



Estimated Impacts to Louisiana Agriculture From Persistent and Excessive Rainfall and Associated Flooding August 2016¹

LSU AgCenter
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Introduction

Starting on August 11, 2016, rainfall totals of well in excess of 30 inches fell within a 48 hour period throughout much of South Louisiana. This historic rainfall event and resulting widespread flooding created significant impacts to the agricultural industry. While the damage associated with the historic flooding in South Louisiana has garnered much of the attention, persistent rainfall throughout the month of August 2016 and into September 2016 also created significant challenges to agricultural production throughout Louisiana. Saturated field conditions have delayed critical field activities, delayed harvest, and significantly affected normal crop production. Impacts experienced have been production losses, quality losses, and increased production costs.

Unfortunately, this latest weather event is the second to impact the state in 2016. In March 2016, a similar rainfall event caused widespread flooding throughout much of North Louisiana. Impacts for this event included significant impacts to the livestock sector, infrastructure losses, and increased production costs. The LSU AgCenter estimated the economic impact from this earlier weather event at roughly \$90 million.

Procedure

A detailed damage survey questionnaire was developed by personnel with the LSU AgCenter's Department of Agricultural Economics and Agribusiness in conjunction with LSU AgCenter commodity specialists. The questionnaire was designed to collect information on acres with expected yield loss, acres with expected quality damage, acres with expected increased production costs, expected yield loss percentages, and the amount or number of infrastructure (buildings, machinery, fencing, etc) impacted. The questionnaire was sent to LSU AgCenter Agricultural and Natural Resource agents located in each parish of the state. Agents were instructed to complete the survey and return it to the Department of Agricultural Economics and Agribusiness. Given the nature of agricultural production, the extent and level of damage is highly influenced by weather conditions following the disaster event. A return to optimal weather conditions can help to mitigate some of the potential damage. Unfortunately, in many cases, persistent rains have continued. This has furthered delayed harvest and other production activities and increased the potential for additional damage to materialize. Given this uncertainty, agents were asked to complete the questionnaire with their best estimates given current crop conditions.

The questionnaire was designed to elicit information in four broad categories. The first category was to obtain information to develop an estimate of the impact to gross revenue from production losses. Data from the questionnaire provided information on the number of acres with production losses, estimated percent yield losses, and the number of livestock deaths. This information was combined with a variety of published data to develop an economic impact estimate. Data from the LSU AgCenter's Agricultural Summary publication was used to establish expected production or yield levels under normal weather conditions. Where available, data from USDA's World Agricultural Supply and Demand Estimates report was used to establish expected commodity values or prices. In cases in which USDA data was

¹ Report prepared by Kurt M. Guidry, Professor and Extension Economist, LSU AgCenter. The information used in developing these estimates was obtained through a collaborative effort of LSU AgCenter State Commodity Specialists and parish level Agricultural and Natural Resource Agents.

not available, expected commodity prices were set at Farm Service Agency's 2016 Planning Prices. Given a lack of reliable price and yield data for many fruit and vegetable crops, the economic impact of production losses for these commodities were established using per acre gross farm value data from the LSU AgCenter's Agricultural Summary publication data. Finally, the impact of livestock deaths was estimated using current price data from the Agricultural Marketing Service. A weighted average price that represented a replacement value was developed for each species of livestock based on the perceived breakdown of the number of market animals and breeding animals loss.

The second questionnaire category was to obtain information to develop an estimate of the impact to gross revenue from quality damages and losses. Data from the questionnaire provided information on the number of acres with quality damage. This information was combined with grade and quality discount information obtained through industry personnel. Personnel from elevators, mills, and the Louisiana Farm Bureau's Commodity Marketing division were contacted to gauge the level of price discounts producers were experiencing due to quality damage. This information was combined with available quality and grade discount tables to establish an average price reduction expected for each commodity for quality and grade impacts.

The third questionnaire category was to obtain information to develop an estimate of the impact of increased production costs. Data from the questionnaire provided information on the number of crop acres with expected increased production costs, the number of crop acres with expected increased drying costs, the number of livestock relocated, the number grazing acres impacted, and the number of days of reduced grazing. The number of crop acres impacted was combined with LSU AgCenter Enterprise Budget data to estimate increased production costs for crop commodities. Increased production costs analyzed were limited to increased harvest costs, increased drying costs, increased land tillage and preparation costs, and increased planting (re-planting) costs. The number of livestock that had to be relocated was combined with published custom rate survey data on custom livestock hauling costs to estimate the increased transportation costs experienced by livestock producers. The number of grazing acres impacted and the number of days of reduced grazing were used in combination with a hay equivalent methodology to estimate increased feeding costs associated with reduced forage availability.

The fourth and final questionnaire category attempted to obtain information to develop an estimate of the impact of infrastructure damage and losses. Data from the questionnaire provided information on the number or amount of agricultural related infrastructure impacted. Data on replacement costs for tractors and implements from the LSU AgCenter Enterprise Budgets was used to estimate an average value for tractors and an average value for agricultural implements. Data on the market value of agricultural land and buildings from the USDA Census of Agriculture was used to estimate an average value for farm buildings. Published custom survey studies were used to estimate the average replacement costs per mile of fencing. Given the data sources used, the estimate of the impact of infrastructure damage is essentially an estimated replacement value or cost rather than simply a repair cost.

Results

Table 1 provides the total estimated impact to the Louisiana agricultural sector from the persistent and excessive rains and flooding that occurred during August 2016. The total impact is estimated at roughly \$277 million. As mentioned earlier, this impact is in addition to the estimated \$90 million impact the state experienced from the excessive rains and flooding during March and April. Collectively, the Louisiana agricultural sector has experienced an estimated \$367 million impact from adverse weather conditions in 2016.

Of the \$277 million total estimated economic impact, roughly \$213 million is associated with expected reductions in gross farm receipts due to either yield losses or quality damage. Another \$25 million is associated with expected increased production costs. The remaining \$38 million is associated with the expected replacement costs of impacted agricultural infrastructure.

Table 1. Estimated Economic Impact to Louisiana Agriculture From Excessive Rains and Flooding in August 2016.

| Commodity | Estimated Reduction In Farm Receipts | Estimated Increases In Farm Production Costs | Total Estimated Impact |
|--|--------------------------------------|--|------------------------|
| Rice | \$60,522,312 | \$8,400,830 | \$68,923,142 |
| Soybeans | \$62,127,123 | \$6,995,170 | \$69,122,293 |
| Corn | \$39,387,205 | \$4,584,341 | \$43,971,547 |
| Grain Sorghum | \$2,000,121 | \$408,254 | \$2,408,375 |
| Cotton | \$26,173,906 | \$460,320 | \$26,634,226 |
| Sweet Potatoes | \$6,272,025 | \$281,135 | \$6,553,160 |
| Sugarcane | \$1,902,335 | \$804,099 | \$2,706,434 |
| Livestock | \$1,412,190 | \$2,839,020 | \$4,251,210 |
| Hay | \$8,228,622 | \$0 | \$8,228,622 |
| Fruits and Vegetables | \$3,359,126 | \$32,266 | \$3,391,392 |
| Ornamental Horticulture ^A | \$1,400,000 | \$0 | \$1,400,000 |
| Honey | \$478,709 | \$0 | \$478,709 |
| Subtotal | \$213,263,674 | \$24,805,436 | \$238,069,110 |
| Estimated Impact to Farm Infrastructure^B | | | \$38,628,000 |
| Total Estimated Impact | | | \$276,697,110 |

^A Estimates on damages to the horticultural industry were developed by Dr. Allen Owings, Horticultural Specialist, LSU AgCenter.

^B Infrastructure losses can not be separated by commodity as most infrastructure is associated with the entire farming operation rather than a specific commodity. The exception is \$2.5 million in infrastructure losses strictly associated with the ornamental horticulture industry and \$828,000 in losses strictly associated with replacing loss bee hives for the honey industry.

Summary

Over the last 5 years, the total farm gate value of the Louisiana agricultural and forestry sectors have averaged roughly \$6.5 billion. The estimated economic impact of \$277 million is roughly 4 percent of the typical total farm gate value for the industry. When combining the impacts from the spring floods, this brings the total estimated impact to nearly 6 percent of typical farm gate value. These impacts will likely create significant financial challenges for many agricultural producers who were already under considerable financial stress resulting from low commodity production in 2015 and low commodity prices both in 2015 and 2016.

While the estimates provided represent the LSU AgCenter's current best estimate of the impacts facing agricultural producers, the final level of damage is not likely to be fully known until harvest is completed later this year. Weather conditions for the remainder of the growing and harvest seasons will almost certainly influence the extent of the damage and impacts. A continuation of the persistent rains that have delayed harvest will almost certainly increase the level of damage being experienced. In addition, a lack of reliable information and/or a high level of uncertainty have limited the ability to include additional impacts in this analysis. Other potential production costs that were not included in this analysis include increased pumping costs to remove flood waters and increased costs associated with repairing levee and drainage systems on farming operations. In addition, potential impacts to the state's fisheries and aquaculture sectors were not included. While there is some potential for production impacts to crawfish production from long periods of flooding and impacts to fisheries from high amounts of fresh water, there are too many unknowns and uncertainties to be able to provide definitive estimates for these commodities at this time.