

DRAFT Swine 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 swine producers prepare for and recover from hurricane damage

This section will focus on:

- How Swine producers should plan for a hurricane
- Facility design to minimize hurricane damage
- Steps to take to minimize disruptions in production
- Equipment needed for operation during a hurricane

I. Pre-Hurricane Planning – Long-term Preparedness

Initial Site Planning:

Preparing commercial swine and poultry facilities for a hurricane is different from most other livestock species in that the animals will need to shelter in place. This means that the buildings they are housed in have to be of higher grade and that provisions have to be made to be able to access the facility during the hurricane. During the initial planning of a swine production facility a number of factors should be taken into consideration. Not only should the swine production facility be outside of the 100 year flood plain (check with local zoning officials for additional requirements), but producers should also insure that access to the facility is also outside of the 100 year flood plain. FEMA flood plain maps can be found here: <https://msc.fema.gov/portal/home>. It is critical that roads leading to and from the facility are outside of the flood plain to insure feed and fuel delivery and allow for transport of animals off the farm. It is also important that lagoons be out of the flood plain and to be designed so that surface runoff does not overflow them causing a waste spill and possible environmental contamination. If an existing facility or its access is in the flood plain, then additional planning is required as discussed below.

Site Establishment:

Once a suitable location is found, the facility should be designed to insure that rain water runs away from the building and lagoons. Buildings should be constructed to withstand hurricane force winds. Hurricane straps should be used in accordance with manufacturer recommendations. Special attention needs to be paid to feed storage bins and other equipment housed outside of the buildings. Backup power generators should be installed with enough fuel storage for 5-7 days of operation. Backup power should be connected to ventilation systems, feed systems and waste management systems. Facilities that have electronic feed systems should make sure that the computer and the air tank needed for the electronic feeder are connected to the backup power source.

Seasonal Considerations Outside of Hurricane Season:

One of the most important things any production operation can do is to plan for emergencies. All operations should have an emergency action plan. This plan should contain detailed information concerning how the operation will respond in the event of an emergency (fire, ice storm, hurricane, tornado, flood, etc.). The plan should prepare the operation for a “worst case scenario” and insure continuity of operation. The National Pork Board has a customizable template here: <https://lms.pork.org/Tools/View/emergency-action-plan>. As the emergency action plan is developed, special consideration should be given to insuring animals have adequate feed, water and ventilation throughout the emergency. It is important that the safety of employees staying on the farm during the emergency event and the safety of the animals be balanced and no lives are put at risk. While in most cases it will not be feasible to practice the emergency action plan, employees should be familiar enough with the plan to be able to put the plan into effect if needed.

Steps should be taken to secure the property against weather events. This may include the construction of wind breaks, securing buildings with hurricane straps, or reinforcing building structures. If landscaping is to be used as a wind break, plants should be native plants that will develop strong, deep root systems and be hardy enough to resist breaking during ice or wind events.

Back up electric and water systems as well as all other essential equipment should receive routine maintenance. Trees and shrubs should be pruned to remove all dead or dying branches.

Monthly Considerations During Hurricane Season:

- During hurricane season, backup generators should be tested monthly.
- Make sure all critical equipment can be attached to the generator and that there is adequate power to supply all critical equipment.
- If the facility uses well water make sure that there is generator power to the well.
- Test the generator to insure it is working properly. Verify there is adequate fuel to power the generator for 5-7 days.
- Make sure all water spillway and lagoon berms are in good condition and have not eroded. It is important that water move away from buildings and lagoons.
- Keep lagoons pumped as low as possible, 20-30” of freeboard is desired.

Annual Considerations

Backup generators need to undergo routine maintenance and tune up on an annual basis. Old fuel should be removed (and possibly used in other machinery) and new, fresh fuel put into storage. All circuits on the backup generator should be tested. Make sure all essential equipment functions off of the backup generator.

Feed storage bins should be checked for leaks and should be repaired as needed. Make sure that fill holes close and lock with a water tight seal.

Emergency action plans should be updated and all employees should be given a refresher course in the steps they are responsible for. Make sure all information in the plan (Names, phone numbers, contract numbers, permit numbers) is up to date. Contact 3rd party vendors to make sure they are still willing to provide services.

Inspect all buildings for structural soundness and make all needed repairs. Special attention should be given to roofs and fan housings and cool cells. Producers may want to consider building weather covers for cool cells that will help block winds from blowing through the building.

Lagoon berms should be inspected and repaired as needed. Surface water drainage around the lagoons should be inspected and repaired.

Producers with pigs outside should make sure that shelters are anchored to the ground and appropriately tied down. Outdoor producers should also make sure that water will not flood shelters.

II. Pre-hurricane Planning – Short-term Preparedness

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

Producers who are in the forecast path of impact from a hurricane should do several things in preparation. Waste lagoons should be pumped as low as possible, however, the operation must remain in compliance with the comprehensive nutrient management plan. Extra feed should be ordered and all feed storage bins should be filled to capacity as close to the expected impact as possible. This will insure that pigs have feed throughout the storm event and will help to prevent wind damage to the storage bins. Weather covers should be placed over cool cells if the temperature is such that restricting ventilation rates will not have an adverse effect on the animals housed within the building. Backup generators should be checked and fuel tanks filled. All loose equipment should be moved inside and stored in a manner that it will not blow around and cause damage. Building should be inspected and repairs made if needed.

Employees should review the emergency action plan and discuss the responsibilities of each employee. The specific responsibilities of each employee should be discussed and a care schedule for the animals developed. At no time should any employee be expected to put their life in danger to care for the animals. If an employee(s) is staying on sight, then arrangements should be made for food and water. Employee(s) should stay on sight only if they can do so safely. If the facility is located in a location where the roads leading to the facility may flood, a boat that can safely navigate the flood waters should be located and staged.

Producers who have animals housed outside should make sure that perimeter fences are in good condition. Feeders should be filled and lids securely fastened. Insure that all animals have a place in each pen that will not flood. Move pigs to higher ground as needed. Make sure that anything that can blow around is picked up or secured. Fill water troughs with water to insure pigs have adequate water and to keep troughs from blowing around.

One Day Before a Hurricane is Forecast to Impact Your Area

Inspect the facility and insure that everything is picked up and put away. Insure that all feeders and waters are working properly. Verify that feed has been delivered and that feed storage bins are full. If the facility uses well water, make sure that well is protected from the weather. If temperatures allow, turn off the evaporative cooling system and install weather covers over cool cells. Test the backup generator to insure it is functioning properly. Communicate with employees any last minute modifications to the emergency action plan. Make sure you and your employees have a safe place to

stay during the storm. If there is a perimeter gate to the facility, close it to insure that if any animals get lose during the storm they are contained.

III. Post-hurricane Recovery

Immediately After the Hurricane has Passed

Inspect buildings for damage and insure the safety of the pigs. Pigs should be removed from damaged buildings if at all possible. Employees should use extreme caution entering damaged buildings. Verify that all of the buildings have power (normal or backup) and that all fans and feed systems are working correctly. If the facility uses well water, check the well to insure it is functioning properly and that it has not been contaminated with flood water. If the well has been contaminated it will need to be chlorinated to prevent the spread of disease (<https://www.youtube.com/watch?v=MZJ6FxK6cwk>). If there has been a significant death loss due to the storm, document the numbers and follow the procedures outlined in the emergency action plan for the disposal of the carcasses. Check lagoon and waste management systems. If lagoons have spilled over the top or failed, report this immediately to state and local officials.

Within a Week Following Hurricane Impacts

Report damage to insurance company and to state and local officials if required. Take pictures of damage and repairs. If using well water, submit a water sample to the lab for coliform testing. If the backup generator is running monitor fuel levels and order fuel as needed. Check with feed and semen suppliers to insure that deliveries will be made as scheduled. Find alternative sources if needed. Check with transporters and packers to see if they are able to take pigs to market or if they will have to be housed for an extended period of time. Continue to monitor lagoons daily to insure they maintain integrity.

Within a Month Following Hurricane Impacts

Complete repairs and work to get back to normal operations. Monitor buildings for any water damage or mold development. Monitor wells for coliforms as needed. Carefully inspect lagoons for any signs of damage. Refill fuel tanks on backup generators. Check feed storage bins for any damage or leaks that may have developed as repair as needed.

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