Guidance and Resources for Growers to Assess Crop Safety After a Flood

University of California Cooperative Extension Produce Safety Technical Assistance Program
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Guidance from FDA related to the safety of flood impacted crops and fields:

The FDA document "Guidance for Industry: Evaluating the Safety of Flood-affected Food Crops for Human Consumption (2011)" provides information for growers. Flood waters may be exposed to sewage, chemicals, heavy metals, pathogenic microorganisms, or other contaminants that can impact the safety of crops destined for human consumption. Growers must evaluate the risk posed to public health when assessing the safety of crops or fields exposed to flood water and make decisions on how to mitigate those risks.

Key features of the FDA Guidance document include:

What a grower should do if the edible portions of the crop are contacted directly by flood waters. In this scenario, the crop is considered adulterated and cannot be used for human food. There is no method of treatment (washing, rinsing, cooking, etc.) that will provide a reasonable assurance of safety, due to the multiple contaminants that may be present in flood water.

Factors that a grower should evaluate if the edible portion of the crop was not directly contacted by flood waters. There are several factors that a grower needs to consider when assessing the safety of crops where the edible portion of the crop was not directly contacted, including what types of contaminants might be present in the flood water, the type of crop and the stage of growth, the degree and duration of exposure of the crop to the flood water, and testing of crops.

When it is safe to replant a field that has been impacted by flooding. Fields should not be replanted until flood water has receded and the soil has dried. Additional considerations include the field history, crop selection, time interval between flooding and planning, sufficient drying of the field, and testing of soil.

How cross contamination of flood exposed and non-flood exposed crops can be minimized. Crops affected by floods should be segregated from crops not impacted by flood water, equipment should be cleaned and sanitized before moving to a non-flooded area after being used in a flood area, create a 30-feet buffer zone around the flooded area, check the quality of well water.

The FDA Guidance Document provides more background on the rationale for these recommendations and how to apply different processes on the farm to minimize food safety risks and what factors guide decision making.

- https://www.fda.gov/regulatory-information/search-fda-guidance-documents/guidance-industry-evaluating-safety-flood-affected-food-crops-human-consumption

Additional information on managing flood damaged crops are available from University Extension, state Departments of Agriculture, and Trade Associations. Links to these documents are provided here. In addition, growers are encouraged to consult with University of California Cooperative Extension and the California Department of Food and Agriculture to help with decision making.

- Agriculture issues after a flood (Extension Disaster Education Network (EDEN))
- Commodity Specific Food Safety Guidelines for the Production, Harvest, Post-harvest, and Value-added Unit Operations of Green Onions (Western Growers Trade Association. 2010) (PDF 1.1 MB)
- Flooding Fact Sheet (CA Leafy Greens Marketing Association) (PDF 66 KB)
- Flood Recovery Resources (California Department of Food and Agriculture)
- Flooding Resources Webinar (CA Leafy Greens Marketing Association) (YouTube video, 1 hour 2 min.)
- Food Safety for Flooded Farms (Produce Safety Alliance) (PDF 1.5 MB)
- Food Safety for Southern U.S. Food Crop Producers After Flooding (Alabama Cooperative Extension System)
- Managing flood-damaged crops (University of Vermont Extension; Bosworth, S., and Kauppila, D.)
- Managing flood damaged crops (Penn State Extension)
- Post-Flooding Produce Safety for Commercial Produce Growers (University of Vermont Extension. 2011)
- Produce from Flooded Areas: Considerations for Growers, Packing Houses, and Processors (Wisconsin Department of Agriculture, Trade and Consumer Protection, 2008) (PDF 33 KB)
- Soil Testing Following Flooding, Overland Flow of Waste Waters and other Freshwater Related Disasters (Provin, T. L., Feagley, S. E., Pitt, J. L., and McFarland, M. L. 2008)
- The questions on salvaging flooded crops (North Carolina State University; Rushing, J. E.)