



AGRICULTURAL ENGINEERING NEWS LETTER

AGRICULTURAL EXTENSION DIVISION
UNIVERSITY OF MINNESOTA

UNIVERSITY FARM, ST. PAUL—JULY 15, 1940—No. 100

The Cost of Using Farm Machines

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The intelligent use of machinery makes possible crop production at lower costs than by hand methods. Furthermore, the work can be done at more nearly the opportune time and, in many cases, the quality of the product is improved. The cost of using machinery, however, represents a large part of the cost of farm operation. Because of the variety of machines that can be used advantageously, the investment is considerable and the total annual use for most machines is limited by the size of farm and the fact that some work can be done only during certain seasons. Keeping the machine cost as low as possible requires good judgment in the selection of machines and good management in their use.

How to Determine Costs

Although it is easy to determine the cost of using machines, such determination is very seldom made by farmers, and few of them know what it is costing to own and operate certain machines.

To compute the cost of using a machine, one must know the first cost, estimated life in years, rate of interest, and amount of use per year. A grain drill will be used in illustrating the method of computing cost and the following assumptions are made: it is a tractor-operated drill 10' wide, the first cost is \$220.00, the estimated life of the drill is 18 years, the annual rate of interest is 6 per cent, the annual acreage covered is 90, and the number of acres per day is 15.

It is convenient first to determine the annual cost and then the cost per acre and per day. The factors to be considered are depreciation, interest, repairs, and housing.

Depreciation

Annual depreciation is the first cost divided by the estimated life in years, or 220/18 which equals \$12.22. In estimating the life of a machine it is well to assume a conservative and reasonable life in keeping with the conditions under which the machine will probably be used. There is a wide variation in the life of individual machines of the same kind.

Interest

Interest is computed on the investment, which naturally decreases in value as the machine depreciates. It may be computed each year on that portion of the investment still unused. For the grain drill under consideration, the interest during its third year would be computed on the first cost less the depreciation for 2 years, or be \$220.00 less 2 times \$12.22 which equals \$195.56. Under some conditions,

however, it is convenient to determine in advance the probable cost of using a new machine. The interest may then be computed on the average value, which is practically one-half the first cost. The interest charge will then be the same each year. In the case of the grain drill, the average investment is \$110.00 and the interest at 6 per cent is \$6.60 annually.

Repairs

The cost of repairs depends on the kind of machine and how it is cared for and used. If one is interested in determining, for his own purposes, the cost of using a particular machine, the repair item is easily determined from year to year. If, however, one wishes to determine in advance what the probable cost will be, it is convenient to assume that the average annual repair cost will be a certain per cent of the first cost of the machine. This will vary for different machines. It is about one-half of one per cent for a grain drill, making that item \$1.10.

Housing

It costs something to build and maintain a machine shelter, and time and effort are required to put the machines into shelter. It is generally agreed, however, that it is well worth while to keep most machines sheltered. Adequate shelter need not be expensive. The annual cost per square foot for shelter will vary from 2 to 5 cents, depending on the cost of the machine shed.

The annual charge for a shelter, including depreciation and upkeep, is about 10 per cent of the first cost. If one assumes a machine shed 18' x 60', costing \$500.00 to build, the annual charge for its use should be about \$50.00. Since the area is 1080 square feet, the annual cost per square foot is somewhat less than 5 cents. If the grain drill occupies an area about 12' x 6', or 72 square feet, the annual cost of housing it is 72 x \$.05, or \$3.60.

Summary of Costs

A summary of the annual costs thus obtained is as follows:

Depreciation	\$12.22
Interest	6.60
Repairs	1.10
Housing	3.60
Total	\$23.52

Cost per acre is \$23.52/90 or 26 cents.
Cost per day is \$23.52/6 or \$3.92.

Average Data for Various Machines

In the following table are shown average values of various factors for some of the most commonly used farm machines. These are suggested, not as exact values for all cases, but merely as a guide in arriving at the true value for any particular machine.

Machine	First cost	Life in years	Repairs (per cent)	Annual service (days)	Cost of service (per day)
Tractor plow 2-16 inch	\$125	10	3.0	16	1.30
Disk harrow, single-15'	140	15	2.0	14	1.40
Mower	100	15	2.5	6	2.25
Binder	200	16	1.0	6	4.20
Silo filler	300	10	2.0	8	5.85
Corn picker	725	10	1.5	15	7.50
Manure spreader	175	14	1.5	25	.90

Conclusion

The successful farm operator depends on the advantages offered by the use of modern farm machines. While the cost of using machines is no small item, it can be kept down by proper care and management. The annual depreciation will decrease as the life increases. For long life, machines must be kept in proper repair, well lubricated, and protected from the elements by paint or shelter when not in use. Checking the machine for repairs before major breakdowns occur will keep down total repair costs and prevent costly delays.

Doubling the annual use for most machines will have little effect on the life and will result in a lower overhead cost per unit of work. This result can be accomplished by using machines on more farms than one through cooperative ownership, by custom work, or by an exchange use arrangement. The last can be worked out under some conditions. According to it, Farmer A owns some machines and uses them on both his farm and that of his neighbor B. Farmer B, on the other hand, owns other types of machines and does the work on both farms with them.

The details of any arrangement providing for greater seasonal use of machines must be worked out on the basis of existing local conditions. The factor of importance is that it be done in some suitable and mutually agreeable manner.

Low machine cost results from high annual use, proper operation and lubrication, timely repairs, and protection from the elements.