

What is being done to prevent another outbreak of *E. coli* O157 in spinach and other fresh-cut produce?

What more needs to be done?



Stopping *E. coli* Outbreaks in Ready-to-Eat Produce

Improving Food Safety Practices

Ready-to-eat leafy greens make it more convenient than ever for Americans to include more daily servings of health-promoting fresh produce in their diets. But the 2006 outbreak of *E. coli* O157 in bagged spinach, which led to 204 illnesses according to the FDA, shook consumers' confidence.

E. coli O157:H7 is just one of four *E. coli* strains that cause serious food-borne illnesses each year from the consumption of fruits and vegetables.

In response, the fresh-cut leafy greens industry, centered in California, immediately stepped up sampling and testing in fields and processing plants and initiated research into the transmission of *E. coli* bacteria. A coalition of growers and processors developed and implemented new Good Agricultural Practice (GAP)

Metrics, coupled with prevention-based practices and testing requirements to enhance the food safety of these uniquely vulnerable leafy green products.

E. coli and other pathogens, such as Salmonella, find their way onto food through seeds, water, soil, compost and other farm inputs, and sometimes, wildlife or people. The GAP Metrics are a work in progress to establish more rigorous testing of possible pathogen sources, as well as both raw and finished product.

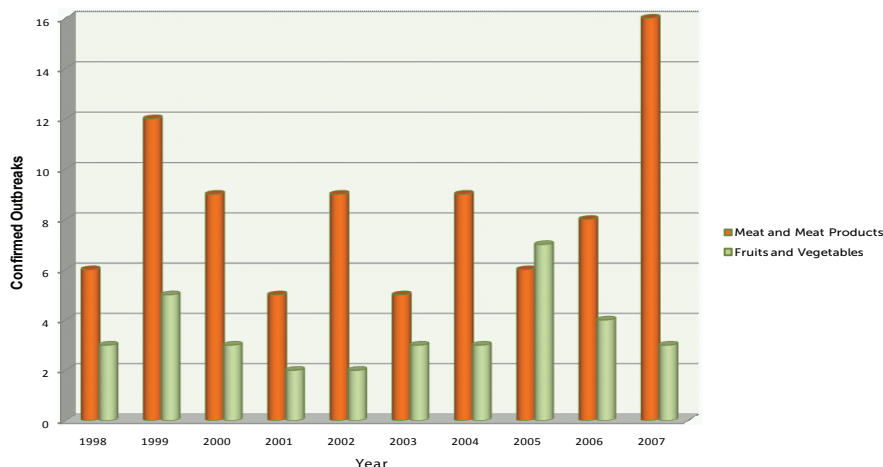
The Center argued in its 2007 report and still believes that the GAP Metrics should require water testing that identifies the presence of *E. coli* O157, not just generic *E. coli*. Likewise, more stringent compost quality standards are needed. Strengthening the GAP Metrics along with systematic, government-supported, industry-wide monitoring and field studies will go far to widen the safety margins in fresh-cut leafy green products.



"Farm to Fork" Food Safety Practices

Every step along the food chain—from the farmer's field to the consumer's fork—plays a role in maintaining the safety of highly perishable fresh food products. Retailers and consumers have a responsibility to maintain **continuous, proper chilling** during transportation and storage. In addition, retailers should highlight and consumers should heed "Best Used By" dates on all fresh produce.

Confirmed Outbreaks of *E. coli* O157:H7 from Meat and Meat Products and Fruits and Vegetables, CDC, 1998-2007



Field testing before harvest helps identify production fields that might pose a food safety risk.

Photo: Courtesy of Earthbound Farm

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Cattle and Leafy Greens Don't Mix

The exhaustive study into the 2006 *E. coli* O157 outbreak did not identify the source of the contamination, but it did add to the mountain of evidence linking the risk of foodborne pathogens to cattle living and grazing in the proximity of leafy green production fields.

Dairy and beef cattle, and the manure they produce, are the primary source of pathogenic *E. coli*. Pathogens in manure can lay dormant for months in a pile or patty, but when disturbed by rain or tillage, or animals moving around they can blow or wash onto fields and colonize leaf surfaces, where all it takes is moisture and heat to trigger growth. Contaminated water sources can transmit *E. coli* O157 onto production fields, as can flood waters and spring run off.

Piecing together all the facts known about the 2006 spinach outbreak, the Center identified dust blowing off a of nearby cattle pasture as the most likely vector carrying *E. coli* O157 onto the outbreak field, a conclusion many experts regard as plausible. This is why the Center recommended in 2007 and still supports a one-half mile buffer between cattle operations or open range and fields producing leafy greens for the fresh-cut industry.

The leafy green GAP Metrics require only a 30' buffer between grazing cattle and a leafy green field -- far too little space to prevent airborne transmission of pathogens. Identifying and targeting high-risk factors such as this can greatly reduce the potential for another *E. coli* outbreak.

Most fresh-cut leafy greens products sold in bags or clamshells have shelf lives of 15–17 days.



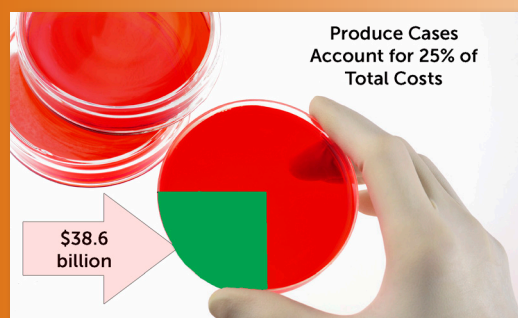
Irrigation water and irrigation systems can be a source of foodborne pathogens in leafy green production.

Safety Advantages Inherent in Organic Farming

Organic cultivation methods may offer several safety nets in preventing *E. coli* O157 growth compared to conventional production practices. On organically managed fields:

- Microbial biodiversity from composts and limited fungicide use can inhibit *E. coli* colonization.
- Higher levels of anti-bacterial phytochemicals and healthy plant immune systems can resist infections.
- Slow-release and lower levels of nitrogen in organic fields are less likely to stimulate rapid bacterial growth.

The Cost of Foodborne Illness Outbreaks in the U.S.



- Total costs of \$152 billion per year
- Average cost of one *E. coli* O157 case = \$14,828
- Salmonella illnesses cost over \$14.6 billion annually

Source: Robert Scharff, "Health-Related Costs from Foodborne Illness in the United States," PEW Foundation Produce Safety Project

Access more information on *E. coli* and the Critical Issue Report, "Unfinished Business: Preventing *E. coli* O157 Outbreaks in Leafy Greens" at www.organic-center.org under "State of Science", then "Food Safety". Contact the author, Dr. Charles Benbrook, at cbenbrook@organic-center.org.



sometimes the greatest ideas are the simplest.



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