



# Extension FactSheet

Food Animal Health Research Program, OARDC, Wooster, Ohio 44691

## *E. coli* O157 in Dairy Cattle: Questions and Answers

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### Q: What Is *E. coli* O157?

A: *Escherichia coli* O157 is a particular type of bacterium that is occasionally found in the digestive tract of cattle and in cattle manure. *E. coli* O157 produces several very powerful toxins (Shiga toxins). However, unlike other types of *E. coli* that farmers may be more familiar with (K99, K88), *E. coli* O157 does not cause scours in calves. Instead, the toxin primarily affects people who accidentally consume the bacteria after direct contact with animals or in contaminated foods and water.

### Q: How Do People Get *E. coli* O157?

A: Most cases of human illness can be traced, either directly or indirectly, to cattle. The consumption of improperly handled or cooked foods of bovine origin, including beef and unpasteurized dairy products, are the primary routes of transmission. More recently, an increasing number of outbreaks of *E. coli* O157-associated illness have been attributed to water contamination and the consumption of raw vegetables (both possibly contaminated with bovine manure). Furthermore, several large outbreaks of disease have been traced to inadequate handwashing among children visiting farms or petting zoos.

This bacterium can cause a spectrum of diseases ranging from diarrhea to a life-threatening disease called Hemolytic Uremic Syndrome (HUS). *E. coli* O157 causes an estimated 80,000 cases of human illness each year in the United States. Some 500 people, mostly children, die as a result of these infections each year in the United States. Children who survive HUS often need kidney transplants or life-long kidney dialysis.

### Q: Why Should *E. coli* O157 Be a Concern for Dairy Farmers?

A: The occurrence of *E. coli* O157 in cattle and bovine manure has three direct implications for farmers. First, farmers who ingest even microscopic amounts of this bacterium directly or in unpasteurized milk may become seriously ill. Second, visitors

and guests at farms may become infected with this organism in this same manner. Three, cull cattle harbouring this organism in their digestive tract or on their hides at the time of slaughter pose a safety risk to the food supply.

### Q: What Is Known About *E. coli* O157 on Dairies?

A: There are no visible signs that an animal has *E. coli* O157. It does not make cattle ill or sick. Animals of all ages may become infected, but *E. coli* O157 is more commonly found among post-weaned heifers (3 to 18 months) than any other group of cattle. *E. coli* O157 is found in cattle on most farms at one time or another, although it occurs most frequently during the summer months. This bacteria can also contaminate the feedbunks, water troughs, and other environmental reservoirs (such as gates and walkways) on farms where it may persist for extended periods.

### Q: What Is Being Done to Control *E. coli* O157?

A: There are several ways that farmers can protect themselves, their employees, and their guests from this deadly bacterium. Ensuring adequate handwashing by all people visiting the animal contact areas, not eating undercooked meat, and prohibiting the consumption of unpasteurized milk from your bulk tank can reduce the likelihood that you or your visitors become ill because of this bacteria. More detailed information is available and should be consulted if you open your farm for public tours.

Controlling the prevalence and magnitude of *E. coli* O157 in cattle to enhance food safety is more complicated. To date there are no known effective control measures for *E. coli* O157 in cattle. However, several active research groups are investigating *E. coli* O157 in cattle populations, including the group lead by Dr. Jeffrey LeJeune at the Food Animal Health Research Program at The Ohio State University's Ohio Agricultural Research and Development Center. Currently, areas of investigation include feed and water hygiene, dietary supplements, and manipulation and vaccination. All these control measures are still in the experimental stages of development.

**Q: Want More Information?**

A. If you would like to learn more about *E. coli* O157 and other foodborne pathogens carried by dairy cattle, or if you would like to become an active participant in helping to identify potential control measures for this organism on your farm, contact Dr. LeJeune directly at the address listed here.

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