296-7 Distribution and Diversity of *Escherichia* and *Salmonella* Isolates Obtained from Beef Cattle Concentrated Animal Feeding Operations

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The Southern High Plains are home to numerous cattle feedlots containing approximately 3.5 million beef cattle that account for nearly 30% of the United States fed beef cattle operations. The high density of beef cattle results in a concentration of nutrients (C, N, and P) due to the generation of manure wastes and may create an environment favorable for the survival and persistence of fecal pathogens. Little is known about the feedlot pen surface chemistry and biology, especially the underlying microbial community composition. Previously the feedlot pen surface profile was determined to be comprised of four layers: an unconsolidated top layer, dry-pack, wet-pack and soil layers. A series of studies was conducted to evaluate the influences of these feedlot pen surface layers on microbial community structure and pathogen density. Feedlot playa lakes were also characterized with respect microbial composition and pathogen community structure. Culture-dependent (pathogen selective media) and culture-independent methods (DGGE-PCR and quantitative real-time PCR) were employed in these studies. Feedlot layers were observed to significantly affect bacterial and fungal community composition. These include the distribution of different lineages of ammonia- and nitrite- oxidizing bacteria within the feedlot layers. The wet-pack layer showed a significant reduction in fungal community composition when compared to the other feedlot pen surface layers. *Escherichia coli* O157:H7 was primarily confined to the unconsolidated and dry-pack feedlot pen surface layers and was not observed within the wet-pack layer. Several hundred isolates of *Escherichia* and *Salmonella* spp. were obtained from feedlot playa lakes. Rep-PCR assays indicate a high level of genetic diversity for both *Escherichia* and *Salmonella* strain collections. Thus beef cattle feedlot pen surface and playa lakes constitute a unique agro-ecosystem conducive to the survival and persistence of fecal pathogens.

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