Produce Safety ALLIANCE

Food Safety for Flooded Farms

In the aftermath of flooding, fruit and vegetable crops may pose a food safety risk.

These catastrophic events can have a lingering and potentially hazardous impact on public health. Crops and other food commodities exposed to flood waters can be considered adulterated and not suitable for human consumption or animal feed. The U.S. Food and Drug Administration (FDA), as well as Universities and Extension Programs across the country, have provided guidance on how to handle manage flood crops, keeping food safety in mind.

Assessing the Risk

Before cleaning up or destroying crops in flooded fields, check with your crop insurance and/or their local Farm Services Agency (FSA) representatives regarding exact documentation to certify losses, procedures for initiating claims, and possible financial assistance.

Several questions should be answered in order to assess the safety of flood covered or damaged crops. The first assessments should involve determining the extent of flooding, what type of contaminants could be in the flood water, and what types of crops are being affected.

Types of Flooding

There are two types of flooding. The first is more typical and occurs after a heavy downpour when fields become saturated and water pools on the soil surface. This type of flooding can reduce yields and even kill plants, but usually will not result in contamination of produce with human pathogens. The second type of flooding is more severe and occurs when water or runoff from surface waters such as rivers, lakes, or steams overflow and run into fields. Flood waters, as described in the second definition, are likely to contain chemical and biological contaminants that may be harmful to the health of humans and animals.

Keith McCall—Photo Courtesy of the National Resource Conservation Service.

Sources of Contamination

There are two primary types of contamination that are of concern for food crops. Not only are these contaminants a concern for human health, they can also be harmful if fed to livestock.

Microbial Contamination

1. Pathogens may include bacteria, parasites, and viruses.
2. Sources of microbial contamination might come from upstream farms, rural septic systems, overflow from industrial sewage systems, and raw manure or feces.

Chemical Contamination

- Chemical contaminants may include heavy metals, petroleum products, pesticides, or other agricultural chemicals.
- Sources of chemical contamination will vary greatly depending on the severity of flood, proximity to operations using chemicals, or runoff from roadways.

Determining Whether Your Crop Is 'Safe'

If the edible portion of the crop has been exposed:
Unfortunately, if the edible portion of a crop has been exposed to flood waters, it is considered adulterated by the U.S. Food and Drug Administration and should not enter human food channels. There is no practical method to recondition the edible portion of a crop to provide reasonable assurance of human food safety.

If the crop comes in proximity to or is exposed to a lesser degree:
Crops near flooded areas or those that were flooded without the edible part of the plant coming in contact with the flood water (such as sweet corn or staked tomatoes) need to be evaluated on a case by case basis. These crops as well as those in which the edible portion develops after flood waters recede are not automatically deemed adulterated.

1. Is the edible part of the plant developing and if so, how far above the flood water was it?
2. Is there any evidence that floodwater splashed up onto edible portion of the crop? Floodwater almost certainly contains some pathogens and/or chemicals.
3. If feeding to livestock, was the crop exposed to prolonged periods of moisture and stress that could promote fungal growth or molds that could produce mycotoxins?

Additional Concerns and Considerations

- Place markers at the high water line so you can identify the areas where crops were in contact with flood waters.
- Leave a 30 foot buffer between flooded areas of fields and adjacent areas to be harvested for human consumption; this is to accommodate a generous turn-around distance for equipment to prevent contact with flooded soil and avoid cross-contamination of non-flooded ground.
- Workers should wear protective clothing such as rubber boots and rubber gloves when working in fields that were flooded. Protective clothing should be discarded or thoroughly cleaned after working in flooded areas.
- If your well head was submerged, re-test your well water to make sure that only safe, potable water comes into direct contact with produce.
- Allow at least 60 days to elapse between flooding and planting of the next human food crop. In absence of known or suspected biological or chemical contaminants in flood waters (such as sewage discharge or run-off from industrial sites) you can replant after 60 days.
- Organic growers should contact their certifier to discuss damage to the crop. Flood waters might contain residues of prohibited substances.

Recommended Resources

FDA Notice for Floods, Hurricanes, and Power Outages: http://www.fda.gov/Food/FoodDefense/Emergencies/FloodsHurricanesPowerOutages/ucm112723.htm

FDA Definition of Adulterated Food:

http://www.fda.gov/RegulatoryInformation/Legislation/FederalFoodDrugandCosmeticActFDCAct/FDCActChapterIVFood/ucm107527.htm

The Questions on Salvaging Flooded Crops, John E. Rushing, Ph.D. North Carolina State University. Department of Food Science, FSE 91-21.

http://www.ces.ncsu.edu/depts/foodsci/ext/pubs/salvagingfloodedcrops.PDF

Impact of Flooding on Organic Food and Fields, Jim Riddle - Organic Outreach Coordinator, University of Minnesota.

http://swroc.cfans.umn.edu/prod/groups/cfans/@pub/@cfans/@swroc/documents/asset/cfans_asset_229667.pdf

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