

ACKNOWLEDGEMENTS

This report was made possible by the support of UF/IFAS Extension faculty in the Northwest Extension District of Florida who provided near real-time input on impacts from Hurricane Sally to various agricultural operations in the region. Valuable assistance was also provided by Cooperative

Extension faculty from Texas A&M University in the form of discussions about the impacts of Hurricane Harvey, which was similar to Hurricane Sally in that the events were characterized by slow-moving storms with heavy precipitation.

UF/IFAS ASSESSMENT OF AGRICULTURAL LOSSES AND DAMAGES RESULTING FROM HURRICANE SALLY

Beginning as an area of disturbed weather near the Bahamas, Tropical Storm Sally formed on the evening of September 12, 2020, after briefly impacting the Florida Keys as a tropical depression. Sally gained hurricane status on September 14th, reaching Category 2 strength prior to landfall on September 16th in Gulf Shores, AL. Sally rapidly weakened after coming ashore as it moved inland over the Florida panhandle and Alabama, eventually degenerating into a remnant low on September 17th.

The agricultural sector frequently experiences substantial adverse impacts following tropical cyclone events. Producers might experience losses (changes in economic flows) resulting from a change in the level or value of sales or a change in input costs and they might also experience damages (changes in economic stocks) that require a repair or replacement. Agricultural losses might result from situations such as nut drop in a pecan grove, a flooded field of peanuts, dumped milk at a dairy farm due to cold storage

not being available during a power outage, or even a lower sales price for a rancher that had cattle that were not able to get the appropriate nutrition due to stress or flooded grazing lands. Agricultural assets at risk for damages include farm homes, farm buildings, greenhouse and nursery structures, machinery/equipment, fencing, irrigation systems, other infrastructure, and perennial plantings such as tree nut groves and vineyards.

On September 17, 2020, UF/IFAS Extension began visually surveying their territories and communicating with producers to assess agricultural losses or damages resulting from Hurricane Sally. However, the full measure of impacts will not be known for weeks or potentially months due to the uniqueness of this particular event. Figure 1 shows the windswath of Hurricane Sally through the final update from the National Hurricane Center prior to degeneration.

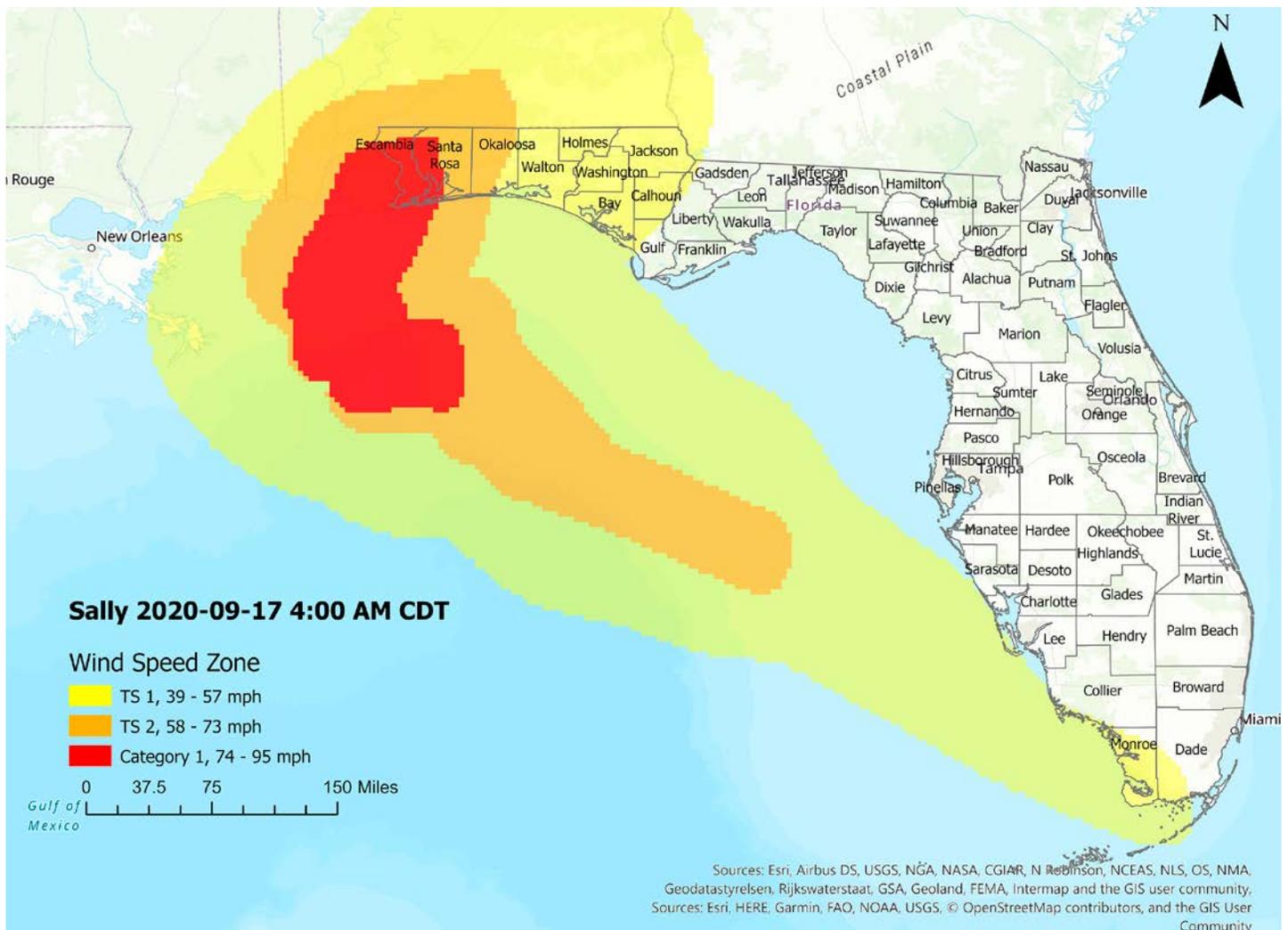


Figure 1. Windswath pattern of Tropical Storm/Hurricane Sally.

Figure 2 displays the winds swath pattern for the Florida panhandle with agricultural lands identified as *Crop Covered* parcels in dark green. As shown in Figure 2, a majority of Escambia County as well as a good portion of Santa Rosa county experienced hurricane force winds and the two

tropical storm force wind categories extended into Okaloosa County and as far east as Calhoun County, respectively. However, the path and speed of Hurricane Sally made it a particularly “wet” storm.

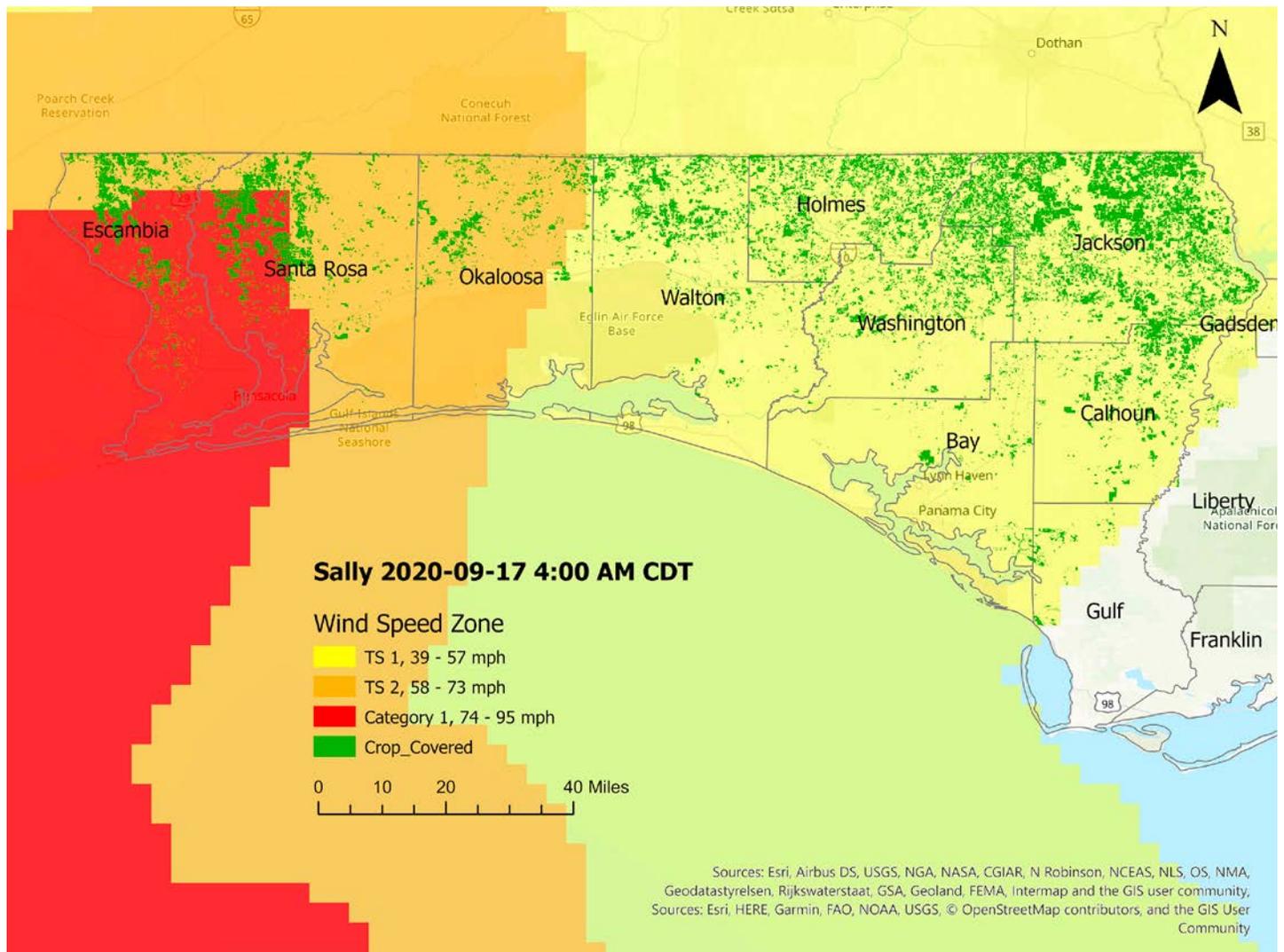


Figure 2. Winds swath pattern of Hurricane Sally with agricultural lands identified.

Figure 3 shows the 72-hour precipitation pattern of Tropical Storm/Hurricane Sally as of 9:00 a.m. Central Time on September 16, 2020 and indicates that over 20 inches of rain fell in the area in and near Pensacola, FL and that rain amounts above 12 inches extended all the way to Franklin County.

UF/IFAS began collecting information on agricultural losses and damages resulting from tropical cyclone events in 2016 in the wake of Hurricane Irma and has been improving baseline and impact databases for these types of analyses ever since. However, Hurricane Irma’s winds had more of an impact

on South and Central Florida than was felt in the Panhandle region, and the heavy rains largely impacted the East-Central Coast near the Indian River Lagoon. Although it impacted the Panhandle region, Hurricane Michael was also quite different in that it was more intense upon landfall and remained intact well inland. Michael’s faster movement did not result in as much precipitation as Sally.

The UF/IFAS Economic Impact Analysis Program used data from the FDACS-FSAID ALG geospatial data layer and the National Hurricane Center to identify impacted croplands, information from UF/IFAS EDIS and USDA-NASS to adjust

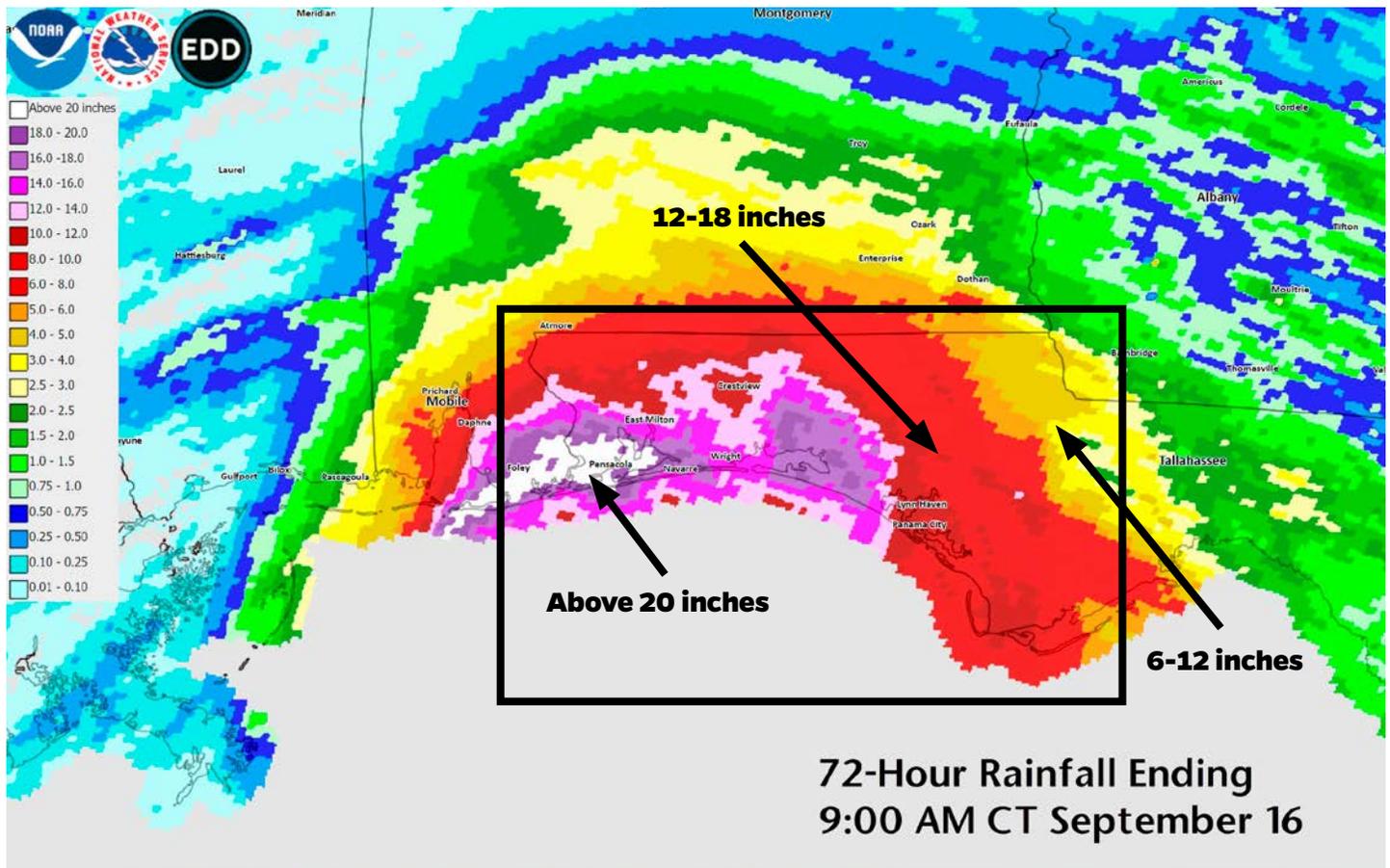


Figure 3. 72-hour precipitation pattern of Tropical Storm/Hurricane Sally as of 9:00 a.m. CT September 16, 2020. Image Credit: National Weather Service.

for season and harvest, information from USDA-NASS and IMPLAN to value the impacted agricultural production, and observations from past tropical cyclone events analyzed in Florida, a few initial observations in the wake of Hurricane Sally, as well as input from Cooperative Extension personnel at Texas A&M University who assessed Hurricane Harvey to estimate losses from damages associated with agriculture in this region.

Cooperative Extension agents in the impacted areas that have been in touch with producers or have been able to assess properties visually are reporting the following:

- Significant production losses are expected for field and row crops in the areas impacted, the severity of which will depend on both wind damage and impacts due to heavy precipitation and flooding.
- Significant losses are also expected for tree nuts (pecans) in the area due to the wind blowing premature nuts off the trees.
- Losses for aquaculture producers are expected due to shellfish harvest closures in the area related to Hurricane Sally.
- Losses associated with livestock operations (beef and dairy cattle, horses, poultry, etc.) and producers of animal products (milk, eggs, honey) are also expected due to damaged fencing and loss of electricity.
- Harvested crop that was not already stored in a barn or sold already (e.g. hay or cotton bales) is likely destroyed, not only as a direct result of damage from the storm but also the potential for rot or future mycotoxin development.
- Losses associated with damaged timber stands are also expected. Damage assessments for timber and associated loss values are completed and analyzed by the Florida Forest Service.
- Additional impacts beyond the acute, visible, and measurable impacts of the event include delayed harvest (in addition to previously planned delays due to significant rainfall prior to Hurricane Sally's arrival), delayed planting, issues related to missed or delayed applications of pesticide or fungicide, reduced nutritional value of flooded grazing lands, etc.
- Several reports on infrastructure damages as well including damage to homes, barns, and fences due to falling trees or tree limbs (ranging from minimal to significant), irrigation equipment, perennial plantings (reports of limb damage to pecan trees), damages to plastic mulch that had been laid prior to the storm and will need to be replaced, and damages to UF/IFAS research and education facilities in the impacted region.

Considering all of this information, **we believe that the agricultural losses (crops, livestock, and aquaculture) resulting from Hurricane Sally will likely be between \$55 million and \$100 million.** At this point in time, we have produced a range as opposed to a point value to reflect the uncertainty surrounding the impact of flooding on different types of cropland, which cannot be determined until fields have dried out and can be assessed. Depending on how long

this process takes, there could be moderate to significant impacts to yield, grade, or quality of the crop or even complete destruction that is not apparent at this point in time. Note that this estimate does not include the value of damages to timber stands or to infrastructure or perennial plantings that will require repair or replacement costs.

Photo credit. Libbie Johnson



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On the cover: Damaged cotton. Photo credit: Libbie Johnson (top circle).
A satellite image of Hurricane Sally. Photo credit: NASA Earth Observatory image by
Lauren Dauphin, using MODIS data from NASA EOSDIS/LANCE and GIBS/Worldview (middle circle).
Flooded soybean field at the UF/IFAS West Florida Research and Education Center in
Jay, Florida. Photo credit: AgroClimate Field Camera (bottom circle).