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MINNESOTA FARM MANAGEMENT SERVICE NOTES

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Prepared by the Farm Management Group at University Farm, St. Paul, Minn.

CROP PRODUCTION COSTS Crookston - Polk County - Minnesota

Most farmers in the northwestern section of Minnesota depend upon the sale of crops for the bulk of their income. In order to secure accurate data on the cost of producing field crops in this region and to gather information concerning the returns from small grain farming, a farm accounting route was established a year ago in the Red River Valley near Crookston in Polk County. Complete records were obtained from 18 farms in 1926. A summary of the costs and returns for each of the principal crops grown last year on these farms is presented in the table on page 2.

The soil in this part of the valley is a black clay loam and the land is very level, causing poor drainage during wet seasons. The land, being level, is well adapted to the use of large units of machinery and large scale methods of farming. The farms studied averaged about 460 acres in size, ranging from 90 to 1200 acres. The principal crops were wheat, flax, sugar beets and potatoes, which together represented an average of 142 acres per farm or 38 per cent of the entire crop area. The small grain crops occupied 240 of the 380 crop acres per farm. Wheat was the most important crop in point of acreage, occupying 82 acres per farm last year. Oats ranked second with 77 acres, followed by flax with 41 and barley with 36. The other crops ranked on the basis of acreage were alfalfa, corn, wild hay, tame hay, sugar beets, sweet clover and potatoes. In addition 20 acres per farm were summer fallowed.

One year's data is not sufficient to show the relative profitableness of different crops because the returns are determined to a large extent by factors not under the farmer's control. Climatic conditions in 1926 were unusual in some respects. Strong winds in the spring uncovered some of the small grain, making it necessary to reseed. The dry summer which followed caused a short hay crop and reduced the yield of sugar beets. The small grain crop on two cooperating farms was damaged by hail to such an extent that their results were excluded from the tabulations. Black stem rust was prevalent, affecting the yield of wheat particularly. A killing frost early in September made it necessary to harvest the corn before it had reached the proper stage of maturity.

In spite of these adverse conditions most of the crops included in the table showed a profit last year. Potatoes with a gain of \$33.65 per acre easily made the largest return for use of land. Because of the unusually high price, too much importance must not be given to the returns from this crop last year. Alfalfa, wheat, sugar beets and flax also made satisfactory returns per acre. Wild hay showed practically no profit, while barley, tame hay and oats all failed to make a favorable showing last year. As many farmers make a practice of farming large areas of land they should be particularly interested in the return for labor.

Cost per Acre of Producing Field Crops 1926 - Crookston, Polk County, Minnesota

| | Wheat | Flax | Oats | Barley | Sugar beets | Potatoes | Alfalfa | Tame hay | Wild hay | Silage |
|-------------------------|------------------|------------------|------------------|------------------|----------------|------------------|------------------|-----------------|-----------------|------------------|
| Acres | 1225 | 647 | 1049 | 517 | 220 | 117 | 498 | 97 | 401 | 194 |
| Man hours | 6 $\frac{3}{4}$ | 5 $\frac{1}{2}$ | 6 $\frac{1}{2}$ | 7 $\frac{1}{2}$ | 16 | 39 $\frac{1}{2}$ | 7 $\frac{1}{2}$ | 4 | 3 $\frac{3}{4}$ | 17 |
| Horse hours | 17 $\frac{3}{4}$ | 12 $\frac{1}{2}$ | 17 $\frac{1}{2}$ | 19 | 45 | 60 $\frac{3}{4}$ | 11 $\frac{1}{2}$ | 6 $\frac{1}{2}$ | 6 | 42 $\frac{1}{2}$ |
| Tractor hours | $\frac{1}{2}$ | 1 | $\frac{1}{2}$ | $\frac{1}{2}$ | - | $\frac{1}{2}$ | - | - | - | $\frac{1}{2}$ |
| Man labor cost | 1.71 | 1.39 | 1.65 | 1.88 | 4.01 | 9.82 | 1.83 | .99 | .93 | 4.22 |
| Contract labor cost | | | | | 24.29 | .90 | | | | |
| Total labor cost | 3.57 | 3.56 | 3.63 | 4.10 | 32.13 | 16.13 | 2.80 | 1.56 | 1.45 | 8.17 |
| Seed cost | 2.35 | 1.40 | 1.05 | 1.16 | 2.62 | 22.34 | 1.00 | 1.00 | - | .64 |
| Twine cost | .36 | .11 | .32 | .32 | - | - | - | - | - | .25 |
| Spray cost | - | - | - | - | - | 1.05 | - | - | - | - |
| Thresh or silo cost | .84 | .77 | .93 | .90 | - | - | - | - | - | .99 |
| Manure & fertilizer | .33 | .07 | .19 | .34 | 1.79 | 1.80 | .30 | .39 | - | 1.56 |
| Machine charge | 1.00 | 1.00 | 1.00 | 1.00 | 1.50 | 3.00 | 1.22 | .90 | .90 | 2.64 |
| Marketing cost | .04 | .07 | .01 | .01 | 5.27 | 1.13 | - | - | - | - |
| Operating costs | 8.49 | 6.98 | 7.13 | 7.83 | 43.31 | 45.45 | 5.32 | 3.85 | 2.35 | 14.25 |
| Land charge | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 | 2.00+ | 4.00 |
| TOTAL COSTS | 12.49 | 10.98 | 11.13 | 11.83 | 47.31 | 49.45 | 9.32 | 7.85 | 4.35 | 18.25 |
| Credit | .04 | - | - | - | - | - | .23 | .35 | .08 | .04 |
| NET COST | 12.45 | 10.98 | 11.13 | 11.83 | 47.31 | 49.45 | 9.09 | 7.50 | 4.27 | 18.21 |
| Yield - grain bu. | 14 $\frac{3}{4}$ | 7 $\frac{3}{4}$ | 30 $\frac{1}{2}$ | 23 $\frac{3}{4}$ | - | 79 $\frac{1}{2}$ | - | - | - | - |
| Yield - roughage, tons | - | - | - | - | 8.7 | - | 1.2 | .6 | .6 | 3.2 |
| COST PER UNIT | .84 | 1.42 | .37 | .50 | 5.42 | .62 | 7.66 | 11.66 | 7.72 | 5.69 |
| December 1 price | 1.25 | 1.95 | .33 | .46 | 6.00 | 1.05 | 13.00 | 10.00 | 8.00 | - |
| CROP VALUE | 18.44 | 15.10 | 9.99 | 10.98 | 52.35 | 83.10 | 15.42 | 6.43 | 4.43 | - |
| GAIN | 5.99 | 4.12 | -1.14 | -.85 | 5.04 | 33.65 | 6.33 | -1.07 | .16 | - |
| Net return for land | 9.99 | 8.12 | 2.86 | 3.15 | 9.04 | 37.65 | 10.33 | 2.93 | 2.16 | - |
| Per cent earned on land | 12.49 | 10.15 | 3.58 | 3.94 | 11.30 | 47.06 | 12.91 | 3.66 | 5.40+ | - |
| RETURN PER HOUR | 1.13 | .99 | .08 | .14 | .56 | 1.11 | 1.11 | None | .29 | - |

+Land charge per acre: Wild hay \$2.00; all other crops \$4.00.

A minus sign (-) indicates a loss.

Value of land per acre: Wild hay land \$40.00; all other crop land \$80.00.

wheat, alfalfa, potatoes, flax and sugar beets all made substantial returns per hour. When satisfactory yields can be obtained, wheat and flax both rank high as crops to be raised profitably on an extensive scale. No market price can be used for silage. The average cost of producing a ton of silage was \$5.69.

Altho the cost per acre varies somewhat from year to year, the yield usually is the most important single item influencing profits. Reliance may be placed on a single year's figures only when due consideration is given to the similarity with which conditions for that year approximate normal conditions. The average yields on the route farms conformed closely with the average yields for the county as shown below. For this reason, assuming the cost of production on the route farms to be representative of the area, the data shown on page 2 should be a good index of crop returns last year in that section of the state. Nevertheless, costs as well as prices vary from year to year and the data should not be used as the sole basis for too general conclusions. A comparison of the yields on the route farms with the county yields for 1926 and the average county yields for the last five years is presented in the following table.

Yields per Acre - Polk County, Minnesota

| | Spring wheat | Flax | Oats | Barley | Potatoes | Tame hay | Wild hay |
|--------------------------|------------------|-----------------|------------------|------------------|------------------|----------|----------|
| Route 1926 | 14 $\frac{3}{4}$ | 7 $\frac{3}{4}$ | 30 $\frac{1}{4}$ | 23 $\frac{3}{4}$ | 79 $\frac{1}{4}$ | 1.10* | .6 |
| County 1926 | 13 | 8 | 28 | 24 | 76 | 1.72** | .87 |
| County average 1922-1926 | 14 | 8 $\frac{1}{2}$ | 30 $\frac{3}{4}$ | 25 $\frac{1}{2}$ | 88 $\frac{1}{4}$ | 1.48** | .93 |

*Alfalfa and tame hay. **All cultivated hay crops.

The purpose of farm accounting studies is to show how farming can be made more profitable. The greatest value of these investigations comes from a study of the farm to farm variations in the physical factors of cost rather than from an attempt to arrive at an absolute cost per acre or per unit. Such a cost figure is elusive, uncertain and variable. Greater profits can be obtained by lowering the cost per unit or product and by selecting a better combination of crops. One way to cut the cost per unit is to obtain larger yields. This can be done by following improved cultural practices, by eradication of weeds and by increasing soil fertility. The best combination of crops can not be selected on the basis of the returns to individual crops only. Certain crops are necessary to provide feed; others are necessary to complete a rotation; still others may be necessary to control weeds. However, the crop most profitable over a period of years should be given preference in arranging a crop organization and then other crops should be selected which will make the most efficient use of the land, labor and equipment. Such a plan should embody a definite system and yet be flexible enough to enable the operator to take advantage of conditions peculiar to the season.

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