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Scientific Challenges and Cost-Effective Management of Risks Associated with Implementation of Produce Safety Regulations

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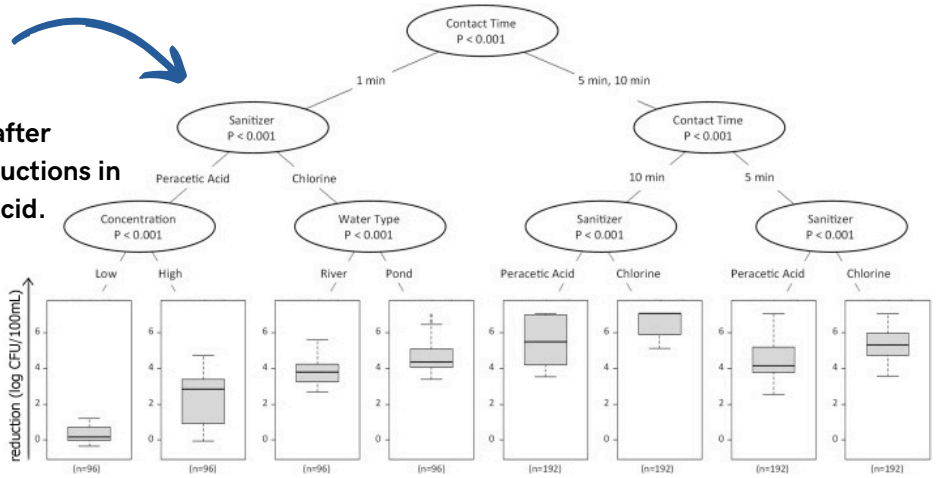
RESEARCH SUMMARIES

EFFICACY OF PERACETIC ACID AND CHLORINE ON THE REDUCTION OF SHIGA TOXIN-PRODUCING ESCHERICHIA COLI AND A NONPATHOGENIC E. COLI STRAIN IN PREHARVEST AGRICULTURAL WATER

Contact time had the largest effect on both Shiga-toxin producing *E. coli* (STEC) and Generic *E. coli* (TVS 353) concentrations.

Sanitizer type was of second greatest importance after contact time, with chlorine resulting in greater reductions in STEC and *E. coli* TVS 353 compared to peracetic acid.

(Model R^2)	Factor	Effect Estimate	95% Confidence Interval	*p* value
Reduction (0.72)				
	Water Type (reference is river)			
	Pond	0.09	−0.03, 0.21	0.133
	Strain (reference is generic *E. coli*)			
	STEC[c]	0.68	0.56, 0.80	<0.001
	Sanitizer (reference is peracetic acid)			
	Chlorine	1.59	1.47, 1.71	<0.001
	Residual Concentration[d] (reference is low)			
	High	0.69	0.57, 0.81	<0.001
	Water Temperature (reference is 12°C)			
	32°C	0.58	0.47, 0.70	<0.001
	Contact Time (reference is 1 min)			
	5 min	2.15	2.00, 2.30	<0.001
	10 min	3.26	3.11, 3.40	<0.001



The STEC panel was more sensitive to sanitizer treatment compared to the *E. coli* TVS 353 strain.

Our findings suggest *E. coli* TVS 353 appears to be a conservative surrogate for in-field experiments, since it possesses similar but slightly more resistant survival characteristics, compared to the STEC panel.

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MORE INFORMATION

Murphy, C.M., Hamilton, A.M., Waterman, K., Rock, C., Schaffner, D., Strawn, L.K., 2023. Efficacy of Peracetic Acid and Chlorine on the Reduction of Shiga Toxin-producing *Escherichia coli* and a Nonpathogenic *E. coli* Strain in Preharvest Agricultural Water. J. Food Prot. 86(11). https://doi.org/10.1016/j.jfp.2023.100172