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Machinery Cost Estimates in 2005

Periodically, personnel within the Department of Agricultural and Consumer Economics estimate the costs of completing field, forage, and harvesting operations on Illinois farms. Per hour costs of operating tractors also are available. Estimates were updated in April 2005 and are available in the management section of *farmdoc* (http://www.farmdoc.uiuc.edu/manage/machinebuilding_index.html).

Estimated costs for most operations are much higher in 2005 than in 2003, the last time machinery costs were estimated. Table 1 shows 2003 estimated costs, 2005 estimated costs, and percent increases from 2003 to 2005 for several field and harvest operations. For these operations, machinery costs are between 2 and 21% higher in 2005 than in 2003.

Table 1. Comparison of Machinery Cost Estimates in 2003 and 2005.

Operation	Year		Percent Increase
	2003	2005	
	\$ per acre		
Chisel plow	9.60	10.70	11%
Combine (corn)	25.80	31.10	21%
Combine (soybeans)	22.40	26.30	17%
Field cultivator	5.30	6.20	17%
Planter	8.10	8.30	2%
Tandem disk	6.80	8.20	21%

Two factors contributed to the increase. First, diesel fuel price was estimated at \$1.00 per gallon in 2003.

In 2005, a \$1.50 per gallon fuel price was used, a 50% increase over the 2003 price. For chisel plowing, the fuel price increase caused a \$.40 per acre increase in total machinery costs. For corn combining, the fuel price increase added \$3.00 to costs per acre.

Second, list prices on new equipment were considerably higher in 2005 than in 2003, particularly for higher-priced items. For example, the list price of the combine used to estimate 2005 costs was 40% higher than the 2003 list price. Machinery costs are calculated assuming that new equipment is purchased and held for 10 years (Seven years for combines). Higher equipment prices contributed to higher depreciation and interest costs.

Higher fuel and equipment prices caused higher machinery costs. Partially mitigating these factors was higher machinery use. For field operations, for example, equipment was picked to be representative of a 1,000 acre arm in 2005. This is a 200 acre increase over the 800 acre farm used in 2003. The 200 acre increase roughly equates to the increase in farm size observed for grain farms enrolled in Illinois Farm Business Management (FBFM). Machinery costs would have been slightly higher had an 800 acre farm been used.

Harvesting costs had dramatic increases in per acre costs. For example, combining corn had a \$31.10 estimated cost in 2005 compared to a \$25.80 per acre cost in 2003 (see Table 1). Unlike field operations, per acre combining costs are highly related to acres harvested, with higher number of acres leading to lower per acre costs. Efficient use of harvesting equipment will have large impacts on profits, with efficient and high use leading to higher profits, all else being equal. Given large increases in costs, farmers with smaller number of acres may find it difficult to economically justify the cost of owning a combine. Joint ownership and custom hiring of combines may be economical alternatives for farmers with smaller acreages.

Cost increases will reduce profits on Illinois farms in coming years. It's doubtful that fuel prices, equipment prices, or any other factor will reverse trends and contribute to machinery cost declines in the near future. As such, higher machinery costs likely are with us for the next several years. Therefore, machinery management will continue to be a large factor contributing to the profitability of farms.

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