Preliminary Estimates of the Impact of Hurricane Ida to the Louisiana Agricultural and Forestry Industries

Developed by Kurt M. Guidry
In conjunction with AgCenter ANR Agents and Commodity Specialists

Introduction

On August 29, 2021, Hurricane Ida made landfall in the southeastern Louisiana as a Category 4 hurricane. Once making landfall near Port Fourchon in Lafourche parish, the storm moved due north through Southeast Louisiana before taking an easternly turn in Mississippi. Given the storm's path, significant impacts seem to be limited to the five parishes that form the eastern edge of the LSU AgCenter's Southwest Region (Lafourche, Terrebonne, Assumption, Iberville, and West Baton Rouge) and the entire sixteen parishes of the LSU AgCenter's Southeast Region.

With any storm of this nature, often the two most significant impacts are flooding from rainfall and storm surge and wind damage. While storm surge and rainfall from 10 to over 15 inches in some areas of Southeast Louisiana caused significant flooding in isolated areas, the winds associated with Hurricane Ida created significant impacts throughout the entire impacted region. Winds in excess of 100 mph were reported in the coastal parishes with the highest reported wind speed of over 170 mph reported in Lafourche Parish. reports of gusts over 170 in Lafourche parish. Hurricane or near hurricane strength winds were experienced throughout the impacted region causing significant damage to timber and agriculture infrastructure.

In response to the storm, the LSU AgCenter developed a damage assessment survey that was sent to Agriculture and Natural Resource (ANR) agents throughout the state. The damage assessment survey was focused on collecting information about acres impacted, expected yield reduction, potential increased production costs, and impacts to agriculture infrastructure. Data complied through the completed surveys was combined with secondary data to develop estimates of the economic impacts to the Louisiana agricultural sector. In addition, LSU AgCenter personnel worked with personnel with the Louisiana Department of Agriculture and Forestry and the US Forestry Service to develop estimates of the impacts to the timber industry.

It should be noted that assessments of the impacts to agriculture from Hurricane Ida have been a challenge for several reasons. First, impacts to utility and communication infrastructure in the most significantly impacted areas made collecting information extremely difficult. Second, many of the LSU AgCenter's ANR agents in the most impacted areas were also dealing with personal impacts from the storm and many had evacuated and were unable to return for several days after the storm. And, finally, the number of ANR agents located in the LSU AgCenter's Southeast Region are limited, making assessment more difficult.

Methodology

Information on damage experienced from Hurricane Ida was collected through damage assessment surveys completed by LSU AgCenter ANR Agents throughout the state. Data provided by ANR Agents was supplemented with information provided by LSU AgCenter Commodity Specialists. Data from secondary sources was then combined with this data to develop estimates of the economic losses and impacts from the storm.

For row crop, vegetable, and fruit commodities, survey and specialist data on acres impacted, expected pre-storm yields, and estimated percent yield impact were used to calculate estimates of total production losses. Using estimates of current commodity prices, these production losses were then developed into estimates of reductions in expected gross revenue. LSU AgCenter Enterprise Budgets were used to develop estimates of planting costs to develop estimates of increased production costs associated with the acres identified by the survey that are projected to be replanted. In addition to estimating revenue losses from reduced production, for fruit trees, estimates of tree loss was also collected.

The current average price of the individual fruit trees were used as an estimate of replacement costs of those impacted trees.

Southeast Louisiana comprises a large portion of the state's horticultural sector. Damage to horticultural operations ranged from plant losses to significant infrastructure damage. The survey sent to ANR agents requested estimates for three different impact areas. The first was the estimated value of marketable plants that were loss. This represents an loss in revenue to the operation. The second was estimates costs associated with storm clean-up and recovery. And the final area was estimates to the projected costs associated with repairing or replacing damaged infrastructure.

For the livestock sector, survey data provided estimates of the total number of animal deaths but did not breakdown those numbers by type. For example, survey data provided total number of beef cattle that died but did not break that total number into the number of cows, bulls, steers, heifers, etc. As such, for beef cattle and all other species, a weighted average value was developed using current market prices and based on the makeup of a typical livestock operation. This weighted average value was then applied to the total number of deaths to get an estimate for total economic losses. Secondary data available on custom livestock hauling rates was used to estimate the increased costs associated with evacuating livestock. The per loaded mile hauling rate was converted to a per head trucking cost by assuming an average trucking distance of 100 miles and assuming an average number of animals hauled per truckload. This per head trucking cost estimate was then applied to the total number of animals evacuated to get an estimate of the increased costs associated with evacuating livestock. Estimates for economic impacts associated with forced liquidation were set at 40 percent of the weighted average value. This value represents the expected reduction in sale price that animals sold after a storm event would be expected to experience. Estimates for the impact of loss grazing days were developed based on a hay-equivalent basis. Assumptions regarding typical stocking rates were used to determine the number of animals impacted pastures would typically support. Estimates on the amount for forage those number of animals would typically consume were then estimated. The amount and value of hay that would be needed to replace that loss forage was then determined and set as the estimate of the economic impact associated with loss grazing days.

Finally, for infrastructure losses, parish level data from the 2017 US Census of Agriculture was obtained on the value of farm machinery and equipment, the value of agricultural land and buildings, and the number of acres of pastureland. The value of farm infrastructure (machinery, equipment, and buildings) was combined with survey estimates on the percentage of agricultural structures and equipment impacted by the storm as well as the average percent damage for each item to develop parish level estimates of infrastructure losses. For fencing losses, the number of acres of pastureland was used to generate an estimate of miles of fencing in each parish. This information was combined with survey estimates of the percentage of fencing in the parish that was impacted. Finally, secondary data on custom rate fencing charges were combined with the estimated miles of fencing impacted to generate a total economic impact associated with fence damage.

Results

Table 1 provides a summary of the preliminary estimated economic impacts to agriculture from Hurricane Ida. Preliminary estimates place the total economic impact at $584 million with 54 percent of that value attributable to estimated timber losses and another 35 percent attributable to infrastructure losses. As mentioned earlier, one of the most significant impacts of Hurricane Ida was devastating winds that impacted much of Southeast Louisiana. Other than timber, individual commodity impacts was the largest for the sugarcane sector. While significant, the estimated impacts to the sugarcane sector represents less than 7 percent of the total annual value of that industry. For other commodities like vegetables, fruits, and horticulture, while there total estimated impact was much lower than sugarcane, the losses represent a much larger percentage of the total annual value of those sectors.

Table 1. Estimated Economic Impacts to Agriculture and Timber from Hurricane Ida

Item	Estimated Economic Impact
Timber	$315,946,540
Sugarcane[A]	$35,378,403
Soybeans	$411,909
Vegetables	$3,844,741
Fruits	$10,632,784
Horticulture	$9,524,950
Livestock, Pasture, and Hay	$1,558,252
Infrasrtucture (including Fencing)	$207,126,813
Total	$584,424,393

[A] Note: The estimate for sugarcane is only associated with the producer and landowner. The mill share of loss revenue is not included. If the mill share was added, the total economic impact would increase from $35.4 million to $59.6 million.

Table 2 provides the total number of acres of timber impacted along with the total estimated volumes of damaged timber by type. Imagery of the area impacted, and the severity of the damage was obtained from flyovers conducted by the Louisiana Department of Agriculture and Forestry. This information was provided to the US Forestry Service which transformed this information into estimates of acres impacted along with estimates of the percent of standing timber damaged. This information was then combined with US Forestry Service timber inventory data by LSU AgCenter personnel to get estimates of volume by timber class. Eleven parishes in the LSU AgCenter's Southeast region were estimated to have impacts to timber with Tangipahoa having the largest impact with nearly 50 percent of the total estimated volume of damage timber. Hardwood pulpwood and hardwood sawtimber represented the two largest classes of timber impacted by the hurricane.

Table 2. Estimated Acres and Volumes of Timber Impacted by Hurricane Ida

Item	Value
Total Acres Impacted	167,622
Volume of Pine - Sawtimber (Cubic Feet)	37,647,931
Volume of Pine - Pulpwood (Cubic Feet)	17,088,844
Volume of Pine - Chip-n-Saw (Cubic Feet)	30,994,523
Volume of Hardwood - Sawtimber (Cubic Feet)	39,914,400
Volume of Hardwood - Pulpwood (Cubic Feet)	55,503,489
Total Volume of all Timber Damaged (Cubic Feet)	181,149,187

Table 3 provides estimates of the acres impacted and the production losses associated with Hurricane Ida to plant commodities. It was estimated that 138,577 acres of sugarcane are projected to have yield impacts from the storm. This represents about 25 percent of the total estimated acres of sugarcane in the state in 2021. At this point, only 50 acres are expected to have to be replanted due to storm impacts. However, this number could change over time as newly planted acres attempt to recovery from storm impacts. Less than 2,700 acres of soybeans are estimated to have been impacted. The parishes impacted by Hurricane Ida are not large soybean production parishes. In addition, most of these soybean acres are produced in rotation with sugarcane and it was estimated that roughly 80 percent of those acres had been harvested prior to the storm. Southeast Louisiana has a large percentage of the fruit and vegetable production in the state with most of it being negatively impacted by the storm.

Table 3. Estimated Acres Impacted and Production Losses from Hurricane Ida - Plant Commodities

Commodity	Acres Impacted	--- Esimated Yield Loss --- Low	High	Average	Estimated Acres Forced To Replant	Estimated Production Trees Loss
Sugarcane	138,577	2.00%	28.62%	19.99%	50	N/A
Soybeans	2,676	2.00%	30.00%	27.38%	N/A	N/A
Vegetables	308	10.00%	100.00%	85.67%	N/A	N/A
Fruits	888	90.00%	100.00%	99.95%	N/A	6,105

As with fruits and vegetables, Southeast Louisiana is also home to a large percentage of the state's horticulture sector. Table 4 provides the estimates of impacts from plant loss, clean-up costs, and damaged infrastructure. Total impacts were estimated at more than $9.5 million with damages to infrastructure making up the majority of that estimate.

Table 4. Estimated Economic Impacts to the Horticulture Sector by Hurricane Ida

Item	Value
Estimated Plant Loss	$1,280,200
Estimated Clean-up Costs	$2,296,250
Estimated Infrastructure Damage	$5,948,500
Total Estimated Impact	$9,524,950

Table 5 provides the impacts to the livestock and forage sectors from Hurricane Ida. Information for these sectors has been the most difficult to obtain. Again due to communication limitations and a lack of ANR agents in the impacted areas with livestock experience and responsibilities, obtaining estimates of physical damage has been difficult. As such, projections based on a general overview of the damage had to be developed. These estimates should be viewed as very preliminary and only a starting point for potential economic damages.

Information received to this point indicate relatively few animal losses. A large number of animals were evacuated prior to the storm which likely limited some of the potential deaths. However, given the difficult conditions and environments that continue to persist, there is some concern of future deaths as animals continue to be under considerable stress.

A common theme to reports regarding the livestock sector is considerable infrastructure damage. In the hardest hit parishes, reports of as high as 90 to 95 percent of the farm structures and fencing were negatively impacted. In addition, reports indicate that the majority of the pastures had only limited availability either due to flooding, lack of fencing, or a significant amount of debris. Given the amount of infrastructure damage and the amount of clean-up required, many producers, especially older producers, have indicated that they would likely liquidate their entire cattle operation.

Table 5. Estimated Economic Impacts to Livestock and Forage from Hurricane Ida

Impact	Number	Estimated Economic Impact
Loss Animals (Head)	22	$16,905
Animals Evacuated (Head)	1,050	$18,533
Animals Liquidated (Head)	800	$245,888
Loss Hay (Tons)	8,435	$674,840
Loss Grazing Days (Acres)	60,382	$602,088
Total Impact		$1,558,252

Table 6 provides the estimated economic impact associated with infrastructure damage and losses. Impacts to farm buildings and equipment was estimated at $169.2 million. Reports indicated that the percentage of farm structures impacts ranged from a low of about 10 percent to as high as 90 percent with parishes closest to the coast having the largest impact. Similarly, for fencing, parishes along the coast had the largest impact but parishes throughout Southeast Louisiana reported significant fencing damage. The total estimated economic impact from infrastructure damage and losses was estimated at more than $207 million.

Table 6. Estimated Economic Impact to Agricultural Infrastructure from Hurricane Ida

Item	Value
Impacts to Farm Buildings and Equipment	$169,216,628
Impacts to Fencing	$37,910,185
Total Impact	$207,126,813

Concluding Remarks

The estimates provided in this report are the preliminary estimates of the immediate impacts associated with Hurricane Ida. As mentioned earlier, given limitations associated with assessing impacted areas and communications, these estimates should be viewed as very preliminary. In addition, there are other sectors that have been mentioned of being impacted. Unfortunately, not enough information was available to make reasonable estimates. Also, it should be noted that impacts to the state's fishery sector were not included in this report. While it is certain that the industry experienced significant impacts, those estimates are conducted by the state's wildlife and fishery agency.

Over the next several weeks, additional information and observations as crops continue to mature may prove to alter the impacts currently estimated. In many cases, weather conditions over the next several weeks may help to minimize or worsen the initial impacts seen from the storm. Also, as with any such storm of this nature, there are likely other impacts that are not as easily recognized or estimated. For many areas of the state, a lack of electricity for a projected long period of time will almost undoubtedly increase operating costs for producers forced to use generator power. Also, for some commodities, the storm's impact on disrupting normal production and marketing timelines could impact both productivity and marketability of the commodity. These types of impacts typically take longer to materialize and are not easily quantified immediately following the storm.