

Planning a Disaster? You Should!
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Ophelia, Ernesto, Charley, Alex, Ivan, Isabel, Floyd, Bonnie, Fran, Hugo, Diana, Donna, Connie, Hazel. These familiar names are probably not a list of your employees, or are not your children, grand children, nieces and nephews. They were hurricanes that made landfall in North Carolina or blew up from south of us and caused memorable damage in North Carolina. Ophelia, Ivan, Floyd, Fran, Hugo, Diana, and Donna were September storms. Hazel, a 1954 hurricane, came in October.

The fact is that North Carolina residents and businesses are quite familiar with hurricanes (Not the 2006 Stanley Cup winning hockey team or ACC rivals at the University of Miami). Residents of North Carolina have learned through bad experiences that hurricanes don't just affect coastal regions on North Carolina. Many of the storms listed above brought destruction to piedmont and mountain zip codes. That's the reason TV stations all over the state do special features on hurricane preparedness and what should be in your "Hurricane Kit". Being prepared is a good idea for our families but - How Prepared is Your Nursery for a such a disaster?

The following information was extracted from: Tom Yeager, Eelco Tinga, Ted Bilderback and Hugh Gramling. 2000. Pre and post hurricane considerations. Proceedings of the International Plant Propagators Society :50:460-463.

I hope you don't need it!

General considerations more than 6 months pre-hurricane

Listed below are items that should be considered and planned for more than 6 months in advance of hurricane season. The items are not listed in any particular order.

1. Construct buildings according to codes and regulations for hurricane wind loads.
This is particularly important for chemical and fertilizer storage facilities.
2. Schedule maintenance for equipment used during hurricanes, such as adding stabilizers to generator fuel.
3. Develop and update emergency contact list and keep numbers current. Some possible contacts might include: employees, insurance companies, hospitals,

pharmacies, counselors and clergy, USDA Farm Service Agency, Natural Resources Conservation Service, Federal Emergency Management Agency, County Emergency Management Agency, university extension offices, power companies, plumbers, electricians, equipment dealers, trucking companies, allied supply companies, landfills, chemical spill companies, portable toilet companies, other nurseries, and suppliers of young plants.

4. Dry storage of valuable papers such as: insurance policy, payroll, plant, pesticide and equipment inventory; photographs of nursery including buildings, equipment, and vehicles; and computer disks of valuable information.
5. Obtain crop insurance. Federal loan assistance will not be available unless you have crop insurance.
6. Develop a written plan of pre- and post-hurricane responsibilities and job descriptions for personnel. Include in the plan procedures for irrigating without electrical power, ventilating or covering greenhouses, and clean-up including prioritized list of most valuable plants or procedure for deciding which plants are important to save. The plan also includes where items such as generators are stored that will be needed pre-hurricane as well as where items such as computers are stored during the hurricane.
7. Conduct safety and first aid training.
8. Evaluate effectiveness of past plans and determine pre- and post-hurricane preparedness changes needed for the future.

General considerations 2-6 months pre-hurricane

1. General repair of buildings to secure loose components.
2. Clean ditches and grade areas for drainage.
3. Prune permanent trees to reduce wind resistance.
4. Obtain items such as: weather radios, plumbing supplies, batteries, tools, lumber, nails, tarps, ropes, shade cloth, greenhouse parts and covers, fuel storage with hand pump, substrate components, portable lights, and batteries.
5. Provide for potable water storage.
6. Tie down portable buildings.
7. Determine capacity, phase, portability, and quantity of electrical generators needed and provide for rapid connection with disconnect to main power.
8. Obtain first aid supplies

General considerations 1-2 days pre-hurricane

1. Irrigate plants and remove water from reservoirs.
2. Remove plants from benches.
3. Obtain cash because electronic fund transfers will not be possible after a hurricane.
4. Fill fuel tanks and fill sprayers with water.
5. Fill portable water containers.
6. Print out payroll, plant inventory, fertilizer, and pesticide inventory.
7. Charge batteries.

General considerations within 1 day pre-hurricane

1. Secure items such as small portable trailers, substrate mixing equipment, and position portable generators.
2. Dismantle irrigation risers; remove greenhouse plastic and shade cloth.

3. Lay large plants, plants likely to break and very valuable plants down with container toward wind. This is particularly important for pot in pot plants.
4. Place most valuable plants in protected place such as box trailer. Park box trailers side by side to resist turning over.
5. Secure windows, doors, and greenhouse vents.
6. Place tractors in fields.
7. Store computers.
8. Turn off natural and propane gas, water, and electricity.

Post-hurricane considerations

General

1. Notify customers about shipment status
2. Notify power company
3. Notify insurance company and apply for other types of assistance. Accept an initial partial payment. Additional losses may become evident at a later date.
4. Contact employees to inquire about their families and damage to personal property.
5. Document damage with photographs.

Post-hurricane considerations

Infrastructure

1. Prepare to irrigate by installing risers, repairing plumbing, or installing temporary plumbing.
2. Un-secure doors and vents and re-build structures and/or replace shade and greenhouse covers. Plants previously in shade may sunburn if not shaded.
3. Determine electrical conductivity (EC) of water in reservoirs. Reservoir water with EC greater than 2.0 dS/m should be diluted with fresh water.
4. Check field soils for elevated EC levels.

5. Evaluate changes in nursery infrastructure in preparation for future hurricanes. For example, now may be the time to convert some production areas from overhead to microirrigation.

Post-hurricane considerations

Plants

1. Place salable or salvageable plants upright, prune and stake if needed. Prioritize what to give attention to first- for example- tree stems sunscald quickly so lifting trees should be a priority.
2. Remove plants from standing water. Inventory plants to account for lost, dead, and plants damaged too severely to recover. Insurance adjusters will need to inventory plants, so do not pile up plants to be discarded.
3. Consider costs to dispose of plants or reshape and re-grow. Substrate EC levels may exceed 2.0 dS/m and require leaching.
4. Fungicide applications may be needed to protect and minimize infestations of root and foliar disease occurrence.
6. Check field grown plants for flood damage. Flooding deprives roots of oxygen and often results in plant wilting even though able moisture is present in soil.
5. Purchase young plants to replace inventory losses.

Long-term considerations

Long-term priorities should concentrate on the direction or focus of the nursery for the future. Now is the time to consider changes you have thought about in the past and would implement only if you had the opportunity to start over. Develop a business plan considering future markets. For example, you may change the predominant size of marketable plants or add additional cultivars to penetrate a new market, such as plants for water-conserving landscapes. You should also consider advancements in technology and make changes based on the most recent research-based information. Some questions to ask yourself include: Can low volume irrigation be used? Are irrigation runoff recovery ponds

and systems for recycling water needed? Do fuel and pesticide storage and pesticide mix/load facilities comply with current guidelines? The university extension office in your county has numerous resources that can help you select and implement technological advancements appropriate for your nursery. Now is the time to make changes for a prosperous and rewarding future!

Literature Cited

National Hurricane Center, Tropical Prediction Center, Miami, Florida.

<http://www.nhc.noaa.gov/>

Web Sites

State Climate Office of North Carolina

<http://www.nc-climate.ncsu.edu/climate/hurricane.php>

Hurricane and Natural Disaster Brochures

<http://www.aoml.noaa.gov/general/lib/hurricbro.html>

National Hurricane Center: <http://www.nhc.noaa.gov/>

National Weather Service: <http://www.nws.noaa.gov/oh/index.html>

National hurricane Division: <http://www.aoml.noaa.gov/hrd/>