

Worksheet 1

Combine Purchase vs. Custom Hire

The purpose of this exercise is to learn how to calculate ownership costs and operating costs for a harvesting machine and compare them to the cost of custom hiring the same operation.

You can hire your crops harvested by a custom operator or you can buy your own combine. To make this decision you must first calculate the ownership and operating costs of the combine. Assume the combine will be used on 500 corn acres and 500 soybean acres.



Use the following information:

Purchase cost of combine (10% discount from list price)	\$145,000
Salvage value (29% of list price after 8 years)	\$46,690
Ownership life of combine in years	8
Interest rate (70% borrowed @ 7%, 30% own funds @ 4%)	
Calculate the weighted cost of capital, first.	<i>6.1%*</i>
Diesel fuel price per gallon	\$ 2.20
Labor cost per hour	\$10.00
Custom combining rate per acre	\$27.00
Combine hours required per acre for harvesting, average of corn and soybeans	.30 hrs/acre

Ownership Costs (per year)

Estimate the average ownership costs associated with the combine over the eight years you will own it. The costs of owning a combine include depreciation, interest, insurance and housing. Round to the nearest dollar.

- a. Depreciation (start with the purchase price, not the list price)

- b. Interest on average value of combine
(calculate the average of the purchase cost and salvage value first)

average combine value = _____ x *6.1 %* cost of capital*

- c. Insurance and housing (use 1% of average value of the combine)

- d. Total ownership costs

- e. Total ownership costs per acre on 1,000 acres

Operating costs (per acre). Round values to the near \$.01.

- a. Repairs: (assume repair costs to be 1/2% of the list price, for each 100 hours of use)

$$\text{Average repair cost per acre} = .005 \times \text{list price} \times .30 \text{ hrs/acre for harvesting} / 100 =$$

- b. Fuel costs:

$$1.25 \text{ gallons used per acre} \times \text{fuel cost per gallon } \$ 2.20 =$$

- c. Lubrication costs: Lubrication costs are usually calculated as 15% of the fuel costs per acre. =

- d. Labor costs: Labor requirements for the size 1 combine are hours per acre, including travel, hauling and storing (average of corn and soybeans).

$$.925 \text{ hours / acre} @ \$10.00 =$$

- e. Total operating costs per acre

Total of ownership and operating costs per acre

Custom Hire Costs

If crops are custom harvested, you have to pay the custom operator \$27 / acre. \$27.00

In addition, you have to supply .35 hours (average for corn and soybeans) of labor for hauling and storing, at \$10 per hour.

Total cost of custom hiring, \$ per acre

Which is cheaper, owning or custom hiring?

Calculate the **breakeven number of crop acres** you would need to justify owning a combine, that is, the number of acres for which costs of owning would be just equal to those for custom hire. Use **acres (A)** as your unknown value and solve for acres.

$$\text{ownership costs, } \$/\text{year} + (\text{total operating costs, } \$/\text{acre, } \times \mathbf{A}) = (\text{total custom hire cost, } \$/\text{acre, } \times \mathbf{A})$$

If you have more acres than this, it is cheaper to own a combine than to custom hire.