



September 3, 2011

Dear Growers,

First, I want to say how sorry I am that so many of you are facing such devastating losses associated with this storm – especially following the June flooding. I know it is heartbreaking to have to destroy food that appears perfectly good – especially when there are so many in need. I want to give you some background on the recommendation to destroy crops that came in contact with floodwaters. This is based on the FDA's Food, Drug and Cosmetic Act <http://www.fda.gov/RegulatoryInformation/Legislation/FederalFoodDrugandCosmeticActFDCA/ct/FDCAChapterIVFood/ucm107527.htm>. The problem is that as an agency that is supposed to protect public health, the FDA takes a very conservative approach, determining that if something may have been exposed to an adulterant that could be injurious to health it is illegal to sell it. Putting aside how we may feel about mercury in fish, and other contaminants that are deemed ok by the Feds, this is the current law and to sell adulterated food is considered criminally liable if anyone were to become ill from the produce. If you disagree with this law, or have suggestions for improving it, let the FDA know!

There is a fair amount of science on produce safety in general. What we do not have a lot of at this point is information on uptake of pathogens in specific root crops. While there may not be many studies yet on the impact of floods on particular crops or particular soil types, we do have science on produce grown in contact with manure, and mediums that have been experimentally inoculated with pathogens. For now, we can use those studies as proxies for conditions in floods, because unless a field is close to the headwaters of a water source, and there are no sources of contamination between the headwaters and the field, we can assume that flood waters of the magnitude we just had were carrying fecal matter from farmland, manure storage, septic systems, and overflow from municipal sewage systems. In addition, flood waters can carry a variety of chemical contaminants such as heavy metals and hydrocarbons, at much higher levels than are normally present in fields.

Feces from humans and other warm-blooded animals can carry all sorts of pathogens: bacteria (e.g., E. coli 0157:H7, Salmonella); viruses (e.g., Hepatitis A, Norovirus); and parasites (e.g., Giardia). If there is oil in floodwaters you are likely to see a sheen in the residue, but fruits and vegetables can be contaminated with these microorganisms and still look perfectly fine (i.e., you would not know it is contaminated, because there is no visible sign as there is with molds). Other chemical contaminants can also be invisible.

UVM Center for Sustainable Agriculture

106 High Point Center, Suite 300, Colchester, VT 05446

(802) 656-5490

Fax: (802) 656-8874

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For more information, contact this office or visit www.uvm.edu/extension.

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Once the product's tissues are contaminated, it cannot be disinfected. We advise triple rinsing produce or adding disinfectant to wash water to dilute pathogens or inactivate them if they are in the soil on the surface of the product and prevent further contamination, not to eliminate pathogens once they are in a plant's tissues.

If someone has a healthy immune system, some of these pathogens associated with food borne illness and feces might only give them an upset stomach or diarrhea. However, once you have put produce into the commercial market, you have no way of knowing about the immune systems of the people who might consume it. The people we are most concerned about are pregnant women, children under the age of five, the elderly, and people on chemotherapy or whose immune systems are otherwise compromised.

You may be saying, "I've been flooded before and I sold my produce then and no one got sick." It often takes days for a pathogen to make someone ill. If they do not have a compromised immune system, they are not likely to go to the doctor just for diarrhea, and if they do, few doctors are likely to take a stool sample and culture for pathogens unless the person is very ill. What we are especially concerned about are the outliers: people with compromised immune systems and virulent pathogens.

E. coli 0157:H7 is a virulent pathogen that can cause kidney failure, even if present in very small amounts. Other pathogens such as *Shigella*, *Campylobacter* and Hepatitis A also need only a very small amount present to make someone seriously ill. Still others, such as the strain of *E. coli* (O104:H4) that was responsible for the recent problem with sprouts in Germany, and new strains of *Salmonella* Typhimurium and *Salmonella* Newport, both of which have been found in dairy cattle, are resistant to many antibiotics, so it is very hard to treat people when they become ill.

Bacteria flourish in warm, humid conditions, such as those after a flood. We know that some of these pathogens can persist in the soil up to 3 months. We also know that tilling soils after floods and introducing other microbes with properly treated compost helps to reduce the levels of pathogenic microbes in soil after floods.

I am not trying to use scare tactics here or be the voice of doom and gloom. We cannot eliminate risk from our lives or our food. Farms are natural systems and microbes are abundant – (thank goodness, I hate to think what life would be like without decomposition!), but some can make people sick and some can make some people very sick. Produce safety was never about eliminating risk, it is intended to reduce risks to the best extent possible to protect consumers, and to protect your businesses.

I know this is an incredibly frustrating and heartbreaking time for many of you. I will be out of the office the next 4 days and not on e-mail, but please call me on my cell at 802-249-6701 with your questions or to let me know if there is anything I can do to help.

Ginger Nickerson
GAPs Outreach Coordinator
gnickers@uvm.edu

Office Phone: (802) 656-5490 (Mondays and Wednesdays only)
Cell Phone: (802) 249-6701
Fax: (802) 656-8874