5-1968

Machinery Costs on Typical Wheat Farms in South Central South Dakota: Lyman and Tripp Counties

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Experiment Station Circular No. 188

Machinery Costs on Typical Wheat Farms

In South Central South Dakota

Lyman and Tripp Counties

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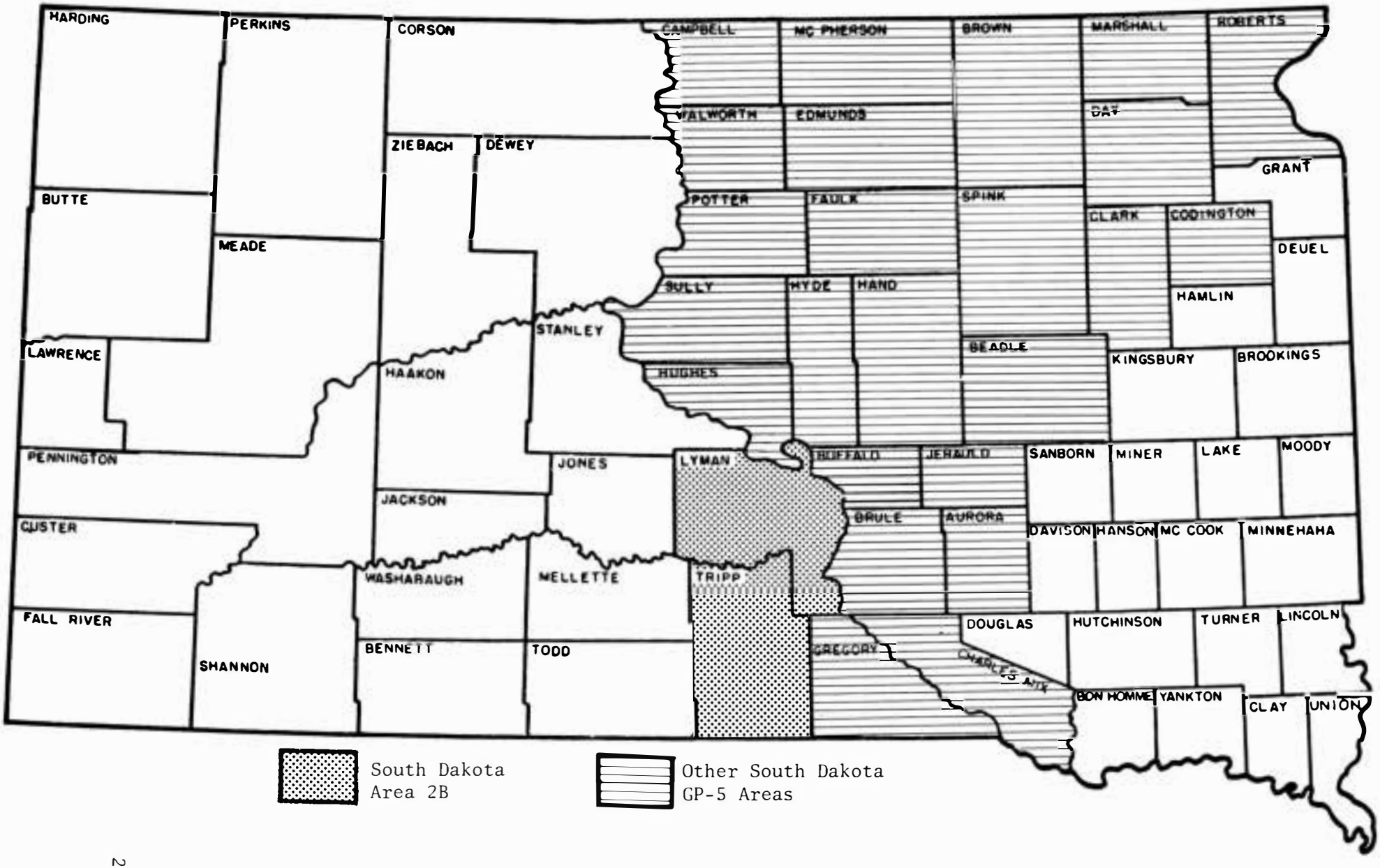
Figure 1. South Dakota GP-5 Study Area



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 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 2B (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 OFAREA 2B

LYMAN AND TRIPP COUNTIES

SOILS

The soils of Lyman County are Chestnut. Chestnut soils in the northern Great Plains area have darker soil surface colors than those in southern areas, because in the north oxidation of organic matter is slower.

Three major soil associations are found in Lyman County. The Agar-Williams Association occurs in undulating or sloping landscapes, formed in glacial till and loess. Agar-Williams Association soils are well-drained soils with grayish brown silt loam and loam surface layers. The major problems associated with the Agar-Williams Association soils are: (1) maintenance of organic matter and nitrogen, (2) moisture conservation, and (3) the control of run-off. Livestock and general types of farming are performed in the Agar-Williams soils area.

Williams-Zahl Association are undulating to steep and are well to excessively drained. These soils have grayish-brown loam surfaces and are developed from calcareous glacial till with areas of mixed outwash being common. The major

management problems of these soils are similar to those of the Agar-Williams series, namely: (1) maintenance of organic matter and supply of nitrogen, (2) moisture conservation, (3) control of run-off and water erosion, and (4) maintenance of stock water. The land use depends mainly upon topography and includes cash grain, livestock and general farms as well as ranches.

The third major soil series in Lyman County, are Raber-Eakin soils. These are undulating, well-drained, 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 associated with the Raber-Eakin soils are: (1) the 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. Cash-grain farming and ranching are best suited to the Raber-Eakin soils with the specific land use being restricted by topography of the land.

Tripp County soils are Chernozems, namely the Boyd-Hamill series and the Holt-Valentine series. The Boyd-Hamill series are undulating to steep and are well to excessively well drained. These grayish-brown clays are developed from Cretaceous marine clays. The Holt-Valentine series, also undulating and well-drained, are dark grayish-brown to grayish-brown loamy and sand soils. These soils are developed from calcareous loamy and sandy beds of Tertiary age; they are medium to high in natural fertility. The major soil and water management problems associated with both soil series are: (1) maintenance of organic matter and nitrogen supply, (2) moisture conservation, and (3) control of wind erosion. Livestock and general farming are the major land uses.

TYPE OF FARMING CHARACTERISTICS

Twenty-four per cent of the 1,450 farms in Lyman and Tripp Counties were classified as cash grain and about 63 per cent were livestock farms and ranches.

The major cash crop in this two-county area is winter wheat. Although only a small percentage of farmers raise rye, nearly all of the rye harvested is sold. In addition, substantial amounts of corn grain, grain sorghum and oats were sold off the farm in 1964. About 76 per cent of the corn acreage harvested was picked for grain and 34.3 per cent of the corn harvested as grain was sold. An average of 60 per cent of the sorghum acreage was harvested as grain and 57 per cent of the grain sorghum harvested was sold. Similarly, slightly over 40 per cent of the oats harvested were sold in 1964.

Livestock were found on about 90 per cent of the area's farms. Beef-cow herds were most common with 50 to 60 per cent of the herds running from 30 to 100 cows. The average herd size was about 14 per cent larger in Lyman County. Cattle feeding enterprises were more common in this area than in other central South Dakota counties with a considerable number in Tripp County. Between 25 and 30 per cent of the farmers sold dairy products, but most of the dairy herds were fairly small. Only a few dairy herds were larger than 20 cows.

Table 1. Number and Per Cent of Farms That Raised and Harvested Major Grain Crops in 1964 in Lyman and Tripp Counties

	No. of Farms	Percentage of Farms	Number of Acres Harvested	Percentage of Acres Harvested
Corn[1/]	786	54.2	75,103	21.0
All Wheat[2/]	788	54.3	137,469	38.5
Sorghum[3/]	789	54.4	72,400	20.3
Oats	852	58.7	60,911	17.0
Rye	78	5.4	4,795	1.3
Other[4/]	---	----	6,668	1.9

1/ Includes corn harvested for grain, silage and other purposes.
2/ Includes 9,883 acres of spring wheat and 767 acres of durum.
3/ Includes sorghum harvested for grain, silage and other purposes.
4/ Includes barley, flax, proso, emmer and speltz, and soybeans.
Source: U.S. Census of Agriculture, 1964.

Table 1 shows the number of and per cent of farms in the Lyman and Tripp County area that raised and harvested grain crops in 1964.

Less than half of the farms had farrowed sows, but hog enterprises on the average were fairly large with over half of the hog enterprises consisting of more than 10 sows. Hog enterprises were larger in Tripp County than in Lyman County.

Sheep and lambs were on fewer than 14 per cent of the area's farms, some of these were for 4-H projects. Very few flocks had 100 or more ewes. Most flocks numbered fewer than 50 head.

MODEL WHEAT FARMS AND BASIS FOR MACHINERY COSTS

Three farms were selected as typical wheat farms in the Lyman and Tripp County area. The first, a 640-acre farm, had 448 acres of cropland and 175 acres of native hay and pasture. The second model was a 960-acre farm with 576 acres of cropland and 346 acres of native hay and pasture. The third typical wheat farm, a 2,240-acre farm, had 1,156 acres of cropland and 950 acres of native hay and pasture.

The average farm size in for the two-county area was calculated at 1,381 acres in 1964 (for Tripp County it was 1,087 acres and for Lyman County 1,937 acres). The 1964 Census of Agriculture shows 48.3 per cent of all farms and ranches were 1,000 acres or larger and 26.8 per cent were from 500 to 999 acres.

Crop	Model Farm 640 Acres	960 Acres	2,240 Acres	Crop	Model Farm 640 Acres	960 Acres	2,240 Acres
Hard Winter Wheat	105	162	275	Sorghum Silage	10	14	43
Oats	51	57	120	Summer Fallow	105	130	235
Other Small Grain	5	16	63	Alfalfa	81	85	136
Corn Grain	52	57	131	Other Tame Hay and Pasture	---	12	25
Corn Silage	22	20	56	Native Hay	58	127	342
Sorghum Grain	17	23	72	Native Pasture	117	219	608

The model farms, serving as the basis for determining machine costs and labor use, had the crops shown in the example above.

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 farms were determined. Occasionally, in this study, 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 an "average" price of major models of the particular implement or machine listed. The price listed assumes only 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 on the hours of use or the useful life in years, which ever 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 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 161 acres of small grain, 101 acres of row crops, 105 acres of summer fallow, two cuttings of hay from 81 acres of alfalfa, and one cutting on 58 acres of native hay.

Costs presented in Tables 11 through 16, on the 960-acre model farm, were determined on the basis of 235 acres of small grain, 114 acres of row crops, 130 acres of summer fallow, two cuttings of hay from 85 acres of alfalfa, and one cutting from 127 acres of native hay.

Costs presented in Tables 17 through 22 on the 2,240-acre model farm, were determined on the basis of 458 acres of small grain, 302 acres of row crops, 235 acres of summer fallow, two cuttings of hay from 136 acres of alfalfa, and one cutting from 342 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 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 swather assumed for the model farm (Table 2) freezes the purchase cost of $1,091. If placed in a savings account, this would return about $49 per year at an interest rate of 4½ per cent. Perhaps, after adding up the earned interest and costs of the swather operation (including the prorated tractor costs) the farm operator will find it more economical to hire a custom swather.

Table 2. Size, Purchase Price, Expected Useful Life, and Annual Use of Machinery on a Hypothetical 640-Acre Model Farm in the Lyman and Tripp County Area[1/]

Machine	Size	Purchase Price[2/]	Useful Life[3/]		Annual Use	
		Dollars	Years	Hours	Acres	Hours
Tractor	2-Plow	$2,872	25	12,000	1,236	213
Tractor	3-Plow	3,527	21	12,000	1,874	572
Moldboard Plow	3-14-Inch	487	24	2,500	168	104
Oneway Plow	10-Foot	761	25	2,500	141	51
Single Disc	15-Foot	568	25	2,500	228	46
Duckfoot or Field Cultivator	12-Foot	898	20	2,000	395	79
Drag Harrow	5-Sect.	152	30	2,500	405	41
Press Drill	12-Foot	1,928	30	1,200	161	37
Swather PTO	12-Foot	1,091	20	1,200	161	32
Combine	12-Foot	5,978	15	2,000	178	57
Corn Planter	2-Row	558	25	1,200	101	36
Corn Cultivator	2-Row	254	20	2,500	202	67
Mower	7-Foot	482	20	2,000	220	66
Dump Rake	10-Foot	274	30	2,500	220	42
Farmhand & Attachment		812	25		161	48
Two Trailers or Wagons		609	25		107	53
Sprayer	30-Foot	457	30	1,500	262	26

1/ Representative farm size is 640 acres with 448 acres of cropland.
2/ Approximate new cost in 1964.
3/ Agricultural Engineers Yearbook.

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 on the next 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	168	34.4%	65.6%
Moldboard Plow	528	225	35.0	65.0
Single Disc	568	228	65.7	34.3
Single Disc	741	609	51.2	48.8
Swather	1,091	235	77.7	22.3
Swather S.P.	3,461	458	76.9	23.1
Combine	5,978	178	80.7	19.3
Combine S.P.	8,764	530	70.5	29.5
Cornpicker	2,715	131	76.4	23.6
Forage Harvester	2,796	99	78.5	21.5

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

Custom harvest of corn grain and silage was assumed on the 640-acre and 960-acre farms, due to the relatively small acreage involved. The costs of owning a cornpicker and forage harvester would have been considerably more than 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/]		Per Cent 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 costs 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) were used in preparation of Table 23. Likewise, the costs shown in Tables 12 through 16 (for the 960-acre farm) and in Tables 18 through 22, (for the 2,240 acre farm) were used to prepare Tables 24 and 25. With only a small change in acreage, there will be only a negligible increase in the fixed costs, hence the cost data should stand reasonably accurate.

Tables 23, 24, and 25 were produced using specific assumptions with regard to tillage practices. A governing assumption was one of "minimum tillage." Other assumptions included both spring and fall plowing, fall plowing of alfalfa, use of the one-way and chisel or duckfoot for summer fallow and seedbed preparation. Other assumptions included a discing of corn stalks and sorghum stubble, and two cultivations on row crops.

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 presented cannot be construed as being representative of all farms in this two-county area, which are similar in size and cropland acreage to the representative farms, 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. Size, Purchase Price, Expected Useful Life, and Annual Use of Machinery on a Hypothetical 960-Acre Model Farm in the Lyman and Tripp County Area[1/]

Machine	Size	Purchase Price[2/]	Useful Life[3/]		Annual Use	
		Dollars	Years	Hours	Acres	Hours
Tractor	3-Plow	$3,527	25	12,000	2,304	465
Tractor	4-Plow	4,567	21	12,000	1,932	504
Moldboard Plow	3-16-Inch	528	20	2,500	225	122
Oneway Plow	10-Foot	761	25	2,500	186	67
Single Disc	15-Foot	568	25	2,500	311	62
Duckfoot or Chisel	12-Foot	898	20	2,000	504	101
Disc Tiller	14-Foot	812	25	2,000	34	6
Drag Harrow	5-Sect.	152	30	2,500	540	54
Press Drill	14-Foot	2,132	26	1,200	235	47
Swather PTO	12-Foot	1,091	20	1,200	235	35
Combine	12-Foot	5,978	15	2,000	258	65
Corn Planter	2-Row	558	25	1,200	114	41
Corn Cultivator	4-Row	457	20	2,500	228	46
Mower	7-Foot	482	20	2,000	297	89
Dump Rake	12-Foot	305	30	2,500	297	56
Farmhand & Attachments		812	25		236	71
Two Trailers or Wagons		609	25		119	60
Sprayer	30-Foot	457	30	1,500	349	35

1/ Representative farm size is 960 acres with 576 acres of cropland.
2/ Approximate new cost in 1964.
3/ Agricultural Engineers Yearbook.

Table 4. Size, Purchase Price, Expected Useful Life, and Annual Use of Machinery on a Hypothetical 2,240-Acre Model Farm in the Lyman and Tripp County Area[1/]

Machine	Size	Purchase Price[2/]	Useful Life[3/]		Annual Use	
		Dollars	Years	Hours	Acres	Hours
Tractor	2-Plow	$2,872	25	12,000	2,127	431
Tractor	3-Plow	3,527	19	12,000	3,050	642
Tractor	4-Plow	4,567	15	12,000	2,878	790
Moldboard Plow	4-14-Inch	812	13	2,500	488	195
Oneway Plow	10-Foot	761	25	2,500	229	82
Single Disc	18-Foot	741	25	2,500	609	91
Duckfoot or Chisel	12-Foot	898	11	2,000	903	181
Disc Tiller	16-Foot	929	25	2,000	195	33
Drag Harrow	6-Sect.	177	30	2,500	842	67
Press Drill	14-Foot	2,132	13	1,200	458	92
Swather S.P.	14-Foot	3,461	15	2,500	458	69
Combine S.P.	14-Foot	8,764	15	2,000	530	133
Lister	4-Row	1,340	14	1,200	302	85
Corn Tender	2-Row	254	12	2,500	302	100
Corn Cultivator	4-Row	457	20	2,500	604	121
Cornpicker	2-Row	2,715	15	2,000	131	78
Forage Harvester PTO	2-Row	2,796	15	2,000	99	54
Mower	7-Foot	482	11	2,000	614	184
Side Rake		558	25	2,500	297	53
Dump Rake	12-Foot	305	30	2,500	317	48
Farmhand & Attachments		812	25		527	158
Three Trailers or Wagons		913	25		279	140
Self Unloading Wagon		380	25		50	25
Sprayer	30-Foot	457	19	1,500	760	76

1/ Representative farm size is 2,240 acres with 1,156 acres of cropland.
2/ Approximate new cost in 1964.
3/ Agricultural Engineers Yearbook.

Table 5. Annual Machine Costs by Machine or Implement Used on the 640-Acre Model Farm; Lyman and Tripp Counties

Machine	Size	Annual Use Acres	Annual Use Hours	Depre-ciation	Insurance & Taxes	Interest	Repairs	Fuel, Oil, & Lubricant	Total
Tractor	2-Plow	1,236	213	$103.40	$ 49.03	$110.56	$ 60.90	$ 18.10[1]	$ 341.99
Tractor	3-Plow	1,874	572	151.14	59.84	135.80	202.30	40.04[1]	589.12
Moldboard Plow	3-14-Inch	168	104	18.25	8.31	18.76	19.76	66.56	131.64
Oneway Plow	10-Foot	141	51	27.54	12.96	29.29	11.73	35.70	117.22
Single Disc	15-Foot	228	46	20.44	9.70	21.87	4.14	23.00	79.15
Duckfoot or Field Cultivator	12-Foot	395	79	40.45	12.21	34.58	11.06	63.20	161.50
Drag Harrow[2]	5-Sect.	405	41	4.57	2.59	5.84	.82	20.50	34.32
Press Drill[3]	12-Foot	161	37	57.83	32.91	74.23	14.80	14.43	194.20
Swather PTO[2]	12-Foot	161	32	49.10	18.64	42.00	7.36	16.00	133.10
Combine PTO	12-Foot	178	57	358.66	102.10	203.16	67.26	91.20	822.38
Corn Planter	2-Row	101	36	20.12	9.61	21.49	5.04	15.84	72.10
Corn Cultivator	2-Row	202	67	11.45	4.87	9.76	2.68	36.18	64.94
Mower	7-Foot	220	66	21.70	8.25	18.55	11.88	21.79	82.17
Dump Rake[2]	10-Foot	220	42	8.23	4.67	10.53	2.10	10.92	36.45
Farmhand & Attachments		161	48	29.24	13.86	31.25	7.68	28.80	110.83
Two Trailers or Wagons[2]		107	53	21.92	10.40	23.45	5.81	28.68	90.26
Sprayer[2]	30-Foot	262	26	13.70	7.81	17.60	2.34	10.40	51.85
Total Costs				$957.74	$367.76	$808.72	$437.66	$541.34	$3,113.22

[1] Overhead maintenance.
[2] Used with 2-plow tractor--all others used with a 3-plow tractor.
[3] Used one-half time with a 2-plow tractor and one-half time with a 3-plow tractor.

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

Machine or Implement	Size	Annual Use Hours	Dollar Cost Per Hour[1] Depre-ciation	Insurance & Taxes	Int.	Repairs	Total
Moldboard Plow	3-14-Inch	104	$0.18	$0.08	$0.18	$0.19	$0.63
Oneway Plow	10-Foot	51	.54	.25	.57	.23	1.59
Single Disc	15-Foot	46	.44	.21	.48	.09	1.22
Duckfoot or Field Cultivator	12-Foot	79	.51	.15	.44	.14	1.24
Drag Harrow	5-Sect.	41	.11	.06	.14	.02	.33
Press Drill	12-Foot	37	1.56	.89	2.01	.40	4.86
Swather PTO	12-Foot	32	1.53	.58	1.31	.23	3.65
Combine PTO	12-Foot	57	6.29	1.79	3.56	1.18	12.82
Corn Planter	2-Row	36	.56	.27	.60	.14	1.57
Corn Cultivator	2-Row	67	.17	.07	.15	.04	.43
Mower	7-Foot	66	.33	.13	.28	.18	.92
Dump Rake	10-Foot	42	.20	.11	.25	.05	.61
Farmhand & Attachments		48	.61	.29	.65	.16	1.71
Two Trailers or Wagons		53	.41	.20	.44	.11	1.16
Sprayer	30-Foot	26	.53	.30	.68	.09	1.60

[1] Costs include only machine or implement.

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

Machine or Implement	Size	Dollar Cost Per Hour					
		Depre-ciation	Insurance & Taxes	Int.	Repairs	Fuel, Oil, & Lubricant	Total
Moldboard Plow	3-14-Inch	$0.44	$0.18	$0.42	$0.54	$0.71	$2.29
Oneway Plow	10-Foot	.80	.35	.81	.58	.77	3.31
Single Disc	15-Foot	.70	.31	.72	.44	.57	2.74
Duckfoot or Field Cultivator	12-Foot	.77	.25	.68	.49	.87	3.06
Drag Harrow[1/]	5-Sect.	.60	.29	.66	.31	.58	2.44
Press Drill	12-Foot	1.82	.99	2.25	.75	.49	6.30
Press Drill[1/]	12-Foot	2.05	1.12	2.53	.69	.45	6.84
Swather PTO[1/]	12-Foot	2.02	.81	1.83	.52	.58	5.76
Combine PTO	2-Row	6.55	1.89	3.80	1.53	1.67	15.44
Corn Planter	2-Row	.82	.70	.84	.49	.51	3.36
Corn Cultivator	7-Foot	.43	.17	.39	.39	.61	1.99
Mower	10-Foot	.39	.23	.52	.53	.40	2.07
Dump Rake[1/]		.69	.34	.77	.34	.34	2.48
Farmhand & Attachments		.87	.39	.89	.51	.67	3.33
Two Trailers or Wagons[1/]		.90	.43	.96	.40	.62	3.31
Sprayer[1/]	30-Foot	1.02	.53	1.20	.38	.48	3.61

[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; Lyman and Tripp Counties

Machine or Implement	Size	Dollar Cost Per Acre					
		Depre-ciation	Insurance & Taxes	Int.	Repairs	Fuel, Oil, & Lubricant	Total
Moldboard Plow	3-14-Inch	$0.164	$0.065	$0.147	$0.219	$0.043	$0.638
Oneway Plow	10-Foot	.095	.038	.085	.127	.025	.370
Single Disc	15-Foot	.053	.021	.047	.071	.014	.206
Duckfoot or Field Cultivator	12-Foot	.053	.021	.047	.071	.014	.206
Drag Harrow[1/]	5-Sect.	.049	.023	.052	.029	.009	.162
Press Drill	12-Foot	.061	.024	.055	.081	.016	.237
Press Drill[1/]	12-Foot	.112	.053	.119	.066	.020	.370
Swather PTO[1/]	12-Foot	.097	.046	.104	.057	.017	.321
Combine PTO	2-Row	.084	.034	.076	.113	.022	.329
Corn Planter	2-Row	.095	.038	.085	.127	.025	.370
Corn Cultivator	7-Foot	.087	.035	.078	.117	.023	.340
Mower	10-Foot	.079	.032	.071	.106	.021	.309
Dump Rake[1/]		.092	.044	.099	.054	.016	.305
Farmhand & Attachments		.079	.032	.071	.106	.021	.309
Two Trailers or Wagons[1/]		.243	.115	.260	.143	.043	.804
Sprayer (trailer)[1/]	30-Foot	.049	.023	.052	.029	.009	.162

[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 Farm; Lyman and Tripp Counties

Machine or Implement	Size	Annual Use in Acres	Dollar Cost Per Acre: Depreciation	Insurance & Taxes	Int.	Repairs	Fuel, Oil, & Lubricant	Total
Moldboard Plow	3-14-Inch	168	$0.109	$0.049	$0.112	$0.118	$0.396	$0.784
Oneway Plow	10-Foot	141	.195	.092	.208	.083	.253	.831
Single Disc	15-Foot	228	.090	.042	.096	.018	.101	.347
Duckfoot or Field Cultivator	12-Foot	395	.102	.031	.088	.028	.160	.409
Drag Harrow	5-Sect.	405	.011	.006	.015	.002	.051	.085
Press Drill	12-Foot	161	.359	.204	.461	.092	.090	1.206
Swather	12-Foot	161	.305	.116	.261	.046	.099	.827
Combine	12-Foot	178	2.015	.574	1.141	.378	.512	4.620
Corn Planter	2-Row	101	.199	.095	.213	.050	.157	.714
Corn Cultivator	2-Row	202	.057	.024	.048	.013	.179	.321
Mower	7-Foot	220	.099	.037	.084	.054	.099	.373
Dump Rake	10-Foot	220	.037	.021	.048	.010	.050	.166
Farmhand & Attachments		161	.182	.086	.194	.048	.179	.689
Two Trailers or Wagons		107	.205	.097	.219	.054	.268	.843
Sprayer (trailer)	30-Foot	262	.052	.030	.067	.009	.040	.198

Table 10. Tractor, Machine, and Implement Costs Per Acre of Use, 640-Acre Model Farm; Lyman and Tripp Counties

Machine or Implement	Size	Dollar Cost Per Acre: Depreciation	Insurance & Taxes	Int.	Repairs	Fuel, Oil, & Lubricant	Total
Moldboard Plow	3-14-Inch	$0.273	$0.114	$0.259	$0.337	$0.439	$1.422
Oneway Plow	10-Foot	.290	.130	.293	.210	.278	1.201
Single Disc	15-Foot	.143	.063	.143	.089	.115	.553
Duckfoot or Field Cultivator	12-Foot	.155	.052	.135	.099	.174	.615
Drag Harrow[1/]	5-Sect.	.060	.029	.067	.031	.060	.247
Press Drill	12-Foot	.420	.228	.516	.173	.111	1.448
Press Drill[1/]	12-Foot	.471	.257	.580	.158	.105	1.571
Swather PTO[1/]	12-Foot	.402	.162	.365	.103	.116	1.148
Combine PTO	2-Row	2.099	.608	1.217	.491	.534	4.949
Corn Planter	2-Row	.294	.133	.298	.177	.182	1.084
Corn Cultivator	7-Foot	.144	.059	.126	.130	.202	.661
Mower	10-Foot	.178	.069	.155	.160	.120	.682
Dump Rake[1/]		.129	.065	.147	.064	.066	.471
Farmhand & Attachments		.261	.118	.265	.154	.200	.998
Two Trailers or Wagons[1/]		.448	.212	.479	.197	.311	1.647
Sprayer (trailer)[1/]	30-Foot	.101	.053	.119	.038	.049	.360

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

Table 11. Annual Machine Costs by Machine or Implement Used on the 960-Acre Model Farm; Lyman and Tripp Counties

Machine	Size	Annual Use Acres	Annual Use Hours	Depreciation	Insurance & Taxes	Interest	Repairs	Fuel, Oil, & Lubricant	Total
Tractor	3-Plow	2,304	465	$ 126.96	$ 59.84	$135.80	$143.15	$ 34.88[1]	$ 500.63
Tractor	4-Plow	1,932	504	195.71	77.97	175.84	265.88	28.22[1]	743.62
Moldboard Plow	3-16-Inch	225	122	23.75	9.02	20.33	25.41	73.20	151.71
Oneway Plow	10-Foot	186	67	27.40	12.96	29.29	15.41	46.90	131.96
Single Disc	15-Foot	311	62	20.48	9.70	21.87	5.58	31.00	88.63
Duckfoot or Chisel	12-Foot	504	101	40.40	15.74	34.58	14.14	111.10	215.96
Disc Tiller	14-Foot	102	18	29.24	13.86	31.25	2.16	9.00	85.51
Drag Harrow[2]	5-Sect.	540	54	4.57	2.59	5.84	1.08	27.00	41.08
Press Drill[3]	14-Foot	235	47	73.81	36.37	82.07	21.15	18.80	232.20
Swather PTO[2]	12-Foot	235	35	49.10	18.64	42.00	8.05	23.45	141.24
Combine PTO[2]	12-Foot	258	65	358.66	102.10	230.16	76.70	132.60	900.22
Corn Planter[2]	2-Row	114	41	20.12	9.61	21.49	5.74	18.04	75.00
Corn Cultivator	4-Row	228	46	20.60	7.81	17.60	3.22	25.30	74.53
Mower[2]	7-Foot	297	89	21.70	8.25	18.55	16.02	29.37	93.89
Dump Rake[2]	12-Foot	297	56	9.17	5.21	11.76	2.80	11.76	40.70
Farmhand & Attachments[2]		236	71	29.24	13.86	31.25	11.39	42.60	128.34
Two Trailers or Wagons[2]		119	60	21.92	10.40	23.45	6.58	31.89	94.24
Sprayer(trailer)[2]	30-Foot	349	35	13.70	7.81	17.60	3.15	14.00	56.26
Total Costs				$1,086.53	$421.74	$950.73	$627.61	$709.11	$3,795.72

[1] Overhead maintenance.
[2] Three-plow tractor--all other used with 4-plow tractors.
[3] Used one-half time with 3-plow and one-half time with 4-plow tractors.

Table 12. Machine Costs Per Hour of Use by Machine and Implement Used, 960-Acre Model Farm; Lyman and Tripp Counties

Machine or Implement	Size	Annual Use Hours	Dollar Cost Per Hour[1] Depreciation	Insurance & Taxes	Int.	Repairs	Total
Moldboard Plow	3-16-Inch	122	$0.19	$0.07	$0.17	$0.20	$0.63
Oneway Plow	10-Foot	67	.41	.19	.44	.23	1.27
Single Disc	15-Foot	62	.33	.16	.35	.09	.93
Duckfoot or Chisel	12-Foot	101	.40	.16	.34	.14	1.04
Disc Tiller	14-Foot	18	1.62	.77	1.73	.12	4.24
Drag Harrow	5-Sect.	54	.08	.05	.11	.02	.26
Press Drill	14-Foot	47	1.57	.77	1.75	.45	4.54
Swather PTO	12-Foot	35	1.40	.53	1.20	.23	3.36
Combine PTO	12-Foot	65	5.52	1.57	3.54	1.18	11.81
Corn Planter	2-Row	41	.49	.23	.52	.14	1.38
Corn Cultivator	4-Row	46	.45	.17	.38	.07	1.07
Mower	7-Foot	89	.24	.09	.21	.18	.72
Dump Rake	12-Foot	56	.16	.09	.21	.05	.51
Farmhand & Attachments		71	.41	.20	.44	.16	1.21
Two Trailers or Wagons		60	.37	.17	.39	.11	1.04
Sprayer (trailer)	30-Foot	35	.39	.22	.50	.09	1.20

[1] Costs include only machine or implement.

Table 13. Tractor, Machine, and Implement Costs Per Hour of Use, 960-Acre Model Farm; Lyman and Tripp Counties

Machine or Implement	Size	Dollar Cost Per Hour					
		Depreciation	Insurance & Taxes	Int.	Repairs	Fuel, Oil, & Lubricant	Total
Moldboard Plow	3-16-Inch	$0.58	$0.23	$0.52	$0.73	$0.66	$2.72
Oneway Plow	10-Foot	.80	.35	.79	.76	.76	3.46
Single Disc	15-Foot	.72	.32	.70	.62	.56	2.92
Duckfoot or Chisel	12-Foot	.79	.32	.69	.67	1.16	3.63
Disc Tiller	14-Foot	2.01	.93	2.08	.65	.56	6.23
Drag Harrow[1/]	5-Sect.	.35	.18	.40	.33	.58	1.84
Press Drill	14-Foot	1.96	.93	2.10	.98	.49	6.46
Press Drill[1/]	14-Foot	1.70	1.06	2.04	.76	.44	6.00
Swather PTO[1/]	12-Foot	1.67	.66	1.49	.54	.75	5.11
Combine PTO	12-Foot	5.91	1.73	3.89	1.71	2.10	15.34
Corn Planter[1/]	2-Row	.76	.36	.81	.45	.52	2.90
Corn Cultivator	4-Row	.84	.33	.73	.60	.61	3.11
Mower[1/]	7-Foot	.51	.22	.50	.49	.41	2.13
Dump Rake[1/]	12-Foot	.43	.22	.50	.36	.29	1.80
Farmhand & Attachments[1/]		.68	.33	.73	.47	.68	2.89
Two Trailers or Wagons[1/]		.64	.30	.68	.42	.61	2.65
Sprayer (trailer)[1/]	30-Foot	.66	.35	.79	.40	.48	2.68

[1/] Three-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, 960-Acre Model Farm; Lyman and Tripp Counties

Machine or Implement	Size	Dollar Cost Per Acre					
		Depreciation	Insurance & Taxes	Int.	Repairs	Fuel, Oil, & Lubricant	Total
Moldboard Plow	3-16-Inch	$0.210	$0.084	$0.188	$0.285	$0.030	$0.797
Oneway Plow	10-Foot	.140	.056	.126	.190	.020	.532
Single Disc	15-Foot	.078	.031	.070	.106	.011	.296
Duckfoot or Chisel	12-Foot	.078	.031	.070	.106	.011	.296
Disc Tiller	14-Foot	.074	.029	.066	.100	.011	.280
Drag Harrow[1/]	5-Sect.	.027	.013	.029	.031	.003	.103
Press Drill	14-Foot	.078	.031	.070	.106	.011	.296
Press Drill[1/]	14-Foot	.055	.026	.058	.062	.015	.216
Swather (pull-type)[1/]	12-Foot	.041	.019	.044	.046	.011	.161
Combine (pull-type)	12-Foot	.097	.039	.087	.132	.014	.369
Corn Planter[1/]	2-Row	.098	.046	.105	.111	.027	.387
Corn Cultivator	4-Row	.078	.031	.070	.106	.011	.296
Mower[1/]	7-Foot	.082	.039	.088	.092	.023	.324
Dump Rake[1/]	12-Foot	.052	.025	.055	.059	.014	.205
Farmhand & Attachments[1/]		.082	.039	.088	.092	.023	.324
Two Trailers or Wagons[1/]		.137	.065	.146	.154	.038	.540
Sprayer (trailer)[1/]	30-Foot	.027	.013	.029	.031	.008	.108

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

Table 15. Costs Per Acre by Machine and Implement Used, 960-Acre Model Farm; Lyman and Tripp 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	225	$0.106	$0.040	$0.090	$0.113	$0.325	$0.674
Oneway Plow	10-Foot	186	.147	.070	.157	.083	.252	.709
Single Disc	15-Foot	311	.066	.031	.070	.018	.100	.285
Duckfoot or Chisel	12-Foot	504	.080	.031	.069	.028	.220	.428
Disc Tiller	14-Foot	102	.287	.136	.306	.021	.088	.838
Drag Harrow	5-Sect.	540	.008	.005	.011	.002	.050	.076
Press Drill	14-Foot	235	.314	.155	.349	.090	.080	.988
Swather PTO	12-Foot	235	.209	.079	.179	.034	.100	.601
Combine PTO	12-Foot	258	1.390	.396	.892	.297	.514	3.489
Corn Planter	2-Row	114	.177	.084	.189	.050	.158	.658
Corn Cultivator	4-Row	228	.090	.034	.077	.014	.111	.326
Mower	7-Foot	297	.073	.028	.062	.054	.099	.316
Dump Rake	12-Foot	297	.031	.017	.040	.009	.040	.137
Farmhand & Attachments		236	.124	.059	.132	.048	.181	.544
Two Trailers or Wagons		119	.184	.087	.197	.055	.268	.791
Sprayer (trailer)	30-Foot	349	.039	.022	.051	.009	.040	.161

Table 16. Tractor, Machine, and Implement Costs Per Acre of Use, 960-Acre Model Farm; Lyman and Tripp Counties

Machine or Implement	Size	Dollar Cost Per Acre: Depreciation	Insurance & Taxes	Int.	Repairs	Fuel, Oil, & Lubricant	Total
Moldboard Plow	3-16-Inch	$0.316	$0.124	$0.278	$0.398	$0.355	$1.471
Oneway Plow	10-Foot	.287	.126	.283	.273	.272	1.241
Single Disc	15-Foot	.144	.062	.140	.124	.111	.581
Duckfoot or Chisel	12-Foot	.158	.062	.139	.134	.231	.724
Disc Tiller	14-Foot	.361	.165	.372	.121	.099	1.118
Drag Harrow[1/]	5-Sect.	.035	.018	.040	.033	.058	.184
Press Drill	14-Foot	.392	.186	.419	.196	.100	1.293
Press Drill[1/]	14-Foot	.369	.181	.407	.152	.086	1.195
Swather PTO[1/]	12-Foot	.250	.098	.223	.080	.111	.762
Combine PTO	12-Foot	1.487	.435	.979	.429	.528	3.858
Corn Planter[1/]	2-Row	.275	.130	.294	.161	.185	1.045
Corn Cultivator	4-Row	.168	.065	.147	.120	.122	.622
Mower[1/]	7-Foot	.155	.067	.150	.146	.122	.640
Dump Rake[1/]	12-Foot	.083	.042	.095	.068	.054	.342
Farmhand & Attachments[1/]		.206	.098	.220	.140	.204	.868
Two Trailers or Wagons[1/]		.321	.152	.343	.209	.306	1.331
Sprayers (trailer)[1/]	30-Foot	.006	.035	.080	.040	.048	.209

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

Table 17. Annual Machine Costs by Machine or Implement Used on the 2,240-Acre Model Farm; Lyman and Tripp Counties

Machine	Size	Annual Use Acres	Annual Use Hours	Depreciation	Insurance & Taxes	Interest	Repairs	Fuel, Oil, & Lubricant	Total
Tractor	2-Plow	2,127	431	$ 103.40	$ 49.03	$ 110.56	$137.17	$ 34.48[1]	$ 434.64
Tractor	3-Plow	3,050	642	167.08	59.84	135.80	225.06	44.94[1]	632.72
Tractor	4-Plow	2,878	790	274.08	77.97	175.84	383.16	41.08[1]	952.13
Moldboard Plow	4-14-Inch	488	195	56.23	13.86	31.25	62.40	146.25	309.99
Oneway Plow	10-Foot	229	82	27.40	12.96	29.29	18.86	57.40	145.91
Single Disc[2]	18-Foot	609	91	26.68	12.65	28.52	10.01	54.60	132.46
Duckfoot or Chisel	12-Foot	903	181	73.45	15.74	34.58	25.34	190.05	339.16
Disc Tiller	16-Foot	195	33	33.44	14.91	35.77	4.62	19.47	108.21
Drag Harrow[2]	6-Sect.	842	67	5.33	3.03	6.82	1.34	33.50	50.02
Press Drill[3]	14-Foot	458	92	147.62	36.37	82.07	41.40	36.80	344.26
Swather (self-prop)	14-Foot	458	69	207.66	59.11	133.24	73.83	46.23	520.07
Combine (self-prop)	14-Foot	530	133	525.86	149.68	337.40	291.27	133.00	1,437.21
Lister[2]	4-Row	302	85	86.14	22.88	51.59	39.95	60.35	260.91
Corn Tender[2]	2-Row	302	100	19.08	4.87	9.76	4.00	55.00	92.71
Corn Cultivator	4-Row	604	121	20.55	7.81	17.60	8.47	66.55	120.98
Cornpicker	2-Row	131	78	162.87	46.38	104.54	42.12	54.60	410.51
Forage Harvester PTO	2-Row	99	54	167.73	47.75	107.66	45.36	43.20	411.70
Mower[4]	7-Foot	614	184	39.45	8.25	18.55	33.12	60.72	160.09
Side Rake[4]		297	53	20.12	9.61	21.49	9.54	14.84	75.60
Dump Rake[4]	12-Foot	317	48	9.17	5.21	11.76	2.40	12.96	41.50
Farmhand & Attachments[2]		527	158	29.24	13.86	31.25	25.28	94.80	194.43
Three Trailers or Wagons[5]		279	140	32.88	15.63	35.14	23.01	74.77	181.43
Self Unloading Wagon[2]		50	25	13.68	6.49	14.62	4.79	15.19	54.77
Sprayer (trailer)[4]	30-Foot	760	76	21.63	7.81	17.60	6.84	30.40	84.28
Total Costs				$2,270.77	$701.70	$1,582.70	$1,519.34	$1,421.18	$7,495.69

[1] Overhead maintenance.
[2] Used with a 3-plow tractor.
[3] Used part time with both a 3- and 4-plow tractor--all other tractor propelled implements and machines used with 4-plow tractor.
[4] Used with a 2-plow tractor.
[5] Used part time with both a 2- and 3-plow tractor.

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

Machine or Implement	Size	Annual Use Hours	Dollar Cost Per Hour[1] Depreciation	Insurance & Taxes	Int.	Repairs	Total
Moldboard Plow	4-14-Inch	195	$0.29	$0.07	$0.16	$0.32	$0.84
Oneway Plow	10-Foot	82	.33	.16	.36	.23	1.08
Single Disc	18-Foot	91	.29	.14	.31	.11	.85
Duckfoot or Chisel	12-Foot	181	.41	.09	.19	.14	.83
Disc Tiller	16-Foot	33	1.01	.45	1.08	.14	2.68
Drag Harrow	6-Sect.	67	.08	.05	.10	.02	.25
Press Drill	14-Foot	92	1.60	.40	.89	.45	3.34
Swather (self-prop)	14-Foot	69	3.01	.86	1.93	1.07	6.87
Combine (self-prop)	14-Foot	133	3.95	1.13	2.53	2.19	9.80
Lister	4-Row	85	1.01	.27	.61	.47	2.36
Corn Tender	2-Row	100	.19	.05	.10	.04	.38
Corn Cultivator	4-Row	121	.17	.05	.15	.07	.45
Cornpicker	2-Row	78	2.09	.59	1.34	.54	4.56
Forage Harvester PTO	2-Row	54	3.11	.88	1.99	.84	6.82
Mower	7-Foot	184	.21	.04	.10	.18	.53
Side Rake		53	.38	.18	.40	.18	1.14
Dump Rake	12-Foot	48	.19	.11	.25	.05	.60
Farmhand & Attachments		158	.19	.09	.20	.16	.64
Three Trailers or Wagons		140	.23	.11	.25	.16	.75
Self Unloading Wagon		25	.55	.26	.58	.19	1.58
Sprayer (trailer)	30-Foot	76	.28	.10	.23	.09	.70

[1] Costs include only machine or implement.

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

Machine or Implement	Size	Dollar Cost Per Hour					
		Depre-ciation	Insurance & Taxes	Int.	Repairs	Fuel, Oil, & Lubricant	Total
Moldboard Plow	4-14-Inch	$0.64	$0.18	$0.38	$0.81	$0.80	$2.81
Oneway Plow	10-Foot	.68	.26	.58	.72	.75	2.99
Single Disc[1/]	18-Foot	.55	.23	.52	.46	.67	2.43
Duckfoot or Chisel	12-Foot	.76	.19	.41	.63	1.10	3.09
Disc Tiller	16-Foot	1.36	.55	1.30	.63	.64	4.48
Drag Harrow[1/]	6-Sect.	.34	.14	.31	.37	.57	1.73
Press Drill	14-Foot	1.95	.50	1.11	.94	.48	4.98
Press Drill[1/]	14-Foot	1.86	.49	1.10	.80	.44	4.69
Swather (self-prop)	14-Foot	3.36	.96	2.15	1.56	.72	8.75
Combine (self-prop)	14-Foot	4.30	1.23	2.75	2.68	1.05	12.01
Lister[1/]	4-Row	1.27	.36	.82	.82	.78	4.05
Corn Tender[1/]	2-Row	.45	.14	.31	.39	.62	1.91
Corn Cultivator	4-Row	.52	.16	.37	.56	.60	2.21
Cornpicker	2-Row	2.44	.69	1.56	1.03	.75	6.47
Forage Harvester PTO	2-Row	3.46	.98	2.21	1.33	.85	8.83
Mower[2/]	7-Foot	.45	.15	.36	.50	.41	1.87
Side Rake[2/]		.62	.29	.66	.50	.36	2.43
Dump Rake[2/]	12-Foot	.43	.22	.51	.37	.35	1.88
Farmhand & Attachments[1/]		.45	.18	.41	.51	.67	2.22
Trailer or Wagon[2/]		.47	.22	.51	.48	.60	2.28
Trailer or Wagon[1/]		.49	.20	.46	.51	.62	2.28
Self Unloading Wagon[1/]		.81	.35	.79	.54	.68	3.17
Sprayer (trailer)[2/]	30-Foot	.52	.21	.49	.41	.48	2.11

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

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

Machine or Implement	Size	Dollar Cost Per Acre					
		Depre-ciation	Insurance & Taxes	Int.	Repairs	Fuel, Oil, & Lubricant	Total
Moldboard Plow	4-14-Inch	$0.139	$0.040	$0.039	$0.194	$0.021	$0.483
Oneway Plow	10-Foot	.125	.036	.030	.175	.019	.435
Single Disc[1/]	18-Foot	.039	.014	.032	.053	.011	.149
Duckfoot or Chisel	12-Foot	.069	.020	.045	.097	.010	.241
Disc Tiller	16-Foot	.059	.017	.038	.082	.009	.205
Drag Harrow[1/]	6-Sect.	.021	.007	.017	.028	.006	.079
Press Drill	14-Foot	.059	.020	.045	.097	.010	.241
Press Drill[1/]	14-Foot	.052	.019	.042	.070	.014	.197
Lister[1/]	4-Row	.073	.026	.059	.098	.020	.276
Corn Tender[1/]	2-Row	.086	.031	.070	.116	.023	.326
Corn Cultivator	4-Row	.069	.020	.045	.097	.010	.241
Cornpicker	2-Row	.208	.059	.134	.291	.031	.723
Forage Harvester PTO	2-Row	.191	.054	.123	.267	.029	.664
Mower[2/]	7-Foot	.072	.034	.077	.095	.024	.302
Side Rake[2/]		.043	.021	.046	.057	.014	.181
Dump Rake[2/]	12-Foot	.036	.017	.039	.048	.012	.152
Farmhand & Attachments[1/]		.078	.028	.064	.105	.021	.296
Trailer or Wagon[2/]		.120	.057	.129	.159	.040	.505
Trailer or Wagon[1/]		.130	.047	.106	.176	.035	.494
Self Unloading Wagons[1/]		.130	.047	.106	.176	.035	.494
Sprayer (trailer)[2/]	30-Foot	.024	.011	.026	.032	.008	.101

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

Table 21. Costs Per Acre by Machine and Implement Used, 2,240-Acre Model Farm; Lyman and Tripp Counties

Machine or Implement	Size	Annual Use in Acres	Dollar Cost Per Acre: Depreciation	Insurance & Taxes	Int.	Repairs	Fuel, Oil, & Lubricant	Total
Moldboard Plow	4-14-Inch	488	$0.115	$0.028	$0.064	$0.128	$0.300	$0.635
Oneway Plow	10-Foot	229	.120	.056	.128	.082	.251	.637
Single Disc	18-Foot	609	.044	.021	.047	.016	.090	.218
Duckfoot or Chisel	12-Foot	903	.081	.018	.038	.028	.211	.376
Disc Tiller	16-Foot	195	.171	.076	.183	.024	.100	.554
Drag Harrow	6-Sect.	842	.006	.003	.008	.002	.040	.059
Press Drill	14-Foot	458	.322	.079	.179	.091	.081	.752
Swather (self-prop)	14-Foot	458	.453	.129	.291	.161	.101	1.135
Combine (self-prop)	14-Foot	530	.992	.282	.637	.550	.251	2.712
Lister	4-Row	302	.285	.076	.171	.132	.200	.864
Corn Tender	2-Row	302	.063	.016	.033	.013	.182	.307
Corn Cultivator	4-Row	604	.034	.013	.029	.014	.110	.200
Cornpicker	4-Row	131	1.243	.354	.798	.322	.417	3.134
Forage Harvester PTO	2-Row	99	1.694	.482	1.088	.458	.436	4.158
Mower	7-Foot	614	.064	.014	.030	.054	.099	.261
Side Rake		297	.068	.032	.072	.032	.050	.254
Dump Rake	12-Foot	317	.029	.017	.037	.008	.041	.132
Farmhand & Attachments		527	.056	.026	.059	.048	.180	.369
Three Trailers or Wagons		279	.118	.056	.126	.082	.268	.650
Self Unloading Wagon		50	.274	.130	.292	.096	.304	1.096
Sprayer (trailer)	30-Foot	760	.029	.010	.023	.009	.040	.111

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

Machine or Implement	Size	Dollar Cost Per Acre: Depreciation	Insurance & Taxes	Int.	Repairs	Fuel, Oil, & Lubricant	Total
Moldboard Plow	4-14-Inch	$0.254	$0.068	$0.153	$0.322	$0.321	$1.118
Oneway Plow	10-Foot	.245	.092	.208	.257	.270	1.072
Single Disc[1/]	18-Foot	.083	.035	.079	.069	.101	.367
Duckfoot or Chisel	12-Foot	.150	.038	.083	.125	.221	.617
Disc Tiller	16-Foot	.230	.093	.221	.106	.109	.759
Drag Harrow[1/]	6-Sect.	.027	.010	.025	.030	.046	.138
Press Drill	14-Foot	.391	.099	.224	.188	.100	1.002
Press Drill[1/]	14-Foot	.374	.098	.221	.161	.085	.939
Swather (self-prop)	14-Foot	.453	.129	.291	.161	.101	1.135
Combine (self-prop)	14-Foot	.992	.282	.637	.550	.251	2.712
Lister[1/]	4-Row	.358	.102	.230	.230	.220	1.140
Corn Tender[1/]	2-Row	.149	.047	.103	.129	.205	.633
Corn Cultivator	4-Row	.103	.033	.074	.111	.120	.441
Cornpicker	2-Row	1.451	.413	.932	.613	.448	3.857
Forage Harvester PTO	2-Row	1.885	.536	1.211	.725	.465	4.822
Mower[2/]	7-Foot	.136	.048	.107	.149	.123	.563
Side Rake[2/]		.111	.053	.118	.089	.064	.435
Dump Rake[2/]	12-Foot	.065	.034	.076	.056	.053	.284
Farmhand & Attachments[1/]		.134	.054	.123	.153	.201	.665
Trailer or Wagon[2/]		.238	.113	.255	.241	.300	1.147
Trailer or Wagon[1/]		.248	.103	.232	.258	.310	1.151
Self Unloading Wagons[1/]		.404	.177	.398	.272	.339	1.590
Sprayer (trailer)[2/]	30-Foot	.053	.021	.049	.041	.048	.212

[1/] Used with a 3-plow tractor--all other implements and machines used with a 4-plow tractor except the swather and combine which are self propelled.
[2/] Used with a 2-plow tractor.

Table 23. Machine Costs Per Acre by Crop and Type of Operation on 640-Acre Model Farm; Lyman and Tripp 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	0.96	$0.75	$0.29	$0.70	$0.51	$0.80	$ 3.05
Small Grain After Summer Fallow	Tillage	.30	.20	.09	.21	.12	.18	.80
	Planting	.23	.44	.24	.55	.17	.11	1.51
	Spraying	.10	.10	.05	.12	.04	.05	.36
	Harvest	.52	2.50	.77	1.58	.59	.65	6.09
	Total	1.15	3.24	1.15	2.46	.92	.99	8.76
Small Grain After Small Grain	Tillage	.84	.52	.22	.52	.42	.59	2.27
	Planting	.23	.44	.24	.55	.17	.11	1.51
	Spraying	.10	.10	.05	.12	.04	.05	.36
	Harvest	.52	2.50	.77	1.58	.59	.65	6.09
	Total	1.69	3.56	1.28	2.77	1.22	1.40	10.23
Small Grain After Corn or Sorghum Silage	Tillage	.78	.52	.23	.53	.38	.55	2.21
	Planting	.23	.44	.24	.55	.17	.11	1.51
	Spraying	.10	.10	.05	.12	.04	.05	.36
	Harvest	.52	2.50	.77	1.58	.59	.65	6.09
	Total	1.63	3.56	1.29	2.78	1.18	1.36	10.17
Small Grain After Corn Grain or Grain Sorghum	Tillage	.98	.67	.26	.67	.47	.67	2.74
	Planting	.23	.44	.24	.55	.17	.11	1.51
	Spraying	.10	.10	.05	.12	.04	.05	.36
	Harvest	.52	2.50	.77	1.58	.59	.65	6.09
	Total	1.83	3.71	1.32	2.92	1.27	1.48	10.70
Small Grain After Alfalfa	Tillage	1.22	.68	.30	.68	.58	.79	3.03
	Planting	.23	.44	.24	.55	.17	.11	1.51
	Spraying	.10	.10	.05	.12	.04	.05	.36
	Harvest	.52	2.50	.77	1.58	.59	.65	6.09
	Total	2.07	3.72	1.36	2.93	1.38	1.60	10.99
Row Crop After Summer Fallow	Tillage	1.05	.55	.24	.53	.41	.64	2.37
	Planting	.35	.29	.13	.30	.18	.18	1.03
	Spraying	.10	.10	.05	.12	.04	.05	.36
	Subtotal	1.52	.94	.42	.95	.63	.87	3.81
Corn Grain	Harvest (custom hired)							3.30
	Total	1.52	.94	.42	.95	.63	.87	7.11
Sorghum Grain	Harvest	.32	2.10	.61	1.22	.49	.53	4.95
	Total	1.84	3.04	1.03	2.17	1.12	1.40	8.76
Silage	Harvest (custom hired)							5.10
	Total	1.52	.94	.42	.95	.63	.87	8.91
Row Crop After Small Grain	Tillage	1.55	.84	.35	.80	.69	1.03	3.71
	Planting	.36	.29	.13	.30	.18	.18	1.08
	Spraying	.10	.10	.05	.12	.04	.05	.36
	Subtotal	2.01	1.23	.53	1.22	.91	1.26	5.15
Corn Grain	Harvest (custom hired)							3.30
	Total	2.01	1.23	.53	1.22	.91	1.26	8.45
Sorghum Grain	Harvest	.32	2.10	.61	1.22	.49	.53	4.95
	Total	2.33	3.33	1.14	2.42	1.40	1.79	10.10
Silage	Harvest (custom hired)							5.10
	Total	2.01	1.23	.53	1.22	.91	1.26	10.25
Row Crop After Row Crop Harvested for Grain	Tillage	2.77	1.28	.65	1.43	1.25	1.85	6.51
	Planting	.36	.29	.13	.30	.18	.18	1.08
	Spraying	.10	.10	.05	.12	.04	.05	.36
	Subtotal	3.23	1.67	.83	1.90	1.47	2.08	7.95
Corn Grain	Harvest (custom hired)							3.30
	Total	3.23	1.67	.83	1.90	1.47	2.08	11.25
Sorghum Grain	Harvest	.32	2.10	.61	1.22	.49	.53	4.95
	Total	3.55	3.77	1.44	3.12	1.96	2.61	12.90
Silage	Harvest (custom hired)							5.10
	Total	3.23	1.67	.83	1.90	1.47	2.08	13.05
Row Crop After Row Crop Harvested for Silage	Tillage	2.57	1.13	.60	1.34	1.17	1.74	5.98
	Planting	.36	.29	.13	.30	.18	.18	1.08
	Spraying	.10	.10	.05	.12	.04	.05	.36
	Subtotal	3.03	1.52	.78	1.76	1.39	1.97	7.42
Corn Grain	Harvest (custom hired)							3.30
	Total	3.03	1.52	.78	1.76	1.39	1.97	10.72
Sorghum Grain	Harvest	.32	2.10	.61	1.22	.49	.53	4.95
	Total	3.35	3.62	1.39	2.98	1.48	2.50	11.97
Silage	Harvest (custom hired)							5.10
	Total	3.03	1.52	.78	1.76	1.39	1.97	12.52
Row Crop After Alfalfa	Tillage	1.78	.91	.39	.86	.81	1.13	4.10
	Planting	.36	.29	.13	.30	.18	.18	1.08
	Spraying	.10	.10	.05	.12	.04	.05	.36
	Subtotal	2.24	1.30	.57	1.28	1.03	1.36	5.54
Corn Grain	Harvest (custom hired)							3.30
	Total	2.24	1.30	.57	1.28	1.03	1.36	8.84
Sorghum Grain	Harvest	.32	2.10	.61	1.22	.49	.53	4.95
	Total	2.56	3.40	1.18	2.50	1.52	1.89	10.49
Silage	Harvest (custom hired)							5.10
	Total	2.24	1.30	.57	1.28	1.03	1.36	10.64
Tame Hay[1]	Mow, Rake, Bale	.69	.31	.13	.30	.22	.19	5.03[2]
	Mow, Rake, Stack	.79	.57	.25	.57	.38	.39	2.16
Native Hay[1]	Mow, Rake, Stack	.79	.57	.25	.57	.38	.39	2.16

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

Table 24. Machine Costs Per Acre by Crop and Type of Operation on 960-Acre Model Farm; Lyman and Tripp 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	0.96	$0.76	$0.31	$0.70	$0.67	$0.97	$ 3.41
Small Grain After Summer Fallow	Tillage	.25	.29	.13	.30	.16	.16	1.04
	Planting	.20	.38	.18	.41	.18	.09	1.24
	Spraying	.10	.07	.03	.08	.04	.05	.27
	Harvest	.40	1.74	.81	1.20	.51	.64	4.62
	Total	.95	2.48	.87	1.99	.89	.94	7.17
Small Grain After Small Grain	Tillage	.75	.49	.20	.46	.50	.54	2.19
	Planting	.20	.38	.18	.41	.18	.09	1.24
	Spraying	.10	.07	.03	.08	.04	.05	.27
	Harvest	.40	1.74	.81	1.20	.51	.64	4.62
	Total	1.45	2.68	.94	2.15	1.23	1.12	8.32
Small Grain After Corn or Sorghum Silage	Tillage	.76	.50	.22	.48	.48	.55	2.23
	Planting	.20	.38	.18	.41	.18	.09	1.24
	Spraying	.10	.07	.03	.08	.04	.05	.27
	Harvest	.40	1.74	.81	1.20	.51	.64	4.62
	Total	1.46	2.69	.96	2.17	1.21	1.33	8.36
Small Grain After Corn Grain or Grain Sorghum	Tillage	.96	.64	.27	.62	.60	.66	2.79
	Planting	.20	.38	.18	.41	.18	.09	1.24
	Spraying	.10	.07	.03	.08	.04	.05	.27
	Harvest	.40	1.74	.53	1.20	.51	.64	4.62
	Total	1.66	2.83	1.01	2.11	1.33	1.44	8.92
Small Grain After Alfalfa	Tillage	1.14	.67	.28	.64	.71	.69	2.99
	Planting	.20	.38	.18	.41	.18	.09	1.24
	Spraying	.10	.07	.03	.08	.04	.05	.27
	Harvest	.40	1.74	.81	1.20	.51	.64	4.62
	Total	1.84	2.86	1.02	2.33	1.44	1.47	9.12
Row Crop After Summer Fallow	Tillage	.80	.55	.23	.51	.43	.47	2.19
	Planting	.36	.28	.13	.29	.16	.19	1.05
	Spraying	.10	.07	.03	.08	.04	.03	.27
	Subtotal	1.26	.90	.39	.88	.63	.71	3.51
Corn Grain	Harvest (custom hired)							1.30
	Total	1.26	.90	.39	.88	.63	.71	6.81
Sorghum Grain	Harvest	.25	1.49	.43	.98	.43	.53	3.86
	Total	1.51	2.39	.82	1.86	1.06	1.24	7.37
Silage	Harvest (custom hired)							5.10
	Total	1.26	.90	.39	.88	.63	.71	8.61
Row Crop After Small Grain	Tillage	1.25	.86	.35	.80	.77	.84	3.62
	Planting	.36	.28	.13	.29	.16	.19	1.05
	Spraying	.10	.07	.03	.08	.04	.05	.27
	Subtotal	1.71	1.21	.51	1.17	.97	1.08	4.94
Corn Grain	Harvest (custom hired)							3.30
	Total	1.71	1.21	.51	1.17	.97	1.08	8.24
Sorghum Grain	Harvest	.25	1.49	.43	.98	.43	.53	3.86
	Total	1.96	2.70	.94	2.15	1.40	1.61	8.80
Silage	Harvest (custom hired)							5.10
	Total	1.71	1.21	.51	1.17	.97	1.08	10.04
Row Crop After Row Crop Harvested for Grain	Tillage	1.11	.82	.33	.76	.71	.74	3.36
	Planting	.36	.28	.13	.29	.16	.19	1.05
	Spraying	.10	.07	.03	.08	.04	.03	.27
	Subtotal	1.57	1.17	.49	1.13	.91	.98	4.68
Corn Grain	Harvest (custom hired)							3.30
	Total	1.57	1.17	.49	1.13	.91	.98	7.98
Sorghum Grain	Harvest	.25	1.49	.43	.98	.43	.53	3.86
	Total	1.82	2.66	.92	2.11	1.34	1.51	8.54
Silage	Harvest (custom hired)							5.10
	Total	1.57	1.17	.49	1.13	.91	.98	9.78
Row Crop After Row Crop Harvested for Silage	Tillage	1.01	.75	.30	.69	.64	.71	3.09
	Planting	.36	.28	.13	.29	.16	.19	1.05
	Spraying	.10	.07	.03	.08	.04	.03	.27
	Subtotal	1.47	1.10	.46	1.06	.84	.95	4.41
Corn Grain	Harvest (custom hired)							3.30
	Total	1.47	1.10	.46	1.06	.84	.95	7.71
Sorghum Grain	Harvest	.25	1.49	.43	.98	.43	.53	3.86
	Total	1.72	2.59	.89	2.04	1.27	1.48	8.27
Silage	Harvest (custom hired)							5.10
	Total	1.47	1.10	.46	1.06	.84	.95	9.51
Row Crop After Alfalfa	Tillage	1.44	.97	.40	.45	.46	.38	2.66
	Planting	.36	.28	.13	.29	.16	.19	1.05
	Spraying	.10	.07	.03	.08	.04	.03	.27
	Subtotal	1.90	1.32	.56	.82	.66	.62	3.98
Corn Grain	Harvest (custom hired)							3.30
	Total	1.90	1.32	.56	.82	.66	.62	7.28
Sorghum Grain	Harvest	.25	1.49	.43	.98	.43	.53	3.86
	Total	2.15	2.81	.99	1.80	1.09	1.15	7.84
Silage	Harvest (custom hired)							5.10
	Total	1.90	1.32	.56	.82	.66	.62	9.08
Tame Hay[1/]	Mow, Rake, Bale	.49	.24	.11	.25	.21	.18	4.37[2/]
	Mow, Rake, Stack	.79	.44	.21	.47	.35	.38	1.85
Native Hay[1/]	Mow, Rake, Stack	.79	.44	.21	.47	.35	.38	1.85

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

Table 25. Machine Costs Per Acre by Crop and Type of Operation on 2,240-Acre Model Farm; Lyman and Tripp 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	0.96	$0.69	$0.21	$0.46	$0.63	$0.93	$ 2.92
Small Grain After Summer Fallow	Tillage	.24	.18	.07	.18	.12	.20	.75
	Planting	.20	.38	.10	.22	.17	.10	.97
	Spraying	.10	.05	.02	.05	.04	.05	.21
	Harvest	.40	1.45	.41	.93	.71	.36	3.86
	Total	.94	2.06	.60	1.38	1.04	.71	6.79
Small Grain After Small Grain	Tillage	.64	.39	.12	.28	.42	.50	1.71
	Planting	.20	.38	.10	.22	.17	.10	.97
	Spraying	.10	.05	.02	.05	.04	.05	.21
	Harvest	.40	1.45	.41	.93	.71	.36	3.86
	Total	1.34	2.27	.65	1.48	1.14	1.01	6.75
Small Grain After Corn or Sorghum Silage	Tillage	.67	.40	.14	.31	.42	.51	1.78
	Planting	.20	.38	.10	.22	.17	.10	.97
	Spraying	.10	.05	.02	.05	.04	.05	.21
	Harvest	.40	1.45	.41	.93	.71	.36	3.86
	Total	1.17	2.28	.67	1.51	1.14	1.02	6.82
Small Grain After Corn Grain or Grain Sorghum	Tillage	.82	.49	.17	.39	.48	.61	2.14
	Planting	.20	.38	.10	.22	.17	.10	.97
	Spraying	.10	.05	.02	.05	.04	.05	.21
	Harvest	.40	1.45	.41	.93	.71	.36	3.86
	Total	1.52	2.37	.70	1.59	1.40	1.12	7.10
Small Grain After Alfalfa	Tillage	.87	.62	.22	.50	.56	.62	2.52
	Planting	.20	.38	.10	.22	.17	.10	.97
	Spraying	.10	.05	.02	.05	.04	.05	.21
	Harvest	.40	1.45	.41	.93	.71	.36	3.86
	Total	1.57	2.50	.75	1.70	1.48	1.13	7.16
Row Crop After Summer Fallow	Tillage	.76	.38	.12	.28	.38	.49	1.65
	Planting	.28	.36	.10	.23	.23	.22	1.14
	Spraying	.10	.05	.02	.05	.04	.05	.21
	Subtotal	1.14	.79	.24	.56	.65	.76	3.00
Corn Grain	Harvest	.60	1.45	.41	.93	.61	.45	3.85
	Total	1.74	2.24	.65	1.49	1.26	1.21	6.85
Sorghum Grain	Harvest	.25	.99	.28	.64	.55	.25	2.71
	Total	1.39	1.78	.52	1.20	1.20	1.01	5.71
Silage	Harvest	.55	1.88	.54	1.21	.72	.47	4.82
	Total	1.69	2.67	.78	1.77	1.57	1.23	7.82
Row Crop After Small Grain	Tillage	1.09	.55	.18	.39	.58	.70	2.40
	Planting	.28	.36	.10	.23	.23	.22	1.14
	Spraying	.10	.05	.02	.05	.04	.05	.21
	Subtotal	1.47	.96	.30	.67	.85	.97	3.75
Corn Grain	Harvest	.60	1.45	.41	.93	.61	.45	3.85
	Total	2.07	2.41	.71	1.60	1.46	1.42	7.60
Sorghum Grain	Harvest	.25	.99	.28	.64	.55	.25	2.71
	Total	1.72	1.95	.58	1.31	1.40	1.22	6.46
Silage	Harvest	.55	1.88	.54	1.21	.72	.47	4.82
	Total	2.02	2.84	.84	1.88	1.77	1.44	8.57
Row Crop After Row Crop Harvested for Grain	Tillage	2.31	.65	.22	.48	.65	.81	2.81
	Planting	.28	.36	.10	.23	.23	.22	1.14
	Spraying	.10	.05	.02	.05	.04	.05	.21
	Subtotal	2.69	1.06	.34	.76	.92	1.08	4.16
Corn Grain	Harvest	.60	1.45	.41	.93	.61	.45	3.85
	Total	3.29	2.51	.75	1.69	1.53	1.53	8.01
Sorghum Grain	Harvest	.25	.99	.28	.64	.55	.25	2.71
	Total	2.94	2.05	.62	1.40	1.47	1.33	6.87
Silage	Harvest	.55	1.88	.54	1.21	.72	.47	4.82
	Total	3.24	2.94	.88	1.91	1.64	1.35	8.96
Row Crop After Row Crop Harvested for Silage	Tillage	2.16	.57	.18	.40	.58	.71	2.44
	Planting	.28	.36	.10	.23	.23	.22	1.14
	Spraying	.10	.05	.02	.05	.04	.05	.21
	Subtotal	2.54	.98	.30	.68	.85	.98	3.79
Corn Grain	Harvest	.60	1.45	.41	.93	.61	.45	3.85
	Total	3.14	2.43	.71	1.61	1.46	1.43	7.64
Sorghum Grain	Harvest	.25	.99	.28	.64	.55	.25	2.71
	Total	2.79	1.97	.58	1.32	1.40	1.23	6.50
Silage	Harvest	.55	1.88	.54	1.21	.72	.47	4.82
	Total	3.09	2.86	.84	1.89	1.61	1.45	8.61
Row Crop After Alfalfa	Tillage	1.21	.64	.19	.43	.70	.81	2.77
	Planting	.28	.36	.10	.23	.23	.22	1.14
	Spraying	.10	.05	.02	.05	.04	.05	.21
	Subtotal	1.59	1.05	.31	.71	.97	1.08	4.12
Corn Grain	Harvest	.60	1.45	.41	.93	.61	.45	3.85
	Total	2.19	2.50	.72	1.64	1.58	1.53	7.97
Sorghum Grain	Harvest	.25	.99	.28	.64	.55	.25	2.71
	Total	1.84	2.04	.59	1.35	1.52	1.33	6.83
Silage	Harvest	.55	1.88	.54	1.21	.72	.47	4.82
	Total	2.14	2.93	.85	1.92	1.69	1.51	8.94
Tame Hay[1/]	Mow, Rake, Bale	.48	.25	.10	.22	.24	.19	4.88[2/]
	Mow, Rake, Stack	.75	.31	.14	.31	.36	.25	1.52
Native Hay[1/]	Mow, Rake, Stack	.75	.33	.14	.31	.36	.38	1.52

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