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PREVALENCE OF ESCHERICHIA COLI O157:H7 AND SALMONELLA SPP. IN SURFACE WATERS OF SOUTHERN ALBERTA AND ITS RELATION TO MANURE SOURCES

ABSTRACT

The Oldman River watershed in southern Alberta, Canada, is an extensively irrigated region in which intensive agricultural practices have flourished. Concern over water quality in the basin has been expressed because of high levels of enteric disease indigenous to the region. To address these concerns, we conducted a 2-year study to estimate the prevalence of *Escherichia coli* O157:H7 and *Salmonella* spp. in surface water within the basin. This study is the first of its kind to identify *E. coli* O157:H7 repeatedly in surface water collected from a Canadian watershed. Prevalence of *E. coli* O157:H7 and *Salmonella* spp. in water samples was 0.9% ($n = 1483$) and 6.2% ($n = 1429$), respectively. While data examined at a regional level show a relationship between high livestock density and high pathogen levels in southern Alberta, statistical analysis of point source data indicates that predicted manure output from bovine, swine, and poultry feeding operations was not directly associated with either *Salmonella* spp. or *E. coli* O157:H7 prevalence. However, geography and weather variables, which are likely to influence bacterial runoff, were not considered in this model. We also postulate that variations in time, amount, and frequency of manure application onto agricultural lands may have influenced levels of surface-water contamination with these bacterial pathogens.

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