 58·0 | 23·0 | 4·33 | 4·0 | 3·25 | 3·0 |
| Leghorns | 47·0 | 17·5 | 3·0 | 0·75 | 2·5 | 1·5 |

The green feed was not weighed, but the cost per bird would not exceed five to ten cents for the year.

The average egg production per bird for each breed for the year was: Barred Rocks, 138·2 eggs; White Wyandottes, 137·5 eggs; and White Leghorns, 166·6 eggs.

For the four winter months the average per bird was: Barred Rocks, 18·6; White Wyandottes, 32·5, and White Leghorns, 23·5.

The scratch food was composed of the following grains: 2 parts of cracked corn, 2 parts of wheat, 1 part oats. In summer only one part of corn was used.

The dry mash was made up as follows: 1 part beef scrap, 1 part feed flour, 1 part bran, 1 part ground elevator screenings, 1 part cornmeal. In summer the cornmeal was omitted.

The wet mash for noon feed was made by moistening the dry mash with skim-milk and adding a small quantity of green bone or beef scrap.

Under the same feeding system, a test was made of the relative costs of winter egg production as between April 20 hatched and May 15 hatched pullets and yearling hens.

The cost per dozen for the several months was as follows:—

EGGS—COST OF PRODUCTION

| — | Nov. | Dec. | Jan. | Feb. | Average for winter months |
|---|---|---|---|---|---|
| | $ cts. | cts. | $ cts. | cts. | cts. |
| April hatched pullets | 0 40 | 29·5 | 0 35 | 29·5 | 33 |
| May hatched pullets | 16 13 | 98·0 | 0 34 | 36·0 | 59 |
| Yearling hens | 0 61 | 72·0 | 1 52 | 68·0 | 78 |

These figures demonstrate the value of early pullets for winter eggs.

### HOUSING

Four different styles of house were used to determine, if possible, the best type for the New Brunswick climate.

*House No. 1* was 12 feet by 48 feet with earth floor, shingled walls, glass in front and straw loft, divided into four pens, each holding 25 pullets.

*House No. 2* had concrete floor, glass and cotton front and straw loft. It was 16 feet by 32 feet, giving two pens 16 feet by 16 feet, in each of which were housed 50 pullets.

*House No. 3* was a colony house 8 feet by 12 feet, with one glass window and one cotton window and a straw loft.

*House No. 4* was a colony house 10 feet by 12 feet with shed roof, no straw loft and glass and cotton front.

For the various qualities listed below the houses stood in order of merit as follows:—

COMPARISON OF POULTRY HOUSES

| — | 1st | 2nd | 3rd | 4th |
|---|---|---|---|---|
| | No. | No. | No. | No. |
| Dryness | 2 | 4 | 1 | 3 |
| Ventilation | 2 | 4 | 1 | 3 |
| Sunlight | 2 | 1 | 4 | 3 |
| Health | 2 | 4 | 3 | 1 |
| Convenience | 2 | 1 | 4 | 3 |

**No. 2 house with concrete floor, glass and cotton front and straw loft made best record on all points, and the cotton and glass front colony house came second in the important qualifications of dryness, ventilation and health of birds.**

### BEST KIND OF FLOOR

A comparison was made between concrete, earth and wood floors.

Insulated concrete was the most costly to construct but was best for sanitation, equal to the others in condition of birds, second to the wood floor in labour required to keep clean and littered, and first in permanence. It should be noted, however, that the concrete must not be in direct contact with the ground moisture, otherwise, it will be damp and cold. The insulation given to the floor under test was merely fifteen inches of small stone between the ground and the concrete.

The wood floor raised from the ground was colder than concrete or earth and more perishable, otherwise it was quite satisfactory.

The earth floor was made by putting sandy loam soil over 12 inches of small stone and was very dry, but rats took a peculiar delight in inhabiting it. To be sanitary, the surface of the earth floor has to be renewed yearly. The rat trouble could be prevented by putting a rat proof wall around the outside of the foundation.

## BEES

Eleven colonies were placed in winter quarters in the autumn of 1919. Three of these were in boxes in the honey house, and packed with shavings, and eight were put in two quadruple wintering cases packed in planer shavings. Three of those in the outside cases died. One of these died from dysentery and the other two died in clusters on the combs with plenty of good stores available. After placing in winter quarters, the colonies were all fed with sugar, and, after feeding, the weight of each ran from 62 to 74 pounds. The weight of stores estimated when the bees were taken out on May 12, varied in the different colonies from 4 pounds to 10 pounds.

The season was a poor one for nectar secretion on account of the dry, cold May. The total honey crop taken off from the eight colonies was 330 pounds, an average of 41 pounds 4 ounces per colony. This was sold at 28 cents per pound net, giving an average return of $11.48 per colony. The best colony gave a yield of 74 pounds of extracted honey and the second best gave 68 pounds. It is of interest to note that these were two of the colonies which wintered in the honey house.

One of the colonies swarmed once but the swarm was, unfortunately, not captured.

The financial record of the season's operations stands as follows:—

| | | |
|---|---|---|
| 330 lb. honey sold at 35c | | $115 50 |
| 142 hours of labour at 35c | $49 70 | |
| Loss of 3 colonies at $7 | 21 00 | |
| 80 lb. sugar at 21c | 16 80 | |
| 66 pails for honey at 9c | 5 94 | |
| | | 93 44 |
| Profit | | $22 06 |

The eight colonies were put in a cellar in November, 1920, after being fed 80 pounds sugar. After feeding, the colonies weighed from 60 pounds to 64 pounds each. They wintered well, all coming out strong in the spring of 1921.

To gain some knowledge of the time and duration of the honey flow from different sources and the effect of climatic conditions upon the amount of honey stored by the bees, one hive is kept on scales and the weight, temperature, etc., recorded daily. While in the season of 1919 the weight of the hive began to increase on May 22 and by the end of June gained 204·5 pounds, in 1920 no gain was made till the 9th of June, and only 30·5 pounds made till the 30th of that month, showing that the dry, cold weather conditions during the spring not only retarded the honey flow but decreased the amount of surplus stored.

## BUILDINGS AND IMPROVEMENTS

A building was erected over an outside root cellar 29 feet wide by 75 feet long for implement and feed storage. A silo 14 feet in diameter 30 feet high was built. Ten double poultry houses were built to accommodate twenty pens of hens in the egg laying contest. A new entrance road was completed and eighty rods of permanent woven wire fencing put up.

Five acres of new land were brought under cultivation and repairs made to some parts of the underdrainage system. Cement tiles in clay subsoil have, in some cases, disintegrated, while in sandy subsoil they remained sound.