**USU EXTENSION GRANTS PROGRAM 2016-17 – Final Report**

**Project Leader:** Dr. L. Niel Allen, Irrigation Specialist

**Project Title:** Irrigation Management Concerning the Food Safety Modernization Act

**Collaborators:** Dr. Brent Black, Extension Fruit Specialist
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James Barnhill, Extension Educator, Weber County
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Katie Wagner, Extension Educator, Salt Lake County
Nancy Mesner, Extension Water Quality (assisted but not on proposal)
Taun Beddes, Extension Educator, Utah County (assisted but not on proposal)

**Project Period**: July 1, 2016 – June 30, 2017

**Total Request:** $10,000

**Project Summary:** The Food Safety Modernization Act (FSMA) establishes microbial water quality standards for water used to irrigate vegetables and fruits. FSMA standards jeopardizes many small farm producers by requiring expensive and time consuming water quality sampling and reporting. Under this grant, we provided information to producers concerning irrigation under FSMA standards and conducted water sampling for *E. coli* in irrigation supplies in Cache, Box Elder, Weber, and Utah counties, and obtained funding for on-going FSMA education and training.

**Project Results:** The project provided opportunities for collaboration between on- and off-campus faculty by working together on workshops and identifying locations for collection of water samples. Results from the field sampling of irrigation water and information provided at workshops provided some assurances to the producers that they would be able to comply with FSMA Rule. A factsheet was developed and provide to producers at a fruit grower meeting (Farm Food Safety Laws: FSMA vs. GAP, Shawn Olsen and Karin Allen, May 2017, http://digitalcommons.usu.edu/extension_curall/1750/. The major outcome of the project is a 5-year grant for over $600,000 to fund an Extension Educator for the FSMA Produce Safety Rule.

***Objective 1***. *Review and understand the FSMA Rule and with this understanding prepare a factsheet concerning the agriculture water and irrigation requirements of the FSMA Rule and make educational presentation(s) at the 2017 Urban and Small Farm Workshop and other workshops. A short video will be prepared and posted on the Extension website showing method of water sampling, application of water to petrifilm, incubation of E. coli colonies, and counting of E. coli colonies*.

A factsheet was prepared "Farm Food Safety Laws: FSMA vs. GAP", by Shawn Olsen and Karin Allen, May 2017, http://digitalcommons.usu.edu/extension_curall/1750/. There are still aspects

and interpretations of the FSMA rule that are under review by the U.S. Food and Drug Administration (FDA). An entire session was devoted to FSMA and Good Agricultural Practices for produce growers (GAP) at the 2017 Urban and Small Farm Workshop. Presentations concerning FSMA were made to approximately 355 attendees at six workshops and meetings. In five of these meetings, FSMA presentations were also made by Utah Department of Agriculture and Food (UDAF) administrators and/or staff. UDAF has responsibilities concerning training and enforcement of the FSMA regulations. The following are the meetings in which information on FSMA was presented:

- Utah State Horticulture Association Annual Convention, 2 presentations (January 19, 2017)
- Utah Onion Association, 2 presentations (February 14, 2017)
- Urban and Small Farms Conference, 4 presentations (February 22-23, 2017)
- Annual Extension Conference (March 1, 2017)
- Utah Water Users Association (March 21-22, 2017)
- Utah County Expanded Fruit Tree Grower Meeting (June 29, 2017)

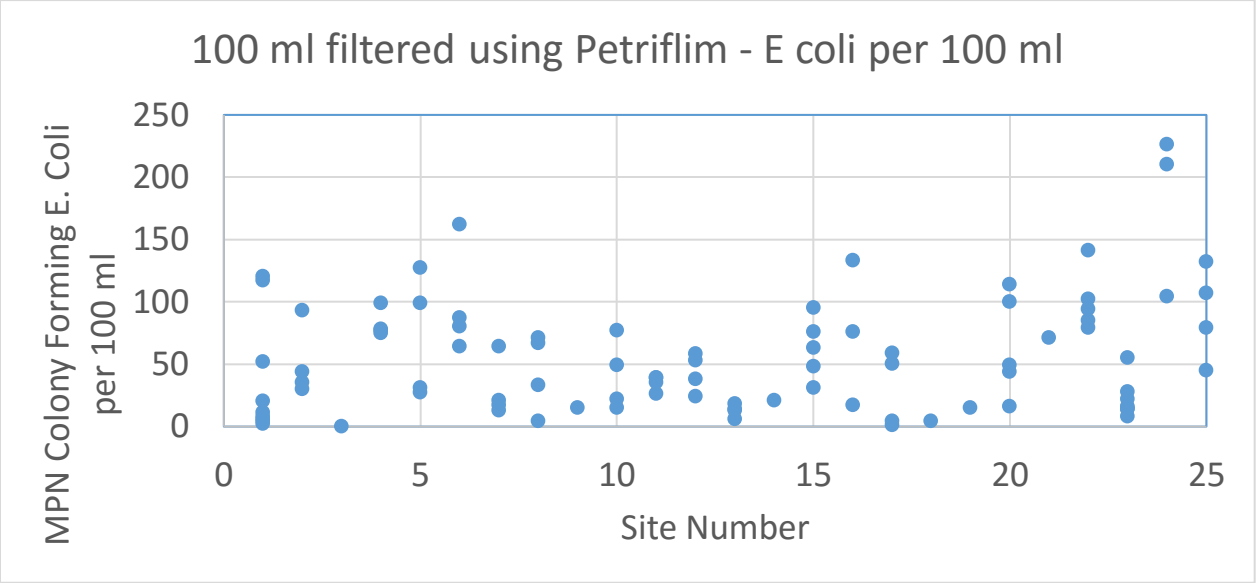
A video was not prepared because there is still ongoing FDA discussion concerning which method(s) are acceptable to determine *E. coli* colony counts. The method proposed by FDA is burdensome and has many limitations. It is likely the petriflim method stated in the proposal will not be the accepted methodology. However, analysis methods and sample techniques were discussed at the workshops.

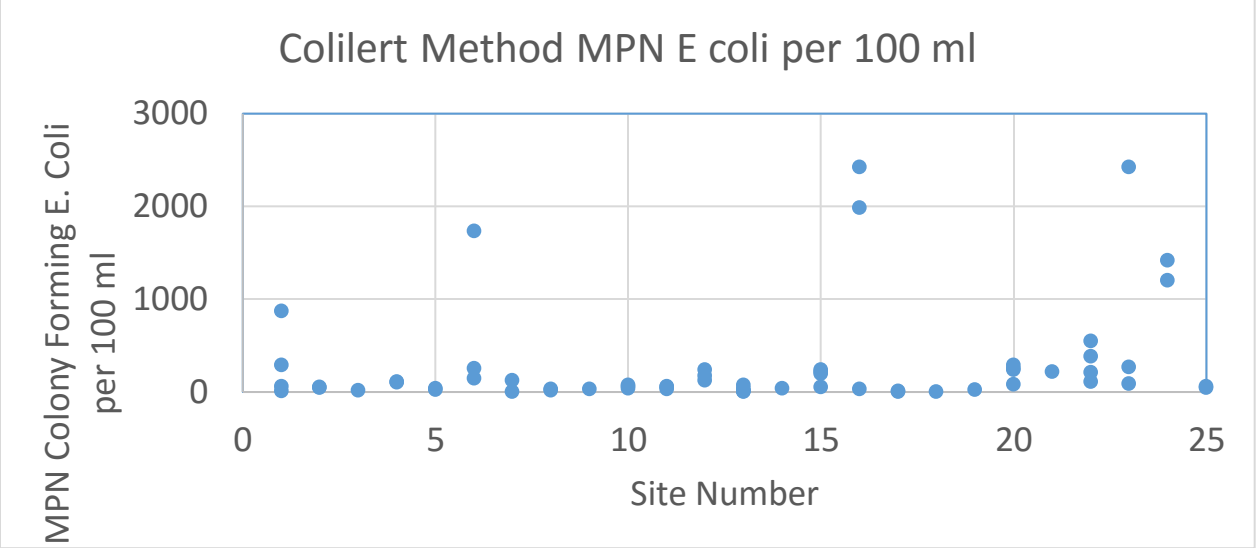
***Objective 2***. *Conduct random testing of irrigation water, using 3M Petrifilm™ or similar product to determine E-coli counts in irrigation water. This will help determine scope of water quality issues and sample technics and whether the sampling can be accomplished by users, organizations, or commercial laboratories*.

Approximately 300 samples were taken and analyzed at 26 locations in Cache, Box Elder, Utah, and Weber counties. Several methods were used get E. coli colony counts (1 ml on petrifilm, 10 ml filtered on disc placed on petrifilm, 100 ml filter on disk place on petrifilm, 100 ml in IDEXX Colilert multi-tray, and private laboratory). It was determined that is best to analysis the entire 100 ml sample, rather than a fraction of the sample. This requires filtering the bacterial on the samples through a filter disc for petriflim methods. Filter requires cleaning and disinfecting of equipment between samples. The IDEXX Colilert multi-tray method (used by Utah Division of Water Quality) analyses the entire sample without filtering. The Colilert method is an EPA approved methods and is the easiest to use, and is under consideration by FDA.

The canal water close to the mountain streams sources has much less E. coli than near the ends of the canals. Colony forming E. coli counts per 100 ml of water (or most probable number) ranged from 0 to over 2,400 and are highly variable (see following figures for some of the results). In several locations, the E. coli counts exceed the FSMA Rule standards. However, the in many of these locations the farming or processing methods mitigate the high E. coli counts. These mitigation measures include one or more of the follow; 1) sufficient number of days between

irrigation and harvest to allow for die-off of E. coli, 2) not direct contact of produce with irrigation water, and/or 3) post harvesting processes that kill E. coli.




***Objective 3***. *Apply for other grants or funding to help producers understand and comply with the ruling. The funding will provide baseline knowledge and data to better compete from grants and to identify the most critical issues concerning FSMA regulations*.

Utah State University Extension has obtained 5-year grant for over $600,000 to fund an Extension Educator for the FSMA Produce Safety Rule (assumes projected annual funding from FDA). The hiring of the Extension Educator is in process. The funding will also provide opportunities to provide the required training for producers. The funding is through the Utah Department of Agriculture and Food, which has a large grant with US Food and Drug Administration. Extension provides a great resource to provide some of the education and outreach due to their present and organization.