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# Machinery Costs on Typical Wheat Farms in Central South Dakota: Buffalo, Hyde, and Hand Counties

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In Central South Dakota

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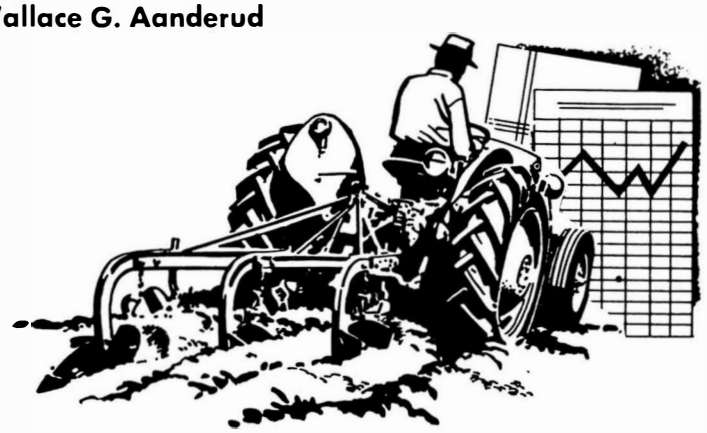
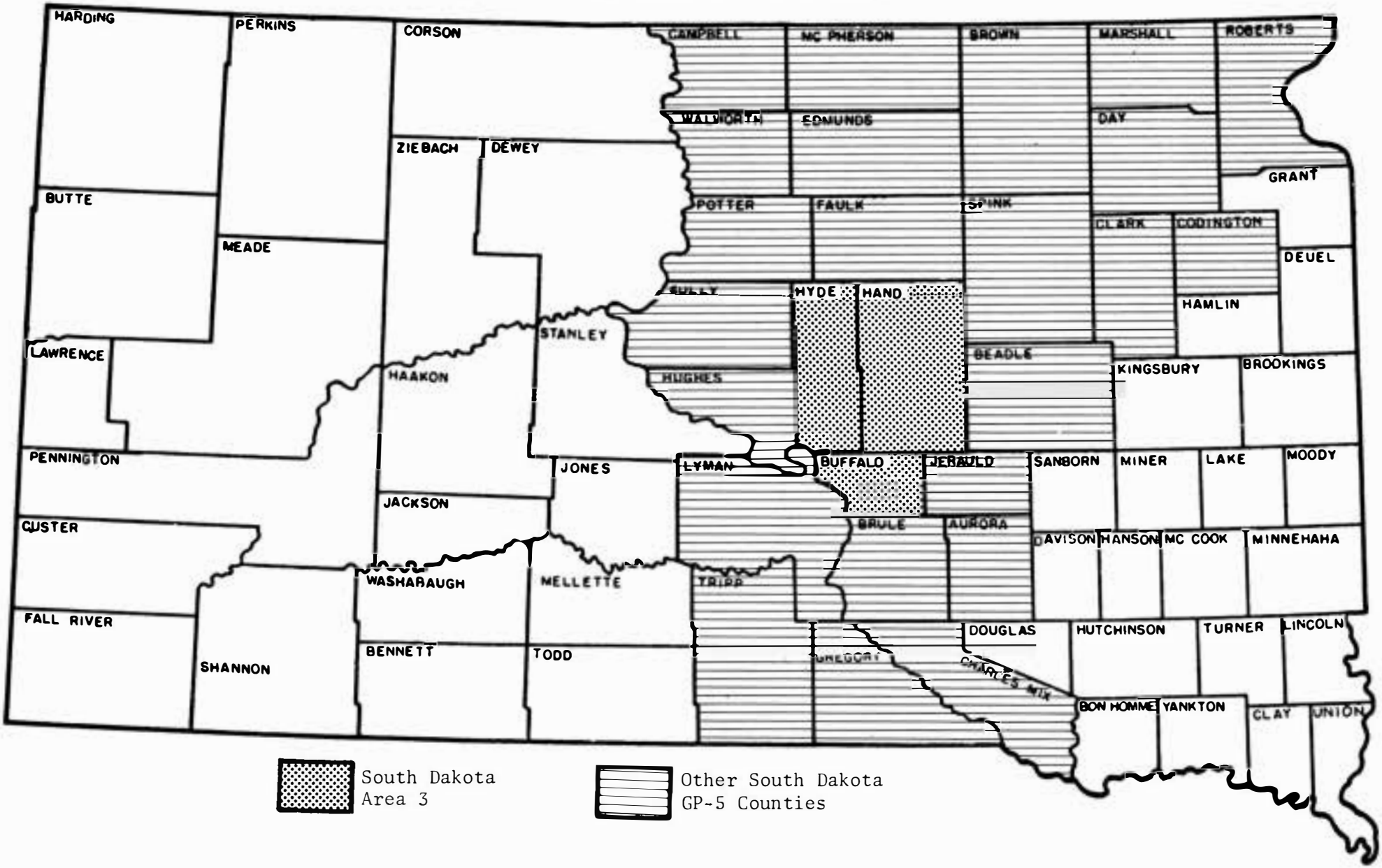


Figure 1. South Dakota GP-5 Study Area



## PREFACE

The data presented in this report were gathered and compiled in a cooperative research project between the South Dakota Agricultural Experiment Station and the Farm Production Economics Division, Economic Research Service, U.S. Department of Agriculture. This research contributes to a larger project--GP-5, "Economic Problems in the Production and Marketing of Great Plains Wheat."

The general objectives of the research undertaken in South Dakota were (1) to provide economic data needed by farmers and to make adjustments in their farming systems and production practices and (2) to develop a research background for evaluating government farm programs under varying assumptions.

Similar contributing projects to GP-5 are simultaneously being conducted in most of the other Great Plains States. Specific objectives as stated in the regional research project are:

1. To develop information on technical production relationships and opportunities for grain farms in the Great Plains.

2. To determine the nature and magnitude of adjustments needed in specific farm situations which will achieve the most profitable systems of farming under a range of conditions with respect to prices of major products and quantities of available resources such as land, labor and capital and to determine the quantities of resources required to provide selected levels of farm income.

3. To determine the effect upon total agricultural production, farm income, farm organization and resources employed in the Great Plains if selected percentages of all farmers adjust to their most profitable farming systems for various assumed product demand conditions, factor supply conditions, and specific agricultural programs and institutional arrangements.

4. To estimate wheat supply potentials for non-domestic wheat producers under varying economic and political conditions in international areas.

The South Dakota study area included 26 counties in Central South Dakota (Figure 1). This area normally accounts for about 68 per cent of the state's wheat acreage, 43 per cent of the feed grain acreage, 60 per cent of the state's flax acreage and about 55 per cent of the total tame- and native-hay acreage. For analytical purposes, the GP-5 study area was divided into eight sub-areas on the basis of selected farm and soil characteristics and cropping practices.

The analysis of this study was based on possible adjustments on individual farming units. Thus, model farms were developed to represent a significant number, group or segment of farms within a defined geographic area. Model

farms were grouped on the basis of similar characteristics, plus similar alternative production opportunities.

Determining characteristics for grouping farms into model or typical farms included: Farm size, proportion of cropland to native hay and rangeland, soil characteristics, land use and tillage practices, farm organization and enterprise, labor use and labor availability.

In all, 14 model farms were developed in the eight sub-areas of the 26 county study--characteristics were so similar in four sub-areas that only one model farm was needed in each, but in the remaining areas there existed enough diversity to require three model farms in each of two sub-areas and two model farms in each of the other two.

Data used to develop model farms for each South Dakota study area and costs for crop and livestock enterprises for each model farm were derived from a variety of sources, which included: Farm surveys, Agricultural Stabilization and Conservation Service county office records, county assessor's records, U.S. Agricultural Census, S.D. State-Federal Crop and Livestock Reporting Service statistics, from the South Dakota State University Economics Department, and actual cost data from machine dealers and insurance agents.

## HOW THIS DATA MAY BE USED

Information gathered on machine costs for the model farm in Area 3 (Figure 1) for this publication should prove useful in planning and budgeting work and should be helpful in other production and farm management studies.

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## DESCRIPTION OF AREA 3

## BUFFALO, HAND, AND HYDE COUNTIES

### SOILS

The soils of this three-county area are mainly Chestnut, but the eastern part of Hand County contains Chernozem soils. Chestnut soils in the northern Great Plains have darker soil surface colors than those in southern areas, because in the north oxidation of organic matter is slower.

Williams-Zahl soils, found in the Buffalo, Hand and Hyde County area, are undulating to steep and are well to excessively drained. These grayish-brown loams are developed from calcareous glacial till with areas of mixed outwash sediments common. The major problems associated with Williams-Zahl soils are: (1) maintenance of organic matter and the supply of nitrogen, (2) moisture conservation, (3) control of run-off, and (4) maintenance of stock water. Although the land use depends mainly upon topography, major soil uses include: Cash grain farming, ranching, livestock and general farming.

A second major soils series is Raber-Eakin. These soils consist of undulating grayish-brown loams, clay loams and silt loams. The Raber soils developed from

clay loam till and the Eakin soils developed from loess over till. The major soil and water management problems with the Raber-Eakin soils are: (1) maintenance of organic matter and the supply of nitrogen, (2) maintenance of soil fertility, (3) moisture conservation, and (4) control of run-off and water erosion. Raber-Eakin soils are best suited for cash grain farming and ranching. The specific land use is restricted by topography of the land.

The third Chestnut soil series is the Pierre series, bordering the Missouri River in Buffalo County. The Pierre soils are undulating to steep and are well to excessively drained. The major problems in soil and water management are: (1) maintenance of organic matter and nitrogen supplies, (2) moisture conservation, (3) control of water erosion, and (4) maintenance of stock water. The major soil uses, similar to those of the Raber-Eakin soils, are cash grain farming and ranching.

The fourth soil series, Chernozem soils, found in eastern Hand County, is the Houdek-Bonilla series. These soils are undulating to nearly level and are moderately well drained. Developed from calcareous loam till, these loams are dark grayish-brown and are slightly acid. The major problems in soil and water management are the maintenance of organic matter and the conservation of moisture. Major soil uses are: (1) cash grain production, (2) livestock farming, and (3) general farming.

## TYPE OF FARMING CHARACTERISTICS

The cumulative average size of farms in the Buffalo, Hyde and Hand County area was 1,340 acres, but county averages ranged from 1,090 acres (in Hand County) to 2,320 acres (in Buffalo County). Hyde County averaged 1,569 acres. There were 1,289 farms in the three counties, according to the 1964 census, of which 79 per cent were livestock (including ranches), 6.0 per cent were general farms and 4.5 per cent were cash grain farms. Miscellaneous categories made up the remaining 10.5 per cent of the area's farms.

Farms in most of Buffalo and Hyde and in western Hand County produce livestock primarily. Somewhat over a third of the cropland in 1964 was in hay and pasture crops and about 62 per cent of the corn and sorghum harvested was harvested as silage or for purposes other than grain. Wheat was the principal cash crop in 1964. Small acreages of barley, flax and rye were grown--flax and rye as cash crops and barley, for both, cash and feed. About 28 per cent of farmers who raised oats in 1964 sold part of the crop (which amounted to 30 per cent of the oats harvested). About 39 per cent of the corn and 26 per cent of the sorghum acreage was harvested as grain. Twenty per cent of the corngrain production and about 31 per cent of the grainsorghums harvested were sold off the farm. The remainder of the feed grains were fed on the farm.

Table 1 shows the number and per cent of farms in the three-county area that raised and harvested major grain crops in 1964.

Livestock of some type were found on nearly all of the area's farms. Cattle, including dairy, were on 91 per cent of the farms. Beef-cow herds (most common because of extensive range area in the three counties) on the average were large.

Table 1. Number and Per Cent of Farms That Raised and Harvested Major Grain Crops in 1964 in Buffalo, Hand, and Hyde Counties

| | No. of Farms | Percentage of Farms | Number of Acres Harvested | Percentage of Acres Harvested |
|---|---|---|---|---|
| Corn[1/] | 883 | 68.5 | 89,636 | 38.6 |
| All Wheat[2/] | 604 | 46.9 | 59,797 | 25.8 |
| Oats | 779 | 60.4 | 58,929 | 25.4 |
| Rye | 101 | 7.8 | 7,148 | 3.1 |
| Sorghum[3/] | 244 | 18.9 | 9,972 | 4.3 |
| Others[4/] | --- | ---- | 6,654 | 2.9 |

1/ Includes corn harvested for grain, silage, and other purposes.
2/ Includes 23,572 acres of winter wheat and 876 acres of durum.
3/ Includes sorghum harvested for grain, silage, and other purposes.
4/ Includes barley, flax, emmer and speltz, and proso.
Source: U.S. Census of Agriculture, 1964.

A survey taken several years ago showed the average size herd was 104 cows. Dairy enterprises, on the other hand were small. The average size of the dairy herds was about seven cows. Dairy herds with over 20 cows were rare, according to the survey data.

About 29 per cent of the area's farms farrowed sows. Sow numbers per farm were relatively large--averaging about 15--and a surprisingly large number of farms that kept sows farrowed between 10 and 20 per season. The bulk of the farrowing occurred in the spring or early summer.

Ewe flocks, kept by about 34 per cent of the farmers, were fairly large, averaging about 96 per flock.

## MODEL WHEAT FARM AND BASIS FOR MACHINERY COSTS

Three model farms were selected to represent this three-county area. The first, a 640-acre farm, had 390 acres of cropland and 228 acres of native hay and pasture. The second model farm was a 1,280-acre farm with 447 acres of cropland and 775 acres of native hay and pasture. The third farm, 2,240 acres, had 464 acres of cropland and 1,671 acres of native hay and pasture.

Although the average farm size in the three-county area was 1,340 acres, the 1964 Census of Agriculture shows the number of farms and ranches was somewhat evenly distributed between four major size groups. Twenty-two per cent of the area's farms were less than 500 acres, 30.3 per cent were between 500 and 999 acres, 31.1 per cent were between 1,000 and 1,999 acres, and the remaining 16.4 per cent were 2,000 acres or more.

The model farms, serving as the basis for determining machine costs and labor, had the following crops:

| Crop | Model Farm 640 Acres | 1280 Acres | 2240 Acres | Crop | Model Farm 640 Acres | 1280 Acres | 2240 Acres |
|---|---|---|---|---|---|---|---|
| Hard Wheat | 107 | 81 | 68 | Summer Fallow | 61 | 21 | 14 |
| Oats and Other Small Grain | 62 | 59 | 54 | Alfalfa | 83 | 135 | 148 |
| Corn Grain | 24 | 45 | 38 | Other Tame Hay and Pasture | 24 | 64 | 101 |
| Corn Silage | 29 | 42 | 41 | Native Hay | 82 | 307 | 649 |
| | | | | Native Pasture | 146 | 468 | 1022 |

The machinery and implements, listed in Tables 2, 3, and 4, represent those most frequently found on the group of farms from which the model or representative farm was determined. Occasionally, an arbitrary judgment was necessary in selecting the size or type of machinery or implement.

PURCHASE PRICE

The purchase price of machinery (in Tables 2, 3, and 4) represents the "average" price of major models of the particular implement or machine listed. The price listed assumes standard equipment was used. Extras or optional features such as power steering on tractors were not included.

USEFUL LIFE

The standard depreciation schedule (see 1964 Agricultural Engineers Yearbook), widely used as a guide by agricultural engineers and others, served as a base in determining depreciation costs.

Since depreciation is a function of use, obsolescence, or a combination of both, depreciation costs were determined either on the hours of use or the useful life in years, whichever was least.

## MACHINE COSTS

Farm operators and others concerned with the development of farm budgets must consider two important aspects of machine costs: (1) total annual machine costs and (2) machine costs per unit of the various individual enterprises.

Total annual machine costs represent a major portion of the total annual farm expenses, and thus are of primary importance in determining net farm income. Annual machine costs include fixed costs (often termed ownership costs) and variable costs. Fixed costs are those which remain relatively constant from year to year, regardless of the amount of use of the machine; variable costs depend directly upon the amount of use.

The allocation of machine costs to individual enterprises requires that these costs be expressed in terms of costs per hour or per acre for the types of machine

Table 2. Machinery Complement, Purchase Cost, Useful Life, and Annual Use of Machinery on a Hypothetical 640-Acre Model Farm in Buffalo, Hand, and Hyde Counties[1/]

| Machine | Size | Purchase Price[2/] | Useful Life[3/] | | Annual Use | |
|---|---|---|---|---|---|---|
| | | Dollars | Years | Hours | Acres | Hours |
| Tractor | 2-Plow | $2,872 | 25 | 12,000 | 1,388 | 286 |
| Tractor | 3-Plow | 3,527 | 25 | 12,000 | 1,350 | 477 |
| Moldboard Plow | 3-14-Inch | 487 | 18 | 2,500 | 222 | 138 |
| Tandem Disc | 10-Foot | 760 | 25 | 2,500 | 301 | 84 |
| Field Cultivator | 12-Foot | 507 | 20 | 2,000 | 228 | 41 |
| Drag Harrow | 5-Sect. | 152 | 30 | 2,500 | 311 | 31 |
| Press Drill | 12-Foot | 1,928 | 30 | 1,200 | 169 | 39 |
| Swather PTO | 12-Foot | 1,091 | 20 | 1,200 | 169 | 34 |
| Combine PTO | 6-Foot | 2,603 | 15 | 2,000 | 169 | 85 |
| Corn Planter | 2-Row | 558 | 25 | 1,200 | 53 | 19 |
| Corn Cultivator | 2-Row | 254 | 20 | 2,500 | 106 | 35 |
| Mower | 7-Foot | 482 | 20 | 2,000 | 248 | 74 |
| Dump Rake | 8-Foot | 254 | 30 | 2,500 | 248 | 55 |
| Farmhand & Attachments | | 812 | 25 | | 187 | 56 |
| Two Trailers or Wagons | | 609 | 25 | | 98 | 49 |
| Sprayer | 30-Foot | 457 | 30 | 1,500 | 229 | 23 |

1/ Representative farm size is 640 acres with 390 acres of cropland.
2/ Approximate new cost in 1964.
3/ Based on Agricultural Engineers Yearbook.

operations used. Machine costs per unit of individual enterprises are necessary considerations in determining the most profitable organization of the farm business.

Total annual costs for each machine assumed to be used on the 640-acre model farm, as well as per-acre and per-hour machine-operations costs, are presented in Tables 5 through 10. The costs shown in these tables were determined on the basis of the model farm having 169 acres of small grain, 53 acres of row crops, 61 acres of summer fallow, two cuttings of hay from 83 acres of alfalfa, and one cutting on 82 acres of native hay.

The costs presented in Tables 11 through 16 for the 1,280-acre model farm were determined on the basis of 130 acres of small grain, 87 acres of row crops, 21 acres of summer fallow, two cuttings of hay from 135 acres of alfalfa, and one cutting from 307 acres of native hay.

The costs presented in Tables 17 through 22, for the 2,240-acre model farm, were determined on the basis of 122 acres of small grain, 79 acres of row crops, 14 acres of summer fallow, two cuttings of hay from 148 acres of alfalfa, and one cutting from 649 acres of native hay.

## FIXED COSTS

Fixed machine costs include depreciation, interest on investment, insurance, and taxes. Total annual fixed costs are constant for any given year, without regard to the amount of use during that year. However, when this fixed sum is charged as a cost against crops, the cost per hour, per acre, or unit of output

may show a variation with the amount of use.

Depreciation--Depreciation in this study is recognized as a cost since "wear and tear" due to use necessitates eventual replacement. New innovations and methods of tillage, planting, or harvesting also necessitate replacement of outmoded or obsolete machinery.

Interest--Interest often is not easily recognized or understood as a cost, unless funds are borrowed and an interest rate actually is charged for the use of borrowed money. In this study, a 7 per cent interest rate was charged on the "average annual investment" as a cost of machine ownership. Even if a farm operator has full equity in an implement or machine, and thus pays no direct interest charge, his capital is frozen. Normally, there are alternative uses for these funds, either in other farm enterprises or in nonfarm investments, which may yield an even greater rate of return. This could be especially true with respect to harvesting equipment, particularly if the harvested acreage is relatively small and custom harvesting can be obtained when needed. For example, the investment in the hay baler assumed for the 1,280-acre model farm (Table 3) freezes the purchase cost of $2,055. If placed in a savings account, this would return about $92 per year at an interest rate of 4½ per cent. Perhaps, after adding up the earned interest and costs of the baling operation (including the prorated tractor costs) the farm operator would find it more economical to hire a custom baler.

Insurance and Taxes--Insurance and personal property taxes are cash costs which do not vary with the amount a machine is used during the year, and thus are considered fixed costs. Insurance, as such, is not a required expenditure. However, since losses do occasionally occur, and if insurance is not actually carried, an amount sufficient to cover the expected annual rate of loss must be included as a cost.

Allocation of Fixed Costs--Each category of fixed costs can be allocated to individual enterprises in the same manner. The allocation of annual depreciation costs, for example, among individual enterprises requires a conversion of the annual cost to an hourly depreciation cost, which is based upon the expected number of hours of use of the machine during the year. Hourly depreciation charges, coupled with machine time requirements per acre, are then used to establish depreciation charges per acre for each crop enterprise.

Fixed Costs on the Model Farm--Fixed costs, with few exceptions, are considerably higher than variable costs for individual machines and implements. This may be illustrated by the examples in the tabulation on the following page.

Recovering fixed-machine costs to insure a profitable long run operation is not important over the short-run. It is important in the long run, however, that fixed costs be covered from the standpoint of replacing worn-out and obsolete machinery. In an era of increasing costs and rapidly changing technology it becomes increasingly important to reduce machine costs as much as possible; particularly so, for machine items which have a high original cost such as tractors and harvesting equipment. Since total annual fixed costs remain the same, fixed-

**FIXED COSTS EXAMPLES**

| Implement | Purchase Price | Number of Acres Covered | Per Cent of Total Costs Per Acre | |
|---|---|---|---|---|
| | | | Fixed | Variable |
| Moldboard Plow | $ 487 | 222 | 31.0 | 69.0 |
| Corn Planter | 558 | 53 | 82.3 | 17.7 |
| Corn Planter | 558 | 87 | 74.0 | 26.0 |
| Press Drill | 1,928 | 169 | 84.3 | 15.7 |
| Press Drill | 1,928 | 122 | 88.2 | 11.8 |
| Combine | 2,603 | 169 | 74.7 | 25.3 |
| Combine | 2,603 | 122 | 80.7 | 19.3 |
| Baler | 2,055 | 320 | 59.2 | 40.8 |
| Baler | 2,055 | 388 | 51.6 | 48.4 |
| Forage Harvester | 2,487 | 42 | | 101.0 |

machine items can effectively be reduced per acre or per unit of production by spreading these costs over as many acres as possible.

Due to the small acreage involved in corn grain and corn silage on the 640-acre model farm, it was assumed custom harvest was used. The costs of owning and operating a cornpicker and forage harvester would have been more than double the cost of custom hire.

To own and use machinery with a capacity greater than is actually needed, on a given acreage, will needlessly raise both the fixed and variable costs. Whether or not the reduction in the amount of labor and machine time will offset the increase in machine costs is questionable. To illustrate the increase in per acre machine costs which results when larger machines are used without an increase in acreage, the following tabulation contains machine costs for selected sizes of tractors and combines:

**EXAMPLES**

| Machine | Acres Covered | Machine Costs 1/ | | Percent Increase |
|---|---|---|---|---|
| | | Annual | Per Acre | |
| Tractor, 3-Plow | 1,256 | $ 563.74 | $0.45 | |
| Tractor, 4-Plow | 1,256 | 715.89 | .57 | 26.7 |
| Tractor, 5-Plow | 1,256 | 890.92 | .71 | 57.8 |
| Combine, 6-Foot | 187 | 350.98 | 1.88 | |
| Combine, 9-Foot | 187 | 483.09 | 2.58 | 37.2 |
| Combine, 12-Foot | 187 | 790.01 | 4.22 | 124.5 |
| Combine, 14-Foot S.P. | 187 | 1,158.76 | 6.20 | 229.8 |

1/ Includes depreciation, interest, taxes, insurance and repairs.

## VARIABLE COSTS

In contrast to fixed costs, annual variable costs depend directly upon the amount of use during the year. When machine use increases from 800 acres to 1,000 acres, the variable costs per acre will remain the same, but total annual variable costs will increase by 25 per cent. This is in contrast to fixed costs which are reduced 20 per cent on the per acre basis while the total annual fixed costs remains the same.

Variable machine costs include repairs, fuel, oil, and lubricants. These costs have been first expressed as hourly costs for each machine or type of operation. Time requirements for each operation and machine are then used to convert the variable costs of each enterprise into per acre costs and total annual variable costs.

## MACHINE COSTS BY CROPS

The cost-data and machine-time requirements can be used to determine the costs per acre (or unit of production) for each crop.

The costs shown in Tables 6 through 10 for the 640-acre model farm, Tables 12 through 16 for the 1,280-acre farm, and in Tables 18 through 22 for the 2,240-acre model farm were used in preparation of Tables 23 through 25. With only a small change in acreage, there will be only a negligible increase or decrease in the fixed costs, hence the cost data will still be reasonably accurate.

Tables 23 through 25 were produced using specific assumptions with regard to tillage practices. A governing assumption was one of "minimum tillage," which included fall and spring field cultivating and/or plowing and discing for small grains and row crops and two cultivations on row crops. Other assumptions included a discing for corn stalks in preparation of the land for future crops and fall plowing of alfalfa.

## SUMMARY

Machine costs for these "representative wheat farms" were developed under assumptions which included specific crop acreages, tillage practices and prices paid for new machinery. Significant changes in fixed costs per acre will result from a significant change in cropland acreage, number of tillage operations, or machinery prices. Consequently, the machine costs cannot be construed as being representative of all farms in this three-county area, although they should be somewhat similar. However, the usefulness of these costs need not be impaired since they provide a basis for estimating machine costs and, also, offer a basis for comparing costs of operating varying sizes and types of machines and implements.

Table 3. Machinery Complement, Purchase Cost, Useful Life, and Annual Use of Machinery on a Hypothetical 1,280-Acre Model Farm in Buffalo, Hand, and Hyde Counties[1/]

| Machinery | Size | Purchase Price[2/] | Useful Life[3/] | | Annual Use | |
|---|---|---|---|---|---|---|
| | | Dollars | Years | Hours | Acres | Hours |
| Tractor | 2-Plow | $2,872 | 25 | 12,000 | 1,885 | 413 |
| Tractor | 3-Plow | 3,527 | 25 | 12,000 | 785 | 319 |
| Tractor | 4-Plow | 4,567 | 23 | 12,000 | 1,381 | 525 |
| Moldboard Plow | 3-16-Inch | 528 | 20 | 2,500 | 227 | 123 |
| Chisel | 12-Foot | 898 | 20 | 2,000 | 108 | 19 |
| Tandem Disc | 10-Foot | 760 | 25 | 2,500 | 300 | 84 |
| Drag Harrow | 5-Sect. | 152 | 30 | 2,500 | 318 | 32 |
| Press Drill | 12-Foot | 1,928 | 30 | 1,200 | 140 | 32 |
| Swather PTO | 12-Foot | 1,091 | 20 | 1,200 | 140 | 28 |
| Combine PTO | 6-Foot | 2,603 | 15 | 2,000 | 140 | 70 |
| Corn Planter | 2-Row | 558 | 25 | 1,200 | 87 | 31 |
| Corn Cultivator | 2-Row | 254 | 20 | 2,500 | 174 | 57 |
| Forage Harvester | 1-Row | 2,487 | 15 | 2,000 | 42 | 44 |
| Mower | 7-Foot | 482 | 11 | 2,000 | 578 | 174 |
| Side Rake | | 558 | 25 | 2,500 | 320 | 58 |
| Dump Rake | 10-Foot | 275 | 30 | 2,500 | 258 | 39 |
| Baler | | 2,055 | 15 | 2,500 | 320 | 112 |
| Farmhand & Attachments | | 812 | 25 | | 316 | 158 |
| Two Trailers or Wagons | | 609 | 25 | | 343 | 172 |
| Sprayer (trailer) | 30-Foot | 457 | 30 | 1,500 | 240 | 24 |

1/ Representative farm size is 1,280 acres with 447 acres of cropland.
2/ Approximate new cost in 1964.
3/ Based on Agricultural Engineers Yearbook.

Table 4. Machinery Complement, Purchase Cost, Useful Life, and Annual Use of Machinery on a Hypothetical 2,240-Acre Model Farm in Buffalo, Hand, and Hyde Counties[1/]

| Machine | Size | Purchase Price[2/] | Useful Life[3/] | | Annual Use | |
|---|---|---|---|---|---|---|
| | | Dollars | Years | Hours | Acres | Hours |
| Tractor | 2-Plow | $2,872 | 21 | 12,000 | 2,303 | 583 |
| Tractor | 3-Plow | 3,527 | 25 | 12,000 | 1,444 | 328 |
| Tractor | 4-Plow | 4,567 | 23 | 12,000 | 1,233 | 527 |
| Moldboard Plow | 3-16-Inch | 528 | 23 | 2,500 | 201 | 109 |
| Chisel | 12-Foot | 898 | 20 | 2,000 | 58 | 10 |
| Single Disc | 16-Foot | 660 | 25 | 2,500 | 257 | 44 |
| Drag Harrow | 6-Sect. | 178 | 30 | 2,500 | 273 | 22 |
| Press Drill | 12-Foot | 1,928 | 30 | 1,200 | 122 | 28 |
| Swather PTO | 12-Foot | 1,091 | 20 | 1,200 | 122 | 24 |
| Combine PTO | 6-Foot | 2,603 | 15 | 2,000 | 122 | 61 |
| Corn Planter | 2-Row | 558 | 25 | 1,200 | 79 | 28 |
| Corn Cultivator | 2-Row | 254 | 20 | 2,500 | 158 | 52 |
| Forage Harvester | 1-Row | 2,487 | 15 | 2,000 | 41 | 43 |
| Mower | 7-Foot | 482 | 7 | 2,000 | 945 | 284 |
| Side Rake | | 558 | 25 | 2,500 | 388 | 70 |
| Dump Rake | 10-Foot | 275 | 24 | 2,500 | 557 | 106 |
| Baler | | 2,055 | 15 | 2,500 | 388 | 136 |
| Farmhand & Attachments | | 812 | 25 | | 652 | 196 |
| Two Trailers or Wagons | | 609 | 25 | | 407 | 204 |
| Sprayer (trailer) | 30-Foot | 457 | 30 | 1,500 | 210 | 21 |

1/ Representative farm size is 2,240 acres with 464 acres of cropland.
2/ Approximate new cost in 1964.
3/ Based on Agricultural Engineers Yearbook.

Table 5. Annual Machine Costs Based on Hours of Use by Machine or Implement Used for Model Farm; Buffalo, Hand, and Hyde Counties

| Machine | Size | Annual Use Acres | Annual Use Hours | Depre-ciation | Insurance & Taxes | Interest | Repairs | Fuel, Oil, & Lubricant | Total |
|---|---|---|---|---|---|---|---|---|---|
| Tractor | 2-Plow | 1,388 | 286 | $103.40 | $ 49.03 | $110.56 | $ 74.24 | $ 24.31[1] | $ 361.54 |
| Tractor | 3-Plow | 1,350 | 477 | 126.97 | 59.84 | 135.80 | 167.64 | 35.77[1] | 526.02 |
| Moldboard Plow | 3-14-Inch | 222 | 138 | 24.33 | 8.31 | 18.76 | 26.22 | 88.32 | 165.94 |
| Tandem Disc | 10-Foot | 301 | 84 | 27.36 | 12.96 | 29.26 | 9.24 | 42.00 | 120.82 |
| Field Cultivator | 12-Foot | 228 | 41 | 22.80 | 8.69 | 19.53 | 3.28 | 36.49 | 90.79 |
| Drag Harrow[2] | 5-Sect. | 311 | 31 | 4.57 | 2.59 | 5.84 | .62 | 15.50 | 29.12 |
| Press Drill[3] | 12-Foot | 169 | 39 | 57.83 | 32.91 | 74.23 | 15.60 | 15.21 | 195.78 |
| Swather PTO[2] | 12-Foot | 169 | 34 | 29.10 | 18.64 | 42.00 | 7.82 | 17.00 | 114.56 |
| Combine PTO | 6-Foot | 169 | 85 | 156.20 | 44.45 | 100.20 | 44.20 | 57.80 | 402.85 |
| Corn Planter | 2-Row | 53 | 19 | 20.12 | 9.61 | 21.49 | 2.66 | 8.36 | 62.24 |
| Corn Cultivator | 2-Row | 106 | 35 | 7.45 | 4.87 | 9.76 | 1.40 | 18.90 | 42.38 |
| Mower[2] | 7-Foot | 248 | 74 | 21.70 | 8.25 | 18.55 | 13.32 | 24.42 | 86.24 |
| Dump Rake[2] | 8-Foot | 248 | 55 | 7.63 | 4.36 | 9.76 | 2.20 | 14.85 | 38.80 |
| Farmhand & Attachments | | 187 | 56 | 29.24 | 13.86 | 31.25 | 8.96 | 33.60 | 116.91 |
| Two Trailers or Wagons[2] | | 98 | 49 | 21.92 | 10.40 | 23.45 | 5.37 | 26.26 | 87.40 |
| Sprayer (trailer)[2] | 30-Foot | 229 | 23 | 13.70 | 7.81 | 17.60 | 2.07 | 9.20 | 50.38 |
| Total Costs | | | | $674.32 | $296.58 | $668.04 | $384.84 | $467.99 | $2,491.77 |

[1] Overhead maintenance.
[2] 2-plow tractor -- all others pulled with a 3-plow tractor.
[3] Used ½ time with 2-plow and ½ time with 3-plow tractor.

Table 6. Machine Costs Per Hour of Use by Machine and Implement Used, 640-Acre Model Farm; Buffalo, Hand, and Hyde Counties

| Machine or Implement | Size | Annual Use Hours | Dollar Cost Per Hour[1] Depre-ciation | Insurance & Taxes | Int. | Repairs | Fuel, Oil, & Lubricant | Total |
|---|---|---|---|---|---|---|---|---|
| Moldboard Plow | 3-14-Inch | 138 | $0.18 | $0.06 | $0.14 | $0.19 | $0.64 | $1.21 |
| Tandem Disc | 10-Foot | 84 | .33 | .15 | .35 | .11 | .50 | 1.44 |
| Field Cultivator | 12-Foot | 41 | .56 | .21 | .48 | .08 | .89 | 2.22 |
| Drag Harrow | 5-Sect. | 31 | .15 | .08 | .19 | .02 | .50 | .94 |
| Press Drill | 12-Foot | 39 | 1.48 | .84 | 1.90 | .40 | .39 | 5.01 |
| Swather PTO | 12-Foot | 34 | .86 | .55 | 1.24 | .23 | .50 | 3.38 |
| Combine PTO | 6-Foot | 85 | 1.84 | .52 | 1.18 | .52 | .68 | 4.74 |
| Corn Planter | 2-Row | 19 | 1.06 | .51 | 1.13 | .14 | .44 | 3.28 |
| Corn Cultivator | 2-Row | 35 | .21 | .14 | .28 | .04 | .54 | 1.21 |
| Mower | 7-Foot | 74 | .29 | .11 | .25 | .18 | .33 | 1.16 |
| Dump Rake | 8-Foot | 55 | .14 | .08 | .18 | .04 | .27 | .71 |
| Farmhand & Attachments | | 56 | .52 | .25 | .56 | .16 | .60 | 2.09 |
| Two Trailers or Wagons | | 49 | .45 | .21 | .48 | .11 | .54 | 1.79 |
| Sprayer (trailer) | 30-Foot | 23 | .60 | .34 | .77 | .09 | .40 | 2.20 |

[1] Costs include only machine or implement.

Table 7. Tractor, Machine, and Implement Costs Per Hour of Use, 640-Acre Model Farm; Buffalo, Hand, and Hyde Counties

| Machine or Implement | Size | Dollar Cost Per Hour | | | | | |
|---|---|---|---|---|---|---|---|
| | | Depreciation | Insurance & Taxes | Int. | Repairs | Fuel, Oil, & Lubricant | Total |
| Moldboard Plow | 3-14-Inch | $0.45 | $0.19 | $0.43 | $0.54 | $0.72 | $2.33 |
| Tandem Disc | 10-Foot | .60 | .28 | .64 | .46 | .58 | 2.56 |
| Field Cultivator | 12-Foot | .83 | .34 | .77 | .43 | .97 | 3.34 |
| Drag Harrow[1/] | 5-Sect. | .51 | .25 | .58 | .28 | .59 | 2.21 |
| Press Drill | 12-Foot | 1.75 | .97 | 2.19 | .75 | .48 | 6.14 |
| Press Drill[1/] | 12-Foot | 1.84 | 1.01 | 2.29 | .66 | .47 | 6.27 |
| Swather PTO[1/] | 12-Foot | 1.22 | .72 | 1.63 | .49 | .59 | 4.65 |
| Combine PTO | 6-Foot | 2.11 | .65 | 1.47 | .87 | .76 | 5.86 |
| Corn Planter | 2-Row | 1.33 | .64 | 1.42 | .49 | .52 | 4.40 |
| Corn Cultivator | 2-Row | .48 | .27 | .57 | .39 | .62 | 2.33 |
| Mower[1/] | 7-Foot | .65 | .28 | .64 | .44 | .42 | 2.43 |
| Dump Rake[1/] | 8-Foot | .50 | .25 | .57 | .30 | .36 | 1.98 |
| Farmhand & Attachments | | .79 | .38 | .85 | .51 | .68 | 3.21 |
| Two Trailers or Wagons[1/] | | .81 | .38 | .87 | .37 | .63 | 3.06 |
| Sprayer (trailer)[1/] | 30-Foot | .96 | .51 | 1.16 | .35 | .49 | 3.47 |

[1/] Two-plow tractor--all other implements and machines pulled with a 3-plow tractor.

Table 8. Tractor Costs Per Acre of Use for Specific Machines and Implements, 640-Acre Model Farm; Buffalo, Hand, and Hyde Counties

| Machine or Implement | Size | Dollar Cost Per Acre | | | | | |
|---|---|---|---|---|---|---|---|
| | | Depreciation | Insurance & Taxes | Int. | Repairs | Fuel, Oil, & Lubricant | Total |
| Moldboard Plow | 3-14-Inch | $0.165 | $0.078 | $0.177 | $0.218 | $0.047 | $0.685 |
| Tandem Disc | 10-Foot | .074 | .035 | .080 | .098 | .021 | .308 |
| Field Cultivator | 12-Foot | .048 | .023 | .051 | .063 | .014 | .199 |
| Drag Harrow[1/] | 5-Sect. | .036 | .017 | .039 | .026 | .009 | .127 |
| Press Drill | 12-Foot | .061 | .029 | .066 | .081 | .017 | .254 |
| Press Drill[1/] | 12-Foot | .083 | .039 | .089 | .060 | .020 | .291 |
| Swather PTO | 12-Foot | .072 | .034 | .077 | .052 | .017 | .252 |
| Combine PTO | 6-Foot | .133 | .063 | .143 | .176 | .038 | .553 |
| Corn Planter | 2-Row | .096 | .045 | .103 | .126 | .027 | .397 |
| Corn Cultivator | 2-Row | .088 | .041 | .094 | .116 | .025 | .364 |
| Mower | 7-Foot | .109 | .051 | .116 | .078 | .026 | .380 |
| Dump Rake | 8-Foot | .080 | .038 | .085 | .057 | .019 | .279 |
| Farmhand & Attachments | | .080 | .038 | .086 | .105 | .023 | .332 |
| Two Trailers or Wagons | | .181 | .086 | .194 | .130 | .043 | .634 |
| Sprayer (trailer) | 30-Foot | .036 | .017 | .039 | .026 | .009 | .127 |

[1/] Two-plow tractor--all other implements and machines pulled with a 3-plow tractor.

Table 9. Costs Per Acre by Machine and Implement Used, 640-Acre Model Farm; Buffalo, Hand, and Hyde Counties

| Machine or Implement | Size | Annual Use in Acres | Dollar Cost Per Acre | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | Depre-ciation | Insurance & Taxes | Int. | Repairs | Fuel, Oil, & Lubricant | Total |
| Moldboard Plow | 3-14-Inch | 222 | $0.110 | $0.037 | $0.084 | $0.118 | $0.398 | $0.747 |
| Tandem Disc | 10-Foot | 301 | .091 | .043 | .097 | .031 | .139 | .401 |
| Field Cultivator | 12-Foot | 228 | .100 | .038 | .086 | .014 | .160 | .398 |
| Drag Harrow | 5-Sect. | 311 | .015 | .008 | .019 | .002 | .050 | .094 |
| Press Drill | 12-Foot | 169 | .342 | .195 | .439 | .092 | .090 | 1.158 |
| Swather PTO | 12-Foot | 169 | .172 | .110 | .248 | .046 | .101 | .677 |
| Combine PTO | 6-Foot | 169 | .924 | .263 | .593 | .262 | .342 | 2.384 |
| Corn Planter | 2-Row | 53 | .380 | .181 | .405 | .050 | .158 | 1.174 |
| Corn Cultivator | 2-Row | 106 | .070 | .046 | .092 | .013 | .179 | .400 |
| Mower | 7-Foot | 248 | .088 | .033 | .075 | .054 | .098 | .348 |
| Dump Rake | 8-Foot | 248 | .031 | .018 | .039 | .009 | .060 | .157 |
| Farmhand & Attachments | | 187 | .156 | .074 | .167 | .048 | .180 | .625 |
| Two Trailers or Wagons | | 98 | .224 | .106 | .239 | .055 | .268 | .892 |
| Sprayer (trailer) | 30-Foot | 229 | .060 | .034 | .077 | .009 | .040 | .220 |

Table 10. Tractor, Machine, and Implement Costs Per Acre of Use, 640-Acre Model Farm; Buffalo, Hand, and Hyde Counties

| Machine or Implement | Size | Annual Use in Acres | Dollar Cost Per Acre | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | Depre-ciation | Insurance & Taxes | Int. | Repairs | Fuel, Oil, & Lubricant | Total |
| Moldboard Plow | 3-14-Inch | 222 | $0.275 | $0.115 | $0.261 | $0.336 | $0.445 | $1.432 |
| Tandem Disc | 10-Foot | 301 | .165 | .078 | .177 | .129 | .160 | .709 |
| Field Cultivator | 12-Foot | 228 | .148 | .061 | .137 | .077 | .174 | .597 |
| Drag Harrow[1/] | 5-Sect. | 311 | .051 | .025 | .058 | .028 | .059 | .221 |
| Press Drill | 12-Foot | 85 | .403 | .224 | .505 | .173 | .107 | 1.412 |
| Press Drill[1/] | 12-Foot | 84 | .425 | .234 | .528 | .152 | .110 | 1.449 |
| Swather PTO[1/] | 12-Foot | 169 | .244 | .144 | .325 | .098 | .118 | .929 |
| Combine PTO | 6-Foot | 169 | 1.057 | .326 | .736 | .438 | .380 | 2.937 |
| Corn Planter | 2-Row | 53 | .476 | .226 | .508 | .176 | .185 | 1.571 |
| Corn Cultivator | 2-Row | 106 | .158 | .087 | .186 | .129 | .204 | .764 |
| Mower[1/] | 7-Foot | 248 | .197 | .084 | .191 | .132 | .124 | .728 |
| Dump Rake[1/] | 8-Foot | 248 | .111 | .056 | .124 | .066 | .079 | .436 |
| Farmhand & Attachments | | 187 | .236 | .112 | .253 | .153 | .203 | .957 |
| Two Trailers or Wagons[1/] | | 98 | .405 | .192 | .433 | .185 | .311 | 1.526 |
| Sprayer (trailer)[1/] | 30-Foot | 229 | .096 | .051 | .116 | .035 | .049 | .347 |

[1/] Two-plow tractor--all other implements and machines pulled with a 3-plow tractor.

Table 11. Annual Machine Costs Based on Hours of Use By Machine or Implement Used, for 1,280-Acre Model Farm; Buffalo, Hand, and Hyde Counties

| Machine | Size | Annual Use Acres | Annual Use Hours | Depre-ciation | Insurance & Taxes | Interest | Repairs | Fuel, Oil, & Lubricant | Total |
|---|---|---|---|---|---|---|---|---|---|
| Tractor | 2-Plow | 1,885 | 413 | $ 103.40 | $ 49.03 | $ 110.56 | $ 86.42 | $ 33.04 1/ | $ 382.45 |
| Tractor | 3-Plow | 785 | 319 | 126.96 | 59.84 | 135.80 | 105.00 | 23.93 1/ | 451.53 |
| Tractor | 4-Plow | 1,381 | 525 | 178.70 | 77.97 | 175.84 | 265.88 | 29.40 1/ | 727.79 |
| Moldboard Plow | 3-16-Inch | 227 | 123 | 23.75 | 9.02 | 20.33 | 24.60 | 79.95 | 157.65 |
| Chisel | 12-Foot | 108 | 19 | 40.40 | 12.21 | 34.58 | 2.66 | 16.91 | 106.76 |
| Tandem Disc | 10-Foot | 300 | 84 | 27.36 | 12.96 | 29.26 | 9.24 | 42.00 | 120.82 |
| Drag Harrow 2/ | 5-Sect. | 318 | 32 | 4.57 | 2.59 | 5.84 | .64 | 16.00 | 29.64 |
| Press Drill 5/ | 12-Foot | 140 | 32 | 57.80 | 32.91 | 74.23 | 12.80 | 12.48 | 190.22 |
| Swather PTO 3/ | 12-Foot | 140 | 28 | 49.10 | 18.64 | 42.00 | 6.44 | 14.00 | 130.18 |
| Combine PTO | 6-Foot | 140 | 70 | 156.20 | 48.95 | 100.20 | 36.40 | 47.60 | 389.35 |
| Corn Planter 3/ | 2-Row | 87 | 31 | 20.12 | 9.61 | 21.49 | 4.34 | 13.64 | 69.20 |
| Corn Cultivator | 2-Row | 174 | 57 | 11.45 | 4.87 | 9.76 | 2.28 | 31.35 | 59.71 |
| Forage Harvester | 1-Row | 42 | 44 | 149.20 | 42.48 | 95.76 | 33.00 | 29.48 | 349.92 |
| Mower 2/ | 7-Foot | 578 | 174 | 39.45 | 8.25 | 18.55 | 31.32 | 57.42 | 154.99 |
| Side Rake 2/ | | 320 | 58 | 20.12 | 9.61 | 21.49 | 10.44 | 16.24 | 77.90 |
| Dump Rake 2/ | 10-Foot | 258 | 39 | 8.23 | 4.67 | 10.60 | 1.95 | 12.87 | 38.32 |
| Baler | | 320 | 112 | 123.27 | 41.59 | 79.13 | 36.96 | 131.04 | 411.99 |
| Farmhand & Attachments 3/ | | 316 | 158 | 29.24 | 13.86 | 31.25 | 25.28 | 56.88 | 156.51 |
| Two Trailers or Wagons 4/ | | 343 | 172 | 21.92 | 10.40 | 23.45 | 18.85 | 91.92 | 166.54 |
| Sprayer (trailer) 2/ | 30-Foot | 240 | 24 | 13.70 | 7.81 | 17.60 | 2.16 | 9.60 | 50.87 |
| Total Costs | | | | 1,204.94 | 477.27 | 1,057.72 | 716.66 | 765.75 | 4,222.34 |

1/ Overhead maintenance.
2/ Used with 2-plow tractor.
3/ Three-plow tractor--all others used with 4-plow tractor.
4/ Used ½ time with a 2-plow and ½ time with 3-plow tractor.
5/ Used ½ time with 3-plow and ½ time with 4-plow tractor.

Table 12. Machine Costs Per Hour of Use by Machine and Implement Used, 1,280-Acre Model Farm; Buffalo, Hand, and Hyde Counties

| Machine or Implement | Size | Annual Use Hours | Dollar Cost Per Hour 1/ Depre-ciation | Insurance & Taxes | Int. | Repairs | Total |
|---|---|---|---|---|---|---|---|
| Moldboard Plow | 3-16-Inch | 123 | $0.19 | $0.07 | $0.17 | $0.20 | $0.63 |
| Chisel | 12-Foot | 19 | 2.13 | .64 | 1.82 | .14 | 4.73 |
| Tandem Disc | 10-Foot | 84 | .33 | .15 | .35 | .11 | .94 |
| Drag Harrow | 5-Sect. | 32 | .14 | .08 | .18 | .02 | .42 |
| Press Drill | 12-Foot | 32 | 1.81 | 1.03 | 2.32 | .40 | 5.56 |
| Swather PTO | 12-Foot | 28 | 1.75 | .67 | 1.50 | .23 | 4.15 |
| Combine PTO | 6-Foot | 70 | 2.23 | .70 | 1.43 | .52 | 4.88 |
| Corn Planter | 2-Row | 31 | .65 | .31 | .69 | .14 | 1.79 |
| Corn Cultivator | 2-Row | 57 | .20 | .09 | .17 | .04 | .50 |
| Forage Harvester | 1-Row | 44 | 3.39 | .97 | 2.18 | .75 | 7.29 |
| Mower | 7-Foot | 174 | .23 | .05 | .11 | .18 | .57 |
| Side Rake | | 58 | .35 | .17 | .37 | .18 | 1.07 |
| Dump Rake | 10-Foot | 39 | .21 | .12 | .27 | .05 | .65 |
| Baler | | 112 | 1.10 | .37 | .71 | .33 | 2.51 |
| Farmhand & Attachments | | 158 | .19 | .09 | .20 | .16 | .64 |
| Two Trailers or Wagons | | 172 | .13 | .06 | .14 | .11 | .44 |
| Sprayer (trailer) | 30-Foot | 24 | .57 | .33 | .73 | .09 | 1.72 |

1/ Costs include only machine or implement.

Table 13. Tractor, Machine, and Implement Costs Per Hour of Use, 1,280-Acre Model Farm; Buffalo, Hand, and Hyde Counties

| Machine | Size | Dollar Cost Per Hour | | | | | |
|---|---|---|---|---|---|---|---|
| | | Depreciation | Insurance & Taxes | Int. | Repairs | Fuel, Oil, & Lubricant | Total |
| Moldboard Plow | 3-16-Inch | $0.53 | $0.22 | $0.51 | $0.71 | $0.71 | $2.68 |
| Chisel | 12-Foot | 2.47 | .79 | 2.16 | .65 | .95 | 7.02 |
| Tandem Disc | 10-Foot | .67 | .30 | .69 | .62 | .56 | 2.84 |
| Drag Harrow[1/] | 5-Sect. | .39 | .20 | .45 | .23 | .58 | 1.85 |
| Press Drill[2/] | 12-Foot | 2.21 | 1.22 | 2.75 | .73 | .44 | 7.35 |
| Press Drill | 12-Foot | 2.15 | 1.18 | 2.66 | .91 | .48 | 7.38 |
| Swather PTO[2/] | 12-Foot | 2.15 | .86 | 1.93 | .56 | .58 | 6.08 |
| Combine PTO | 6-Foot | 2.57 | .85 | 1.77 | 1.03 | .74 | 6.96 |
| Corn Planter[2/] | 2-Row | 1.05 | .50 | 1.12 | .47 | .52 | 3.66 |
| Corn Cultivator | 2-Row | .54 | .24 | .51 | .55 | .61 | 2.45 |
| Forage Harvester | 1-Row | 3.73 | 1.12 | 2.52 | 1.26 | .73 | 9.36 |
| Mower[1/] | 7-Foot | .48 | .17 | .38 | .39 | .41 | 1.83 |
| Side Rake[1/] | | .60 | .29 | .64 | .39 | .36 | 2.28 |
| Dump Rake[1/] | 10-Foot | .46 | .24 | .54 | .26 | .41 | 1.91 |
| Baler | | 1.44 | .52 | 1.05 | .84 | 1.23 | 5.08 |
| Farmhand & Attachments[2/] | | .59 | .28 | .63 | .49 | .44 | 2.43 |
| Trailer or Wagon[1/] | | .38 | .18 | .41 | .32 | .60 | 1.89 |
| Trailer or Wagon[2/] | | .53 | .25 | .57 | .44 | .61 | 2.40 |
| Sprayer (trailer)[1/] | 30-Foot | .82 | .45 | 1.00 | .30 | .48 | 3.05 |

1/ Used with a 2-plow tractor.
2/ Used with a 3-plow tractor--all other implements and machines pulled with a 4-plow tractor.

Table 14. Tractor Costs Per Acre of Use for Specific Machines and Implements, 1,280-Acre Model Farm; Buffalo, Hand, and Hyde Counties

| Machine or Implement | Size | Dollar Cost Per Acre | | | | | |
|---|---|---|---|---|---|---|---|
| | | Depreciation | Insurance & Taxes | Int. | Repairs | Fuel, Oil, & Lubricant | Total |
| Moldboard Plow | 3-16-Inch | $0.184 | $0.080 | $0.181 | $0.273 | $0.030 | $0.748 |
| Chisel | 12-Foot | .061 | .027 | .060 | .091 | .010 | .249 |
| Tandem Disc | 10-Foot | .095 | .042 | .094 | .142 | .016 | .389 |
| Drag Harrow[1/] | 5-Sect. | .025 | .012 | .027 | .021 | .008 | .093 |
| Press Drill[2/] | 12-Foot | .092 | .043 | .098 | .076 | .017 | .326 |
| Press Drill | 12-Foot | .078 | .034 | .077 | .116 | .013 | .318 |
| Swather PTO[2/] | 12-Foot | .080 | .038 | .085 | .066 | .015 | .284 |
| Combine PTO | 6-Foot | .170 | .075 | .168 | .253 | .028 | .694 |
| Corn Planter[2/] | 2-Row | .143 | .068 | .153 | .118 | .027 | .509 |
| Corn Cultivator | 2-Row | .112 | .049 | .111 | .167 | .018 | .457 |
| Forage Harvester | 1-Row | .357 | .156 | .352 | .531 | .059 | 1.455 |
| Mower[1/] | 7-Foot | .075 | .036 | .080 | .063 | .024 | .278 |
| Side Rake[1/] | | .045 | .021 | .048 | .038 | .014 | .166 |
| Dump Rake[1/] | 10-Foot | .038 | .018 | .040 | .031 | .012 | .139 |
| Baler | | .119 | .052 | .117 | .177 | .020 | .485 |
| Farmhand & Attachments[2/] | | .199 | .094 | .213 | .165 | .038 | .709 |
| Trailer or Wagon[1/] | | .125 | .060 | .134 | .105 | .040 | .464 |
| Trailer or Wagon[2/] | | .199 | .094 | .213 | .165 | .038 | .709 |
| Sprayer (trailer)[1/] | 30-Foot | .025 | .012 | .027 | .021 | .008 | .093 |

1/ Two-plow tractor.
2/ Three-plow tractor--all other implements and machines pulled with a 4-plow tractor.

Table 15. Costs Per Acre by Machine and Implement Used, 1,280-Acre Model Farm; Buffalo, Hand, and Hyde Counties

| Machine or Implement | Size | Annual Use in Acres | Dollar Cost Per Acre: Depreciation | Insurance & Taxes | Int. | Repairs | Fuel, Oil, & Lubricant | Total |
|---|---|---|---|---|---|---|---|---|
| Moldboard Plow | 3-16-Inch | 227 | $0.105 | $0.040 | $0.089 | $0.108 | $0.352 | $0.694 |
| Chisel | 12-Foot | 108 | .374 | .113 | .320 | .025 | .157 | .989 |
| Tandem Disc | 10-Foot | 300 | .091 | .043 | .098 | .031 | .140 | .403 |
| Drag Harrow | 5-Sect. | 318 | .015 | .008 | .018 | .002 | .050 | .093 |
| Press Drill | 12-Foot | 140 | .413 | .235 | .530 | .092 | .089 | 1.359 |
| Swather PTO | 12-Foot | 140 | .351 | .133 | .300 | .046 | .100 | .930 |
| Combine PTO | 6-Foot | 140 | 1.116 | .350 | .716 | .260 | .340 | 2.782 |
| Corn Planter | 2-Row | 87 | .231 | .110 | .247 | .050 | .157 | .795 |
| Corn Cultivator | 2-Row | 174 | .066 | .028 | .056 | .013 | .180 | .343 |
| Forage Harvester | 1-Row | 42 | 3.552 | 1.011 | 2.280 | .786 | .702 | 8.331 |
| Mower | 7-Foot | 578 | .068 | .014 | .032 | .054 | .099 | .267 |
| Side Rake | | 320 | .063 | .030 | .067 | .033 | .051 | .244 |
| Dump Rake | 10-Foot | 258 | .032 | .018 | .041 | .007 | .050 | .148 |
| Baler | | 320 | .385 | .130 | .247 | .116 | .409 | 1.287 |
| Farmhand & Attachments | | 316 | .092 | .044 | .100 | .080 | .180 | .496 |
| Two Trailers or Wagons | | 343 | .064 | .030 | .068 | .055 | .268 | .485 |
| Sprayer (trailer) | 30-Foot | 240 | .057 | .033 | .073 | .009 | .040 | .212 |

Table 16. Tractor, Machine, and Implement Costs Per Acre of Use, 1,280-Acre Model Farm; Buffalo, Hand, and Hyde Counties

| Machine or Implement | Size | Annual Use in Acres | Dollar Cost Per Acre: Depreciation | Insurance & Taxes | Int. | Repairs | Fuel, Oil, & Lubricant | Total |
|---|---|---|---|---|---|---|---|---|
| Moldboard Plow | 3-16-Inch | 227 | $0.289 | $0.120 | $0.270 | $0.381 | $0.382 | $1.442 |
| Chisel | 12-Foot | 108 | .435 | .140 | .380 | .116 | .167 | 1.238 |
| Tandem Disc | 10-Foot | 300 | .186 | .085 | .192 | .173 | .156 | .792 |
| Drag Harrow[1/] | 5-Sect. | 318 | .040 | .020 | .045 | .023 | .058 | .186 |
| Press Drill[2/] | 12-Foot | 70 | .505 | .278 | .628 | .168 | .100 | 1.679 |
| Press Drill | 12-Foot | 70 | .491 | .269 | .607 | .208 | .108 | 1.683 |
| Swather PTO[2/] | 12-Foot | 140 | .431 | .171 | .385 | .112 | .115 | 1.214 |
| Combine PTO | 6-Foot | 140 | 1.286 | .425 | .884 | .513 | .368 | 3.476 |
| Corn Planter[2/] | 2-Row | 87 | .374 | .178 | .400 | .168 | .184 | 1.304 |
| Corn Cultivator | 2-Row | 174 | .178 | .077 | .167 | .180 | .198 | .800 |
| Forage Harvester | 1-Row | 42 | 3.909 | 1.167 | 2.632 | 1.317 | .761 | 9.786 |
| Mower[1/] | 7-Foot | 578 | .143 | .050 | .112 | .117 | .123 | .545 |
| Side Rake[1/] | | 320 | .108 | .051 | .115 | .071 | .065 | .410 |
| Dump Rake[1/] | 10-Foot | 258 | .070 | .036 | .081 | .038 | .062 | .287 |
| Baler | | 320 | .504 | .182 | .364 | .293 | .429 | 1.772 |
| Farmhand & Attachments[2/] | | 316 | .291 | .138 | .313 | .245 | .218 | 1.205 |
| Trailer or Wagon[1/] | | 171 | .189 | .090 | .202 | .160 | .303 | .944 |
| Trailer or Wagon[2/] | | 172 | .263 | .124 | .281 | .220 | .311 | 1.199 |
| Sprayer (trailer)[1/] | 30-Foot | 240 | .082 | .045 | .100 | .030 | .048 | .305 |

[1/] Two-plow tractor.
[2/] Three-plow tractor--all other implements and machines pulled with a 4-plow tractor.

Table 17. Annual Machine Costs by Machine or Implement Used for 2,240-Acre Model Farm; Buffalo, Hand, and Hyde Counties

| Machine | Size | Annual Use Acres | Annual Use Hours | Depre-ciation | Insurance & Taxes | Interest | Repairs | Fuel, Oil, & Lubricant | Total |
|---|---|---|---|---|---|---|---|---|---|
| Tractor | 2-Plow | 2,303 | 583 | $ 123.09 | $ 49.03 | $ 110.56 | $160.95 | $ 46.64[1]/ | $ 490.27 |
| Tractor | 3-Plow | 1,444 | 328 | 126.96 | 59.84 | 135.80 | 111.65 | 24.60[1]/ | 458.85 |
| Tractor | 4-Plow | 1,233 | 527 | 178.73 | 77.97 | 175.84 | 162.52 | 29.51[1]/ | 624.57 |
| Moldboard Plow | 3-16-Inch | 201 | 109 | 20.65 | 9.02 | 20.33 | 22.89 | 74.12 | 147.01 |
| Chisel | 12-Foot | 58 | 10 | 40.45 | 12.21 | 34.58 | 1.40 | 10.00 | 98.64 |
| Single Disc[2]/ | 16-Foot | 257 | 44 | 23.76 | 11.28 | 25.41 | 4.40 | 25.96 | 90.81 |
| Drag Harrow[2]/ | 6-Sect. | 273 | 22 | 5.33 | 3.03 | 6.86 | .44 | 11.00 | 26.66 |
| Press Drill[3]/ | 12-Foot | 122 | 28 | 57.83 | 32.91 | 74.23 | 11.20 | 10.92 | 187.09 |
| Swather PTO[2]/ | 12-Foot | 122 | 24 | 49.10 | 18.64 | 42.00 | 5.52 | 12.00 | 127.26 |
| Combine PTO | 6-Foot | 122 | 61 | 156.20 | 48.95 | 100.20 | 31.72 | 41.48 | 378.55 |
| Corn Planter[4]/ | 2-Row | 79 | 28 | 20.12 | 9.61 | 21.49 | 3.92 | 12.32 | 67.46 |
| Corn Cultivator | 2-Row | 158 | 52 | 11.45 | 4.87 | 9.76 | 2.08 | 28.60 | 56.76 |
| Forage Harvester | 1-Row | 41 | 43 | 149.20 | 42.48 | 95.76 | 32.25 | 28.81 | 348.50 |
| Mower[4]/ | 7-Foot | 945 | 284 | 62.00 | 8.25 | 18.55 | 51.12 | 93.72 | 233.64 |
| Side Rake[4]/ | | 388 | 70 | 20.12 | 9.61 | 21.49 | 12.60 | 19.60 | 83.42 |
| Dump Rake[4]/ | 10-Foot | 557 | 106 | 10.29 | 4.67 | 10.61 | 5.30 | 27.56 | 58.43 |
| Baler | | 388 | 136 | 123.27 | 41.59 | 79.14 | 69.36 | 159.12 | 472.48 |
| Farmhand & Attachments[2]/ | | 652 | 196 | 29.24 | 13.86 | 31.25 | 31.36 | 117.60 | 223.31 |
| Two Trailers or Wagons[5]/ | | 407 | 204 | 21.92 | 10.40 | 23.45 | 22.36 | 109.07 | 187.20 |
| Sprayer (trailer)[4]/ | 30-Foot | 210 | 21 | 13.70 | 7.81 | 17.60 | 1.89 | 8.40 | 49.40 |
| Total Costs | | | | $1,243.41 | $476.03 | $1,054.91 | $744.93 | $891.03 | $4,410.31 |

1/ Overhead maintenance.
2/ Three-plow tractor--all other machines or implements pulled by a 4-plow tractor.
3/ Used ½ time with 3-plow and ½ time with 4-plow tractor.
4/ Used with 2-plow tractor.
5/ Used ½ time with a 2-plow and ½ time with 3-plow tractor.

Table 18. Machine Costs Per Hour of Use by Machine and Implement Used, 2,240-Acre Model Farm; Buffalo, Hand, and Hyde Counties

| Machine or Implement | Size | Annual Use Hours | Dollar Cost Per Hour[1]/ Depre-ciation | Insurance & Taxes | Int. | Repairs | Total |
|---|---|---|---|---|---|---|---|
| Moldboard Plow | 3-16-Inch | 109 | $0.19 | $0.08 | $0.19 | $0.21 | $0.67 |
| Chisel | 12-Foot | 10 | 4.05 | 1.22 | 3.46 | .14 | 8.87 |
| Single Disc | 16-Foot | 44 | .54 | .26 | .58 | .10 | 1.48 |
| Drag Harrow | 6-Sect. | 22 | .24 | .14 | .31 | .02 | .71 |
| Press Drill | 12-Foot | 28 | 2.07 | 1.18 | 2.65 | .40 | 6.30 |
| Swather PTO | 12-Foot | 24 | 2.05 | .78 | 1.75 | .23 | 4.81 |
| Combine PTO | 6-Foot | 61 | 2.56 | .80 | 1.64 | .52 | 5.52 |
| Corn Planter | 2-Row | 28 | .72 | .34 | .77 | .14 | 1.97 |
| Corn Cultivator | 2-Row | 52 | .22 | .09 | .19 | .04 | .54 |
| Forage Harvester | 1-Row | 43 | 3.47 | .99 | 2.23 | .75 | 7.44 |
| Mower | 7-Foot | 284 | .22 | .03 | .07 | .18 | .50 |
| Side Rake | | 70 | .29 | .14 | .31 | .18 | .92 |
| Dump Rake | 10-Foot | 106 | .10 | .04 | .10 | .05 | .29 |
| Baler | | 136 | .91 | .31 | .58 | .51 | 2.31 |
| Farmhand & Attachments | | 196 | .15 | .07 | .16 | .16 | .54 |
| Two Trailers or Wagons | | 204 | .11 | .05 | .11 | .11 | .38 |
| Sprayer (trailer) | 30-Foot | 21 | .65 | .37 | .84 | .09 | 1.95 |

1/ Costs include only machine or implement.

Table 19. Tractor, Machine, and Implement Costs Per Hour of Use, 2,240-Acre Model Farm; Buffalo, Hand, and Hyde Counties

| Machine or Implement | Size | Dollar Cost Per Hour | | | | | |
|---|---|---|---|---|---|---|---|
| | | Depreciation | Insurance & Taxes | Int. | Repairs | Fuel, Oil, & Lubricant | Total |
| Moldboard Plow | 3-16-Inch | $0.53 | $0.23 | $0.52 | $0.52 | $0.74 | $ 2.54 |
| Chisel | 12-Foot | 4.39 | 1.37 | 3.79 | .45 | 1.06 | 11.06 |
| Single Disc[1/] | 16-Foot | .93 | .44 | .99 | .44 | .67 | 3.47 |
| Drag Harrow[1/] | 6-Sect. | .63 | .32 | .72 | .36 | .58 | 2.61 |
| Press Drill | 12-Foot | 2.41 | 1.33 | 2.98 | .71 | .48 | 7.91 |
| Press Drill[1/] | 12-Foot | 2.46 | 1.36 | 3.06 | .74 | .44 | 8.06 |
| Swather PTO[1/] | 12-Foot | 2.44 | .96 | 2.16 | .57 | .58 | 6.71 |
| Combine PTO | 6-Foot | 2.90 | .95 | 1.97 | .83 | .74 | 7.39 |
| Corn Planter[1/] | 2-Row | 1.11 | .52 | 1.18 | .48 | .52 | 3.81 |
| Corn Cultivator | 2-Row | .56 | .24 | .52 | .35 | .61 | 2.28 |
| Forage Harvester | 1-Row | 3.81 | 1.14 | 2.56 | 1.06 | .73 | 9.30 |
| Mower[2/] | 7-Foot | .43 | .11 | .26 | .46 | .41 | 1.67 |
| Side Rake[2/] | | .50 | .22 | .50 | .46 | .36 | 2.04 |
| Dump Rake[2/] | 10-Foot | .31 | .12 | .29 | .33 | .34 | 1.39 |
| Baler | | 1.25 | .46 | .91 | .89 | 1.23 | 4.74 |
| Farmhand & Attachments[1/] | | .54 | .25 | .57 | .50 | .68 | 2.54 |
| Trailer or Wagon | | .45 | .20 | .44 | .42 | .62 | 2.13 |
| Trailer or Wagon[2/] | | .32 | .13 | .30 | .39 | .59 | 1.73 |
| Sprayer (trailer)[2/] | 30-Foot | .86 | .45 | 1.03 | .37 | .48 | 3.19 |

[1/] Three-plow tractor--all other implements and machines pulled with a 4-plow tractor.
[2/] Two-plow tractor.

Table 20. Tractor Costs Per Acre of Use for Specific Machines and Implements, 2,240-Acre Model Farm; Buffalo, Hand, and Hyde Counties

| Machine or Implement | Size | Dollar Cost Per Acre | | | | | |
|---|---|---|---|---|---|---|---|
| | | Depreciation | Insurance & Taxes | Int. | Repairs | Fuel, Oil, & Lubricant | Total |
| Moldboard Plow | 3-16-Inch | $0.183 | $0.080 | $0.180 | $0.166 | $0.030 | $0.639 |
| Chisel | 12-Foot | .061 | .027 | .060 | .055 | .010 | .213 |
| Single Disc[1/] | 16-Foot | .066 | .031 | .070 | .058 | .013 | .238 |
| Drag Harrow[1/] | 6-Sect. | .031 | .015 | .033 | .027 | .006 | .112 |
| Press Drill | 12-Foot | .078 | .034 | .077 | .071 | .013 | .273 |
| Press Drill[1/] | 12-Foot | .089 | .042 | .095 | .078 | .017 | .321 |
| Swather PTO[1/] | 12-Foot | .077 | .036 | .083 | .068 | .015 | .279 |
| Combine PTO | 6-Foot | .170 | .074 | .167 | .154 | .028 | .593 |
| Corn Planter[1/] | 2-Row | .139 | .066 | .149 | .122 | .027 | .503 |
| Corn Cultivator | 2-Row | .112 | .049 | .110 | .102 | .018 | .391 |
| Forage Harvester | 1-Row | .356 | .155 | .351 | .323 | .059 | 1.244 |
| Mower[2/] | 7-Foot | .063 | .025 | .057 | .083 | .024 | .252 |
| Side Rake[2/] | | .038 | .015 | .034 | .050 | .014 | .151 |
| Dump Rake[2/] | 10-Foot | .040 | .016 | .036 | .052 | .015 | .159 |
| Baler | | .119 | .052 | .117 | .108 | .020 | .416 |
| Farmhand & Attachments[1/] | | .116 | .055 | .124 | .102 | .023 | .420 |
| Trailer or Wagon | | .170 | .074 | .167 | .154 | .028 | .593 |
| Trailer or Wagon[2/] | | .106 | .042 | .095 | .138 | .040 | .421 |
| Sprayer (trailer)[2/] | 30-Foot | .021 | .008 | .019 | .028 | .008 | .084 |

[1/] Three-plow tractor--all other implements and machines pulled with a 4-plow tractor.
[2/] Two-plow tractor.

Table 21. Costs Per Acre by Machine and Implement Used, 2,240-Acre Model Farm; Buffalo, Hand, and Hyde Counties

| Machine or Implement | Size | Annual Use in Acres | Dollar Cost Per Acre: Depreciation | Insurance & Taxes | Int. | Repairs | Fuel, Oil, & Lubricant | Total |
|---|---|---|---|---|---|---|---|---|
| Moldboard Plow | 3-16-Inch | 201 | $0.103 | $0.045 | $0.101 | $0.114 | $0.369 | $0.732 |
| Chisel | 12-Foot | 58 | .697 | .211 | .596 | .024 | .172 | 1.700 |
| Single Disc | 16-Foot | 257 | .092 | .044 | .099 | .017 | .101 | .353 |
| Drag Harrow | 6-Sect. | 273 | .020 | .011 | .025 | .002 | .040 | .098 |
| Press Drill | 12-Foot | 122 | .474 | .270 | .608 | .092 | .090 | 1.534 |
| Swather PTO | 12-Foot | 122 | .403 | .153 | .344 | .045 | .098 | 1.043 |
| Combine PTO | 6-Foot | 122 | 1.280 | .401 | .827 | .260 | .340 | 3.108 |
| Corn Planter | 2-Row | 79 | .254 | .122 | .272 | .050 | .156 | .854 |
| Corn Cultivator | 2-Row | 158 | .072 | .031 | .062 | .013 | .181 | .359 |
| Forage Harvester | 1-Row | 41 | 3.639 | 1.036 | 2.336 | .786 | .703 | 8.500 |
| Mower | 7-Foot | 945 | .066 | .009 | .019 | .054 | .099 | .247 |
| Side Rake | | 388 | .052 | .025 | .055 | .032 | .051 | .215 |
| Dump Rake | 10-Foot | 557 | .019 | .008 | .019 | .009 | .050 | .105 |
| Baler | | 388 | .318 | .107 | .204 | .179 | .410 | 1.218 |
| Farmhand & Attachments | | 652 | .045 | .021 | .048 | .048 | .180 | .342 |
| Two Trailers or Wagons | | 407 | .054 | .025 | .058 | .055 | .268 | .460 |
| Sprayer (trailer) | 30-Foot | 210 | .065 | .037 | .084 | .009 | .040 | .235 |

Table 22. Tractor, Machine, and Implement Costs Per Acre of Use, 2,240-Acre Model Farm; Buffalo, Hand, and Hyde Counties

| Machine or Implement | Size | Annual Use in Acres | Dollar Cost Per Acre: Depreciation | Insurance & Taxes | Int. | Repairs | Fuel, Oil, & Lubricant | Total |
|---|---|---|---|---|---|---|---|---|
| Moldboard Plow | 3-16-Inch | 201 | $0.286 | $0.125 | $0.281 | $0.280 | $0.399 | $1.371 |
| Chisel | 12-Foot | 58 | .758 | .238 | .656 | .079 | .182 | 1.913 |
| Single Disc[1/] | 16-Foot | 257 | .158 | .075 | .169 | .075 | .114 | .591 |
| Drag Harrow[1/] | 6-Sect. | 273 | .051 | .026 | .058 | .029 | .046 | .210 |
| Press Drill | 12-Foot | 61 | .552 | .304 | .685 | .163 | .109 | 1.813 |
| Press Drill[1/] | 12-Foot | 61 | .563 | .312 | .703 | .170 | .101 | 1.849 |
| Swather PTO[1/] | 12-Foot | 122 | .480 | .189 | .427 | .113 | .113 | 1.322 |
| Combine PTO | 6-Foot | 122 | 1.450 | .475 | .994 | .414 | .368 | 3.701 |
| Corn Planter[1/] | 2-Row | 79 | .393 | .188 | .421 | .172 | .183 | 1.357 |
| Corn Cultivator | 2-Row | 158 | .184 | .080 | .172 | .115 | .199 | .750 |
| Forage Harvester | 1-Row | 41 | 3.995 | 1.191 | 2.687 | 1.109 | .762 | 9.744 |
| Mower[2/] | 7-Foot | 945 | .129 | .034 | .076 | .137 | .123 | .499 |
| Side Rake[2/] | | 388 | .090 | .040 | .089 | .082 | .065 | .366 |
| Dump Rake[2/] | 10-Foot | 557 | .059 | .024 | .055 | .061 | .065 | .264 |
| Baler | | 388 | .437 | .159 | .321 | .287 | .430 | 1.634 |
| Farmhand & Attachments[1/] | | 652 | .161 | .076 | .172 | .150 | .203 | .762 |
| Trailer or Wagon | | 204 | .224 | .099 | .225 | .209 | .308 | 1.065 |
| Trailer or Wagon[2/] | | 203 | .160 | .067 | .153 | .193 | .296 | .869 |
| Sprayer (trailer)[2/] | 30-Foot | 210 | .086 | .045 | .103 | .037 | .048 | .319 |

[1/] Three-plow tractor--all other implements and machines pulled with a 4-plow tractor.
[2/] Two-plow tractor.

Table 23. Machine Costs Per Acre by Crop and Type of Operation on 640-Acre Model Farms; Buffalo, Hand, and Hyde Counties

| Crop | Type of Operation | Machine Time Hours Per Acre | Dollar Cost Per Acre: Depreciation | Insurance & Taxes | Int. | Repairs | Fuel, Oil, & Lubricant | Total |
|---|---|---|---|---|---|---|---|---|
| Summer Fallow | Tillage | 1.16 | $0.72 | $0.30 | $0.67 | $0.57 | $0.97 | $ 3.23 |
| Small Grain After Summer Fallow | Tillage | .33 | .21 | .09 | .22 | .13 | .23 | .88 |
| | Planting | .23 | .41 | .23 | .52 | .16 | .11 | 1.43 |
| | Spraying | .10 | .10 | .05 | .12 | .03 | .05 | .35 |
| | Harvest | .70 | 1.30 | .47 | 1.06 | .61 | .50 | 3.94 |
| | Total | 1.36 | 2.02 | .84 | 1.92 | .93 | .89 | 6.60 |
| Small Grain After Small Grain, Corn, or Sorghum Silage | Tillage | 1.00 | .49 | .22 | .50 | .49 | .66 | 2.36 |
| | Planting | .23 | .41 | .23 | .52 | .16 | .11 | 1.43 |
| | Spraying | .10 | .10 | .05 | .12 | .03 | .05 | .35 |
| | Harvest | .70 | 1.30 | .47 | 1.06 | .61 | .50 | 3.94 |
| | Total | 2.03 | 2.30 | .97 | 2.20 | 1.29 | 1.32 | 8.08 |
| Small Grain After Corn Grain | Tillage | 1.28 | .66 | .30 | .67 | .62 | .82 | 3.07 |
| | Planting | .23 | .41 | .23 | .52 | .16 | .11 | 1.43 |
| | Spraying | .10 | .10 | .05 | .12 | .03 | .05 | .35 |
| | Harvest | .70 | 1.30 | .47 | 1.06 | .61 | .50 | 3.94 |
| | Total | 2.31 | 2.47 | 1.05 | 2.37 | 1.42 | 1.48 | 8.79 |
| Small Grain After Alfalfa | Tillage | 1.38 | .71 | .32 | .73 | .65 | .88 | 3.29 |
| | Planting | .23 | .41 | .23 | .52 | .16 | .11 | 1.43 |
| | Spraying | .10 | .10 | .05 | .12 | .03 | .05 | .35 |
| | Harvest | .70 | 1.30 | .47 | 1.06 | .61 | .50 | 3.94 |
| | Total | 2.41 | 2.52 | 1.07 | 2.43 | 1.45 | 1.54 | 9.01 |
| Row Crop After Summer Fallow | Tillage | 1.14 | .58 | .30 | .67 | .44 | .69 | 2.68 |
| | Planting | .36 | .48 | .22 | .51 | .18 | .18 | 1.57 |
| | Spraying | .10 | .10 | .05 | .12 | .03 | .05 | .35 |
| | Subtotal | 1.60 | 1.16 | .57 | 1.30 | .65 | .92 | 4.60 |
| Corn Grain | Harvest (custom hired) | | | | | | | 3.30 |
| | Total | 1.60 | 1.16 | .57 | 1.30 | .65 | .92 | 7.90 |
| Corn or Sorghum Silage | Harvest (custom hired) | | | | | | | 5.10 |
| | Total | 1.60 | 1.16 | .57 | 1.30 | .65 | .92 | 9.70 |
| Row Crop After Small Grain | Tillage | 1.76 | .86 | .42 | .93 | .78 | 1.13 | 4.12 |
| | Planting | .36 | .48 | .22 | .51 | .18 | .18 | 1.57 |
| | Spraying | .10 | .10 | .05 | .12 | .03 | .05 | .35 |
| | Subtotal | 2.22 | 1.44 | .69 | 1.56 | .99 | 1.36 | 6.04 |
| Corn Grain | Harvest (custom hired) | | | | | | | 3.30 |
| | Total | 2.22 | 1.44 | .69 | 1.56 | .99 | 1.36 | 9.34 |
| Corn or Sorghum Silage | Harvest (custom hired) | | | | | | | 5.10 |
| | Total | 2.22 | 1.44 | .69 | 1.56 | .99 | 1.36 | 11.14 |
| Row Crop After Corn Grain | Tillage | 2.03 | 1.05 | .54 | 1.11 | .92 | 1.32 | 4.94 |
| | Planting | .36 | .48 | .22 | .51 | .18 | .18 | 1.57 |
| | Spraying | .10 | .10 | .05 | .12 | .03 | .05 | .35 |
| | Subtotal | 2.49 | 1.63 | .81 | 1.74 | 1.13 | 1.55 | 6.86 |
| Corn Grain | Harvest (custom hired) | | | | | | | 3.30 |
| | Total | 2.49 | 1.63 | .81 | 1.74 | 1.13 | 1.55 | 10.16 |
| Corn or Sorghum Silage | Harvest (custom hired) | | | | | | | 5.10 |
| | Total | 2.49 | 1.63 | .81 | 1.74 | 1.13 | 1.55 | 11.96 |
| Row Crop After Corn or Sorghum Silage | Tillage | 1.75 | .88 | .42 | .94 | .79 | 1.16 | 4.19 |
| | Planting | .36 | .48 | .22 | .51 | .18 | .18 | 1.57 |
| | Spraying | .10 | .10 | .05 | .12 | .03 | .05 | .35 |
| | Subtotal | 2.21 | 1.46 | .69 | 1.57 | 1.00 | 1.39 | 6.11 |
| Corn Grain | Harvest (custom hired) | | | | | | | 3.30 |
| | Total | 2.21 | 1.46 | .69 | 1.57 | 1.00 | 1.39 | 9.41 |
| Corn or Sorghum Silage | Harvest (custom hired) | | | | | | | 5.10 |
| | Total | 2.21 | 1.46 | .69 | 1.57 | 1.00 | 1.39 | 11.21 |
| Row Crop After Alfalfa | Tillage | 1.80 | .89 | .43 | .96 | .82 | 1.15 | 4.25 |
| | Planting | .36 | .48 | .22 | .51 | .18 | .18 | 1.57 |
| | Spraying | .10 | .10 | .05 | .12 | .03 | .05 | .35 |
| | Subtotal | 2.26 | 1.47 | .70 | 1.59 | 1.03 | 1.38 | 6.17 |
| Corn Grain | Harvest (custom hired) | | | | | | | 3.30 |
| | Total | 2.26 | 1.47 | .70 | 1.59 | 1.03 | 1.38 | 9.47 |
| Corn or Sorghum Silage | Harvest (custom hired) | | | | | | | 5.10 |
| | Total | 2.26 | 1.47 | .70 | 1.59 | 1.03 | 1.38 | 11.27 |
| Tame Hay[1/] | Mow, Rake, Bale | .52 | .31 | .14 | .32 | .20 | .20 | 8.17[2/] |
| | Mow, Rake, Stack | .82 | .54 | .25 | .57 | .35 | .41 | 2.12 |
| Native Hay[1/] | Mow, Rake, Stack | .82 | .54 | .25 | .57 | .35 | .41 | 2.12 |

1/ Per cutting per acre.
2/ Includes cost of custom baling.

Table 24. Machine Costs Per Acre by Crop and Type of Operation on 1,280-Acre Model Farms; Buffalo, Hand, and Hyde Counties

| Crop | Type of Operation | Machine Time Hours Per Acre | Dollar Cost Per Acre: Depreciation | Insurance & Taxes | Int. | Repairs | Fuel, Oil, & Lubricant | Total |
|---|---|---|---|---|---|---|---|---|
| Summer Fallow | Tillage | 1.08 | $1.59 | $0.54 | $1.41 | $0.73 | $0.88 | $ 5.15 |
| Small Grain After Summer Fallow | Tillage | .33 | .35 | .13 | .33 | .17 | .22 | 1.20 |
| | Planting | .23 | .50 | .27 | .62 | .19 | .10 | 1.68 |
| | Spraying | .10 | .03 | .05 | .10 | .03 | .05 | .31 |
| | Harvest | .70 | .86 | .30 | .63 | .31 | .24 | 2.34 |
| | Total | 1.36 | 1.79 | .75 | 1.68 | .70 | .61 | 5.53 |
| Small Grain After Small Grain, Corn, or Sorghum Silage | Tillage | .92 | .52 | .22 | .51 | .58 | .60 | 2.43 |
| | Planting | .23 | .50 | .27 | .62 | .19 | .10 | 1.68 |
| | Spraying | .10 | .08 | .05 | .10 | .03 | .05 | .31 |
| | Harvest | .70 | .86 | .30 | .63 | .31 | .24 | 2.34 |
| | Total | 1.95 | 1.96 | .84 | 1.86 | 1.11 | .99 | 6.76 |
| Small Grain After Corn Grain | Tillage | 1.20 | .70 | .31 | .70 | .69 | .75 | 3.15 |
| | Planting | .23 | .50 | .27 | .62 | .19 | .10 | 1.68 |
| | Spraying | .10 | .03 | .05 | .10 | .03 | .05 | .31 |
| | Harvest | .70 | .86 | .30 | .63 | .31 | .24 | 2.34 |
| | Total | 2.23 | 2.14 | .93 | 2.05 | 1.22 | 1.14 | 7.48 |
| Small Grain After Alfalfa | Tillage | 1.30 | .74 | .33 | .74 | .77 | .81 | 3.39 |
| | Planting | .23 | .50 | .27 | .62 | .19 | .10 | 1.68 |
| | Spraying | .10 | .03 | .05 | .10 | .03 | .05 | .31 |
| | Harvest | .70 | .86 | .30 | .63 | .31 | .24 | 2.34 |
| | Total | 2.33 | 2.18 | .95 | 2.09 | 1.30 | 1.20 | 7.72 |
| Row Crop After Summer Fallow | Tillage | 1.14 | .62 | .28 | .62 | .58 | .67 | 2.77 |
| | Planting | .36 | .37 | .18 | .40 | .17 | .18 | 1.30 |
| | Spraying | .10 | .03 | .05 | .10 | .03 | .05 | .31 |
| | Subtotal | 1.60 | 1.07 | .51 | 1.12 | .78 | .90 | 4.38 |
| Corn Grain | Harvest (custom hired) | | | | | | | 3.30 |
| | Total | 1.60 | 1.07 | .51 | 1.12 | .78 | .90 | 7.68 |
| Corn or Sorghum Silage | Harvest | 1.05 | 3.91 | 1.17 | 2.63 | 1.32 | .76 | 9.79 |
| | Total | 2.65 | 4.98 | 1.68 | 3.75 | 2.10 | 1.66 | 14.17 |
| Row Crop After Small Grain | Tillage | 1.68 | .91 | .40 | .89 | .96 | 1.05 | 4.21 |
| | Planting | .36 | .37 | .18 | .40 | .17 | .18 | 1.30 |
| | Spraying | .10 | .03 | .05 | .10 | .03 | .05 | .31 |
| | Subtotal | 2.14 | 1.36 | .63 | 1.39 | 1.16 | 1.28 | 5.82 |
| Corn Grain | Harvest (custom hired) | | | | | | | 3.30 |
| | Total | 2.14 | 1.36 | .63 | 1.39 | 1.16 | 1.28 | 9.12 |
| Corn or Sorghum Silage | Harvest | 1.05 | 3.91 | 1.17 | 2.63 | 1.32 | .76 | 9.79 |
| | Total | 3.19 | 5.27 | 1.80 | 4.02 | 2.48 | 2.04 | 15.61 |
| Row Crop After Corn Grain | Tillage | 1.95 | 1.27 | .54 | 1.22 | 1.17 | 1.23 | 5.43 |
| | Planting | .36 | .37 | .18 | .40 | .17 | .18 | 1.30 |
| | Spraying | .10 | .09 | .05 | .10 | .03 | .05 | .31 |
| | Subtotal | 2.41 | 1.72 | .77 | 1.72 | 1.37 | 1.46 | 7.04 |
| Corn Grain | Harvest (custom hired) | | | | | | | 3.30 |
| | Total | 2.41 | 1.72 | .77 | 1.72 | 1.37 | 1.46 | 10.34 |
| Corn or Sorghum Silage | Harvest | 1.05 | 3.91 | 1.17 | 2.63 | 1.32 | .76 | 9.79 |
| | Total | 3.46 | 5.63 | 1.94 | 4.35 | 2.69 | 2.22 | 16.83 |
| Row Crop After Corn or Sorghum Silage | Tillage | 1.67 | 1.09 | .45 | 1.03 | 1.00 | 1.07 | 4.64 |
| | Planting | .36 | .37 | .18 | .40 | .17 | .18 | 1.30 |
| | Spraying | .10 | .08 | .05 | .10 | .03 | .05 | .31 |
| | Subtotal | 2.13 | 1.54 | .68 | 1.53 | 1.20 | 1.30 | 6.25 |
| Corn Grain | Harvest (custom hired) | | | | | | | 3.30 |
| | Total | 2.13 | 1.54 | .68 | 1.53 | 1.20 | 1.30 | 9.55 |
| Corn or Sorghum Silage | Harvest | 1.05 | 3.91 | 1.17 | 2.63 | 1.32 | .76 | 9.79 |
| | Total | 3.18 | 5.45 | 1.85 | 4.16 | 2.52 | 2.06 | 16.04 |
| Row Crop After Alfalfa | Tillage | 1.72 | .96 | .42 | .94 | 1.02 | 1.07 | 4.41 |
| | Planting | .36 | .37 | .18 | .40 | .17 | .18 | 1.30 |
| | Spraying | .10 | .03 | .05 | .10 | .03 | .05 | .31 |
| | Subtotal | 2.18 | 1.41 | .65 | 1.44 | 1.22 | 1.30 | 6.02 |
| Corn Grain | Harvest (custom hired) | | | | | | | 3.30 |
| | Total | 2.18 | 1.41 | .65 | 1.44 | 1.22 | 1.30 | 9.32 |
| Corn or Sorghum Silage | Harvest | 1.05 | 3.91 | 1.17 | 2.63 | 1.32 | .76 | 9.79 |
| | Total | 3.23 | 5.32 | 1.82 | 4.07 | 2.54 | 2.06 | 15.81 |
| Tame Hay[1/] | Mow, Rake, Bale | .83 | .76 | .28 | .59 | .48 | .62 | 2.73 |
| | Mow, Rake, Stack | .95 | .50 | .22 | .51 | .40 | .40 | 2.03 |
| Native Hay[1/] | Mow, Rake, Stack | .95 | .50 | .22 | .51 | .40 | .40 | 2.03 |

1/ Per cutting per acre.

Table 25. Machine Costs Per Acre by Crop and Type of Operation on 2,240-Acre Model Farm; Buffalo, Hand, and Hyde Counties

| Crop | Type of Operation | Machine Time Hours Per Acre | Dollar Cost Per Acre: Depreciation | Insurance & Taxes | Int. | Repairs | Fuel, Oil, & Lubricant | Total |
|---|---|---|---|---|---|---|---|---|
| Summer Fallow | Tillage | 1.08 | $2.56 | $0.84 | $2.25 | $0.52 | $0.95 | $ 7.12 |
| Small Grain After Summer Fallow | Tillage | .25 | .21 | .10 | .23 | .10 | .16 | .80 |
| | Planting | .23 | .56 | .31 | .69 | .17 | .10 | 1.83 |
| | Spraying | .10 | .09 | .05 | .10 | .04 | .05 | .33 |
| | Harvest | .70 | 1.93 | .66 | 1.42 | .53 | .48 | 5.02 |
| | Total | 1.28 | 2.79 | 1.12 | 2.44 | .84 | .79 | 7.98 |
| Small Grain After Small Grain, Corn, or Sorghum Silage | Tillage | .79 | .49 | .23 | .51 | .38 | .56 | 2.17 |
| | Planting | .23 | .56 | .31 | .69 | .17 | .10 | 1.83 |
| | Spraying | .10 | .09 | .05 | .10 | .04 | .05 | .33 |
| | Harvest | .70 | 1.93 | .66 | 1.42 | .53 | .48 | 5.02 |
| | Total | 1.82 | 3.07 | 1.25 | 2.72 | 1.12 | 1.19 | 9.35 |
| Small Grain After Corn Grain | Tillage | .96 | .65 | .30 | .68 | .46 | .67 | 2.76 |
| | Planting | .23 | .56 | .31 | .69 | .17 | .10 | 1.83 |
| | Spraying | .10 | .09 | .05 | .10 | .04 | .05 | .33 |
| | Harvest | .70 | 1.93 | .66 | 1.42 | .53 | .48 | 5.02 |
| | Total | 1.99 | 3.23 | 1.32 | 2.89 | 1.20 | 1.30 | 9.94 |
| Small Grain After Alfalfa | Tillage | 1.04 | .70 | .33 | .74 | .49 | .72 | 2.98 |
| | Planting | .23 | .56 | .31 | .69 | .17 | .10 | 1.83 |
| | Spraying | .10 | .09 | .05 | .10 | .04 | .05 | .33 |
| | Harvest | .70 | 1.93 | .66 | 1.42 | .53 | .48 | 5.02 |
| | Total | 2.07 | 3.28 | 1.35 | 2.95 | 1.23 | 1.35 | 10.16 |
| Row Crop After Summer Fallow | Tillage | .99 | .63 | .29 | .63 | .36 | .60 | 2.51 |
| | Planting | .36 | .39 | .19 | .42 | .17 | .18 | 1.35 |
| | Spraying | .10 | .09 | .05 | .10 | .04 | .05 | .33 |
| | Subtotal | 1.45 | 1.11 | .53 | 1.15 | .57 | .83 | 4.19 |
| Corn Grain | Harvest (custom hired) | | | | | | | 3.30 |
| | Total | 1.45 | 1.11 | .53 | 1.15 | .57 | .83 | 7.49 |
| Corn or Sorghum Silage | Harvest | 1.05 | 3.99 | 1.19 | 2.69 | 1.11 | .76 | 9.74 |
| | Total | 2.50 | 5.10 | 1.72 | 3.84 | 1.68 | 1.59 | 13.93 |
| Row Crop After Small Grain | Tillage | 1.53 | .91 | .41 | .91 | .64 | 1.00 | 3.87 |
| | Planting | .36 | .39 | .19 | .42 | .17 | .18 | 1.35 |
| | Spraying | .10 | .09 | .05 | .10 | .04 | .05 | .33 |
| | Subtotal | 1.99 | 1.39 | .65 | 1.43 | .85 | 1.23 | 5.55 |
| Corn Grain | Harvest (custom hired) | | | | | | | 3.30 |
| | Total | 1.99 | 1.39 | .65 | 1.43 | .85 | 1.23 | 8.85 |
| Corn or Sorghum Silage | Harvest | 1.05 | 3.99 | 1.19 | 2.69 | 1.11 | .76 | 9.74 |
| | Total | 3.04 | 5.38 | 1.84 | 4.12 | 1.96 | 1.99 | 15.29 |
| Row Crop After Corn Grain | Tillage | 1.71 | 1.40 | .58 | 1.35 | 1.23 | 1.16 | 5.72 |
| | Planting | .36 | .39 | .19 | .42 | .17 | .18 | 1.35 |
| | Spraying | .10 | .09 | .05 | .10 | .04 | .05 | .33 |
| | Subtotal | 2.17 | 1.88 | .82 | 1.87 | 1.44 | 1.39 | 7.40 |
| Corn Grain | Harvest (custom hired) | | | | | | | 3.30 |
| | Total | 2.17 | 1.88 | .82 | 1.87 | 1.44 | 1.39 | 10.70 |
| Corn or Sorghum Silage | Harvest | 1.05 | 3.99 | 1.19 | 2.69 | 1.11 | .76 | 9.74 |
| | Total | 3.22 | 5.87 | 2.01 | 4.56 | 2.55 | 2.15 | 17.14 |
| Row Crop After Corn or Sorghum Silage | Tillage | 1.54 | 1.24 | .51 | 1.18 | 1.15 | 1.05 | 5.13 |
| | Planting | .36 | .39 | .19 | .42 | .17 | .18 | 1.35 |
| | Spraying | .10 | .09 | .05 | .10 | .04 | .05 | .33 |
| | Subtotal | 2.00 | 1.72 | .75 | 1.70 | 1.36 | 1.28 | 6.81 |
| Corn Grain | Harvest (custom hired) | | | | | | | 3.30 |
| | Total | 2.00 | 1.72 | .75 | 1.70 | 1.36 | 1.28 | 10.11 |
| Corn or Sorghum Silage | Harvest | 1.05 | 3.99 | 1.19 | 2.69 | 1.11 | .76 | 9.74 |
| | Total | 3.05 | 5.71 | 1.94 | 4.39 | 2.47 | 2.04 | 16.55 |
| Row Crop After Alfalfa | Tillage | 1.62 | 1.02 | .46 | 1.02 | .69 | 1.07 | 4.26 |
| | Planting | .36 | .39 | .19 | .42 | .17 | .18 | 1.35 |
| | Spraying | .10 | .09 | .05 | .10 | .04 | .05 | .33 |
| | Subtotal | 2.08 | 1.50 | .70 | 1.54 | .90 | 1.30 | 5.94 |
| Corn Grain | Harvest (custom hired) | | | | | | | 3.30 |
| | Total | 2.08 | 1.50 | .70 | 1.54 | .90 | 1.30 | 9.24 |
| Corn or Sorghum Silage | Harvest | 1.05 | 3.99 | 1.19 | 2.69 | 1.11 | .76 | 9.74 |
| | Total | 3.13 | 5.49 | 1.89 | 4.23 | 2.01 | 2.06 | 15.68 |
| Tame Hay[1/] | Mow, Rake, Bale | .83 | .66 | .23 | .49 | .51 | .62 | 2.51 |
| | Mow, Rake, Stack | .79 | .35 | .13 | .30 | .31 | .39 | 1.52 |
| Native Hay[1/] | Mow, Rake, Stack | .79 | .35 | .13 | .30 | .31 | .39 | 1.52 |

1/ Per cutting per acre.