# Food Crop Safety After Irene's Floodwaters

Published by Food Safety News | Sep 01, 2011

Last Friday and Saturday, the crew at Roxbury Farm in New York's Hudson Valley prepared for the hurricane by stowing machinery and hay bales above the floodplain. Jean-Paul Courtens and his workers harvested ripe delicata squash, secured tomato plants against the wind, and pulled irrigation equipment from the Kinderhook Creek. However, there was no way to prepare for the floods that resulted from the storm, which was downgraded to Tropical Storm Irene.

"I was surprised to hear that it affected growers as far north as Burlington, (Vermont)," said Courtens, whose farm runs on a community supported agriculture (CSA) subscription model and serves 1,100 members in New York City and upstate New York.

Courtens feels fortunate in the aftermath, yet the 300-acre Roxbury Farm has lost a lot of food, with no crop insurance to cover it. The farm's fields are half upland and half lowland, and many of the lower fields flooded. Even food from the lower, unflooded fields is lost.

"The advice is to destroy any food that came in contact with floodwater. We're going to follow that advice, even the stuff (on the lower areas) that wasn't flooded, we're calling it condemned," he said because "you have to go through contaminated fields to get to them."

This scene is being repeated throughout the path of the storm, which flattened cornfields, waterlogged pumpkins and squash, and knocked fruit to the ground. Crops that were nearing fall harvest are now submerged, or have been submerged, in floodwaters that could possibly contain pathogens and toxins. The uncertainty alone creates food safety concerns.

"We don't really know much about the microbiological quality of the waters," said John E. Rushing, who is retired from the Food Sciences Department at North Carolina State University. "We also don't know what has washed onto the land. Is it pesticides from a cotton crop?"

According to the U.S. Food and Drug Administration, floodwater can carry sewage, chemicals, heavy metals, pathogenic microorganisms or other contaminants. The FDA's notice on handling food from flooded fields explains:

"*If the edible portion of a crop is exposed to flood waters, it is considered adulterated and should not enter human food channels. There is no practical method of reconditioning the edible portion of a crop that will provide a reasonable assurance of human food safety.*"

Extension agents are assembling information and distributing fact sheets on food safety advice, like the one for home gardeners from the University of Wisconsin-Extension, "Safety Using Produce from Flooded Gardens."

Ginger Nickerson works on extension at University of Vermont, and her advice for commercial growers is being circulated to farmers in that state and surrounding states as well. One guideline: "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."

Other recommendations include wearing protective clothing in flooded areas, and not feeding livestock crops that came in contact with floodwaters because "the plants could have pesticides, pathogens, mycotoxins or other contaminants."

Steve Reiners, associate professor at Cornell University, put together "Dealing with Flooded Vegetable Fields," which deals with plant survival under water and flooding and soil fertility, as well as flooding and food safety.

"There are two types of flooding," wrote Reiners. "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, from rising creeks and rising rivers rather than a deluge of rainwater, is affecting many farmers in the aftermath of Irene, although some farms might be dealing with both types of storm water.

"Unless you are absolutely sure that flooding is not from streams and surface water, do not use fruits and vegetables that were at or near harvest at the time of flooding," he writes.

He notes that produce that such as melons, eggplant, sweet corn, or winter squash may be contaminated on the surface, but for melons "this is a major concern as pathogens on the surface are moved to the edible part as the product is sliced and eaten raw."

Reiners details how to properly wash produce to reduce post-harvest losses. But he adds says vegetables that have come in contact with stream and river overflows should not be harvested or consumed, adding that, "Chlorinated wash water will not eliminate likely human pathogens on their surface."

Each farmer has several different assessments to make based on fields, water and the type of crop. These assessments are informed, at times, by consulting with extension agents. Some farmers also have training as part of certification for the Good Agricultural Practices (GAPs) Program.

"With the food safety emphasis that's been going on, some of them have been through trainings and have a much better idea of what risk assessment looks like from a food safety perspective," noted Elizabeth Bihn, coordinator for the National GAPs program, and a Senior Extension Associate at Cornell.

Ginger Nickerson, in addition to her work at cooperative extension, is an outreach coordinator for GAPs, and finds her outreach work in this crisis dovetailing with other GAPs efforts.

"Even though not all of the growers in the state are GAPs-certified," she said, "they're all wondering what do I need to do to handle my crops appropriately in this situation."

In many cases in Vermont, Nickerson said, the water did not touch the edible parts of the plant, or the edible part of the plant hadn't yet emerged. These foods will likely be edible and saleable.

Still, Vernon Grubinger, also of University of Vermont's extension, estimated the total loss at millions statewide. "Few growers have insurance," he noted.

Farmers are being encouraged to document and report damage to the Farm Service Agency, regardless of whether they have insurance. The information is being collected in case it may be possible to gather emergency grants or loans.

Bihn said she didn't yet have a clear picture of the extent of the damage.

"I know where I'm getting questions from, and I know where we've heard reports (about) flooding, but I don't have in my head who exactly is affected," she said. She is hearing mostly from extension agents, who are fielding questions from farmers. "In the next week or so I think I will have a better handle on exactly who and how many people are underwater, and what crops are most affected."

Asked to comment on flooding and food safety, she said, "The flooding does represent risk, and understanding where the risks are coming from, whether they be microbial or chemical." While it's important to assess that risk, she said to have such a storm inundate fields is simply "awful."

"All the time, all the energy, all the seed, all the protective sprays," continued Bihn. "To lose it in the end is awful."