

Safety of Produce from Flooded Gardens (June 2008)

As a result of recent flooding, questions have been raised about the safety of consuming produce from gardens that were under water for a day or two. How concerned you have to be about using garden produce after a flood depends, to a large degree, on how "clean" the flood water was or whether it was likely to have been contaminated with sewage, river or creek water, farm run-off, or industrial pollutants.

The most conservative answer — one that eliminates any and all risks — is that you discard all produce that was touched by flood water. However, with weeks left in the growing season, you may wish to salvage some crops. Here are tips for considering what can be salvaged and what must be discarded from your flooded garden.

Produce can be **cooked** to ensure safety, and this is the best choice if anything that was touched by flood water will be served to those most at risk for serious consequences from foodborne illness: young children, the elderly, pregnant women and those with compromised immune systems.

For produce to be consumed uncooked (raw), begin by **discarding** all **leafy vegetables** such as lettuce or spinach — regardless of how mature the plants are. It's not possible to scrub these crops as they have many ridges and crevices that could contain contaminated silt or bacteria. All **soft fruits** that are **ready to harvest** such as strawberries or raspberries, must be cooked; they too are impossible to thoroughly clean and **can not** be safely consumed raw.

Other produce may be salvaged depending on the crop and how far along it is in the growing season. In general, any produce for which the edible part was directly touched by flood water presents a potential risk to health if consumed. This includes produce that was submerged or splashed by flood water. The ability to salvage crops that will be eaten raw with minimal risk depends on the source of the flood water, time to harvest, and whether potential contamination will have been internalized into the plant tissue.

One starting point for evaluating the safety of produce from flooded gardens is the National Organic Program (NOP) guidance to farmers wishing to harvest produce from soil fertilized with non-composted manure. The NOP requires a 90-day period before harvesting edible material from plants grown in soil fertilized with non-composted manure — the manure can not have touched the edible material. NOP standards require a 120-day period before harvest of edible plant material with direct contact with non-composted manure. Research suggests that contamination from non-composted manure should present a more significant health risk than contamination from flood waters.

Early season crops that will be harvested within the next few weeks and that remained above flood waters should **be safe if cooked or peeled**. Examine any produce carefully before harvest. If it is soft or cracked, bruised, or has open fissures where contamination might have entered, throw it out. Begin by rinsing produce with clear tap water (do not use soap) followed by a brief soak (2 minutes) in a weak chlorine solution of 2 Tablespoons bleach to a gallon of water. Rinse

in cool, clean tap water. Peel or cook thoroughly before eating. Take care to prevent cross contamination in the kitchen. Change the bleach solution if you notice the water is no longer clean.

Plants where fruits have set (tomatoes) or where flowers are evident (broccoli/cauliflower) present an undefined risk. Before consuming these crops raw, consider the source of the flood water, the time since contamination, and the health of the tissue. Always discard any tissue that is bruised, cracked or otherwise blemished. Washing fresh produce with clear water, followed by a brief soak in a dilute bleach solution (see above) and then rinsing before eating or peeling will help to reduce any remaining risk.

Underground vegetables such as beets, carrots and potatoes that are still early in the growing season should be safe if allowed to grow to maturity (4-8 more weeks). Root crops that will be consumed within the month (i.e. new potatoes) should be washed in water, rinsed and sanitized as directed above before cooking thoroughly. Note: beets may be peeled after cooking, if desired.

Melons and other fruits which will be eaten raw **should not be consumed**. Recent foodborne illness outbreaks linked to melons suggest that these low-acid fruits may not be safe even if surface-sanitized.

Late-season vegetables that result from flowers produced on growth that develops after flood waters subside should be safe. To increase safety, cook them thoroughly, or at least wash them well and peel them, if possible, before eating. This could include tomatoes, peppers, eggplants, squash, cucumbers, and similar vegetables.

Flood-damaged garden produce that is otherwise unfit for eating **should not be canned** or otherwise preserved. Garden produce that **would** be safe to consume after washing, sanitizing and cooking may be safely canned. Because the low temperature of home dehydrators do not destroy high numbers of bacteria, **do not attempt** to dehydrate produce from flooded gardens.

Never sell produce from a flood-damaged garden at a farm market or farm stand until you are sure that all contamination has been removed from the garden, usually a period of at least one month after the last incidence of flooding. Check with the Division of Food Safety of the Department of Agriculture, Trade, and Consumer Protection (608) 224-4665 if you have questions about market sales of garden-flooded produce.

August 2007 (rev. June 2008)
Barbara Ingham
Food Science Extension Specialist

Steve Ingham
Food Safety Extension Specialist
University of Wisconsin Extension

