

DRAFT Dairy Producers Guide to Preparing for and Recovering from Hurricanes in the Southeast U.S.

This is a draft of guidance being developed by the USDA SE Climate Hub to help dairy producers prepare for and recover from hurricane damage.

This section will focus on:

- Facility and infrastructure considerations to minimize disruptions due to power loss and heavy rain
- Preparing and securing facilities to protect cattle and property
- Initial recovery following a hurricane

I. Pre-Hurricane Planning – Long-term Preparedness

Measures taken to protect managed land from hurricanes expected to come in months or years (i.e., the coming hurricane season and future hurricane seasons)

Initial Site Planning

Below are some considerations to include in site selection and planning:

- All weather access to site where facilities will be constructed
- Availability and easy access to utilities
- Drainage away from facilities
- Proper soil characteristics for constructing a lagoon
- Natural wind flow for ventilation

Site Establishment

When planning a dairy, one of the first considerations is where to build the facilities that will provide all weather access, easy access to utilities, appropriate drainage and soil characteristics for constructing a lagoon, and natural wind flow for ventilation. Below are some items to consider related to hurricane and storm preparedness.

- The primary driveway into the farm should have adequate drainage to prevent flooding. The road or drive should be well packed with a solid base that will hold up to heavy equipment and trucks during extreme conditions.
- A secondary entrance should be constructed to provide access from a different road in the event the primary entrance is blocked.
- Trees that could potentially blow down and block the entrance to the farm should be removed as soon as identified.
- Power line easements should be kept free of trees that could potentially fall on the lines during a storm.

- Critical operating areas should include a standby generator and be wired with a transfer switch to provide power when the power goes out. Critical areas that are common to all dairies include: wells, milking parlor; irrigation pumps and pivots for maintaining lagoon levels; feed center (feed bins and mixer); and calf barn. The standby generator should be sized to meet the minimum requirements of equipment required for operations. A standardized operating procedure should be posted for each standby generator installed.
- Additional electrical transfer switches should be installed to allow the use of generators for extended power outages where a standby generator is not standard. Areas for consideration include:
 - a. Well(s) to provide water for animals, cleaning milking equipment, and other normal activities
 - b. Freestall barns to run heat abatement or ventilation systems
 - c. Farm shop for working on equipment
 - d. Home
- Have an approved burial site for catastrophic losses approved by the Georgia Department of Agriculture in the event there were a large number of animal deaths

Seasonal Considerations Outside of Hurricane Season

- Trees that have grown and now present a risk to utilities or facilities should be removed
- Evaluate roads for any repairs or improvements that need to be made before storms arrive
- Add electrical transfer switches and standby generators as needed

Monthly Considerations During Hurricane Season

- Monitor inventory of feed, fuel, medical supplies, and general supplies needed for operations
- Inspect and service emergency generator to keep ready when needed

Annual Considerations

- Establish communication with your local Sheriff's department, electrical provider, and others key groups so they understand how your business operates, the number of people who may be working at the dairy, potential impact of the storm on animal welfare, and the potential environment hazards that can occur should the lagoon overflow or structure rupture. This will help them understand the nature of your business and response needed should a storm occur.
- Update emergency contact information and name of individuals to contact:
 - Sheriff's office or Emergency Management Agency (EMA)
 - Electric company/cooperative contact
 - County road department of Georgia Department of Transportation
 - Milk hauler
 - Veterinarian
 - Contractors: electrician, plumber, etc.
 - Employees
 - Vendors: feed, fuel, supplies, etc.
 - Equipment rental for emergency generators, lifts, etc.
 - Department of Agriculture or agency responsible for permits and inspection of lagoons
- Update digital pictures of facilities and equipment to document condition
- Survey your operations to assess the potential impact high wind or heavy rain or flooding would have on livestock and facilities to identify changes that should be addressed. Consider what would happen if utilities were not available on each task on your dairy to determine if additional standby generators or electrical switches are needed.

II. Pre-hurricane Planning – Short-term Preparedness

Measures taken to prepare for an existing hurricane that is forecast to make landfall in the next week or less

Review inventory and order additional supplies in the event normal operations are disrupted for a short (1 to 3 day), medium (3 to 7 day) or longer period (more than 1 week). The following items should be considered:

- Diesel and gas (1-2 week supply minimum). Be sure the supplier understands how much you use daily and that it is necessary for providing animal care and avoiding a potential overflow of a lagoon.
- Feed (1 week supply minimum). Give the feed company plenty of notice as they will be working to provide additional inventory to others in the area as well as secure their facilities. Have a secondary vendor on call in case the storm impacts your primary vendor. Work with your nutritionist to develop a backup plan for feeding animals in case you cannot unload feed in bins or delayed restocked ingredients and concentrates inventories.
- Batteries for flashlights, weather radio, AM/FM radio and other devices
- Nonperishable food and water for family and employees
- Animal health supplies to address the potential increase incidence of mastitis, metabolic, and reproductive disease. Should also have vet wrap and materials needed for treatment of any wounds.
- Supplies for milking: detergent, acid, chlorine, paper towels, predip, postdip, and spare parts to repair milking equipment
- Fencing supplies to repair or replace fence damaged by fallen trees, etc.
- Plumbing supplies to repair any broken lines
- Chain saw(s), tools, Gloves and safety supplies for removing and handling debris
- Tarps and other supplies to patch roofs

When a Hurricane Is Forecast to Impact Your Area (1 to 7 days before)

The following items should be considered:

- Pump lagoons to lower levels to provide space for the predicted rainfall and prevent an overflow
- Move and anchor pivots into a position that would minimize potential damage from the wind
- Reserve a hotel room(s) for employees to use for showers after the storm if electricity is out for extended period of time. If housing on the farm or employees home is not considered secure, consider renting a hotel room for the employee and their family.
- Secure a caterer or food truck to provide meals for employees and their families after the storm
- Determine if individual employees plan to evacuate or stay during the storm. For those who evacuate, establish a schedule for checking in after the storm to provide updates so they know when they can return as well as the extent of damages. For employees who stay, be sure they have safe lodging and have a plan for them to report in.
- Inform workers of planned changes to the normal work schedule. Milking and all other activities should cease well before the storm arrives to allow workers time to go home safely. Additional feed should be provided to animals ahead of the storm. This would also include putting out hay for animals in pastures.
- Secure cash reserves to use for purchasing supplies after the storm. If there is wide spread power outages, credit or debit cards will not work and many vendors do not accept checks.
- Secure loose items that could become flying projectiles and injury people or livestock or damage buildings and equipment

- Anchor calf hutches and do not tether calves to the hutch. Consider using round bales to build a wind break.
- Remove shades and anchor any portable shade frames

One Day Before a Hurricane is Forecast to Impact Your Area

There are many preparations that should be done in advance of the storm that will minimize damage and protect livestock. Some of the preparations that should be considered include:

- Move cattle housed in structures that may be damaged by the wind to pastures that would provide greater protection from the impending storm. Make sure they have plenty of feed prior to the storm and access to water should the pump go out.
- Lower grain augers and other items that could be blown over to minimize potential damage
- Move equipment to open location to minimize potential damage should the structure collapse
- Fill portable water tank for watering cattle in pastures without a pond after the storm. If you do not have a water tank suitable for hauling clean water to cattle in pastures for drinking, purchase one prior to the storm.
- Back up data on computers and turn off and unplug computers and other electronic equipment prior to the hurricane's arrival to prevent permanent damage from possible electrical surges.

III. Post-hurricane Recovery

Measures taken to assess and repair damage after a hurricane

Immediately After the Hurricane Has Passed

When the storm has passed, proceed with extreme caution as you begin to inspect for damage. If it is dark, it may be difficult to see potential dangers. Consider all downed power lines to be energized and lethal! If there are structures that were damaged, there will be debris that could have exposed nails, screws, splinters or sharp edges that could potentially cause injury to people and animals. Items to include in your post storm response plan include:

- Check on family and employees. Remind everyone of the potential dangers that might exist after the storm.
- Check for downed power lines and make sure everyone is aware to stay away from downed power lines. Remember that a downed power line on a fence may energize the fence.
- Check for any natural or LP gas leaks. If possible turn off the gas and notify the proper authorities. If the leak cannot be stopped, evaluate the area, notify the authorities, and tell employees to stay clear.
- Inspect cows and heifers. If any animals are injured, work with staff to get proper treatment started as soon as possible.
- Check animals in pasture and fencing. If fence was damaged, either repair or move animals to another pasture that will keep them secured.
- Clean debris from driveways and roads
- If there is limited damage to the facilities and the area has been determined to be safe (no downed power lines, natural or LP gas leaks, etc.), make plans to resume normal operations as soon as employees can arrive.
- However, if there is extensive damage that limits operations
 - Assess the extent of damage and potential hazards to people and animals.

- If you can milk, feed and manage animals after initial obstacles have been addressed, work with employees to provide care for animals. Call for assistance and equipment needed to begin making repairs.
- If you cannot milk, feed or properly care for animals, ask for assistance to move animals to other dairies as soon as possible. Work with the Sheriff's office or EMA to make them aware of the situation.
- Check lagoon levels and pump as needed to prevent any spill. Maintain records of volumes pumped and locations the waste is applied as outlined in your nutrient management plan.
- Inspect all feed ingredients to make sure it is free of debris. If the feed is contaminated, move it so it is not fed and replace with clean feed.
- Make sure employees are aware that the animals have been stressed and to expect more health issues including mastitis, dystocia, metabolic disease, and lower reproductive performance. Depending on the severity of the storm, these issues may persist for several days or weeks following a storm.
- Contact your milk hauler and cooperative or milk plant to advise them of changes in milking schedule and access to the dairy.

Within a Week Following Hurricane Impacts

- Evaluate animal health and work with veterinarian or nutritionist to address issues.
- Contact your insurance agent as soon as possible to report any damage. Document all damage with digital pictures before any cleanup begins.
- Evaluate fields for crop damage and debris that needs to be removed.
- Check stored feeds for damage. Replace or patch plastic covers on silos to prevent spoilage, sample inventoried hay and feed ingredients that were potentially damaged by rain to determine any change in feeding value
- Work with employees to address issues with prolonged power outage, damage to their home, and other stressors.
- Evaluate unharvested crops to determine the damage and if changes in harvest schedule are needed and the impact on feed inventory.

Within a Month Following Hurricane Impacts

- Continue to evaluate animals for any prolong or lingering stress due to power outage, heat stress, etc. Evaluate the impact on reproduction and stress to determine the impact of future calving schedules and milk production.
- Evaluate impact of storm on feed inventory and made adjustments to feeding program as needed for loss of inventory
- Work with insurance company to repair damage

This draft guidance was developed by subject matter experts from the University of Georgia