DOMINION OF CANADA
DEPARTMENT OF AGRICULTURE
DOMINION EXPERIMENTAL FARMS

# EXPERIMENTAL STATION

## KENTVILLE, N.S.

## REPORT OF THE SUPERINTENDENT

W. SAXBY BLAIR

## FOR THE YEAR 1925

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# EXPERIMENTAL STATION, KENTVILLE, N.S.

## THE SEASON

The early part of the winter of 1924-25 was about normal. January was somewhat colder than usual, but was succeeded in February and March by weather considerably warmer than usual. Sleighing ceased after warm weather on February 7 and 8, and all snow had disappeared, except in very sheltered places, by the 14th. April temperature was about normal, and frost was out of the ground by April 13. The spring was about a week earlier than usual, and permitted early seeding of most crops. Apples bloomed very heavily, and the general set of fruit was good. There was more rainfall than usual during June and July, and less than usual in August and September. All field crops grew well, and gave average or better yields. October was quite wet and cold, hindering harvesting operations considerably. Ploughing was possible until the end of November. Winter set in about December 10, with several inches of frost in the ground and about three inches of snow.

The following table gives some meteorological records for the year. Data regarding the precipitation, sunshine, and temperature for the years 1914 to 1924 are given in detail for each year in the 1924 report.

METEOROLOGICAL RECORDS AT EXPERIMENTAL STATION, KENTVILLE, N.S., FOR THE YEAR 1925

| 1925 Month | Temperature, Fahrenheit | | | | Precipitation | | | | | | Sunshine | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Highest | Lowest | Mean | Mean average 1914 to 1924, inclusive | Rainfall | | Snowfall | | Total precipitation, inches | Average precipitation, 1914 to 1924, inches | Days | Hours | Average hours, 1914 to 1924, inclusive |
| | | | | | Days | Inches | Days | Inches | | | | | |
| January | 45 | −22 | 13·24 | 19·53 | 3 | 0·61 | 11 | 24·50 | 3·06 | 3·56 | 27 | 99·80 | 79·91 |
| February | 54 | − 8 | 27·48 | 18·90 | 7 | 1·38 | 5 | 7·50 | 2·13 | 2·96 | 23 | 88·20 | 100·60 |
| March | 56 | 8 | 34·11 | 28·65 | 11 | 2·67 | 1 | 3·75 | 3·04 | 2·81 | 25 | 131·60 | 132·32 |
| April | 65 | 13 | 38·93 | 38·99 | 10 | 1·49 | 1 | 5·00 | 1·99 | 2·88 | 22 | 146·75 | 142·92 |
| May | 74 | 30 | 49·43 | 49·53 | 13 | 2·37 | ..... | ..... | 2·37 | 1·86 | 28 | 204·90 | 202·83 |
| June | 89 | 37 | 61·18 | 58·80 | 17 | 4·97 | ..... | ..... | 4·97 | 3·01 | 29 | 199·55 | 209·05 |
| July | 86 | 42 | 65·58 | 65·49 | 12 | 3·34 | ..... | ..... | 3·34 | 2·79 | 29 | 234·75 | 219·57 |
| August | 87 | 38 | 64·70 | 64·25 | 4 | 1·42 | ..... | ..... | 1·42 | 3·35 | 26 | 229·40 | 210·68 |
| September | 78 | 30 | 54·69 | 57·31 | 14 | 2·11 | ..... | ..... | 2·11 | 3·15 | 23 | 136·90 | 184·54 |
| October | 65 | 18 | 41·32 | 48·47 | 17 | 6·44 | ..... | ..... | 6·44 | 4·02 | 23 | 147·25 | 151·74 |
| November | 59 | 11 | 35·94 | 36·60 | 8 | 3·54 | ..... | ..... | 3·54 | 4·06 | 27 | 104·15 | 81·25 |
| December | 52 | − 2 | 23·55 | 24·84 | 7 | 0·36 | 7 | 14·00 | 1·76 | 3·79 | 22 | 55·70 | 57·41 |
| Totals or averages | 67·5 | 16·2 | 42·51 | 42·61 | 123 | 30·70 | 25 | 54·75 | 36·17 | 38·24 | 304 | 1,778·95 | 1,772·82 |

## ANIMAL HUSBANDRY

### CATTLE

The Shorthorn herd at the end of the year consisted of one herd bull, 24 cows, 2 three-year-old heifers, 6 two-year-old heifers, 12 yearling heifers, 9 heifer calves, and 7 bull calves; a total of 61 head. Twenty-two calves were born during the year, and 18 head were disposed of; these were 2 cows, 2 yearling heifers and 8 bull calves for breeding purposes, and 4 cows, 1 yearling heifer and 1 bull for beef.

Eight cows qualified in the R.O.P. during the year. These were: Kentville Susan, 6 years old, with 8,271 pounds of milk and 354 pounds of fat; Kentville Victoria 3rd, 6 years old, with 6,183 pounds of milk and 264 pounds of fat; Kentville Lady, 6 years old, with 7,723 pounds of milk and 296 pounds of fat; Kentville May 2nd, 5 years old, with 6,376 pounds of milk and 249 pounds of fat; Kentville Victoria 6th, 3 years old, with 5,391 pounds of milk and 222 pounds of fat; Kentville Susan 5th, 3 years old, with 5,179 pounds of milk and 233 pounds of fat; Kentville May 3rd, 2 years old, with 4,435 pounds of milk and 182 pounds of fat; and Kentville Jessamine 11th, 2 years old, with 4,688 pounds of milk and 209 pounds of fat. All normal cows are entered for Record of Performance testing, which is used as a standard for retaining cows in the herd. Cows of small production, and all animals of poor conformation are culled from the herd. In this way it is hoped to build up a uniform herd with a profitable production.

The meal mixture for the milking cows for the first part of the year was made up of 300 pounds of bran, 200 pounds of oats, 200 pounds of oil meal, and 100 pounds of cottonseed meal. For the summer months the oilcake meal is usually left out of the mixture. During the fall and winter the following mixture was used: 250 pounds of ground oats, 400 pounds of gluten feed, 150 pounds of wheat bran, 100 pounds of oilcake meal, 100 pounds of cottonseed meal, and 10 pounds of salt. The average cost of this mixture was $2.45 per cwt. Hay is charged at $10, roots at $3, ensilage at $3.25, and green feed at $4 per ton, and pasture at $2 per month.

The tabulated data show the feed consumed by, and the production of the 17 cows which completed their lactation periods during the year. This lot is made up of 9 mature cows with an average production of 6,145 pounds of milk; 3 four-year-old cows with an average of 3,938 pounds; 3 three-year-old cows with an average of 5,126 pounds, and 2 two-year-old cows with an average of 4,562 pounds. The average production of these 17 cows was 5,389.6 pounds of milk and 262 pounds of fat.

AMOUNT AND VALUE OF MILK PRODUCED BY SHORTHORN COWS WHICH COMPLETED LACTATION PERIODS DURING THE YEAR ENDING DECEMBER 31, 1925

| Name of cow | Age in years | Date of dropping calf | Number of days dry | Number of days milking | Total milk | Daily average yield of milk | Average per cent fat | Butter produced | Value of butter | Value of skim-milk | Total value of product |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | lb. | lb. | % | lb. | $ cts. | $ cts. | $ cts. |
| Kentville Fairy | 7 | April 29, 1924 | 56 | 296 | 4,353·7 | 14·70 | 4·16 | 213·10 | 78 95 | 8 34 | 87 29 |
| Kentville Primrose | 6 | May 5, 1924 | 127 | 453 | 6,826·4 | 15·07 | 4·24 | 340·74 | 124 53 | 13 07 | 137 60 |
| Kentville Susan | 6 | June 15, 1924 | 90 | 368 | 8,272·1 | 22·47 | 4·27 | 416·45 | 159 69 | 15 83 | 175 52 |
| Kentville Victoria 3rd | 6 | July 10, 1924 | 108 | 300 | 6,183·7 | 20·61 | 4·26 | 310·54 | 120 63 | 11 83 | 132 46 |
| Kentville Lady | 6 | Jan. 3, 1925 | 34 | 313 | 7,722·7 | 24·67 | 3·83 | 348·60 | 130 10 | 14 85 | 144 95 |
| Kentville Susan 2nd | 4 | July 15, 1924 | 393 | 259 | 3,666·5 | 14·15 | 4·08 | 176·01 | 69 27 | 7 03 | 76 30 |
| Kentville Meadow Flower 2nd | 5 | Jan. 14, 1925 | 125 | 259 | 4,969·9 | 19·18 | 3·95 | 231·51 | 84 92 | 9 54 | 94 46 |
| Kentville Jessamine 4th | 5 | Feb. 5, 1925 | 139 | 254 | 5,971·8 | 23·50 | 3·92 | 276·00 | 100 83 | 11 47 | 112 30 |
| Kentville Jessamine 5th | 5 | Dec. 16, 1924 | 133 | 235 | 4,632·0 | 19·71 | 4·08 | 222·48 | 79 80 | 9 26 | 89 06 |
| Kentville May 2nd | 5 | Mar. 10, 1925 | 148 | 265 | 6,376·1 | 24·06 | 3·90 | 292·98 | 111 64 | 12 25 | 123 89 |
| Kentville Victoria 4th | 4 | Dec. 13, 1924 | 147 | 169 | 3,309·7 | 19·58 | 4·28 | 166·88 | 61 62 | 6 33 | 67 95 |
| Kentville Jessamine 6th | 4 | Mar. 20, 1925 | 96 | 253 | 4,838·6 | 19·12 | 3·95 | 224·89 | 86 55 | 9 29 | 95 84 |
| Kentville Countess 2nd | 3 | July 13, 1924 | First calf | 330 | 4,806·6 | 14·56 | 4·20 | 237·59 | 90 95 | 9 20 | 100 15 |
| Kentville Victoria 6th | 3 | Jan. 5, 1925 | 49 | 232 | 5,391·0 | 23·23 | 4·08 | 258·80 | 94 23 | 10 34 | 104 57 |
| Kentville Susan 5th | 3 | May 26, 1924 | First calf | 307 | 5,179·3 | 16·87 | 4·50 | 274·39 | 104 12 | 9 89 | 114 01 |
| Kentville May 3rd | 2 | Sept. 11, 1924 | " | 290 | 4,434·6 | 15·29 | 4·15 | 216·74 | 81 67 | 8 50 | 90 17 |
| Kentville Jessamine 11th | 2 | Feb. 20, 1925 | " | 312 | 4,688·9 | 15·02 | 4·46 | 246·33 | 98 32 | 8 95 | 107 27 |
| Average | 4·4 | ..... | 126 | 288 | 5,389·6 | 18·71 | 4·13 | 262·00 | 98 69 | 10 35 | 109 04 |

AMOUNT AND COST OF FEED CONSUMED BY SHORTHORN COWS WHICH COMPLETED LACTATION PERIODS DURING 1925

| Name of cow | Age in years | Date of birth of calf | Amount of meal consumed | Amount of roots and ensilage consumed | Amount of hay consumed | Amount of green feed consumed | Months on pasture | Total cost of feed | Cost to produce 100 pounds of milk | Cost to produce one pound butter | Profit on one pound butter, skim-milk not considered | Profit on cow |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | lb. | lb. | lb. | lb. | | $ cts. | $ cts. | cents | cents | $ cts. |
| K. Fairy | 7 | April 29, 1924 | 1,695 | 11,110 | 3,369 | 1,605 | 2 | 82 10 | 1 88 | 38·52 | −1·48 | 5 19 |
| K. Primrose | 6 | May 5, 1924 | 2,445 | 20,345 | 5,610 | 1,725 | 3½ | 120 26 | 1 76 | 35·29 | 1·25 | 17 34 |
| K. Susan | 6 | June 15, 1924 | 2,952 | 16,305 | 4,613 | 1,605 | 2 | 125 22 | 1 51 | 30·06 | 8·28 | 50 30 |
| K. Victoria 3rd | 6 | July 10, 1924 | 2,535 | 13,870 | 4,016 | 1,605 | 2 | 107 90 | 1 74 | 34·74 | 4·10 | 24 56 |
| K. Lady | 6 | Jan. 3, 1925 | 2,848 | 11,760 | 3,080 | 2,205 | 1½ | 113 73 | 1 47 | 32·62 | 4·70 | 31 22 |
| K. Susan 2nd | 4 | July 15, 1924 | 2,135 | 19,910 | 5,727 | 3,155 | 5½ | 126 21 | 3 44 | 71·70 | −32·35 | −49 91 |
| K. Meadow Flower 2nd | 5 | Jan. 14, 1925 | 1,883 | 12,170 | 3,509 | 2,205 | 1⅓ | 97 95 | 1 97 | 42·30 | −5·62 | −3 49 |
| K. Jessamine 4th | 5 | Feb. 5, 1925 | 2,257 | 13,595 | 3,711 | 2,205 | 1 | 107 05 | 1 79 | 38·78 | −2·25 | 5 25 |
| K. Jessamine 5th | 5 | Dec. 16, 1924 | 1,785 | 12,705 | 3,196 | 260 | 1½ | 89 29 | 1 90 | 40·13 | −4·27 | −0 23 |
| K. May 2nd | 5 | Mar. 10, 1925 | 2,348 | 13,165 | 3,748 | 2,205 | 1⅓ | 104 01 | 1 63 | 35·50 | 2·60 | 19 88 |
| K. Victoria 4th | 4 | Dec. 13, 1924 | 1,243 | 10,785 | 2,908 | ..... | 3 | 69 50 | 2 09 | 41·64 | −4·72 | −1 55 |
| K. Jessamine 6th | 4 | Mar. 20, 1925 | 2,039 | 12,345 | 3,126 | 2,205 | 1½ | 90 97 | 1 88 | 40·45 | −1·96 | 4 87 |
| K. Countess 2nd | 3 | July 13, 1924 | 1,777 | 11,725 | 3,549 | 1,605 | ⅔ | 82 85 | 1 72 | 34·87 | 3·41 | 17 30 |
| K. Victoria 6th | 3 | Jan. 5, 1925 | 2,126 | 10,145 | 2,708 | 720 | 1⅓ | 88 18 | 1 63 | 34·07 | 2·33 | 16 39 |
| K. Susan 5th | 3 | May 26, 1924 | 1,991 | 9,040 | 2,830 | 1,605 | 2 | 80 75 | 1 55 | 29·42 | 8·52 | 33 26 |
| K. May 3rd | 2 | Sept. 11, 1924 | 1,939 | 11,075 | 2,922 | 680 | ⅓ | 81 14 | 1 82 | 37·43 | 0·25 | 9 03 |
| K. Jessamine 11th | 2 | Feb. 20, 1925 | 2,128 | 9,875 | 2,502 | 2,205 | 1⅓ | 87 86 | 1 87 | 35·66 | 4·25 | 19 41 |
| Average | 4·4 | ..... | 2,125 | 12,937 | 3,595 | 1,635 | 1·8 | 97 35 | 1 86 | 37·15 | 0·51 | 11 70 |

## REARING YOUNG STOCK

Practically all of the calves at this Station are raised by hand. It has always been the practice to leave the new-born calf with the mother for two days. This insures a good start for the calf; the first milk of the mother acts as a tonic and laxative for the calf, and suckling the cow seems the best way for the calf to get its first food. There is seldom any trouble in teaching a calf to drink. About twelve hours after it is taken from the cow it is hungry enough to suck the fingers, and at that time the first feed, three pounds of milk, is given, by letting it suck all the milk from the pail. Let the calf get somewhat hungry for the next feed, for this is the time to have it out with the little fellow and have him take the milk without the fingers; be gentle and patient at this time and he will soon learn to drink the milk. If the calf is small, 9 pounds of whole milk given in three feeds is sufficient for the first week, after which time it can be increased to 4 pounds to a feed. If the calf is large and strong 4 pounds at one time would be all right at first, but it is not advisable to give over 12 pounds of whole milk per day at any age, and this in three feeds. It has been found best to give the mother's milk to the calf for the first two weeks, or even for a longer time if convenient. Usually the milk from any other cow newly in milk would be all right after two weeks, provided she has not just freshened.

The calf can be put on skim-milk about four weeks old; this should be done gradually, taking about two weeks to make the change complete. The amount of skim-milk given is 15 pounds per day at eight weeks of age, and this is increased to 21 pounds per day at four months. All increases are made gradually, not more than 1 pound to a feed.

A good time to teach a calf to eat grain is when the change is made from whole to skim-milk, giving him a small handful at first immediately after the milk. Any increase in grain should be made slowly and gradually. One pound per day is an average feed of grain for a calf three months of age, and three pounds at five months. A good meal mixture for calves is two parts of oats, one part of wheat bran, and one part of linseed meal. Roots can be fed to good advantage from the time the calves are ten weeks of age. Clover hay of good quality should be provided, and in as liberal quantities as the calves can digest properly. Water is provided each day. No calves are turned out to pasture, all being reared in the stable with access to a small yard when conditions are suitable.

The following table gives the amount of feed consumed by 35 heifer calves from birth to six months.

FEED CONSUMED BY HEIFERS FROM BIRTH TO SIX MONTHS, AND GAINS MADE

| Name | Date of birth | Whole milk | Skim-milk | Meal | Hay | Roots | Weight at birth | Weight at six months | Gain |
|---|---|---|---|---|---|---|---|---|---|
| | | lb. | lb. | lb. | lb. | lb. | lb. | lb. | lb. |
| K. Lady 2nd | April, 1921 | 305 | 2,442 | 269 | 188 | ..... | 70 | 345 | 275 |
| K. May 3rd | Dec., 1921 | 967 | 1,764 | 302 | 238 | 120 | 65 | 350 | 285 |
| K. Lady 3rd | May, 1922 | 676 | 1,812 | 247 | 280 | ..... | 70 | 350 | 280 |
| K. Victoria 8th | June, 1922 | 1,294 | 552 | 238 | 231 | 175 | 80 | 350 | 270 |
| K. Blossom 6th | July, 1922 | 706 | 1,680 | 266 | 245 | 225 | 70 | 340 | 270 |
| K. Jessamine 11th | Oct., 1922 | 374 | 2,312 | 168 | 156 | 355 | 80 | 360 | 280 |
| K. Jessamine 12th | Nov., 1922 | 611 | 1,692 | 248 | 226 | 517 | 80 | 340 | 260 |
| K. Blossom 7th | Nov., 1922 | 600 | 1,690 | 248 | 226 | 517 | 85 | 350 | 265 |
| K. Susan 7th | Dec., 1922 | 463 | 2,406 | 163 | 177 | 240 | 70 | 320 | 250 |
| K. Meadow Flower 3rd | Dec., 1922 | 463 | 2,406 | 163 | 177 | 240 | 65 | 280 | 215 |
| K. Jessamine 13th | Dec., 1922 | 588 | 2,436 | 196 | 192 | 210 | 75 | 340 | 265 |
| K. Susan 8th | Jan., 1923 | 1,597 | ..... | 91 | 84 | ..... | 70 | 240 | 170 |
| K. Primrose 4th | Mar., 1923 | 439 | 2,473 | 245 | 280 | ..... | 80 | 340 | 260 |
| K. Jessamine 14th | Mar., 1923 | 400 | 2,450 | 250 | 265 | ..... | 80 | 310 | 230 |
| K. Victoria 9th | April, 1923 | 404 | 2,308 | 266 | 336 | ..... | 85 | 330 | 245 |
| K. Lass 2nd | May, 1923 | 512 | 1,967 | 141 | 225 | 125 | 70 | 310 | 240 |
| K. Fairy 5th | May, 1923 | 708 | 1,633 | 152 | 239 | 375 | 75 | 340 | 265 |
| K. Victoria 10th | June, 1923 | 444 | 1,700 | 215 | 326 | 560 | 70 | 310 | 240 |

FEED CONSUMED BY HEIFERS FROM BIRTH TO SIX MONTHS, AND GAINS MADE—*Concludad*

| Name | Date of Birth | Whole milk | Skim-milk | Meal | Hay | Roots | Weight at birth | Weight at six months | Gain |
|---|---|---|---|---|---|---|---|---|---|
| | | lb. | lb. | lb | lb. | lb. | lb. | lb. | lb. |
| K. Susan 9th | July, 1923 | 428 | 2,498 | 219 | 273 | 760 | 75 | 360 | 285 |
| K. Lady 4th | Nov., 1923 | 571 | 2,751 | 244 | 273 | 400 | 75 | 400 | 325 |
| K. Susan 10th | Jan., 1924 | 516 | 2,562 | 245 | 294 | 70 | 80 | 320 | 240 |
| K. Victoria 11th | Jan., 1924 | 582 | 2,520 | 224 | 244 | 70 | 70 | 375 | 305 |
| K. Victoria 12th | Jan., 1924 | 510 | 2,550 | 240 | 290 | 70 | 78 | 380 | 302 |
| K. Jessamine 15th | April, 1924 | 406 | 3,000 | 280 | 392 | ..... | 85 | 409 | 324 |
| K. Victoria 13th | April, 1924 | 588 | 2,275 | 189 | 322 | ..... | 85 | 395 | 310 |
| K. Jessamine 16th | April, 1924 | 575 | 2,280 | 185 | 325 | ..... | 80 | 335 | 255 |
| K. Fairy 7th | April, 1924 | 515 | 2,280 | 185 | 325 | ..... | 90 | 340 | 250 |
| K. Susan 11th | June, 1924 | 600 | 2,108 | 378 | 358 | 450 | 75 | 390 | 315 |
| K. Jessamine 17th | Dec., 1924 | 562 | 2,192 | 192 | 233 | 84 | 75 | 355 | 280 |
| K. Lady 5th | Dec., 1924 | 500 | 2,192 | 192 | 233 | 84 | 70 | 375 | 305 |
| K. Lady Maud | Jan., 1925 | 365 | 2,718 | 276 | 331 | 98 | 77 | 397 | 320 |
| K. Fairy 8th | Feb., 1925 | 852 | 1,920 | 168 | 238 | ..... | 80 | 357 | 277 |
| K. Jessamine 18th | Feb., 1925 | 816 | 1,920 | 168 | 238 | ..... | 67 | 365 | 298 |
| K. Jessamine 19th | Mar., 1925 | 573 | 2,121 | 259 | 280 | ..... | 75 | 380 | 305 |
| K. Susan 12th | June, 1925 | 671 | 2,126 | 224 | 265 | 240 | 72 | 351 | 279 |
| Average | ..... | 605 | 2,106 | 221 | 257 | 171 | 75 | 348 | 273 |

The average cost of these calves to six months of age has been as follows:—

| | |
|---|---|
| 605 pounds whole milk at $2 per cwt | $12 10 |
| 2,106 pounds skim milk at 20 cents per cwt | 4 21 |
| 221 pounds meal at $2.30 per cwt | 5 08 |
| 257 pounds hay at 50 cents per cwt | 1 28 |
| 171 pounds roots at 20 cents per cwt | 0 34 |
| Total | $23 01 |

It will be noted that the average weight at birth was 75 pounds; the weight at six months, 348 pounds; and the gain, 273 pounds. The cost per pound of gain was 8.42 cents.

CALVES SUCKLED

The following table gives the amount of feed consumed by 6 heifer calves from birth to six months. These calves were allowed to suckle the cow from four to six months.

FEED CONSUMED BY HEIFERS FROM BIRTH TO SIX MONTHS, AND GAINS MADE

| Name | Date of birth | Days nursing cow | Meal | Hay | Roots | Weight at birth | Weight at six months | Gain |
|---|---|---|---|---|---|---|---|---|
| | | | lb. | lb. | lb. | lb. | lb. | lb. |
| K. Primrose 5th | Nov., 1923 | 150 | 154 | 214 | ..... | 70 | 430 | 360 |
| K. Primrose 6th | Dec., 1923 | 120 | 189 | 236 | 305 | 75 | 460 | 385 |
| K. Queen 2nd | Nov., 1923 | 115 | 140 | 154 | 224 | 65 | 250 | 185 |
| K. Fairy 6th | Mar., 1924 | 180 | In pasture with cow. | | | 75 | 400 | 325 |
| K. Victoria 14th | July, 1924 | 147 | 161 | 224 | 315 | 70 | 360 | 290 |
| K. Victoria 15th | Mar., 1925 | 180 | 245 | 287 | ..... | 80 | 485 | 405 |
| Average | ..... | 148 | 148 | 186 | 141 | 72 | 397 | 325 |

The average cost of feed for these six calves was:—

| | |
|---|---|
| 148 days nursing cow at 22 cents per day | $32 56 |
| 148 pounds meal at $2.30 per cwt | 3 40 |
| 186 pounds hay at 50 cents per cwt | 0 93 |
| 141 pounds roots at 20 cents per cwt | 0 28 |
| Total | $37 17 |

Average gain, 325 pounds.
Cost per pound of gain, 11.43 cents.

### CALVES FED ROOTS VS. CALVES NOT FED ROOTS

The following data show the average amount of feeds consumed to six months of age by 10 heifer calves fed roots, as compared with 10 heifer calves fed no roots, and the average gains made.

*With roots—*

| | |
|---|---|
| 503 pounds whole milk at $2 per cwt. | $10 06 |
| 2,270 pounds skim-milk at 20 cents per cwt. | 4 54 |
| 204 pounds meal at $2.30 per cwt. | 4 69 |
| 247 pounds hay at 50 cents per cwt. | 1 23 |
| 214 pounds roots at 20 cents per cwt. | 0 42 |
| Total | $20 94 |

Average gain, 270 pounds.
Cost per pound of gain, 7.75 cents.

*Without roots—*

| | |
|---|---|
| 538 pounds whole milk at $2 per cwt. | $10 76 |
| 2,288 pounds skim-milk at 20 cents per cwt. | 4 57 |
| 226 pounds meal at $2.30 per cwt. | 5 19 |
| 286 pounds hay at 50 cents per cwt. | 1 43 |
| Total | $21 95 |

Average gain 270 pounds.
Cost per pound of gain 8.13 cents.

### DEVELOPMENT OF CALVES BORN AT DIFFERENT PERIODS

Records have been kept of the amount and cost of feed required to raise from birth to six months of age calves born at different seasons of the year. These records for 32 calves, together with the gains and the cost per pound of gain, are as follows:—

AVERAGE, TWELVE CALVES, BORN MARCH, APRIL, MAY

| | |
|---|---|
| 508 pounds whole milk at $2 per cwt. | $10 16 |
| 2,253 pounds skim-milk at 20 cents per cwt. | 4 50 |
| 222 pounds meal at $2.30 per cwt. | 5 10 |
| 288 pounds hay at 50 cents per cwt. | 1 44 |
| 41 pounds roots at 20 cents per cwt. | 0 08 |
| Total | $21 28 |

Average gain, 270 pounds.
Cost per pound of gain, 7.88 cents.

AVERAGE, FIVE CALVES, BORN JUNE, JULY, AUGUST

| | |
|---|---|
| 570 pounds whole milk at $2 per cwt. | $11 40 |
| 2,022 pounds skim-milk at 20 cents per cwt. | 4 04 |
| 260 pounds meal at $2.30 per cwt. | 5 98 |
| 293 pounds hay at 50 cents per cwt. | 1 46 |
| 447 pounds roots at 20 cents per cwt. | 0 89 |
| Total | $23 77 |

Average gain, 278 pounds.
Cost per pound of gain, 8.55 cents.

AVERAGE, FOUR CALVES, BORN SEPTEMBER, OCTOBER, NOVEMBER

| | |
|---|---|
| 539 pounds whole milk at $2 per cwt. | $10 78 |
| 2,111 pounds skim-milk at 20 cents per cwt. | 4 22 |
| 227 pounds meal at $2.30 per cwt. | 5 22 |
| 220 pounds hay at 50 cents per cwt. | 1 10 |
| 447 pounds roots at 20 cents per cwt. | 0 89 |
| Total | $22 21 |

Average gain, 282 pounds.
Cost per pound of gain, 7.87 cents.

AVERAGE, ELEVEN CALVES, BORN DECEMBER, JANUARY, FEBRUARY

| | |
|---|---|
| 565 pounds whole milk at $2 per cwt. | $11 30 |
| 2,347 pounds skim-milk at 20 cents per cwt. | 4 69 |
| 202 pounds meal at $2.30 per cwt. | 4 64 |
| 240 pounds hay at 50 cents per cwt. | 1 20 |
| 106 pounds roots at 20 cents per cwt. | 0 21 |
| Total | $22 04 |

Average gain, 278 pounds.
Cost per pound of gain, 7.92 cents.

## AVERAGE COST OF HEIFER CALVES FROM SIX MONTHS TO ONE YEAR

The table following gives the feed consumed by 40 heifers from six months to one year of age, and the gains made.

FEED CONSUMED BY HEIFERS FROM SIX MONTHS TO ONE YEAR, AND GAINS MADE

| Name | Year | Skim-milk | Meal | Hay | Roots and ensilage | Weight at six months | Weight at one year | Gain |
|---|---|---|---|---|---|---|---|---|
| | | lb. | lb. | lb. | lb. | lb. | lb. | lb. |
| K. Lady 2nd | 1921-22 | 312 | 700 | 749 | 1,620 | 345 | 560 | 215 |
| K. Susan 5th | 1921-22 | ..... | 701 | 770 | 2,025 | 420 | 625 | 205 |
| K. Victoria 7th | 1921-22 | ..... | 757 | 861 | 2,130 | 430 | 665 | 235 |
| K. Jessamine 9th | 1922 | 276 | 730 | 1,043 | 1,200 | 420 | 635 | 215 |
| K. Susan 6th | 1922 | 378 | 700 | 1,055 | 600 | 400 | 630 | 230 |
| K. Jessamine 10th | 1922 | ..... | 749 | 1,176 | 550 | 475 | 655 | 180 |
| K. May 3rd | 1922 | ..... | 751 | 1,106 | 990 | 350 | 540 | 190 |
| K. Lady 3rd | 1922-23 | ..... | 539 | 693 | 2,680 | 350 | 600 | 250 |
| K. Victoria 8th | 1922-23 | ..... | 560 | 728 | 2,710 | 350 | 570 | 220 |
| K. Blossom 6th | 1923 | 642 | 504 | 658 | 2,050 | 340 | 530 | 190 |
| K. Jessamine 11th | 1923 | 227 | 679 | 917 | 260 | 360 | 600 | 240 |
| K. Jessamine 12th | 1923 | ..... | 686 | 1,036 | 80 | 340 | 585 | 245 |
| K. Blossom 7th | 1923 | ..... | 686 | 1,036 | 80 | 350 | 550 | 200 |
| K. Meadow Flower 3rd | 1923 | 1,408 | 673 | 987 | 200 | 280 | 585 | 305 |
| K. Susan 7th | 1923 | 1,408 | 673 | 987 | 200 | 320 | 625 | 305 |
| K. Jessamine 13th | 1923 | 820 | 477 | 1,106 | 720 | 340 | 585 | 245 |
| K. Susan 8th | 1923-34 | ..... | 440 | 312 | 900 | 240 | 400 | 160 |
| K. Primrose 4th | 1923-24 | ..... | 567 | 1,134 | 2,600 | 340 | 600 | 260 |
| K. Jessamine 14th | 1923-24 | ..... | 553 | 1,050 | 2,600 | 310 | 550 | 240 |
| K. Victoria 9th | 1923-24 | ..... | 546 | 1,092 | 2,450 | 360 | 625 | 265 |
| K. Lass 2nd | 1923-24 | ..... | 560 | 850 | 2,480 | 310 | 515 | 205 |
| K. Fairy 5th | 1923-24 | ..... | 589 | 787 | 2,730 | 340 | 610 | 270 |
| K. Victoria 10th | 1923-24 | 1,131 | 526 | 696 | 2,220 | 310 | 620 | 310 |
| K. Susan 9th | 1924 | 1,677 | 421 | 523 | 2,070 | 360 | 660 | 300 |
| K. Primrose 5th | 1924 | ..... | 525 | 1,131 | 360 | 430 | 635 | 205 |
| K. Queen 2nd | 1924 | ..... | 546 | 930 | 350 | 250 | 470 | 220 |
| K. Lady 4th | 1924 | 1,717 | 540 | 1,246 | 665 | 400 | 620 | 220 |
| K. Primrose 6th | 1924 | ..... | 540 | 1,288 | 1,015 | 460 | 725 | 265 |
| K. Victoria 11th | 1924-25 | 855 | 574 | 1,071 | 980 | 375 | 595 | 220 |
| K. Susan 10th | 1924-25 | 820 | 602 | 1,042 | 1,190 | 320 | 590 | 270 |
| K. Victoria 12th | 1924-25 | 820 | 602 | 1,042 | 1,190 | 380 | 610 | 230 |
| K. Fairy 6th | 1924-25 | ..... | 600 | 926 | 2,170 | 400 | 652 | 252 |
| K. Jessamine 15th | 1924-25 | 384 | 663 | 1,024 | 2,310 | 409 | 666 | 257 |
| K. Victoria 13th | 1924-25 | 94 | 665 | 1,040 | 2,550 | 395 | 699 | 304 |
| K. Jessamine 16th | 1924-25 | 451 | 528 | 764 | 1,550 | 335 | 595 | 260 |
| K. Fairy 7th | 1924-25 | 450 | 520 | 760 | 1,550 | 340 | 625 | 285 |
| K. Susan 11th | 1924-25 | 884 | 425 | 846 | 2,200 | 390 | 680 | 290 |
| K. Victoria 14th | 1925 | ..... | 462 | 710 | 2,050 | 360 | 651 | 291 |
| K. Jessamine 17th | 1925 | 815 | 587 | 931 | 1,230 | 355 | 635 | 280 |
| K. Lady 5th | 1925 | 689 | 587 | 931 | 1,230 | 375 | 695 | 320 |
| Average | ..... | 406 | 593 | 938 | 1,468 | 360 | 606 | 246 |

The average cost of feed for these calves was as follows:—

| | |
|---|---|
| 406 pounds skim-milk at 20 cents per cwt | $ 0 81 |
| 593 pounds meal at $2.30 per cwt | 13 63 |
| 938 pounds hay at 50 cents per cwt | 4 69 |
| 1,468 pounds roots and ensilage at 20 cents per cwt | 2 93 |
| Average cost for six months | $22 06 |

The average gain for this period was 246 pounds, the average weight at one year being 606 pounds. The cost per pound of gain was 8.96 cents.

### HEIFER CALVES SIX MONTHS TO ONE YEAR WITH SKIM-MILK

The table following gives the quantity of feeds consumed by 21 heifers from six months to one year of age, fed skim-milk for a short period after six months of age. The average cost of these was as follows:—

| | |
|---|---|
| 536 pounds skim-milk at 20 cents per cwt | $ 1 07 |
| 589 pounds meal at $2.30 per cwt | 13 54 |
| 924 pounds hay at 50 cents per cwt | 4 62 |
| 1,323 pounds roots and ensilage at 20 cents per cwt | 2 64 |
| Average cost for six months | $21 87 |

The average weight at one year was 621 pounds. The average gain was 262 pounds, and the cost per pound of gain, 8.34 cents.

FEEDS CONSUMED BY HEIFERS FROM SIX MONTHS TO ONE YEAR, AND GAINS MADE—SKIM-MILK FED

| Name | Year | Skim-milk | Meal | Hay | Roots and ensilage | Weight at six months | Weight at one year | Gain |
|---|---|---|---|---|---|---|---|---|
| | | lb. | lb. | lb. | lb. | lb. | lb. | lb. |
| K. Lady 2nd | 1921-22 | 312 | 700 | 749 | 1,620 | 345 | 560 | 215 |
| K. Jessamine 9th | 1922 | 276 | 730 | 1,043 | 1,200 | 420 | 635 | 215 |
| K. Susan 6th | 1922 | 378 | 700 | 1,055 | 600 | 400 | 630 | 230 |
| K. Blossom 6th | 1923 | 642 | 504 | 658 | 2,050 | 340 | 530 | 190 |
| K. Jessamine 11th | 1923 | 227 | 679 | 917 | 260 | 360 | 600 | 240 |
| K. Susan 7th | 1923 | 1,408 | 673 | 987 | 200 | 320 | 625 | 305 |
| K. Meadow Flower 3rd | 1923 | 1,408 | 673 | 987 | 200 | 280 | 585 | 305 |
| K. Jessamine 13th | 1923 | 820 | 477 | 1,106 | 720 | 340 | 585 | 245 |
| K. Victoria 10th | 1923-24 | 1,131 | 526 | 696 | 2,220 | 310 | 620 | 310 |
| K. Susan 9th | 1924 | 1,677 | 421 | 523 | 2,070 | 360 | 660 | 300 |
| K. Lady 4th | 1924 | 1,717 | 540 | 1,246 | 665 | 400 | 620 | 220 |
| K. Victoria 11th | 1924-25 | 855 | 574 | 1,071 | 980 | 375 | 595 | 220 |
| K. Susan 10th | 1924-25 | 820 | 602 | 1,042 | 1,190 | 320 | 590 | 270 |
| K. Victoria 12th | 1924-25 | 820 | 602 | 1,042 | 1,190 | 380 | 610 | 230 |
| K. Jessamine 15th | 1924-25 | 384 | 663 | 1,024 | 2,310 | 409 | 666 | 257 |
| K. Victoria 13th | 1924-25 | 94 | 665 | 1,040 | 2,550 | 395 | 699 | 304 |
| K. Jessamine 16th | 1924-25 | 451 | 528 | 764 | 1,550 | 335 | 595 | 270 |
| K. Fairy 7t | 1924-25 | 450 | 520 | 760 | 1,550 | 340 | 625 | 285 |
| K. Susan 11th | 1924-25 | 884 | 425 | 846 | 2,200 | 390 | 680 | 290 |
| K. Jessamine 17th | 1925 | 815 | 587 | 931 | 1,230 | 355 | 635 | 280 |
| K. Lady 5th | 1925 | 689 | 587 | 931 | 1,230 | 375 | 695 | 320 |
| Average | | 774 | 589 | 924 | 1,323 | 359 | 621 | 262 |

### HEIFER CALVES SIX MONTHS TO ONE YEAR WITHOUT SKIM-MILK

The table following gives the quantity of feeds consumed by 19 heifers from six months to one year of age, reared without having received skim-milk after six months of age. The average cost of these heifers for this period was:—

| | |
|---|---|
| 597 pounds meal at $2.30 per cwt | $13 73 |
| 953 pounds hay at 50 cents per cwt | 4 76 |
| 1,629 pounds roots and ensilage at 20 cents per cwt | 3 25 |
| Average cost for six months | $21 74 |

The average weight at one year was 590 pounds. The average gain for this period was 229 pounds, and the cost per pound of gain, 9.49 cents.

FEED CONSUMED BY HEIFERS FROM SIX MONTHS TO ONE YEAR, AND GAINS MADE—NO SKIM-MILK

| Name | Year | Meal | Hay | Roots and ensilage | Weight at six months | Weight at one year | Gain |
|---|---|---|---|---|---|---|---|
| | | lb. | lb. | lb. | lb. | lb. | lbs |
| K. Susan 5th | 1921-22 | 701 | 770 | 2,025 | 420 | 625 | 205 |
| K. Victoria 7th | 1921-22 | 757 | 861 | 2,130 | 430 | 665 | 235 |
| K. Jessamine 10th | 1922 | 749 | 1,176 | 550 | 475 | 655 | 180 |
| K. May 3rd | 1922 | 751 | 1,106 | 990 | 350 | 540 | 190 |
| K. Lady 3rd | 1922-23 | 539 | 693 | 2,680 | 350 | 600 | 250 |
| K. Victoria 8th | 1922-23 | 560 | 728 | 2,710 | 350 | 570 | 220 |
| K. Jessamine 12th | 1923 | 686 | 1,036 | 80 | 340 | 585 | 245 |
| K. Blossom 7th | 1923 | 686 | 1,036 | 80 | 350 | 550 | 200 |
| K. Susan 8th | 1923-24 | 440 | 812 | 900 | 240 | 400 | 160 |
| K. Primrose 4th | 1923-24 | 567 | 1,134 | 2,600 | 340 | 600 | 260 |
| K. Jessamine 14th | 1923-24 | 553 | 1,050 | 2,600 | 310 | 550 | 240 |
| K. Victoria 9th | 1923-24 | 546 | 1,092 | 2,450 | 360 | 625 | 265 |
| K. Lass 2nd | 1923-24 | 560 | 850 | 2,480 | 310 | 515 | 205 |
| K. Fairy 5th | 1923-24 | 589 | 787 | 2,730 | 340 | 610 | 270 |
| K. Primrose 5th | 1924 | 525 | 1,131 | 360 | 430 | 635 | 205 |
| K. Queen 2nd | 1924 | 546 | 930 | 350 | 250 | 470 | 220 |
| K. Primrose 6th | 1924 | 540 | 1,288 | 1,015 | 460 | 725 | 265 |
| K. Fairy 6th | 1924-25 | 600 | 926 | 2,170 | 400 | 652 | 252 |
| K. Victoria 14th | 1925 | 462 | 710 | 2,050 | 360 | 651 | 291 |
| Average | | 597 | 953 | 1,629 | 361 | 590 | 229 |

HEIFERS ONE TO TWO YEARS OLD

Below is given the amount of feeds consumed by 30 heifers for the period from one to two years of age. These heifers were given the amount of feed necessary to keep them in a thrifty growing condition without any attempt at forcing.

FEED CONSUMED BY HEIFERS FROM ONE TO TWO YEARS OF AGE, AND GAINS MADE

| Name | Year | Meal | Hay | Roots and ensilage | Pasture | Weight at one years | Weight at two years | Gain |
|---|---|---|---|---|---|---|---|---|
| | | lb. | lb. | lb. | months | lb. | lb. | lb. |
| K. Countess 2nd | 1921-22 | 1,630 | 1,883 | 3,590 | 2 | 650 | 1,050 | 400 |
| K. Jessamine 7th | 1921-22 | 1,312 | 1,488 | 3,605 | 3½ | 575 | 785 | 210 |
| K. Jessamine 8th | 1921-22 | 1,342 | 1,610 | 4,255 | 4 | 540 | 900 | 360 |
| K. Queen | 1922-23 | 1,095 | 1,656 | 4,570 | 4 | 485 | 775 | 290 |
| K. Primrose 3rd | 1922-23 | 1,083 | 1,747 | 4,885 | 4 | 560 | 890 | 330 |
| K. Fairy 4th | 1922-23 | 1,021 | 1,908 | 5,490 | 4 | 550 | 950 | 400 |
| K. Victoria 6th | 1922-23 | 991 | 1,880 | 5,405 | 4 | 620 | 1,045 | 425 |
| K. Lady 2nd | 1922-23 | 1,000 | 1,875 | 5,400 | 4 | 560 | 980 | 420 |
| K. Susan 5th | 1922-23 | 943 | 2,065 | 6,140 | 4 | 625 | 950 | 325 |
| K. Victoria 7th | 1922-23 | 990 | 2,285 | 6,530 | 4 | 665 | 1,050 | 385 |
| K. Jessamine 9th | 1922-23 | 1,008 | 2,212 | 4,780 | 3 | 635 | 950 | 315 |
| K. Susan 6th | 1922-23 | 1,078 | 2,352 | 4,880 | 2½ | 630 | 1,000 | 370 |
| K. Jessamine 10th | 1922-23 | 1,050 | 2,436 | 4,780 | 2½ | 655 | 1,075 | 420 |
| K. May 3rd | 1922-23 | 938 | 2,352 | 4,220 | 2½ | 540 | 975 | 435 |
| K. Jessamine 11th | 1923-24 | 952 | 1,904 | 4,680 | 3½ | 600 | 1,000 | 400 |
| K. Jessamine 12th | 1923-24 | 940 | 1,900 | 4,600 | 3½ | 585 | 975 | 390 |
| K. Blossom 7th | 1923-24 | 870 | 1,840 | 5,660 | 3½ | 550 | 925 | 375 |
| K. Susan 7th | 1923-24 | 830 | 1,750 | 5,240 | 3½ | 625 | 1,000 | 375 |
| K. Meadow Flower 3rd | 1923-24 | 830 | 1,750 | 5,240 | 3½ | 585 | 950 | 365 |
| K. Jessamine 13th | 1923-24 | 785 | 1,696 | 5,170 | 3½ | 585 | 920 | 335 |
| K. Susan 8th | 1924-25 | 694 | 1,398 | 3,890 | 5 | 400 | 890 | 490 |
| K. Primrose 4th | 1924-25 | 825 | 1,584 | 4,340 | 5 | 600 | 1,040 | 440 |
| K. Jessamine 14th | 1924-25 | 825 | 1,584 | 4,340 | 5 | 550 | 995 | 445 |
| K. Victoria 9th | 1924-25 | 841 | 1,643 | 4,550 | 5 | 625 | 1,100 | 475 |
| K. Lass 2nd | 1924-25 | 708 | 1,361 | 3,710 | 5 | 515 | 720 | 205 |
| K. Fairy 5th | 1924-25 | 805 | 1,666 | 5,220 | 5 | 610 | 990 | 380 |
| K. Susan 9th | 1924-25 | 852 | 1,708 | 5,415 | 4 | 660 | 1,100 | 440 |
| K. Primrose 5th | 1924-25 | 799 | 1,534 | 5,190 | 4 | 635 | 880 | 245 |
| K. Lady 4th | 1924-25 | 800 | 1,550 | 5,200 | 4 | 620 | 875 | 255 |
| K. Primrose 6th | 1924-25 | 740 | 1,872 | 6,200 | 4 | 725 | 965 | 240 |
| Average | | 952 | 1,816 | 4,905 | 3·8 | 592 | 956 | 364 |

The meal consumption averaged 3.8 pounds; hay, 7.25 pounds; and roots and ensilage, 19.62 pounds per day when not on pasture.

The average cost of these heifers for the period was as follows:—

| | |
|---|---|
| 952 pounds meal at $2.30 per cwt | $21 89 |
| 1,816 pounds hay at 50 cents per cwt | 9 08 |
| 4,905 pounds roots and ensilage 20 cents per cwt | 9 81 |
| 3.8 months pasture at $1 per month | 3 80 |
| Total cost for one year | $44 58 |

The average gain was 364 pounds, the weight at two years averaging 956 pounds, and the weight at one year, 592 pounds. The cost per pound of gain was 12.25 cents.

### HEIFERS FROM TWO YEARS TO CALVING

The feeds consumed by 23 heifers and the gains for this period were as given in the table following:—

FEED CONSUMED BY HEIFERS FROM TWO YEARS OF AGE TO CALVING, AND GAINS MADE

| Name | Year of birth | Age in years | Meal | Hay | Roots and ensilage | Pasture | Weight at two years | Weight at calving | Gain |
|---|---|---|---|---|---|---|---|---|---|
| | | | lb. | lb. | lb. | months | lb. | lb. | lb. |
| K. Susan 3rd | 1920 | 1,238 | 1,293 | 3,308 | 12,615 | 4 | 1,000 | 1,400 | 400 |
| K. Blossom 5th | 1920 | 873 | 411 | 980 | 2,520 | ..... | 915 | 980 | 65 |
| K. Primrose 2nd | 1920 | 1,046 | 726 | 1,736 | 4,935 | 4½ | 980 | 1,325 | 345 |
| K. Victoria 4th | 1920 | 992 | 453 | 1,302 | 3,360 | 4 | 900 | 1,200 | 300 |
| K. Fairy 3rd | 1920 | 963 | 306 | 1,022 | 3,500 | 4 | 1,075 | 1,250 | 175 |
| K. Jessamine 6th | 1920 | 990 | 390 | 1,302 | 4,502 | 4 | 990 | 1,200 | 210 |
| K. Susan 4th | 1920 | 958 | 300 | 1,000 | 3,450 | 4 | 950 | 1,100 | 150 |
| K. Countess 2nd | 1920 | 1,442 | 1,658 | 4,934 | 20,660 | 5 | 1,050 | 1,350 | 300 |
| K. Jessamine 7th | 1920 | 1,055 | 1,106 | 2,548 | 7,920 | 2 | 785 | 1,100 | 315 |
| K. Queen | 1921 | 1,019 | 1,005 | 2,184 | 6,660 | 2 | 775 | 1,050 | 275 |
| K. Primrose 3rd | 1921 | 1,000 | 858 | 1,876 | 5,730 | 2 | 890 | 1,110 | 220 |
| K. Victoria 6th | 1921 | 1,018 | 900 | 2,030 | 6,450 | 1½ | 1,045 | 1,250 | 205 |
| K. Lady 2nd | 1921 | 995 | 921 | 1,820 | 4,250 | 2 | 980 | 1,200 | 220 |
| K. Susan 5th | 1921 | 1,100 | 1,000 | 3,010 | 9,940 | 1½ | 950 | 1,200 | 250 |
| K. Victoria 7th | 1921 | 971 | 550 | 1,484 | 5,250 | 1½ | 1,050 | 1,225 | 175 |
| K. May 3rd | 1921 | 1,003 | 480 | 1,636 | 5,600 | 3½ | 975 | 1,100 | 125 |
| K. Jessamine 11th | 1922 | 852 | 595 | 1,150 | 3,920 | ..... | 1,000 | 1,125 | 125 |
| K. Jessamine 12th | 1922 | 820 | 546 | 910 | 3,220 | ..... | 975 | 1,075 | 100 |
| K. Susan 7th | 1922 | 1,114 | 946 | 2,052 | 6,360 | 4 | 1,000 | 1,250 | 250 |
| K. Meadow Flower 3rd | 1922 | 1,134 | 960 | 2,200 | 6,400 | 4 | 950 | 1,180 | 230 |
| K. Susan 8th | 1923 | 1,061 | 806 | 1,636 | 5,575 | 4 | 890 | 1,080 | 190 |
| K. Primrose 4th | 1923 | 984 | 456 | 1,128 | 3,880 | 4 | 1,040 | 1,250 | 210 |
| K. Jessamine 14th | 1923 | 983 | 460 | 1,130 | 3,880 | 4 | 995 | 1,200 | 205 |
| Average | ..... | 1,026 | 744 | 1,864 | 6,112 | 2·8 | 963 | 1,182 | 219 |

The average cost of feed for these heifers for the period was:—

| | |
|---|---|
| 744 pounds meal at $2.30 per cwt | $17 11 |
| 1,864 pounds hay at 50 cents per cwt | 9 32 |
| 6,112 pounds roots and ensilage at 20 cents per cwt | 12 22 |
| 2.8 months pasture at $1 per month | 2 80 |
| Total cost per heifer for period | $41 45 |

The average weight of these cows at calving was 1,182 pounds, and the average age in days, 1,026. The gain for this period averaged 219 pounds, and the cost per pound of gain was 18.92 cents.

### AVERAGE COST OF HEIFERS FROM BIRTH TO CALVING

The average amount of feeds consumed from birth to calving by these various lots of heifers is given in the table following:—

COST OF HEIFERS FROM BIRTH TO CALVING

| Age | Number of heifers | Whole milk | Skim-milk | Meal | Hay | Roots and ensilage | Pasture |
|---|---|---|---|---|---|---|---|
| | | lb. | lb. | lb. | lb. | lb. | months |
| Birth to six months | 35 | 605 | 2,106 | 221 | 257 | 171 | ..... |
| Six months to one year | 40 | ..... | 406 | 593 | 938 | 1,468 | ..... |
| One year to two years | 30 | ..... | ..... | 952 | 1,816 | 4,905 | 3·8 |
| Two years to calving | 23 | ..... | ..... | 744 | 1,864 | 6,112 | 2·8 |
| Total | ..... | 605 | 2,512 | 2,510 | 4,875 | 12,656 | 6·6 |

The average cost for the period was:—

| | |
|---|---|
| 605 pounds whole milk at $2 per cwt | $ 12 10 |
| 2,512 pounds skim-milk at 20 cents per cwt | 5 02 |
| 2,510 pounds meal at $2.30 per cwt | 57 73 |
| 4,875 pounds hay at 50 cents per cwt | 24 37 |
| 12,656 pounds roots and ensilage at 20 cents per cwt | 25 31 |
| 6.6 months pasture at $1 per month | 6 60 |
| Average cost of heifer calf from birth to calving | $131 13 |

YOUNG SHORTHORN STEERS FOR BEEF

To determine the cost of producing beef from dual-purpose Shorthorns, a test was conducted with 10 steer calves. These were at all times given a ration sufficient to keep them growing well throughout the period. All were fed whole milk for several weeks at the start, when, with one exception, they were gradually put on skim-milk. This steer (Flower Boy 2nd) was fed whole milk throughout the first six months, in order to get data for another experiment, and serves here to show the high cost of producing beef on whole milk. All were stall-fed throughout the period, except Flower Boy 2nd and Crown Prince, which were on pasture 3½ months. The data with regard to these two are tabulated separately. The meal mixture fed principally was composed of equal parts of wheat bran, ground oats, and oilcake meal. Another mixture, used after the steers were a year old, was two parts of bran, two parts of oats, and one part each of cotton-seed and oilcake meals. The steers consumed of these various meal mixtures an average of 3.9 pounds daily. The hay fed was of average quality, containing only a small percentage of clover. The succulent feeds were turnips, mangels, and corn ensilage.

The feeds were charged at the following prices: whole milk, $2; skim-milk, 20 cents; meal, $2.20; hay, 50 cents; roots and ensilage, 15 cents, per cwt.; and pasture, 50 cents per month.

The milk production back of these steers is very good, there being fifteen Record of Performance cows and four Record of Performance bulls represented in the various pedigrees.

These steers were sold locally, and realized little over the regular price for mature beef. On a discriminating market, appreciative of the extra quality of this class of beef, an increase of fifty per cent in the selling price might reasonably have been expected.

It will be noted that the cost was materially reduced in the case of the animal on pasture during the summer.

The following tables give the data obtained:—

FEED CONSUMPTION BY PERIODS, YOUNG SHORTHORN STEERS FOR BEEF

| Name | Birth to six months | | | | Six months to one year | | | One year to sale | | | Total period, birth to sale | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Whole milk | Skim-milk | Meal | Hay | Meal | Hay | Roots and ensilage | Meal | Hay | Roots and ensilage | Whole milk | Skim-milk | Meal | Hay | Roots and ensilage |
| | lb. | lb. | lb. | lb. | lb. | lb. | lb. | lb. | lb. | lb. | lb. | lb. | lb. | lb. | lb. |
| Archer | 742 | 2,233 | 204 | 152 | 728 | 924 | 580 | 1,405 | 1,736 | 5,910 | 742 | 2,233 | 2,337 | 2,812 | 6,490 |
| Fortune | 883 | 1,357 | 181 | 140 | 798 | 566 | 1,730 | 970 | 864 | 2,910 | 883 | 1,357 | 1,949 | 1,570 | 4,640 |
| Jim | 886 | 1,557 | 272 | 280 | 882 | 1.036 | 2.150 | 990 | 858 | 2,380 | 886 | 1,557 | 2,144 | 2,174 | 4,530 |
| Jack | 884 | 1,504 | 266 | 266 | 852 | 1,008 | 2,150 | 924 | 798 | 2,250 | 884 | 1,504 | 2,042 | 2,072 | 4,400 |
| Bob | 896 | 1,582 | 245 | 280 | 924 | 1,034 | 2,850 | 740 | 618 | 1,610 | 896 | 1,582 | 1,909 | 1,932 | 4,460 |
| Lad | 728 | 1,561 | 294 | 350 | 966 | 1,060 | 3,130 | 616 | 504 | 1,250 | 728 | 1,561 | 1,876 | 1,914 | 4,380 |
| George | 876 | 1,350 | 273 | 305 | 917 | 952 | 3,210 | 628 | 492 | 970 | 876 | 1,350 | 1,818 | 1,749 | 4,180 |
| Star | 792 | 1,350 | 301 | 357 | 938 | 964 | 3,320 | 602 | 462 | 830 | 792 | 1,350 | 1,841 | 1,783 | 4,150 |
| Average | 836 | 1,562 | 254 | 269 | 875 | 943 | 2,390 | 859 | 791 | 2,264 | 836 | 1,562 | 1,989 | 2,001 | 4,654 |
| *On pasture, 5½ months—* Crown Prince | 560 | 2,366 | 100 | 126 | 328 | 336 | 610 | 1,684 | 1,160 | 6,860 | 560 | 2,366 | 2,112 | 1,622 | 7,470 |
| *Whole milk to six months; pasture, 5½ months—* Flower Boy 2nd | 2,353 | ..... | 189 | 179 | 259 | 353 | 560 | 1,687 | 2,086 | 6,840 | 2,353 | ..... | 2,135 | 2,618 | 7,400 |

WEIGHTS, GAINS, AND COSTS, YOUNG SHORTHORN STEERS FOR BEEF

| Name | Weight at birth | Weight at sale | Gain | Number of days in period | Average gain per day | Dressed weight | Dressing per centage | Total cost of feed | Cost of one pound of gain | Cost of one pound dressed weight | Selling price at 13 cents per pound | Loss |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | lb. | lb. | lb. | days | lb. | lb. | % | $ | cents | cents | $ | $ |
| Archer | 75 | 1,000 | 925 | 595 | 1·6 | 582 | 58·2 | 95 65 | 10·3 | 16·4 | 75 66 | 19 99 |
| Fortune | 85 | 850 | 765 | 513 | 1·5 | 473 | 55·6 | 76 45 | 10·0 | 16·1 | 61 49 | 14 96 |
| Jim | 75 | 930 | 855 | 506 | 1·7 | 482 | 51·8 | 85 65 | 10·0 | 17·8 | 62 66 | 22 99 |
| Jack | 75 | 910 | 835 | 498 | 1·7 | 480 | 52·7 | 82 55 | 9·9 | 17·2 | 62 40 | 20 15 |
| Bob | 72 | 840 | 768 | 470 | 1·6 | 449 | 53·4 | 79 41 | 10·3 | 17·7 | 58 37 | 21 04 |
| Lad | 75 | 770 | 695 | 450 | 1·5 | 425 | 55·2 | 75 07 | 10·8 | 17·7 | 55 25 | 19 82 |
| George | 75 | 830 | 755 | 452 | 1·7 | 448 | 53·9 | 75 20 | 9·9 | 16·8 | 58 24 | 16 96 |
| Star | 80 | 810 | 730 | 440 | 1·7 | 459 | 55·5 | 74 16 | 10·2 | 16·5 | 58 50 | 15 66 |
| Average | 76 | 867 | 791 | 490 | 1·6 | 474 | 54·6 | 80 52 | 10·2 | 17·0 | 61 57 | 18 94 |
| *On pasture, 3½ months—* | | | | | | | | | | | | |
| Crown Prince | 80 | 1,080 | 950 | 679 | 1·4 | 585 | 56·8 | 84 88 | 8·9 | 14·5 | 76 05 | 8 83 |
| *Whole milk to six months; pasture, 3½ months—* | | | | | | | | | | | | |
| Flower Boy 2nd | 75 | 1,028 | 953 | 643 | 1·5 | 514 | 50·0 | 116 06 | 12·2 | 22·6 | 66 82 | 49 24 |

## STEER-FEEDING, 1924-25

The experiments carried on in steer-feeding for the year 1925 were: (1) influence of dehorning on gains made by steers; (2) value of local vs. western steers for feeding; (3) feeding fair to good vs. inferior steers; and (4) light vs. medium feeding of concentrates. These experiments, except the first one, were started on December 1, 1924, and continued for 95 days. All pens received hay and ensilage alike; 10 pounds of mixed hay and 40 pounds of sunflower ensilage per steer per day. The steers were fed twice each day and had free access to water. The meal mixture was made up of 100 pounds of wheat bran, 100 pounds of ground oats, 200 pounds of oilcake meal, and 4 pounds of salt, and cost $2.54 per cwt. Hay was charged at $10, and ensilage at $3.25 per ton.

### INFLUENCE OF DEHORNING ON GAINS MADE BY STEERS

Among the steers purchased for feeding were nine without horns, and these are compared as to gains with nine which were dehorned after they were purchased. The weights were taken just before dehorning, in thirty days, and again at the end of 125 days. The dehorned steers apparently did not suffer from the dehorning and were all in good health during the test. Both lots were fed and cared for alike. It will be noticed that the steers which had been dehorned previously made considerably better gains than the others.

INFLUENCE OF DEHORNING ON GAINS MADE BY STEERS

| — | Number of steer | Initial weight | Weight in 30 days | Gain in 30 days | Weight in 125 days | Tota gain |
|---|---|---|---|---|---|---|
| | lb. | lb. | lb. | lb. | lb. | |
| *Nine hornless steers* | 3 | 840 | 915 | 75 | 1,068 | 228 |
| | 7 | 840 | 885 | 45 | 1,001 | 161 |
| | 14 | 810 | 905 | 95 | 1,119 | 309 |
| | 15 | 920 | 985 | 65 | 1,123 | 203 |
| | 5 | 1,040 | 1,070 | 30 | 1,262 | 222 |
| | 45 | 865 | 875 | 10 | 1,022 | 157 |
| | 4 | 840 | 920 | 80 | 1,055 | 215 |
| | 43 | 880 | 950 | 70 | 1,201 | 321 |
| | 2 | 920 | 985 | 65 | 1,126 | 206 |
| Totals | ..... | 7,955 | 8,490 | 535 | 9,977 | 2,022 |
| *Nine dehorned steers* | 28 | 840 | 900 | 60 | 1,112 | 272 |
| | 29 | 845 | 865 | 20 | 1,093 | 248 |
| | 23 | 810 | 820 | 10 | 1,058 | 248 |
| | 18 | 925 | 950 | 25 | 1,071 | 146 |
| | 33 | 1,045 | 1,040 | −5 | 1,152 | 107 |
| | 22 | 865 | 930 | 65 | 1,023 | 158 |
| | 19 | 845 | 860 | 15 | 991 | 146 |
| | 32 | 895 | 955 | 60 | 1,074 | 179 |
| | 16 | 930 | 945 | 15 | 1,104 | 174 |
| Totals | ..... | 8,000 | 8,265 | 265 | 9,678 | 1,678 |

| — | Hornless steers | Dehorned steers |
|---|---|---|
| | lb. | lb. |
| Average weight, October 30, before dehorning | 884 | 888·8 |
| Average weight at end of 30 days | 943·3 | 918·3 |
| Average gain in 30 days | 59·4 | 29·4 |
| Average daily gain in 30 days | 1·98 | 0·98 |
| Average gain in 125 days | 224·6 | 186·4 |
| Average daily dain in 125 days | 1·79 | 1·49 |

### WESTERN VS. LOCAL STEERS

Six uniform western steers which had been brought in from Winnipeg were compared with six equally uniform steers purchased locally. It will be noted in the table following that there was little difference in the gain of these lots.

### FAIR TO GOOD VS. INFERIOR STEERS

Four local and four western steers, all rather inferior in type, were compared with the six local and six western steers. It will be noted that the inferior steers made a better daily gain. It should be kept in mind, however, that the better quality of steers will, on a discriminating market, bring a better price. A shipment of twenty of the best steers was made to England, and while all the steers were shipped from Lots 1 and 2, four only were suitable for shipment from Lot 3, the inferior steers. These three lots received the same meal ration, which was 4 pounds each during December, 6 pounds during January, and 8 pounds during February.

The table following gives details of the results of this test.

VALUE OF LOCAL VS. WESTERN STEERS FOR FEEDING, AND FEEDING FAIR TO GOOD VS. INFERIOR STEERS

| — | | Lot 1<br>Fair to good, local | Lot 2<br>Fair to good, Western | Lot 3<br>Inferior: 4 local, 4 Western |
|---|---|---|---|---|
| Number of steers in lot | | 6 | 6 | 8 |
| Number of days fed | | 95 | 95 | 95 |
| Total weight at beginning of test | lb. | 6,384 | 5,718 | 7,075 |
| Average weight at beginning of test | lb. | 1,064 | 953 | 884 |
| Total weight at finish of test | lb. | 7,238 | 6,624 | 8,444 |
| Total gain during period | lb. | 854 | 906 | 1,369 |
| Average gain per steer | lb. | 142·3 | 151 | 171·1 |
| Average gain per steer per day | lb. | 1·5 | 1·6 | 1·8 |
| *Feed Costs*— | | | | |
| 7,600 lb. hay at $10 per ton | $ | ..... | ..... | 38 00 |
| 30,400 lb. ensilage at $3.25 per ton | $ | ..... | ..... | 49 40 |
| 4,592 lb. meal at $2.54 per cwt | $ | ..... | ..... | 116 63 |
| 5,700 lb. hay at $10 per ton | $ | 28 50 | 28 50 | |
| 22,800 lb. ensilage at $3.25 per ton | $ | 37 05 | 37 05 | |
| 3,444 lb. meal at $2.54 per cwt | $ | 87 47 | 87 47 | |
| Value at beginning of test, 6,384 lb. at 5½ cents | $ | 335 16 | ..... | |
| Value at beginning of test, 5,718 lb. at 5½ cents | $ | ..... | 300 19 | |
| Value at beginning of test, 7,075 lb. at 5½ cents | $ | ..... | ..... | 371 43 |
| Total cost of steers at finish of test | $ | 488 18 | 453 21 | 575 46 |
| Total value of steers at finish of test | $ | 621 02 | 568 33 | 622 56 |
| Total increase in value | $ | 132 84 | 115 12 | 47 10 |
| Average increase in value | $ | 22 14 | 19 18 | 5 89 |

Pens 1 and 2, all shipped to England, at $8.58 per cwt.
Pen 3, four shipped to England, 4,493 lb. at $8.58 per cwt.; and four shipped to Halifax, 3,951 lb. at $6 per cwt.

### LIGHT VS. MEDIUM FEEDING OF CONCENTRATES

This test was conducted with rather inferior steers, fairly uniform in type and of the same average weight. It will be noted that the average daily gain was greater with the steers fed the light grain ration, yet when they were selected for market only two were sufficiently well fitted for export, while of those fed the medium grain ration four were exported. The medium grain ration fed Lot 3 was the same as that fed to Lots 1 and 2. Lot 4 received three pounds of meal each during December, four pounds during January, and five pounds during February. All other feeds were alike for both lots.

The results of this test are given in the table following:—

LIGHT VS. MEDIUM FEEDING OF CONCENTRATES TO STEERS

| | | Lot 3 | Lot 4 |
|---|---|---|---|
| | | Medium meal ration | Light meal ration |
| Number of steers in lot | | 8 | 7 |
| Number of days fed | | 95 | 95 |
| Total weight at beginning of test | lb. | 7,075 | 6,200 |
| Average weight at beginning of test | lb. | 884 | 885 |
| Total weight at finish of test | lb. | 8,444 | 7,485 |
| Total gain during period | lb. | 1,369 | 1,285 |
| Average gain per steer | lb. | 171 | 183 |
| Average gain per steer per day | lb. | 1·8 | 1·93 |
| *Feed Costs—* | | | |
| 7,600 lb. hay at $10 per ton | $ | 38 00 | |
| 6,650 lb. hay at $10 per ton | $ | ..... | 33 25 |
| 30,400 lb. ensilage at $3.25 per ton | $ | 49 40 | |
| 26,600 lb. ensilage at $3.25 per ton | $ | ..... | 43 22 |
| 4,592 lb. meal at $2.54 per cwt | $ | 116 63 | |
| 2,674 lb. meal at $2.54 per cwt | $ | ..... | 67 91 |
| *Value at beginning of test—* | | | |
| 7,075 lb. at 5¼ cents | $ | 371 43 | |
| 6,200 lb. at 5¼ cents | $ | ..... | 325 50 |
| Total cost of steers at finish of test | $ | 575 46 | 469 88 |
| Total value of steers at finish of test | $ | 622 55 | 503 30 |
| Total increase in value | $ | 47 09 | 33 42 |
| Average increase in value | $ | 5 88 | 4 18 |

From Pen 3, 4 steers were shipped to England, 4,493 lb. at $8.58 per cwt., and 4 sold in Halifax, 3,951 lb. at $6 per cwt.

From Pen 4, 2 steers were shipped to England, 2,101 lb. at $8.58 per cwt., and 5 sold in Halifax, 5,384 lb. at $6 per cwt.

COST OF SHIPMENT OF TWENTY STEERS FROM KENTVILLE, N.S., TO ENGLAND

*Transportation Charges*

| | | |
|---|---|---|
| Total charges to Halifax | $ | 89 65 |
| Tags and tagging, 5 cents each | | 1 00 |
| Ropes, roping, and foreman's wages | | 17 78 |
| Handling and loading | | 14 00 |
| Insurance | | 16 25 |
| Ocean feed | | 112 14 |
| Cattlemen's supplies, board, etc | | 4 89 |
| Excise stamps | | 0 16 |
| Ocean freight | | 400 00 |
| Total | $ | 655 87 |
| Less demurrage (one day at Halifax) | $ | 10 00 |
| Total cost to port of debarkation | | 645 87 |
| Average per head to port of debarkation | | 32 29 |
| Overseas charges | | 84 00 |
| Total charges | | 729 87 |
| Total charges per steer | | 36 49 |

*Profit and Loss Statement*

| | | |
|---|---|---|
| Cost of steers per head, fall, 1924 | $ | 52 17 |
| Total cost of steers, fall, 1924 | | 1,043 43 |
| Cost of feed per head to carry over | | 34 47 |
| Total cost of feed to carry over | | 689 44 |
| Cost of transportation to, and selling in Great Britain | | 729 87 |
| Total cost | | 2,462 74 |
| Total returns | | 2,719 20 |
| Total profit on twenty steers | | 256 46 |
| Total profit per steer | | 12 82 |

FINANCIAL STATEMENT, ELEVEN STEERS SOLD LOCALLY

| | | |
|---|---|---|
| Purchase price 9,545 pounds at 5¼ cents | $ | 501 11 |
| Cost of feed, Nov. 30, 1924 to April 6, 1925 | | 382 18 |
| Total cost | | 883 29 |
| Average purchase price | | 45 55 |
| Average cost of feed | | 34 74 |
| Average cost to time of sale | | 80 29 |
| Selling price, 11,581 pounds at 6 cents | | 694 86 |
| Total loss | | 188 43 |
| Average loss | | 17 13 |

The loss on these steers must be attributed to the narrow margin between buying and selling prices, which again is accounted for by the fact that the steers in this lot were for the most part of inferior quality.

FINANCIAL STATEMENT, THIRTY-ONE STEERS FED 1924-25

| | |
|---|---|
| Total profit on twenty steers shipped to England | $ 256 46 |
| Total loss on eleven steers sold in Halifax | 188 43 |
| Total profit on the thirty-one steers | 68 03 |
| Profit per steer | 2 19 |

## SWINE

Six mature breeding swine, and some eighteen feeders, all Yorkshires, are regularly kept. Since there is no acreage available for pasture the feed cost is comparatively high. Two litters are raised per year, and so doing a much larger meal ration is required. Mangels are fed eight months in the year, and some form of green feed during the summer months, such as green clover, oats-peas-vetches, or waste from the vegetable garden. Skim-milk is fed when available to the sows nursing litters, and in starting the young feeders. The meal ration for the most part was made up of 100 pounds each of wheat bran, and ground oats, 200 pounds of middlings, 50 pounds of linseed meal, and 15 pounds of charcoal, and cost $2.50 per cwt.

The following table gives the amount and cost of the feed consumed by the breeding swine during 1925:—

FEED CONSUMED BY MATURE BREEDING SWINE DURING 1925

| —— | Total feed | Average per day | Total cost | Cost per day |
|---|---|---|---|---|
| | lb. | lb. | $ | cents |
| Herd boar, Ottawa Augustus— | | | | |
| Meal | 1,574 | 4·31 | 39 35 | 10·8 |
| Roots | 1,825 | 5·00 | 2 73 | 0·7 |
| Total cost | ..... | ..... | 42 08 | 11·5 |
| Sow, Nappan Augustine— | | | | |
| Meal | 2,127 | 5·83 | 52 67 | 14·4 |
| Roots | 1,515 | 4·15 | 2 27 | 0·6 |
| Skim-milk | 1,472 | 4·03 | 2 94 | 0·8 |
| Total cost | ..... | ..... | 57 88 | 15·8 |
| Sow, Kentville Beauty— | | | | |
| Meal | 2,006 | 5·49 | 50 15 | 13·7 |
| Roots | 1,659 | 4·54 | 2 48 | 0·7 |
| Skim-milk | 972 | 2·66 | 1 94 | 0·5 |
| Total cost | ..... | ..... | 54 57 | 14·9 |
| Sow, Kentville Charlotte— | | | | |
| Meal | 2,062 | 5·64 | 51 55 | 14·1 |
| Roots | 1,575 | 4·31 | 2 36 | 0·6 |
| Skim-milk | 1,119 | 3·07 | 2 23 | 0·6 |
| Total cost | ..... | ..... | 56 14 | 15·3 |
| Sow, Kentville Rose— | | | | |
| Meal | 2,024 | 5·54 | 50 60 | 13·8 |
| Roots | 1,729 | 4·73 | 2 59 | 0·7 |
| Skim-milk | 1,026 | 2·81 | 2 05 | 0·6 |
| Total cost | ..... | ..... | 55 24 | 15·1 |
| *Sow, Kentville Primrose— | | | | |
| Meal | 1,025 | 5·69 | 25 62 | 14·2 |
| Roots | 917 | 5·09 | 1 37 | 0·8 |
| Skim-milk | 660 | 3·66 | 1 32 | 0·7 |
| Total cost | ..... | ..... | 28 31 | 15·7 |

*Feed computed for six months only, from January 1 to June 30.

## COST OF PORK PRODUCTION, 1925

Eleven Yorkshire pigs six weeks old in spring were fed 160 days more, and marketed in the fall. Sufficient fed was given throughout the period to keep them growing well, and the pork produced was of excellent quality. The following data were obtained.

COST OF PORK PRODUCTION, 1925

| | | |
|---|---|---|
| Value of 11 pigs six weeks old at $3 each | $ | 33 00 |
| 6,829 pounds skim-milk at 20c per cwt | | 13 65 |
| 3,850 pounds meal at $2.51 per cwt | | 96 63 |
| 1,264 pounds roots at 15c per cwt | | 1 89 |
| Total cost of 11 pigs to time of sale | | 145 17 |
| 1,213 pounds of pork sold at 14½c | | 175 88 |
| Profit over feed and cost of pigs | | 30 71 |
| Total weight of pigs at six weeks of age | lb. | 220 |
| Average weight of pigs at six weeks of age | lb. | 20 |
| Total weight of pigs at end of 160 days | lb. | 1,652 |
| Average weight of pigs at end of 160 days | lb. | 150·2 |
| Total gain in 160 days | lb. | 1,432 |
| Average gain in 160 days | lb. | 130·2 |
| Average gain per pig per day | lb. | ·81 |
| Dressed weight, percentage of live weight | % | 73·4 |
| Average cost per pound of gain | cents | 8 |
| Cost to produce one pound of pork | cents | 12 |

## SWINE FEEDING EXPERIMENT, 1924-25

The objects of this experiment were (1) to obtain data with regard to these different methods of feeding ground grain to pigs; in water slop; dry; soaked from one feed to the next and fed cold; and soaked from one fed to the next and fed warm; and (2) to ascertain which method of feeding is most economical for pork production.

Sixteen Yorkshire pigs ten weeks old were divided into four lots of four each, as equal in weight as possible. All lots were fed the same amount of feeds, and the skim-milk and roots were fed separate from the grain. All lots received water to drink as required. One pig on account of crippling had to be removed from Lot 4 at an early date in the test, and is, therefore, eliminated altogether in working up the results. At the close of the test two others were crippled, one each in pens 1 and 2. Pen 3 remained healthy throughout the period. The meal mixture was compound of 100 pounds each of wheat bran and ground oats, 200 pounds of middlings, 50 pounds of oilcake meal, and 15 pounds of charcoal, and cost $2.51 per cwt. The test extended from December 1, 1924 to March 4, 1925, a period of 94 days.

The following tables show the methods of feeding the various lots, and the results obtained. It will be noticed that Lot 3, which received the meal ration soaked from one feed to the next and fed cold, made the greatest gains.

SWINE FEEDING EXPERIMENT, 1924–25

| | | Lot 1 | Lot 2 | Lot 3 | Lot 4 |
|---|---|---|---|---|---|
| | | Meal fed dry | Meal in water slop, fed cold | Meal soaked from one feed to next and fed cold | Meal soaked from one feed to next and fed warm |
| Number in lot | | 4 | 4 | 4 | 3 |
| Meal eaten | lb. | 749 | 749 | 749 | 562 |
| Roots eaten | lb. | 431 | 431 | 431 | 323 |
| Skim-milk fed | lb. | 1,414 | 1,414 | 1,414 | 1,061 |
| Cost of feed for period | $ | 22·27 | 22·27 | 22·27 | 16·70 |
| Total weight at beginning of period | lb. | 135 | 144 | 154 | 105 |
| Total weight at end of period | lb. | 381 | 423 | 475 | 337 |
| Gain in 94 days | lb. | 246 | 279 | 321 | 232 |
| Average gain per pig | lb. | 61·5 | 69·7 | 80·2 | 77·3 |
| Average gain per pig per day | lb. | 0·65 | 0·74 | 0·85 | 0·82 |
| Cost of one pound of gain | cents | 9·0 | 8·0 | 6·9 | 7·2 |

# FIELD HUSBANDRY

## HAY

The acreage which was in flax in 1924 and seeded with this crop to clover and timothy yielded 7.37 tons, or 2.3 tons per acre, showing the feasibility of seeding down with this crop. Field "A", newly broken in 1923 and seeded with a nurse-crop of oats at that time, produced its second crop of hay in 1925, yielding 2.2 tons per acre. The marsh land ploughed in the spring of 1924 and seeded to grass with a nurse-crop of oats yielded 22.8 tons of hay of good quality, an average yield per acre of 3.5 tons. The hay crop on the whole was good, with alsike clover predominating. The total yield at this Station was 142.8 tons.

### A COMPARISON OF DIFFERENT FODDER CROPS

This work was continued in 1925 and included, as formerly, the growing of corn, sunflowers, O.P.V., turnips, and mangels on plots of equal size, all treated alike as to cultural and fertilizing methods, to determine the total fodder available from these crops and the relative cost of each.

The land on which this test was made in 1925 had been in hay for two years. It was manured in the fall at the rate of fifteen tons per acre and ploughed, and was well worked up with the disk harrow and cultivator in the spring. Fertilizer made up of 200 pounds of nitrate of soda, 300 pounds of acid phosphate, and 100 pounds of muriate of potash was applied at the rate of 500 pounds per acre, and the ground levelled with the smoothing harrow. All plots were seeded May 20. The mangels and turnips were grown in rows 2½ feet apart, and the corn and the sunflowers in rows 3 feet apart. The oats, peas and vetches mixture was made by mixing together 2½ bushels of oats, ½ bushel of peas, and ½ bushel of vetches. This was seeded broadcast at the rate of 3 bushels per acre. The corn and sunflowers were seeded with the grain-drill and the turnips and mangels with the garden drill.

The O.P.V. was harvested August 12; the corn and sunflowers, September 16; the mangels, October 15; and the turnips, October 29.

The following tables show the detailed costs of producing these crops. It will be noted that some extra expense was incurred in producing the turnip crop; owing to the prevalence of root-maggot they were thinned twice, the first time to only one inch apart. Manure is charged at the rate of $2 per ton; fertilizer at the cost here, plus expense of mixing and applying; and labour at the current rate of wages. The rental of land is based on a valuation of $50 per acre at 6 per cent interest.

COST OF GROWING ONE ACRE OF CORN, 1925

| | |
|---|---|
| Rental of land | $ 3 00 |
| Share of manure, 50 per cent of 15 tons at $2 | 15 00 |
| Fertilizer, 500 pounds | 9 50 |
| Use of machinery | 3 00 |
| Seed, 30 pounds at 5 cents | 1 50 |
| Ploughing, 8 hours at 48 cents | 3 84 |
| Disking and cultivating, 4 hours at 48 cents | 1 92 |
| Seeding, 1½ hours at 48 cents | 0 72 |
| Cultivating, 10 hours at 48 cents | 4 80 |
| Hoeing, 20 hours at 28 cents | 5 60 |
| Cutting, 1½ hours at 48 cents | 0 72 |
| Twine, 3 pounds at 18½ cents | 0 56 |
| Loading and hauling to silo, 3½ hours at $1.04 | 3 64 |
| Cutting and storing in silo, 3½ hours at $1.68 | 5 88 |
| Kerosene and oil | 0 85 |
| Total cost per acre | $60 53 |

Yield per acre, 23.18 tons.
Cost per ton, $2.61.

COST OF GROWING ONE ACRE OF SUNFLOWERS, 1925

| | |
|---|---|
| Rental of land | $ 3 00 |
| Share of manure, 50 per cent of 15 tons at $2 | 15 00 |
| Fertilizer, 500 pounds | 9 50 |
| Use of machinery | 3 00 |
| Seed, 15 pounds at 8 cents | 1 20 |
| Ploughing, 8 hours at 48 cents | 3 84 |
| Disking and cultivating, 4 hours at 48 cents | 1 92 |
| Seeding, 1½ hours at 48 cents | 0 72 |
| Cultivating, 10 hours at 48 cents; 6 hours at 38 cents | 7 08 |
| Hoeing and thinning, 40 hours at 28 cents | 11 20 |
| Cutting, 1½ hours at 48 cents | 0 72 |
| Loading and hauling to silo, 5½ hours at $1.04 | 5 72 |
| Cutting and storing in silo, 5½ hours at $1.68 | 9 24 |
| Kerosene and oil | 1 45 |
| Total cost per acre | $73 59 |

Yield per acre, 27.5 tons.
Cost per ton, $2.67.

COST OF GROWING ONE ACRE OF TURNIPS, 1925

| | |
|---|---|
| Rental of land | $ 3 00 |
| Share of manure, 50 per cent of 15 tons at $2 | 15 00 |
| Fertilizer, 500 pounds | 9 50 |
| Use of machinery | 3 00 |
| Seed, 2 pounds at 50 cents | 1 00 |
| Ploughing, 8 hours at 48 cents | 3 84 |
| Disking and cultivating, 5 hours at 48 cents | 2 40 |
| Seeding with garden drill, 3 hours at 28 cents | 0 84 |
| Cultivating, 15 hours at 38 cents | 5 70 |
| Hoeing and thinning to one inch apart, 20 hours at 28 cents | 5 60 |
| Hoeing and thinning second time, 60 hours at 28 cents | 16 80 |
| Pulling and topping, 30 hours at 28 cents | 8 40 |
| Loading, hauling and storing, 12 hours at 48 cents | 5 76 |
| Total cost per acre | $80 84 |

Yield per acre, 694.8 bushels, or 17.37 tons.
Cost per bushel, 11.6 cents.
Cost per ton, $4.65.

COST OF GROWING ONE ACRE OF MANGELS, 1925

| | |
|---|---|
| Rental of land | $ 3 00 |
| Share of manure, 50 per cent of 15 tons at $2 | 15 00 |
| Fertilizer, 500 pounds | 9 50 |
| Seed, 12 pounds at 25 cents | 3 00 |
| Use of machinery | 3 00 |
| Ploughing, 8 hours at 48 cents | 3 84 |
| Disking and cultivating, 5 hours at 48 cents | 2 40 |
| Seeding with garden drill, 3 hours at 28 cents | 0 84 |
| Cultivating, 15 hours at 38 cents | 5 70 |
| Hoeing and thinning, 68 hours at 28 cents | 19 04 |
| Pulling and topping, 23 hours at 28 cents | 6 44 |
| Loading, hauling, and storing, 12 hours at 48 cents | 5 76 |
| Total cost per acre | $77 52 |

Yield per acre, 1,022.5 bushels, or 25.56 tons.
Cost per bushel, 7.6 cents.
Cost per ton, $3.03.

COST OF GROWING ONE ACRE OF OATS, PEAS, VETCHES, 1925

| | |
|---|---|
| Rental of land | $ 3 00 |
| Share of manure, 50 per cent of 15 tons at $2 | 15 00 |
| Fertilizer, 500 pounds | 9 50 |
| Use of machinery | 3 00 |
| Seed, 2½ bushels oats at 80 cents; ½ bushel peas at $2.85; ½ bushel vetches at $3.10 | 4 46 |
| Disking and cultivating, 3 hours at 48 cents | 1 44 |
| Seeding, 1 hour at 48 cents | 0 48 |
| Cutting, 1½ hours at 48 cents | 0 72 |
| Loading, hauling and unloading, 5 hours at 48 cents | 2 40 |
| Cutting and storing in silo, 2¾ hours at $1 | 2 75 |
| Kerosene and oil | 0 73 |
| Total cost per acre | $43 48 |

Yield per acre, 10.3 tons.
Cost per ton, $4.21.

SUMMARY—COMPARISON OF DIFFERENT FODDER CROPS

| Crop | Yield per acre | | | | Cost per acre | | | | Average yield per acre | Average cost per acre | Average cost per ton |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1922 | 1923 | 1924 | 1925 | 1922 | 1923 | 1924 | 1925 | | | |
| | tons | tons | tons | tons | $ c. | $ c. | $ c. | $ c. | tons | $ cts. | $ cts. |
| Corn | 19·92 | 14·90 | 13·31 | 23·18 | 60 78 | 45 32 | 56 57 | 60 53 | 17·83 | 55 80 | 3 13 |
| Sunflowers | 20·80 | 19·80 | 18·13 | 27·50 | 63 73 | 53 91 | 69 70 | 73 59 | 21·56 | 65 23 | 3 02 |
| Turnips | 21·28 | 19·14 | 13·41 | 17·37 | 69 34 | 58 25 | 69 34 | 80 84 | 17·80 | 69 44 | 3 90 |
| Mangels | 17·59 | 16·47 | 19·62 | 25·56 | 69 89 | 69 60 | 72 08 | 77 52 | 19·81 | 72 27 | 3 65 |
| O.P.V | 5·05 | 8·26 | 4·95 | 10·30 | 47 37 | 30 44 | 41 46 | 43 48 | 7·14 | 40 69 | 5 70 |

## OTHER COSTS OF PRODUCTION

The following data show the cost of one acre of clover hay and one acre of oats in 1925:—

COST OF ONE ACRE OF CLOVER HAY, 1925

| | |
|---|---|
| Rental of land | $ 3 00 |
| Share of manure, 20 per cent of 15 tons at $2 | 6 00 |
| Seed: clover and timothy | 4 18 |
| Use of machinery | 3 00 |
| Cutting, 1½ hours at 48 cents | 0 72 |
| Tedding, ¾ hours at 48 cents | 0 36 |
| Raking, ¾ hours at 38 cents | 0 29 |
| Coiling, 2¼ hours at 28 cents | 0 63 |
| Shaking out and recoiling, 4½ hours at 28 cents | 1 26 |
| Loading, hauling and unloading, 5 hours at $1.04 | 5 20 |
| Total cost per acre | $24 64 |

Yield per acre, 2.5 tons.
Cost per ton, $9.85.
Harvesting cost per ton, $4.58.

COST OF GROWING ONE ACRE OF OATS, 1925

| | |
|---|---|
| Rental of land | $ 3 00 |
| Share of manure, 30 per cent of 15 tons at $2 | 9 00 |
| Seed, 3 bushels at $1 | 3 00 |
| Ploughing, 8 hours at 48 cents | 3 84 |
| Use of machinery | 3 00 |
| Disking with tractor, 1 hour at $1 | 1 00 |
| Preparing seed bed, 1½ hours at 48 cents | 0 72 |
| Seeding and smoothing, 3 hours at 48 cents | 1 44 |
| Cutting, 1½ hours at 48 cents | 0 72 |
| Twine, 3 pounds at 18½ cents | 0 56 |
| Stooking, 1½ hours at 28 cents | 0 42 |
| Loading and unloading, 2 hours at 80 cents | 1 60 |
| Threshing, 7 hours at 28 cents | 1 96 |
| Kerosene and oil | 0 50 |
| Total cost per acre | $30 76 |

Yield per acre, oats, 63.9 bushels.
Yield per acre, straw, 1.56 tons.
Cost of oats per bushel (after deducting value of straw at $6 per ton), 33.1 cents.

## YIELD OF OATS FOLLOWING DIFFERENT FODDER CROPS

Victory oats were seeded May 12 on land on which different fodder crops had been grown in 1924. The land had been ploughed in the fall after the crop was harvested, and was worked up in the spring by disking and cultivating, after which the grain was seeded. These areas were prepared and fertilized alike in 1924, and received no additional fertilization in 1925. The crop was harvested August 17, with yields from the different areas as given below.

YIELD OF OATS FOLLOWING DIFFERENT FODDER CROPS

| Crop in 1924 | Yield per acre | |
|---|---|---|
| | Grain | Straw |
| | bush. | tons |
| Mangels | 65·0 | 1·61 |
| Turnips | 71·0 | 1·68 |
| Sunflowers | 61·2 | 1·43 |
| Corn | 63·8 | 1·50 |
| O. P. V. | 58·5 | 1·60 |

### CROP ROTATIONS

Two-, three-, four-, and five-year rotations are being tested, and incorporated with these are various cultural and fertilizer treatments. The results are tabulated annually on cards devised for the purpose, but to be of value to the farmer an accumulation of data is necessary. Costs of all operations, value of product, and profit or loss are recorded and it is thought by the careful following up of this work to arrive at conclusions of value.

### CLEARING LAND

An area of about 3 acres was cleared and broken in the spring of 1925. The growth of bush on this land had been chopped in 1923 and 1924, and it was possible to start pulling stumps April 9. Ploughing with the breaker plough, using two yoke of oxen, was started April 11, and the ploughing and stumping were completed April 23. Stumps and roots were piled and burned, and harrowing with the heavy disk harrow drawn by the tractor was started May 27. A fairly good seed-bed was ready by May 29. A fertilizer made by mixing 300 pounds of nitrate of soda, 600 pounds of acid phosphate, 100 pounds of muriate of potash, and 100 pounds of sulphate of ammonia was applied at the rate of 600 pounds per acre to the whole area. It was then seeded to Victory oats and harrowed May 30. This area was harvested September 2, and yielded 109 bushels of grain, or slightly over 30 bushels per acre. This land was again ploughed in the fall of 1925 and will provide a much needed additional area for experimental work.

## HORTICULTURE

### THE SEASON

The early winter of 1924-25 was characterized by steady cold weather. December's mean temperature was 2.01 degrees lower, and January's 6.29 degrees lower than the average for these periods for the previous eleven years. The balance of the winter was noteworthy for its continued mild weather. The covering of snow was gone from the fields by February 14, and remained thus, except for short intervals, for the rest of the winter. The rapid and extreme changes in temperature destroyed many cherry blossoms, while continued thawing and freezing of the ground during late winter and early spring resulted in much winter-killing and root injury to the strawberry crop.

The spring was about a week early. Orchard ploughing was possible by April 17, although orchard cultivation was not general until May 2. Dormant sprays were applied to plums and cherries on April 16. The first apple spray was applied on May 8. The blooming periods for the various fruits were: cherries, May 20-June 5; plums, May 16-June 1; apples, May 23-June 8. Apples bloomed heavily throughout the valley. Blossom Sunday fell on June 7.

Favourable weather for the pollination and fertilization of the apple blossoms prevailed during this period, and a good set of fruit resulted. Heavy discharges of apple-scab spores, favoured by weather conditions during the early spray periods, were conducive to an abnormal development of scab and a heavy drop of newly-formed fruits. Weather conditions during the early autumn were not favourable to the proper development of high-class or mature fruit. The season was practically normal from April to August inclusive, but September shows a mean average temperature 2.62 degrees lower, with 47.64 less hours of sunshine, and October a mean average temperature 7.15 degrees lower with slightly less sunshine, than the averages for these periods during the previous eleven years.

## SMALL FRUITS

### STRAWBERRIES

The strawberry crop was very light. An open winter from early February, with alternate freezing and thawing of the surface soil, resulted in winter injury which very adversely affected the crop.

### RASPBERRIES

Three varieties of red raspberries were planted in the spring of 1922. These were set in rows 6 feet apart, the plants 1½ feet apart in the rows. New canes were allowed to form a hedgerow. Pruning is practised in the spring when all old canes and the weaker new ones are removed. The following are the yields per acre since 1923.

RASPBERRIES—VARIETIES

| Variety | 1923 | 1924 | 1925 | Total yield since planting |
|---|---|---|---|---|
| | qts. | qts. | qts. | qts. |
| Newman No. 23 | 539·4 | 1,512·5 | 3,819·0 | 5,870·9 |
| Newman No. 20 | 506·7 | 899·9 | 2,510·7 | 3,917·3 |
| Herbert | 704·0 | 745·2 | 2,398·0 | 3,847·2 |

### BLACKBERRIES AND DEWBERRIES

Eight varieties of blackberries and one of dewberries were planted in the spring of 1922: Eldorado, West Kittatinny, Taylor, Snyder, McDonald, Erie, Blowers, and Rathbeim blackberries, and Lucretia dewberry. With the exception of McDonald these varieties are hardy. Eldorado and the Lucretia dewberry are the most productive varieties.

### RED CURRANTS

The varieties Fay's Prolific and Perfection are grown. These varieties were planted in the spring of 1921. The 1925 crop was practically a failure due to frost injury at the time of bloom. The total yield per acre since planting is: Fay's Prolific, 5,556.6 quarts; Perfection, 4,092.8 quarts.

### BLACK CURRANTS

Three varieties are under test at this Station. These were set out in 1921. The 1925 crop was a failure, frost on the 19th of May destroying the blossoms. The yields per acre since planting are: Black Victoria, 5,462 quarts; Saunders, 2,381.4 quarts; Boskoop Giant, 2,326.7 quarts.

### GOOSEBERRIES

Two American varieties, Downing and Josselyn (Red Jacket) were started in a plantation in 1921. The bushes were set 5 feet by 5 feet apart. They have become well established and have fruited per acre as follows:—

| Variety | 1922 | 1923 | 1924 | 1925 | Total yield |
|---|---|---|---|---|---|
| | qt. | qt. | qt. | qt. | qt. |
| Downing | 1,452·0 | 7,514·1 | 9,164·0 | 3,158·0 | 21,288·1 |
| Josselyn | 1,343·1 | 4,846·0 | 3,630·0 | 3,920·4 | 13,739·5 |

## TREE FRUITS

### PLUMS

Plums were a heavy crop generally throughout the valley. Heavy importations of plums from Ontario glutted our local markets, and resulted in many of our local growers leaving their plum crop unpicked. The fruit at this Station was particularly free from brown rot and other diseases. The following sprays were applied to this orchard: April 16, dormant 1-10 lime-sulphur; June 20, 1-50 lime-sulphur; July 9, wetable sulphur; and July 30, wetable sulphur.

Burbank has, with the exception of 1924, been the highest-yielding variety at this Station, and is recommended for commercial planting particularly. Other good varieties for both domestic and commercial planting are Quackenboss, Miller Superb, Monarch, Bradshaw, Diamond, and Reine Claude, giving a fruiting season from the latter part of August to the first week in October and including red, yellow, green, and purple-skinned varieties.

### APPLES ON DWARFING STOCK

Twelve trees each of Gravenstein, Wealthy, and McIntosh, budded on both Paradise and Doucin dwarfing stocks, were set out 10 by 20 feet apart in 1914 in rather poor soil. The Paradise stock has more dwarfing effect than the Doucin, as will be seen from the table, so that trees on this stock may be expected to be smaller and give smaller yields than those on Doucin. Neither stock, because of the greatly reduced yields, is recommended for commercial planting, and is advised for the home garden only if the space is very limited.

APPLES ON DWARFING STOCK

| Variety | Kind of stock | Number of trees planted | Number of trees alive, 1925 | Growth of trees | Condition of trees | Average diameter of trees | Total yield, single tree, since planting |
|---|---|---|---|---|---|---|---|
| | | | | | | in. | pks. |
| Gravenstein | Paradise | 12 | 11 | Fair | Fair | 3·84 | 13·82 |
| Gravenstein | Doucin | 12 | 12 | Good | Good | 3·19 | 13·17 |
| Wealthy | Paradise | 12 | 8 | Strong | Fair | 3·33 | 21·06 |
| Wealthy | Doucin | 12 | 12 | Strong | Good | 3·83 | 31·83 |
| McIntosh | Paradise | 12 | 11 | Strong | Strong | 3·72 | 21·00 |
| McIntosh | Doucin | 12 | 12 | Strong | Strong | 4·29 | 27·91 |

## COMPARATIVE TIME OF BLOOM AND YIELDS OF STANDARD COMMERCIAL VARIETIES OF APPLES PLANTED 1912

All commercial varieties under test at this Station bore a good crop in 1925, except Gravenstein, Blenheim, Ribston, and R. I. Greening, which were in their "off" year. The yield of fruit from the apple orchards was approximately 3,800 barrels. The fruit was below the average in size, colour and quality, due largely to unfavourable weather conditions, particularly during the early stages, when the weather favoured the development of fungous diseases, and again in the autumn, when both the sunshine and temperature were below normal. Picking was completed by October 27. The table below gives the yield of each variety, and shows the average number of days after the full bloom of Crimson Beauty, the earliest-blooming variety, to the full bloom of the other varieties.

COMPARATIVE TIME OF BLOOM AND YIELDS OF STANDARD COMMERCIAL VARIETIES OF APPLES PLANTED 1912

| Variety | Number of trees fruiting | Average number of days after full of bloom of Crimson Beauty to full bloom of variety | Lowest yield per tree | Highest yield per tree | Total yield since planting in 1912 | Total yield per tree since planting | |
|---|---|---|---|---|---|---|---|
| | | | pk. | pk. | pk. | pk. | brl. |
| Baldwin | 40 | 6 | 12·75 | 75·25 | 1,588·25 | 39·70 | 3·31 |
| Baxter | 6 | 5 | 18·00 | 41·75 | 168·50 | 28·08 | 2·34 |
| Ben Davis | 18 | 6 | 60·25 | 102·50 | 1,500·75 | 83·37 | 6·95 |
| Bishop Pippin | 19 | 6 | 14·00 | 60·00 | 671·74 | 35·36 | 2·95 |
| Blenheim | 37 | 5 | 1·50 | 68·50 | 972·58 | 26·28 | 2·19 |
| Cox. Orange | 10 | 5 | 16·50 | 65·50 | 449·75 | 44·97 | 3·75 |
| Crimson Beauty | 16 | ..... | 21·00 | 67·00 | 688·87 | 43·05 | 3·59 |
| Duchess | 16 | 2 | 35·00 | 73·00 | 871·75 | 54·48 | 4·54 |
| Dudley (North Star) | 3 | 4 | 27·50 | 99·00 | 186·00 | 62·00 | 5·17 |
| Fallawater | 21 | 6 | 12·00 | 74·50 | 743·50 | 40·17 | 3·35 |
| Fameuse | 20 | 3 | 36·50 | 130·00 | 1,949·00 | 97·45 | 8·12 |
| Gano | 16 | 6 | 46·50 | 137·00 | 1,402,08 | 87·63 | 7·30 |
| Golden Russet | 16 | 4 | 13·75 | 49·50 | 533·00 | 33·31 | 2·78 |
| Gravenstein | 19 | 1 | 8·50 | 141·50 | 1,297·50 | 68·29 | 5·69 |
| Banks Gravenstein | 18 | 1 | 12·75 | 92·00 | 936·57 | 52·03 | 4·33 |
| R. I. Greening | 40 | 5 | 22·75 | 95·50 | 1,984·08 | 49·60 | 4·13 |
| Hubbardson | 8 | 4 | 44·50 | 107·75 | 479·25 | 59·91 | 4·99 |
| King of Tompkins | 30 | 4 | 1·50 | 66·25 | 1,006·83 | 33·56 | 2·80 |
| McIntosh | 20 | 5 | 19·75 | 107·75 | 1,212·00 | 60·60 | 5·05 |
| McMahon | 6 | ..... | 41·50 | 107·50 | 390·75 | 65·12 | 5·43 |
| Milwaukee | 19 | 5 | 71·75 | 151·00 | 2,015·00 | 106·05 | 8·84 |
| Nonpariel | 15 | 5 | 10·50 | 53·00 | 377·00 | 25·13 | 2·09 |
| Northern Spy | 39 | 8 | 3·50 | 80·25 | 1,048·00 | 26·87 | 2·24 |
| Ontario | 19 | 4 | 10·00 | 112·75 | 1,083·00 | 57·00 | 4·75 |
| Red Astrachan | 6 | 3 | 21·00 | 40·00 | 190·00 | 31·66 | 2·64 |
| Ribston | 35 | 5 | 10·50 | 85·00 | 1,938·73 | 55·39 | 4·62 |
| Rome Beauty | 17 | 8 | 50·00 | 125·75 | 1,273·25 | 74·89 | 6·24 |
| Stark | 16 | 4 | 27·83 | 114·50 | 1,231·91 | 76·99 | 6·42 |
| Tolman Sweet | 24 | 6 | 29·00 | 88·00 | 1,321·25 | 55·05 | 4·59 |
| Wagener | 37 | 3 | 13·50 | 98·50 | 2,167·91 | 58·59 | 4·88 |
| Wealthy | 22 | 3 | 44·00 | 112·25 | 1,775·00 | 80·68 | 6·72 |
| Wellington | 20 | 6 | 30·50 | 102·00 | 1,245·00 | 62·25 | 5·19 |
| Wolf River | 10 | 6 | 5·25 | 88·00 | 530·00 | 53·00 | 4·42 |
| Yellow Transparent | 19 | 2 | 33·50 | 74·75 | 964·50 | 51·29 | 4·27 |

## COST OF GROWING AN INTER-CROPPED APPLE ORCHARD

This orchard was set out in 1913, the rows being forty feet apart, and the standard trees (McIntosh in one section, and Gravenstein in another) forty feet apart in the rows, with Wagener fillers between, making a totol of fifty-four trees per acre. The soil was a light, sandy loam of comparatively low fertility. A three-year rotation of potatoes, grain, and clover hay has been followed on the land not taken up by the growing trees.

Some fifty plots in this orchard have been fertilized in various ways in an orchard fertilizer experiment. The data from three distinct methods of fertilization, those most representative of general orchard fertilization methods in the Annapolis valley, are given in the tables following. The results from plots 1 and 16, duplicates, are averaged in the tables. These receive 650 pounds of commercial fertilizer per acre, (made up of 150 pounds of nitrate of soda, 350 pounds of acid phosphate, and 150 pounds of muriate of potash), applied broadcast twice during each rotation to the potato and the grain crops. Plot 39 is also fertilized twice during each rotation, at the rate of 800 pounds per acre (150 pounds of nitrate of soda, 500 pounds of basic slag, and 150 pounds of muriate of potash). Plot 25 receives 15 tons of barnyard manure in each rotation, applied to the potato crop.

In calculating the costs, the items of labour, fertilizers, spraying materials, seeds, etc., are charged at the actual prices prevailing during the year they were used.

The following table gives various data for each year, and is followed by summaries for each plot, and this by a summary of the costs and profits for the three plots. It will be noted that the first method of fertilization (plots 1 and 16, averaged) had a credit balance at the end of the eighth year, and that from the tenth year the orchard revenue returned a profit over the orchard charges; that the second method (plot 39) had a credit balance at the end of the seventh year, and that from that time the revenue from the orchard was greater than the orchard charges; and that the third method (plot 25) had a credit balance at the end of the seventh year, and the revenue from the orchard was greater than the orchard charges from the eleventh year on.

It will be seen that the average production of Wagener apples from plots 1 and 16 was 69.2 barrels per acre, with a total value of $147.65; from plot 25, 53.5 barrels with a value of $108.77; and from plot 39, 69.5 barrels with a value of $150.78. The standard trees in plots 1 and 16 and plot 25, it will be noted, are Gravensteins, and these two plots may be compared in production. The average production of plots 1 and 16 was 39.7 barrels per acre, having a value of $89.08; and of plot 25, 45.4 barrels, having a value of $105.96. The increase in revenue on plot 39 comes from the large yield of McIntosh Red on this plot, the total production being 235 barrels per acre, having a value of $600.12. It will be seen therefore that in total production the average of plots 1 and 16 and the production from plot 25 only are comparable.

COST OF GROWING AN INTER-CROPPED APPLE ORCHARD

| 1913 *Items of Cost* | Plots 1 and 16 | Plot 39 | Plot 25 |
|---|---|---|---|
| | $ cts. | $ cts. | $ cts. |
| Land, 1 acre at $80 | 80 00 | 80 00 | 80 00 |
| Ploughing, 1912, 8 1/11 hours; spring, 1913, 8 1/11 hours, at 34 cents | 5 50 | 5 50 | 5 50 |
| Harrowing, disk, twice, 3 hours; smooth, ½ hour, at 34 cents | 1 19 | 1 19 | 1 19 |
| Trees, 54 at 25 cents; planting at 13 cents | 20 52 | 20 52 | 20 52 |
| Pruning, 3 hours at 18 cents; spraying, twice, 3 hours at 45 cents; 22 gallons spray at 1 cent | 2 11 | 2 11 | 2 11 |
| Fertilizer | 11 00 | 13 50 | 30 00 |
| Mixing and applying fertilizer, at 18 cents per hour | 0 90 | 0 90 | 1 80 |
| Potatoes: production cost of 4/5 acre | 53 27 | 53 27 | 53 27 |
| Total cost | 174 49 | 176 99 | 194 39 |
| *Credit* | | | |
| Potatoes, marketable, at 50 cents per bushel | 83 30 | 98 80 | 97 40 |
| Potatoes, unmarketable at 10 cents per bushel | 2 50 | 3 46 | 3 40 |
| Total credit, potatoes, marketable and unmarketable | 85 80 | 102 26 | 100 80 |
| Balance, first year, debit, excess of cost over revenue | 88 69 | 74 73 | 93 59 |

COST OF GROWING AN INTER-CROPPED APPLE ORCHARD—*Continued*

| | Plots 1 and 16 | Plot 30 | Plot 25 |
|---|---|---|---|
| 1914 *Items of Cost* | $ cts. | $ cts. | $ cts. |
| Pruning and removing brush, 6 5/9 hours at 18 cents; spraying, 3½ hours at 45 cents | 2 76 | 2 76 | 2 76 |
| Spray, 25 gallons at 1 cent; cultivating, 2 hours at 27 cents; hoeing trees, 2½ hours at 18 cents | 1 24 | 1 24 | 1 24 |
| Fertilizers (same prices as in 1913) | 11 00 | 13 50 | |
| Applying and mixing fertilizer, 5 hours at 18 cents | 0 90 | 0 90 | |
| Oats: production cost of 4/5 acres, including threshing | 15 85 | 16 45 | 16 40 |
| Total cost | 31 75 | 34 85 | 20 40 |
| *Credit* | | | |
| Oats, at 70 cents per bushel | 34 72 | 41 16 | 40 60 |
| Straw, at $8 per ton | 7 51 | 8 86 | 8 73 |
| Total credit, oats and straw | 42 23 | 50 02 | 49 33 |
| Balance, credit, on second year's operations | 10 48 | 15 17 | 28 93 |
| 1915 *Items of cost* | | | |
| Pruning and removing brush, 4½ hours at 18 cents | 0 81 | 0 81 | 0 81 |
| Spraying, twice, 3 2/3 hours at 45 cents; spray material, 30 gallons at 1 cent | 1 95 | 1 95 | 1 95 |
| Ploughing around trees, 1 hour at 34 cents; cultivating, 3 hours at 27 cents; hoeing, 1 hour at 18 cents | 1 33 | 1 33 | 1 33 |
| Hay: production cost of 4/5 acre | 6 34 | 6 34 | 6 34 |
| Total cost | 10 43 | 10 43 | 10 43 |
| *Credit* | | | |
| Hay at $12 per ton | 18 96 | 22 49 | 22 16 |
| Balance, credit, on third year's operations | 8 53 | 12 06 | 11 73 |
| 1916 *Items of Cost* | | | |
| Pruning and removing brush, 5 hours at 18 cents | 0 90 | 0 90 | 0 90 |
| Spraying, twice, 3½ hours at 45 cents; spray material, 37 gallons at 1 cent | 1 95 | 1 95 | 1 95 |
| Cultivating, 3 hours at 27 cents; hoeing, 1½ hours at 18 cents | 1 08 | 1 08 | 1 08 |
| Fertilizer | 12 17 | 22 67 | 30 00 |
| Mixing and applying fertilizers | 2 00 | 3 00 | 3 40 |
| Potatoes: production cost of 4/5 acre | 70 73 | 70 73 | 70 73 |
| Total cost | 88 83 | 100 33 | 108 06 |
| *Credit* | | | |
| Potatoes, marketable, at 60 cents per bushel | 90 96 | 101 28 | 106 08 |
| Potatoes, unmarketable, at 10 cents per bushel | 1 28 | 2 32 | 2 48 |
| Total, credit, potatoes, marketable and unmarketable | 92 24 | 103 60 | 108 56 |
| Balance, credit, on this year's operations | 3 41 | 3 27 | 0 50 |
| 1917 *Items of Cost* | | | |
| Pruning and removing brush, 5 hours at 20 cents | 1 00 | 1 00 | 1 00 |
| Cultivating trees, 3 hours at 29 cents; hoeing, 2 hours at 20 cents | 1 27 | 1 27 | 1 27 |
| Spraying, twice, 3½ hours at 50 cents; spray material, 40 gallons at 1 cent | 2 15 | 2 15 | 2 15 |
| Fertilizer | 14 51 | 17 13 | |
| Mixing and applying fertilizers, 10 hours at 20 cents | 2 00 | 2 00 | |
| Grain: production cost, including threshing, of 4/5 acre | 19 12 | 19 29 | 18 90 |
| Total cost | 40 05 | 42 84 | 23 32 |
| *Credit* | | | |
| Wheat, at $5 per cwt | 29 60 | 36 00 | 21 60 |
| Straw, at $8 per ton | 4 90 | 10 56 | 2 90 |
| Total credit, wheat and straw | 34 50 | 46 56 | 24 50 |
| Balance, credit, on this year's operations | −5 55 | 3 72 | 1 18 |

COST OF GROWING AN INTER-CROPPED APPLE ORCHARD—*Continued*

| | Plots 1 and 16 | Plot 39 | Plot 25 |
|---|---|---|---|
| | $ cts. | $ cts. | $ cts. |
| 1918 *Items of Cost* | | | |
| Pruning and removing brush, 5 hours at 25 cents | 1 25 | 1 25 | 1 25 |
| Ploughing, 1½ hours at 47 cents; cultivating, 3 hours at 37 cents; hoeing, 1 hour at 25 cents | 2 06 | 2 06 | 2 06 |
| Spraying, twice, 3 hours at 52 cents; spray material 50 gallons at 1¼ cents | 2 19 | 2 19 | 2 19 |
| Hay: production cost of 4/5 acre | 9 69 | 9 69 | 9 69 |
| Total cost | 15 19 | 15 19 | 15 19 |
| *Credit* | | | |
| Hay, at $26 per ton | 11 96 | 43 20 | 16 38 |
| Balance, credit, on this year's operations | −3 23 | 28 01 | 1 19 |
| 1919 *Items of Cost* | | | |
| Pruning and removing brush, 6 hours at 27½ cents | 1 65 | 1 65 | 1 65 |
| Cultivating trees, 2 hours at 50 cents; hoeing, 2 hours at 27½ cents | 1 55 | 1 55 | 1 55 |
| Spraying, twice, 3 hours at 57½ cents; spray material, 50 gallons at 1¼ cents | 2 35 | 2 35 | 2 35 |
| Fertilizers | 16 70 | 26 10 | 30 00 |
| Mixing and applying | 2 50 | 3 50 | 5 00 |
| Potatoes: production cost of ⅘ acre | 86 99 | 86 99 | 86 99 |
| Total cost | 111·74 | 122·14 | 127·54 |
| *Credit* | | | |
| Potatoes, marketable, at $1 per bushel | 184 88 | 210 56 | 196 88 |
| Potatoes, unmarketable, at 15 cents per bushel | 1 35 | 1 75 | 3 03 |
| Fruit | ..... | 12 00 | |
| Total credit, potatoes, marketable and unmarketable, and fruit | 186 23 | 224 31 | 199 91 |
| Balance, credit, on this year's operations | 74 49 | 102 17 | 72 37 |
| 1920 *Items of Cost* | | | |
| Pruning and removing brush, 5 hours at 35 cents | 1 75 | 1 75 | 1 75 |
| Cultivating trees, 2 hours at 55 cents; hoeing, 2 hours at 35 cents | 1 80 | 1 80 | 1 80 |
| Spraying, 2½ hours at 90 cents; spray material, 60 gallons at 1½ cents; power sprayer, 2½ hours at 20 cents | 3 50 | 3 50 | 3 50 |
| Fertilizer | 17 01 | 18 41 | |
| Mixing and applying fertilizer, 10 hours at 35 cents | 3 50 | 3 50 | |
| Wheat: production cost, including threshing, of ⅘ acre | 21 02 | 21 59 | 20 90 |
| Barrels at 80 cents: picking at 15 cents; hauling, at 4 cents | 3 96 | 14 36 | 1 49 |
| Total cost | 52 54 | 64 91 | 29 44 |
| *Credit* | | | |
| Wheat, at $4.10 per cwt | 36 29 | 50 43 | 33 21 |
| Straw, at $11 per ton | 9 87 | 11 39 | 6 20 |
| Fruit, at $3 per barrel, tree run | 12 00 | 43 50 | 4 50 |
| Total credit, wheat, straw, and fruit | 58 16 | 105 32 | 43 91 |
| Balance, credit, on this year's operations | 5 62 | 40 41 | 14 47 |
| 1921 *Items of Cost* | | | |
| Pruning and removing brush, 6 hours at 30 cents | 1 80 | 1 80 | 1 80 |
| Ploughing, 1½ hours at 40 cents; cultivating, 3 hours at 40 cents; hoeing trees, 1 hour at 30 cents | 2 10 | 2 10 | 2 10 |
| Spraying, 2 2/3 hours at 80 cents, 2 2/3 hours at 20 cents, spray material, 136 gallons at 1½ cents | 4 33 | 4 33 | 4 33 |
| Hay: production cost of ⅘ acre | 11 78 | 11 78 | 11 78 |
| Barrels at 75 cents; picking at 13 cents; hauling, at 4 cents | 3 68 | 8 28 | 5 52 |
| Total cost | 23 69 | 28 29 | 25 53 |

COST OF GROWING AN INTER-CROPPED APPLE ORCHARD—*Continued*

| | Plots 1 and 16 | Plot 39 | Plot 25 |
|---|---|---|---|
| | $ cts. | $ cts. | $ cts. |
| *Credit* | | | |
| Hay at $18 per ton | 13 50 | 15 39 | 9 24 |
| Fruit at $2.75 per barrel, tree run | 11 00 | 24 75 | 16 50 |
| Total credit, hay and fruit | 24 50 | 40 14 | 25 74 |
| Balance, credit, on this year's operations | 0 81 | 11 85 | 0 21 |
| 1922 *Items of Cost* | | | |
| Pruning, 5½ hours at 27½ cents; hauling brush, 3/5 hours at 50 cents | 1 81 | 1 81 | 1 81 |
| Ploughing, 1½ hours at 40 cents; cultivating, 3 hours at 40 cents | 1 80 | 1 80 | 1 80 |
| Spraying, 2¾ hours at 77½ cents; machine, 2¾ hours at 20 cents; material, 184 gallons at 1 1/8 cents | 4 75 | 4 75 | 4 75 |
| Fertilizers | 10 84 | 13 43 | 30 00 |
| Mixing and applying fertilizer | 2 20 | 2 20 | 5 00 |
| Potatoes: production costs of 3/5 acre | 59 11 | 59 11 | 59 11 |
| Barrels at 45 cents; picking, 12 cents; hauling, 4 cents; packing, 25 cents | 13 76 | 48 16 | 9 46 |
| Total cost | 94 27 | 131 26 | 111 93 |
| *Credit* | | | |
| Potatoes, marketable, at $1 per bushel | 175 20 | 180 60 | 184 50 |
| Potatoes, unmarketable, at 15 cents per bushel | 0 47 | 1 94 | 1 89 |
| Apples | 30 07 | 151 26 | 21 09 |
| Total credit, potatoes and apples | 205 74 | 333 80 | 207 48 |
| Balance, credit, on this year's operations | 111 47 | 202 54 | 95 55 |
| 1923 *Items of Cost* | | | |
| Pruning, 5 hours at 27½ cents; hauling brush, 4/5 hours at 50 cents | 1 78 | 1 78 | 1 78 |
| Ploughing, 1½ hours at 40 cents; cultivating, 3 hours at 40 cents | 1 80 | 1 80 | 1 80 |
| Four sprays, 3 hours at 77½ cents; material, 231 gallons at 1¼ cents; gasoline, ½ gallon at 28 cents; machine, 3 hours at 17 cents | 5 86 | 5 86 | 5 86 |
| Fertilizer | 10 36 | 23 21 | |
| Mixing and applying fertilizer | 2 20 | 3 03 | |
| Oats: production cost, including threshing, 3/5 acre | 15 82 | 15 88 | 15 13 |
| Fruit: picking at 12 cents; barrels at 45 cents; packing at 25 cents; hauling at 3·2 cents | 19 60 | 27 26 | 19 94 |
| Total cost | 57 42 | 78 82 | 44 51 |
| *Credit* | | | |
| Grain at 60 cents per bushel | 23 68 | 24 05 | 19 56 |
| Straw at $6 per ton | 6 12 | 6 63 | 3 92 |
| Fruit | 52 97 | 86 11 | 54 78 |
| Total credit, grain, straw, and fruit | 82 77 | 116 79 | 78 26 |
| Balance, credit, on this year's operations | 25 35 | 37 97 | 33 75 |
| 1924 *Items of Cost* | | | |
| Pruning, 8 hours at 28 cents; hauling brush, 1 hour at 50 cents | 2 74 | 2 74 | 2 74 |
| Ploughing round trees, 1½ hours at 40 cents; cultivating, 3 hours at 40 cents | 1 80 | 1 80 | 1 80 |
| Spraying, four times, 3½ hours at 78 cents; gasoline, ½ gallon at 31 cents; machine, 3½ hours at 17 cents | 3 49 | 3 49 | 3 49 |
| Spraying materials, 243 gallons at 1·14 cents | 2 77 | 2 77 | 2 77 |
| Hay: production cost of 3/5 acre | 5 87 | 5 87 | 5 87 |
| Fruit: picking at 12 cents; barrels at 45 cents; packing at 25 cents; hauling, 3·2 cents | 34 44 | 66 78 | 18 48 |
| Total cost | 51 11 | 83 45 | 35 15 |
| *Credit* | | | |
| Hay at $10 per ton | 8 70 | 7 02 | 5 16 |
| Fruit | 56 86 | 190 42 | 55 66 |
| Total credit, hay and fruit | 65 56 | 197 44 | 60 82 |
| Balance, credit, on this year's operations | 14 45 | 113 99 | 25 67 |

COST OF GROWING AN INTER-CROPPED APPLE ORCHARD—*Concluded*

| 1925 *Items of Cost* | Plots 1 and 16 | Plot 39 | Plot 25 |
|---|---|---|---|
| | $ cts. | $ cts. | $ cts. |
| Pruning, 8 hours at 28 cents; hauling brush, 1 hour at 49 cents | 2 73 | 2 73 | 2 73 |
| Ploughing around trees, 1½ hours at 39 cents; cultivating, 3 hours at 39 cents | 1 76 | 1 76 | 1 76 |
| Mowing grass strips and mulching trees, twice, 5 hours at 28 cents | 1 40 | 1 40 | 1 40 |
| Spraying, 3 5/6 hours at $1.06; gasoline, 5/8 gallon at 30 cents; machine, 3 5/6 hours at 17 cents | 4 90 | 4 90 | 4 90 |
| Material for 5 applications, 400 gallons at 1·11 cent | 4 44 | 4 44 | 4 44 |
| Fertilizer | 10 07 | 11 76 | 30 00 |
| Mixing and applying fertilizer | 2 24 | 2 24 | 5 00 |
| Potatoes: production cost of ¼ acre | 36 39 | 36 39 | 36 39 |
| Fruit: barrels at 40 cents; picking at 13 cents; hauling at 3·2 cents; packing at 25 cents | 32 48 | 88 10 | 28 42 |
| Total cost | 96 41 | 153 72 | 115 04 |
| *Credit* | | | |
| Potatoes, marketable, at $1 per bushel | 89 70 | 57 05 | 84 25 |
| Potatoes, unmarketable, at 15 cents per bushel | 1 91 | 1 91 | 2 67 |
| Fruit | 73 83 | 242 86 | 62 20 |
| Total credit, potatoes and fruit | 165 44 | 301 82 | 149 12 |
| Balance, credit, on this year's operations | 69 03 | 148 10 | 34 08 |

SUMMARY OF COSTS, PLOTS 1 AND 16 AVERAGED, GROWING AN INTER-CROPPED APPLE ORCHARD

| Year | Inter-crop | Orchard charges | Inter-crop charges | Total charges | Orchard revenue | | | Inter-crop revenue | Total revenue | Total profit to date | Orchard yields per acre | | | Average net price per barrel tree run |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Wagener | Gravenstein | Total | | | | Wagener | Gravenstein | Total | |
| | | $ cts. | $ cts. | $ cts. | $ cts. | $ cts. | $ cts. | $ cts. | $ cts. | $ cts. | bbl. | bbl. | bbl. | $ cts. |
| 1913 | Potatoes | 111 70 | 62 79 | 174 49 | | | | 85 80 | 85 80 | −88 69 | | | | |
| 1914 | Oats | 6 38 | 25 37 | 31 75 | | | | 42 23 | 42 23 | −78 21 | | | | |
| 1915 | Clover hay | 4 09 | 6 34 | 10 43 | | | | 18 96 | 18 96 | −69 68 | | | | |
| 1916 | Potatoes | 6 76 | 82 07 | 88 83 | | | | 92 24 | 92 24 | −66 27 | | | | |
| 1917 | Wheat | 7 72 | 32 33 | 40 05 | | | | 34 50 | 34 50 | −71 82 | | | | |
| 1918 | Clover hay | 5 50 | 9 69 | 15 19 | | | | 11 96 | 11 96 | −75 05 | | | | |
| 1919 | Potatoes | 10 35 | 101 39 | 111 74 | | | | 186 23 | 186 23 | − 0 56 | | | | |
| 1920 | Wheat | 16 14 | 36 40 | 52 54 | 10 50 | 1 50 | 12 00 | 46 16 | 58 16 | 5 06 | 3·5 | 0·5 | 4·0 | 1 76 |
| 1921 | Clover hay | 11 91 | 11 78 | 23 69 | 5 50 | 5 50 | 11 00 | 13 50 | 24 50 | 5 87 | 2·0 | 2·0 | 4·0 | 1 58 |
| 1922 | Potatoes | 27 33 | 66 94 | 94 27 | 23 12 | 6 95 | 30 07 | 175 67 | 205 74 | 117 34 | 10·0 | 5·7 | 15·7 | 1 04 |
| 1923 | Oats | 34 06 | 23 36 | 57 42 | 30 01 | 22 96 | 52 97 | 29 80 | 82 77 | 142 67 | 12·7 | 10·0 | 22·7 | 1 47 |
| 1924 | Clover hay | 45 24 | 5 87 | 51 11 | 26 34 | 30 52 | 56 86 | 8 70 | 65 56 | 157 14 | 10·0 | 12·5 | 22·5 | 1 75 |
| 1925 | Potatoes | 53 86 | 42 55 | 96 41 | 52 18 | 21 65 | 73 83 | 91 61 | 165 44 | 226 17 | 31·0 | 9·0 | 40·0 | 0 78 |
| | Totals | 341 04 | 506 88 | 847 92 | 147 65 | 89 08 | 236 73 | 837 36 | 1,074 09 | 226 17 | 69·2 | 39·7 | 109·0 | |

SUMMARY OF COSTS, PLOT 25, GROWING AN INTER-CROPPED APPLE ORCHARD

| Year | Inter-crop | Orchard charges | Inter-crop charges | Total charges | Orchard revenue | | | Inter-crop revenue | Total revenue | Total profit to date | Orchard yields per acre | | | Average net price per barrel tree run |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Wagener | Gravenstein | Total | | | | Wagener | Gravenstein | Total | |
| | | $ cts. | $ cts. | $ cts. | $ cts. | $ cts. | $ cts. | $ cts. | $ cts. | $ cts. | bbl. | bbl. | bbl. | $ cts. |
| 1913 | Potatoes | 115 68 | 78 71 | 194 39 | ..... | ..... | ..... | 100 80 | 100 80 | −93 59 | ..... | ..... | ..... | ..... |
| 1914 | Oats | 4 00 | 16 40 | 20 40 | ..... | ..... | ..... | 49 33 | 49 33 | −64 66 | ..... | ..... | ..... | ..... |
| 1915 | Clover hay | 4 09 | 6 34 | 10 43 | ..... | ..... | ..... | 22 16 | 22 16 | −52 93 | ..... | ..... | ..... | ..... |
| 1916 | Potatoes | 10 61 | 97 45 | 108 06 | ..... | ..... | ..... | 108 56 | 108 56 | −52 43 | ..... | ..... | ..... | ..... |
| 1917 | Wheat | 4 42 | 18 90 | 23 32 | ..... | ..... | ..... | 24 50 | 24 50 | −51 25 | ..... | ..... | ..... | ..... |
| 1918 | Clover hay | 5 50 | 9 69 | 15 19 | ..... | ..... | ..... | 16 38 | 16 38 | −50 06 | ..... | ..... | ..... | ..... |
| 1919 | Potatoes | 14 30 | 113 24 | 127 54 | ..... | ..... | ..... | 199 91 | 199 91 | 22 31 | ..... | ..... | ..... | ..... |
| 1920 | Wheat | 8 54 | 20 90 | 29 44 | 4 50 | ..... | 4 50 | 39 41 | 43 91 | 36 78 | 1·5 | ..... | 1·5 | 2 01 |
| 1921 | Clover hay | 13 75 | 11 78 | 25 53 | 6 88 | 9 62 | 26 50 | 9 24 | 25 74 | 36 99 | 2·5 | 3·5 | 6·0 | 1 76 |
| 1922 | Potatoes | 31 82 | 80 11 | 111 93 | 13 71 | 7 38 | 21 09 | 186 39 | 207 48 | 132 54 | 5·5 | 5·5 | 11·0 | 1 06 |
| 1923 | Oats | 29 38 | 15 13 | 44 51 | 35 31 | 19 47 | 54 78 | 23 48 | 78 26 | 166 29 | 15·0 | 8·5 | 23·5 | 1 48 |
| 1924 | Clover hay | 29 28 | 5 87 | 35 15 | ..... | 55 66 | 55 66 | 5 16 | 60 82 | 191 96 | ..... | 22·0 | 22·0 | 1 69 |
| 1925 | Potatoes | 61 15 | 53 89 | 115 04 | 48 37 | 13 83 | 62 20 | 86 92 | 149 12 | 226 04 | 29·0 | 5·9 | 34·9 | 0 97 |
| | Totals | 332 52 | 528 41 | 860 93 | 108 77 | 105 96 | 214 73 | 872 24 | 1,086 97 | 226 04 | 53·5 | 45·4 | 98·9 | ..... |

SUMMARY OF COSTS, PLOT 39, GROWING AN INTER-CROPPED APPLE ORCHARD

| Year | Inter-crop | Orchard charges | Inter-crop charges | Total charges | Orchard revenue | | | Inter-crop revenue | Total revenue | Total profit to date | Orchard yields per acre | | | Average net price per barrel tree run |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Wagener | Gravenstein | Total | | | | Wagener | Gravenstein | Total | |
| | | $ cts. | $ cts. | $ cts. | $ cts. | $ cts. | | $ cts. | $ cts. | $ cts. | bbl. | bbl. | bbl. | $ cts. |
| 1913 | Potatoes | 112 20 | 64 79 | 176 99 | | | | 102 26 | 102 26 | −74 73 | | | | |
| 1914 | Oats | 6 88 | 27 97 | 34 85 | | | | 50 02 | 50 02 | −59 56 | | | | |
| 1915 | Clover hay | 4 09 | 6 34 | 10 43 | | | | 22 49 | 22 49 | −47 50 | | | | |
| 1916 | Potatoes | 9 06 | 91 27 | 100 33 | | | | 103 60 | 103 60 | −44 23 | | | | |
| 1917 | Wheat | 8 24 | 34 60 | 42 84 | | | | 46 56 | 46 56 | −40 51 | | | | |
| 1918 | Clover hay | 5 50 | 9 69 | 15 19 | | | | 43 20 | 43 20 | −12 50 | | | | |
| 1919 | Potatoes | 12 95 | 109 19 | 122 14 | 10 00 | 2 00 | 12 00 | 212 31 | 224 31 | 89 67 | 4·0 | 1·0 | 5·0 | 1 74 |
| 1920 | Wheat | 26 89 | 38 02 | 64 91 | 12 00 | 31 50 | 43 50 | 61 82 | 105 32 | 130 08 | 5·0 | 10·5 | 15·5 | 1 82 |
| 1921 | Clover hay | 16 51 | 11 78 | 28 29 | 16 50 | 8 25 | 24 75 | 15 39 | 40 14 | 141 93 | 6·0 | 3·0 | 9·0 | 1 83 |
| 1922 | Potatoes | 62 77 | 68 49 | 131 26 | 23 12 | 128 14 | 151 26 | 182 54 | 333 80 | 344 47 | 10·0 | 46·0 | 56·0 | 1 84 |
| 1923 | Oats | 47 20 | 31 62 | 78 82 | 42 88 | 43 23 | 86 11 | 30 68 | 116 79 | 382 44 | 18·0 | 14·0 | 32·0 | 1 84 |
| 1924 | Clover hay | 77 58 | 5 87 | 83 45 | 3 00 | 187 42 | 190 42 | 7 02 | 197 44 | 496 43 | 1·5 | 78·0 | 7·5 | 1 55 |
| 1925 | Potatoes | 110 33 | 43 39 | 153 72 | 43 28 | 199 58 | 242 86 | 58 96 | 301 82 | 644 53 | 26·0 | 82·5 | 108·5 | 1 43 |
| | Totals | 500 20 | 543 02 | 1,043 22 | 150 78 | 600 12 | 750 90 | 936 85 | 1,687 75 | 644 53 | 69·5 | 235·0 | 304·5 | |

SUMMARY OF COSTS AND PROFITS, GROWING AN INTER-CROPPED APPLE ORCHARD

| Year | Plots 1 and 16 | | | Plot 39 | | | Plot 25 | | |
|---|---|---|---|---|---|---|---|---|---|
| | Costs | Revenue | Balance to date | Costs | Revenue | Balance to date | Costs | Revenue | Balance to date |
| | $ cts. | $ cts. | $ cts. | $ cts. | $ cts. | $ cts. | $ cts. | $ cts. | $ cts. |
| 1913 | 174 49 | 85 80 | −88 69 | 176 99 | 102 26 | −74 73 | 194 39 | 100 80 | −93 59 |
| 1914 | 31 75 | 42 23 | −78 21 | 34 85 | 50 02 | −59 56 | 20 40 | 49 33 | −64 66 |
| 1915 | 10 43 | 18 96 | −69 68 | 10 43 | 22 49 | −47 50 | 10 43 | 22 16 | −52 93 |
| 1916 | 88 83 | 92 24 | −66 27 | 100 33 | 103 60 | −44 23 | 108 06 | 108 55 | −52 43 |
| 1917 | 40 05 | 34 50 | −71 82 | 42 84 | 46 56 | −40 51 | 23 32 | 24 50 | −51 25 |
| 1918 | 15 19 | 11 96 | −75 05 | 15 19 | 43 20 | −12 50 | 15 19 | 16 38 | −50 06 |
| 1919 | 111 74 | 186 23 | − 0 56 | 122 14 | 224 31 | 89 67 | 127 54 | 199 91 | 22 31 |
| 1920 | 52 54 | 58 16 | 5 06 | 64 91 | 105 32 | 130 08 | 29 44 | 43 91 | 36 78 |
| 1921 | 23 69 | 24 50 | 5 87 | 28 29 | 40 14 | 141 93 | 25 53 | 25 74 | 36 99 |
| 1922 | 94 27 | 205 74 | 117 34 | 131 26 | 333 80 | 344 47 | 111 93 | 207 48 | 132 54 |
| 1923 | 57 42 | 82 77 | 142 69 | 78 82 | 116 79 | 382 44 | 44 51 | 78 26 | 166 29 |
| 1924 | 51 11 | 65 56 | 157 14 | 83 45 | 197 44 | 496 43 | 35 15 | 60 82 | 191 96 |
| 1925 | 96 41 | 165 44 | 226 17 | 153 72 | 301 82 | 644 53 | 115 04 | 149 12 | 226 04 |
| Totals | 847 92 | 1,074 09 | 226 17 | 1,043 22 | 1,687 75 | 644 53 | 860 93 | 1,086 97 | 226 04 |

## SPRAYING AND DUSTING

Lime-sulphur has been used principally, and our results would show it to be equal to if not better than either Bordeaux or wetable sulphur. The russeting of the fruit is the principal drawback to the use of Bordeaux. All sulphur sprays and dusts give a better appearance to the mature fruit. Wetable sulphur is not a strong fungicide, but is excellent to use in combination with nicotine sulphate when a drench spray for sucking insects is desirable, as no injury will result from heavy applications. It is advisable not to spray with lime-sulphur when the foliage is damp or when it is liable to remain damp for some time after the spraying. Lime-sulphur is applied as a mist spray at a pressure of 250 to 300 pounds. A coarse driving spray should be avoided. Lime-sulphur-arsenate spray mixed over night should not be used, and liquid remaining in the hose over night should be cleared out before starting to spray.

The lime-sulphur for the first and second sprays is made of 1 gallon of concentrated lime-sulphur and water to make 40 gallons, to which quantity is added 1 pound of arsenate of lead or arsenate of lime. When arsenate of lime is used 2 pounds of hydrated lime is also added. For the third spray a weaker solution, 1 to 45, is used, and for the fourth, 1 to 50. The Bordeaux is made up of 4 pounds of bluestone, 8 pounds of hydrated lime and water to make 40 gallons, to which quantity 1 pound of arsenate of lead or arsenate of lime is added. The wetable sulphur is made up of 16 pounds of superfine sulphur, 8 pounds of hydrated lime and 1 pound of calcium caseinate to 100 gallons of water, to which quantity 2½ pounds of arsenate of lead is added.

The results from the different sprays and dusts used follow in tabular form.

APPLE SCAB CONTROL

| Variety and how sprayed or dusted | Per cent clean | Per cent scab | Per cent No.1'sand 2's | Per cent culls | Per cent bud moth | Per cent plant bug | Per cent russet-ing |
|---|---|---|---|---|---|---|---|
| *Gravenstein* | | | | | | | |
| Lime-sulphur-arsenate spray | 55·35 | 44·65 | 29·53 | 7·91 | 0·96 | 6·32 | 0·0 |
| Bordeaux 4-8-40 spray | 69·34 | 30·66 | 8·70 | 6·37 | 1·98 | 7·84 | 72·8 |
| Wetable sulphur spray | 36·15 | 63·85 | 22·22 | 16·44 | 1·67 | 6·82 | 1·4 |
| Bordeaux (1st, 2nd); wetable sulphur (3rd, 4th) sprays | 66·43 | 33·57 | 37·39 | 9·07 | 1·81 | 11·60 | 7·6 |
| Check, not sprayed or dusted | 1·47 | 98·53 | 0·49 | 76·22 | 1·63 | 4·88 | 0·0 |
| Sulphur 85-15 dust | 51·91 | 48·09 | 37·84 | 7·96 | 1·53 | 3·71 | 1·4 |
| Bordeaux 12-15-73 dust | 63·55 | 36·45 | 24·54 | 8·35 | 5·45 | 5·03 | 33·3 |
| Bordeaux (1st, 2nd); sulphur 3rd, 4th) dusts | 74·50 | 25·50 | 53·70 | 7·10 | 1·70 | 5·10 | 1·80 |

APPLE SCAB CONTROL—*Concluded*

| Variety and how sprayed or dusted | Per cent clean | Per cent scab | Per cent No.1's and 2's | Per cent culls | Per cent bud moth | Per cent plant bug | Per cent russeting |
|---|---|---|---|---|---|---|---|
| *McIntosh* | | | | | | | |
| Lime-sulphur-arsenate spray | 74·80 | 25·20 | 53·70 | 7·40 | 4·00 | 5·20 | 0·3 |
| Bordeaux 4-8-40 spray | 79·8 | 20·2 | 20·1 | 12·4 | 4·5 | 18·3 | 38·6 |
| Wetable sulphur spray | 59·8 | 40·2 | 27·3 | 20·1 | 3·6 | 23·7 | 0·0 |
| Bordeaux (1st, 2nd); wetable sulphur (3rd, 4th) sprays | 82·9 | 17·1 | 48·5 | 14·9 | 4·7 | 15·4 | 5·1 |
| Check, not sprayed or dusted | 0·0 | 100·0 | 0·0 | 97·0 | 1·7 | 28·9 | 0·0 |
| Sulphur, 85-15 dust | 72·4 | 27·6 | 62·0 | 3·3 | 1·6 | 2·1 | 0·0 |
| Bordeaux 12-15-73 dust | 84·7 | 15·3 | 31·1 | 3·2 | 3·7 | 3·3 | 40·4 |
| Bordeaux (1st, 2nd); sulphur (3rd, 4th) dusts | 86·6 | 13·4 | 63·6 | 1·6 | 2·1 | 2·7 | 0·9 |
| *Fameuse* | | | | | | | |
| Lime-sulphur-arsenate spray | 88·0 | 12·0 | 69·0 | 2·1 | 2·8 | 7·2 | 0·6 |
| Bordeaux 4-8-40 spray | 91·7 | 8·3 | 41·2 | 4·2 | 4·5 | 9·1 | 30·2 |
| Wetable sulphur spray | 65·3 | 34·7 | 43·7 | 7·8 | 2·7 | 12·0 | 0·2 |
| Bordeaux (1st, 2nd); wetable sulphur (3rd, 4th) sprays | 88·0 | 12·0 | 66·8 | 1·6 | 2·8 | 6·8 | 2·3 |
| Check, not sprayed or dusted | 0·0 | 100·0 | 0·0 | 96·5 | 7·2 | 13·0 | 0·1 |
| Sulphur 85-15 dust | 76·3 | 23·7 | 64·1 | 1·5 | 3·4 | 4·1 | 1·5 |
| Bordeaux 12-15-73 dust | 72·3 | 27·7 | 45·4 | 1·7 | 4·6 | 4·4 | 18·4 |
| Bordeaux (1st, 2nd); sulphur (3rd, 4th) dusts | 55·3 | 44·7 | 48·1 | 6·8 | 1·8 | 4·5 | 0·1 |
| *Bishop Pippin* | | | | | | | |
| Lime-sulphur-arsenate spray | 69·78 | 30·22 | 35·87 | 4·56 | 2·30 | 2·83 | 7·82 |
| Bordeaux 4-8-40 spray | 87·79 | 12·21 | 53·66 | 11·15 | 1·44 | 3·16 | 97·56 |
| Wetable sulphur spray | 46·43 | 53·57 | 29·63 | 3·53 | 1·37 | 3·27 | 3·61 |
| Bordeaux (1st, 2nd); wetable sulphur (3rd, 4th) sprays | 78·79 | 21·21 | 58·87 | 5·19 | 2·59 | 2·16 | 46·00 |
| Check, not sprayed or dusted | 0·48 | 99·52 | 0·48 | 70·53 | 2·6 | 5·2 | 0·0 |
| Sulphur 85-15 dust | 88·65 | 11·35 | 43·59 | 3·2 | 1·04 | 2·43 | 15·10 |
| Bordeaux 12-15-73 dust | 85·22 | 14·78 | 47·71 | 7·87 | 1·59 | 10·92 | 70·00 |
| Bordeaux (1st, 2nd); sulphur (3rd, 4th) dusts | 96·17 | 3·83 | 53·28 | 2·92 | 0·91 | 3·65 | 0·0 |
| *Wagener* | | | | | | | |
| Lime-sulphur-arsenate spray | 95·13 | 4·87 | 69·39 | 7·21 | 1·95 | 2·33 | 0·0 |
| Bordeaux 4-8-40 spray | 88·90 | 11·10 | 59·84 | 7·61 | 2·80 | 3·84 | 100·0 |
| Wetable sulphur spray | 52·11 | 47·89 | 29·19 | 11·39 | 2·38 | 7·15 | 0·0 |
| Bordeaux (1st, 2nd); wetable sulphur (3rd, 4th) sprays | 86·59 | 13·41 | 52·87 | 11·15 | 1·62 | 2·63 | 54·0 |
| Check, not sprayed or dusted | 0·01 | 99·99 | 0·0 | 74·92 | 3·71 | 4·81 | 0·0 |
| Sulphur 85-15 dust | 82·50 | 17·50 | 55·89 | 14·16 | 1·49 | 0·87 | 0·0 |
| Bordeaux (1st, 2nd); sulphur (3rd, 4th) dusts | | | | | | | |
| Bordeaux 12-15-73 dust | 86·64 | 13·36 | 62·30 | 5·47 | 1·82 | 1·06 | 59·0 |
| *Averages of the 5 varieties* | | | | | | | |
| Lime-sulphur-arsenate spray | 76·63 | 23·39 | 51·49 | 5·83 | 2·40 | 4·78 | 1·74 |
| Bordeaux 4-8-40 spray | 83·51 | 16·49 | 36·70 | 8·34 | 3·04 | 8·45 | 67·83 |
| Wetable sulphur spray | 51·97 | 48·04 | 30·41 | 11·85 | 2·34 | 10·59 | 1·04 |
| Bordeaux (1st, 2nd); wetable sulphur (3rd, 4th) sprays | 80·54 | 19·46 | 52·89 | 8·38 | 2·70 | 7·72 | 23·00 |
| Check, not sprayed or dusted | 0·39 | 99·61 | 0·19 | 83·03 | 3·37 | 11·36 | 0·02 |
| Sulphur 85-15 dust | 74 35 | 25·65 | 52·68 | 6·02 | 1·81 | 2·64 | 3·60 |
| Bordeaux 12-15-73 dust | 78·48 | 21·52 | 42·21 | 5·32 | 3·43 | 4·94 | 42·22 |
| Bordeaux (1st, 2nd); sulphur (3rd, 4th) dusts | 78·14 | 21·86 | 54·67 | 4·60 | 1·63 | 3·99 | 0·70 |

COST OF SPRAY MATERIALS

*Lime-sulphur, 1–40—*

| | Cents |
|---|---|
| 1 gallon concentrated lime-sulphur | 25.0 |
| 2 pounds hydrated lime at $15 per ton | 1.5 |
| 1 pound dry arsenate of lead | 18.0 |
| Cost of 40 gallons of spray | 44.5 |

Cost per gallon 1.11 cents.

*Bordeaux, 4–8–40—*

| | Cents |
|---|---|
| 4 pounds of copper sulphate at 7 cents | 28 |
| 8 pounds hydrated lime at $15 per ton | 6 |
| 1 pound dry arsenate of lead | 18 |
| Cost of 40 gallons of spray | 42 |

Cost per gallon, 1.3 cents.

*Wetable sulphur (100 gallons)—*

| | Cents |
|---|---|
| 16 pounds of superfine sulphur at $3.75 | 60 |
| 8 pounds hydrated lime at $15 per ton | 6 |
| 1 pound calcium caseinate | 15 |
| 2½ pounds dry arsenate of lead at 18 cents | 45 |
| Cost of 100 gallons of spray | 126 |

Cost per gallon, 1.26 cents.

The labour charge for spraying was $1.26 per hour, made up as follows: 2 men spraying at 28 cents; teamster at 29 cents; team at 20 cents; use of machine at 15 cents; gasoline, oil, etc., at 6 cents.

COST OF SPRAYING

| Trees, 13 years old | | Lime sulphur-arsenate | Bordeaux arsenate | Wetable sulphur | Bordeaux (1st, 2nd); wetable sulphur (3rd, 4th, 5th) |
|---|---|---|---|---|---|
| Total material used on 54 trees, 5 applications | gal. | 459 | 459 | 459 | 459 |
| Total material used per acre, 40 trees, 5 applications | " | 340 | 340 | 340 | 340 |
| Cost of spray material for 54 trees, 5 applications | $ | 509 | 5·96 | 5 78 | 5 85 |
| Cost of spray material per acre, 40 trees, 5 applications | $ | 3 77 | 4 41 | 4 28 | 4 33 |
| Time taken to spray 54 trees, 5 times | min. | 315·6 | 315·6 | 315·6 | 315·6 |
| Time taken to spray per acre, 40 trees, 5 times | " | 233·8 | 233·8 | 233·8 | 233·8 |
| Cost of applying to 54 trees, 5 sprays | $ | 6 63 | 6 63 | 6 63 | 6 63 |
| Cost of applying per acre, 40 trees, 5 sprays | $ | 4 91 | 4 91 | 4 91 | 4 91 |
| Total cost per acre of 40 trees | $ | 8 68 | 9 32 | 9 19 | 9 24 |

Apple scab as well as similar fungous diseases may be successfully controlled by the use of either sulphur or Bordeaux dusts. During the season of 1925, which was very favourable to the development of apple scab, dusts were more effective at this Station in apple scab control than were sprays, and at only a very small additional cost per acre. Dusts in the control of apple scab and insects should be applied as recommended by the spray calendars for the district, and provided the dusting is thoroughly done, with effective dusting materials, satisfactory control of scab should result. Dusting can only be thoroughly done when the dust blast is directed at the tree from all angles, at a range not exceeding three yards, thus smothering the tree in a cloud of dust. To do this efficiently dusting must be done when the air is calm, either in the early morning or at twilight, preferably the latter.

Both sulphur and Bordeaux dusts are effective fungicides. Sulphur dust, although more expensive, gives a better finish to the fruit, and where the apple

sucker is a serious pest is the only dust recommended. In regard to russeting of the fruit the same remarks apply to Bordeaux dust as to Bordeaux spray.

Sulphur dust comes in two grades: 85-15, and 90-10. These differ in their arsenical content, the former grade containing 15 per cent of arsenate, and the latter 10 per cent, the balance being composed of superfine dusting sulphur. Bordeaux dust also comes in two grades: 12-8-80, and 12-15-73. The former is composed of 12 pounds of dehydrated copper sulphate, 8 pounds of arsenate of lime and 80 pounds of hydrated lime, and the latter of 12 pounds of dehydrated copper sulphate, 15 pounds of arsenate of lead and 73 pounds of hydrated lime.

The dusts used in our experimental work were the 85-15 sulphur and the 12-15-73 Bordeaux.

## Dusting Costs

Materials used were charged at cost: sulphur 85-15, $6 per cwt., and Bordeaux 12-15-73, $5.50 per cwt. The labour charges per hour were: 2 men at 28½ cents; team, 20 cents; use of machine, 18 cents; gasolene and oil, 5 cents, a total of $1 per hour.

Cost of Dusting

| Trees 13 years old | | Sulphur 85-15 | Bordeaux 12-15-73 | Bordeaux (1st, 2nd); sulphur (3rd, 4th, 5th) |
|---|---|---|---|---|
| Total material used on 54 trees, 5 applications | gal. | 222·5 | 205 | 215·5 |
| Material used per acre, 40 trees, 5 applications | " | 164·8 | 151·8 | 159·6 |
| Cost of material for 54 trees, 5 applications | $ | 13 35 | 11 28 | 12 51 |
| Cost of material per acre, 40 trees, 5 applications | $ | 9 88 | 8 35 | 9 27 |
| Time taken to dust 54 trees, 5 times | min. | 60 | 56 | 58 |
| Time taken to dust per acre, 40 trees, 5 times | " | 44·4 | 41·5 | 42·9 |
| Cost of dusting 54 trees, 5 times | $ | 1 00 | 0 93 | 0 97 |
| Cost of dusting per acre, 40 trees, 5 times | $ | 0 74 | 0 69 | 0 72 |
| Total cost per acre of 40 trees | $ | 10 62 | 9 04 | 9 99 |

## THINNING APPLES

An experiment in thinning was conducted on Wealthy apples in the summer of 1925. The trees had been set out in the spring of 1912, 20 feet by 20 feet apart. One row of 41 trees was thinned, while a similar row was left unthinned. The thinning was done July 13 with a thinning shears, only one fruit being left to each fruit spur. The following are the results, based on a yield of 100 barrels per acre.

Thinning Apples

| Wealthy | Thinned to one fruit per spur | Not thinned |
|---|---|---|
| Average number apples harvested per tree | 1,004 | 1,380 |
| Average number of apples removed per tree | 529 | ..... |
| Per cent No. 1's | 20·9 | 1·08 |
| Per cent No. 2's | 30·9 | 21·77 |
| Per cent No. 3's | 31·9 | 55·86 |
| Per cent Domestics | 12·7 | 12·37 |
| Per cent Culls | 3·6 | 8·92 |

The revenue from these rows, calculated on a crop of 100 barrels per acre, would be:—

REVENUE FROM THINNED AND UNTHINNED TREES

| Thinned | | | Unthinned | | |
|---|---|---|---|---|---|
| 20·9 bbl. | No. 1's at $2.94 | $ 61 45 | 1·08 bbl. | No. 1's at $2.94 | $ 3 17 |
| 30·9 " | No. 2's at $2.25 | 69 52 | 21·77 " | No. 2's at $2.25 | 48 98 |
| 31·9 " | No. 3's at $1.08 | 34 45 | 55·86 " | No. 3's at $1.08 | 60 32 |
| 12·7 " | Dom. at $1.96 | 24 89 | 12·37 " | Dom. at $1.96 | 24 24 |
| 3·69 " | Culls at $0.25 | 0 92 | 8·92 " | Culls at $0.25 | 2 23 |
| | | $ 191 23 | | | $ 138 94 |

Balance in favour of thinning, $52.29.
Cost of thinning 1 tree, 13 years old, producing 1·85 barrels per tree, 18c.
Cost of thinning 54 trees, or 1 acre, $9.72.
Profit in favour of thinning after deducting cost of thinning, $42.57 per acre.

It will be noted that thinning reduced the number of culls by 5.33 per cent; and of No. 3's by 23.96 per cent. The high percentage of No. 3 apples on both the thinned and unthinned plots was due to a very heavy crop of apples, below the average in size, and lacking in sufficient colour to permit of their being graded as No. 1's and No. 2's.

NOTE.—For experiments with fertilizers on fruit trees see section "Fertilizer Experiments."

## VEGETABLES

### BEANS

BUSH BEANS, TEST OF VARIETIES.—Sixteen varieties and strains of bush beans were sown May 26 in single rows 33 feet long, the various rows being 2½ feet apart. All were showing above ground June 5. Masterpiece is a good early green pod, and was free from anthracnose. Davis White Wax is a good early wax pod, with not much anthracnose. Hodsons Long Pod is the best late yellow, and Refugee or 1000 to 1 the best late green variety. Yields, etc., follow.

BUSH BEANS—TEST OF VARIETIES AND STRAINS.

| Variety or strain, and source | First ready for use | Yield of green pods to August 1 | | Total yield of green pods | | Percentage anthracnose on green pods at various pickings | Yield of seed | | Percentage anthracnose on seed when threshed |
|---|---|---|---|---|---|---|---|---|---|
| | | lb. | oz. | lb. | oz. | p.c. | lb. | oz. | p.c. |
| Masterpiece (Sutton) | July 25 | 13 | .. | 37 | .. | 0–0 | 3 | 6 | 0 |
| Hodson Long Pod (0·6904) | Aug. 7 | .. | .. | 32 | 14 | 0–0 | 3 | .. | 0 |
| Giant Stringless Green Pod (Burpee) | July 25 | 8 | 14 | 28 | .. | 3–40 | 4 | 2 | 8 |
| Davis White Wax (0·6903) | " 25 | 8 | 8 | 26 | 9 | 2–50 | 1 | 14 | 22 |
| Stringless Green Pod (0·6877) | " 25 | 9 | 10 | 22 | 8 | 2–50 | 2 | 12 | 24 |
| Refugee or 1000 to 1 (Burpee) | Aug. 6 | .. | .. | 21 | 9 | 4–95 | 1 | 8 | 44 |
| Round Pod Kidney Wax (0·6875) | July 25 | 7 | 6 | 20 | .. | 4–80 | 3 | 10 | 17 |
| Jones White (Man. A.C.) | " 25 | 7 | 10 | 19 | 13 | 0–90 | 1 | 8 | 33 |
| Stringless Green Pod (Graham) | " 25 | 8 | 4 | 17 | 14 | 5–100 | 2 | 8 | 28 |
| Yellow Eye (0·6950) | Aug. 2 | .. | .. | 17 | 12 | 0–66 | 2 | 12 | 20 |
| Unnamed Variety (Rev. S. T.) | July 25 | 8 | 8 | 16 | 11 | 0–0 | 4 | 2 | 16 |
| Fordhook Favourite (Burpee) | " 25 | 7 | 11 | 16 | 11 | 0–70 | 1 | 12 | 29 |
| Challenger Wax (Green Pod) (0·6876) | " 23 | 12 | 2 | 16 | .. | 5–54 | 1 | 4 | 17 |
| Round Pod Kidney Wax (McD.) | " 25 | 7 | 6 | 14 | 12 | 16–100 | .. | 14 | 49 |
| Wardwell Kidney Wax (0·6897) | " 25 | 4 | 2 | 14 | 8 | 0–10 | 1 | 10 | 13 |
| Wardwell Kidney Wax (Graham) | " 25 | 7 | .. | 13 | .. | 32–100 | 1 | 2 | 19 |

BUSH BEANS, GROWN AT DIFFERENT DISTANCES APART.—Two varieties were sown May 26 by hand, 2, 4, and 6 inches apart in the row, and also planted with a seeder and thinned to these distances. The plants grown 4 inches apart gave the best yields. The following yields are from single rows 16½ feet long and 2½ feet wide.

BUSH BEANS, GROWN AT DIFFERENT DISTANCES APART

| Variety | Distance between plants | Yield where seed was spaced | | | Yield where plants were thinned | | |
|---|---|---|---|---|---|---|---|
| | | Pods to August 8 | Total pods | Seed | Pods to August 8 | Total pods | Seed |
| | in. | lb. oz. | lb. oz. | oz. | lb. oz. | lb. oz. | oz. |
| Round Pod Kidney Wax | 2 | 4 .. | 6 14 | 12 | 4 13 | 7 7 | 14 |
| Round Pod Kidney Wax | 4 | 5 8 | 8 4 | 10 | 6 4 | 9 4 | 16 |
| Round Pod Kidney Wax | 6 | 4 6 | 6 5 | 10 | 5 2 | 8 2 | 16 |
| Stringless Green Pod | 2 | 11 .. | 13 8 | 18 | 7 .. | 8 6 | 26 |
| Stringless Green Pod | 4 | 9 4 | 12 2 | 20 | 8 2 | 10 12 | 24 |
| Stringless Green Pod | 6 | 6 .. | 10 .. | 24 | 6 2 | 9 8 | 18 |

## BEETS

TEST OF VARIETIES AND STRAINS.—Ten varieties and strains of beets were sown May 6 in rows 1½ feet apart, and the plants thinned June 29 to 6 inches apart. These were all ready for use July 16, except Half Long Blood Red, which was not ready till July 28. The following yields are from single rows 8¼ feet long.

BEETS—TEST OF VARIETIES AND STRAINS

| Variety and Source | July 16 | | July 28 | | Quality on a scale of 10 points for maximum |
|---|---|---|---|---|---|
| | Number of unmarketable roots | Weight of marketable roots | Number of unmarketable roots | Weight of marketable roots | |
| | | lb. oz. | | lb. oz. | |
| Detroit Dark Red (Ott. 6050) | 15 | 2 7 | 18 | 10 .. | 9·5 |
| Ferguson Red Globe (D. & F.) | 14 | 2 2 | 20 | 8 12 | 8 |
| Detroit Dark Red (McD.) | 13 | 1 14 | 18 | 11 .. | 9 |
| Crosby Egyptian (D. & F.) | 15 | 1 12 | 20 | 8 8 | 8·5 |
| Eclipse (McD.) | 14 | 1 11 | 21 | 8 4 | 8 |
| Early Wonder (Graham) | 15 | 1 11 | 19 | 7 8 | 8 |
| Early Model (Graham) | 11 | 1 9 | 18 | 8 4 | 8 |
| Cardinal Globe (Rennie) | 13 | 1 8 | 19 | 7 .. | 8 |
| Black Red Ball (Burpee) | 10 | 1 2 | 21 | 8 .. | 8 |
| Half Long Blood Red (Graham) | 15 | .. .. | 15 | 7 3 | 8 |

SPRING VS. FALL SOWING.—The variety Detroit Dark Red was sown November 13, 1924, but made a much inferior showing to that sown the following spring (May 6). Only a few seeds germinated, and the roots were very irregular in size.

SEEDED AT DIFFERENT DATES.—Detroit Dark Red was sown on five different dates, in rows 8¼ feet by 1½ feet, the plants being thinned to 6 inches apart in the row. The latter part of June and early July would appear to be the best time to sow to obtain satisfactory marketable roots for winter use. When late seeding is practised, if the soil is dry and seasonable rains do not follow seeding, the rows should be watered to facilitate germination.

BEETS—SEEDED AT DIFFERENT DATES

| Date sown | First ready for use | Number of marketable roots when first ready for use | Weight of marketable roots | | Weight of six roots October 6 |
|---|---|---|---|---|---|
| | | | lb. | oz. | lb. |
| May 6 | July 6 | 18 | 2 | 14 | 17 |
| May 19 | July 28 | 16 | 5 | .. | 16 |
| June 6 | Aug. 17 | 17 | 6 | .. | 11 |
| June 17 | Aug. 19 | 16 | 4 | .. | 8 |
| June 25 | Aug. 27 | 17 | 6 | 8 | 7 |

## CARROTS

TEST OF VARIETIES, FIRST SOWING.—Eleven varieties and strains of carrots were sown May 6 in rows 2 feet apart, and the plants later thinned to 3 inches apart in the row. Half of each row was treated with a solution of corrosive sublimate to combat the carrot rust fly, and the other half left as a check. The yields on September 1 from single rows 8¼ feet long, are given in the following table.

CARROTS—TEST OF VARIETIES, FIRST SOWING

| Variety and source | Treated with corrosive sublimate | | Check rows; not treated | |
|---|---|---|---|---|
| | Number of marketable roots | Number of unmarketable roots | Number of marketable roots | Number of unmarketable roots |
| | September 1 | | | |
| Chantenay (Ott. 4049) | 22 | 8 | 8 | 17 |
| Early Scarlet Horn (D. & F.) | 13 | 11 | .. | 31 |
| Nantes Half Long (S.B.) | 7 | 24 | .. | .. |
| Chantenay (McD.) | 5 | 16 | .. | 18 |
| Suttons Scarlet (Patmore) | 4 | 23 | .. | .. |
| Chantenay (Ott. 3423) | .. | 14 | 4 | 20 |
| *Long Orange (Vaughan) | .. | .. | .. | .. |
| | October 6 | | | |
| Red St. Valery (Rennie) | 43 | 33 | .. | .. |
| St. Valery (D. & F.) | 24 | 31 | .. | .. |
| St. Valery (Graham) | 15 | 38 | .. | .. |
| St. Valery (Ewing) | 10 | 20 | .. | .. |

*Crop ruined by rust fly.

TEST OF VARIETIES, SECOND SOWING.—A second sowing of seven varieties and strains was made June 18, and these were late enough to be free from rust fly injury. The yields from single rows 16½ feet long are given below.

CARROTS—TEST OF VARIETIES, SECOND SOWING

| Variety and source | Number of marketable roots | Weight of marketable roots | | Number of roots not marketable |
|---|---|---|---|---|
| | | lb. | oz. | |
| Chantenay (McD.) | 52 | 16 | 8 | 6 |
| Chantenay (Ott. 3423) | 56 | 16 | 0 | 6 |
| Scarlet Horn (D. & F.) | 68 | 15 | 12 | 10 |
| Chantenay (D. & F.) | 64 | 15 | 0 | 10 |
| Long Orange (Vaughan) | 39 | 13 | 8 | 9 |
| Half Long Nantes (S. B.) | 50 | 11 | 8 | 4 |
| St. Valery (D. & F.) | 42 | 11 | 8 | 7 |

FALL SOWING.—A row of Chantenay was sown November 13, 1924, and was ready for use July 30. This row developed sufficiently early to be free from rust fly injury. It is, however, the first successful fall sowing of carrots made here.

## CAULIFLOWER

TEST OF VARIETIES.—Seven varieties were sown inside March 30, and planted to the field May 8. Seven varieties were also sown May 6 in the open field. All rows were 33 inches apart, and the plants 18 inches apart in the rows. Owing to root maggot injury to plants in the later sowing accurate data as to comparative yields could not be obtained.

CAULIFLOWER—TEST OF VARIETIES

| Variety and source | First ready for use | Weight of six average heads | | Heads cut and ready to July 13 |
|---|---|---|---|---|
| | | lb. | oz. | |
| *Sown inside* | | | | |
| White Mountain Erfurt (Stokes) | June 29 | 2 | .. | 40 |
| Henderson Snowball (Graham) | " 29 | 2 | 10 | 40 |
| Early Dwarf Erfurt (McD.) | " 29 | 1 | 15 | 40 |
| Danish Giant (McD.) | July 2 | 2 | 14 | 34 (July 19) |
| Large Late Algiers (D. & F.) | " 19 | 2 | 4 | 9 |
| Veitch Autumn Giant (McD.) | * | .. | .. | .. |
| Autumn Giant (Sutton) | * | .. | .. | .. |
| *Sown in open field* | | | | |
| Extra Early Dwarf Erfurt (D. & F.) | Aug. 11 | 2 | 5 | .. |
| Early Erfurt (McD.) | " 11 | 2 | 4 | .. |
| White Mountain Erfurt (Stokes) | " 11 | 2 | 3 | .. |
| Early Snowball (Graham) | " 11 | 3 | .. | .. |
| Danish Giant (McD.) | " 15 | 3 | .. | .. |
| Autumn Giant (Sutton) | * | .. | .. | .. |
| Veitch Autumn Giant (McD.) | * | .. | .. | .. |

*All plants headed prematurely.

N.B.—All cauliflower heads were unusually small during the season, having matured prematurely due evidently to root maggot injury.

SUCCESSIONAL SOWING.—Successional sowings of Early Dwarf Erfurt (McDonald) were made with results as follow.

CAULIFLOWER—SUCCESSIONAL SOWING

| Date of sowing seed | First ready for use | Weight of six average heads | | Number of plants set out | Heads cut and ready | | |
|---|---|---|---|---|---|---|---|
| | | | | | July 13 | July 29 | Oct. 8 |
| | | lb. | oz. | | | | |
| Mar. 30 | June 29 | 2 | .. | 40 | 40 | .. | .. |
| April 16 | July 19 | 3 | 8 | 30 | .. | 30 | .. |
| May 6 | Aug. 8 | 2 | 5 | 20 | .. | .. | 20 |
| " 21 | Sept. 16 | 2 | .. | 15 | .. | .. | 14 |
| June 6 | Oct. 8 | 1 | 8 | 23 | .. | .. | 7 |
| " 17 | * | | | | | | |
| " 25 | * | | | | | | |

*Very small plants on October 8.

## CUCUMBER

TEST OF VARIETIES.—Nine varieties were sown May 30 in single drills 10 feet apart, and the plants later thinned to 12 inches apart. The following table shows the earliest varieties and the total yields of fruit from single rows 16½ feet long.

CUCUMBER—TEST OF VARIETIES

| Variety and source | First ready for use | Yield of fruit to August 11 | | Total yield of fruit | |
|---|---|---|---|---|---|
| | | lb. | oz. | lb. | oz. |
| Early White Spine (Harris) | Aug. 7 | 14 | 6 | 182 | .. |
| Davis Perfect (Graham) | " 5 | 8 | 2 | 147 | 12 |
| Early Frame (McK.) | " 3 | 18 | 2 | 140 | 2 |
| Improved Long Green (McD.) | " 5 | 7 | 12 | 137 | 10 |
| Arlington White Spine (Bruce) | " 7 | 8 | 12 | 133 | .. |
| XXX Table (Rennie) | " 5 | 5 | 4 | 130 | 14 |
| Hybrid White Spine (Stokes) | " 7 | 6 | .. | 130 | 7 |
| Extra Long White Spine (Stokes) | " 10 | 6 | .. | 104 | .. |
| Extra Early White Spine (Burpee) | " 11 | 2 | 2 | 90 | .. |

PICKLING.—Seed of Jersey Pickling (Ferry) was sown May 30 in a single row 10 feet wide and 50 feet long, the plants later being thinned to 18 inches apart in the row. The fruit was picked every few days as it became ripe, and from this plot there was a yield of 137 pounds of marketable, and 44 pounds of overgrown fruit.

### EGG PLANT

TEST OF VARIETIES.—Three varieties were sown inside March 28, and planted to the field June 5, twenty-five plants of each variety. Extra Early Dwarf was the best variety tested, giving a large number of small fruits. Egg plants here are attacked by the potato beetle very soon after planting, and frequent dusting with 1 part of arsenate of lead to 9 parts of hydrated lime is necessary. The following records were obtained.

EGG PLANT—TEST OF VARIETIES

| Variety and source | First ready for use | Number of fruits Aug. 15 | Number of fruits Sept. 10 |
|---|---|---|---|
| Extra Early Dwarf (Wills) | Aug. 20 | 9 | 34 |
| Black Beauty (Graham) | Sept. 18 | ** | 11 |
| New York Purple (McD.) | * | .. | 2 |

*Just setting fruit September 10.
**Just setting fruit, August 20.

### SWEET CORN: TEST OF VARIETIES AND STRAINS; EARLY SOWING INSIDE; SUCKERING EXPERIMENT

Seventeen varieties and strains of sweet corn were sown May 26, most of them in single rows 66 feet long, the rows 3 feet apart, and the plants later thinned to 9 inches apart in the rows.

Two varieties were also sown in pots in the greenhouse May 15, and planted to the field June 8, in hills 3 feet by 3 feet, three plants to a hill.

Two varieties sown outside May 26 in hills were used to test the value of removing the suckers from the base of the plant until the ears commenced to form. A similar lot were left with the suckers on.

The variety Banting, originated by the Horticultural Division, Ottawa, is the earliest variety tested, and its quality is exceptionally good. Alpha is also a good, very early variety. Early Malcolm, Golden Bantam, Earliest Catawba, Buttercup, Seymours Sweet Orange, and Burbank are all of very good quality.

The ears on the plants from which the suckers were removed, while less in number than those on the untreated plots, were noticeably larger than those from the untreated plants.

The following table gives the results of the different tests.

SWEET CORN: TEST OF VARIETIES AND STRAINS; EARLY SOWING INSIDE: SUCKERING EXPERIMENT

| Variety or strain, source, and how sown or treated | First ready for use | Number of plants | Number of marketable ears | Number of marketable ears per plant | Number of unmarketable ears |
|---|---|---|---|---|---|
| *Open field; rows—* | | | | | |
| Banting (C.E.F.) | Aug. 15 | 77 | 65 | 0·84 | 42 |
| Alpha (Harris) | " 20 | 60 | 35 | 0·58 | 23 |
| *Early Malcolm (O.8205) | " 22 | 132 | 164 | 1·24 | 77 |
| Early Mayflower (McD.) | " 24 | 93 | 79 | 0·84 | 28 |
| Golden Bantam (McD.) | " 29 | 111 | 105 | 0·94 | 48 |
| Golden Bantam (James) | " 29 | 107 | 135 | 1·26 | 27 |
| Golden Bantam (Moore) | " 29 | 103 | 119 | 1·15 | 41 |
| Golden Bantam (Graham) | Sept. 1 | 104 | 117 | 1·12 | 62 |
| Buttercup (Harris) | " 1 | 97 | 72 | 0·74 | 24 |
| Extra Early Cory (Graham) | " 5 | 107 | 91 | 0·85 | 31 |
| Seymours Sweet Orange (Burpee) | " 5 | 105 | 71 | 0·67 | 49 |
| Earliest Catawba (Burpee) | " 8 | 108 | 101 | 0·93 | 28 |
| Golden Giant (Rennie) | " 8 | 116 | 66 | 0·57 | 32 |
| Evergreen Bantam (Graham) | " 10 | 109 | 51 | 0·47 | 33 |
| Burbank (Burbank) | " 11 | 34 | 5 | 0·15 | 18 |
| Stowells Evergreen (Graham) | " 30 | 110 | 11 | 0·10 | |
| White Evergreen (Burpee) | " 30 | 106 | 10 | 0·09 | |
| *Greenhouse; transplanted to hills—* | | | | | |
| Early Malcolm (O.8205) | Aug. 22 | 38 | 53 | 1·39 | 19 |
| Golden Bantam (Graham) | Sept. 1 | 29 | 36 | 1·24 | 17 |
| *Hills; suckers removed—* | | | | | |
| Early Malcolm (O.8205) | Aug. 22 | 60 | 88 | 1·46 | 27 |
| Golden Bantam (Graham) | Sept. 1 | 60 | 81 | 1·35 | 36 |
| *Hills; suckers left on—* | | | | | |
| Early Malcolm (O.8205) | Aug. 25 | 60 | 116 | 1·93 | 47 |
| Golden Bantam (Graham) | Sept. 1 | 60 | 90 | 1·50 | 68 |

*Sown June 3.

PEPPER

Eight varieties were sown inside March 28, and the plants set to the open field June 5. Harris Earliest was easily the best variety, the plants having from 5 to 15 fruits each. Tomato Pepper (Harris) was fairly good, and Red Chili (McDonald) gave a fair crop of green fruit. The other varieties set few or no fruit.

PARSNIP

TEST OF VARIETIES.—Four varieties were sown May 6 in rows 2 feet apart, and the plants later thinned to 4 inches apart in the row. The following yields were obtained from single rows 16½ feet long.

PARSNIP, TEST OF VARIETIES

| Variety and Source | Number of marketable roots | Weight of marketable roots | | Number of roots not marketable |
|---|---|---|---|---|
| | | lb. | oz. | |
| Dobbies Exhibition (Ewing) | 35 | 13 | .. | 7 |
| Elcomes Improved (Graham) | 20 | 10 | 8 | 8 |
| Coopers Champion (D. & F.) | 25 | 9 | 8 | 11 |
| Hollow Crown (Ott. 6048) | 16 | 8 | .. | 18 |

SUCCESSIONAL SOWING.—The variety Hollow Crown (Graham) was sown on five dates between the first of May and the last of June, in rows 30 feet long and 1½ feet apart, the plants being lated thinned to 4 to 6 inches apart in the row. The first sowing germinated poorly. The percentage of injury from root-maggot increased with the later sowings. The following data were obtained.

PARSNIP, SUCCESSIONAL SOWING

| Date of Sowing | Number of marketable roots | Weight of marketable roots | | Number of unmarketable roots |
|---|---|---|---|---|
| | | lb. | oz. | |
| May 6 | 18 | 11 | 8 | 8 |
| May 19 | 43 | 20 | .. | 17 |
| June 6 | 50 | 17 | .. | 21 |
| June 17 | 63 | 17 | 8 | 22 |
| June 25 | 59 | 11 | 8 | 12 |

## PUMPKIN, SQUASH, VEGETABLE MARROW, AND CITRON

Six varieties and strains of squash, three of citron, and two each of vegetable marrow and pumpkin were sown May 30 in hills 10 feet apart in rows 12 feet apart, and later thinned to 3 plants to a hill.

Hubbard and Golden Hubbard are good varieties of squash. Perfect Gem and Table Queen have small fruits of excellent quality. Small Sugar pumpkin is an excellent variety. Very little difference could be noticed in the three varieties of citron.

The following data were obtained:—

PUMPKIN, SQUASH, VEGETABLE MARROW, AND CITRON—TEST OF VARIETIES

| Variety and Source | First ready for use | Number of plants | Number of marketable fruit Aug. 19 | Number of marketable fruit Sept. 9 | Weight of three average fruits | |
|---|---|---|---|---|---|---|
| | | | | | lb. | oz. |
| *Pumpkins* | | | | | | |
| Small Sugar (Graham) | Aug. 15 | 15 | 40 | 56 | 21 | .. |
| Connecticut Field (McD.) | " 15 | 9 | 16 | ..... | 50 | .. |
| *Squashes* | | | | | | |
| Hubbard (Graham) | " 15 | 6 | 6 | 14 | 54 | .. |
| Golden Hubbard (McD.) | " 10 | 9 | 10 | ..... | 29 | .. |
| Kitchenette (Wedge) | " 19 | 6 | 5 | 17 | 26 | 8 |
| Kitchenette (Vaughan) | " 19 | 6 | 8 | 13 | 25 | .. |
| Table Queen (Vaughan) | " 19 | 3 | 5 | 22 | 7 | .. |
| Perfect Gem (Morse) | Sept. 3 | 6 | ..... | 38 | 6 | .. |
| *Vegetable Marrows* | | | | | | |
| English (S. B.) | Aug. 6 | 6 | 17 | ..... | 34 | .. |
| Long Green Italian (Harris) | " 10 | 6 | 12 | ..... | 22 | 8 |
| *Citrons* | | | | | | |
| Colorado (McD.) | " 30 | 3 | ..... | 12 | 25 | .. |
| Colorado (O.8197) | " 30 | 3 | ..... | 13 | 24 | 8 |
| Red Seeded (Rennie) | " 19 | 3 | 2 | 18 | 20 | .. |

## SPINACH

Six varieties and strains were sown May 6 in rows 1½ feet apart, and the plants later thinned to 4 inches apart in the row. Three varieties and strains were sown May 27, and five July 3. Bloomsdale has been for some time the best variety tested. The following records were obtained from single rows 8½ feet long.

SPINACH, TEST OF VARIETIES AND STRAINS

| Variety and Source | First ready for use | Number of plants in row | Weight twelve heads | Weight from full row |
|---|---|---|---|---|
| *Sown May 6* | | | lb. oz. *June 17* | lb. oz. *June 20* |
| Bloomsdale (D. & F.) | June 17 | 18 | 1 4 | 2 2 |
| King of Denmark (Stokes) | " 17 | 18 | 0 15 | 2 1 |
| Viroflay (Graham) | " 17 | 17 | 0 15 | 2 .. |
| King of Denmark (Graham) | " 17 | 17 | 0 14 | 1 15 |
| Long Standing (McD.) | " 17 | 17 | 0 15 | 1 10 |
| King of Denmark (D. & F.) | " 17 | 18 | 0 13 | 1 3 |
| *Sown May 27* | | | *July 3* | *July 3* |
| Bloomsdale (E. S. Kent) | July 3 | 30 | 2 .. | 5 .. |
| Bloomsdale (D. & F.) | " 3 | 30 | 1 2 | 1 14 |
| King of Denmark (D. & F.) | " 3 | 28 | 0 14 | 1 3 |
| *Sown July 3* | | | *Aug. 8* | |
| Bloomsdale (D. & F.) | Aug. 8 | ..... | 1 10 | |
| Long Standing (McD.) | " 8 | ..... | 1 10 | |
| King of Denmark (D. & F.) | " 8 | ..... | 1 6 | |
| Viroflay (Graham) | " 8 | ..... | 0 15 | |
| King of Denmark (Graham) | " 8 | ..... | 0 10 | |

## TOMATO

TEST OF VARIETIES AND STRAINS.—Forty varieties and strains of tomatoes were grown as bush plants 4 by 4 feet apart; six plants of each variety. Seeds were sown in the greenhouse April 1, the small plants pricked off April 22, and set out, after being hardened in hotbed and cold-frame, on June 2. Varieties of the Earliana type during the past season grew somewhat furrowed and uneven, not yielding such a high percentage of marketable fruit as the Bonny Best, which, while not ripening quite so early, is one of the most satisfactory sorts tested.

The yields of the twenty earliest-maturing varieties tested are given in the table following.

TOMATO, TEST OF VARIETY AND STRAINS

| Variety and strain | Source of seed | Weight of ripe fruit to Aug. 25 | Total yield of fruit | Total yield of green fruit |
|---|---|---|---|---|
| | | lb. oz. | lb. | lb. |
| Anon | Vaughan | 21 14 | 110·4 | 2·5 |
| Sparks Earliana | Ewing | 11 8 | 109·6 | 3·8 |
| Alacrity x Earlibell | O–5455 | 9 12 | 110·2 | 5·0 |
| Earliana Grade 2 | Langdon | 9 4 | 136·1 | 3·2 |
| Alacrity x Hipper | O–5458 | 8 14 | 101·4 | 5·5 |
| Danish Export | Wiboltt | 8 12 | 116·3 | 20·0 |
| Earliest of All | S. B. | 8 6 | 90·2 | 5·8 |
| Burbank | Bruce | 8 4 | 134·4 | 8·0 |
| Alacrity | O–5408 | 8 4 | 134·2 | 10·5 |
| Seedling | Kent | 7 6 | 112·5 | 11·5 |
| Earliana | Moore | 6 10 | 145·0 | 4·3 |
| Prosperity | Bolgiano | 6 2 | 175·4 | 12·8 |
| Sparks Earliana | Burpee | 5 6 | 142·0 | 4·5 |
| Earliana | Ferry | 5 4 | 123·2 | 4·5 |
| Wayahead | Bruce | 5 0 | 118·2 | 12·0 |
| Chipmans | Chipman | 5 0 | 175·0 | 11·8 |
| Fifty Day | Buckbee | 4 4 | 182·9 | 16·2 |
| The Burbank | Burbank | 3 14 | 134·4 | 30·2 |
| Pink No. 1 | O–5463 | 3 12 | 53·4 | 23·5 |
| Bolgiano | Bolgiano | 3 12 | 123·1 | 10·5 |

TRAINING TO SINGLE STEMS AND STAKING.—Two varieties were planted in rows two feet apart, the plants one foot apart in the rows and tied to stakes, all laterals being kept removed. Certain plants were topped above the second, third, and fourth trusses respectively, twenty-five plants of each, and these are compared in the table with six bush plants, which occupied approximately the same space as twenty-five plants trained to single stems.

It will be noticed that the greatest yields of ripe fruit from both varieties were from the single-stemmed plants with four trusses, but as the pruning and staking takes considerable time this practice is probably of value only in the home garden. The yields follow.

TOMATO—TRAINING TO SINGLE STEMS AND STAKING

| Variety and how trained | Weight of ripe fruit to Aug. 25 | Total weight of ripe fruit | Per cent of fruit cracked | Total weight of green fruit marketable | Total weight of fruit not marketable | Total number of fruit produced | Per cent of leaf curl to July 30 |
|---|---|---|---|---|---|---|---|
| | lb. oz. | lb. oz. | p.c. | lb. oz. | lb. oz. | | p.c. |
| *Alacrity* | | | | | | | |
| Single stem, two trusses | 41 8 | 57 0 | 13·8 | .. .. | 28 8 | 320 | 50 |
| " three " | 48 4 | 76 6 | 18·9 | 3 0 | 40 14 | 478 | 30 |
| " four " | 42 8 | 102 4 | 17·1 | 0 8 | 41 8 | 521 | 10 |
| Full grown | 38 12 | 86 4 | 12·6 | 16 0 | 55 7 | 606 | 5 |
| *Bonny Best* | | | | | | | |
| Single stem, two trusses | 27 6 | 84 2 | 25·7 | .. .. | 21 6 | 327 | 60 |
| " three " | 33 4 | 72 10 | 10·5 | 0 12 | 24 6 | 483 | 40 |
| " four " | 28 0 | 154 2 | 14·3 | 1 12 | 18 9 | 543 | 15 |
| Full grown | 20 8 | 146 2 | 4·9 | 32 4 | 22 0 | 709 | 5 |

TURNIP

TEST OF VARIETIES AND STRAINS.—Seven varieties and strains of table turnip were sown May 6 in rows 2½ feet apart, and the plants later thinned to one foot apart in the row. The rows were level with the surface, not earthed up. The yields that follow are from single rows 16½ feet long.

A second sowing was made June 25, and the roots were ready from the middle of August on, but the crop was not so good.

TURNIPS—TEST OF VARIETIES AND STRAINS

| Variety and source | First ready for use | Number of marketable roots | Weight of marketable roots | Number of unmarketable roots |
|---|---|---|---|---|
| | | | lb. oz. | |
| Red Top Strap Leaf (McD.) | July 16 | 23 | 11 8 | 2 |
| White Milan (Harris) | " 8 | 20 | 10 8 | 2 |
| Milan Purple Top (McD.) | " 10 | 16 | 10 4 | 6 |
| F. S. Extra Early Purple Milan (McD.) | " 9 | 18 | 10 .. | 4 |
| Extra Early Purple Milan (McD.) | " 9 | 20 | 9 14 | 4 |
| Golden Ball (Graham) | " 16 | 18 | 8 .. | 2 |
| Early Snowball (Graham) | " 8 | 14 | 6 .. | 6 |

## CEREALS

The snow disappeared early in the spring of 1925. Work was started on the land about the middle of April. The large cereal plots were seeded May 7 and 8, and the rod-row plots on the 9th and 11th. The temperature during May was

normal, and during June about three degrees above normal. July and August were normal, and September slightly below the usual temperature. Precipitation during the five growing months was 14.21 inches, about the average for the previous eleven years. The rainfall during June was 4.97 inches, which was 1.96 inches above the average; that for July was 0.55 inches above normal.

## CEREALS, TEST OF VARIETIES

The land on which the tests of different varieties of oats, wheat and barley were made had produced a crop of corn in 1924, and had been manured for that crop at the rate of 15 tons per acre. Oats was seeded at the rate of 2½ bushels per acre; wheat, 2 bushels; and barley, 2 bushels (except Duckbill, which being a larger kernel was seeded at the rate of 2¼ bushels per acre).

All oats except Liberty (a hulless variety) were given the dry formalin treatment for smut. The Liberty oats were dusted with Bayer's Dust. Very little smut was noticed in any of the grains. The hulless oat seems very susceptible to smut when not treated, but where the seed has been dusted before seeding with any of the copper carbonate dusts, using about two ounces to the bushel, almost perfect control has been secured.

All grains were sown May 7. The weather was favourable for germination, and all came up quickly. The table following shows the yields of grain and straw per acre.

CEREALS—TEST OF VARIETIES

| Variety | When ripe | Number of days to maturity | Height | Per cent stand | Yield per acre | Straw per acre |
|---|---|---|---|---|---|---|
| | | | inches | | lb. bush. | tons |
| *Oats* | | | | | | |
| Banner, Kentville | Aug. 17 | 102 | 43 | 99 | 2,065 60·7 | 1·35 |
| Victory | " 17 | 102 | 44 | 99 | 2,054 60·4 | 1·20 |
| Banner, Waugh | " 17 | 102 | 43 | 98 | 1,830 53·8 | 1·46 |
| Alaska 10307 | " 8 | 93 | 41 | 99 | 1,463 43·0 | 0·85 |
| Liberty—Ottawa 480 | " 10 | 95 | 38 | 99 | 1,435 42·2 | 1·01 |
| *Barley* | | | | | | |
| Charlottetown—No. 80 | Aug. 13 | 98 | 41 | 98 | 1,575 32·8 | 0·86 |
| Chinese—Ottawa 60 | " 13 | 98 | 39 | 99 | 1,428 29·7 | 0·86 |
| Duckbill—Ottawa 57 | " 15 | 100 | 40 | 96 | 962 20·0 | 0·66 |
| *Wheat* | | | | | | |
| Marquis—Ottawa 15 | Aug. 17 | 102 | 42 | 97 | 1,190 19·8 | 1·14 |
| Red Fife—Ottawa 17 | " 23 | 108 | 43 | 96 | 1,120 18·6 | 1·00 |
| Huron—Reg'd | " 20 | 105 | 43 | 97 | 1,078 17·9 | 0·93 |
| Charlottetown—No. 123 | " 23 | 108 | 40 | 98 | 1,074 17·9 | 1·51 |
| *Peas* | | | | | | |
| Golden Vine | Sept. 16 | 120 | ..... | 95 | 956 15·9 | ..... |
| *Vetches* | | | | | | |
| Black | Sept. 16 | 120 | ..... | 95 | 653 10·9 | ..... |

## CEREALS, RELATIVE YIELDS OF VARIETIES

The following tables have been prepared for the purpose of showing the relative yields of different varieties of wheat, oats, and barley grown at this Station over a period of years. These yields are worked out on a percentage basis, rating the yield of one variety at 100 per cent, and calculating the yields

of the other varieties on this basis. Banner oats, Charlottetown No. 80 barley, and Marquis, Ottawa 15, wheat were designated, respectively, as the varieties with which the others were to be measured.

This arrangement enables a comparison to be made over a number of years, as well as a comparison for the same year.

It will be noted that Victory oats has outyielded the Banner eight out of the eleven years in which they were compared. None of the varieties of barley grown here has approached in yield Charlottetown No. 80, the average increased yield of this variety over the others being about 23 per cent.

Marquis, Huron and Red Fife wheats have given practically equal yields at Kentville. In 1918 both Huron and Red Fife gave a much larger yield than Marquis. This was true again of Huron in 1921. Red Fife surpassed the yield of Marquis in five of the twelve years tested, but in the other seven years yielded an average of 11 per cent less.

RELATIVE YIELDS OF VARIETIES OF WHEAT, 1914-1925

| Year | Yield of Marquis, pounds per acre | Percentage of yield of Marquis | | |
|---|---|---|---|---|
| | | Huron Ottawa 3 | Red Fife Ottawa 17 | Charlottetown No. 123 |
| | | p.c. | p.c. | p.c. |
| 1914 | 1,575 | ..... | 87·9 | ..... |
| 1915 | 994 | ..... | 102·4 | ..... |
| 1916 | 1,107 | ..... | 95·3 | ..... |
| 1917 | 899 | ..... | 96·6 | ..... |
| 1918 | 1,273 | 130·4 | 115·3 | ..... |
| 1919 | 1,489 | 97·3 | 107·4 | ..... |
| 1920 | 1,245 | 99·9 | 111·8 | ..... |
| 1921 | 1,294 | 110·6 | 105·2 | ..... |
| 1922 | 947 | 99·2 | 84·2 | ..... |
| 1923 | 606 | 95·0 | 82·1 | ..... |
| 1924 | 1,780 | 60·4 | 82·1 | 81·9 |
| 1925 | 1,190 | 90·6 | 94·1 | 90·0 |
| Averages— | | | | |
| 1914–1919 | 1,223 | ..... | 100·8 | ..... |
| 1920–1925 | 1,177 | 92·6 | 93·2 | ..... |
| 1924–1925 | 1,485 | 75·5 | 88·1 | 85·9 |

RELATIVE YIELDS OF VARIETIES OF OATS, 1914-1925

| Year | Yield of Banner, pounds per acre | Percentage of yield of Banner | | | |
|---|---|---|---|---|---|
| | | Victory | Daubeney | Liberty Ottawa 480 | Alaska |
| | | p.c. | p.c. | p.c. | p.c. |
| 1914 | 1,981 | ..... | 90·6 | ..... | ..... |
| 1915 | 1,872 | 108·8 | 63·5 | ..... | ..... |
| 1916 | 1,474 | 120·2 | 98·3 | 59·7 | ..... |
| 1917 | 1,487 | 95·8 | 87·4 | 57·3 | ..... |
| 1918 | 2,595 | 95·6 | 89·0 | 58·9 | ..... |
| 1919 | 2,423 | 117·2 | ..... | 47·5 | ..... |
| 1920 | 2,539 | 102·1 | ..... | 61·9 | ..... |
| 1921 | 1,776 | 118·0 | ..... | 108·5 | ..... |
| 1922 | 2,052 | 108·2 | ..... | 72·1 | ..... |
| 1923 | 1,788 | 123·3 | ..... | 66·1 | ..... |
| 1924 | 2,594 | 105·1 | ..... | 68·6 | ..... |
| 1925 | 2,065 | 99·4 | ..... | 69·4 | 70·8 |
| Averages— | | | | | |
| 1915–1918 | 1,857 | 105·1 | 84·6 | ..... | ..... |
| 1916–1925 | 2,079 | 108·5 | ..... | 67·0 | ..... |

RELATIVE YIELDS OF VARIETIES OF BARLEY, 1916-1925

| Year | Yield of Charlottetown No. 80 per acre | Percentage of yield of Charlottetown No. 80 | | | |
|---|---|---|---|---|---|
| | | (Two-row) Duckbill Ottawa 57 | (Six-row) Manchurian | (Six-row) Canadian Thorpe | (Six-row) Chinese Ottawa 60 |
| | lb. | p.c. | p.c. | p.c. | p.c. |
| 1916 | 1,408 | ..... | 72·7 | 66·6 | ..... |
| 1917 | 1,060 | ..... | 70·5 | 81·1 | ..... |
| 1918 | 1,623 | ..... | 88·7 | 73·6 | ..... |
| 1919 | 1,873 | 93·9 | 84·8 | ..... | ..... |
| 1920 | 1,797 | 69·4 | 62·3 | ..... | ..... |
| 1921 | 1,912 | 61·7 | ..... | ..... | ..... |
| 1922 | 2,171 | 68·2 | ..... | ..... | 52·5 |
| 1923 | 1,122 | 62·8 | ..... | ..... | 87·1 |
| 1924 | 1,789 | 100·7 | ..... | ..... | 103·8 |
| 1925 | 1,575 | 61·1 | ..... | ..... | 90·6 |
| Averages— | | | | | |
| 1916–1918 | 1,364 | ..... | 77·3 | 73·7 | ..... |
| 1922–1925 | 1,664 | 73·2 | ..... | ..... | 83·5 |

## FORAGE PLANTS

### CORN FOR ENSILAGE, TEST OF VARIETIES AND STRAINS

Twenty-four varieties and strains of corn were tested in 1925. These were grown on land that had been growing alfalfa since 1920. The alfalfa had gradually thinned out and had been replaced by other grasses. The land was ploughed in the fall of 1924. Twenty tons of manure per acre were applied in the spring of 1925, after the land had been well worked up with disk harrow and cultivator. The land was again ploughed and worked into a good mellow seed-bed with disk and cultivator. No chemical fertilizers were used. The corn was seeded with the grain-drill May 20, and all varieties were harvested September 16.

The yields per acre in both green and dry matter are given in the following table.

CORN FOR ENSILAGE—TEST OF VARIETIES AND STRAINS

| Variety and source | Average height | Stage of maturity | Green weight per acre | Per cent dry matter | Dry weight per acre |
|---|---|---|---|---|---|
| | ft. | | tons | p.c. | tons |
| North Dakota (St. Br.) | 8½ | Silk to early milk.. | 30·58 | 12·93 | 3·95 |
| Burr Leaming (Carter) | 9¾ | Silk..... | 29·92 | 13·44 | 4·02 |
| Disco 90-day (Disco) | 8 | Late milk..... | 28·38 | 15·86 | 4·50 |
| Compton's Early (Duke) | 9 | Silk..... | 27·83 | 11·41 | 3·17 |
| Northwestern Dent (Neb.-A. E. McK.) | 8½ | Late silk..... | 26·73 | 14·02 | 3·74 |
| Hybrid (A. J. W.) | 7½ | Late silk to early milk. | 25·96 | 14·30 | 3·71 |
| Longfellow (Disco) | 8¾ | Silk..... | 25·96 | 12·07 | 3·13 |
| Leaming (Parks) | 9½ | Silk to early milk.. | 25·30 | 10·94 | 2·76 |
| Bailey (Duke) | 8½ | Silk to early milk.. | 25·19 | 14·18 | 3·57 |
| Northwestern Dent (Disco) | 7¾ | Late milk..... | 24·53 | 13·95 | 3·42 |
| Longfellow (Duke) | 8¾ | Late milk..... | 24·31 | 13·55 | 3·29 |
| Longfellow (U. F. Cos.) | 6¾ | Late milk..... | 23·05 | 16·05 | 3·69 |
| Amber Flint (A. J. W.) | 6½ | Early dough..... | 21·78 | 19·77 | 4·30 |
| Golden Glow (Duke) | 9 | Silk to early milk.. | 21·34 | 14·61 | 3·11 |
| Wisconsin No. 7 (Parks) | 9½ | Silk to early milk.. | 20·24 | 13·12 | 2·65 |
| Wisconsin No. 7 (Duke) | 9½ | Silk to early milk.. | 20·00 | 15·12 | 3·02 |
| Quebec No. 28 (Dr. Todd) | 6½ | Early milk..... | 19·69 | 19·37 | 3·81 |
| Twitchell's Pride (Fredericton) | 6½ | Early dough..... | 19·58 | 22·58 | 4·42 |
| Northwestern Dent (Brandon) | 6¾ | Late dough..... | 19·00 | 17·15 | 3·25 |
| Yellow Dent (A. J. W.) | 8½ | Silk to late silk..... | 17·71 | 14·02 | 2·48 |
| Northwestern Dent (N. D.-A. E. McK.) | 6¾ | Early dough..... | 17·49 | 15·70 | 2·74 |
| White Cap Yellow Dent (St. Br.) | 7½ | Late silk..... | 17·49 | 14·57 | 2·54 |
| Leaming (Duke) | 9½ | Silk to early dough. | 17·49 | 13·05 | 2·28 |

## SUNFLOWERS, TEST OF VARIETIES AND STRAINS

Nine varieties and strains of sunflowers were grown in 1925. The land on which this test was carried out was similar to and treated in the same manner as that on which the different varieties of corn were grown. The seed was sown May 9 with the grain-drill, using twelve pounds per acre, and all varieties were harvested September 5.

The table following gives the yields per acre of both green and dry matter, and the stage of maturity at harvest.

SUNFLOWERS FOR ENSILAGE—TEST OF VARIETIES AND STRAINS

| Variety and source | Height at harvest | Stage of maturity | Green weight per acre | Per cent of dry matter | Dry matter per acre |
|---|---|---|---|---|---|
| | ft. | | tons | % | tons |
| Mammoth Russian (K. McD.) | 10¼ | 95% in bloom | 22·33 | 18·48 | 4·12 |
| Mammoth Russian (U. F. Co.) | 10¼ | 95% in bloom | 21·78 | 19·59 | 4·26 |
| Russian Giant (Disco) | 9½ | 95% in bloom | 21·67 | 19·37 | 4·19 |
| Manteca (C.P.R.) | 8 | Seed late dough | 19·91 | 17·70 | 3·52 |
| Mixed (C.P.R.) | 7½ | Some seed in dough; some plants just in bloom | 18·92 | 17·30 | 3·27 |
| Black (C.P.R.) | 8 | Seed early dough | 17·60 | 15·70 | 2·76 |
| Manchurian (C.P.R.) | 7½ | Seed late dough | 17·38 | 18·01 | 3·13 |
| Mammoth Russian (C.P.R.) | 7½ | Seed late dough | 16·50 | 16·35 | 2·69 |
| Mennonite (Rosthern) | 5½ | Seed ripe | 12·59 | 18·52 | 2·33 |

## TURNIPS, TEST OF VARIETIES AND STRAINS

The land on which the different varieties and strains of turnips were grown had been in hemp in 1924. It was ploughed in the fall, and well worked up with the disk harrow and two-wheel cultivator in the spring. No manure was used, but a chemical fertilizer made up of 150 pounds of nitrate of soda, 300 pounds of acid phosphate, and 50 pounds of muriate of potash was applied at the rate of 800 pounds per acre with the fertilizer distributor. The land was then levelled with the smoothing harrow, drills were made 2½ feet apart, and all seed sown May 21. In general the stand was even. Fearing the ravages of root-maggot, which is a serious pest here, all turnips were first thinned to one inch apart, on June 13, and allowed to stand thus until July 2, when they were thinned to 10 inches apart. About this time it was noticed that the leaves on many of the plants were turning yellow and falling; this continued for over two months and materially reduced the yield. We are not fully satisfied as to the nature of the trouble, but plant pathologists claim that the roots were injured by root-maggots and that the plants were subsequently attacked by some species of Rhizoctonia.

The crop was harvested November 3. The average yields per acre of the twenty-nine varieties and strains tested are given in the following table.

SWEDE TURNIPS, TEST OF VARIETIES AND STRAINS

| Variety and source | Average yield per acre | | Per cent of dry matter | Dry matter per acre |
|---|---|---|---|---|
| | tons | bush. | % | tons |
| Wilhelmsburger (D.L.F.) | 23·49 | 939·8 | 12·42 | 2·91 |
| Ditmars (H. McN.) | 23·49 | 939·8 | 12·27 | 2·88 |
| Shepherds 1283 (Trifol.) | 22·70 | 908·1 | 12·03 | 2·73 |
| Derby Bronze Green Top (Ren.) | 22·62 | 904·9 | 11·41 | 2·58 |
| Bangholm (Kentville) | 20·85 | 834·2 | 12·38 | 2·58 |
| Invicta (U. F. Cos.) | 19·80 | 792·0 | 12·93 | 2·56 |
| Prize Purple Top (Ren.) | 19·53 | 781·4 | 12·73 | 2·48 |
| Olsgaard Bangholm (H. & H.) | 19·53 | 781·4 | 11·33 | 2·21 |

SWEDE TURNIPS, TEST OF VARIETIES AND STRAINS—*Concluded*

| Variety and source | Average Yield per acre | | Per cent of dry matter | Dry matter per acre |
|---|---|---|---|---|
| | tons | bush. | % | tons |
| Bangholm 1029 (Trifol.) | 19·19 | 767·7 | 13·36 | 2·56 |
| Shepherd's Golden Globe (H. & H.) | 19·14 | 765·6 | 12·15 | 2·32 |
| Bangholm 1322 (Trifol.) | 19·14 | 765·6 | 12·27 | 2·34 |
| Bangholm (G,S.S. Co.) | 19·05 | 762·2 | 12·42 | 2·36 |
| Canadian Gem (Ren.) | 18·92 | 757·1 | 10·62 | 2·00 |
| Canadian Gem (St. Br.) | 18·74 | 749·7 | 12·70 | 2·37 |
| Improved Jumbo or Elephant (Ren.) | 18·53 | 741·3 | 12·85 | 2·38 |
| Kangaroo (St. Br.) | 18·53 | 741·3 | 11·56 | 2·14 |
| Best of All (Ren.) | 18·48 | 739·2 | 12·46 | 2·30 |
| Halls Westbury (Ren.) | 18·26 | 730·6 | 12·38 | 2·26 |
| Ditmars (R.V.D.) | 18·08 | 723·3 | 11·87 | 2·14 |
| Best of All (Graham) | 18·00 | 720·1 | 11·56 | 2·08 |
| Bangholm Studsgaard (D.L.F.) | 17·68 | 707·5 | 14·80 | 2·61 |
| Hartley's Bronze Top (K. McD.) | 16·94 | 677·9 | 12·89 | 2·18 |
| Bangholm (Ch'town) | 16·76 | 670·5 | 14·80 | 2·48 |
| Elephant or Jumbo (H.S.Co.) | 16·50 | 660·0 | 12·34 | 2·03 |
| Improved Yellow Swedish (G.S.S.Co.) | 16·36 | 654·6 | 11·48 | 1·87 |
| Kangaroo Bronze Green Top (Ren.) | 16·28 | 651·5 | 12·42 | 2·02 |
| Champion Purple Top (K.McD.) | 16·28 | 651·5 | 12·15 | 1·97 |
| Bangholm (A. E. McK.) | 16·15 | 646·2 | 13·44 | 2·17 |
| Bangholm 8112 (McD.) | 14·91 | 596·6 | 12·11 | 1·80 |

## MANGELS, TEST OF VARIETIES AND STRAINS

Thirty-one varieties and strains of mangels were grown on land which had been seeded to alfalfa in 1924. The stand of alfalfa was poor. The land was manured at the rate of 20 tons per acre, ploughed, disked, cultivated, and smoothed. The seed was sown May 9, using a garden drill, and the crop was harvested October 26. The yields were as given in the table following.

MANGELS, TEST OF VARIETIES AND STRAINS

| Variety and source | Average yield per acre | | Per cent of dry matter | Dry matter per acre |
|---|---|---|---|---|
| | tons | bush. | % | tons |
| Yellow Eckendorfer (G.S.S.Co.) | 36·43 | 1,457·2 | 9·65 | 3·51 |
| Mammoth Long Red (U.F. Cos.) | 34·50 | 1,380·0 | 11·91 | 4·10 |
| Red Eckendorfer (G.S.S.Co.) | 33·44 | 1,337·9 | 9·92 | 3·31 |
| Giant Yellow Intermediate (U.F.Cos.) | 33·13 | 1,325·2 | 8·75 | 2·89 |
| Barres Oval (G.S.S.Co.) | 32·86 | 1,314·7 | 10·35 | 3·40 |
| Danish Sludstrup (Ew.) | 32·73 | 1,309·4 | 10·62 | 3·47 |
| Taaroje Barres (H. & H.) | 32·47 | 1,298·8 | 12·58 | 4·08 |
| Ferritslev Barres (H. & H.) | 31·28 | 1,251·3 | 9·18 | 2·87 |
| Giant Yellow Globe (Ren.) | 31·20 | 1,248·1 | 9·53 | 2·97 |
| Stryno Barres (H. H. Co.) | 30·75 | 1,230·2 | 9·14 | 2·80 |
| Yellow Intermediate (U. F. Co.) | 29·88 | 1,195·3 | 8·48 | 2·53 |
| Rosted Barres (H. & H.) | 29·43 | 1,177·4 | 9·77 | 2·87 |
| Danish Sludstrup (McD.) | 29·43 | 1,177·4 | 9·92 | 2·91 |
| Elvetham Mammoth (H. & H.) | 29·35 | 1,174·2 | 15·39 | 4·51 |
| Svalof (G.S.S.Co.) | 29·00 | 1,160·0 | 11·68 | 3·38 |
| Perfection Mammoth Long Red (Ren.) | 29·22 | 1,168·9 | 10·27 | 3·00 |
| Eckendorfer Red (H. & H.) | 29·22 | 1,168·9 | 9·14 | 2·67 |
| Giant Sugar (Ren.) | 29·17 | 1,166·8 | 14·88 | 4·34 |
| White Green Top, Half Sugar (H. & H.) | 28·96 | 1,158·4 | 12·70 | 3·67 |
| Eckendorfer Yellow (H. & H.) | 28·43 | 1,137·3 | 9·73 | 2·76 |
| Champion or Gate Post (H.S. Co.) | 28·40 | 1,136·0 | 11·87 | 3·37 |
| Giant Yellow Half Long Intermediate (Ren.) | 28·16 | 1,126·7 | 10·43 | 2·93 |
| Svalof Original Alfa (G.S.S. Co.) | 27·11 | 1,084·5 | 9·77 | 2·64 |
| White Red Top, Half Sugar (H. & H.) | 26·92 | 1,077·1 | 12·89 | 3·46 |
| Golden Tankard (H.S. Co.) | 26·45 | 1,058·1 | 11·56 | 3·05 |
| Giant White Feeding (Ren.) | 26·40 | 1,056·0 | 10·31 | 2·72 |
| Barres Half Long (G.S.S. Co.) | 26·32 | 1,052·8 | 10·08 | 2·65 |
| Yellow Intermediate (C.E.F.) | 25·39 | 1,015·8 | 13·87 | 3·52 |
| Half Sugar Rose (D. & F.) | 25·39 | 1,015·8 | 11·48 | 2·91 |
| Golden Tankard (Ren.) | 24·34 | 973·6 | 11·91 | 2·89 |
| Red Globe (Ew.) | 20·98 | 839·5 | 12·27 | 2·57 |

## CARROTS, TEST OF VARIETIES AND STRAINS

Thirteen varieties and strains of carrots were grown on land which had produced hemp in 1924. It was ploughed in the fall and in the spring disked, again ploughed, and well worked up. Fertilizer made up of 150 pounds of nitrate of soda, 300 pounds acid phosphate and 50 pounds of muriate of potash was applied at the rate of 800 pounds per acre, and harrowed in. Drills were run 2½ feet apart, and the seed sown May 21. All varieties gave a fairly even stand but were attacked by the carrot rust fly, which reduced the yield to one-quarter of the average crop. The crop was harvested November 3.

CARROTS, TEST OF VARIETIES AND STRAINS

| Variety and source | Average yield per acre | | Per cent of dry matter | Dry matter per acre |
|---|---|---|---|---|
| | tons | bush. | % | tons |
| Danish Champion (K. McD.) | 10·08 | 403·3 | 10·08 | 1·01 |
| Mammoth White Intermediate (Ren.) | 7·18 | 287·2 | 11·13 | 0·79 |
| White Belgian (H.S.Co) | 5·80 | 232·0 | 11·03 | 0·64 |
| Half Long White (G.S.S.Co.) | 5·01 | 200·6 | 12·98 | 0·65 |
| White Belgian (Trifol.) | 4·62 | 184·8 | 12·59 | 0·58 |
| Large White Belgian (Ren.) | 4·48 | 179·5 | 15·23 | 0·68 |
| Mammoth Short White (Ren.) | 4·22 | 168·9 | 13·47 | 0·56 |
| Improved Intermediate White (Ew.) | 4·22 | 168·9 | 12·69 | 0·53 |
| Danish Champion (H. & H.) | 4·22 | 168·9 | 12·59 | 0·53 |
| White Belgian (H. & H.) | 3·96 | 158·4 | 12·98 | 0·51 |
| Improved White Vosges (K. McD.) | 3·69 | 147·8 | 11·81 | 0·43 |
| Long White Vosges (D. & F.) | 3·30 | 132·0 | 12·40 | 0·40 |
| Danish Champion (C.E.F.) | 3·30 | 132·0 | 12·89 | 0·42 |

## SUGAR BEETS, TEST OF VARIETIES AND STRAINS

Eight varieties and strains were grown on land that had been seeded in 1924 to alfalfa with poor stand. The land was manured at the rate of 20 tons per acre, ploughed, disked, cultivated, and smoothed. No chemical fertilizers were used. The seed was sown with the garden drill May 9, and a good even stand was secured. The crop was harvested October 26. The yields per acre of both green and dry matter are given in the table following, as well as the percentage of sugar in the juice.

SUGAR BEETS, TEST OF VARIETIES AND STRAINS

| Variety or source | Yield per acre | | Per cent of dry matter | Dry matter per acre | Per cent sugar in juice |
|---|---|---|---|---|---|
| | tons | bush. | % | tons | % |
| Horning | 17·21 | 688·5 | 23·24 | 3·99 | 16·41 |
| Henning and Harving | 16·76 | 670·5 | 22·81 | 3·82 | 18·37 |
| Dr. Bergman | 16·63 | 665·2 | 23·05 | 3·83 | 18·39 |
| Shreiber & Son | 16·23 | 649·4 | 22·62 | 3·67 | 17·91 |
| Dippe | 14·78 | 591·3 | 24·02 | 3·55 | 18·98 |
| Rabbethge & Giesecke | 14·52 | 580·8 | 23·83 | 3·46 | 18·51 |
| Vilmorin Improved | 13·60 | 546·0 | 22·19 | 3·02 | 17·32 |
| Home Grown | 13·25 | 530·0 | 24·77 | 3·28 | 18·78 |

## SOY BEANS, TEST OF VARIETIES

Four varieties of soy beans were tested. These were grown on land that had been in hay the previous year. Manure was applied in the fall at the rate

of 15 tons per acre. The land was well worked up in the spring with disk harrow and cultivator. Fertilizer made up of 200 pounds of nitrate of soda, 300 pounds of acid phosphate, and 100 pounds of muriate of potash was applied at the rate of 500 pounds per acre and worked in with the cultivator. The land was then levelled with the smoothing harrow and the seed sown with the garden drill. The yields per acre and stage of maturity at harvest are given in the table below.

SOY BEANS—VARIETY TEST

| Variety | Stage of maturity | Green weight per acre | Per cent dry matter | Dry matter per acre |
|---|---|---|---|---|
| | | tons | % | tons |
| Ito San | Pods and seeds found | 6·61 | 23·55 | 1·55 |
| Hollybrook 1368 | Not podded | 6·48 | 22·19 | 1·43 |
| Summerland | Podded, but seeds not developed | 5·89 | 23·28 | 1·37 |
| Mancheco 1367 | Pods and seeds formed | 4·05 | 23·71 | 0·96 |

## DIFFERENT GRASS MIXTURES SEEDED 1923

The plots seeded in 1923 with different grass mixtures were again cut for hay in 1925. Harvesting was done July 17; at that date the meadow fescue plants were beginning to ripen, while the timothy was just out of bloom. The plots seeded with timothy and clover yielded a hay of much better apperance than the others. The average yields for 1924 and 1925 follow.

DIFFERENT GRASS MIXTURES SEEDED 1923

| Plot | Seed per acre | Average yield per acre | | |
|---|---|---|---|---|
| | | 1924 | 1925 | Total |
| | | tons | tons | tons |
| IX—1 | Early red clover, 10; timothy, 8 | 2·13 | 1·46 | 3·59 |
| IX—2 | Early red clover, 10; Weadow fescue, 15 | 2·03 | 1·36 | 3·39 |
| IX—3 | Late red clover, 10; timothy, 8 | 2·58 | 1·82 | 4·40 |
| IX—4 | Late red clover, 10; meadow fescue, 15 | 2·14 | 1·40 | 3·54 |
| IX—5 | Early red clover, 10; red top, 8 | 2·14 | 1·80 | 3·94 |
| IX—6 | Late red clover, 10; red top, 8 | 2·41 | 1·89 | 4·30 |
| X—10 | Red clover, 8; alsike, 2; timothy, 6; red top, 6 | 2·00 | 1·85 | 3·85 |
| X—9 | Red clover, 8; alsike, 2; timothy, 6; red top, 4 | 1·82 | 1·95 | 3·77 |
| XIV—6 | Timothy, 8; red clover, 6; alsike, 2 | 1·88 | 1·87 | 3·75 |
| XIV—7 | Timothy, 8; red clover, 2; alsike, 5 | 2·21 | 1·64 | 3·85 |
| X—1 | Red clover, 8; alsike, 2; timothy, 8 | 1·34 | 1·62 | 2·96 |
| X—2 | Red clover, 8; alsike, 2; timothy, 7; meadow fescue, 2 | 1·50 | 1·66 | 3·16 |
| X—3 | Red clover, 8; alsike, 2; timothy, 7; meadow fescue, 4 | 1·82 | 1·84 | 3·66 |
| X—4 | Red clover, 8; alsike, 2; timothy, 7; meadow fescue, 6 | 1·74 | 1·71 | 3·45 |
| X—5 | Red clover, 8; alsike, 2; timothy, 6; meadow fescue, 2 | 1·43 | 1·60 | 3·03 |
| X—6 | Red clover, 8; alsike, 2; timothy, 6; meadow fescue, 4 | 1·98 | 2·00 | 3·98 |
| X—7 | Red clover, 8; alsike, 2; timothy, 6; meadow fescue, 6 | 1·78 | 1·95 | 3·73 |
| X—8 | Red clover, 8; alsike, 2; timothy, 6; red top, 2 | 2·01 | 1·87 | 3·88 |
| XIV—1 | Timothy, 8; red clover, 10 | 1·33 | 1·76 | 3·09 |
| XIV—2 | Timothy, 8; red clover, 8; alsike, 2 | 1·64 | 1·96 | 3 60 |
| XIV—3 | Timothy, 8; red clover, 4; alsike, 6 | 2·35 | 2·63 | 4·98 |
| XIV—4 | Timothy, 8; alsike, 6 | 2·12 | 1·78 | 3·90 |
| XIV—5 | Timothy, 8; red clover, 5; alsike, 5 | 1·71 | 1·68 | 3·39 |

### TIMOTHY, TEST OF STRAINS, SEEDED 1923

The table following shows the average yields per acre, both green and cured weights, of ten different strains of timothy seeded in 1923. The hay on all plots was harvested July 16.

| Name or source | Average yield per acre | |
|---|---|---|
| | Green weight | Cured weight |
| | tons | tons |
| Commercial | 5·96 | 2·88 |
| Quebec | 5·44 | 3·12 |
| Ohio 3937 | 5·36 | 2·88 |
| Ohio Commercial | 5·20 | 2·48 |
| Ohio 9335 | 4·96 | 2·20 |
| Ottawa 1921, bulk | 4·72 | 2·32 |
| Boon (C.E.F.) | 4·40 | 2·88 |
| Ohio 6779 | 4·32 | 1·92 |
| Primus (Sweden) | 4·08 | 2·12 |
| Kentville | 3·52 | 1·92 |

### TIMOTHY AND CLOVER VS. MEADOW FESCUE AND CLOVER FOR HAY

The average results of this test, extending over a three-year period, are given in the table following, and would go to show that better yields on the whole are obtained where timothy is used rather than meadow fescue.

TIMOTHY AND CLOVER VS. MEADOW FESCUE AND CLOVER FOR HAY

| How seeded, per acre, 1922 | Average yield per acre | | | |
|---|---|---|---|---|
| | 1923 | 1924 | 1925 | Total |
| | tons | tons | tons | tons |
| Early red clover, 10 lb.; timothy, 8 lb | 3·70 | 2·40 | 2·61 | 8·71 |
| Early red clover, 10 lb.; meadow fescue, 15 lb | 3·75 | 1·96 | 1·86 | 7·57 |
| Late red clover, 10 lb.; timothy, 8 lb | 3·51 | 1·92 | 1·92 | 7·35 |
| Late red clover, 10 lb.; meadow fescue, 15 lb | 3·63 | 1·92 | 1·51 | 7·06 |
| Mammoth red clover, 10 lb.; timothy, 8 lb | 3·39 | 2·28 | 2·29 | 7·96 |

### OTHER GRASSES, SEEDED 1923

Several grasses were seeded separately in 1923. These gave yields as follows in 1925.

OTHER GRASSES, SEEDED 1923

| — | Average yield per acre | |
|---|---|---|
| | Green weight | Cured weight |
| | tons | tons |
| Red top | 2·58 | 1·23 |
| Meadow fescue | 1·42 | 0·56 |
| Kentucky Blue | 2·62 | 1·23 |

### WESTERN RYE GRASS, TEST OF STRAINS

The fifteen strains tested in 1924 were again cut for hay in 1925, the yields being somewhat larger than in 1924. Both green and cured weights per acre are given in the table following.

WESTERN RYE GRASS SEEDED 1923, TEST OF STRAINS

| Number | Average yield per acre | |
|---|---|---|
| | Green weight | Cured weight |
| | tons | tons |
| 19 | 7·24 | 3·76 |
| 81 | 7·20 | 3·60 |
| 11 | 7·20 | 3·48 |
| 6 | 6·68 | 3·56 |
| 20 | 6·20 | 3·60 |
| 10 | 5·80 | 3·16 |
| 17 | 5·72 | 3·48 |
| 4 | 5·56 | 3·04 |
| 98 | 5·20 | 3·32 |
| 78 | 5·14 | 2·80 |
| 5 | 4·80 | 2·76 |
| 18 | 4·76 | 2·84 |
| 118 | 4·68 | 2·56 |
| 16 | 4·40 | 2·56 |
| 15 | 4·12 | 2·60 |

### GRIMM ALFALFA

Two cuttings of alfalfa were taken from the plots seeded in 1923 and 1924. The catch was not good on either seeding, and seed inoculation showed little beneficial effect. Owing to the high value of this plant in the production of feed for dairy cows, further experiments in growing it are to be carried out. The area seeded in 1920, after producing alfalfa for five seasons, became badly mixed with other grasses and was limed and ploughed in the fall of 1924 with the idea of reseeding to alfalfa in the spring of 1925. Upon further consideration it was decided to make a fairly heavy application of manure to this area and grow a crop of roots before again seeding down. This was done in 1925 and the land should be in good shape for alfalfa in 1926.

The average yields per acre from the plots cut in 1925 are given in the table. The first cutting was made July 4, and the second cutting August 24.

GRIMM ALFALFA

| When and how seeded | Average yield per acre | | |
|---|---|---|---|
| | First cutting | Second cutting | Total yield |
| (1923) | tons | tons | tons |
| Broadcast, with nurse-crop, inoculated | 0·94 | 0·40 | 0·98 |
| 12" rows, with nurse-crop, inoculated | 1·03 | 0·56 | 1·59 |
| 12" rows, no nurse-crop, inoculated | 0·98 | 0·31 | 1·29 |
| 12" rows, no nurse-crop, not inoculated | 1·08 | 0·50 | 1·58 |
| (1924) | | | |
| Broadcast, no nurse-crop | 1·22 | 1·01 | 2·23 |
| (1921) | | | |
| Broadcast | 2·06 | ..... | 2·06 |
| (1923) | | | |
| Grimm | 2·88 | ..... | 2·88 |
| Ontario | 2·80 | ..... | 2·80 |
| W. G. Lane, Falmouth | 3·36 | ..... | 3·36 |

### NITROGENOUS FERTILIZERS FOR TIMOTHY SEED PRODUCTION

Three plots were fertilized in the spring of 1925 as indicated in the table following. The yields of hay and seed, seed alone, and deseeded hay are given. It will be noted that in this test, on land in a good state of fertility, no gain has resulted from the surface application of fertilizers.

NITROGENOUS FERTILIZERS FOR TIMOTHY SEED PRODUCTION

| Plot | Pounds of fertilizer applied per acre, 1925 | Average yield of hay and seed per acre | Average yield of seed per acre | Average yield of deseeded hay per acre |
|---|---|---|---|---|
| | | tons | lb. | tons |
| 1 | No fertilizers | 2·34 | 275·2 | 2·20 |
| 2 | Nitrate of soda, 100; acid phosphate, 300 | 2·22 | 247·2 | 2·09 |
| 3 | Nitrate of soda, 100 | 2·44 | 237·6 | 2·32 |

### TURNIP SEED GROWING

Following up the work started in 1922 an area was given over to the production of seed of the Bangholm club-root-resistant strain of turnips.

The roots that were grown in the summer of 1924 were stored in two different ways: part of them pitted in the field, and the balance placed in slatted crates in a cellar where the temperature was around 40 degrees.

The pit was made by ploughing six furrows 8 or 9 inches deep and throwing out all but the two outside furrows. The pit was about four feet wide and the stecklings were placed in a sloping pile, care being taken to have them not more than eighteen inches deep in the centre. It has been found that when piled to a greater depth than 18 or 20 inches there is too much heating and the roots do not keep so well. A triangular ventilator made by nailing together two 7-inch boards was then placed on the centre of the pile the whole length of the pit, being supported here and there upon short pieces of board. The whole was then covered with 8 to 10 inches of straw and this again with a few inches of soil. Both ends of the ventilator were left open until January 10, when 7 or 8 inches of horse manure was placed over the whole pit and the ventilator stopped with straw. The site was located when there was good drainage. Upon opening up the pit April 27 it was found that the stecklings had kept well, that there was no rot, and that growth had just started from the crowns. Those stored in the cellar in crates were also in good condition, and it would seem that roots for planting can be stored either way with good success, with possibly a slight margin in favour of pitting on account of the smaller cost.

The ground on which the roots were set had been in potatoes in 1924. It was manured at the rate of 20 tons per acre, ploughed, and levelled with the smoothing harrow. Rows were marked out with the plough three feet apart, and the roots were set two feet apart in the row with the crown just above the surface. Planting was completed April 28, and growth started quickly. Cultivation to keep down weeds was kept up as long as it was possible to get through without injuring the plants.

The seed was ready to harvest August 8. The yield from the area was 787 pounds, or at the rate of 803 pounds per acre, which is considered a good yield.

## FERTILIZER EXPERIMENTS

### FERTILIZERS AND GROUND LIMESTONE EXPERIMENT

The table following gives the yields from four three-year rotations of potatoes, grain, and hay, and shows the returns from sections of land treated alike except that one area was limed and the other was not limed. The yields given are the average of duplicate plots. The fertilizers used and the times of application were as indicated on the table. In 1917, because of low fertility and lack of humus, manure at the rate of 15 tons per acre was applied to each plot, including the plots on which no commercial fertilizer was used.

It will be noted that nitrate of soda was used as the source of nitrogen on plot No. 1, and sulphate of ammonia, carrying the same amount of nitrogen, on plot No. 2, with the other fertilizers the same. Plots No. 3 and No. 4 were fertilized alike, except that the phosphoric acid in No. 3 was supplied by acid phosphate and that in No. 4 by slag. On plot No. 5 the phosphorus was supplied by bone meal, which also furnished a portion of the nitrogen.

Another table shows the percentage of gain of each plot over the unlimed plot that had not been fertilized. It should be stated that the information obtained shows that the heavy use of lime is not advisable in connection with the development of potatoes grown in short rotations, the production on the limed areas decreasing and the quality deteriorating because of scab. On the other hand very large gains resulted from its use in the development of clover, as the areas not limed produced practically no clover. It will be noticed that where sulphate of ammonia was used without ground limestone the production of hay was less than on the unfertilized plot, while with limestone the increase over the unlimed area was 114.2 per cent.

FERTILIZERS AND GROUND LIMESTONE EXPERIMENT

Fertilizers applied, 1914, 1917, 1920, 1923; limestone at the rate of 2 tons per acre applied, 1914, 1917, 1920, 1924.

| Plot | Nitrate of soda (15% N) | Sulphate of ammonia (20% N) | Acid phosphate (15% $P_2O_5$) | Basic slag (16% $P_2O_5$) | Bone meal (2·5% N; 22% $P_2O_5$) | Muriate of potash (50% $K_2O$) |
|---|---|---|---|---|---|---|
| | lb. | lb. | lb. | lb. | lb. | lb. |
| 1 | 140 | ..... | 150 | 150 | ..... | 101·2 |
| 2 | ..... | 105 | 150 | 150 | ..... | 101·2 |
| 3 | 70 | 52½ | 300 | ..... | ..... | 101·2 |
| 4 | 70 | 52½ | ..... | 300 | ..... | 101·2 |
| 5 | 50 | 37½ | ..... | ..... | 240 | 101·2 |
| 6—No fertilizer | ..... | ..... | ..... | ..... | ..... | ..... |

SUMMARY OF YIELDS, FERTILIZERS AND GROUND LIMESTONE EXPERIMENT

| Plot | Potatoes 1914, '17, '20, '23 | Hay 1916, '19, '22, '25 | Wheat, 1918, '21 | | Oats, 1915, '24 | |
|---|---|---|---|---|---|---|
| | | | Grain | Straw | Grain | Straw |
| | bush. | lb. | bush. | lb. | bush. | lb. |
| 1 a Not limed | 725·8 | 6,210 | 34·5 | 3,430 | 65·6 | 2,990 |
| b Limed | 791·2 | 12,380 | 44·4 | 4,920 | 78·9 | 3,640 |
| Gain | 65·4 | 6,170 | 9·9 | 1,490 | 13·3 | 650 |
| 2 a Not limed | 690·7 | 5,370 | 31·5 | 2,810 | 55·2 | 2,750 |
| b Limed | 743·1 | 11,740 | 44·3 | 4,700 | 78·6 | 3,670 |
| Gain | 52·4 | 6,370 | 12·8 | 1,890 | 23·4 | 920 |
| 3 a Not limed | 734·0 | 5,720 | 31·6 | 3,110 | 58·4 | 2,945 |
| b Limed | 788·5 | 12,170 | 45·2 | 4,640 | 74·1 | 3,395 |
| Gain | 54·5 | 6,450 | 13·6 | 1,530 | 15·7 | 450 |
| 4 a Not limed | 738·3 | 6,240 | 34·4 | 3,530 | 59·7 | 2,980 |
| b Limed | 819·4 | 13,250 | 48·5 | 4,520 | 80·2 | 3,745 |
| Gain | 81·1 | 7,010 | 14·1 | 990 | 20·5 | 765 |
| 5 a Not limed | 702·1 | 6,090 | 35·3 | 3,750 | 65·7 | 2,845 |
| b Limed | 792·1 | 12,480 | 45·2 | 4,910 | 80·3 | 3,420 |
| Gain | 90·0 | 6,390 | 9·9 | 1,160 | 14·6 | 575 |
| 6 a Not limed | 557·4 | 5,480 | 28·3 | 3,270 | 57·1 | 2,675 |
| b Limed | 652·4 | 9,280 | 41·9 | 3,950 | 66·2 | 2,735 |
| Gain | 95·0 | 3,800 | 13·6 | 680 | 9·1 | 60 |

SUMMARY, PERCENTAGE OF GAIN OVER UNFERTILIZED PLOT (PLOT 6A), FERTILIZERS AND GROUND LIME-STONE EXPERIMENT

| Plot | Potatoes | Hay | Wheat grain | Wheat straw | Oats grain | Oats straw |
|---|---|---|---|---|---|---|
| 1 a Not limed | 30·2 | 13·3 | 21·9 | 4·9 | 14·8 | 11·7 |
| b Limed | 41·9 | 125·9 | 56·8 | 50·4 | 38·1 | 36·0 |
| 2 a Not limed | 23·9 | — 2·0 | 11·3 | −14·0 | — 3·3 | 2·8 |
| b Limed | 33·3 | 114·2 | 56·5 | 43·7 | 37·6 | 37·1 |
| 3 a Not limed | 31·7 | 4·3 | 11·6 | −4·9 | 2·2 | 10·1 |
| b Limed | 41·4 | 122·0 | 59·7 | 41·9 | 29·7 | 26·9 |
| 4 a Not limed | 32·4 | 13·8 | 21·5 | 8·0 | 4·5 | 11·4 |
| b Limed | 47·0 | 141·8 | 71·3 | 38·2 | 40·4 | 40·0 |
| 5 a Not limed | 25·9 | 11·1 | 24·7 | 14·6 | 15·0 | 6·3 |
| b Limed | 42·1 | 127·7 | 59·7 | 50·1 | 40·6 | 27·8 |
| 6 a Not limed | ..... | ..... | ..... | ..... | ..... | ..... |
| b Limed | 17·0 | 69·3 | 48·0 | 20·7 | 15·9 | 2·2 |

## MALAGASH SALT

An experiment was started in 1924 to determine the value of Malagash salt in farm crop production. The salt was applied and well worked into the soil previous to seeding. Manure was used at the rate of 16 tons per acre. One section was seeded to oats, and this was in clover and timothy hay in 1925. Turnips and mangels were planted separately in another section, and this was seeded to grain, clover and timothy in 1925. (For the yields in 1924 from these various plots see page 61 of the report of this Station for 1924.) All plots were 1/320 acre each, and were in quadruplicate, so that the results tabulated are the average yields from four plots.

MALAGASH SALT TEST

Yields of hay—Second crop in the rotation (First crop, oats, 1924)

| Plot | How treated per acre | Yields of hay per acre, 1925 | | | |
|---|---|---|---|---|---|
| | | Green weight | | | Cured weight, first cutting |
| | | First cutting | Second cutting | Total | |
| | | tons | tons | tons | tons |
| 1 | Malagash salt, 100 lb | 9·04 | 4·72 | 13·76 | 3·20 |
| 2 | Malagash salt, 200 lb | 8·53 | 3·81 | 12·34 | 3·20 |
| 3 | Malagash salt, 300 lb | 7·12 | 3·36 | 10·48 | 2·96 |
| 4 | Malagash salt, 400 lb | 6·66 | 4·08 | 10·74 | 2·61 |
| 5 | Malagash salt, 500 lb | 7·15 | 3·82 | 10·97 | 2·64 |
| 6 | Malagash salt, 600 lb | 5·65 | 3·41 | 9·06 | 2·40 |
| 7 | Check | 7·36 | 3·41 | 10·77 | 2·72 |
| 8 | Common salt, 100 lb | 6·66 | 3·44 | 10·10 | 2·45 |
| 9 | Common salt, 200 lb | 8·16 | 4·13 | 12·29 | 3·07 |
| 10 | Common salt, 400 lb | 7·84 | 4·21 | 12·05 | 3·04 |
| 11 | Check | 7·01 | 3·79 | 10·80 | 2·59 |
| 12 | Malagash salt, 100 lb.; nitrate of soda, 100 lb | 7·55 | 4·78 | 12·33 | 2·96 |
| 13 | Malagash salt, 200 lb.; nitrate of soda, 100 lb | 6·88 | 4·29 | 11·17 | 2·77 |
| 14 | Malagash salt, 400 lb.; nitrate of soda, 100 lb | 7·89 | 4·11 | 12·00 | 3·20 |
| 15 | Check | 7·45 | 4·56 | 12·01 | 2·93 |
| 16 | Malagash salt, 100 lb.; nitrate of soda, 100 lb; acid phosphate, 300 lb | 9·87 | 4·73 | 14·60 | 3·84 |
| 17 | Malagash salt, 200 lb.; nitrate of soda, 100 lb.; acid phosphate, 300 lb | 8·83 | 3·66 | 12·49 | 3·68 |
| 18 | Malagash salt, 400 lb.; nitrate of soda, 100 lb.; acid phosphate, 300 lb | 8·88 | 3·60 | 12·48 | 3·60 |
| 19 | Check | 7·36 | 3·14 | 10·50 | 3·04 |
| 20 | Muriate of potash, 100 lb | 6·80 | 4·74 | 11·54 | 2·51 |
| 21 | Muriate of potash, 200 lb | 6·80 | 4·53 | 11·33 | 2·59 |
| 22 | Muriate of potash, 300 lb | 8·08 | 4·85 | 12·93 | 3·31 |
| 23 | Muriate of potash, 400 lb | 8·04 | 4·80 | 12·84 | 3·20 |
| 24 | Muriate of potash, 500 lb | 7·79 | 4·74 | 12·53 | 2·81 |
| 25 | Check | 7·57 | 4·43 | 12·00 | 2·77 |

MALAGASH SALT TEST
Mangels and turnips, 1924; oats, 1925

| Plot | How treated, pounds per acre | Average yield per acre, 1924 | | Average yield per acre, 1925 | |
|---|---|---|---|---|---|
| | | Mangels | Turnips | Oats | Straw |
| | | bush. | bush. | bush. | bush. |
| 1 | Malagash salt, 200 | 592·0 | 736·0 | 59·9 | 1·52 |
| 2 | Malagash salt, 400 | 678·4 | 672·0 | 70·5 | 1·65 |
| 3 | Malagash salt, 600 | 710·4 | 780·8 | 70·5 | 1·7 |
| 4 | Check | 521·6 | 627·2 | 74·5 | 1·78 |
| 5 | Common salt, 200 | 496·0 | 684·8 | 65·4 | 1·57 |
| 6 | Common salt, 400 | 624·0 | 716·8 | 64·2 | 1·76 |
| 7 | Common salt, 600 | 649·6 | 732·8 | 74·8 | 1·87 |
| 8 | Check | 518·4 | 681·6 | 60·0 | 1·69 |
| 9 | Muriate of potash, 200 | 524·8 | 675·2 | 57·6 | 1·64 |
| 10 | Muriate of potash, 400 | 617·6 | 745·6 | 71·7 | 1·68 |
| 11 | Check | 521·6 | 678·4 | 73·2 | 1·94 |
| 12 | Malagash salt, 200; nitrate of soda, 200 | 528·0 | 710·4 | 70·5 | 1·88 |
| 13 | Malagash salt, 400; nitrate of soda, 200 | 729·6 | 790·4 | 70·5 | 1·84 |
| 14 | Malagash salt, 600; nitrate of soda, 200 | 742·4 | 828·1 | 71·2 | 1·77 |
| 15 | Check | 496·0 | 665·6 | 65·1 | 1·80 |
| 16 | Malagash salt, 200; nitrate of soda, 200; acid phosphate, 500 | 780·8 | 808·9 | 67·7 | 1·80 |
| 17 | Malagash salt, 400; nitrate of soda, 200; acid phosphate, 500 | 770·5 | 747·7 | 75·5 | 1·86 |
| 18 | Malagash salt, 600; nitrate of soda, 200; acid phosphate, 500 | 783·3 | 761·6 | 73·6 | 1·89 |
| | Average of 16 check plots | 514·2 | 663·2 | 68·2 | 1·79 |

Further tests were made in 1925 with Malagash salt applied to the land previous to seeding with grain, clover and timothy. The plots were $\frac{1}{320}$ acre each, and the results tabulated are the average yields of oats from four plots treated similarly.

MALAGASH SALT, 1925

| Plot | How fertilized, pounds per acre | Yield per acre | |
|---|---|---|---|
| | | Grain | Straw |
| | | bush. | tons |
| 1 | 200, Malagash salt | 52·9 | 1·56 |
| 2 | 400, Malagash salt | 56·2 | 1·59 |
| 3 | 200, common salt | 46·8 | 1·39 |
| 4 | 400, common salt | 51·5 | 1·58 |
| 5 | Check | 51·5 | 1·50 |
| 6 | 200, Malagash salt<br>100, nitrate of soda | 65·1 | 1·97 |
| 7 | 400, Malagash salt<br>100, nitrate of soda | 71·0 | 1·95 |
| 8 | Check | 52·7 | 1·68 |
| 9 | 200, Malagash salt<br>100, nitrate of soda<br>300, acid phosphate | 71·7 | 1·98 |
| 10 | 400, Malagash salt<br>100, nitrate of soda<br>300, acid phosphate | 64·2 | 2·00 |
| 11 | 200, Malagash salt<br>100, nitrate of soda<br>300, acid phosphate<br>50, muriate of potash | 53·4 | 1·57 |
| 12 | 400, Malagash salt<br>100, nitrate of soda<br>300, acid phosphate<br>50, muriate of potash | 64·2 | 1·88 |
| 13 | 100, nitrate of soda<br>300, acid phosphate<br>50, muriate of potash | 60·2 | 1·92 |
| 14 | Check | 49·8 | 1·40 |

Further tests were also made in 1925 in applying Malagash salt to the land when seeding to roots. This land was low in fertility and was in grain in 1924.

No fertilizers were applied other than those indicated in the table following. This area will be seeded to grain, clover, and timothy, in 1926.

MALAGASH SALT, 1925

| Plot | How fertilized, pounds per acre | Yield per acre | |
|---|---|---|---|
| | | Mangels | Turnips |
| | | bush. | bush. |
| 1 | 200, Malagash salt | 188·8 | 315·5 |
| 2 | 400, Malagash salt | 204·8 | 323·8 |
| 3 | 600, Malagash salt | 188·8 | 358·4 |
| 4 | Check | 163·2 | 362·2 |
| 5 | 200, common salt | 172·8 | 381·4 |
| 6 | 400, common salt | 214·4 | 343·0 |
| 7 | 600, common salt | 211·2 | 349·4 |
| 8 | Check | 118·4 | 371·2 |
| 9 | 200, muriate of potash | 153·6 | 266·2 |
| 10 | 400, muriate of potash | 153·6 | 320·0 |
| 11 | Check | 121·6 | 321·9 |
| 12 | 200, Malagash salt<br>200, nitrate of soda | 201·6 | 400·6 |
| 13 | 400, Malagash salt<br>200, nitrate of soda | 240·0 | 352·0 |
| 14 | 600, Malagash salt<br>200, nitrate of soda | 166·4 | 353·9 |
| 15 | Check | 182·4 | 307·2 |
| 16 | 200, Malagash salt<br>200, nitrate of soda<br>500, acid phosphate | 256·0 | 443·5 |
| 17 | 400, Malagash salt<br>200, nitrate of soda<br>500, acid phosphate | 323·2 | 437·1 |
| 18 | 600, Malagash salt<br>200, nitrate of soda<br>500, acid phosphate | 332·8 | 400·6 |

GYPSUM AND SULPHUR EXPERIMENT

This test was undertaken to determine the effect of these materials on crop yields, and their influence on succeeding crops in the rotation, particularly with reference to potato and clover development. The materials were applied in 1924, and potatoes planted. The land was seeded to oats, clover, and timothy in 1925. The yields given in the table following are the average of four plots treated alike.

GYPSUM AND SULPHUR EXPERIMENT

| Plot | How fertilized, 1924, pounds per acre | Average yield potatoes per acre, 1924 | Average yield oats per acre, 1925 | |
|---|---|---|---|---|
| | | | Grain | Straw |
| | | bush. | bush. | ton |
| 1 | Gypsum, 550 | 153·8 | 50·0 | 1·38 |
| 2 | Gypsum, 1,100 | 144·6 | 50·3 | 1·39 |
| 3 | Gypsum, 2,200 | 179·9 | 54·1 | 1·45 |
| 4 | Check | 130·6 | 50·3 | 1·21 |
| 5 | Sulphur, 100 | 159·8 | 50·1 | 1·44 |
| 6 | Sulphur, 200 | 171·9 | 56·0 | 1·45 |
| 7 | Sulphur, 400 | 164·5 | 48·9 | 1·44 |
| 8 | Superphosphate, 890 | 171·9 | 50·3 | 1·55 |
| 9 | Superphosphate, 1,780 | 169·2 | 58·8 | 1·66 |
| 10 | Check | 144·5 | 54·8 | 1·48 |
| 11 | Ground natural rock phosphate, 500 | 183·2 | 60·2 | 1·63 |
| 12 | Ground limestone, 4,000 | 152·6 | 59·3 | 1·63 |
| 13 | Sulphur, 200; ground limestone, 4,000 | 147·2 | 48·9 | 1·00 |
| 14 | Check | 163·9 | 53·1 | 1·52 |
| 15 | Gypsum, 500; manure, 20,000 | 198·5 | 55·3 | 1·69 |
| 16 | Manure, 20,000 | 176·4 | 54·1 | 1·65 |
| 17 | Check | 149·2 | 49·8 | 1·45 |
| 18 | Check | 107·2 | 42·1 | 0·92 |
| | Average of 20 checks | 139·0 | 50·7 | 1·36 |

## BASIC SLAG EXPERIMENT

The following hay yield was obtained from the areas treated with different slags when seeding down in 1924, the grain yields from which were given in the 1924 report. Unfortunately through a mishap to the seeder the seeder attachment failed to work on a range where no nitrate of soda or muriate of potash was used, and although this was seeded later by hand, the seed did not start evenly and plots 1 to 10 had to be eliminated. Plots 11 to 20 received, in addition to the slag, nitrate of soda at the rate of 100 pounds per acre and muriate of potash, 50 pounds per acre, scattered broadcast on the plots before seeding. Plots 11 to 14 inclusive received slag in quantity to supply the same amount (140 pounds) of phosphoric acid per acre, while plots 16 to 19 inclusive received one-half this amount, or 70 pounds per acre. The yields given are the average of four plots treated similarly.

BASIC SLAG EXPERIMENT

| Plot | How fertilized per acre | Average yield of hay per acre | | | |
|---|---|---|---|---|---|
| | | Green weight | | | Cured weight, first cutting |
| | | First cutting | Second cutting | Total | |
| | | tons | tons | tons | tons |
| 11 | Sydney slag, 14%, 1,000 lb | 8·59 | 5·71 | 14·30 | 3·07 |
| 12 | Sydney slag, 17%, 824 lb | 7·55 | 4·92 | 12·47 | 2·88 |
| 13 | Florida rock phosphate, 29%, 483 lb | 7·84 | 4·99 | 12·82 | 2·72 |
| 14 | Bessemer imported slag, 16%, 875 lb | 9·07 | 4·81 | 13·88 | 3·28 |
| 15 | Check, not fertilized | 5·60 | 3·47 | 9·07 | 1·71 |
| 16 | Sydney slag, 14%, 500 lb | 8·32 | 5·23 | 13·55 | 2·92 |
| 17 | Sydney slag, 17%, 412 lb | 6·32 | 4·08 | 10·40 | 2·40 |
| 18 | Florida rock phosphate, 29%, 241·5 lb | 7·79 | 4·72 | 12·51 | 2·91 |
| 19 | Bessemer imported slag, 16%, 437·5 lb | 7·84 | 4·72 | 12·56 | 3·04 |
| 20 | Check, not fertilized | 5·47 | 3·55 | 9·02 | 1·92 |

## EPHOS BASIC PHOSPHATE

Tests were made with Ephos, an Egyptian rock phosphate containing 27½ per cent of phosphoric acid. This was compared with Bessemer imported slag and with acid phosphate. The land on which this test was conducted was of low fertility, having previously been in oats, and no fertilizer other than that stated was used. The yield was low. It will be noted that the turnips responded to the treatment better than the mangels. This is what one would expect, for unless the soil has sufficient available plant food to give the mangel crop a good start, the yield will not be very large. Under poor soil conditions the turnip plant will make much better growth than the mangel, and is capable of making much better use of a phosphate not readily soluble than is the mangel. The results tabulated are the average of four plots treated similarly. The phosphatic materials supplied were the equivalent of 80 pounds of phosphoric acid per acre.

EPHOS BASIC PHOSPHATE

| Plot | How treated per acre | Crop | Average yield per acre |
|---|---|---|---|
| | | | tons |
| 1 | Ephos, 292 lb | Mangels | 1·68 |
| | | Turnips | 7·72 |
| 2 | Acid phosphate, 500 lb | Mangels | 4·12 |
| | | Turnips | 7·68 |
| 3 | Bessemer slag, 500 lb | Mangels | 4·56 |
| | | Turnips | 7·04 |
| 4 | Ephos, 292 lb.; nitrate of soda, 150 lb.; muriate of potash, 100 lb. | Mangels | 2·76 |
| | | Turnips | 8·16 |
| 5 | Acid phosphate, 500 lb.; nitrate of soda, 150 lb.; muriate of potash, 100 lb. | Mangels | 6·35 |
| | | Turnips | 9·48 |
| 6 | Bessemer slag, 500 lb.; nitrate of soda, 150 lb.; muriate of potash, 100 lb. | Mangels | 6·96 |
| | | Turnips | 9·72 |
| 7 | Nitrate of soda, 150 lb.; muriate of potash, 100 lb | Mangels | 3·08 |
| | | Turnips | 7·84 |
| 8 | Check | Mangels | 1·52 |
| | | Turnips | 6·80 |
| 8 | Check | Mangels | 2·48 |
| | | Turnips | 5·88 |

CALCITIC VS. MAGNESIAN LIMESTONE

This experiment was undertaken to ascertain whether magnesian limestone is as valuable in crop production as calcitic limestone, and these materials were compared with gypsum and hydrated lime. Turnips were planted in 1924 and the plots were seeded to oats, clover and timothy in 1925. The average of four plots in each test was as given in the following table.

CALCITIC VS. MAGNESIAN LIMESTONE

| Plot | How treated, 1924, tons per acre | Average yield turnips per acre, 1924 | Average yield oats per acre, 1925 | |
|---|---|---|---|---|
| | | | Grain | Straw |
| | | bush. | bush. | tons |
| 1 | Magnesian limestone, 2 | 500·4 | 58·8 | 1·90 |
| 2 | Magnesian limestone, 4 | 554·8 | 64·9 | 1·88 |
| 3 | Magnesian limestone, 6 | 567·6 | 63·0 | 2·09 |
| 4 | Magnesian limestone, 8 | 528·0 | 62·1 | 1·94 |
| 5 | Check | 551·6 | 52·7 | 1·64 |
| 6 | Calcitic limestone, 2 | 602·9 | 61·4 | 1·90 |
| 7 | Calcitic limestone, 4 | 582·4 | 59·2 | 1·75 |
| 8 | Calcitic limestone, 6 | 568·6 | 61·6 | 1·86 |
| 9 | Calcitic limestone, 8 | 595·2 | 66·8 | 2·04 |
| 10 | Check | 570·8 | 64·3 | 1·82 |
| 11 | Gypsum, 2 | 567·6 | 57·6 | 1·72 |
| 12 | Gypsum, 4 | 572·8 | 58·3 | 1·63 |
| 13 | Check | 532·4 | 61·2 | 1·72 |
| 14 | Hydrated lime, 1 | 529·2 | 63·0 | 1·74 |
| 15 | Hydrated lime, 2 | 542·0 | 67·5 | 2·22 |
| 16 | Hydrated lime, 3 | 532·5 | 64·9 | 2·19 |
| 17 | Hydrated lime, 4 | 503·6 | 62·1 | 2·00 |
| 18 | Check | 497·2 | 61·4 | 1·78 |

NITROGENOUS FERTILIZERS AS TOP-DRESSINGS ON VARIOUS CROPS

Nitrate of soda and sulphate of ammonia, each at two rates per acre, were applied to duplicate sixtieth-acre plots of mangels and turnips and fiftieth-acre plots of corn. The fertilizer was applied to the mangels and turnips after thinning, and to the corn when the plants were about one foot high. The following table gives the average yields, and the profit or loss from each application.

It should be pointed out that the turnip crop was greatly reduced through the ravages of root-maggot and rhizoctonia, which helps explain the loss experienced on all four fertilized plots of this crop. In calculating the profit or loss, nitrate of soda is charged at $60, sulphate of ammonia at $70, mangels and turnips at $4, and corn at $3 per ton.

NITROGENOUS FERTILIZERS AS TOP-DRESSINGS ON VARIOUS CROPS

| Plot | Material used, pounds per acre | Average yield per acre | Gain over check plot per acre | Cost of materials and application per acre | Profit over check plot, or (−) loss, per acre |
|---|---|---|---|---|---|
| | | tons | tons | $ | $ |
| | *Mangels* | | | | |
| 1 | Nitrate of soda, 150 | 24·73 | 4·21 | 5 00 | 11 84 |
| 2 | Nitrate of soda, 200 | 24·19 | 3·67 | 6 50 | 8 18 |
| 3, 6 | Check, not fertilized | 20·52 | | | |
| 4 | Sulphate of ammonia, 112½ | 21·46 | 0·94 | 4 43 | −0 67 |
| 5 | Sulphate of ammonia, 150 | 22·08 | 1·56 | 5 75 | −0 49 |
| | *Turnips* | | | | |
| 1 | Nitrate of soda, 150 | 18·43 | 0·54 | 5 00 | −2 84 |
| 2 | Nitrate of soda, 200 | 19·45 | 1·56 | 6 50 | −0 26 |
| 3, 6 | Check, not fertilized | 17·89 | | | |
| 4 | Sulphate of ammonia, 112½ | 17·23 | −0·66 | 4 43 | −7 07 |
| 5 | Sulphate of ammonia, 150 | 19·05 | 1·16 | 5 75 | −1 11 |
| | *Corn* | | | | |
| 1 | Nitrate of soda, 150 | 14·05 | −1·07 | 5 00 | −8 21 |
| 2 | Nitrate of soda, 200 | 15·07 | −0·05 | 6 50 | −6 65 |
| 3, 6 | Check, not fertilized | 15·12 | | | |
| 4 | Sulphate of ammonia, 112½ | 15·80 | 0·68 | 4 43 | −2 39 |
| 5 | Sulphate of ammonia, 150 | 16·32 | 1·20 | 5 75 | −2 15 |

## YIELD OF OATS FOLLOWING HEMP FERTILIZED IN DIFFERENT WAYS

The following table gives the yields of oats in 1925 from plots fertilized in various ways for hemp in 1924. The plots were 1/80 acre each, and the results given are the average of quadruplicate plots.

YIELD OF OATS FOLLOWING HEMP FERTILIZED IN DIFFERENT WAYS

| Plot | How treated, 1924, pounds per acre | Average yield per acre | |
|---|---|---|---|
| | | Grain | Straw |
| | | bush. | tons |
| 1 | Nitrate of soda, 200 | 50·9 | 1·40 |
| 2 | Acid phosphate, 500 | 51·2 | 1·35 |
| 3 | Muriate of potash, 100 | 46·2 | 1·32 |
| 4 | Check, not fertilized | 48·8 | 1·33 |
| 5 | Nitrate of soda, 200; acid phosphate, 500 | 55·3 | 1·48 |
| 6 | Nitrate of soda, 200; acid phosphate, 500; muriate of potash, 100 | 53·5 | 1·43 |
| 7 | Check, not fertilized | 50·6 | 1·38 |
| 8 | Nitrate of soda, 100 | 51·2 | 1·32 |
| 9 | Nitrate of soda, 300 | 50·0 | 1·37 |
| 10 | Nitrate of soda, 400 | 57·4 | 1·56 |

## SOILGRO

A sample of this material was sent to this Station to be tested on various crops. It was claimed to be of value because of its introduction into the soil of beneficial bacteria. It was mixed according to directions and applied June 18, after the plants had started well, to plots of corn, sunflowers, turnips and mangels, as well as to a portion of a new lawn which was being seeded.

The results show no advantage from the use of this material. Following will be found the average yields per acre from the treated plots of corn, sunflowers, turnips and mangels, as well as yields from plots of same area, on which no Soilgro was used. No difference in the growth of grass on the new lawn was apparent.

TESTS WITH SOILGRO

| Crop | Average yield per acre | |
|---|---|---|
| | Treated with Soilgro | Not treated with Soilgro |
| | tons | tons |
| Corn | 22·8 | 23·4 |
| Sunflowers | 27·5 | 26·9 |
| Turnips | 18·7 | 19·6 |
| Mangels | 29·8 | 29·3 |

NITRATE OF SODA ON WAGENER APPLE TREES

An experiment was started in the spring of 1923 to compare the effects of heavy versus light applications of nitrate of soda on apple trees, used alone and in combination with acid phosphate and muriate of potash, separately and combined. The trees had been planted in 1913. The fertilizers were applied by hand annually, as early in May as the soil conditions would permit, and were cultivated in.

The following table gives the fertilizers applied per acre and the total yield per tree for the three years 1923, 1924, and 1925.

NITRATE OF SODA ON WAGENER APPLE TREES

| Plot | Nitrate of soda | Acid phosphate | Muriate of potash | Total yield per tree, three years, 1923, 1924 and 1925 |
|---|---|---|---|---|
| | lb. | lb. | lb. | pks. |
| 61 | 216 | ..... | ..... | 9·78 |
| 62 | 432 | ..... | ..... | 11·64 |
| 63 | 216 | 216 | 108 | 9·09 |
| 64 | 432 | 216 | 108 | 15·52 |
| 65 | 216 | 216 | ..... | 12·75 |
| 66 | 432 | 216 | ..... | 16·50 |
| 67 | 216 | ..... | 108 | 12·38 |
| 68 | 432 | ..... | 108 | 14·31 |
| 69 | 216 | 432 | 216 | 13·29 |
| 70 | 432 | 432 | 216 | 12·83 |
| 71 | nil | nil | nil | 8·27 |
| 72 | nil | nil | nil | 11·78 |

NITRATE OF SODA VS. SULPHATE OF AMMONIA AS AN ORCHARD FERTILIZER

Two similar plots of trees have been treated and fertilized alike since their planting in 1913, except that one plot has received nitrate of soda and the other an equal quantity of sulphate of ammonia. The land not occupied by the growing trees has been in a rotation of potatoes, grain and hay. The fertilizer has been applied to the potato and the grain crops. The trees, likewise, during their early growth and until the commencement of the fourth rotation period were fertilized only two years out of three, but since that time have received annual applications of fertilizer.

Nitrate of soda contains 15 per cent of nitrogen and the quantity applied would supply 22½ pounds of nitrogen per acre at each application. The sulphate of ammonia contains 20 per cent of nitrogen, and the quantity applied would supply 30 pounds of nitrogen per acre at each application. The sulphate of ammonia plot, therefore, received more nitrogen than the nitrate of soda plot.

The following table gives the average yields from, and diameters of, the trees in the two plots.

NITRATE OF SODA VS. SULPHATE OF AMMONIA AS AN ORCHARD FERTILIZER

| How fertilized, per acre | Average diameter of trees, autumn, 1925 | Total yield per tree since planting in 1913 |
|---|---|---|
| | inches | pks. |
| Nitrate of soda, 150 lb.; acid phosphate, 350 lb.; muriate of potash, 150 lb..... | 5·70 | 13·0 |
| Sulphate of ammonia, 150 lb.; acid phosphate, 350 lb.; muriate of potash, 150 lb. | 6·15 | 13·9 |

## ORCHARD FERTILIZER EXPERIMENT, AVERAGE OF SEVEN YEARS YIELDS, 1919-1920 INCLUSIVE

The trees in this experiment were planted in 1913. The ground not occupied by the growing trees has been in rotation with potatoes, grain and hay. Fertilizers have been applied twice during each three-year rotation, to the potato and the grain crops. Plots 1 to 24 were laid out in 1913, and the remainder in 1916, at the beginning of the second rotation.

A summary of the inter-crops grown on the various plots, on the fertilized land not occupied by the growing trees, for the three rotation periods, 1916-1924, inclusive, is given in the report of this Station for 1924.

Each plot consists of four trees, two Gravenstein and two Wagener. The table following gives the average total yield of fruit per tree, 1919 to 1925, inclusive, from the various plots, and the average diameter in 1925 of the trees on the plots.

ORCHARD FERTILIZER EXPERIMENT, AVERAGE OF SEVEN YEARS' YIELDS, 1919–1925, INCLUSIVE

| Plot | Fertilizers applied 1916–17–19–20–22–23 | | | | | Average total yield per tree | Average diameter of trees fall 1925 |
|---|---|---|---|---|---|---|---|
| | Nitrate of soda 15% N | Acid phosphate 16% $P_2O_5$ | Basic slag 11·2% $P_2O_5$ | Muriate of potash 50% $K_2O$ | Other fertilizers | | |
| | lb. | lb. | lb. | lb. | lb. | pk. | in. |
| 1 | 150 | 350 | ..... | 150 | ..... | 14·7 | 5·55 |
| 2 | 150 | ..... | 500 | 150 | ..... | 17·7 | 5·99 |
| 3 | 150 | ..... | ..... | 150 | 500 (1) | 11·9 | 6·34 |
| 4 | ..... | 350 | ..... | 150 | 150 (2) | 14·0 | 6·38 |
| 5 | 150 | 350 | ..... | 100 | ..... | 29·2 | 6·59 |
| 6 Check | ..... | ..... | ..... | ..... | ..... | 14·4 | 6·01 |
| 7 | 92·3 | 215·4 | ..... | 92·3 | ..... | 23·9 | 6·27 |
| 8 | 138·5 | 323 | ..... | 138·5 | ..... | 13·1 | 6·26 |
| 9 | 150 | 350 | ..... | 60 | ..... | 27·2 | 6·60 |
| 10 | 150 | ..... | ..... | ..... | ..... | 19·2 | 6·44 |
| 11 Check | ..... | ..... | ..... | ..... | ..... | 13·8 | 6·29 |
| 12 | 184·6 | 430·8 | ..... | 184·6 | ..... | 18·4 | 6·22 |
| 13 | 150 | 350 | ..... | 30 | ..... | 26·2 | 6·12 |
| 14 Check | ..... | ..... | ..... | ..... | ..... | 14·0 | 5·66 |
| 15 | ..... | ..... | ..... | 150 | ..... | 28·6 | 5·87 |
| 16 | 150 | 350 | ..... | 150 | ..... | 25·5 | 6·29 |
| 17 | ..... | 350 | ..... | ..... | ..... | *26·2 | *6·66 |
| 18 | ..... | ..... | ..... | ..... | 500 (1) | 30·1 | 6·44 |
| 19 Check | ..... | ..... | ..... | ..... | ..... | 36·5 | 6·56 |
| 20 | ..... | 350 | ..... | 150 | ..... | 23·9 | 6·61 |
| 21 | ..... | ..... | 500 | ..... | ..... | 28·9 | 6·65 |
| 22 | 150 | ..... | 500 | ..... | ..... | 40·7 | 7·00 |
| 23 | 150 | ..... | ..... | 150 | ..... | 38·7 | 6·63 |
| 24 | 150 | 350 | ..... | ..... | ..... | 19·8 | 6·25 |

ORCHARD FERTILIZER EXPERIMENT, AVERAGE OF SEVEN YEARS' YIELDS, 1919–1925, INCLUSIVE—*Concluded*

| Plot | Fertilizers applied 1916–17–19–20–22–23 | | | | | Average total yield per tree | Average diameter of trees fall 1925 |
|---|---|---|---|---|---|---|---|
| | Nitrate of soda 15% N | Acid phosphate 16% $P_2O_5$ | Basic slag 11·2% $P_2O_5$ | Muriate of potash 50% $K_2O$ | Other fertilizers | | |
| | lb. | lb. | Basic slag 16% lb. | Manure 1916–19–22 ton | Ground limestone 1916–19–23 lb. | pk. | in. |
| 25 | ..... | ..... | ..... | 15 | ..... | 22·4 | 6·19 |
| 26, Check | ..... | ..... | ..... | ..... | ..... | 8·6 | 5·64 |
| 27 | ..... | 250 | 250 | 15 | ..... | 34·8 | 6·20 |
| 28 | ..... | ..... | 500 | 15 | 4,000 | *28·7 | *6·02 |
| 29 | ..... | 250 | 250 | 15 | 4,000 | 28·9 | 6·72 |
| 30 | ..... | ..... | 500 | 15 | ..... | 17·2 | 5·95 |
| 31 | ..... | 500 | ..... | 15 | ..... | 19·6 | 5·82 |
| 32 | ..... | ..... | ..... | 15 | 4,000 | 26·2 | 6·35 |
| 33 | ..... | 500 | ..... | 15 | 4,000 | 22·8 | 6·60 |
| 34, Check | ..... | ..... | ..... | ..... | ..... | 23·4 | 6·01 |
| 35 | ..... | ..... | 500 | 15 | ..... | 27·1 | 4·93 |
| 36 | 150 | ..... | 500 | ..... | 4,000 | 16·7 | 5·10 |
| 37 | 150 | 250 | 250 | ..... | 4,000 | 30·0 | 5·63 |
| 38 | ..... | ..... | 500 | ..... | 4,000 | 33·7 | 6·29 |
| | | | | Muriate of potash lb. | | | |
| 39 | 150 | ..... | 500 | 150 | 4,000 | 58·5 | 6·07 |
| 40, Check | ..... | ..... | ..... | ..... | ..... | 17·2 | 4·95 |
| 41 | 150 | 500 | ..... | ..... | 4,000 | 21·9 | 5·35 |
| 42 | 150 | ..... | ..... | ..... | 4,000 | 40·7 | 5·82 |
| 43 | ..... | 500 | ..... | ..... | 4,000 | 31·4 | 5·75 |
| 44, Check | ..... | ..... | ..... | ..... | ..... | 34·0 | 5·01 |
| 45 | 150 | ..... | 500 | ..... | ..... | 20·7 | 5·05 |
| 46, Check | ..... | ..... | ..... | ..... | ..... | 26·6 | 4·75 |
| 47 | 150 | 500 | ..... | 150 | ..... | 44·1 | 5·61 |
| 48 | ..... | ..... | ..... | ..... | 4,000 | *55·1 | *5·84 |
| 49 | 150 | 500 | ..... | ..... | ..... | 31·8 | 5·11 |
| 50 | 150 | ..... | 500 | 150 | ..... | 49·4 | 5·48 |
| 51 | ..... | 500 | ..... | ..... | ..... | 45·5 | 5·21 |

(1) Bone Meal, 2½% N. and 22% $P_2O_5$.
(2) Sulphate of ammonia, 20% N.

*Average of three trees only.

## POULTRY

### COST OF RAISING CHICKENS

This being the first year that our chickens have been raised on range records were kept of the feed required to raise 500 chickens (about equal number of Barred Rocks and White Leghorns) from hatching, May 7, to October 1, and were as follows:—

COST OF RAISING 500 CHICKENS FROM MAY 7 TO JULY 31

| | | |
|---|---|---|
| 192 | pounds Blatchford's milk mash at $4.90 | $ 9 41 |
| 77 | pounds chick scratch at $4.25 | 3 27 |
| 116 | pounds chick scratch (H.O) at $5.15 | 5 97 |
| 78 | pounds Purina chick scratch at $4.25 | 3 31 |
| 104 | pounds rolled oats at $3.75 | 3 90 |
| 230 | pounds bran at $1.85 | 4 25 |
| 192 | pounds middlings at $2.25 | 4 32 |
| 75 | pounds cornmeal at $2.85 | 2 14 |
| 115 | pounds crushed oats at $2.25 | 2 69 |
| 385 | pounds Monarch scratch at $3.35 | 12 90 |
| 385 | pounds cracked corn at $2.85 | 10 97 |
| 190 | pounds wheat at $2.50 | 4 75 |
| 20 | pounds meat scrap at $6 | 1 20 |
| | **Total cost** | **$69 08** |

**Cost per chicken, 13.8 cents.**

COST OF RAISING 500 CHICKENS FROM AUGUST 1 TO AUGUST 31

| | | |
|---|---|---|
| 345 | pounds crushed oats at $2.25 | $ 7 77 |
| 190 | pounds bran at $1.85 | 3 52 |
| 191 | pounds shorts at $2.25 | 4 30 |
| 50 | pounds meat scrap at $6 | 3 00 |
| 200 | pounds cornmeal at $2.80 | 5 60 |
| 796 | pounds wheat at $2.75 | 21 89 |
| 590 | pounds whole corn at $2.85 | 16 82 |
| 488 | pounds cracked corn at $2.85 | 13 81 |
| | Total cost | $76 71 |

Cost per chicken, 15.3 cents.

COST OF RAISING 500 CHICKENS FROM SEPTEMBER 1 TO OCTOBER, 1

| | | |
|---|---|---|
| 1,015 | pounds corn at $2.65 | $26 90 |
| 890 | pounds wheat at $2.75 | 24 48 |
| 188 | pounds bran at $1.70 | 3 20 |
| 188 | pounds shorts at $2.25 | 4 23 |
| 190 | pounds crushed oats at $2.25 | 4 28 |
| 180 | pounds cornmeal at $2.75 | 4 95 |
| 285 | pounds oats at $2.25 | 6 41 |
| 95 | pounds meat scrap at $6 | 5 70 |
| | Total cost | $80 15 |

Cost per chicken, 16.0 cents.

| | Cents |
|---|---|
| Cost per chicken from May 7 to July 31 | 13.8 |
| Cost per chicken from August 1 to August 31 | 15.3 |
| Cost per chicken from September 1 to October 1 | 16.0 |
| Total cost per chicken from May 7 to October 1 | 45.1 |

## NOVA SCOTIA SOUTHERN EGG-LAYING CONTEST

The first year of this contest terminated October 31, 1925. Twenty pens (11 Barred Rocks, 7 White Leghorns, and one each of White Wyandottes and Rhode Island Reds) of ten birds each were entered. Of this number 17 birds qualified for registration, having each laid 200 eggs or over averaging at least two ounces in weight, and 18 birds laid over 200 eggs each, which averaged slightly under the required weight.

From the records kept of the feed, production, costs, etc., the following data have been tabulated.

SUMMARY, BY BREEDS, OF EGG PRODUCTION, FEED COSTS AND PROFIT, NOVA SCOTIA SOUTHERN EGG-LAYING CONTEST, KENTVILLE, 1924-25

| No. birds | Breed | Total eggs laid | Average eggs laid per bird | Total value of eggs | Average value eggs per bird | Total cost of feed | Average cost of feed per bird | Total profit | Average profit per bird for year |
|---|---|---|---|---|---|---|---|---|---|
| | | | | $ cts. | $ cts. | $ cts. | $ cts. | $ cts. | $ cts. |
| 70 | White Leghorns | 11,155 | 159·3 | 388 76 | 5 55 | 182 98 | 2 61 | 205 78 | 2 94 |
| 10 | W. Wyandottes | 1,466 | 146·6 | 49 23 | 4 92 | 28 42 | 2 84 | 20 81 | 2 08. |
| 120 | Barred Rocks | 17,207 | 156·4 | 561 42 | 5 10 | 334 77 | 3 04 | 226 65 | 2 06 |
| 10 | R. I. Reds | 875 | 87·5 | 28 59 | 2 85 | 26 92 | 2 69 | 1 67 | 17 |

NOTE.—There being only one pen of 10 birds each of Wyandottes and Rhode Island Reds, the table does not make a satisfactory comparison of breeds.

SUMMARY BY PENS OF EGG PRODUCTION AND FEED CONSUMPTION, N. S. S. EGG-LAYING CONTEST, KENTVILLE, N.S., 1924–1925

| Pen | Breed | Total eggs laid | Cost per dozen | Value of eggs | Total cost of feed | Profit for year |
|---|---|---|---|---|---|---|
| | | | $ cts. | $ cts. | $ cts. | $ cts. |
| 1 | B.R. | 1,679 | 0 20 | 59 86 | 27 77 | 32 09 |
| 2 | W.W. | 1,466 | 0 23 | 49 23 | 28 42 | 20 81 |
| 3 | W.L. | 1,201 | 0 24 | 40 49 | 24 28 | 16 21 |
| 4 | B.R. | 1,603 | 0 23 | 51 44 | 30 87 | 20 57 |
| 5 | W.L. | 1,536 | 0 20 | 52 67 | 25 82 | 26 85 |
| 6 | B.R. | 1,536 | 0 26 | 48 49 | 33 30 | 15 19 |
| 7 | R.I.R. | 875 | 0 37 | 28 59 | 26 92 | 1 67 |
| 8 | B.R. | 1,603 | 0 23 | 51 00 | 32 00 | 19 00 |
| 9 | W.L. | 1,429 | 0 22 | 50 09 | 26 08 | 24 01 |
| 10 | B.R. | 1,521 | 0 21 | 50 26 | 26 49 | 23 77 |
| 11 | B.R. | 1,368 | 0 22 | 43 39 | 24 89 | 18 50 |
| 12 | B.R. | 1,731 | 0 25 | 55 31 | 36 19 | 19 12 |
| 13 | W.L. | 1,612 | 0 21 | 56 86 | 28 89 | 27 97 |
| 14 | B.R. | 1,844 | 0 22 | 61 06 | 34 35 | 26 71 |
| 15 | W.L. | 2,188 | 0 14 | 76 29 | 26 47 | 49 82 |
| 16 | B.R. | 1,030 | 0 31 | 28 40 | 26 88 | 1 52 |
| 17 | W.L. | 1,378 | 0 21 | 48 82 | 24 23 | 24 59 |
| 18 | B.R. | 1,580 | 0 23 | 55 48 | 30 17 | 25 31 |
| 19 | W.L. | 1,811 | 0 18 | 63 54 | 27 21 | 36 33 |
| 20 | B.R. | 1,712 | 0 22 | 56 73 | 31 86 | 24 87 |
| Totals or averages | | 30,703 | 0 22 | 1,028 00 | 573 09 | 454 91 |

Total feed consumed by the twenty pens:—

| | | | | | |
|---|---|---|---|---|---|
| Grain | 9,222 lb. | Meat scrap | 655 lb. | Shell | 719 lb. |
| Mash | 7,389 lb. | Green feed | 3,960 lb. | Skim-milk | 6,190 lb. |
| Grit | 140 lb. | Charcoal | 44 lb. | | |

## APIARY

The winter of 1924-25 was the most favourable experienced in years for the satisfactory wintering of bees. During the month of February the bees had flights on five different days, which is a very uncommon occurrence. Fifty-two colonies were wintered in quadruple cases, one in a single case, and four in the old honey-house. Four of these colonies were double colonies in that they contained two queens separated by a tight-fitting division-board. Two single colonies and half of a double colony did not survive the winter. The average number of combs covered May 13 was 5.5.

At the out-apiary at Bridgetown eight colonies were wintered in quadruple cases. They came through the winter in good condition. The average number of combs covered on May 28 was 15.5.

The eight colonies in the out-apairy at Brooklyn came through the winter in fair condition. The average number of combs covered on May 21 was 10.06.

### POISONING OF BEES BY ARSENICAL DUST

During the spring of 1925, the bees at the Kentville apiary were poisoned by dust, which weakened the colonies to a great extent. Many of the colonies did not recover from the loss of bees until the clover flow was practically over. For this reason the crop of clover honey harvested was very light. Some colonies that were not poisoned to any extent produced an average crop of honey, while those that were badly poisoned produced a very light crop. The amount of honey harvested per colony varied in direct proportion to the effects of the poisoning.

At the out-apiaries at Bridgetown and Brooklyn the bees were not poisoned. At the former place dusting has been discontinued, while the latter place is not in the orchard district.

## PRODUCTION

The production for 1925 was lower than usual, due to the bees having been poisoned by dust, thereby weakening the colonies to a marked degree, immediately before the clover flow started.

Fruit bloom was as usual a minor source of honey, due to the short period of bloom and the uncertainty of the weather.

The production for a number of years is given in the table following.

| Year | Number of colonies in spring | Number of colonies in fall | Pounds of honey produced | Average per colony, spring count |
|---|---|---|---|---|
| 1919 | 21 | 36 | 2,577½ | 122·7 |
| 1920 | 32 | 56 | 1,168 | 36·5 |
| 1921 | 43 | 60 | 1,681 | 39·1 |
| 1922 | 41 | 69 | 1,685½ | 41·1 |
| 1923 | 36 | 61 | 1,836½ | 51·0 |
| 1924 | 41 | 57 | 2,472½ | 60·3 |
| 1925 | 44 | 61 | 1,741 | 39·5 |

NOTE.—The number of producing colonies for 1925, out of the 44 over-wintered colonies, was only thirty-four, as five were transferred to Modified Dadant hives on sheets of foundation, and most of the brood from 5 other colonies was used in making up mating-boxes, thus reducing these colonies to nuclei or non-producing colonies.

## OUT-APIARIES

Records of the amount of honey gathered since the two out-apiaries have been established are given in the table following.

PRODUCTION IN OUT-APIARIES

| Year | Apiary | Number of colonies in spring | Pounds of honey produced | Number of colonies in fall | Avsrage honey per colony spring count |
|---|---|---|---|---|---|
| | | | | | lb. |
| 1923 | Kennetcook | 4 | 370 | 8 | 92·5 |
| 1923 | Bridgetown | 4 | 336 | 8 | 84·0 |
| 1924 | Brooklyn | 6 | 885 | 8 | 147·5 |
| 1924 | Bridgetown | 8 | 973 | 8 | 121·6 |
| 1925 | Brooklyn | 8 | 449 | 8 | 56·1 |
| 1925 | Bridgetown | 8 | 903 | 8 | 112·9 |

Average production (including both out-apiaries) per colony for the three years, 103·05 pounds.

## SWARM DETECTION

In the two out-apiaries, consisting of sixteen colonies, a shallow super is left on the entire year. In the winter this serves as a food-chamber and in the active season as a brood-chamber. Additional supers given these colonies during the active season were placed over a queen-excluder.

Of the sixteen colonies four developed queen cells in the lower brood-chamber, as well as along the bottom bars of the frames of the shallow supers. The probable reason for the cells being developed in the lower brood chamber is that the honey stored the previous fall in the shallow supers was not consumed during the winter or spring by the bees, which meant the queen did not have sufficient comb-area to carry on brood-rearing, and consequently a large number of cells were developed where most of the brood was. Two colonies

that had consumed practically all the honey in the shallow supers developed queen cells along the bottom bars of the shallow supers, but none in the lower brood-chamber.

In previous years it was found that where shallow supers were used queen cells developed under the swarming impulse were found only along the bottom bars of the shallow supers, making it unnecessary to examine each comb individually in both brood-chambers, it being necessary only to tip one end of the shallow super and look along the bottom bars of the shallow frames to detect queen cells that might be present.

### QUEEN-REARING

Queen-rearing is the main project that is being carried on at this Station. By rearing queens of selected parentage during the last three years there is now an apiary of sixty-one colonies of pure Italian bees, one colony only showing a little of the dark colour of hybrids. During the summer of 1925 sufficient queens were raised to re-queen eighty per cent of the colonies at Kentville and practically all the colonies in the two out-apiaries. A number of queens were also supplied to two of the Experimental Farms, and eleven queens were sold.

### INCREASE

On July 13 and 14, five nuclei were made up from three colonies by taking from them two frames of emerging brood with adhering bees and one frame of honey, and placing these in ten-frame empty hives on new stands. A young queen was then introduced to each nucleus. Drawn combs were given to these nuclei as the season advanced. Until the nuclei became strong in bees the entrances were reduced to 2 inches by $\frac{5}{8}$ of an inch.

In September, after the queen-rearing season was over, five double and four single colonies were made up by uniting strong nuclei in mating-boxes.

### SIZE OF HIVES

In addition to the experiments carried on with the ten-frame Jumbo and Langstroth hives, five Modified Dadant hives were procured to make a more complete test of the most popular hives in use. As it was necessary to transfer five colonies into the new hives on sheets of foundation it was consequently practically impossible for the bees to store a surplus of honey after drawing out the foundation. A thorough comparison should, however, be possible next year.

### CARNIOLAN VERSUS ITALIAN BEES

For the purpose of comparing these two races of bees as to hardiness and honey-gathering ability three Carniolan nuclei were obtained in June. These nuclei built up to full colonies by fall, but did not produce a surplus of honey. These three colonies, and a colony of Italian bees that was re-queened with a Carniolan queen in the fall, will be placed in an out-apiary in the spring together with the same number of Italian colonies.

### ALUMINUM COMBS

To obtain some data as to the value of aluminum combs, two sets of these combs were procured. These were given to two strong colonies over queen-excluders. The bees did not work on them as readily as other colonies of equal strength did on wax combs that were partly drawn. It was found necessary to move the outer combs in the super to the centre to get the bees to add the necessary wax to finish them ready for brood-rearing. The season was not a normal one for having foundation or partly drawn out combs completed, owing to the slow honey flow.

Next year the finished aluminum combs will be put in brood-chambers to find out if the bees will accept them for brood-combs.

## WINTER STORES, 1924-25

During the winter of 1924-25 twenty-nine colonies were given combs of clover honey in addition to the natural stores of goldenrod and clover honey. Eighteen colonies were fed sugar syrup in addition to their natural stores of goldenrod and clover honey. Four colonies were fed equal proportions of sugar syrup and fermented golden rod honey in addition to natural stores of goldenrod honey. The amount of extra food given varied in proportion to the weight of the colonies before feeding commenced.

The following table indicates the strength of the colonies in the spring, as compared with the strength the previous autumn.

WINTER STORES, 1924-1925

| Number of colony | Stores fed to bees in fall | Average number of combs covered in fall 1924 | Average number of combs covered in spring, 1925 | Average loss during winter of combs covered |
|---|---|---|---|---|
| 29 | Combs clover honey | 8·7 | 5·3 | 3·4 |
| 18 | Sugar syrup | 8·5 | 5·8 | 2·7 |
| 4 | Fermented honey and sugar syrup | 8·0 | 3·3 | 4·7 |

## WINTERING, 1925-26

Sixty-one colonies were prepared for winter; five of these contained two queens. Fifty-two colonies were packed in quadruple cases, and one in a single case. Four colonies were put in the old honey-house and packed with planer shavings. Four colonies were grouped together and the whole wrapped with tar paper. These colonies are on their summer stands. An entrance was left in the tar paper opposite the hive entrance so that the bees could have a flight on a warm day. No packing material was used.

Of these colonies four were given a shallow super of clover honey; ten were given deep supers with three to five frames of clover honey in them; one had natural stores of clover and goldenrod honey only; thirty-one were fed sugar syrup; four were given a mixture of equal parts of sugar syrup and fermented goldenrod honey; six colonies were given sugar syrup only; and five were fed sugar syrup in addition to a shallow super partly filled with clover honey. Ten-pound honey pails were used for the feeding of the syrups.

The sixteen colonies in the two out-apiaries were given a shallow super of clover honey.

### SIZE OF HIVES

Of the sixty-one colonies at Kentville eleven are in ten-frame Jumbo hives; thirty-seven in ten-frame Langstroth hives; three in eight-frame Langstroth hives; five in Modified Dadant hives; and five double colonies in ten-frame Langstroth hives.

The sixteen colonies in the two out-apiaries are in ten-frame Langstroth hives.

### CONDITION OF COLONIES IN THE AUTUMN

Although the summer of 1925 was not favourable in every respect for the gathering of honey, nuclei built up to strong colonies by the time fall feeding commenced. Mating-boxes that contained one frame of brood and adhering bees and a comb of honey, made up the earlier part of July, developed in some cases to strong colonies. Three of these are being wintered as eight-frame hives; ten are being wintered in double hives. The average number of combs covered on October 9 was 8.8.

### GENERAL NOTES

DEMAND FOR BEES.—This is becoming greater each year. During the spring of 1925, nine colonies of Italian bees were sold, in addition to eleven Italian queens.

EXHIBITION.—Two honey exhibits were put up during the year, one at Bridgewater and one at Caledonia. At both exhibitions a large quantity of honey was disposed of. This is found to be one of the best ways of advertising the value of honey, and stimulating beekeeping.

## FIBRE PLANTS

### FLAX FOR FIBRE

The land on which the tests with flax for fibre were carried on was in mangels in 1924. This land was fall-ploughed, spring-disked and harrowed, and the seeding was done May 7, except certain plots which were required to be seeded at different dates. Where fertilizer was used, it was scattered broadcast and harrowed into the soil before seeding. The area devoted to this crop was seeded to 8 pounds of red clover, 2 pounds of alsike clover, and 8 pounds of timothy, and a good stand was secured. The plots were 1/60-acre each, and the results tabulated are calculated from the average of three plots in each test.

FLAX—VARIETY TESTS

| Variety | Seed per acre | Yield per acre | | | | Average yield of fibre from 100 lb. straw | | Average yield of tow from 100 lb. straw | |
|---|---|---|---|---|---|---|---|---|---|
| | | De-seeded straw | Retted straw | Fibre | Tow | De-seeded | Retted | De-seeded | Retted |
| | lb. | lb. | lb. | lb. | lb. | lb. | lb. | lb. | lb. |
| Riga Blue, Imp. | 966 | 3,760 | 2,470 | 280 | 370 | 7·4 | 11·3 | 9·8 | 14·9 |
| Riga Blue, H.G. | 1,188 | 4,000 | 2,700 | 340 | 340 | 6·0 | 8·8 | 8·5 | 12·5 |
| Dutch Blue, Imp. | 986 | 3,600 | 2,370 | 260 | 370 | 7·2 | 10·9 | 10·2 | 15·6 |
| Dutch Blue, H.G. | 1,032 | 3,740 | 2,620 | 305 | 340 | 8·1 | 11·6 | 9·0 | 12·5 |
| Dutch White | 784 | 3,860 | 2,620 | 220 | 470 | 5·7 | 8·4 | 12·1 | 17·5 |
| Longstem | 602 | 3,800 | 2,440 | 295 | 420 | 7·8 | 11·3 | 11·0 | 17·2 |
| Saginaw | 602 | 3,760 | 2,580 | 380 | 360 | 10·1 | 14·8 | 9·6 | 13·9 |
| Pure Line No. 5 | 1,030 | 3,320 | 2,190 | 310 | 340 | 9·3 | 14·2 | 10·2 | 15·5 |
| 829 C | 830 | 3,820 | 2,620 | 300 | 350 | 7·9 | 11·4 | 9·2 | 13·4 |

FLAX—HARVESTED AT DIFFERENT DATES

| Date harvested | Seed per acre | Yield per acre | | | | Average yield of fibre from 100 lb. straw | | Average yield of tow from 100 lb. straw | |
|---|---|---|---|---|---|---|---|---|---|
| | | De-seeded straw | Retted straw | Fibre | Tow | De-seeded | Retted | De-seeded | Retted |
| | lb. | lb. | lb. | lb. | lb. | lb. | lb. | lb. | lb. |
| August 4 | 652 | 3,540 | 2,340 | 205 | 420 | 5·7 | 8·7 | 11·8 | 17·9 |
| " 11 | 762 | 3,800 | 2,380 | 355 | 390 | 9·3 | 15·0 | 10·2 | 16·3 |
| " 18 | 616 | 3,180 | 2,160 | 300 | 320 | 9·4 | 13·9 | 10·0 | 14·8 |
| " 25 | 704 | 3,400 | 2,150 | 270 | 350 | 7·9 | 12·5 | 10·3 | 16·2 |

FLAX—SEEDED AT DIFFERENT RATES PER ACRE

| Seed used per acre | Seed per acre | Yield per acre | | | | Average yield of fibre from 100 lb. straw | | Average yield of tow from 100 lb. straw | |
|---|---|---|---|---|---|---|---|---|---|
| | | De-seeded straw | Retted straw | Fibre | Tow | De-seeded | Retted | De-seeded | Retted |
| lb. | lb. | lb. | lb. | lb. | lb. | lb. | lb. | lb. | lb. |
| 84 | 878 | 3,400 | 2,220 | 265 | 330 | 7·7 | 11·9 | 9·7 | 14·8 |
| 98 | 882 | 2,620 | 2,420 | 220 | 380 | 6·07 | 9·09 | 10·5 | 15·7 |
| 112 | 800 | 3,440 | 2,280 | 300 | 340 | 8·7 | 13·1 | 9·9 | 14·9 |

FLAX—SEEDED AT DIFFERENT DATES

| When seeded | Seed per acre | Yield per acre | | | | Average yield of fibre from 100 lb. straw | | Average yield of tow from 100 lb. straw | |
|---|---|---|---|---|---|---|---|---|---|
| | | De-seeded straw | Retted straw | Fibre | Tow | De-seeded | Retted | De-seeded | Retted |
| | lb. | lb. | lb. | lb. | lb. | lb. | lb. | lb. | lb. |
| May 6 | 462 | 2,320 | 1,960 | 250 | 275 | 10·7 | 12·7 | 11·8 | 14·0 |
| " 13 | 614 | 2,900 | 2,070 | 300 | 340 | 10·3 | 14·5 | 11·7 | 16·4 |
| " 20 | 474 | 3,280 | 2,200 | 250 | 430 | 7·6 | 11·4 | 13·1 | 19·5 |
| " 27 | 390 | 3,820 | 2,250 | 290 | 400 | 7·6 | 12·9 | 10·5 | 17·7 |

FLAX—SEEDED IN DIFFERENT WAYS

| How seeded | Seed per acre | Yield per acre | | | | Average yield of fibre from 100 lbs. straw | | Average yield of tow from 100 lbs. straw | |
|---|---|---|---|---|---|---|---|---|---|
| | | De-seeded straw | Retted straw | Fibre | Tow | De-seeded | Retted | De-seeded | Retted |
| | lb. | lb. | lb. | lb. | lb. | lb. | lb. | lb. | lb. |
| Drills, 6" | 616 | 3,240 | 2,190 | 300 | 360 | 9·2 | 13·7 | 11·1 | 16·4 |
| Broadcast | 796 | 3,400 | 2,380 | 300 | 365 | 8·8 | 12·6 | 10·5 | 15·3 |

| How fertilized, per acre | Seed per acre | Yield per acre | | | | Average yield of fibre from 100 lbs. straw | | Average yield of tow from 100 lbs. straw | |
|---|---|---|---|---|---|---|---|---|---|
| | | De-seeded straw | Retted straw | Fibre | Tow | De-seeded | Retted | De-seeded | Retted |
| | lb. | lb. | lb. | lb. | lb. | lb. | lb. | lb. | lb. |
| Nitrate of soda, 100 lb. | 796 | 3,760 | 2,400 | 230 | 350 | 6·1 | 9·6 | 9·3 | 14·5 |
| Nitrate of soda, 200 lb. | 840 | 3,560 | 2,240 | 160 | 450 | 4·5 | 7·1 | 12·6 | 20·0 |
| Nitrate of soda, 300 lb. | 756 | 3,810 | 2,340 | 115 | 535 | 3·0 | 4·4 | 14·0 | 22·8 |
| Nitrate of soda, 400 lb. | 894 | 3,886 | 2,620 | 145 | 470 | 4·2 | 5·5 | 13·8 | 17·9 |
| Nitrate of soda, 200 lb.; acid phosphate, 500 lb. | 692 | 3,750 | 2,100 | 195 | 330 | 5·2 | 9·3 | 8·8 | 15·7 |
| Nitrate of soda, 200 lb.; acid phosphate, 500 lb.; muriate of potash, 100 lb. | 614 | 3,480 | 2,360 | 115 | 490 | 3·3 | 4·8 | 14·1 | 20·7 |
| Muriate of potash, 100 lb. | 830 | 3,430 | 2,560 | 260 | 310 | 7·5 | 10·1 | 9·0 | 12·1 |
| Acid phosphate, 500 lb. | 612 | 3,150 | 2,100 | 260 | 290 | 8·2 | 12·4 | 9·2 | 13·8 |
| Check 4 | 609 | 3,127 | 2,115 | 285 | 322 | 9·1 | 13·4 | 10·3 | 15·2 |
| Check 7 | 640 | 3,370 | 2,320 | 360 | 320 | 10·7 | 15·5 | 9·5 | 13·8 |

COST OF ONE ACRE OF FLAX

| | |
|---|---|
| Rental of land | $ 3 00 |
| Ploughing in fall, 6 hours at 58 cents | 3 48 |
| Disking with tractor, 1 hour at $1 | 1 00 |
| Cultivating, 1 hour at 48 cents | 0 48 |
| Seeding, broadcast, by hand, 1 hour at 28 cents | 0 28 |
| Seed, 1½ bushels at $3 | 4 50 |
| Covering seed with smoothing harrow, 1 hour at 48 cents | 0 48 |
| Pulling, tying and stooking, 91 hours at 28 cents | 25 48 |
| Deseeding, 16 hours at 28 cents, $4.48; team, 5 hours at 20 cents, $1; gas and oil, 85 cents | 6 33 |
| Hauling to field for retting, 1 hour at 75 cents | 0 75 |
| Spreading for retting, 43 hours at 28 cents | 12 04 |
| Lifting and tying, 25 hours at 28 cents, $7; hauling and storing, 2 hours at 48 cents, 96 cents | 7 96 |
| Breaking, 61 hours at 28 cents | 17 08 |
| Scutching, 89 hours at 28 cents, $24.92; gas and oil, $5.56 | 30 48 |
| Use of machinery | 7 00 |
| Total cost | $120 34 |

*Product from one acre—*

| | |
|---|---|
| Fibre | 313 pounds |
| Tow | 216 pounds after cleaning |
| Seed | 674 pounds |

YIELD FROM ONE ACRE OF FLAX, 1925; PURE LINE NO. 5

| | Pounds |
|---|---|
| Weight of seed | 674 |
| Weight of straw after retting | 2,357 |
| Weight of straw after breaking | 1,478 |
| Weight of fibre | 313 |
| Weight of tow | 216 |
| Fibre from 100 pounds of retted straw | 13.2 |
| Tow from 100 pounds of retted straw | 19.1 |
| Fibre from 100 pounds of broken straw | 21.2 |
| Tow from 100 pounds of broken straw | 14.6 |

## HEMP

The tests with hemp for fibre were made on land that was in corn in 1924. The plots were 1/60-acre each. The land was fall-ploughed and spring-disked

and harrowed. The seed, except that required to be seeded at different dates, was sown May 9. Where fertilizer was used it was scattered broadcast and harrowed into the soil before seeding. The seed was sown at the rate of 55 pounds per acre. The results as tabulated are calculated from the average of triplicate plots.

HEMP—VARIETY TEST

| Variety | Yield per acre | | | | Tow from 100 lb. straw | | Fibre from 100 lb. straw | |
|---|---|---|---|---|---|---|---|---|
| | Before breaking | After breaking | Tow | Fibre | Before breaking | After breaking | Before breaking | After breaking |
| | lb. | lb. | lb. | lb. | lb. | lb. | lb. | lb. |
| Chington..... | 4,040 | 1,530 | 520 | 360 | 12·8 | 33·9 | 8·9 | 23·5 |
| Minnesota No. 8... | 5,040 | 1,960 | 600 | 484 | 11·9 | 30·6 | 9·6 | 24·7 |

HEMP—HARVESTED AT DIFFERENT DATES

| When harvested | Yield per acre | | | | Tow from 100 lb. straw | | Fibre from 100 lb. straw | |
|---|---|---|---|---|---|---|---|---|
| | Before breaking | After breaking | Tow | Fibre | Before breaking | After breaking | Before breaking | After breaking |
| | lb. | lb. | lb. | lb. | lb. | lb. | lb. | lb. |
| Sept. 11..... | 6,440 | 2,150 | 580 | 876 | 9·1 | 26·9 | 13·6 | 40·7 |
| " 18..... | 5,040 | 1,835 | 400 | 680 | 7·9 | 21·8 | 13·4 | 37·0 |
| " 25..... | 5,920 | 3,400 | 930 | 710 | 15·7 | 27·3 | 12·0 | 20·8 |
| Oct. 3..... | 5,680 | 3,500 | 1,200 | 584 | 21·1 | 34·2 | 10·2 | 16·6 |

HEMP—DIFFERENT RATES PER ACRE

| Seed used per acre | Yield per acre | | | | Tow from 100 lb. straw | | Fibre from 100 lb. straw | |
|---|---|---|---|---|---|---|---|---|
| | Before breaking | After breaking | Tow | Fibre | Before breaking | After breaking | Before breaking | After breaking |
| lb. | lb. | lb. | lb. | lb. | lb. | lb. | lb. | lb. |
| 40..... | 3,560 | 1,430 | 475 | 325 | 10·3 | 33·2 | 9·1 | 22·7 |
| 50..... | 4,760 | 1,720 | 450 | 560 | 9·4 | 16·1 | 11·7 | 32·5 |
| 60..... | 4,360 | 1,820 | 590 | 560 | 13·5 | 32·4 | 12·8 | 30·7 |

HEMP—SEEDED AT DIFFERENT DATES

| Variety | Yield per acre | | | | Tow from 100 lb. straw | | Fibre from 100 lb. straw | |
|---|---|---|---|---|---|---|---|---|
| | Before breaking | After breaking | Tow | Fibre | Before breaking | After breaking | Before breaking | After breaking |
| When seeded | lb. | lb. | lb. | lb. | lb. | lb. | lb. | lb. |
| May 9..... | 6,320 | 2,290 | 730 | 800 | 11·5 | 31·8 | 12·6 | 34·9 |
| " 16..... | 4,840 | 1,520 | 460 | 566 | 9·5 | 30·2 | 11·6 | 37·2 |
| " 23..... | 5,260 | 1,970 | 500 | 704 | 9·5 | 25·3 | 13·3 | 35·7 |
| " 30..... | 5,720 | 2,340 | 550 | 840 | 9·6 | 23·5 | 14·6 | 35·9 |

HEMP—SEEDED IN DIFFERENT WAYS

| Variety | Yield per acre | | | | Tow from 100 lb. straw | | Fibre from 100 lb. straw | |
|---|---|---|---|---|---|---|---|---|
| | Before breaking | After breaking | Tow | Fibre | Before breaking | After breaking | Before breaking | After breaking |
| How seeded | lb. | lb. | lb. | lb. | lb. | lb. | lb. | lb. |
| Broadcast | 7,580 | 2,545 | 580 | 1,020 | 7·6 | 22·7 | 13·4 | 40·0 |
| Drills, 7" | 5,520 | 1,690 | 490 | 664 | 8·8 | 29·0 | 12·0 | 39·2 |

HEMP—FERTILIZING EXPERIMENTS

| Variety | Yield per acre | | | | Tow from 100 lb. straw | | Fibre from 100 lb. straw | |
|---|---|---|---|---|---|---|---|---|
| | Before breaking | After breaking | Tow | Fibre | Before breaking | After breaking | Before breaking | After breaking |
| How fertilized per acre | lb. | lb. | lb. | lb. | lb. | lb. | lb. | lb. |
| Nitrate of soda, 200 lb.; acid phosphate, 500 lb. | 4,800 | 1,730 | 460 | 640 | 9·6 | 26·6 | 13·3 | 37·0 |
| Nitrate of soda, 200 lb.; acid phosphate, 500 lb.; muriate of potash, 100 lb. | 4,920 | 1,660 | 570 | 626 | 11·6 | 34·3 | 12·7 | 37·7 |
| Muriate of potash, 100 lb | 3,540 | 1,210 | 470 | 320 | 13·3 | 38·8 | 9·0 | 26·4 |
| Check 4 | 3,540 | 1,160 | 430 | 331 | 12·1 | 37·0 | 9·3 | 28·5 |
| Check 7 | 3,480 | 1,290 | 420 | 340 | 12·1 | 32·5 | 9·8 | 26·3 |
| Nitrate of soda, 100 lb | 4,590 | 1,640 | 510 | 560 | 11·1 | 31·1 | 12·2 | 34·1 |
| Nitrate of soda, 200 lb | 5,940 | 1,970 | 590 | 768 | 9·9 | 29·9 | 12·9 | 39·0 |
| Nitrate of soda, 300 lb | 5,660 | 1,910 | 515 | 735 | 9·1 | 26·9 | 13·0 | 38·4 |
| Nitrate of soda, 400 lb | 5,760 | 1,920 | 530 | 716 | 9·2 | 27·6 | 12·4 | 37·3 |
| Acid phosphate, 500 lb | 4,280 | 1,370 | 520 | 440 | 12·1 | 37·9 | 10·2 | 32·1 |

COST OF ONE ACRE OF HEMP, 1925

| | |
|---|---|
| Rental of land | $ 3 00 |
| Ploughing in fall, 6 hours at 58 cents | 3 48 |
| Disking with tractor, 1 hour at $1 | 1 00 |
| Cultivating, 1 hour at 48 cents | 0 48 |
| Seeding, 1 hour at 28 cents | 0 28 |
| Covering and smoothing, 1 hour at 48 cents | 0 48 |
| Seed, 55 pounds at 18 cents | 9 90 |
| Cutting with binder, 2 hours at 48 cents | 0 96 |
| Spreading, 32 hours at 28 cents | 8 96 |
| Lifting and tying, 12½ hours at 28 cents | 3 50 |
| Hauling and storing, 2 hours at 76 cents | 1 52 |
| Breaking, 67 hours at 28 cents | 18 76 |
| Scutching, 79½ hours at 28 cents | 22 26 |
| Use of machinery | 7 00 |
| Total cost | $81 58 |

*Product from one acre*

| | | |
|---|---|---|
| Weight when retted | 4,321 | pounds |
| Weight when broken | 1,471.5 | pounds |
| Tow | 337 | pounds |
| Fibre | 615 | pounds |

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