



Agricultural
Research
Service

South
Atlantic
Area

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Most Probable Number Methodology for Quantifying Dilute Concentrations and Fluxes of *Salmonella* in surface Water

Why Does it matter?

Watersheds with animal agriculture have the potential to adversely impact recreational waters and threaten public health by contaminating surface waters with fecal pathogens such as *Salmonella*. Because small numbers of *Salmonella* can cause disease, and because the indicator of fecal contamination, *E. coli*, may not indicate its presence, a method is needed to detect and enumerate dilute concentrations of viable *Salmonella*.

What was done?

To resolve this problem three proven technologies were combined: 1) a filtration method for filtering large volumes of environmental water, 2) a standard most probable number (MPN) dilution scheme for counting bacteria with prescribed growth media, and 3) a genetic method for confirming the identity of *Salmonella*.



What was found?

This method has determined the concentration of *Salmonella* in 20 liter samples taken from the inflow and outflow streams of a pond in an agricultural watershed as low as 0.1 *Salmonella* cells/liter and identified substantial fluxes of *Salmonella* when the fecal indicator bacterium *E. coli* was not detected.

What is the impact?

The sensitivity of this method will enhance our understanding of the fate and transport of *Salmonella* in agricultural watersheds and because it has the potential for developing culture collections it may prove helpful in identifying the actual environmental sources of this pathogen.

Research Team and Contact information

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