

Heat in the Heartland

IMPACTS OF THE 2012 DROUGHT





Jim McMillin's soybean leaves make a lush green blanket across a field near the Missouri River in Sibley, Mo. Remnants of Hurricane Issac came through the area at the end of August, dumping 3 to 6 inches of rain, and about two inches of rain fell a week later.

Though he tries to remain optimistic, he knows the rain may have no effect after the heavy toll the drought took on his crops.

"It's too late for corn, but we'll just have to wait and see about the beans."

The soil underneath the green leaves had been hard, dusty and cracked for more than two months after receiving 0 to 2/10 of an inch of rainfall from the end of June through August.

"The rain usually follows the river and it didn't even do that this year," he said.

McMillin planted corn the week of April 10 and got less than a 50-percent yield in August. He planted soybeans in May, worrying about the possibility of a late frost.

"I'm a little more conservative than other guys, but even back then we had a small window to get everything planted because we battled with moisture levels in the ground."

Four months later, it's the second week of

September and McMillin has another small window of opportunity to harvest soybeans. Prices are good right now, and he hopes there are enough viable beans on the stocks to yield a decent profit.

"Green soybean plants may not be a good sign, even though the plants appear to be thriving, compared to the brown and dead corn stalks in adjoining fields," said Bill Wiebold, a University of Missouri Extension soybean specialist.

A soybean plant needs a steady flow of water moving up the plant's system. The lack of moisture caused soybeans to go into survival mode.

Although the green leaves make the plant appear to have adequate moisture for reproduction, Wiebold said, "More likely, the green results from high nitrogen levels in leaves that have not converted into protein stored in seed pods."

As he walks through the field inspecting different soybean plants, McMillin says it's going to be a random harvest. Some stalks have three or four pods while others have a dozen, sometimes twice that amount.

"A good plant could produce up to 40 to 80 pods, but I don't think we'll get that this



PHOTO BY BOB GREENSPAN

JIM MCMILLIN, A FARMER IN SIBLEY, MO., looks at the lack of pods on a soybean plant that was affected by the recent drought.

year,” he said.

And he’s still not sure whether the beans inside those pods are viable.

Drought strains Tenth District

“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,” said Jason Henderson, a Kansas City Fed economist and Omaha Branch executive.

By Aug. 2, nearly 220 counties in a dozen drought-stricken states were added to the U.S. Department of Agriculture’s list of natural disaster areas. More than 500 were added to the list halfway through the month. By September, the USDA Farm Service Agency listed more than 1,900 counties as drought disaster designations.

Tenth Federal Reserve District states recorded some of the highest consecutive

temperatures in 50 years. As a nation, July was the hottest month since the government began keeping temperature records in 1895. Some areas across the Tenth District averaged four to six degrees higher than normal for 30 consecutive days without rain, according to the National Weather Service.

Climatologists at the National Oceanic and Atmospheric Administration reported that by the end of July, about 63 percent of the nation was experiencing drought conditions, which contributed to the high temperatures. In the Tenth District, more than 90 percent of the area experienced drought or severe drought conditions.

This year was worse than the 1988 drought, during which 45 percent of the nation experienced drought or severe-drought conditions as defined by the Palmer Drought Severity Index. Officials are now saying the 2012 drought is the worst drought in 56 years.

This also is the worst planting season McMillin, 62, can remember. For McMillin, the 1,000 acres of corn and soybean he's planted could yield less than 50 percent.

"It's definitely hurting a lot of people," he said. "I'm very happy to have Federal crop insurance."

Saving grace for producers

With shrinking yields, crop insurance will help some crop producers make up losses by boosting gross revenues, Henderson said.

"Similar to 2011, the majority of farmers are expected to have purchased some form of crop insurance at varying coverage levels."

With lower yields, for example, Illinois farmers with crop-revenue insurance policies could expect payments of \$300 an acre, if crop production follows the trend of the 1988 drought, Henderson said.

Couple this with the increase in food prices and land values, some farmers may be more financially stable than the previous year.

In the Tenth District, which covers Colorado, Kansas, western Missouri, northern New Mexico, Nebraska, Oklahoma and Wyoming, land values rose by less than 3 percent in the second quarter, which is still higher than a year ago. Irrigated cropland is up 26 percent, nonirrigated is up 28 percent and ranchland, 16 percent.

Soybean prices peaked above \$17 a bushel and corn prices \$8 before falling seasonally with the harvest.

In a recent Kansas City Fed survey, bankers in the District said they think farmers are in good financial shape despite the drought. Significant losses, however, could occur for uninsured farmers and people over-hedged in the derivative markets. And losses are on the horizon for ranchers, dairy farmers, and the hog and poultry industries.

Trying to break even

Ranchers felt the pinch of the drought through sun-washed pastures and increasing hay costs.

"Estimates suggest that over 70 percent of all beef cows are in states with pasture conditions rated as poor to very poor," Henderson said.

Alfalfa prices increased 10 percent since the beginning of the year and ranchers weaned calves earlier than usual and increased placement of feeder cattle into feedlots. The Livestock Marketing Information Center reported that cow-calf returns dropped by more than \$100 per cow since May.

Henderson says cattle feedlot enterprises face significant losses from high feed costs, and breakeven prices for cattle feedlot operations surged in July as the price for feeds, such as soybean meal, corn gluten and dried distillers grains, increased more than 25 percent between May and July. This was in conjunction with fed cattle prices falling more than 15 percent. The USDA expects feedlot operations to lose more than \$200 per head this fall.

The heat also affected milk production.

"Although smaller supplies have boosted milk prices on futures markets by 17 percent between May and July, and the prices continue to rise, feed prices have surged more quickly," Henderson said.

Pork and poultry producers will take a loss as well. Rising feed costs pushed hog producers to sell hogs early and lower broiler prices and feed costs cut the price-to-feed costs ratio for poultry producers by 13 percent in June. The industries will take another hit this fall in feed costs, making it difficult to rebound.

Grain handlers, food processors and ag transportation also face uncertain times. Smaller crop production means less supply in the midst of higher demand.

"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," Henderson said.

The aflatoxin effect

In the Nebraska drought of 2002, the state corn crop had a high amount of aflatoxin,

Mark Fulmer, of Lincoln Inspection Service, told the *Lincoln Journal Star*.

“Since then, there’s been basically nothing,” Fulmer said. “This year is a huge concern with the amount of aflatoxin that could be in this crop.”

Aflatoxins are potent chemical compounds produced by mold fungi that cause a variety of human and animal health problems.

The Regional Office for the Risk Management Agency of the USDA in Topeka, Kan., reported that trace amounts of aflatoxin have been found in corn in Colorado, Kansas, Missouri and Nebraska.

Hot, dry conditions allow the fungus that produces aflatoxins to survive in crop residue and soil, and produce abundant spores throughout the growing season.

Most commonly, aflatoxin reduces the feed efficiency and reproductivity of livestock, affecting the animal’s immune system, leading to the occurrence of more infectious diseases. The most abundant aflatoxin, aflatoxin B1, is a carcinogen. This raises human health concerns because aflatoxin can appear in the milk of dairy cows fed contaminated corn.

And the effects of aflatoxin are random—it can infect an entire crop or a small portion of the yield. One truckload of McMillin’s corn tested positive for aflatoxin, but the remainder of his corn was toxin-free.

A major outbreak could halt feed production and send prices soaring for untainted corn that’s already in short supply. The USDA, however, is not sounding the alarm, saying the trace amounts found are not an indicator of a large-scale problem.

A majority of the corn produced in the Corn Belt goes toward feed and other byproducts, but given the drought’s effects on all crop production, consumers will feel the results at the cash register.

Increasing food prices

Economists estimate that the drought could increase food prices between 4 to 6 percent, depending on the final outcome of the



JIM MCMILLIN KEEPS A COPY OF A NEWSPAPER that published a story about the affects of aflatoxin, a potent compound produced by mold fungi that can be found in drought-stricken corn.

harvest season.

Historically, Henderson says, drought conditions and surging crop prices have led to an initial increase in food prices by boosting the price for cereals and bakery products, despite an initial decline in meat prices.

A result of the 1988 drought, the consumer price index for food increased 5.1 percent annually in September that year. Although meat prices initially declined, prices increased over the next year due to short supply and smaller breeding herds.

In 1989, U.S. livestock prices increased 8 percent, which contributed to a 10-percent increase in the consumer price index for meat in 1990. Henderson says historical patterns could re-emerge from this drought if livestock prices rebound in 2013 and herd sizes shrink.

A moderate increase in food prices could contribute to overall inflation; however, the impact would be small. The consumer price index for food contributes a 14-percent share to United States’ overall consumer price index. A 4-percent increase in retail food price inflation would contribute 0.6 percent to



overall inflation, Henderson said.

Increasing food prices will affect the way people spend more than anything, especially for poorer U.S. households, who spend a majority of their income on food compared with wealthier households.

Historically, as food prices increase, families spend less on food. When eating out, people will choose less expensive restaurants or menu items, and cut out any extras, like dessert, or stop eating out all together. Data also shows that families tend to spend less on nonfood products when retail food prices increase.

And some consumers could see the drought's effect at the pump as ethanol plants are struggling to remain profitable. Corn accounts for 90 percent of total variable costs at an average ethanol plant, said Nathan Kauffman, an economist at the Omaha Branch.

An increase in corn prices has led to cutbacks in production—ethanol production dropped 13 percent below first-quarter levels in July—causing layoffs and some plant closures.

Lasting effects

The biggest effect of the 2012 drought is higher crop prices, which will remain high as long as inventories remain low.

Higher prices could dissipate over the next

year if the demand for grain and corn decrease through the liquidation of herds and a cutback in ethanol production, as well as less retail food demand.

This is the second year the United States has experienced below-average yields, and climatologists expect drier conditions will continue, although they are uncertain whether it will lead to drought-like conditions. And it's uncertain whether some producers can endure these short-term losses.

What U.S. farmers may see is a shift in global production as countries ramp-up the number of planting acres. Russia and South America have expanded crop production by 48 million and 42 million acres, respectively, since 2003, which could drive down high prices.

But as the old adage goes, it all depends on the weather.

“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,” Henderson said.



KEVIN WRIGHT, EDITOR

FURTHER RESOURCES

“INITIAL IMPACTS OF THE 2012 DROUGHT”

by Jason Henderson and Nathan Kauffman
KansasCityFed.org/publications/research/mse/index.cfm

COMMENTS/QUESTIONS are welcome and should be sent to teneditors@kc.frb.org.