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CUSTOM RATES FOR FARM MACHINERY IN THE OREGON COLUMBIA BASIN COUNTIES

Gene Nelson and David Miller

Many farmers and ranchers, because of restricted capital, limited labor, desired flexibility, small size of business, or other reasons, cannot or do not choose to own all the power and equipment required in their operations. Hiring of custom services is one method of obtaining needed machinery service. The purpose of this report is to provide information on custom service charges in the Columbia Basin counties of Oregon.

Procedure for Obtaining Rates

Surveys were distributed by the county extension agents to the grain growers in the Columbia Basin counties: Umatilla, Morrow, Gilliam, Sherman, and Wasco Counties. The 200 responses showed an average of 960 acres of grain harvested per farm. An average of 2.3 tractors and 1.5 combines were owned, per farm. The tractors averaged 14 years of age and the combines averaged 10 years of age. Twenty-nine percent of the respondents reported rates for hiring custom services, and 19 percent reported rates for performing custom services on other farms. The most frequently reported custom rates were for combining, spraying, and plowing.

Because of the differences in rates charged for custom combining between counties, separate rates for each county are given. The rates for the other operations are combined for the five counties. The range of charges reported is given for each custom operation. A "typical" rate is also presented in each case. The number reporting for each operation provides an indication of the amount of information on which each rate is based. It is assumed that the rates reported are for the machine, tractor, and operator. In some cases, the custom operator may include materials.

Information obtained in this survey represents a variety of working conditions. The rates reported here are not recommended rates, but simply indicate some rates currently being charged. Circumstances often justify a departure from the rates reported. The typical rate reported can serve as a starting point for negotiating a mutually acceptable rate for the operation.

Custom Rates for Combining and Other Operations

Tables 1 and 2 give the number of rates reported, the usual range in rates,

Authors: Gene Nelson is Extension Farm Management Specialist, and David Miller is Research Assistant, both of the Department of Agricultural Economics, Oregon State University.

Table 1. Custom Rates for Combining by County, Oregon
Columbia Basin Counties, 1971

County	Number reporting	Rate in dollars per acre	
		Range	Typical
Umatilla.....	17	6.00 - 10.00	7.75
Morrow.....	4	3.00 - 6.50	5.00
Gilliam.....	4	5.00 - 7.00	6.50
Sherman.....	11	5.00 - 7.00	6.50
Wasco.....	6	5.00 - 7.00	6.50
ALL COUNTIES.....	40	3.00 - 10.00	7.00

Table 2. Custom Rates for Oregon Columbia Basin Counties
by Operation, 1971

Operation	Number reporting	Rate in dollars per acre	
		Range	Typical
Rodweeding.....	8	1.00 - 2.00	1.35
Springtoothing.....	4	1.00 - 1.50	1.20
Chiseling.....	3	none	1.25
Spraying.....	24	.90 - 1.60	1.20
Seeding.....	7	1.00 - 2.00	1.60
Plowing.....	12	2.00 - 4.00	2.60
Swathing.....	5	3.00 - 4.75	4.00
Baling (per ton).....	5	5.00 - 7.00	6.00

and the most typical rate per acre (or per ton). In the five Columbia Basin counties, 40 reported rates for custom combining. In some cases these rates may include hauling. The range was from \$3 to \$10 per acre, with the typical rate being \$7 per acre. The yield per acre, number of acres, and distance between fields are important considerations in determining the custom rate charged for combining.

Because of the large variations in yields, particularly between irrigated and non-irrigated acres, several rates were reported for combining grain on other than a "per acre" basis. Seven reported rates on a "per hour" or "per day" basis. For example, rates were reported at \$20 per hour and \$150 per day. Four other operators reported rates on a "per bushel" basis, at 17 to 18 cents per bushel.

Table 2 reports the custom rates for other field operations. The rates are reported on a "per acre" basis except for baling, which is on a "per ton" basis. Spraying and plowing were the most frequently reported operations in the five-county area.

Some of the custom rates in these two tables may appear low. Others may seem high. One of the factors accounting for the seemingly low rates is the willingness of machinery owners with excess machine capacity to do additional custom work at a rate covering the operating costs (fuel, lubricants, repairs, and labor) plus a margin to only partially offset ownership costs. This puts the custom rate below the total cost. As in any market, the relationship between supply and demand determines the price.

Ownership Versus Custom Service

The economic aspects affecting the decision of whether to hire custom service or to own the necessary power and equipment can be resolved by comparing the costs of the two alternatives, assuming no difference in returns. The annual costs of owning and operating machinery are of two types: (1) ownership costs, and (2) operating costs.

Ownership Costs

Ownership costs consist of depreciation, interest on the investment, taxes, insurance, and housing. These costs are fixed, that is, they are incurred regardless of the annual use of the machine. Therefore, the ownership costs per unit (acre, hour, ton, etc.) become smaller as the annual use of the machine increases.

Depreciation is the loss in value due to age, use, and obsolescence. Although depreciation is partly a function of use, it is considered to be primarily an ownership cost. The annual depreciation charge can be calculated by subtracting the salvage value (the value at the time of trade or at the end of its useful life) from the purchase price of the machine, and dividing this

difference by the number of years it is to be kept. This method should be fitted to the individual's policy for trading machinery. If machinery is traded often, a higher salvage value and fewer years should be used in determining the annual depreciation charge.

Interest on the investment is apparent if money was borrowed to purchase the machine. However, the individual that pays cash for the machine has foregone the opportunity to invest or use that money in some other manner. The interest charge then is the "opportunity cost", the cost of the lost opportunity to use the money in some other way.

The interest is usually calculated on the average investment in the machine. This can be found by adding the machine's purchase price and salvage value, and dividing that sum by two. If the individual is using borrowed money, the interest rate paid is the opportunity cost. Otherwise, the rate of return in the best alternative investment would be appropriate.

The personal property tax is a cost that is fixed, regardless of machine use. Rates vary widely from one community to another. Therefore the local rate should be used, multiplied times the average value of the machine.

Risk of losses by fire, windstorm, and other hazards, is always present. The risk of these losses must be borne by the owner himself, or he can pay an insurance company to bear the risk. For budgeting, use the insurance rate times the average value of the machine.

The economic value of housing for farm machinery is questionable. An appropriate charge for housing should be made if the machine is stored under cover. If no charge is made, a faster depreciation rate or larger repair cost should be considered.

Operating Costs

Operating costs are those which vary directly with the use of the machine. Items that fall under this category include fuel, lubricants, repairs, and service.

Fuel is an operating cost for equipment with engines. This cost can be estimated using past records, information from the manufacturer, or Nebraska Tractor Test results. Lubricants include engine oil, hydraulic oil, lubricating greases, and filters.

Repair costs depend on several factors. The annual use of the machine, soil type, skill of the operator, the nature of the work, and the maintenance requirements of the machine directly influence the annual repair expenditures. In addition to the cash expenditures for parts and repair, include the value of the operator's labor used in making repairs, and for other service such as routine lubrication and maintenance.

The total cost of performing an operation includes more than the cost of the machine itself. The cost of operator's labor, cost of power to operate the machine, cost of transporting between fields, and cost of needed supplies such as baling twine or wire, herbicides, insecticides, etc., must be included also.

Break-Even Analysis

With an understanding of ownership and operating costs and how they are derived, the grower can determine his break-even acreage for a particular task. This figure indicates whether it would be less costly to own the machine or to custom hire the work done. The break-even point is equal to the annual ownership costs divided by the difference between the custom rate per acre and the operating costs per acre. The following example may help clarify this concept.

Suppose a grower harvests 1,000 acres of wheat annually, and is contemplating the purchase of a new combine costing \$30,000. He would plan to keep it for seven years, at which time it is expected to be worth \$9,000. His alternative would be to custom hire the wheat harvest for \$8 per acre. His estimates of the annual ownership and operating costs for the combine are as follows:

Depreciation.	\$3,000
Interest.	1,365
Property tax.	365
Insurance	90
Housing	<u>180</u>
Annual ownership costs .	\$5,000
Fuel, lubricants.	\$ 575
Repairs, service.	1,425
Operator's labor.	<u>750</u>
Annual operating cost. .	\$2,750
Total ownership and operating .	\$7,750

The average total cost for combining 1,000 acres with the new purchased combine is \$7,750. This includes a cost of \$3 per hour for labor to operate the combine. Compared to \$8,000 for custom hiring, the grower saves \$250 annually by harvesting the 1,000 acres with his own combine.

To calculate the break-even acreage, divide the annual ownership cost of \$5,000 by the difference between the \$8 custom rate and \$2.75 operating cost per acre:

$$\$5,000 / (\$8.00 - \$2.75) = 952 \text{ acres.}$$

The result is a break-even acreage of 952. In other words, if the grower harvests more than 952 acres of wheat annually over the next seven years, it would be less costly for him to own the machine rather than to custom hire. In our example, the grower harvests 1,000 acres of wheat, and could justify owning the combine.

This break-even analysis can be illustrated graphically (Figure 1). The chart measures the total annual cost for combining on the vertical axis, and the acres of grain harvested on the horizontal axis. The cost of combining by custom hire increases linearly from zero, if no acres are harvested, to \$9,600 if 1,200 acres are harvested. The purchased combine has a \$5,000 ownership cost even if no acres are harvested. This increases in a straight line to \$8,300 for a 1,200-acre harvest. The two lines intersect at 952 acres. At larger acreages, the purchased combine has the least cost, and at smaller acreages custom hiring is cheaper.

The figures presented here are for example purposes only. Each grower needs to evaluate this decision for his own situation, based on his alternatives.

Other Considerations

After making the above analysis, the grower should also evaluate the pro's and con's of custom hiring to those of ownership. The biggest advantage of custom hiring is that the need to make a large investment is eliminated, and the capital can be used in other ways. This enhances the grower's flexibility to make adjustments in his operation.

In addition, the custom operator may furnish additional labor with the necessary skills to operate the machine. However, this may be to the disadvantage of the grower who is not able to put the labor released to good use.

Timeliness often is important to the grower. A delay in planting or harvesting may result in yield losses. Large scale operators often supplement their machinery through custom hiring, to assure that the operation is performed at the optimum time. Small growers may experience delays, however, waiting for custom operators.

Besides the possible delays, another disadvantage to custom hiring would be the possible spread of disease and weeds to the individual's farm. Custom operators generally do good quality work, but one cannot rule out the possibility of poor quality work and the resultant loss in yield as a disadvantage.

Excess machinery capacity, resulting from ownership, can be justified as a hedge against an adverse year. An owner may also perform custom work to utilize any excess capacity, but these considerations should be studied carefully in the decision to purchase. Personal pride could also be listed as an advantage to ownership, but this may have a high cost.

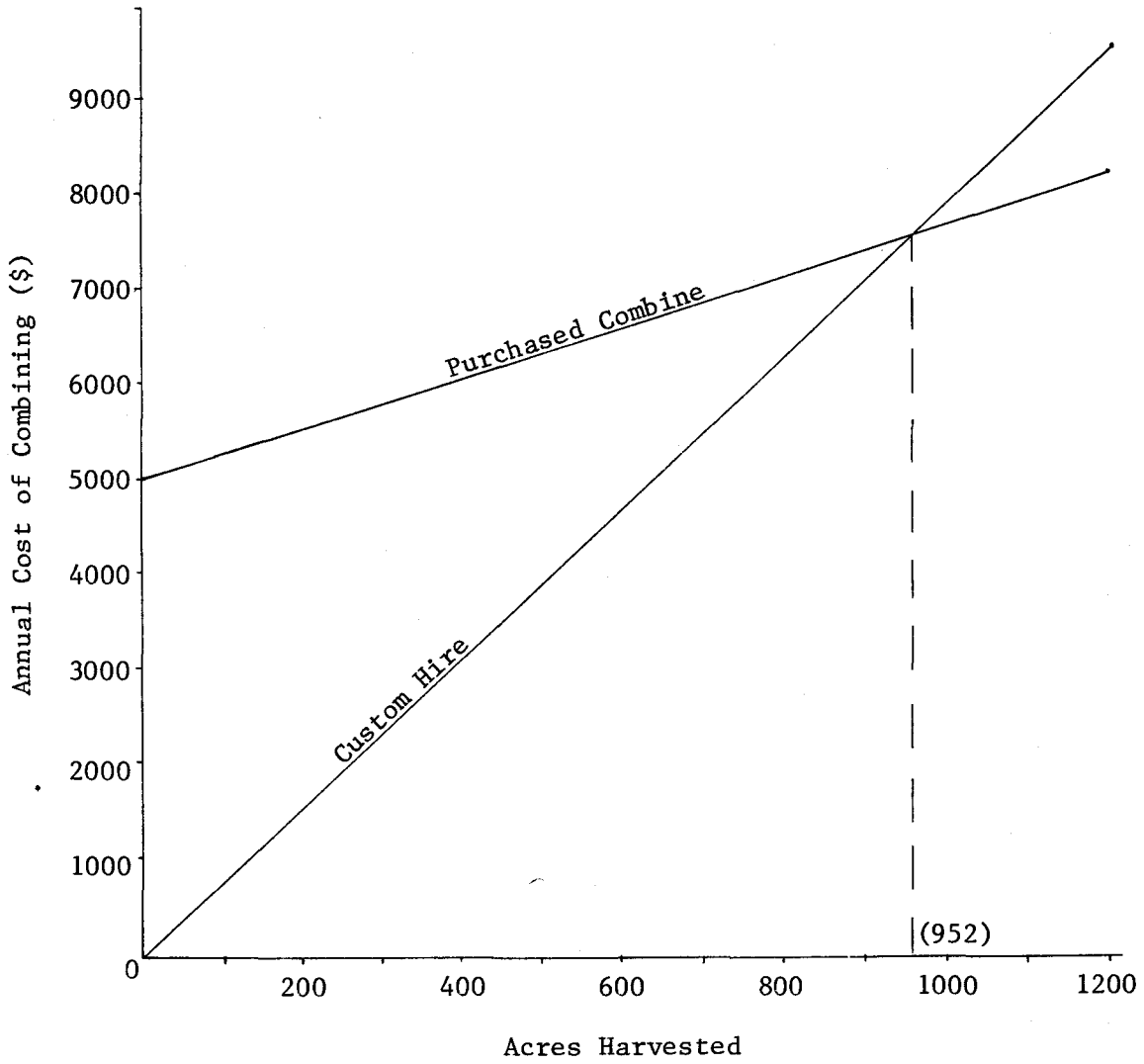


Figure 1. Graphic Method of Break-Even Analysis