

Does pasture irrigation increase groundwater contamination?

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This image shows dairy cows grazing next to a stationary Center Pivot irrigator. Credit: Murray Close.

Concern about microbial contamination of groundwater from foraging dairy cows has increased as spray irrigation practices in New Zealand have increased over the years. Bacteria capable of living in both animals and humans are commonly found in cow manure. Addressing the lack of research on the topic, a team of New Zealand researchers studied the transport of microbes from two spray irrigated dairy pastures into groundwater supplies.

The research team, reporting in the May-June 2010 [Journal of Environmental Quality](#) and published by the American Society of Agronomy, Crop Science Society of America, and [Soil Science Society of America](#), found little to no transport of microbes due to spray

irrigation application.

When irrigation applications were increased to simulate irrigation plus heavy rainfall, there was a small increase some forms of bacteria, notably E. coli. But other common bacteria were only detected at very low levels when fresh cow pats were subjected to this treatment.

The results of the study indicate a minimal impact of dairy farm pastures on microbial quality of [groundwater](#) as a result of spray irrigation.

Previous studies of flood irrigation, which apply much more water less efficiently than the spray irrigation systems used in this study, have been shown to cause high levels of groundwater contamination. No difference was noticed between two different spray irrigation systems, a traveling irrigator and center pivot. The researchers suggest that converting from flood irrigation to spray irrigation will reduce microbial contamination of groundwater and reduce environmental health risks.

More information: View the abstract at jeq.scijournals.org/cgi/content/abstract/39/3/824

Provided by American Society of Agronomy

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