

PREVENTATIVE TREATMENTS

COMPETITIVE INHIBITION MICROORGANISMS FOR THE CONTROL OF ZOOBOTIC PATHOGENS IN COMPOST

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Indigenous microflora may play a significant role in suppression of zoonotic pathogens during static composting. The objective of this project was to isolate competitive inhibition (CI) microorganisms from static compost piles for the control of zoonotic pathogens. Compost samples from the surface of static compost piles were collected during the study of the fate of zoonotic pathogens (*E. coli* O157:H7, *Listeria innocua*, and *Salmonella* Typhimurium) in static composting of chicken litter and peanut hulls. Only samples that exhibited a large decline in inoculated pathogen populations in two consecutive sampling times were used for the isolation of CI microorganisms. Two methods were used to screen for potential CI bacteria against target pathogens (*E. coli* O157:H7, *Listeria monocytogenes*, and *Salmonella*): a deferred antagonism test and a co-culture test. A total of 20 potential CI isolates against either one or all of three target pathogens were selected from 16 compost samples. Cross inhibitory activity among these isolates revealed that nine of the isolates were compatible. Characterization of these isolates by DNA sequencing of the 16S rRNA gene is currently in progress. Future studies will incorporate these isolates into cured compost materials and evaluate their potential to inhibit the growth of *Salmonella*.

