October 5, 2005 Update

Disaster Recovery

LSU AgCenter Research & Extension

Assessment of Damage to Louisiana Agricultural, Forestry, and Fisheries Sectors By Hurricane Rita

After Hurricane Katrina made landfall in Louisiana on August 29, 2005, the LSU AgCenter quickly began to assess the degree of damage caused to the agriculture, forestry, and fisheries industries. Since those initial estimates, the LSU AgCenter has refined its projections and now pegs the total economic impact due losses in revenue and additional production costs at slightly over $1.0 billion. While still in the process of adjusting estimates from Hurricane Katrina, Hurricane Rita ravaged the western Gulf Coast region of Louisiana making landfall in Cameron Parish on September 24, 2005, and moving northward affecting much of western and central Louisiana. Much like Katrina, Rita brought high winds, heavy rains, and flooding. In addition, storm surge along much of the Louisiana Gulf Coast flooded areas in nearly every coastal parish in the state.

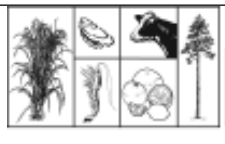
Shortly after Hurricane Rita made landfall, the LSU AgCenter began to develop assessments of the potential damage caused to the agricultural, fisheries, and forestry industries in the state. Information on potential damage was provided by county agents and production specialists. However, because of communication limitations and access difficulties to many of the hardest hit areas of the state, assessments have been difficult. In addition, for many of these commodities, the economic impact of this storm will continue to grow because of delays in re-establishing infrastructure and communications. Therefore, current estimates will likely grow until some type of normalcy is returned to production. However, based on the information known at this time and given the historical value of these industries to the state, the LSU AgCenter was able to begin to provide preliminary estimates.

When natural disasters of this nature occur, the impact to agriculture can originate from several different sources. Obviously, the most direct economic impact to any industry is that of revenue loss from production loss. Another source of economic impact is the potential for lowered prices because of either quality issues, alterations in supply and demand conditions, or the disruption in marketing and distribution channels. A third source of economic impact is the potential for increased production costs. A final source of economic impact, related to increased costs, is the physical damage caused to agricultural infrastructure. While all sources of economic impact are important and all play a role in the total effects felt by an industry, some are considerably more difficult to assess.

Given that assessments on production losses were the most attainable at this time, the majority of the estimates in Table 1 provide only projections of direct revenue loss for each commodity. In certain instances, however, additional information was available for increased production costs and expected quality impacts. These estimates should be viewed as very preliminary. For many commodities the exact nature of the losses is still being assessed and for some commodities the exact nature of the losses will continue to increase depending upon the time required to repair infrastructure and for marketing and distribution channels to return to some resemblance of normalcy. In addition, for some commodities losses could also include future revenue losses. In areas where flooding occurred, land may not be suitable for its original agricultural endeavor. The LSU AgCenter will continue to update and gather new information in an effort to refine these estimates. Finally, while every attempt was made to separate the damage from Hurricane Katrina and Hurricane Rita, there may be some industries where some overlap may have occurred.

Table 1. Preliminary Estimates of Economic Impact From Hurricane Rita to Louisiana Agriculture Due to Reduced Revenue and Increased Costs

Commodity	Estimated Economic Impact
Forestry	
Timber	$225,926,661.00
Christmas Trees	$1,140,000.00
Total Forestry	$227,066,661.00
Agronomic Crops	
Sugarcane (Sugar and Molasses)	$141,409,357.00
Cotton	$38,404,584.00
Rice	$11,743,993.00
Soybeans	$5,106,183.00
Other Agronomic Crops	$5,172,243.00
Total Agronomic Crops	$201,836,360.00
Fruits/Nuts/Vegetables/Honey	
Vegetables	$378,741.00
Wholesale Nurseries	$1,436,700.00
Greenhouse Vegetables	$17,963.00
Citrus	$1,564,000.00
Pecans	$5,589,079.00
Honey Production	$595,144.00
Total Fruits/Nuts/Vegetables/Honey	$9,581,627.00
Livestock and Forage	
Poultry	$2,659,982.00
Cattle	$32,948,775.00
Dairy	$88,861.00
Horses	$6,500,000.00
Hay/Forage	$9,541,080.00
Total Livestock and Forage	$51,738,698.00
Aquaculture	
Crawfish	$38,238,652.00
Alligators	$9,475,002.00
Turtles	$623,000.00
Other Aquaculture	$841,370.00
Total Aquaculture	$49,178,024.00
Fisheries	
Shrimp	$18,263,996.00
Oysters	$2,084,787.00
Crabs	$3,551,338.00
Menhaden	$8,041,701.00
Commercial Finfish	$2,149,070.00
Total Fisheries	$34,090,892.00
Wildlife/Recreational	
Hunting Leases	$9,427,570.00
Charter Fishing	$7,155,000.00
Total Wildlife/Recreational	$16,582,570.00
Total Estimated Economic Impact	**$590,074,832.00**



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The following gives a brief description of the methodology and assumptions used in developing estimates for each of the listed commodities along with other potential issues facing the industry.

Timber

Damage estimates for timber were developed based on forestry industry personnel's assessment of the percentage of timber affected in impacted regions. Estimates for the total gross volume of all timber and sawtimber in each affected parish were obtained from the Southern Forestry Inventory Assessment database. Using historical percentages of softwood and hardwood timber and historical percentages for pulpwood and chip-n-saw timber in each parish, estimates for volumes of timber by type and growth stage were developed. Estimated post-storm value of timber were developed assuming that 30 percent of the downed timber would be salvaged and assuming that salvaged timber would be valued at a discounted pulpwood price. Estimates of pre-and post-storm values of the existing timber were developed with the difference being the expected loss in revenue.

Christmas Trees

Damage estimates for Christmas trees were developed based on AgCenter personnel's assessment of expected tree loss, quality discounts, and additional production costs. The assessment provided estimates of the number of acres with lodged trees. For each of the downed trees, labor costs and supplies associated with staking these trees upright formed the estimate for additional production costs. While many of these trees would be expected to survive once staked back upright, it was assumed that 20 percent would be evidentially lost. In addition, of those trees that survive, it is estimated that 30 percent would experience quality discounts associated with irregular re-growth.

Sugarcane

Damage estimates for sugarcane are based on AgCenter personnel's assessment of production losses, increased planting and harvesting costs, and revenue loss and increased costs associated with flooded cane acres. Production losses were developed by comparing post-storm production and revenue estimates to "normal" sugar production and revenue. The National Agricultural Statistics Service (NASS) average of sugar production from 1999 to 2001 was used as the proxy for "normal" production. In addition to reduced sugar production, the lodged cane associated with the storm will likely necessitate the switch of planting cane from wholestalks to billeted cane. The additional costs associated with plant cane as billeted cane were estimated. The additional harvest costs associated with slower harvest times needed to harvest lodged cane were also estimated.

Several acres of cane were flooded for a prolonged period of time because of the tidal surge associated with Hurricane Rita. Many of these flooded acres were cane that was recently planted in 2005. Estimates for lost investment, lost revenue, and additional costs were developed for acres of plant cane that were flooded and assumed lost. Estimates were developed for the producer's investment in the plant cane up until the time of the storm. Estimates were developed for lost potential revenue from plant cane expected in 2006. Finally, estimates were developed for planting costs associated with having to replant those plant cane acres. For the acres of stubble cane that were flooded, estimates for lost production and therefore lost revenue were estimated.

While not provided in the estimate, experience with past storms indicates that sugarcane production could be affected by 10 percent to 15 percent in subsequent years because of carry-over affects. For those acres flooded with saltwater, the carry-over effects may be substantially higher. AgCenter personnel are attempting to address the issue of saltwater intrusion on future production of sugarcane as well as other commodities.

Cotton

Damage estimates for cotton are based on AgCenter personnel's assessment of production losses, quality losses, and increased costs of production. Estimates on acres impacted and expected yield losses formed the basis of estimated revenue loss. In addition to revenue losses from lower expected production, quality losses are also expected because of staining of cotton lint. Average price discounts were applied to an assumed percentage of production to form the basis of the estimate for quality impacts. A final source of economic impact were the additional costs associated with likely needed additional application of defoliant. The estimated costs of making an additional application of defoliant to prevent re-growth of cotton formed the basis of the estimate. One issue not included but that will have an impact on cotton producers is the potential for mills to assess a fee to mill cotton. With high fuel prices, revenue from sale of cotton seed will likely not cover milling costs.

Rice

Damage estimates for rice are based on AgCenter personnel's assessment of production loss because of

flooding and wind damage. While the vast majority of first-crop rice was harvested in Southwest Louisiana, there was a limited number of acres not harvested and assumed to have been lost. Most of the second-crop rice in Southwest Louisiana was lost because of flooding, and much of the remaining crop in North Louisiana was severely lodged. One issue not addressed in these estimates is the likelihood of rice loss in storage facilities flooded by high water. AgCenter personnel are attempting to get an overall assessment of the type and extent of damage done on storage facilities.

Soybeans

Damage estimates for soybeans are based on AgCenter personnel's assessment of production loss because of flooding, excessive rainfall, and wind damage. These estimates do not include any projections for quality reductions that may result from delayed harvest.

Other Agronomic Crops

Other agronomic crops include corn, grain sorghum, and sweet potatoes. Damage estimates for other agronomic crops were based on AgCenter personnel's assessment of the number of acres affected and average yield loss. AgCenter personnel continue to assess additional economic damages.

Vegetables

Damage estimates for vegetables are based on 2004 farm gate values and assumed percentage losses. While not provided in these estimates, additional economic impacts could result from either temporary or permanent loss in marketing channels. Finally, these estimates do not provide any projections for infrastructure damage or potential revenue loss because of saltwater intrusion. AgCenter personnel continue to assess additional economic damages.

Greenhouse Vegetables

Damage estimates for greenhouse vegetables are based on 2004 farm gate values and assumed percentage losses. While not provided in these estimates, additional economic impacts could result from either temporary or permanent loss in marketing channels. Finally, these estimates do not provide any projections for infrastructure damage or potential revenue loss because of saltwater intrusion. AgCenter personnel continue to assess additional economic damages.

Wholesale Nurseries

Damage estimates for wholesale nurseries are based on 2004 farm gate values and assumed percentage losses. While not provided in these estimates, additional economic impacts could result from either temporary or permanent loss in marketing channels. Finally, these estimates do not provide any projections for infrastructure damage or potential loss revenue due to implications from saltwater intrusion. AgCenter personnel continue to assess additional economic damages.

Citrus

Damage estimates for citrus are based on AgCenter personnel's assessment of production loss, value of lost trees, and increased production costs. Lost revenue was estimated assuming the number of acres affected and average revenue per acre. Economic impact of lost trees was estimated assuming the number of acres lost and an average value per acre. Finally, increased production costs were estimated assuming a per acre cost associated with cleanup. While not provided in the estimate, there are likely future production implications because of saltwater intrusion. AgCenter personnel continue to assess additional economic damages.

Pecans

Damage estimates for pecans based on AgCenter personnel's assessment of production loss. Loss revenue was estimated assuming the numbers of acres affected along with average yield reductions. This estimate does not, however, include any quality damage impacts or tree damage and/or loss. AgCenter personnel continue to assess additional economic damages.

Honey Production

Damage estimates for honey production are based on 2004 farm gate values, estimated percentage losses, and AgCenter personnel assessment of the number of loss bee hives. Loss revenue was estimated based on 2004 farm gate values and assumed percentage losses associated with the hurricane. Increased costs were estimated based on the assumed number of hives destroyed and an average replacement value. While not included in this estimate, there is some concern that additional and future production losses could be incurred due to increased mosquito

control activities in many of the affected areas. Proposed pesticides for mosquito control are thought to be toxic to bees and could impact current and future production. AgCenter personnel continue to assess additional economic damages.

Poultry

Damage estimates for poultry were developed based on AgCenter personnel's assessment of increased production costs, infrastructure damage, and bird loss. Loss revenue due to bird loss was estimated assuming the number of dead birds, an average market weight, and current market prices. Increased production costs associated with having to use generators to maintain production were estimated assuming average fuel use per generator per day, the average number of days of use, and the assumed number of affected operations. Infrastructure damage to bird houses was estimated assuming the number of damaged facilities and an average replacement/repair cost.

These estimates do not, however, address potential production losses because of disruption of normal production conditions. A disruption in normal production conditions could cause short-term reductions in egg production and weight gain in poultry. In addition, these disruptions could evidently lead to bird loss. AgCenter personnel continue to assess additional potential damages.

Cattle

Damage estimates were based on AgCenter personnel's estimate of the number of cattle unaccounted for due to Hurricane Rita and the percentage of salvaged cattle that will be forced liquidated due to inadequate pastures. For calves, current market value was assumed in calculating revenue loss. For cows and bulls, a replacement value was used to determine the economic impact. Liquidated cattle were assumed to be sold at discounted prices. With the health and stress related concerns and with the large number of cattle to be liquidated, it is expected that producers will receive a discounted price for cows.

The estimate provides only losses in expected revenue for 2005. It does not account for lost future earnings of lost cattle. In addition, these estimates do not provide estimates for damage to infrastructure. AgCenter personnel continue to assess potential future losses as well as the extent and nature of infrastructure damage.

Dairy

Damage estimates were based on AgCenter personnel's estimate for pounds of milk that had to be dumped because of disruptions in infrastructure and distribution channels

and additional costs associated with having to run generators to maintain production. Average milk production per day in affected areas was determined using historical production values. Days of loss production was estimated for each affected area to determine the total amount of milk loss to date. The estimates also include estimated increased production costs associated with having to use generators to maintain production.

While not provided in these estimates, there is likely reduced milk production because of increased stress and less-than-optimum milking conditions. In addition to these conditions, it is likely that producers will experience increased animal health costs. Finally, these estimates do not provide projections for damage to infrastructure. AgCenter personnel continue to assess additional potential impacts as well as the extent and nature of infrastructure damage and possibly cattle losses.

Horses

Damage estimates were based on AgCenter personnel's assessment of the number of dead horses and estimated lost training revenue. For dead horses, an assumed replacement value formed the basis of the economic impact. Because of damage to facilities and loss of power, normal training activities would not be possible. Estimates for average training revenue, total number of lost training days, and the number of horses impacted formed the basis for loss revenue estimates. In addition to the estimates provided, current estimates of potential infrastructure losses are projected at $24.9 million dollars.

Hay and Forage

Damage estimates for hay and forage were developed based on Ag Census statistics on acreage devoted to hay and estimated acreage devoted to pasture. The percentage of total acreage affected was assumed for both hay and forage production. For hay production, historical production per acre was used as a pre-storm yield. In areas where flooding existed, it was assumed that 100 percent of hay production was lost – not only production yet to be realized but also hay stored that was likely destroyed because of high water. In other areas, it was assumed that hay production losses were associated with a final of four assumed cuttings in a year or one-fourth of annual production. For forage production, economic impacts were based on lost grazing days. Stocking rates were assumed along with the number of days that grazing would be lost. Using an average amount of forage consumed per day per animal,

the economic impact was estimated at the cost of purchasing hay to compensate for loss grazing.

These estimates do not, however, address the likelihood that forage production on flooded acres will likely be limited for an extended period of time because of saltwater intrusion. AgCenter personnel continue to assess the potential future production implications associated with saltwater intrusion.

Crawfish

Damage estimates for crawfish were based on 2004 farm gate values and AgCenter personnel assessment of potential revenue losses. In addition to the estimates provided, infrastructure damage is estimated at $57 million. While not provided in these estimates, future production implications are expected because of saltwater intrusion. AgCenter personnel continue to assess additional economic damages.

Alligators

Damage estimates for alligators were based on 2004 farm gate values and AgCenter personnel's assessment of potential revenue losses along with AgCenter peronnel's assessment of wildcatch losses. In addition to the estimates provided, infrastructure damage is currently estimated at $13 million. While not provided in these estimates, future production implications are expected because of saltwater intrusion. AgCenter personnel continue to assess additional economic damages.

Turtles

Damage estimates for turtles were based on 2004 farm gate values and AgCenter personnel assessment of potential revenue losses. AgCenter personnel continue to assess additional economic damages.

Other Aquaculture

Other aquaculture includes losses associated with catfish, ornamental fish, and softshell crabs. Damage estimates for other aquaculture were based on 2004 farm gate values and AgCenter personnel's assessment of potential revenue losses. AgCenter personnel continue to assess additional economic damages.

Fisheries

Damage estimates for all fisheries industries (shrimp, oysters, crab, menhaden, and commercial finfish) were based on 2004 farm gate values and AgCenter personnel's assessment of potential revenue losses. While not provided in these estimates, there is likely damage to infrastructure. AgCenter personnel continue to assess additional economic damages.

Hunting Leases

Damage estimates for hunting leases were based on 2004 farm gate values and AgCenter personnel's assessment of potential revenue losses. While not provided in these estimates, there is likely damage to infrastructure to hunting lodges and other related facilities. AgCenter personnel continue to assess additional economic damages.

Charter Fishing

Damage estimates for charter fishing were based on the number of licensed guides in the affected area, the estimated average revenue per fishing trip per day and the estimated number of loss fishing days. Data from the Louisiana Department of Wildlife provided estimates for the number of licensed guides impacted. AgCenter personnel provided estimates for the average revenue per fishing trip and the estimated number of loss fishing days.

While not provided in this estimates, there is also likely damage to charter boats and other related infrastructure. AgCenter personnel continue to assess additional economic damages.

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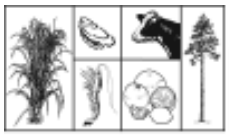

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