Chapter 11: Energy Use in the Agricultural Sector

Overview

Energy is a significant component of agricultural production costs. Nationwide, rising energy prices—and increased prices for fertilizer and feed—have substantially affected agricultural producers.

Agriculture uses energy directly (as fuel or electricity) to operate machinery and equipment, to heat or cool buildings, and for lighting on the farm or indirectly in the fertilizers and chemicals produced off the farm.[1] In recent years (2000 to 2003), energy expenses accounted for nearly 15 percent of total agricultural production expenses; about 5.2 percent of these were direct expenses and 9.3 percent indirect. Not surprisingly, energy costs affect some agricultural activities more dramatically than others: crop agriculture's energy costs are about 23 percent of overall crop production expenses, whereas energy costs are only about 6 percent of livestock production expenses (though higher energy costs indirectly affect feed costs, which account for roughly 60 percent of total livestock production costs).[2]

As in other sectors, the agricultural sector has increased the efficiency with which it uses energy in recent decades: total energy usage in agriculture has fallen about 28 percent since the late 1970's. In 1999, agriculture was about 10 percent more efficient in terms of indirect energy usage and about 40 percent more efficient in terms of direct energy usage than in 1965.Although both direct and indirect energy consumption has been increasing in recent years, output has increased even more rapidly, indicating increasing growth in energy efficiency.

Over time, the type of energy used in the agricultural sector has also changed, with the direct use of natural gas and gasoline declining significantly and consumption of diesel fuel and electricity increasing. Aside from the indirect energy usage associated with fertilizer, the largest on-farm energy usage is associated with motors (with irrigation being the largest motor application), lighting, and onsite transportation.

As with any other business, sharp increases in input costs affect profitability. Farmers and ranchers will continue to make adjustments to reduce the negative impact of rising energy costs.

[1] Library of Congress, Congressional Research Service, 2004, Energy Use in Agriculture: Background and Issues, Abstract: https://www.policyarchive.org/handle/10207/171 (accessed December 19, 2008).
[2] Kasten et al., 2006, Energy Use in the Kansas Agricultural Sector, Report Submitted to the Kansas Energy Council, June 15, 2006: http://www.kec.kansas.gov/reports/FinalReport_EnergyInAg_6_15_06.pdf. Unless noted otherwise, background information in this section comes from this report.