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# Management of Flood-submerged Grain

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# Management of Flood-submerged Grain

## **Abstract**

There have been flooded fields with water over the grain in Southwest, Northwest and East Central Iowa this year. This was caused by intense rains over Labor Day and the following weekends. Poor stalk strength causing downed corn has increased the amount of grain covered by flood waters. Grain submerged by uncontrolled flood waters is considered adulterated under the Food Drug and Cosmetic Act. This policy dates to 2008 when grain storage in Cedar Rapids were inundated and has been applied to several situations since then. Adulterated material cannot be put in commercial facilities of any type, where there would be a chance of entering human or animal food. The Food and Drug Administration (FDA) updated its [flooded food guidance](#) on September 17, 2018. Grains are considered food crops.

## **Disciplines**

Agricultural Science | Agriculture

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## Extension and Outreach

Integrated Crop Management

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September 27, 2018

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There have been flooded fields with water over the grain in Southwest, Northwest and East Central Iowa this year. This was caused by intense rains over Labor Day and the following weekends. Poor stalk strength causing downed corn has increased the amount of grain covered by flood waters. Grain submerged by uncontrolled flood waters is considered adulterated under the Food Drug and Cosmetic Act. This policy dates to 2008 when grain storage in Cedar Rapids were inundated and has been applied to several situations since then. Adulterated material cannot be put in commercial facilities of any type, where there would be a chance of entering human or animal food. The Food and Drug Administration (FDA) updated its [flooded food guidance](#) on September 17, 2018. Grains are considered food crops.

All grains for which the edible portion was submerged are considered adulterated. This would include grain from fields that had shorter plants flooded but not taller ones, if both were harvested together. By rule, adulterated materials cannot be used for human or animal food in any circumstance. For any adulterant, however, there is provision for the holder to ask the FDA to approve a reconditioning plan. In Iowa, the contact point for the FDA is the Iowa Department of Agriculture and Land Stewardship, Feed and Fertilizer Bureau. This process may take considerable time and effort.

Grain not flooded but was near to the flood water on partially submerged plants is subject to testing for contaminants based on a risk-based evaluation of the specific situation (case by case basis). This places the responsibility for the risk assessment on the producer. Discuss the situation with crop insurance and liability insurance carriers. Document any decisions made, as clearly as possible – how much area, what did you do, why. Food safety regulations are now very reliant on documentation of actions and reasoning.

The FDA provided a list of potential hazards in flooded grain in the guidance referenced above. Mycotoxins, heavy metals, pathogenic organisms, pesticide residues, and polychlorinated biphenyls are the main concerns. The Iowa State University Veterinary Diagnostic Laboratory, accessible through any veterinarian in Iowa, is one source of testing and support.

The FDA makes a specific distinction between uncontrolled waters (streams, rivers, etc.) and isolated low places in fields. The guidance states “*Flooding is the flowing or overflowing of a field with water outside a grower’s control. Pooled water (e.g., after rainfall) that is not reasonably likely to cause contamination of the edible portions of fresh produce is not considered flooding*”. Uncontrolled flowing water may have picked up contaminants, while ponds in low places are less likely to do so.

Grain elevators and grain processors should be aware of any flooded grain situations in their trade areas. Because flooded grain is adulterated, this grain should not be offered for sale nor knowingly taken into a commercial facility. Processors have flooded grain as one of the reasonably foreseeable hazards being controlled in their Food Safety Plan under the Food Safety Modernization Act. Without an approved reconditioning plan, this grain is effectively a total loss with no portion recoverable from the market.

The continued rainy weather is increasing the chances for mold growth on all corn. Grain that has not been flooded but is showing mold growth should be harvested and dried as quickly as possible.



**Corn in previously flooded field. Photo credit: Brian Lang**

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**Category:** Grain Handling and Storage

**Crop:**

Corn

**Tags:** Corn Soybean grain quality flood damage

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Dr. Charles R. Hurburgh, Charlie to most everyone, is a native Iowan from Rockwell City (Iowa, USA). He continues to operate the family farm, and is a professor of Agricultural and Biosystems Engineering at Iowa State University. He has a bachelor's degree, master's degree, and doctoral degree fr...