



In-Field Irrigation Water Treatment for the Food Safety Modernization Act Produce Safety Rule

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FSMA PSR Agricultural Water Criteria

For water applied directly to produce:

- GM: 126 or less CFU*
OR

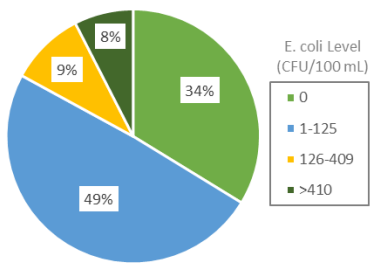
- STV: 410 or less CFU*

* Based on Generic *E. coli* in wa-
ter samples of 100 mL

For harvest and postharvest water:

- No detectable generic *E. coli*
per 100 mL

Statewide Agricultural Water Survey Results



Under the Food Safety Modernization Act (FSMA) of 2011, the Produce Safety Rule (PSR) has set criteria for the microbial quality of agricultural water. Agricultural water is defined by FSMA as water used in the production of crops that come into direct contact with produce covered by the Rule. This includes irrigation water, crop sprays, and water that is applied in any way that directly contacts covered produce during or after harvest is also considered agricultural water by the FDA. Activities during or after harvest include washing, cooling, and making ice. Water used for handwashing is also must also meet criteria set by the Produce Safety Rule.

The criteria for water that is applied directly to produce has been set at a geometric mean (GM) of 126 or less colony forming units (CFU) of generic *E. coli* per 100 ml of water and a statistical threshold value (STV) of 410 CFU or less generic *E. coli* per 100 ml. For harvest and postharvest agricultural water, FDA requires no detectable generic *E. coli* per 100 ml.

Many farmers in Hawaii utilize groundwater or surface water, which includes streams, open irrigation ditches, catchment, and reservoir water for irrigation and other uses described above. In recent results from a Statewide Agricultural Water Survey that was conducted by the CTAHR Farm Food Safety Team which tested 252 samples of agricultural water, 83% were found to be below the FSMA GM limit of 126 CFU per 100 ml of water.

Despite these results, a portion of Hawaii farmers may still need to address the microbial water quality of their agricultural water by one of three options: The first would be to change water source, which may only be applicable to crop sprays, or change irrigation method to drip irrigation which is least likely to come into contact with the edible portions most crops.



If agricultural water does not meet the criteria, growers may also allow time for potentially dangerous microbes to die off in the field by using an interval between the last irrigation and harvest, not to exceed 4 days. Growers may also treat their agricultural water.

With funding provided by the Western Region Center for Enhanced Food Safety, the CTAHR Farm Food Safety Team has been able to investigate practical and locally available treatment systems for growers who may need to treat their agricultural water. One viable option is to use an in-field treatment system.

The main component of this system is an injector that is used to accurately apply a sanitizer to irrigation systems. The primary goal of applying a sanitizer to the an irrigation system is to control algal growth which is responsible for cause uneven irrigation, and clogging or blockage of pipes, sprinklers, and drip tape. The secondary benefit of the use of these sanitizers is controlling potentially pathogenic microbes in agricultural water, effectively treating agricultural water to meet FSMA PSR requirements.

There are sanitizers suitable for use by both organic and conventional operations with active ingredients peroxyacetic acid or sodium hypochlorite, respectively. While there are also many different injectors and materials available to achieve this type of system, it is important to verify that the materials are rated for use with sanitizers.

Field days were held on Maui and Oahu, and another will be held on the Big Island. The project team is also currently working on a video to demonstrate how to install this system on farms. If you would like to know more about this system, please stay tuned for the educational video and future field days.



Pictured Above: The injector and system set-up used in demonstrations. Please contact a professional engineer to determine the proper equipment for your farm