



This food safety research has offered a unique opportunity to assess gaps in knowledge, attitudes and practices among small and limited-resource produce growers in KY regarding Good Agricultural Practice (GAP) recommendations. This research and outreach project will facilitate reducing the possibilities of allowing potentially pathogenic strains of food borne bacteria such as *E. coli* O157:H7, *E. coli* nonO157:H7 STEC, other *Enterobacteriaceae* members and *Listeria* from entering the ready-to-eat (RTE) food supply.

Project Name

Food Safety of Local Produce: Helping Farmers Produce Safe Food for Consumers

Who cares and why?

Food safety matters to every one of us every day, and is a priority research area for the USDA. According to new estimates from the Centers for Disease Control and Prevention, about 48 million people (1 in 6 Americans) get sick, 128,000 are hospitalized, and 3,000 die each year as a result of foodborne illnesses. In recent years, the number of food-borne outbreaks associated with contaminated produce has increased substantially. Consequently, there is a need for a systematic study on how and at what stages of cultivation and/or distribution there are possibilities for contamination, niches for survival, and dynamics of successful transmission of food-borne pathogens in fresh produce. In the region's \$3 billion food economy, Louisville-area residents alone spend an estimated \$100 million annually on local foods and express interest in purchasing as much as \$158 million more in 2012. While most produce related outbreaks are associated with conventionally grown commodities, given a wide range of organic production practices and with more small farmers transitioning to organic production, there is a vulnerable segment of produce which demands microbial safety assessment. Animal and plant wastes are the major sources of fertility for organic production. These practices can result in higher risk of contamination by microbial pathogens on organic vegetables.

What has the project done so far?

Microorganisms, including coliforms, *Escherichia coli*, *E. coli* O157:H7, *Salmonella* and *Listeria* have been isolated from produce from small organic and conventional farms in the Bluegrass region of Kentucky to profile their antibiotic resistance and to offer food safety training to small and especially minority organic producers. Consenting conventional, certified, and non-certified organic small and limited-resource farmers were contacted and recruited through a mailing list from Kentucky State University's current outreach and Extension programs, including the Small Farm Program, Third Thursday Thing, the Socially Disadvantaged Farmer Outreach Project, and the Organic Association of Kentucky. A survey based on recommendations for general Good Agricultural Practices (GAP) was developed. Each farmer was given a survey that explored details regarding certification status, fertilization practices (such as the type(s) of manure or compost and/or chemicals, age of the manure or compost and the time of application), sources of irrigation, surrounding land use, handling practices during harvest and post-harvest.

Further, the survey was targeted to help in ascertaining the needs and gaps in knowledge of the farmers in various aspects of 'on farm' food safety. Approximately 44% of produce samples tested positive for *E. coli* from farms that used non-commercial fertilizers (including compost, animal manures, and compost mixtures), and approximately 41% of produce samples tested positive for *E. coli* from farms that used no additional fertilizer on their fields and farms that only used commercial fertilizers on their fields, while no *E. coli* was found on produce that was grown on farms which used commercial fertilizers. However, no pathogenic *E. coli* O157:H7 was detected in any samples.



Impact Statement

In recent years, the number of food-borne outbreaks associated with contaminated produce has increased substantially. There is a need for a systematic study on how and at what stages of cultivation and/or distribution there are possibilities for contamination, niches for survival and dynamics of successful transmission of food-borne pathogens in fresh produce. All participating local farmers received feedback regarding the nature of findings, especially to those whose produce typically tested positive for *E. coli* in all the samplings. Plans were discussed for improving food safety practices, and follow up samplings and analyses are in progress.

What research is needed?

Research that enhances food safety and increases awareness among small and limited produce growers to adherence of Good Agricultural Practices and record keeping, emphasizing their relevance in the context of the changing scenario of the Food Safety Modernization Act (FSMA) is needed to ensure food security for US Consumers of fruits and vegetables. This research will improve the sampling size and approaches that benefit farmers to improve Food Safety standards of produce to reduce the risk of foodborne bacterial pathogens from entering the food supply.

Want to know more?

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Additional Links: <http://www.umes.edu/ard/Default.aspx?id=46285>

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