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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

THE EFFECT OF HEAT-TREATED POULTRY PELLETS AND COMPOSTED POULTRY LITTER ON E. COLI SURVIVAL IN SOUTHEASTERN US SOILS: FLORIDA AND GEORGIA

Amendment type significantly influenced *E. coli* survival, with heat-treated poultry pellets (HTPP) showing highest survival, then poultry litter (PL), then unamended (UN) soil with the lowest survival.

In UN plots, E. coli sharply declined to close to the limit of detection by day 14 and 112 in Fl and GA, respectively. However, *E. coli* survived for up to 140 days in PL- and HTPP-amended soils at both locations.

Sampling days	FL			GA		
	UN	PL	HTPP	UN	PL	HTPP
0	$5.95\pm0.07_{A,a}$	$5.99\pm0.51_{A,a}$	$5.84\pm0.07_{A,a}$	$4.35\pm0.74_{A,a}$	$4.90\pm0.96_{A,a}$	$4.13\pm0.77_{A,ab}$
1	$5.03\pm0.39_{A,a}$	$4.74\pm0.74_{A,ab}$	$5.14\pm0.34_{A,a}$	$1.93\pm1.11_{A,ab}$	$4.34\pm0.49_{A,ab}$	$2.88\pm1.25_{A,bcd}$
3	$1.30\pm0.56_{C,c}$	$4.09\pm0.30_{B,b}$	$5.51\pm0.32_{A,a}$	$1.93\pm1.80_{B,ab}$	$4.50\pm0.10_{AB,ab}$	$5.25\pm0.12_{A,a}$
7	$2.88\pm0.28_{B,b}$	$4.90\pm0.46_{A,ab}$	$4.08\pm0.48_{A,b}$	$2.02\pm1.74_{A,ab}$	$3.65\pm0.39_{A,abc}$	$3.52\pm0.21_{A,bc}$
14	$-0.01\pm0.40_{B,d}$	$1.58\pm1.06_{B,c}$	$3.90\pm0.16_{A,b}$	$1.99\pm1.18_{A,ab}$	$3.38\pm0.15_{A,abc}$	$3.55\pm0.50_{A,bc}$
28	$0.37\pm0.79_{B,cd}$	$1.11\pm0.59_{B,c}$	$2.66\pm0.16_{A,c}$	$1.53\pm0.71_{A,ab}$	$2.73\pm1.77_{A,abcd}$	$3.04\pm0.39_{A,bcd}$
56	$-0.14\pm0.19_{B,d}$	$0.40\pm0.34_{B,c}$	$2.13\pm0.72_{A,cd}$	$1.25\pm0.65_{B,b}$	$2.54\pm0.26_{A,bcd}$	$2.20\pm0.43_{AB,cd}$
84	$0.34\pm0.44_{B,cd}$	$0.27\pm0.19_{B,c}$	$1.47\pm0.40_{A,d}$	$2.39\pm0.45_{A,ab}$	$1.45\pm0.38_{B,cd}$	$2.11\pm0.22_{AB,cd}$
112	$-0.24\pm0.00_{C,d}$	$0.64\pm0.48_{B,c}$	$1.52\pm0.22_{A,d}$	§ ND	$1.02\pm0.00_{B,d}$	$2.44\pm0.37_{A,cd}$
140	$0.04\pm0.48_{B,cd}$	$0.30\pm0.55_{B,c}$	$1.49\pm0.28_{A,d}$	§ ND	$0.71\pm1.21_{A,d}$	$1.57\pm0.38_{A,d}$

State	[a]Treatments	[b]Environmental factor	[c]Correlation coefficient (ρ)	Prob>|ρ|
Overall	[d]All treatments	Total radiation	0.2942	<0.0001
		Rainfall	−0.3519	<0.0001
		Soil temperature	0.2218	0.0028
		Air temperature	0.0304	0.6856
		Relative humidity	0.2848	0.0001
		Soil moisture	−0.5729	<0.0001

Environmental factors with moderate-strong ($\rho > 0.40$) and significant correlations ($P < 0.05$) with E. coli survival are represented in bold print.

Except for soil moisture and rainfall parameters, the weak correlation between other tested environmental parameters and survival indicated that factors intrinsic to the location may not be as influential on *E. coli* survival as the amendment type and time.

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MORE INFORMATION

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