

Cross contamination station:

Supplies needed: Apples, glow germ, black lights (multiple), drying cloths, blueberry pick buckets

Handouts: Pick bucket stickers

Key concepts:

- a. All it takes is one source and one route to contaminate a lot of produce
- b. Cross contamination can happen very quickly

Where this fits in the PSA GT: Modules 2, 4, and 6

The Setup: Cross contamination can happen in a lot of different places. It's important not only to ensure that Zone 1 is clean and sanitary, but also to be thoughtful about keeping Zone 2 clean if Zone 2 could contact Zone 1.

Zone 1 can take many forms. It can include our hands, our clothes and drying cloths. All of these can spread contamination.

§ 112.123(d)(1) states, "You must inspect, maintain, and clean and, when necessary and appropriate, sanitize all food contact surfaces of equipment and tools used in covered activities as frequently as reasonably necessary to protect against contamination of covered produce."

§ 112.123(d)(2) states, "You must maintain and clean all non-food-contact surfaces of equipment and tools subject to this subpart used during harvesting, packing, and holding as frequently as reasonably necessary to protect against contamination of covered produce."

Specific to Module 4, wildlife can also pose a food-contact risk

§ 112.112 states, in part, "You must take all measures reasonably necessary to identify, and not harvest, covered produce that is reasonably likely to be contaminated with a known or reasonably foreseeable hazard, including steps to identify and not harvest covered produce that is visibly contaminated with animal excreta."

Another area that may be overlooked as a contamination risk is Zone 2 surfaces that come into contact with Zone 1 surfaces. §112.83 (b)(1) states, "Assess the relevant areas used for a covered activity for evidence of potential contamination of covered produce as needed during the growing season (based on your covered produce; your practices and conditions; and your observations and experience);" In the case of harvest bins, lugs and pick buckets, these items are often placed directly on the ground then nested. If the area they are placed on has feces on it, that feces ends up on the bottom of that container. Once the containers are filled and stacked, that contaminated bottom surface becomes the top of a full container. In some cases pick buckets are nested, again allowing the area exposed to the ground to directly contact the inside of the food contact surface.

The Demo: Place glow germ on a counter top or flat surface. Clarify that the glowgerm represents feces found on the ground in a blueberry field. Place a blueberry pick bucket directly on top of the glow germ area, then nest that bucket into another bucket. Un-nest them and use the black light to assess cross contamination.

Place a small amount of glow germ powder onto an apple. Tell the group to pretend the apples are tomatoes. Explain that many small growers often harvest tomatoes and do not wash them, but they may take a cloth and rub the fruit to remove dust or debris. If one fruit has contamination and they don't change out drying cloths, the cloth can contaminate a lot of fruit. Show how the cloth contaminated the fruit right after the one you put the glow germ on. Pose the question, "How many clean fruit could get contaminated by one piece of poop fruit? Let's find out."

The Assignment: Have one group do the wiping, and have another few folks looking at the fruit with a black light to see if the uncontaminated fruit are contaminated. Have them count out the number of fruits wiped before there is no contamination found.

As a wrap up, reference work by Michelle Danyluk that found several key cross contamination facts. Drying cloths on tomatoes on average were found to contaminate the next 20 fruit after being contaminated. Danyluk also found that tomatoes also contaminated cardboard containers used for packing. When that packing was reused, she found the bacteria transferred to clean fruit.

Share the stickers developed by MSU Extension that remind farm workers to not set down their pick buckets.

Citation: ASWATHY SREEDHARAN, KEITH R. SCHNEIDER, and MICHELLE D. DANYLUK (2014) Salmonella Transfer Potential onto Tomatoes during Laboratory-Simulated In-Field Debris Removal. *Journal of Food Protection*: July 2014, Vol. 77, No. 7, pp. 1062-1068.

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