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## **Survival and transport of *E. coli* O157:H7 and *Salmonella* Newport in manure and manured soils**

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### Abstract Text:

*E. coli* O157:H7 and *Salmonella enterica* serovar Newport (*S. Newport*) are zoonotic pathogens imposing serious public health concerns. Both organisms have apparently established reservoirs in dairy cattle. As infected animals shed the organisms in manure, which is subsequently spread on agricultural land, the pathogens may be incorporated into plants, transmitted to other animals or humans, or transported into waters compromising the balance and health of the ecosystem. Information is lacking on how the organisms may survive and move in the post-shed environment particularly under different manure handling or treatment conditions.

We hypothesize that the survival kinetics of *E. coli* O157:H7 or *S. Newport* differs under different pH, temperature, and moisture conditions in manure or manure amended soils, and that their persistence varies with manure handling/storage systems on farms. We have designed a series of laboratory- and field-based experiments to test these hypotheses. Our overall goal is to enhance the understanding of the fate and impact of manure pathogens in agroecosystems and to contribute to the development of science-based and farm-applicable management strategies for their controls. Specific objectives are: (i) Assess the survival characteristics of *E. coli* O157:H7 and *S. Newport* in manure and manured soils under laboratory conditions. (ii) Determine the persistence of the organisms in different manure handling/storage and cropping systems on farms using sentinel monitoring devices. (iii) Investigate the transport behavior and factors affecting movement of the organisms from manured soils to waters through leaching studies and on-farm investigations. The project is readily executable, supported by well-tested protocols, preliminary data, and a multidisciplinary team with relevant and complementary research expertise and skills.

### Impact Statement:

(This is a 2007 award, therefore only an abstract is available at this time.)