

The Garden is Flooded, is the Produce Safe?

Heavy rains and the flowing water that results can contaminate plants growing in the garden and create a **food safety hazard**. As floodwater moves into your garden, it can carry

- raw sewage overflow
- farm and domestic animal waste
- river or pond water, or
- agricultural run-off.



Each of these contaminants can be sources of human pathogens such as **norovirus**, **Salmonella**, and **pathogenic E. coli**. Gardeners and other people who mishandle and/or consume fresh produce exposed to floodwater are at risk of gastrointestinal illnesses, with accompanying symptoms such as vomiting, stomach cramps and diarrhea. Flood waters can also carry chemical contaminant from nearby industries.

How do you salvage as much garden produce as possible from a garden exposed to flooding? Generally, the answer to how much you can salvage depends on the **type of possible contamination**, **how much of the growing season is left**, and the **type of produce** that was affected.

The safest response is always to discard produce that has come in contact with water from heavy rains. But, if rain, and only rain, fell on the garden, the primary risk is from **standing water**. Assuming you have done a good job of keeping animals and their waste out of your garden, you can start by considering what to discard and what you might safely keep. **Carefully sort produce**, discarding items that will have had the most contact with water, that will spoil easily, or that will be eaten raw, such as lettuce or strawberries. Produce items that **weren't in direct contact with standing water** or items that won't be harvested for several more months, may remain.

What to do if flood waters entered your garden? If your garden was reached by flood waters from a nearby stream or lake, or if flowing water carried animal waste or possible contaminants from nearby fields or compost piles, garden produce may be risky to consume.

The most **conservative** approach is to **destroy** any produce that comes into *direct* contact with floodwater. And whether exposed directly or indirectly to floodwater, the most conservative response is any produce that is meant to be eaten raw **should not be consumed**. This means that crops such as lettuce and other leafy greens should be discarded. While some thick-skinned crops may be able to be salvaged, any soft fruits such as raspberries or blackberries which are impossible to clean should also be discarded. Soft-skinned crops in direct contact with flood waters, items such as tomatoes, peppers, and eggplants, should also be destroyed. Cantaloupe and other netted melons present a higher risk to human health and the safest action is to discard these crops as well.

How much of the growing season is left? Over time and due to the action of sunlight, microorganisms transferred to fresh produce from flood waters can become inactivated. This is primarily true of bacterial pathogens such as **Salmonella**; chemical contaminants would not be inactivated. So **early in the season** when crops are still fruiting and **won't be harvested for several months** and where the items were above water level, these items can continue to grow

and can be harvested as you would without a flood event. Highly perishable, early season crops should be discarded. **A flood event at the time of harvest means careful sorting and cleaning of produce that can be salvaged.**

Handling produce from flooded gardens. There are fruits and vegetables that may be salvaged even from late season flooding if the items can be cleaned and are cooked before eating. Wait at least 72 hours after standing water recedes before harvesting. Then thoroughly clean and cook produce before eating.

Root crops, including carrots, parsnips, beets or potatoes should be cleaned to remove dirt and contaminants by **rinsing in clean potable (safe for drinking) water**, followed by dipping for 2 minutes in a very **dilute bleach solution**, and then given a **final rinse in clean water**. Soap should not be used for rinsing produce, just plain, clean water. A final rinse in clean water will remove all traces of bleach. These crops should be peeled and cooked before consuming.

*Very dilute bleach solution for salvaging late-season produce:
Regular bleach – 5.25% - Use 1 ½ teaspoons per gallon of water
Concentrated bleach – 8.25% - Use 1 teaspoon per gallon of water*

Winter squash, winter melons, and pumpkins with their thick rinds can be washed and rinsed in potable water, then sanitized in the dilute bleach solution described for root crops and rinsed. Allow to air dry prior to peeling and cooking.

Any produce that is not fit for eating **should not** be preserved by canning, freezing or drying. Salvaged produce should not be offered for sale at farmers' markets or roadside stands. And for food-safety sake, do not donate salvaged produce to food banks or food pantries.

Prevent contamination as you prepare salvaged produce. Good habits in the kitchen will help ensure that you are not spreading contamination as you prepare salvaged produce. Be sure to clean counter tops, cutting boards and utensils that have been used to prepare salvaged produce for cooking, or eating after cooking. Follow best-handling practices for fruits and vegetables:

*Best handling practices for fresh fruits and vegetables:
Start with clean hands. Wash hands with soap and water for 20 seconds. Rinse.
Rinse fresh produce with clean water, scrubbing the surfaces of melons, rubbing the skin of tomatoes and peppers.
Dry with a clean towel. Rinse produce just before eating or preparing.*

To prevent the spread of contaminants within the garden, remove soil, plant debris, and sap from garden tools and harvesting containers used to handle produce from flooded fields. Wash tools and harvest containers with soap and water, rinse, and then sanitize with a disinfectant such as Lysol, or a dilute bleach solution. Dry with an old towel before storing.

