

Pen-level prevalence and Environmental Risk Factors for *Escherichia coli* O157:H7 Fecal Shedding by Feedlot Cattle

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Introduction

The objective of this study was to describe feedlot pens by the point-prevalence of cattle shedding *Escherichia coli* O157:H7 in feces, and to look for relationships between pen prevalence and other characteristics of the pen.

Materials and Methods

Feces were collected from the rectums of all cattle in each of 29 pens from 5 Midwest feedyards. Concurrent samples were collected of water from water tanks and partially consumed feed from feed bunks. Concurrent pen-level data was collected on the cattle and pen environment. Culture methods were specific to the type of sample, but included selective enrichment, and immunomagnetic separation. Isolates were confirmed by standard methods including polymerase chain reaction (PCR). Each pen was studied once during the June-September study period.

Results and Conclusions

E. coli O157:H7 was isolated from at least 1 animal in each of the 29 pens. The 5 feedyards did not differ by pen prevalence ($P > .10$); however, the pen prevalence differed widely within feedyards ($P < .001$). Pen prevalence was not correlated with such pen characteristics such as temperature, pH, or cleanliness of water in water tanks, pH of feed in the bunks, number of cattle, mean body weight, or number of days in the feedyard ($P > .1$). Recovery of *E. coli* O157:H7 from feed or water was not associated with pen-prevalence ($P > .1$). Wet pen conditions were associated with the level of pen prevalence ($P < .05$). *E. coli* O157:H7 should be considered an ubiquitous organism in pens of feedlot cattle, but factors related to the pen environment may help explain the level of *E. coli* O157:H7 shedding by feedlot cattle.