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**Fertilizer and Fuel Outlook for Spring 2005**  
**FAPRI-UMC Report #04-05**  
**April 2005**

The energy impact on U.S. agriculture is evident in spring prices for fertilizer and fuel, and in some areas, tighter supplies are slowing the pace of land preparation a bit for Missouri farmers. Cost of production indications from the FAPRI 2005 Baseline, completed in January 2005, suggested modest increases in fertilizer and fuel costs for corn, soybeans and wheat for 2005. These figures incorporated December 2004 macroeconomic projections, including energy projections, from Global Insight and the historical cost of production survey developed by the National Agricultural Statistics Service within USDA.

Price increases over the past few months would indicate that it is very likely actual prices for fertilizer and fuel in 2005 will exceed the modest increases from the January 2005 baseline. Current fertilizer prices throughout the state of Missouri compared to last spring, would indicate increases in ammonium nitrate and anhydrous ammonia nitrogen prices of 2.5 to 3 cents per pound, phosphate prices of 1 to 2 cents per pound, and potassium prices of approximately 5 to 6 cents per pound. Table 1 highlights the per acre costs associated with these increases depending on application rates. The application rates represent a low and high target for yields. Ammonium nitrate prices are currently 16 cents per pound higher than anhydrous ammonia. When used in place of anhydrous, ammonium nitrate has the ability to further impact the per acre costs.

Table 1. - Fertilizer and fuel costs per acre, Spring 2005

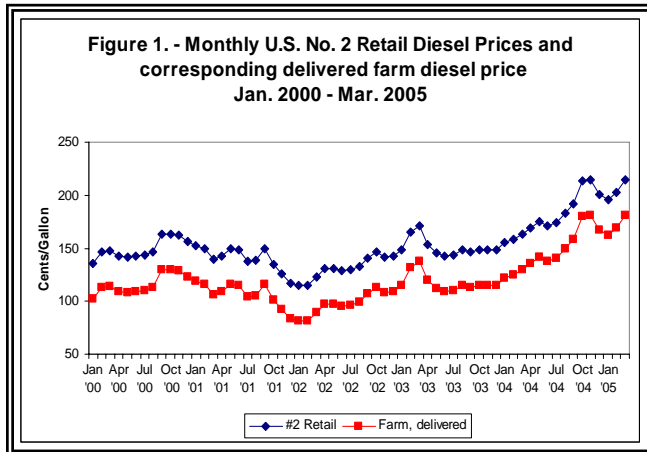
	Corn 110-60-60*	Corn 190-115-115*	Soybeans 0-30-50*	Soybeans 0-46-80*	Wheat 110-20-0*	Wheat 110-40-20*
Targeted yield - bu/acre	110	160	35	55	40	70
Nitrogen - anhydrous ammonia	\$24.75	\$42.75	\$0.00	\$0.00	\$24.75	\$24.75
Phosphate	\$13.80	\$26.45	\$6.90	\$10.58	\$4.60	\$9.20
Potash	\$12.90	\$24.73	\$10.75	\$17.20	\$0.00	\$4.30
<b>Fertilizer cost/acre</b>	<b>\$51.45</b>	<b>\$93.93</b>	<b>\$17.65</b>	<b>\$27.78</b>	<b>\$29.35</b>	<b>\$38.25</b>
<b>Fuel field cost/acre **</b>	<b>\$8.98</b>	<b>\$8.98</b>	<b>\$5.74</b>	<b>\$5.74</b>	<b>\$4.91</b>	<b>\$4.91</b>
<b>Total cost/acre</b>	<b>\$60.43</b>	<b>\$102.91</b>	<b>\$23.39</b>	<b>\$33.52</b>	<b>\$34.26</b>	<b>\$43.16</b>
<i>Avg. increase from spring '04</i>	<i>\$9.55</i>	<i>\$13.45</i>	<i>\$4.26</i>	<i>\$5.59</i>	<i>\$5.24</i>	<i>\$5.44</i>
<i>Avg. increase from spring '03</i>	<i>\$13.39</i>	<i>\$15.47</i>	<i>\$6.52</i>	<i>\$9.11</i>	<i>\$6.42</i>	<i>\$8.52</i>

Note: \*Represents nitrogen (N), phosphate (P<sub>2</sub>O<sub>5</sub>), and potassium (K<sub>2</sub>O) pounds applied per acre.

Fuel costs do not include costs of application, hauling, or drying.

Source: UMC Farm Budgets.

Gasoline and diesel fuel prices are substantially higher than last spring. According to the Energy Information Administration (EIA), retail diesel prices for the Midwest are running \$2.15 for March 2005 compared with \$1.61 for March 2004 and \$1.50 for March 2003. Farm grade diesel is approximately 41.4 cents below retail diesel prices and is averaging \$1.81 delivered. (Figure 1.) January through March U.S. city average diesel prices for 1998-2002 was \$1.35 per gallon or 80 cents below the current retail price for the Midwest.

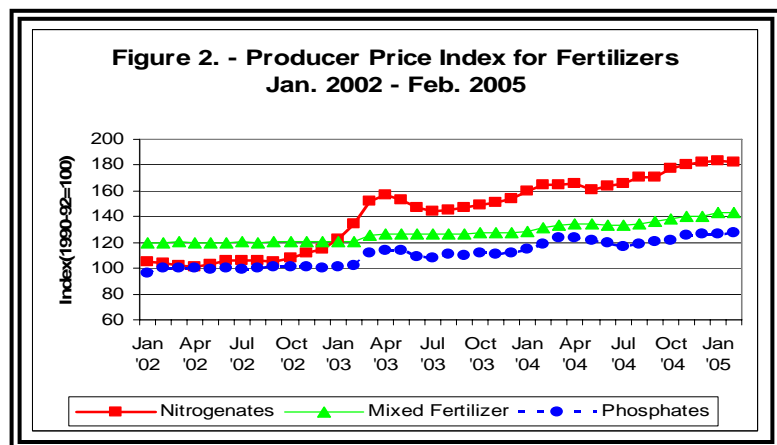


The per acre cost associated with diesel fuel for tillage, planting, spraying, and harvest is approximately \$8.98 per acre for corn, \$5.74 per acre for soybeans, and \$4.91 per acre for wheat at current farm diesel rates of \$1.81/gallon. A 1 cent increase in farm diesel prices could impact costs per acre by 57 cents for corn, 36 cents for soybeans, or 31 cents for wheat<sup>1</sup>.

Total costs per acre associated with fuel and fertilizer costs for 2005 could range from \$60.43 to \$102.91 per acre, or 15 to 19

percent above 2004, for corn. The range for soybeans is \$23.39 to \$33.52 per acre or 20 to 22 percent above 2004 with the range for wheat at \$34.26 to \$43.16 per acre or 14 to 18 percent above 2004. This would mean an additional 8 to 9 cents per bushel would be required on corn, 10 to 12 cents on soybeans, and 8 to 13 cents on wheat, to offset the increase in fuel and fertilizer costs from 2004, assuming the targeted yields in Table 1.

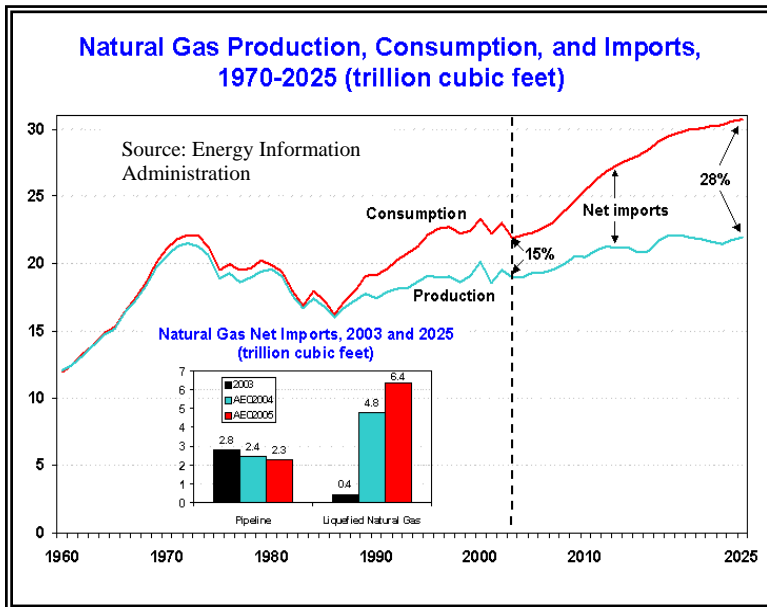
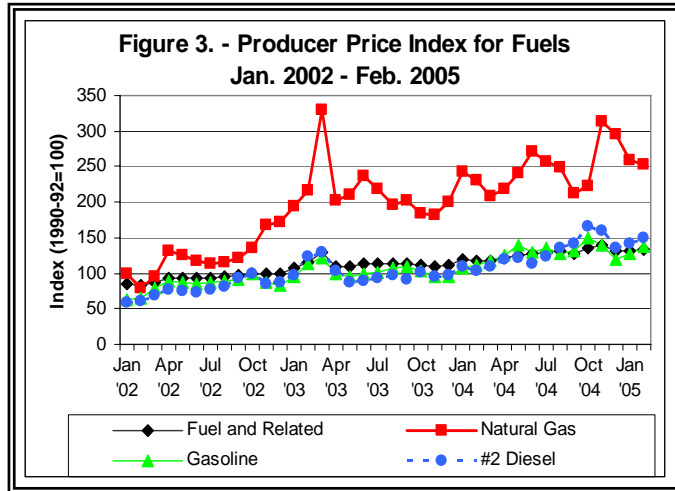
Monthly prices-paid indices reported by USDA/NASS and the producer price index (PPI) reported by the Bureau of Labor Statistics indicated increases in fertilizer price indices for the first quarter of 2005. The largest increase, 27 percent above first quarter 2003, was reported for #2 diesel with all fuel and related power index increasing more than 12 percent. The producer price index for nitrogenates is up 11.7 percent with mixed fertilizer increasing 7.7 percent. (Figure 2.)



<sup>1</sup> University of Missouri, Farm Management Guide Budgets were used to calculate fertilizer application rates and machinery usage/fuel utilization. No hauling or drying costs were incorporated.

The near term outlook for fertilizer and diesel prices would tend to support volatility and the potential for higher prices during 2005. Longer term impacts will hinge on supply of fertilizer, demand for gasoline and diesel, and fuel inventories.

Congressional testimony provided by The Fertilizer Institute (TFI) in September 2004 indicates that over 20 percent of domestic production capacity for nitrogen fertilizer has been lost since mid-2000 due to permanent plant closures. In addition, other facilities have been idled, sighting the volatility of U.S. natural gas prices as a cause. As the main energy driver for nitrogen fertilizer costs, natural gas has the ability to create volatility and the potential for higher nitrogen prices. Figure 3 provides monthly movements in the PPIs for fuel products. Since Fall 2002, the volatility and level of price increases for natural gas has far surpassed those of gasoline and diesel.



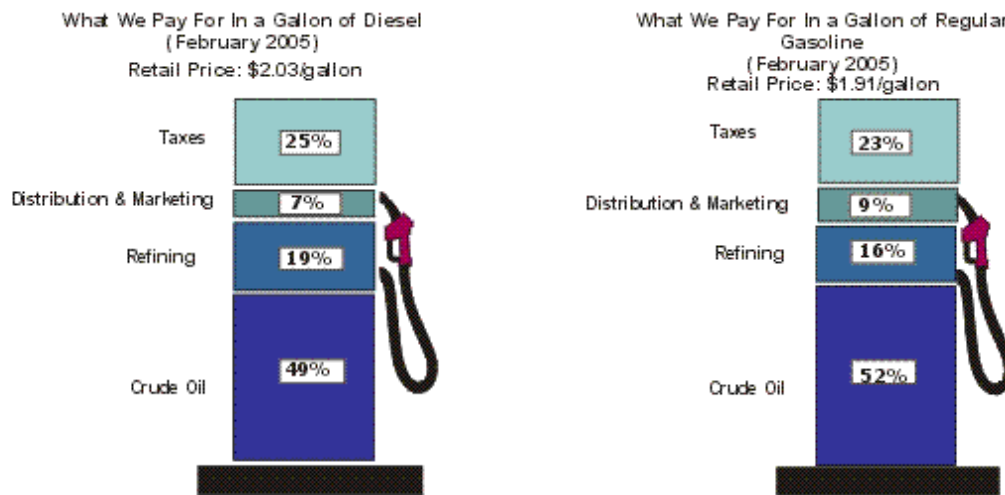
The decrease in domestic nitrogen plants has increased dependence on nitrogen fertilizer imports. The traditional source for nitrogen imports has been Canada and Mexico. An increasing percentage of nitrogen imports are coming from locations outside North America. The result is an increasing impact of international nitrogen supplies and ocean freight rates on U.S. nitrogen prices. Current projections from the EIA through 2025 continue to show an increased dependence on international supplies of natural gas with net imports expected to reach 28 percent of consumption by 2025 compared to approximately 15 percent currently.

According to TFI, the production of one ton of ammonia (the basic building block for all nitrogen fertilizers), requires an average of 33.5 million British Thermal Units (MMBtu) of natural gas and can account for over 80 percent of the costs of producing nitrogen fertilizer. If the EIA's projections for natural gas imports are correct, the U.S. will be looking at either more nitrogen imports or increased impacts of world natural gas prices on domestically produced nitrogen.

The EIA current outlook does not project any immediate relief from higher gasoline and diesel prices. The projection for April through September is a \$2.28 per gallon average for gasoline and \$2.24 for diesel. High world oil demand is not expected to drop in the near term, despite higher prices and a moderation in Chinese demand. The average West Texas Intermediate (WTI) crude oil price for the first quarter of 2005 was \$49.77 per barrel. This is \$14.50 per barrel higher than the same time period for 2004 and the WTI is expected to remain at the \$50 per barrel range throughout 2005 and 2006.

High world demand, which is expected to keep ahead of growth in OPEC supplies, diminished capacity in spare crude oil production, relatively high freight rates, and the continued insurgency in Iraq and political unrest in Nigeria and Venezuela are sighted as reasons for the projected strength in fuel prices.

The percentage breakout for the components making up the retail price for a gallon of U.S. regular gasoline and diesel are provided. The price of crude oil, while having a dramatic impact on retail prices, still accounts for less than 50 percent of the total costs associated with retail diesel prices and 52 percent of retail gas. The after-tax impacts on farm grade diesel would result in a larger impact of crude prices.



Source: Energy Information Administration

Contact Lori Wilcox at 573-882-9057 or visit FAPRI's website at [www.fapri.missouri.edu](http://www.fapri.missouri.edu) for additional information.