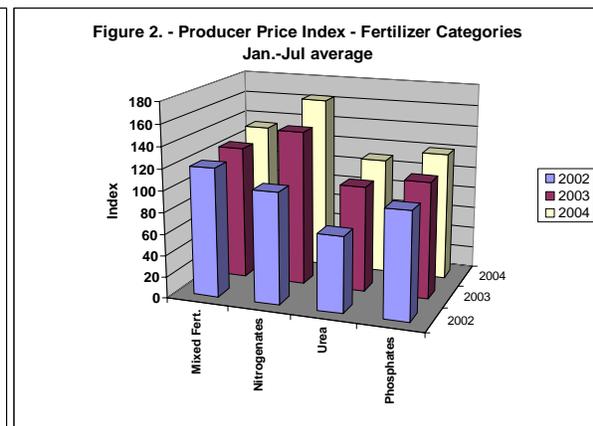
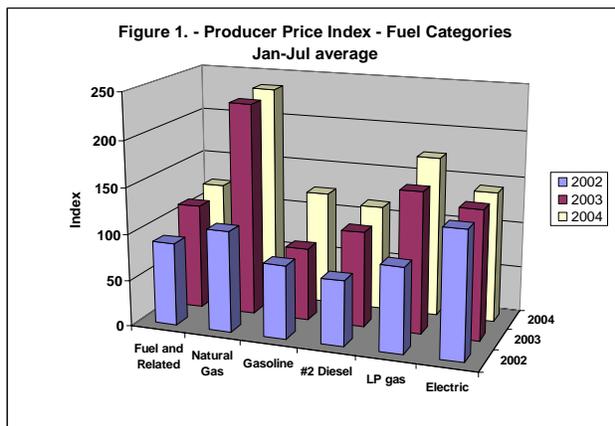


Fertilizer and Fuel Prices and Cost of Production
FAPRI - University of Missouri
September 2004
FAPRI-UMC #10-04

The near term outlook for fertilizer and diesel prices would tend to support modest increases in costs from last year in addition to the potential for added volatility in the market. The immediate impact on producers will also vary depending on contracting arrangements that were made last spring and those that may be made this fall/winter. Longer term impacts will hinge on supply of fertilizer, demand for gasoline and diesel, and fuel inventories. Early reports are supporting a slower growth rate in global oil demand as higher oil prices begin to impact world economic growth. However, with world oil surplus production capacity close to its lowest point over the past 30 years, there is an extremely limited cushion in the event of unexpected world oil market disruptions ¹.

Analyzing these potential impacts of fuel and fertilizer prices on the overall production expenses for grain and oilseed producers has been one of the focuses of recent economic model refinements in the FAPRI system. Fertilizer and fuel comprised approximately 11% of prices paid for production for all U.S. farmers, 40% to 50% of the operating costs for U.S. corn and wheat and 20% to 23% for soybeans over the past five years ². The impact of higher fuel prices can be two-fold, first directly impacting the cost of fuel and second by indirectly impacting the cost of fertilizer, in particular, nitrogen fertilizers.

The Bureau of Labor Statistics (BLS) provides monthly indices for macro-economic variables including the producer price for fuels and related products, including natural gas, gasoline, #2 diesel fuel, liquefied petroleum gas, and electric power. Figure 1 provides movement for these categories over the past three years. The largest one year increase in percentage terms are for gasoline up 19.7% from the first seven months of 2003 and liquefied petroleum (LP) gas up 14% from the same time period. The largest increases in percentage terms from the first seven months of 2002 are 116.2% for natural gas and 90.1% for LP gas.



¹ Source is September 8, 2004 Short-term Outlook by the Energy Information Administration.

² Based on prices paid by farmers' index developed by USDA/ERS and historical cost of production survey developed by USDA/NASS. Operating and variable costs do not incorporate hauling or drying costs.

In addition, BLS provides monthly indices for the producer price paid for fertilizer, including mixed fertilizers, nitrogenates, anhydrous ammonia, urea, and phosphates. Figure 2 provides movement for these categories since 2002. In looking at the first seven months of the year, the largest one and two year increases are for nitrogenates (13.2% and 57.3%) and urea (11.1% and 55.7%). Information for anhydrous ammonia is not available after June 2003.

The corresponding impact of current and projected fuel and fertilizer increases on prices paid by farmers and crop operating costs are presented in Tables 1. Table 1 represents percentage increases for prices paid by farmers for selected categories. The largest increase can be seen in nitrogen fertilizer with a two year increase from 2002 to 2004 of 46.6% with fuel prices increasing 39.2% over the same two-year period. Minimal impacts are also noticeable in other farm production categories including agricultural chemicals.

TABLE 1	2002 INDEX	2003 % CHANGE	2004 % CHANGE
All Production Items	119	4.2%	9%
All Fertilizer	108	14.8%	6.5%
Mixed Fertilizer	105	6.7%	3.1%
Nitrogen Fertilizer	112	25.9%	16.4%
Phosphate/Potash Fertilizer	107	1.9%	1%
Fuel & Lube	106	32.1%	5.4%

Current fertilizer prices throughout the state of Missouri, would indicate increases in dry and anhydrous nitrogen prices since Spring 2003 of 1 to 10 cents per pound, phosphate prices of 1 to 3 cents per pound, and potash prices of approximately 2 cents per pound. Current prices are holding steady to 1 cent higher than Spring 2004. Table 2 highlights the per acre costs associated with these increases depending on application rates.

Table 2 - Fertilizer Application Rates and Cost per Acre for Nitrogen (N), Phosphate (P), and Potash (K) - Fall 2004

	Corn 110-60-60*	Corn 190-115-115*	Soybeans 0-30-50*	Soybeans 0-46-80*	Wheat 110-20-0*	Wheat 110-40-20*
Nitrogen (N) - Anhydrous	\$22.00	\$38.00	\$0.00	\$0.00	\$22.00	\$22.00
Phosphate (P)	\$13.80	\$26.45	\$6.90	\$10.58	\$4.60	\$9.20
Potash (K)	\$10.20	\$2.55	\$8.50	\$13.60	\$0.00	\$3.40
Total Cost/Acre	\$46.00	\$67.00	\$15.40	\$24.18	\$26.60	\$34.60
<i>Avg. \$ Increase from Spring '03</i>	\$5.35	\$10.15	\$1.65	\$2.58	\$6.30	\$7.15

Note: * Represents Nitrogen (N) - Phosphate (P) - Potash (K) pounds applied per acre.
Does not include cost of application

Dry nitrogen prices are currently 16 cents per pound higher than anhydrous nitrogen. When used in place of anhydrous, dry nitrogen has the ability to further impact the per acre costs. In addition, decisions regarding application rates and adding a spring top dressing for wheat are also factors that will impact these cost figures. The Chicago Mercantile Exchange (CME) launched trading on its new fertilizer futures and options in June 2004. These futures prices for the week of September 6, 2004 would indicate expectations for steady prices for DAP and urea ammonium nitrate into Spring 2005.

Gasoline and diesel fuel prices are running slightly higher than 2003. AAA reports retail diesel prices approximately \$1.74 a gallon for the state for March 2004 with a 6 cent per gallon difference between Matthews and Springfield. This is 17 cents above the same prices reported in April 2004. According to the Energy Information Administration, retail diesel prices for the Midwest are running at \$1.84 for August 2004 compared with \$1.61 in March 2004 and \$1.48 in August 2003. Farm grade diesel is approximately 41.4 cents below retail diesel prices and is averaging \$1.40 to \$1.50 delivered. January through March U.S. city average diesel prices for 1998-2002 averaged \$1.35 per gallon or 39 cents below the current retail price for Missouri.

The per acre cost associated with diesel fuel for planting, spraying, and harvest is approximately \$7.44/acre for corn, \$4.76 per acre for soybeans, and \$4.07/acre for wheat at current farm diesel rates of \$1.50/gallon. A 1 cent increase in farm diesel prices could impact costs per acre by 5 cents for corn, 3.2 cents for soybeans, or 2.7 cents for wheat³. The per acre costs estimated do not take into account hauling or drying costs which can both be significantly impacted by swings in diesel and LP gas prices. Using information provided by University of Missouri Extension and current propane prices of approximately \$1.20 per gallon, it would cost approximately 24 cents per bushel for LP gas to dry corn from 26% initial moisture to 15% final moisture⁴.

Futures prices during the week of September 6 would currently indicate somewhat lower gas prices during the winter with increases in the spring with the opposite occurring for propane gas. Those within the industry suggest that low fuel stocks on the east coast will be affected by the ability to build the stock level. It is typical for refineries to shut down for maintenance during the fall and spring, which can also impact these stock levels. While China's economic growth and demand for food is something agricultural producers are keeping an eye on, China's demand for petroleum and oil will also have an impact on fuel prices in the U.S.

FAPRI will produce a preliminary baseline in November 2004 for the U.S. and International crop and livestock sectors. Please visit the FAPRI web-site at www.fapri.missouri.edu for the latest economic analysis or for details relating to the baseline and agricultural outlook produced annually by FAPRI.

³ University of Missouri Extension, Farm Management Guide Budgets used to calculate fertilizer application rates and machinery usage/fuel utilization. No hauling or drying costs were incorporated.

⁴ Assuming an automatic column batch dryer is used. Fuel cost/bu = (BTU's/bu * cost/gal of L.P.)/92,000 BTU's/gal. Additional energy costs associated with electricity for heating and cooling fans and augers estimated at less than 1 cent per bushel.