

**Evaluation of fecal pool size strategies for herd-level detection of
Mycobacterium avium subsp. *paratuberculosis***

McKenna, Shawn; Barkema, Herman; Keefe, Greg; Stryhn, Henrik; Sanchez, Javier; Dohoo, Ian

University of Prince Edward Island, Atlantic Veterinary College, Dept. of Health Management, 550 University Avenue, Charlottetown, Prince Edward Island, Canada, C1A 4P3

Feces collected from cattle at slaughter were used to estimate the performance of culturing various pool size strategies for herd level detection of *Mycobacterium avium* subsp. *paratuberculosis*. Previous results from tissue culture using the TREK ESP[®] Culture System II on the same cattle were used to determine which cows were to be included in each pool. Pool sizes of 3, 5, 8, 10, and 15 were used with varying number of tissue positive animals in each pool ranging from 0 to five. An individual fecal culture was also performed on each animal. All fecal cultures were performed using the TREK ESP[®] Culture System II. Overall, there were 49, 52, 48, 49 and 47 pools of 3, 5, 8, 10 and 15 animals, which included at least one fecal culture-positive animal, respectively. Some pools had more than one fecal culture-positive animal. Using pools with minimally one fecal shedder to determine the sensitivity of pooling, the results for pools of 3, 5, 8, 10, and 15 were 46 (95% CI: 33.0-61.0), 67 (95% CI: 54.5-80.1), 43 (95% CI: 29.7-57.8), 59 (95% CI: 45.4-72.9), and 39% (95% CI: 28.1 - 50.3), respectively. For screening purposes, pools of 10 animals appeared to perform adequately; however, a pool of five was optimal. There were two pools that only had fecal culture-negative animals that were positive. However both had at least one tissue culture-positive animal included. Overall, these results suggest that utilizing pools of 10 in suspected low prevalence herds may be valid.