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## *Initial Impacts of the 2012 Drought*

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**A**merican farmers are battling one of the worst droughts in U.S. history. For many across the nation, the current situation evokes comparisons to the late 1980s, or even the 1950s, when drought slashed U.S. crop production and sent food prices soaring. At the same time, the lack of feed and forage is shrinking livestock profits and sparking herd liquidations. If historical patterns hold, U.S. consumers can expect to pay higher food prices over the next year.

This article discusses some of the frequently asked questions surrounding the drought and its initial economic impacts on agricultural producers, agribusinesses and U.S. food prices. Although the drought is far from over and its final toll on U.S. agriculture is still uncertain, the 2012 drought will undoubtedly be etched into farmers' memories for years to come.

### **HOW SEVERE IS THE 2012 DROUGHT?**

The 2012 drought is the most extensive drought in half a century (Map 1). Last year's extreme drought in the southern United States has now spread through most of the nation. By the end of July, roughly two-thirds of U.S. corn, soybean and livestock production were facing severe

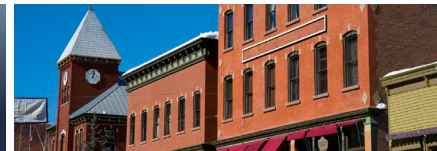
drought conditions.<sup>1</sup> With withering crops and shriveling pastures, the U.S. Department of Agriculture (USDA) has designated more than 1,300 counties as natural disaster areas. Drought conditions are expected to persist through the fall for most of the nation.

### **WHAT ARE THE IMPACTS ON CROP PRODUCTION?**

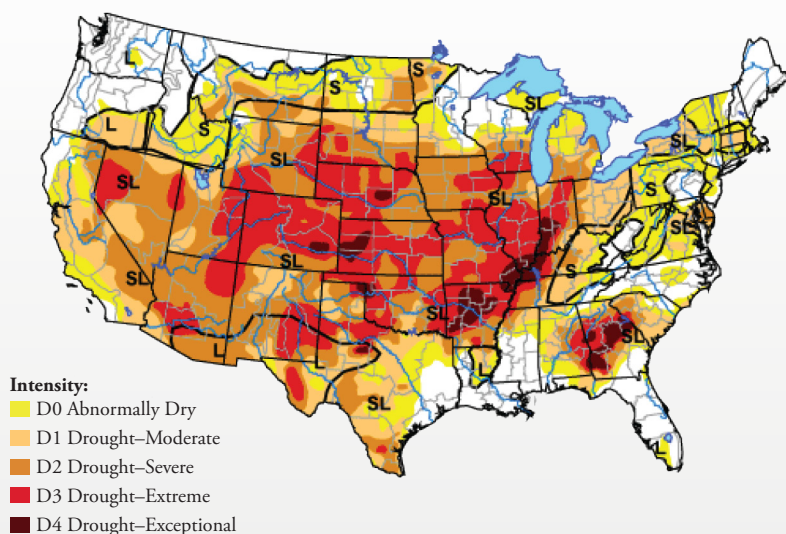
Severe drought has ruined one of the most promising harvests in U.S. history. During the spring, a bumper fall harvest was expected as farmers planted record acres of corn and soybeans with high yield expectations. By July, intensifying drought led USDA to cut its corn and soybean yield estimates by 12 percent and 8 percent, respectively, as crop production entered its most critical portions of the growing season. Since then, growing conditions have deteriorated further and market analysts expect further yield reductions and field abandonment in the coming weeks.

### **HOW HIGH HAVE CROP PRICES RISEN?**

U.S. crop prices surged as the prospect of a bumper crop evaporated. With grain inventories already at historical lows, declining corn production spurred a sharp rise in USDA's average annual price for the 2012 corn crop

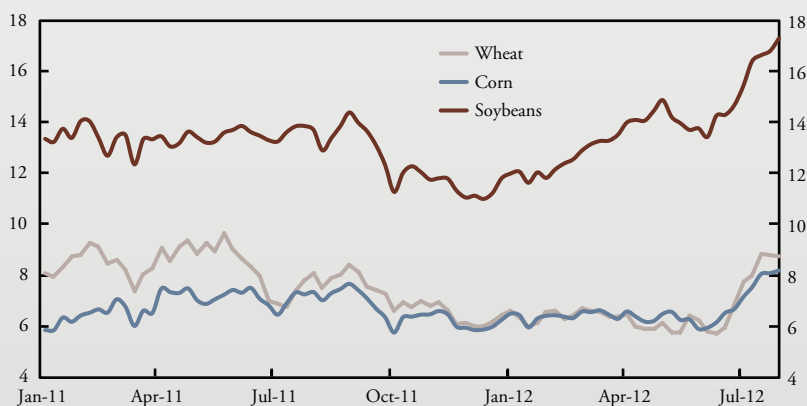


## Map 1 U.S. Drought Monitor, July 24, 2012



Source: National Drought Mitigation Center

## Chart 1 U.S. Crop Prices

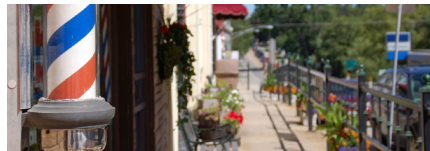


Source: Commodity Research Bureau

and 40 percent gains in cash corn prices since the beginning of June (Chart 1). At the same time, soybean prices rose almost 30 percent by the end of July, and wheat prices moved higher as global livestock producers used more wheat in feed rations. Although crop prices have yet to match the 50-percent price increases in 1988, further reductions in harvest expectations could send crop prices higher.

### WHAT ARE THE IMPLICATIONS FOR U.S. CROP REVENUE?

Surging crop prices could offset yield losses and raise U.S. gross crop revenues above initial 2012 estimates. By the end of July, U.S. crop prices had risen faster in relative terms than the declines in crop yields. Despite significant yield losses, USDA's price and yield projections suggest that U.S. corn revenues could rise 12 percent above June estimates and approach last year's record highs (Table 1). Similarly, total soybean revenues are now projected to increase 3 percent above June 2012 estimates. A similar revenue pattern emerged during the 1988 drought. Still, final revenue estimates for 2012 will hinge on future weather patterns, final production losses and price responses to harvest expectations.



**CAN CROP INSURANCE OFFSET INDIVIDUAL FARM REVENUE LOSSES?**

With shrinking yields, crop insurance payments will be a vital revenue source for farmers, potentially boosting gross revenues for some crop producers. Similar to 2011, the majority of farmers are expected to have purchased some form of crop insurance at varying coverage levels. With lower yields, Illinois farmers with crop-revenue insurance policies could expect insurance payments to reach more than \$300 per acre, which would offset revenue losses if crop production and prices follow 1988 trends.<sup>2</sup> Nevertheless, significant losses could emerge for farmers without crop insurance or those with over-hedged positions in derivative markets.

**WHAT ARE THE IMPACTS ON RANCHING OPERATIONS?**

Amid drought-stressed pastures and rising hay costs, ranching operations are heavily burdened by the drought. Estimates suggest that over 70 percent of all beef cows are in states with pasture conditions rated as poor to very poor. With two-thirds of U.S. hay production areas experiencing drought, alfalfa prices have jumped 15 percent since May. In an attempt to limit losses, ranchers weaned calves earlier than usual and increased the placement of feeder cattle into feedlots. Combined with the increased shipments of feeder cattle

**Table 1  
U.S. Corn and Soybean Price, Production and Revenue**

U.S. Corn Production 2012	Price (Dollars per bushel)	Yield (Bushels per acre)	Production (Billion bushels)	Revenue (Billion dollars)
2011	6.20	147.20	12.36	76.62
2012				
May est.	4.60	166.00	14.79	68.03
June est.	4.60	166.00	14.79	68.03
July est.	5.90	146.00	12.97	76.52

U.S. Soybean Production 2012	Price (Dollars per bushel)	Yield (Bushels per acre)	Production (Billion bushels)	Revenue (Billion dollars)
2011	12.4	41.5	3.06	37.89
2012				
May est.	13.0	43.9	3.21	41.67
June est.	13.0	43.9	3.21	41.67
July est.	14.0	40.5	3.05	42.70

Source: USDA

from Mexico, the influx of cattle into feedlots contributed to a 12-percent decline in feeder cattle prices since mid-June. According to the Livestock Marketing Information Center, cow-calf returns have dropped by more than \$100 per cow since May.

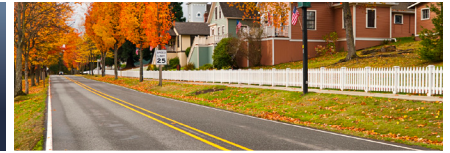
**WHAT ARE THE IMPLICATIONS FOR CATTLE FEEDING OPERATIONS?**

Despite lower feeder cattle prices, cattle feedlot enterprises face significant losses from high feed costs. Break-even prices for cattle feedlot operations surged in July as the price for feeds, such as soybean meal, corn gluten and dried distillers grains, jumped more than 25 percent since May (Chart 2). At the same time, fed cattle prices fell more than 15 percent

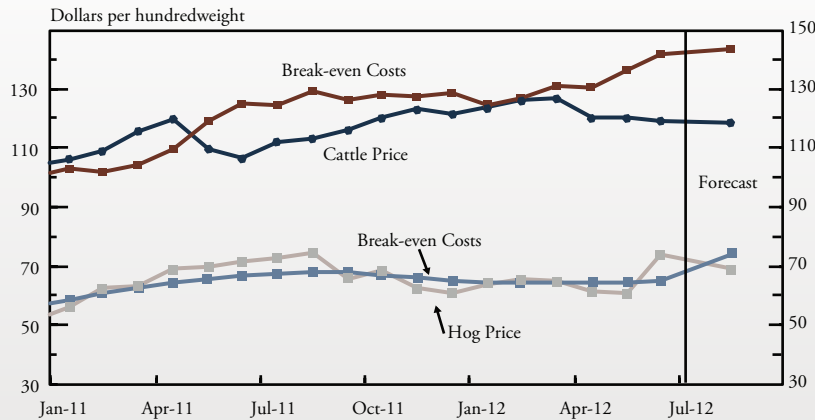
as seasonal price declines weighed on the market. Combined with escalating feed costs, USDA expects feedlot operations to lose more than \$200 per head this fall.<sup>3</sup>

**WHAT ARE THE EFFECTS ON U.S. DAIRY PRODUCTION?**

U.S. dairy operations have not been spared from the devastating effects of the drought. Heat stress has lowered U.S. milk production. After rising almost 4 percent above year-ago levels this spring, U.S. milk production per cow retreated to year-ago levels in June. Although smaller supplies have boosted milk prices on futures markets by 17 percent since May, feed prices have surged more quickly. As a result, dairy operations



## Chart 2 U.S. Livestock Prices and Break-even Costs



Sources: USDA and Iowa State University

continue to struggle with profitability and the increased liquidation of dairy herds has contributed to the decline in cattle prices.

### WHAT ARE THE IMPACTS ON HOG AND POULTRY ENTERPRISES?

Hog and poultry enterprises are also bracing against rising feed costs and falling profits. High feed prices are pressuring hog producers to sell hogs early at steadily decreasing slaughter weights. After spiking in June, hog profit margins are projected to fall below break-even levels this fall (Chart 2). For poultry producers, lower broiler prices and rising feed costs cut the price-to-feed costs ratio by 13 percent in June. Rising feed costs will limit any rebound in pork or poultry production.

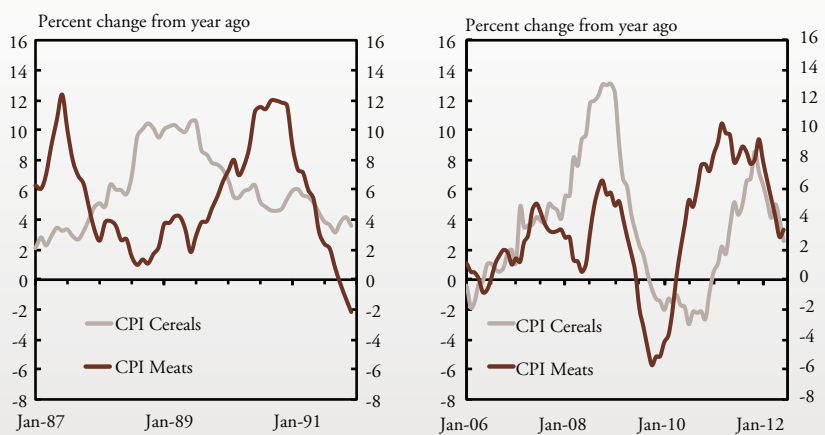
### HOW HIGH WILL FOOD PRICES RISE?

Similar to 1988, the current drought could contribute 4 percent more to annual retail food prices over the next year. Historically, under

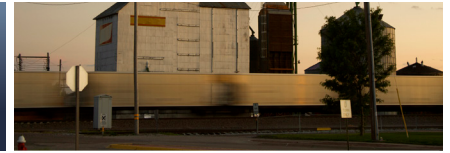
drought conditions, surging crop prices have led to an initial rise in food prices by boosting the price for cereals and bakery products, despite an initial decline in meat prices (Chart 3). Based on the relationships between the consumer price index (CPI) for food and farm-level prices for crop and livestock, July's crop price increases and declines in livestock prices could lead to a 4-percent increase in the CPI for food from September 2011 to September 2012.<sup>4</sup> In September 1988, the CPI for food rose 5.1 percent annually.

A second wave of higher food prices tends to emerge from rising meat prices. Historically, within a year of a drought, the initial influx of meat supplies disappears and smaller breeding herds produce fewer slaughter

## Chart 3 Consumer Price Inflation for Food



Source: Bureau of Labor Statistics



animals and meat supplies shrink. In 1989, U.S. livestock prices rose 8 percent, which contributed to a 10-percent increase in the CPI for meat in 1990 (Chart 3). Surging crop prices in 2008 contributed to similar meat price shifts within a year. Historical patterns could re-emerge if livestock prices rebound in 2013 with shrinking herd sizes.

### WHAT ARE THE IMPLICATIONS FOR OVERALL INFLATION?

Rising food prices could lead to moderate increases in overall inflation. According to the Bureau of Labor Statistics, the CPI for food contributes a 14-percent share to the overall CPI. Thus, a 4-percent rise in retail food price inflation would contribute 0.6 percent to overall inflation. Higher food prices have little relationship to core CPI (Chart 4).

### HOW DO RISING FOOD PRICES AFFECT CONSUMER SPENDING?

Rising food prices could alter consumer spending patterns, especially for poorer U.S. households. In response to higher food prices, U.S. consumers typically shift their food consumption to less-expensive foods. Consumers increase their purchases at food and grocery stores, where many purchase less-expensive products, such as hamburger instead of steak.

Consumers also tend to reduce their restaurant spending when food

prices rise. Some choose to dine at less-expensive restaurants instead of high-end restaurants. Others reduce restaurant spending by purchasing cheaper menu items or avoiding dessert.

Moreover, consumers appear to reduce spending on nonfood items as a result of higher food prices. Data show that a rise in retail food prices is correlated with slightly lower retail sales at nonfood stores. In addition, low-income households, who spend a disproportionately higher share of their income on food relative to wealthier households, tend to face the biggest burden of higher food prices.<sup>5</sup>

### HOW HAVE HIGHER CORN PRICES AFFECTED THE ETHANOL INDUSTRY?

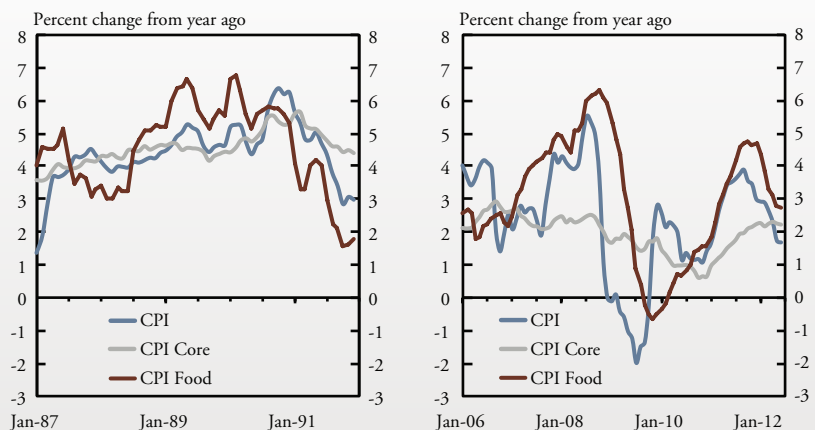
Ethanol plants are struggling to remain profitable in the face of

higher input costs stemming from the drought. Corn accounts for almost 90 percent of total variable costs at an average ethanol plant.<sup>6</sup> Steep corn price increases have strained profits at many ethanol plants, leading to production cutbacks, worker layoffs, and some plant shutdowns. By mid-July, U.S. ethanol production was 13 percent below first-quarter levels at 796,000 barrels per day (Chart 5).

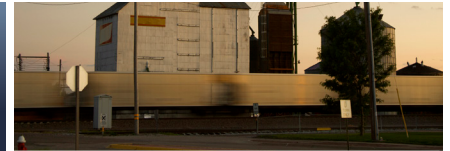
### WHAT ARE THE IMPLICATIONS FOR RENEWABLE ENERGY POLICY?

High corn prices and low grain inventories have also fueled speculation that the Environmental Protection Agency may issue a temporary waiver to the Renewable Fuel Standards (RFS) program. Currently, the RFS mandates the use

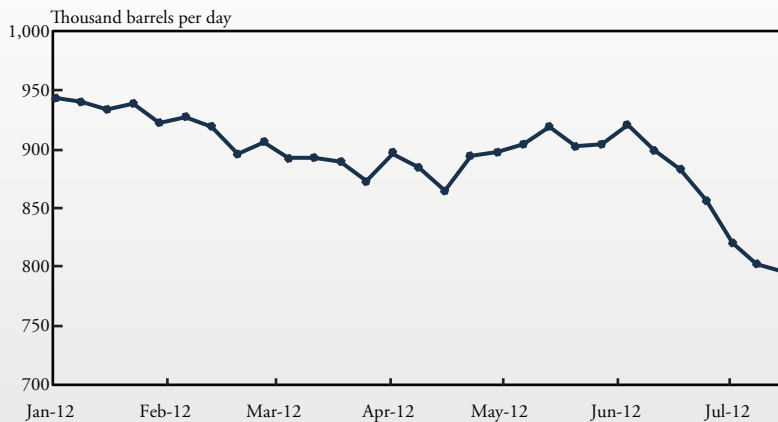
**Chart 4**  
**Consumer Price Inflation**



Source: Bureau of Labor Statistics



## Chart 5 U.S. Ethanol Production



Source: Energy Information Administration

of 13.2 billion gallons of ethanol in 2012. If the mandate is waived, fuel blenders' demand for ethanol could fall, which could translate into weaker corn demand and lower corn prices.

If the mandate remains in place, fuel blenders would be obligated to blend gasoline with ethanol, which could support domestic corn demand. However, a provision of the RFS program allows blenders to carry over 20 percent of their mandated blending level from one year to the next in the form of a credit referred to as a Renewable Identification Number (RIN). Blenders have the option of using RINs carried over from the previous year to satisfy their 2012 blending obligations and effectively reduce their purchases of ethanol and reduce short-term corn demand.

### WHAT ARE THE IMPACTS ON GRAIN HANDLING, PROCESSING AND TRANSPORTATION FIRMS?

Agribusinesses that specialize in grain handling, food processing and transportation could face leaner profits. With smaller crop production expected this fall, grain handling and storage capacity needs will shrink and reduce business activity. Although higher commodity costs are likely to be passed through to retail markets and consumers in varying degrees, grain processors have faced difficulties finding adequate supplies to keep their operations active.

In addition, low water levels on the Mississippi River could boost the cost of transporting U.S. crops. On some areas of the Mississippi River, water levels that are nearly 20

feet below normal have forced some barges to carry lighter loads, raising transportation costs. With roughly 60 percent of grain exports being shipped by barge on the Mississippi River, transportation costs could continue to rise. Although barge traffic has not been halted, water levels typically reach their lowest in the fall, which could place additional strains on agricultural transportation systems.

### WHAT ARE THE EFFECTS ON MEAT PACKERS?

Meat packer profits have also been squeezed as a result of the drought. Beef packer margins, while narrowly positive, have shrunk nearly 90 percent from a month ago partly due to extremely high temperatures reducing demand during an otherwise peak sales season. Boxed beef prices have fallen more than 10 percent since June. Pork demand has also been weak during the hot summer, although exports to China have remained relatively steady. Since mid-June, pork cutout values have fallen roughly 10 percent and packer margins have remained negative despite falling hog prices.

### HOW LONG WILL CROP PRICES REMAIN HIGH?

Most of the burden of the drought has come through higher crop prices. High crop price will persist as long as crop inventories remain historically low. Prior to the



drought, crop prices were sliding lower as bumper crops were expected to lift grain stocks-to-use ratios from record lows. Now, grain inventories are projected to remain near historical lows following the fall harvest and underpin record high prices.

Crop prices, however, could retreat over the next year if demand and supply conditions change. For example, surging prices are likely to cut grain demand. Livestock herd liquidations could curtail feed demand next year. Reduced ethanol production could trim corn demand. High crop prices could also slow export activity.

High prices could also spark a strong supply response from foreign crop producers. Rising crop prices in

recent years have spurred an increase in global production. The former Soviet Union and South American nations have expanded crop production by 48 million and 42 million acres, respectively, since 2003, compared to 8 million additional planted acres in the United States.<sup>7</sup> High prices could entice further expansions in global production that could lead to lower prices. The best cure for high prices might be high prices.

Moreover, the United States has experienced below-average yields for two years, and other regions of the world have also experienced drought. More favorable growing conditions in the United States and across the world could lead to stronger crop production and lower prices.

## CONCLUSION

Severe drought has had a profound impact on U.S. agriculture this summer. Crops have been devastated and prices have skyrocketed. For the livestock sector, the drought has been just as devastating with steep short-term losses projected to give way to a price rebound if livestock supplies shrink next year. Although the immediate challenges of the drought are expected to disappear over time with improved weather, there are concerns about whether some producers can endure these short-term losses. Regardless of how the transition from short-term despair to long-term hope proceeds, the drought of 2012 will be forever engraved into the annals of agricultural history.



## ENDNOTES

<sup>1</sup>USDA provides updates on the drought and its economic impacts at <http://www.ers.usda.gov/newsroom/us-drought-2012-farm-and-food-impacts.aspx>

<sup>2</sup>Gary Schnitkey, "Crop Insurance in 2012," *farmdocdaily*, July 3, 2012, [http://www.farmdocdaily.illinois.edu/2012/07/crop\\_insurance\\_in\\_2012.html](http://www.farmdocdaily.illinois.edu/2012/07/crop_insurance_in_2012.html)

<sup>3</sup>Rachel Johnson, "Livestock, Dairy, and Poultry Outlook: July 2012:" Economic Research Service, USDA, <http://www.ers.usda.gov/publications/ldpm-livestock,-dairy,-and-poultry-outlook/ldpm-217.aspx>

<sup>4</sup>Estimates regarding the impact of crop and livestock prices on the CPI for food were obtained by regressing monthly percent changes in CPI for food on lagged values of monthly percent changes in crop and livestock price indices obtained from the National Agricultural Statistics Service. These monthly changes were then annualized. Correlations suggest that the relationship between the CPI for food and crop and livestock prices tend to emerge within three months.

<sup>5</sup>Jason Henderson, "Will U.S. Food Prices Follow Global Trends?" *The Main Street Economist*: 2011. [http://www.kansascityfed.org/publicat/mse/MSE\\_0311.pdf](http://www.kansascityfed.org/publicat/mse/MSE_0311.pdf)

<sup>6</sup>Don Hofstrand, Ag Decision Maker, D1-10 Ethanol Profitability, July 6, 2012. <http://www.extension.iastate.edu/agdm>

<sup>7</sup>William Hudson, "What Lies Beyond the Horizon for Farm Income?" July 16, 2012. Presented at the 2012 Agricultural Symposium "Is This Farm Boom Different" at the Federal Reserve Bank of Kansas City. <http://www.kansascityfed.org/research/regionaleconomy/agriculture.cfm>

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