



Scientists examining risks of raw produce

It seems like there have been more food safety problems with fresh produce in recent years. How do fruits and vegetables become contaminated?

That's a question researchers nationwide are investigating with vigor.

It's true that fruits and vegetables have been implicated in more food-borne disease outbreaks in the past decade or so. And pathogens in produce are of great concern because, unlike meat products, fruits and vegetables are often eaten without cooking — a process that kills harmful bacteria. Plus, we also tend to be more cautious while handling raw meat, reducing risk of spreading bacteria that might get on our hands, utensils, cutting boards or other surfaces.

On the other hand, fresh produce is generally eaten raw, allowing any pathogens to survive the journey from the farm to our gut.

That's probably why so many people — nearly 400 at last count — were affected by the recent *Salmonella Saintpaul* outbreak involving certain types of tomatoes. Currently, no one knows exactly how those tomatoes were contaminated. But the Centers for Disease Control and Prevention says it can happen in a number of ways.

Obviously, the outside of tomatoes (and other vegetables and fruits) can be exposed to bacteria that exists in the soil and throughout the environment. But researchers have also found

that the interior of whole tomatoes is at risk, too. In experiments, scientists found that if a tomato is immersed in water that's contaminated, and if the water is colder than the tomato, the water can enter the tomato through the stem scar. Also, studies have found that bacteria in water can enter a growing tomato if the water comes in contact with the stem or flower of the tomato plant.

In studies at Ohio State University, researchers examined *E. coli* O157 on leafy greens. They found that greens are most vulnerable to the pathogen if leaves are cracked or damaged. The plant's natural wound-response mechanism exudes sugars that provide *E. coli* with what it needs to survive.

Like other food, produce can also become contaminated if those who handle the food haven't washed their hands properly or if their work areas aren't kept clean.

Although bacteria is easily killed with thorough cooking, authorities recommend throwing away tomatoes associated with the recent outbreak — the risk of spreading bacteria by cooking or otherwise handling the contaminated food is too high.

For guidance on everyday safe handling of produce, check out the advice from the Center for Food Safety and Nutrition at <http://www.cfsan.fda.gov/~dms/prodsafe.html>.

Chow Line is a service of Ohio State University Extension and the Ohio Agricultural Research and Development Center. Send questions to Chow Line, c/o Martha Filipic, 2021 Coffey Road, Columbus, OH, 43210-1044, or filipic.3@cfaes.osu.edu.



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By Martha Filipic
(614) 292-9833
filipic.3@cfaes.osu.edu

Editor:
This column was reviewed by Jeff LeJeune, microbiologist and associate professor with the Ohio Agricultural Research and Development Center and Ohio State University Extension.

To receive Chow Line by e-mail, send a message to filipic.3@cfaes.osu.edu or sign up at <http://www.ag.ohio-state.edu/~news/subscribe.php>.

**Section of Communications
and Technology
News and Media Relations**
2021 Coffey Road
Columbus, OH 43210-1044
(614) 292-2011

208 Research Services
Building
1680 Madison Ave.
Wooster, OH 44691-4096
(330) 263-3780

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