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(Revised November 3, 2005 – see explanation of revision on second page)

Effect of Higher Fuel Prices on Machinery Costs

The price of diesel fuel has increased substantially during the past year or so with no indication that fuel prices will decline in the near future. This has resulted in increased machinery costs for farmers. The question arises as to how much machinery costs per acre have increased due to the higher fuel costs. This is especially important to those farmers involved in custom farming arrangements. The increase in machinery costs per acre due to the higher fuel prices depends on a number of factors, including the size of equipment, efficiency and type of machinery operation. Fuel costs per acre are estimated for selected machinery operations typically performed in the fall given different prices per gallon for diesel fuel.

Fuel Requirements

Table 1 lists the estimated number of gallons of diesel fuel required for selected machinery operations. These fuel requirements are based on formulas published by the American Society of Agricultural Engineers. Diesel fuel requirements will vary by size, efficiency and age of equipment along with other factors but the fuel requirements given in table 1 would be typical.

Fuel Cost per Acre

Fuel costs per acre are given in Table 1 for selected machinery operations with the price per gallon for diesel fuel ranging from \$1.00 to \$3.00 in 50 cent increments. Fuel cost per acre for combining corn is estimated at \$2.70 with the price of diesel fuel at \$1.50 per gallon. It increases to \$5.40 per acre when the price per gallon of diesel fuel increases to \$3.00.

Table 1. Estimated Diesel Fuel Requirements and Fuel Costs Per Acre with Alternative Diesel Fuel Prices for Selected Machinery Operations

Operation	Diesel gallons per acre	Dollars per gallon of diesel fuel				
		1.00	1.50	2.00	2.50	3.00
Harvesting		-----Fuel cost per acre-----				
Corn	1.80	1.80	2.70	3.60	4.50	5.40
Soybeans	1.50	1.50	2.25	3.00	3.75	4.50
Tillage						
Chisel plow	1.33	1.33	2.00	2.66	3.33	3.99
Moldboard plow	2.36	2.36	3.54	4.72	5.90	7.08
Mulch tiller (disk, chisel)	1.64	1.64	2.46	3.28	4.10	4.92
Tandem disk	0.73	0.73	1.10	1.46	1.83	2.19
Fertilizer application						
Anhydrous ammonia	0.61	0.61	0.92	1.22	1.53	1.83

Increase in Fuel Cost per Acre

The Machinery Cost Estimates published by the University of Illinois in April of 2005 used \$1.50 per gallon for the price of diesel fuel. Table 2 illustrates how these cost estimates can be adjusted upward to take into account the increase in diesel fuel prices. Diesel fuel prices of \$2.00, \$2.50 and \$3.00 per gallon are listed in the table. For example, combining corn using \$2.50 per gallon would increase the cost per acre by \$1.80 as compared to \$1.50 per gallon diesel fuel. Of course, the most accurate way of adjusting machinery costs would be using the actual fuel requirements and fuel prices incurred by farmers.

Table 2. Increase in Fuel Cost per Acre for Every 50 Cent Increase per Gallon of Diesel Fuel Above \$1.50

Operation	Dollars per gallon of diesel fuel			
	1.50	2.00	2.50	3.00
Harvesting	-----Increase in fuel cost per acre-----			
Corn	----	0.90	1.80	2.70
Soybeans	----	0.75	1.50	2.25
Tillage				
Chisel plow	----	0.67	1.33	2.00
Moldboard plow	----	1.18	2.36	3.54
Mulch tiller (disk, chisel)	----	0.82	1.64	2.46
Tandem disk	----	0.37	0.73	1.10
Fertilizer application				
Anhydrous ammonia	----	0.31	0.61	0.92

Explanation of Revision

The estimated diesel fuel usage per acre for combining corn and soybeans was revised downward. Diesel fuel usage for corn was revised from 3.75 gallons to 1.80 and for soybeans from 2.67 gallons to 1.50. The downward revision was due to using a different formula for estimated gallons of diesel fuel used which better reflects actual fuel requirements. As mentioned above, adjustment in costs are best based on actual fuel useage recorded by farmers.

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