



Estimates of the Economic Impacts on the Louisiana Agricultural Industry from Hurricane Francine

Prepared by

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In Conjunction with

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Executive Summary

Hurricane Francine made landfall in the southeastern portion of Louisiana on September 11, 2024. Once making landfall, the storm moved in a northern/northeastern trajectory skirting the eastern edge of Louisiana. While the impacts of wind and rainfall were most significantly felt in the coastal parishes in the southcentral and southeastern portion of the state, much of the eastern half of the state experienced heavy rainfall. Wind, flooding, and excessive rainfall were all believed to have led to production reductions, quality losses, and increased costs.

To develop estimates of the economic impact of the Hurricane Francine, the LSU AgCenter conducted a detailed damage assessment. Working through parish based Agricultural and Natural Resource (ANR) agents and commodity specialists, data was collected on the acreage impacted, production losses, quality impacts, and increased production costs. Information collected through the assessment survey was then combined with publicly available data from the LSU AgCenter and the Farm Service Agency to develop estimates of reduced revenue and increased production costs.

The analysis conducted estimated the total economic impact associated with Hurricane Francine at approximately \$55.3 million. Roughly 98 percent of this total was associated with soybeans and sugarcane. Excessive rainfall resulted in significant harvest delays for soybeans causing both yield loss and quality damage. In many cases, the yield loss and/or quality damage was so high that the soybeans were completely abandoned and not harvested. High winds and flooding led to lodged sugarcane and reduced production, particularly in the southeastern portion of the sugarcane production region of the state. In addition, excessive rainfall and flooding led to some sugarcane acres having to be replanted. Other commodities that were impacted were rice, cotton, and sweet potatoes but at significantly lower levels. Given the stage of production for these commodities along with the quick return to more favorable weather conditions after the storm are believed to have limited impacts for these commodities. In fact, the dry conditions that followed the storm are believed to have also limited the damage experienced for both soybeans and sugarcane. Had wet conditions persisted after the storm, additional yield and quality damage would have likely been seen throughout the soybean industry and additional yield losses and replanting costs would have likely been seen throughout the sugarcane industry.

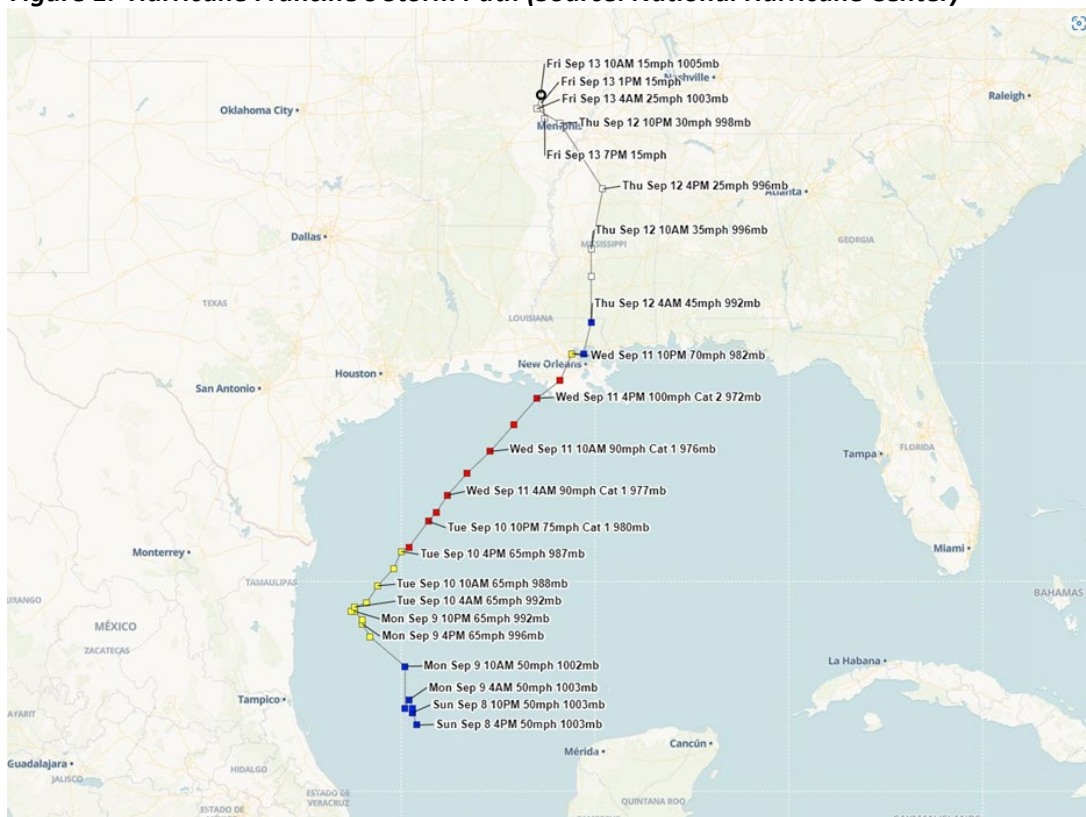
It should be noted that while the estimates of economic impacts are relatively low, particularly compared to other storms or other weather-related events, it shouldn't be interpreted as having minimal effects on the financial stability of the Louisiana agricultural industry. Impacts from Hurricane Francine come on the heels of an estimated \$1.6 billion in impacts in 2023 from excessive drought and heat and \$495 million in 2022 from excessive rainfall. The accumulative effect of three consecutive years of weather-related impacts coupled with depressed commodity prices leaves many operations within the agricultural industry in very precarious financial situations.

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INTRODUCTION

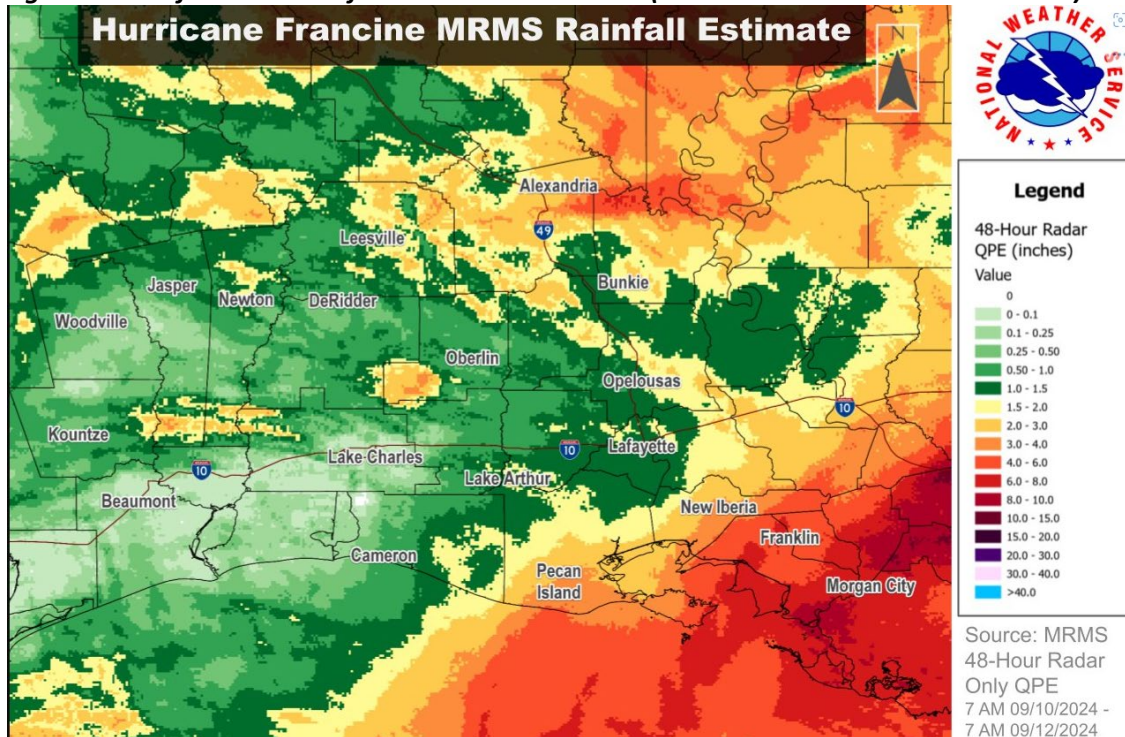
Hurricane Francine made landfall along the eastern coast of Louisiana on September 11, 2024. After that initial landfall, the storm followed a northern/northeastern track, skirting the eastern edge of Louisiana (see Figure 1). The coastal parishes in south central and southeast Louisiana experienced the brunt of the storm with both high winds and heavy rainfall. But, given the track of the storm, the eastern half of the state experienced high rainfall levels that delayed commodities ready to be harvested resulting in both quality and quantity impacts (See Figure 2).

Figure 1. Hurricane Francine's Storm Path (Source: National Hurricane Center)



Rainfall totals from Hurricane Francine were highest in the coastal parishes of south central and southeastern Louisiana ranging from 8 to over 10 inches. But rainfall totals in the 3-to-4-inch range were noted in many locations throughout the eastern portion of the state. The rainfall from Hurricane Francine added to the wet conditions that persisted in many areas of the state, only adding to harvest delays being experienced for many row crop commodities.

Figure 2. Rainfall Estimates from Hurricane Francine (Source: National Hurricane Center)



As with all weather events such as Hurricane Francine, the LSU AgCenter began to conduct assessments of the damage. The initial step in that process was to conduct an informal survey with LSU AgCenter personnel simply to get an overview of the type and magnitude of the damage as well as other issues being experienced. This initial assessment was then used to develop a survey instrument that was focused on collecting the needed information and data to estimate economic impacts of the damage and issues revealed.

METHODOLOGY

The initial assessment revealed several items. First, given the path of the storm and the resulting rainfall totals, damage was mostly limited to the eastern half of the state. Second, much of the damage being experienced was from excessive rainfall, both impacting production through flooding and quality through harvest delays. Third, wind damage was primarily limited to the south central and southeastern portion of the state. Finally, most of the damage reported was to certain row crop commodities. No significant damage was reported for livestock or forage production.

Based on these findings, an assessment survey was developed and sent to LSU AgCenter production specialists for review. This review was to ensure that all perceived impacts were being addressed by the survey and to ensure that the data and information being requested could be reasonably and effectively developed by parish agents. The assessment survey was modified based on that review and finalized. The finalized survey was sent to parish based ANR Agents on September 25, 2024.

Once all survey data was collected and summarized, it was sent to commodity production specialists for their review to ensure estimates were consistent with their perceptions and knowledge of the significance and severity of the impacts. Where appropriate, adjustments or additions were made to the survey data to ensure that the full extent and magnitude of the impact for that commodity was effectively described. Certified acres from the Farm Service Agency and yield and production data from the LSU AgCenter's Agricultural Summary publication was used in conjunction with the commodity specialists review to make all needed modifications and additions to the survey data. Once the survey data had been reviewed and modified, economic loss equations were developed to generate estimates of total economic impacts.

Loss Estimates

Economic loss equations were developed to address several different impact categories. The impact categories and the description of the economic loss equations are as follows:

- **Failed Acres** - the economic loss equation associated with failed acres estimates the level of gross revenue that would have been generated had those acres been harvested under normal growing and harvest conditions. Gross revenue per acre was determined using a 5-year parish average yield from the LSU AgCenter's Agricultural Summary publication as the "normal" or "typical" yield and an estimated selling price based on USDA price data and/or current futures market prices. The per acre revenue estimate was applied across the estimate of failed acres provided by the assessment survey to provide the total economic impact.
- **Yield Reduction** – the economic loss equation estimates the reduction in gross revenue expected given lower yields and production. The per acre reduction in yield was determined using the 3-year parish average as the "normal" or "typical" yield and applying the estimated percent yield loss provided the assessment survey. The estimate for current market price was applied to the per acre yield reduction to determine an estimate for reduced revenue per acre. This per acre reduced revenue estimate was applied across the estimate of impacted acres provided by the assessment survey to provide the total economic impact.
- **Quality Reduction** – the economic loss equation estimates the reduction in gross revenue due to price discounts experienced by the producer related to lower quality. The 5-year parish average was adjusted by one minus the estimated percent yield loss provided by the assessment survey to provide an estimate for the yield expected in 2024. This per acre yield value was multiplied by an estimate of a price discount to develop a reduced revenue estimate per acre. The price discount was developed based on average quality damage percentages obtained from the assessment survey and discount schedules obtained from commodity buyers. The reduced revenue per acre estimate was then applied across all impacted acres to determine a total economic impact. The acres with quality impacts were determined by adjusting the estimate of total acres impacted by the estimate of percentage of acres with quality impacts, both of which were provided by the assessment survey.
- **Increased Harvest Costs** – the economic loss equation estimates the additional costs associated with harvesting commodities under wet field conditions and/or are lodged. Both lodged commodities and wet field conditions reduce harvest efficiency, increase harvest time and increase harvest repairs. LSU AgCenter Enterprise Budget estimates of harvest costs under normal or typical conditions were adjusted to reflect the slower harvest speeds and reduced harvest efficiency. The increase in total harvest costs associated with these adjustments was used as the economic impact. Per acre increased harvest costs were then applied across the number of impacted acres provided by the assessment survey to provide the total economic impact.
- **Replanting Costs** – the economic loss equation estimates the increase in production costs associated with acres that had to be replanted due to flooding. Given the time of the year, this impact category was limited to sugarcane. The economic impact of having to replant sugarcane was estimated as both the machinery and labor costs associated with physically planting the sugarcane as well as the forgone revenue from having to use additional sugarcane as seed versus selling it for sugar. The per acre estimate was then applied across the estimate of impacted acres provided by the assessment survey to provide the total economic impact.

The final area of economic impact from Hurricane Francine estimated was damage caused to agricultural infrastructure (buildings, machinery, and fencing). Estimates of the total market value of farm buildings and farm machinery in a parish were obtained from the 2023 Ag Census. These values served as the basis for estimates of the economic impact and were adjusted by the percentage of buildings and machinery impacted along with the average percent damage of each, taken from the assessment survey. The economic impact associated with damage to fencing was estimated based on per mile estimates of total replacement and repair costs and the estimated miles of fencing destroyed and damaged, taken from the assessment survey.

RESULTS

Table 1 shows that the total estimated economic impact of Hurricane Francine was estimated at \$55.3 million. Relative to other weather-related events that have impacted the state, values for both the number of commodities impacted and the overall economic impact were low. Over 98 percent of the total economic impact was estimated for soybeans and sugarcane. For soybeans, delays in harvest from rainfall resulted in significant yield and quality loss and, in many cases, resulted in complete abandonment of the crop. For sugarcane, high winds and flooding, particularly in coastal parishes in the direct line of the storm, resulted in lodged sugarcane and reduced production. In addition, a limited number of acres originally planted in August and September had to be replanted due to flooding. However, a relatively quick return to dry conditions likely helped to limit the number of acres that had to be replanted as well as limited some of the quality damage experienced for the soybean industry.

Economic impacts were also estimated for rice, cotton, and sweet potatoes. These were, however, at much lower levels than soybeans and sugarcane as relatively small acreage was reported impacted. Much of this is likely attributable to the stage of production of these commodities when the storm made landfall and to the relatively ideal production and harvest conditions that followed. No significant damage was reported for corn and grain sorghum as most of those crops were harvested by the time Hurricane Francine made landfall. Finally, while some infrastructure damage was reported, it was relatively isolated and at low levels. This was likely attributable to both the storm diminishing in strength relatively quickly as well as moving fairly quickly through the state. This likely also contributed to no significant damage to the forestry industry. With a large forestry industry in the southeast portion of the state, the relatively rapid reduction in storm and wind strength likely helped to limit any significant damage.

Table 1. Estimated Impacts to Louisiana Agriculture from Hurricane Francine

Commodity	Acres Failed	Additional Acres Impacted	Average Yield Loss	Average Quality Damage	Acres Replanted	Total Economic Impact
Rice -Primary Crop	0	1,300	12.50%	12.50%	N/A	\$38,928
Rice - Ratoon Crop	0	50	5.00%	5.00%	N/A	\$717
Soybeans	22,061	56,050	31.56%	17.06%	N/A	\$23,659,951
Cotton	0	5,232	6.25%	6.25%	N/A	\$320,973
Sweet Potatoes	0	100	15.00%	0.00%	N/A	\$124,416
Sugarcane	N/A	224,710	9.11%	0.00%	96	\$30,465,579
Infrastructure Damage	N/A	N/A	N/A	N/A	N/A	\$651,796
Total						\$55,262,360

While the total economic impact associated with Hurricane Francine is relatively small compared to other weather events, it still creates challenges for the agricultural industry. This is particularly true when considering the economic impacts of weather-related events in previous years and with depressed prices for many commodities. Impacts from Hurricane Francine come on the heels of an estimated \$1.6 billion in impacts in 2023 from excessive drought and heat and \$495 million in 2022 from excessive rainfall. The accumulative effect of three consecutive years of weather-related impacts coupled with depressed commodity prices leaves many operations within the agricultural industry in very precarious financial situations.