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## Katrina and Rita: Lingering Effects on Agriculture

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**T**he broad swath of devastation left by Hurricanes Katrina and Rita will command the nation's attention for months and possibly years to come. The impacts will be felt in many parts of the nation's economy, including agriculture. In the near term, Katrina packed a more powerful punch for agriculture. It shut down the nation's most important grain export terminals and swiftly drove up the price of fuel, a critical input in growing and transporting the nation's food supply. In the longer term, the hurricanes' impacts will cloud the outlook for both energy and transportation infrastructure, perhaps longer than some analysts now think.

What are the hurricanes' impacts on agriculture and how long might they last? While Rita's impacts remain uncertain, assessments of Katrina's near-term impacts are beginning to emerge. This article

reviews the near-term effects of Katrina and then explores how higher energy prices and new questions about export infrastructure could affect agriculture in the period ahead.

### Katrina's impact on Gulf Coast agriculture

After crossing the Florida peninsula, Hurricane Katrina strengthened and landed on the Gulf Coast as the third strongest hurricane in U.S. history. The hurricane decimated agriculture in the Gulf Coast region. USDA expects the production losses throughout the Gulf coast region to hit \$882 million in 2005 (Table 1). Those losses amount to about 15 percent of the net farm income in the five states affected—Florida, Louisiana, Mississippi, Alabama, and Tennessee, with continued losses into the future. While that represents a significant hit to that region, the effect on net farm income at the national level will be minimal.

The biggest losses in the Gulf region are in the crop sector. USDA estimates that roughly 80% of lost profits in the region will come from crop losses. The counties in the five states that were buffeted by tropical (39 to 73 mph) or hurricane (74 mph or greater) force winds are large producers of fruit, vegetable, nursery, sugarcane, rice, and cotton crops.

Most of the crop damage was to high-value crops—fruit, vegetable, and nursery. Losses in these three categories are expected to reach \$563 billion dollars, mostly in Florida and Mississippi. At the national level, lost sales from these three crop categories will be quite small, just a decline of 1.2 percent.

The biggest impact for the nation will be in the sugarcane industry. Hurricane damaged areas account for 83% of U.S. sugarcane production. Louisiana is expected to have the sharpest harvest reduction. Production losses may reach \$50 million, or roughly 5% of the U.S. gross cash receipts in sugarcane.

**Table 1 Estimated Crop, Livestock, and Fish Losses Resulting from Hurricane Katrina**

	Estimated Value of		Share of Gross Receipts	
	2005 Production	Loss (Mil.\$)	2004	2005
Total Commodity Production	882		0.4%	0.4%
<b>Crops</b>	705		0.6%	0.6%
Fruit, Vegetable, Nursery	563		1.2%	1.1%
Sugarcane*	50		5.0%	
Upland Cotton*	40		0.9%	
Rice	21		1.2%	1.3%
Soybeans	17		0.1%	0.1%
Corn	14		0.1%	0.1%
<b>Livestock</b>	177		0.1%	0.1%
Fish and Shellfish*	151		16.9%	
Broilers	15		0.1%	0.1%
Cattle	8		0.0%	0.0%
Dairy	3		0.0%	0.0%
Hogs	n/a			

\* Crop receipts for 2005 not available from USDA  
Data and calculations based on USDA statistics

Production losses may extend into 2006, since sugarcane fields yield crops over a multiyear period. The lost cane production, coupled with a smaller U.S. sugar beet crop, has also led to a potential sugar shortage. Responding to the shortage, the Secretary of Agriculture has raised the import quota on Mexican sugar.

Hurricane Katrina also produced losses in the livestock industry of the Gulf Coast region. In Louisiana, several thousand head of cattle perished, with many herds in flood-ravaged parishes still struggling to survive in the water. In Mississippi, thousands of poultry barns were destroyed, along with millions of birds. Many dairy operations lost cattle, and those without electricity or transportation access lost milk production or had to dump milk on the ground. In total, USDA puts 2005 production losses for dairy, cattle, and poultry industries in the region at \$26 million. In addition, many livestock facilities were severely damaged, and future losses may ultimately run much higher.

While livestock losses are significant, the fish and shellfish industry was hit the hardest. Louisiana is home to a large and diverse fresh and saltwater fishing industry and is the leading producer of oysters, shrimp, and crabs. Hurricane winds and wave surges destroyed several fishing villages and flooded delicate oyster beds with saltwater. The initial USDA assessment set 2005 production losses in Louisiana's fish and shellfish industry at \$151 million or 16.9% of the nation's aquaculture cash receipts. Coupled with Hurricane Rita and incorporating infrastructure losses, Louisiana state officials suggest a billion dollar impact, with the shrimp and oyster industries facing \$539 and \$150 million losses, respectively.

### Higher energy prices for producers

In addition to production losses, the food and agriculture sector will bear higher energy costs in the wake of Katrina and Rita. The immediate impact of higher energy costs will be a sharp jump in fall harvest costs. Over the long term, higher energy

prices will also boost farm input costs and consumer food prices.

Hurricane Katrina shut down nearly all of the Gulf's oil and natural gas production facilities, halted oil imports, and shut down many refineries. The loss of electricity to many pipelines also stopped the flow of gasoline out of several refineries.

While much of the Gulf production has been restarted, the loss of U.S. oil production and pipeline transportation led to sharply higher energy prices. In the days immediately following the hurricane, fuel prices spiked. Gasoline prices doubled and averaged above \$3.00 per gallon. Some Midwestern gas stations were rationing sales. Diesel and jet fuel jumped roughly 25%. By mid-September, gasoline, diesel, and jet fuel prices had returned to pre-Katrina levels, only to surge again when Rita entered the Gulf and shut down oil and natural gas production.

While petroleum-based fuel prices returned to pre-Katrina levels, natural gas prices have stayed high. Natural gas prices surged 28 percent and remained 9% above pre-Katrina levels before a Hurricane Rita price surge. Natural gas prices did not recede with oil prices, because more of the nation's natural gas supply is sourced domestically.

High energy prices will have substantial impacts on 2005 U.S. agricultural production costs. Even prior to Katrina, a steady increase in gasoline and diesel prices had led USDA to forecast a big increase in energy costs in agriculture. In a report released just prior to Katrina, USDA projected that fuel and oil production costs for 2005 would jump 25% and fertilizer costs would rise 10%. Combined, the higher prices for fuel and fertilizer will add an estimated \$3 billion to total agricultural production costs.

Worsening the situation, the prices paid by farmers for fuel jumped another 14% in September. USDA estimates that every 10% rise in fuel and energy costs means an \$85 million surge in agricultural production costs. In addition, fuel price surges around

harvest time cut deeply into farm profits. In the case of corn, for instance, fuel costs during harvest account for more than half of total annual fuel costs. While fuel demands during harvest are less in other crops, Katrina's impact on fuel prices will clearly erode farm profits in many parts of the nation. Many farm lenders are already reporting additional operating loan requests for the fall harvest.

Katrina's impact on fuel prices may linger well beyond harvest. Futures markets suggest little relief in fuel prices for next spring. If prices hold at current levels, farm production costs will be significantly higher in 2006. Natural gas prices at current levels would lead to a sharp boost in fertilizer costs next year, since natural gas is a prime input in anhydrous ammonia, a critical input for many crops. History could provide a useful guide. In 2000, natural gas prices jumped 125% from July to December. The following spring, fertilizer prices jumped 30%. This year, natural gas prices are up 96% since July, and early onset of weather or weather colder than normal could drive them still higher. The Food and Agricultural Policy Research Institute (FAPRI) at the University of Missouri indicates that fuel,

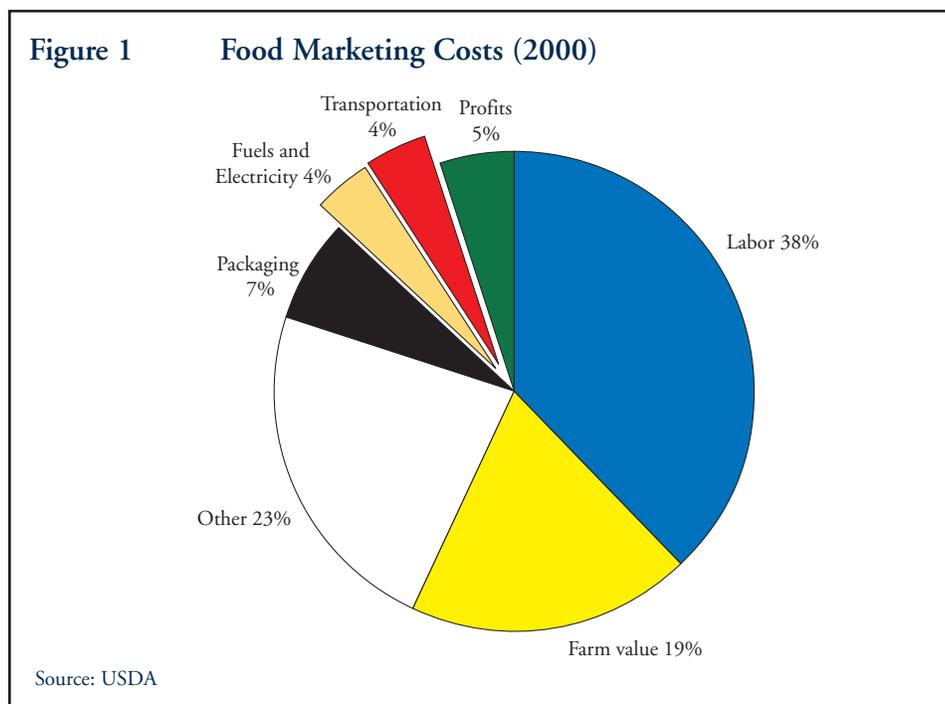
fuel-related costs, and fertilizer costs will post strong gains in 2006.

If higher energy prices continue, some change in U.S. crop production practices could be expected. With higher fertilizer prices, farmers will probably trim application rates. Many farmers may shift away from crops that require a lot of fertilizer (such as corn and cotton) to crops that require less (such as soybeans).

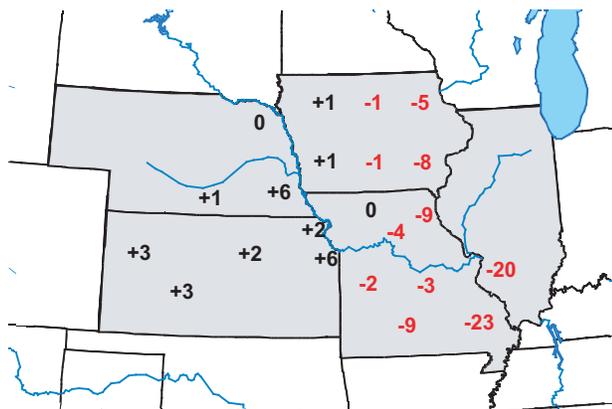
### Higher food process for consumers

High fuel prices will have several significant impacts on food prices for consumers heading into 2006. Higher energy costs boost transportation costs associated with the procurement of supplies and the shipment of final products. Higher energy prices also boost production costs at food processing facilities. According to USDA, transportation costs account for, 4% of the food marketing bill, with fuel and electricity costs at processing facilities accounting for another 4% (Figure 1).

Food prices were already heading higher in 2005, even before the hurricane season. In April, sharp increases in transportation costs and energy costs at processing facilities fueled a surge in consumer



**Map 1 Corn Price Changes at Midwest Elevators**  
(Cents per bushel from August 26, 2005 to September 2, 2005)



Calculations based on USDA, Agricultural Marketing Service data

food prices. After easing in the early part of the summer, transportation and energy costs in the past few months have risen sharply. These costs are again expected to translate into higher consumer food price inflation for the rest of the year as a portion of the higher transportation and energy costs are passed on to consumers. As result, consumer food price inflation forecasts from USDA have risen and prices are expected to rise between 2.5 and 3.5% in 2005, compared with 3.4% in 2004.

The rise in food price inflation may extend into 2006, depending on how food processors and consumers respond to higher transportation and energy prices. After crude oil prices broke the \$55 per barrel mark, consumer food prices surged 0.6% in April. With futures prices suggesting crude oil prices could remain above \$65 per barrel in 2006, the expected rise in consumer food prices could extend into next year. If food processors can trim energy costs by adjusting production, procurement, and distribution practices, the impact of higher energy prices on consumer food prices could ease in 2006.

### Transportation disruptions

Katrina dealt a big blow to the nation's grain export system, although the disruption was shorter than at first feared. Nevertheless, shipping rates on the Mississippi River remain much higher than before Katrina,

and many analysts wonder if the nation should put so many of its grain export "eggs" in one basket going forward. Katrina halted U.S. grain exports out of the Mississippi River for nearly two weeks. This posed a serious headache for U.S. agriculture, since about half of all grain exports flow out the Mississippi. Fully two-thirds of corn and soybeans—the nation's two most valuable export crops—pass through New Orleans. By September 6, export activity had resumed, though it took several weeks to clear the shipping channel, replace lost buoys, and make possible two-way shipping traffic.

It remains unclear when export activity will return to pre-Katrina levels. Electrical power has still not been restored at some export facilities. And getting workers back on the job remains a widespread problem shared by all other Gulf Coast businesses.

The shipping disruption has raised longer-term questions about the best way to export the nation's agricultural bounty. Barge shipping down the Mississippi has long been a highly cost-effective way of moving agricultural commodities to market, and the river flows right through some of the most productive corn and soybean growing regions in the nation. In 2004, for instance, the cost of shipping corn by barge from Minnesota to Gulf of Mexico export terminals was half the cost of rail.

With growing markets in Asia, however, Pacific terminals were already gaining wider use as gateways for U.S. agricultural exports. Pacific Northwest terminals handle about a quarter of U.S. grain exports, a share that

has risen steadily over the past decade. More recently, rail exports to Mexico have also been rising, though it remains a relatively small share of total exports.

The Mississippi will remain a vital pathway for agricultural exports, but Katrina may raise fresh questions about whether exports should be so heavily concentrated in one export path. In many respects, the question is similar to those posed by analysts who wonder whether so much of the nation's refining capacity should be located in places prone to hurricanes.

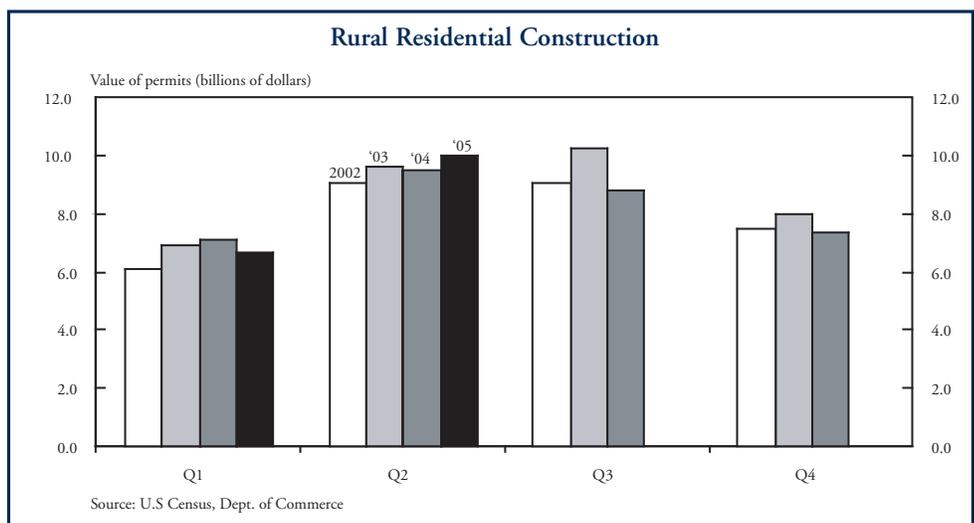
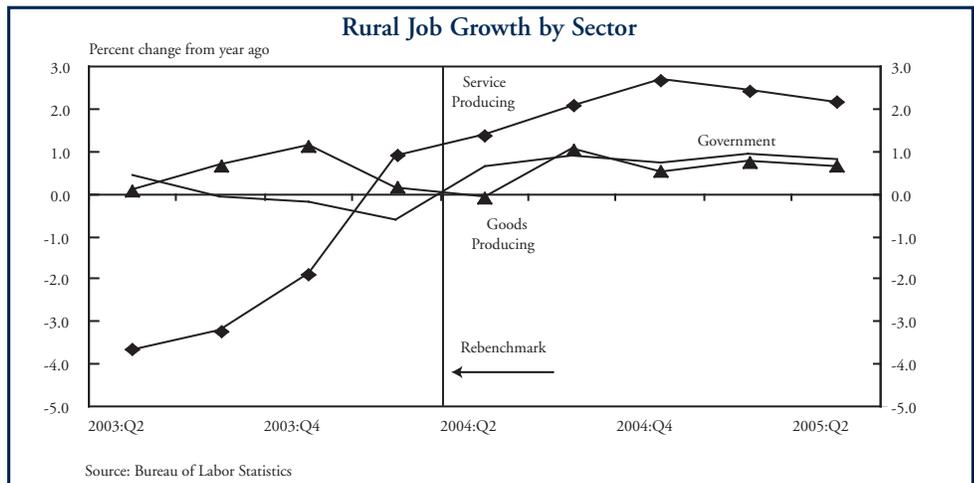
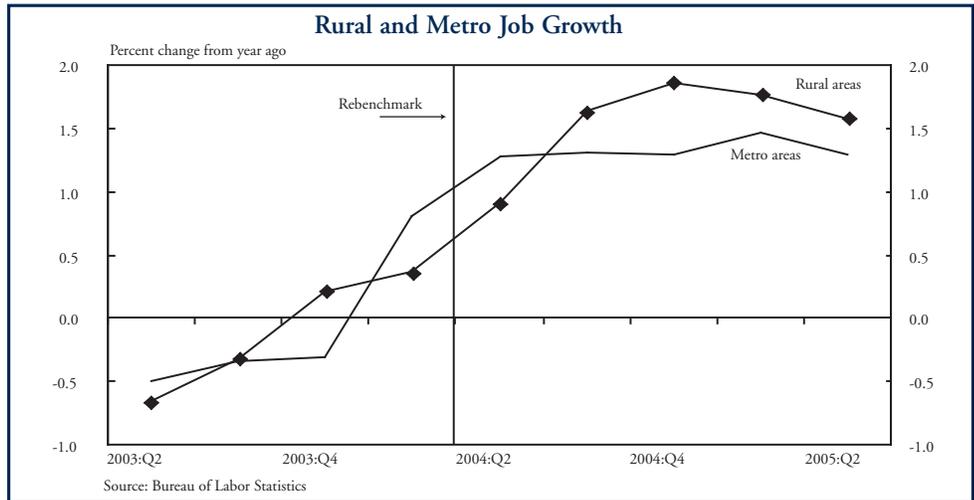
Katrina demonstrated a risk to agriculture from being so heavily dependent on Mississippi shipping. In the immediate wake of the hurricane, corn and soybean prices plummeted in places like southeast Missouri and western Illinois, prime growing regions that ship virtually all of their harvest down the river. Price drops of 20 to 25 cents a bushel at grain elevators were common (Map 1). By contrast, posted prices actually rose in western Iowa and eastern Nebraska, regions that ship their harvest via rail to the Pacific Northwest.

This difference in how local grain prices responded to Katrina may spark new dialogue on a more flexible grain export infrastructure. Agricultural firms, including farmer-owned cooperatives, in regions like Western Iowa and Nebraska have made deliberate investments in rail facilities that give them new shipping options. Yet the investment decisions surrounding agricultural transportation also involve some big public investments. The lock and dam system along the Mississippi River is very costly to maintain—a capital budget measured in the tens of billions of dollars has been proposed by some Mississippi River proponents. Katrina's impact—and the fear that future hurricanes might do the same—may cause some observers to weigh future public investments in the Mississippi transportation system with greater caution. In the end, greater attention to a more balanced, more flexible grain transportation system may be one of Katrina's most enduring impacts on agriculture.

## Summary of Economic Conditions

### Highlights from the second quarter

- The rural nonfarm economy continued to expand in the second quarter of 2005. Job growth moved slightly lower to a robust 1.6 percent on a year-over-year basis. Growth has slowed a bit in the last two quarters, though the rural economy continues to add new jobs at a healthy rate.
- Among major sectors, the service sector remained the best performing area of the rural labor market. In the second quarter, service growth was led by strength in the recreation and producer services sectors. On the goods-producing side, robust construction and mining activity helped to buoy sector's growth rate, despite manufacturing continuing to be a drag on job growth in the overall sector.
- Construction activity remained healthy in the second quarter with strong building permits and job gains. The average value of building permits moved up significantly from the previous quarter and came in just slightly ahead of the second quarter results of the previous three years. Total building permits (not pictured) moved higher in the second quarter, reaching a two year high.



Please refer questions to Sean Moore, research associate, at 816-881-4766 or sean.moore@kc.frb.org.

For more current analysis on the state of the rural farm and nonfarm economies, visit our website at [www.kansascityfed.org/ruralcenter](http://www.kansascityfed.org/ruralcenter)

Notes: Data for all tables are not seasonally adjusted. Job data were revised and reclassified in January 2004.

## Survey of Agricultural Credit Conditions

Federal Reserve Bank of Kansas City

June 30, 2005

Highlights from the second quarter survey\*

- District farmland values continued their upward momentum and posted strong gains in the second quarter of 2005. Ranchland values again posted the strongest gains at 11.9% over a year ago. Gains in ranchland values were healthy in all district states, but Kansas, Missouri, and Nebraska values were especially robust. District cropland values also remained strong. Nonirrigated cropland values increased 8.5% over a year ago, while irrigated land gained 6.9%. Strong demand, especially from nonfarm buyers, continues to drive the gains in many areas.
- District farm credit conditions were steady in the second quarter. The index of farm loan repayment rates edged lower, as fewer respondents reported an increase in repayment rates than in previous quarters. The slightly lower index of renewals and extensions was an improvement over the previous quarter with fewer respondents reporting an increase in renewal and extension requests. The district indices for farm income and capital spending slipped again in the second quarter. Respondents expressed concern about the impact that rising input prices and lower crop prices will have on farm finances.
- The district farm commodity price index fell slightly from the previous quarter and well below a year ago. High feeder cattle prices have buoyed the index. Soybean and sorghum prices were above the previous quarter, but all prices except feeder cattle were below the previous year.
- Interest rates on new farm loans moved up in the second quarter. At the end of the quarter, interest rates on new farm loans averaged 7.91% for operating loans, 7.88% for machinery and intermediate-term loans, and 7.41% for real estate loans. Since the end of June, interest rates in national money markets have moved higher.

\*Note: 282 banks responded to the second quarter Survey of Agricultural Credit Conditions in the Tenth Federal Reserve District—an area that includes Colorado, Kansas, Nebraska, Oklahoma, Wyoming, the northern half of New Mexico, and the western third of Missouri.

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