

# Hurricane History and Farmer Preparedness Checklist

**This report was developed by Iowa State University in partnership with Virgin Islands Good Food Coalition and FEMA Interagency Recovery Coordination (IRC).**

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The United States Virgin Islands (USVI) Territory is a resilient and impressive region that has a strong culture and pride in their community. While the USVI continues to evolve through disaster recovery work, tourism, and newcomers; unique landmarks, societal norms, and cultural identity are ever present. These characteristics promote the territory as a tourist destination and home to many.

In 2017 the territory was hit by two category five hurricanes within two weeks of each other. Devastation from these storms was felt on all islands within the territory. In addition to the immediate impact of the storms, continuous rains and floods continued to impact the territory as well as power outages, severe infrastructure damages, and general collapse of communication and connectivity. The territory had over 22,500 damaged homes, accounting for over 52% of the housing. Of the total, over 5,000 homes had severe destruction. Infrastructure damages included 90% of aerial powerlines including approximately 13,500 total poles. Power was not fully restored until February 2018, leaving numerous homes, businesses and organizations without power for cleaning, food storage, and general safety. Damage to infrastructure within the community also included (but was not limited to) wastewater pump damage and spillover into surface waterways, extreme road damage, sinking vessels within the coastal waters, and telecommunication service transmission issues. (FEMA, 2018)

Overall, losses of over \$1.5 billion dollars occurred in the US Virgin Islands territory including loss of wages (\$398 million), lost government revenues (\$576 million), and commercial property damage (\$561 million). (FEMA, 2018)

While the recovery for the territory includes many aspects for the community, the need for a farmer preparedness checklist was a top priority for farmers to prepare for storms in the future. This need was identified due to the immense impact the hurricanes had on the farming community and the lack of information on the best way to prepare for storms, as well as the desire farmers have to continue to provide food for the community and develop a thriving economy.

This farmer preparedness checklist has been developed based on interviews and focus groups with farmers and food businesses to provide a planning structure in the wake of an oncoming storm.

Farms experienced dramatic impacts both immediately from the hurricane and post-hurricane, due to inability to access property, or simply from damage from looting or individuals driving through their property. Farmers shared about their inability to build back quickly due to extreme environmental damage to crops, fencing, and debris on property; loss of fencing led to additional death of livestock due to wild dogs and environmental hazards; and infrastructure losses included irrigation systems, buildings, greenhouses, fencing, and farm stands as well as cold and dry storage units, water tanks, and sheds. Many farms also experienced loss due to looting, and one farmer shared that they had the only passable location to get to other areas of the island, which led to increased property damage. Generally, farmers who live off-property were also unable to get to their farms to check on livestock or other detrimental impacts from the storm, leading to increased loss and devastation to their business.

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# Producer Disaster Preparedness Checklist

## General Practices

- Identify partners outside of region affected by hurricane to support with materials and communication.
  - Build relationships and trust with community members.
  - Establish pre-disaster and post-disaster contacts.
  - Consider networking both internal and external to disaster zone and address needs and innovative ways to respond.
    - Partnering with organizations and support systems out of the disaster zone, may help with receiving support from non-impacted areas.
  
- Develop a community-wide disaster plan that includes preparation and recovery for agriculture and supply chain.
  - Include:
    - Debris and material management, such as utilizing fallen trees for mulch or building of new fence rows; consider mulching on property to keep material on-farm vs. hauling away downed trees to different location.
    - Allow for farmers to get access to their land immediately; this will support farmers being able to access their livestock or crops and assess damage and immediate needs- especially for those who live off site.
    - Identify ways of re-securing and identifying existing food supply available.
      - Identify existing food supply pre-storm that farmers/ grocers/ etc. have on hand.
      - Identify options for aggregation and safe distribution of food post-disaster so food does not go to waste without electricity; create bunkers and food safe storage options to secure food.
    - Understand and assess commodities across the territory and create a plan for resupply after a storm.
  
- Develop a hurricane kit for farms and small food businesses.
  - Consider including generator, gas, farm stand pop-up, water-tank, solar powered charger, cellphone booster, etc.

## Business Practices

- Keep records of all infrastructure, crops, livestock, etc. that have been implemented on farm.
  - Expenses to date for the farm and revenue and sales for adequate assessment of the business prior to the storm.
  - It may be helpful to take photos of the property regularly to have images of pre- and post-storm.
  - Record-keeping will help regarding accurate assessment of finances and investment on farm and will also help assess the potential impact of the storm and the amount of funds needed for a full repair.
  
- Identify alternative communication options to share with customers the state of your farm post-hurricane.
  - Communicate with customers and neighbors about practices following the storm.
  
- Create a disaster financial savings plan for your business that allows for you to operate post-storm without sales for 3-6 months.
  - This may include money for shipping, materials, seeds, equipment, fencing repair, etc.
  - Consider immediate (0-4 weeks); intermediate (1-3 months) and up to 6 months post-storm expense
  
- Discuss alternatives and impact potential with hired labor for post-hurricane cleanup.

## Infrastructure

- Incorporate alternative energy resources (solar, wind, water).
  - This may include smaller equipment needs such as solar powered lights, battery chargers, etc.
  - If there are currently solar panels on site, bring panels in prior to the storm.
- Secure vehicles and farm equipment within a storage container or other secure structure.
- Bring small, mobile equipment home and store within bunker or secured area for repair needs and easy access.
  - This may include chainsaw (including extra oil, chains, and gas), axe, battery pack, lanterns, fencing materials, mulcher, general maintenance equipment, etc.
- Regularly check buildings for loose or weak components and make necessary repairs prior to storm.
- Obtain and use a shipping container to store materials during storm.
  - Ensure that the container is heavy, has no windows, and is equipped with a generator.
  - Store as much heavy equipment, materials (water tank/ feed/ etc.) as possible to weigh down.
- Fill all water tanks.
  - Purchase additional water tanks if appropriate (both individually and as a community) to have on property.

## Crops

- Save seeds and store in a secure location (temperature-controlled if possible, with generator available).
- Stock up on mulch, compost, and other materials for replanting needs.
- Consider processing crops that are ripening in the field pre-storm; this could include drying or canning for a shelf-stable product.
  - If a generator and cold storage are available, additional processing may take place and allow for further storage and maintaining of sales from the product.
- Prune trees before hurricane winds arrive.
  - Banana, plantain, mango, moringa, and papaya farmers shared that pruning the tree down helped with storm damage and led to regrowth sooner.
  - If unable to prune prior to the storm, prune immediately after to help with regrowth.

## Livestock

- Ensure that livestock are in a consolidated and sheltered area as much as possible pre-storm.
- Stock up on feed and health-care supplies; store in shipping container.
- Have a gas-powered generator that can support in specific infrastructure needs for livestock.