Detecting Johne’s Disease heavy shedders in dairy cows

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Cows that shed high concentrations of *Mycobacterium avium* subsp. *paratuberculosis* (Map) in feces into the environment (heavy shedders) can be identified through fecal culture, though this method is costly and requires a long period of incubation. Other methods of detection are available, including pooling of fecal samples and use of fecal PCR, though efficacy for detection of heavy fecal shedders within pooled samples has not yet been demonstrated.

The objective of this study was to identify alternative methods to identify Map heavy shedders in dairy herds. Fecal samples were collected from dairy cows in 7 herds participating in the Minnesota Johne’s Disease Demonstration Herd Project. Pooled environmental fecal samples and individual cow fecal samples were collected. Samples were tested using fecal culture and fecal PCR at the Minnesota Veterinary Diagnostic Laboratory. In addition, individual cow fecal samples were pooled in groups of 5 and 10 individual samples per pool and tested using both assays. Heavy shedding cows were defined using fecal culture (greater than 50 colonies per tube).

Preliminary results of fecal culture indicated that the apparent cow-level prevalence was 4.8%, and 18.8% of them were heavy shedding cows. Compared to fecal culture of individual fecal samples, the sensitivity for detection of at least one heavy fecal shedding cow in environmental samples was 100% for fecal culture and 25% for fecal PCR. The sensitivity for detection of at least one heavy fecal shedding cow in pools of 10 cows per pool was 100% for fecal culture and 80% for fecal PCR. The sensitivity for detection of at least one heavy fecal shedding cow in pools of 5 cows per pool was 100% for fecal culture and 88% for fecal PCR. In summary, fecal PCR is an alternative method to fecal culture on pooled fecal samples for detection of heavy shedders.