

M. F. MILLER, *Director*

CIRCULAR 252

Columbia, Mo.

JANUARY, 1943

# Rental Rates for Farm Machines

MACK M. JONES AND LLOYD E. HIGHTOWER

An owner should not be expected to rent his machines or to use them for his neighbors without fair compensation. He should receive an hourly (or daily) rental for a machine at least equal to the cost of using it on his own farm, unless his costs for some reason are abnormally high. And those who rent machines should be willing to pay such a cost plus something in addition to compensate the owner for the cares and responsibility of ownership.

## What Items Constitute Hourly Cost of a Farm Machine?

The main items which make up the cost of service for a farm machine are: Repairs, depreciation, housing, taxes, insurance and interest on money invested in it. The largest item is usually depreciation. Repair costs, which vary widely for different machines and for different conditions of use, are usually important also, particularly if the machines are kept in good repair and at a high working efficiency.

## Annual Cost of Many Machines not Greatly Affected by Use

Many machines which are used only a few days per year depreciate practically as much from becoming obsolete or out-of-date as from use. A corn planter, for example, will last practically as long when used 5 or 6 days per year as when used 2 or 3 days per year. The *annual cost* of such machines, which is made up largely of depreciation and other fixed costs, will be affected only slightly by the number of days or hours they are used per year.

## Hourly Cost of Machines is Greatly Affected by Use

The hourly cost of a machine is determined by dividing the annual cost by the number of hours used per year. Since the annual cost of most machines remains nearly the same regardless of the amount the machines are used, the hourly cost varies greatly with the number of hours used per year. The greater the number of hours, the lower the cost per hour.

## Average Hourly Cost for Farm Machines

Estimated average costs of various farm machines for Missouri conditions are given in the accompanying table. It is assumed that the machines are used average amounts per year, and that they are maintained in good repair. It must be recognized that costs in individual cases may vary widely from the average. Average costs can be quite helpful, however, in determining fair rental rates for particular conditions. If a machine is used considerably more per year than the

## MACHINE COSTS AND RENTAL RATES

MACHINE	Purchase price	Average use per year, hours	Probable life, years	Cost per years*	Cost per hour*
<b>Tractors</b>					
Tractor, 1-plov	\$ 700	500	12	\$125	\$0.25
Tractor, 2-plov	1050	500	12	175	.35
Tractor, 3-plov	1300	500	12	215	.43
<b>Tillage Machines</b>					
Tractor plow, 2-bottom	130	100	15	30	.30
Tractor disk harrow, 7-foot tandem	125	80	15	20	.25
Spike tooth harrow	40	60	20	6	.10
Spring tooth harrow	60	60	15	9	.10
Rotary hoe	90	60	15	12	.20
Field cultivator	130	70	15	19	.25
Cultivator, 1-row, horse drawn	60	100	20	9	.10
Cultivator, 2-row tractor	125	100	12	20	.20
<b>Planting and Seeding Machines</b>					
Corn planter, 2-row, horse drawn	90	45	20	11	.25
End gate seeder	35	25	20	4	.15
Grain drill	130	40	20	20	.50
<b>Harvesting Machines</b>					
Combine, 5-foot	650	100	10	125	1.25
Combine, 3½-foot	400	80	10	78	1.00
Grain binder, 8-foot	275	50	15	37	.75
Corn binder	240	50	20	30	.60
Corn picker, 1-row	500	100	10	90	.90
Corn picker, 2-row	800	100	10	140	1.40
Ensilage cutter	350	40	15	48	1.20
<b>Haying Machines</b>					
Mower, 7-foot, tractor	130	60	12	24	.40
Mower, 5-foot, horse-drawn	100	60	15	18	.30
Side delivery rake	120	50	16	15	.30
Sulky rake	50	40	25	6	.15
Sweep rake, horse-drawn	50	40	15	8	.20
Hay loader	140	65	16	19	.30
Baler, pickup (with engine)	1000	100	15	140	1.40
Baler, stationary (without engine)	500	100	20	55	.55
<b>Miscellaneous</b>					
Manure spreader	200	120	15	25	.20

\*These costs include repairs, sharpening expense, depreciation, housing, taxes, insurance and interest, but not fuel, oil, twine, etc., nor labor for operating.

These rates may need to be increased to cover severe operating conditions; also somewhat higher rates may be justified to compensate the owner for cares and responsibilities of ownership.

Lessee should repair all damage or breakage beyond normal wear.

average indicated in the table, then its hourly cost will be lower than that indicated. Likewise, if a machine is used less than average, then the hourly cost will be higher than indicated. It probably would not be fair, however, to charge rental rates based on a very low use per year, which would give a high hourly cost. Nor should an owner who uses his machine much more than average per year, and therefore has a very low hourly cost, be expected to rent his machines at considerably less than average cost.

### A. S. A. E. Rental Rates

A committee of the American Society of Agricultural Engineers has formulated and distributed a table of rental rates for farm machines. These rates apply principally to corn belt conditions, and, in the main, are not greatly different from the rates given in this circular, which apply particularly to Missouri conditions.

### Custom Work and Custom Charges

An owner may prefer to operate his own machines and do custom work for a neighbor rather than just rent his machines. The neighbor may also prefer to hire the owner along with a machine, and thus be relieved of the responsibility of taking care of the machine while in operation. In such cases the question of custom charges often arises.

The table of costs in this circular may be used as a basis for determining custom rates. In many localities prices established by regular custom operators may also be used as a guide. It should be remembered that the costs given in the table are machine costs only, and do not include fuel, oil, labor or materials or supplies like twine and wire. The cost of such items used, which usually is not difficult to estimate, should be added to the machine costs. Then it would be no more than fair to add a certain amount, say 30 to 50 per cent, to pay the owner for the cares and responsibilities of ownership, for the time and trouble of getting his equipment ready and moving it from farm to farm and from field to field, etc. Such prices thus determined will usually be fair to both the owner of the machinery and to the farmer hiring the work done.

Prices determined in the manner described will be on the hourly basis. If the prices are desired on the basis of the amount of work done, such as an acre basis, then it will be necessary to know or determine the amount of work done per hour or per day. This is not difficult. A convenient method of estimating the acres covered per 10-hour day is as follows:

Acres in 10 hrs. = Width of cut in ft. x miles per hr.

### An Example of Determining Custom Charges

**Problem:** What is a fair custom charge for plowing with a tractor and 2-bottom, 14-inch plow, assuming plowing of average difficulty?

**Solution:**

#### COSTS PER 10-HOUR DAY

##### Machine Costs

Tractor, from table, \$0.35 per hour .....	\$3.50
Plow, from table, \$0.30 per hour .....	3.00
*Fuel, 18 Gal. @ \$0.12 .....	2.16
*Daily oil and grease costs, including oil at changes .....	.25
Labor, 1 man-day @ \$3.50 .....	3.50
Daily Costs .....	<u>\$12.41</u>

Add 30% for responsibilities of ownership, time for moving equipment, etc. .... 3.72

Daily Charge .....\$16.11

Estimated acres plowed in 10 hours

= Width of furrows in ft. x miles per hr.

$$= 2 \times \frac{14}{12} \times 4 = 9.33 \text{ Acres.}$$

(Plowing speed is 4 miles per hr.)

Acres Charge = Daily Charge  $\div$  Acres plowed per day  
 = \$16.11  $\div$  9.33 = \$1.73.

### Another Example

**Problem:** What would be a fair charge for combining grain with a 5-foot combine and a 2-plow tractor?

**Solution:**

#### COSTS PER 10-HOUR DAY

##### Machine Costs

Tractor, from table, \$0.35 per hour.....	\$ 3.50
Combine, from table, \$1.25 per hour.....	12.50
Fuel, 18 gal. @ \$0.12.....	2.16
Oil and grease, tractor and combine, including oil at changes .....	.40
Labor, 1 man-day @ \$3.50 .....	3.50
Daily Costs .....	<u>\$22.06</u>

Add 50% for responsibilities of ownership, time for preparing equipment, moving it, etc..... 11.03

Daily Charge .....\$33.09

Assuming 12 acres cut per 10 hours,

Acres cost = \$33.09  $\div$  12 = \$2.76.

\*It is well to remember that fuel and oil costs of a tractor will increase with age.

### Another Example

**Problem:** What would be a fair custom charge for mowing hay with a 7-ft. power mower and a 2-plow tractor?

**Solution:**

#### COSTS PER 10-HOUR DAY

##### Machine Costs

Mower, from table, \$0.40 per hour .....	\$ 4.00
Tractor, from table, \$0.35 per hour .....	3.50
Daily oil and grease costs, including oil at changes.....	.25
Fuel, 12 gal. @ \$0.12 .....	1.44
Labor, 1 man-day @ \$3.50.....	3.50

Daily Costs .....\$12.69

Add 30% for responsibilities of ownership, time for  
moving equipment, etc. .... 3.81

Daily Charge .....\$16.50

Estimated acres cut in 10 hours.

= Width of swath in ft. x miles per hr.

=  $7 \times 3\frac{3}{4} = 22\frac{3}{4}$  acres or approximately 23 acres.

Acre Charge = Daily charge  $\div$  Acres cut per day

=  $\$16.50 \div 23 = \$0.72$ .

In the preceding examples, certain prices have been assumed for labor, fuel, and oil. If these prices do not fit prevailing local prices or if the acres done per day vary greatly from the value assumed in the examples, then the charges should be adjusted accordingly.

### A Quick Method of Estimating Machinery Costs

The approximate annual cost of a farm machine may be quickly estimated by taking an appropriate percentage of its first cost. The annual cost of farm machines may be expected to be from 10 to 20 per cent of the first cost, averaging perhaps 15 per cent. See the table of cost in this circular. Machines which have high repair and sharpening expense, like mowers and plows, and the more complex machines, like combines and corn pickers, may be expected to have annual costs ranging from 15 to 20 per cent of the first cost. The annual cost of machines which normally have long life and low repair expense, like planters, grain drills, and hay rakes, may be expected to be 10 to 15 per cent of the first cost.

Renting and hiring of farm machines is one important way to help offset the shortage of farm labor and the shortage of new machines.

Most farm implements and machines are capable of doing more work than they normally do.

Teamwork through the exchange of labor and sharing of machinery is not only neighborly, but it is also patriotic.

In many cases it will be better for the owner to operate his machine and to do custom work for his neighbor, rather than just rent the machine, because the owner is more familiar with it and can make sure it receives proper care.

Hiring and renting of machines usually makes for lower machinery costs for both owner and renter. It is therefore good business for both.

Machines kept in good repair do better work and require less power. Furthermore, machines in good repair make for fewer breakdowns and less lost time in the field.