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DISSEMINATION AND THE FATE OF FOODBORNE PATHOGENS AND INDICATORS ON PRODUCE POST IRRIGATION WITH SURFACE WATER: AN INTERVENTION TRIAL

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Irrigation water has been recognized by the US FDA Food Safety Modernization Act (FSMA) as a major route of produce contamination at pre-harvest. There is a critical need for new and improved control strategies and to evaluate their effectiveness in reducing microbial hazards in irrigation water, as affected by irrigation method, produce commodity and weather conditions. We have conducted controlled intervention trials in cantaloupes and spinach to determine effectiveness of FSMA mitigation options based on the microbial die-off post irrigation, and to test the effectiveness of two strategies for treatment of surface water to keep generic *Escherichia coli* levels under the regulatory thresholds. The two treatments are ultra-violet (UV) radiation and a novel treatment, which takes advantage of the widespread use of sulfuric acid based fertilizers (SA-fertilizer) in produce growing. The preliminary results indicated that, compared to the no-treatment control (NO), both UV and SA treatments were effective in reducing contamination of water with (i) generic *E. coli* that naturally occurred in water used for irrigation and (ii) inoculated Rifampicin-Resistant (RifR) *E. coli*, and the microbial reduction was evident both in the tank water, just before irrigation, and in the irrigation water in the produce field, and both in cantaloupe and spinach trials.

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