Culture of *Mycobacterium paratuberculosis* (Johne’s):

We have expanded and improved our Johne’s disease diagnostic services to include rapid liquid culture systems for the isolation of *Mycobacterium paratuberculosis* from feces, tissues, and environmental samples. We use the TREK system and provide complete culture results in as little as 5 weeks from submission of the sample, with preliminary reports issued on individual animals as they are available. Results are available on-line, by e-mail, and by fax.

Our laboratory is fully certified by USDA, APHIS to conduct the rapid Johne’s culture testing for routine diagnosis, for Herd Status programs, and for import/export testing. We are also certified to conduct testing on pools of fecal samples, which recently has been shown to be a cost-effective method to screen herds for Johne’s and to estimate the overall herd prevalence. Our laboratory has sufficient staff and instruments available to accommodate expanded service and—with rare exceptions—samples are processed and cultures started within 2 days of sample receipt. We can also accommodate your Johne’s serology needs.

**Testing options and sample submission:**

We do routine herd testing as well as contract testing of animals for import/export purposes. DCPAH has a number of options available in this regard, with different charges (check the current fee schedule or test catalog for current prices) for each option. We are also willing to discuss alternate testing strategies and charges with clients who have significant sample volume or unique needs.

**Pricing options:**

- **Routine:** Culture for up to 42 days with PCR confirmation of all positives.
- **Accelerated:** Culture for up to 35 days with PCR confirmation of all positives and negatives.
- **Maximum sensitivity:** Culture for 42 days with PCR confirmation of all positives and all negatives.
- **Pooled fecal cultures:** Culture for up to 42 days with PCR confirmation of all positives. There is an initial charge for culture of the 5-sample pool. If follow-up culture of each individual animal in a positive pool is requested, those will be charged at a discounted price. See the information below for the recommended testing protocol.
- **Serology:** ELISA testing is available. Serum or milk ELISA – for cattle, serum ELISA for sheep or goats. Agarose Immunodiffusion – any species (bison, zoo animals, deer, alpaca, llama).

**Sample submission:**

- Each fecal sample should be collected and identified individually. Samples may be submitted in a variety of containers, but snap-cap milk tubes are preferred. Whirlpack bags are also acceptable. **Please do not submit samples collected in gloves or OB sleeves.**

- Please fill out our general lab submittal form and ship the samples to the address on the submittal form. Please list the animal numbers on the second page of the submittal form or an additional sheet of paper.
- Our lab accepts samples Monday through Saturday. We do not charge an accession fee or an out-of-state premium.

**Pooled Fecal Culture Strategy:**

**Background:** Recent studies have shown that bacteriologic culture of pooled fecal samples from cattle herds is an efficient, sensitive, and cost effective way to identify herds infected with *M. paratuberculosis*. Various strategies have been evaluated, but current experimental data supports herd sampling with 10 pools of feces (5 animals/pool) to produce optimal results. This strategy results in a sensitivity of 79 percent for detection of herds with a low (<10%) prevalence of infection and a 99 percent sensitivity for detection of herds with a high prevalence (>10%) of infection. Furthermore, the percentage of fecal pools that are positive directly correlates with the infection prevalence; this is not the case with serological test results.

**Advantages of pooled fecal culture:**

- Decreases cost of testing, as the cost for culture of a 5-animal pool is significantly less than the cost of testing each animal individually
- Percent of positive pools is correlated with herd prevalence
- Provides direct microbiological evidence of herd infection with 100 percent specificity, as opposed to serology where non-specific reactivity can be a problem
- Results can be used to more effectively measure and manage the infectious risk and guide control measures.
- No additional sample processing is required by the submitting veterinarian—individual samples are collected and shipped as usual and the fecal samples are pooled in the lab with individual samples preserved for further testing.

**Disadvantages of pooled fecal culture:**

- Does not provide results for individual cows to assist with culling decisions. However, individual cultures from positive pools can always be done without further sample collection and submission.
- Fecal culture does take time; therefore, results are not available as quickly as with ELISA testing. However, our new liquid culture systems have cut the turnaround time for fecal cultures to 5 to 6 weeks, with positive results often available by 21 to 25 days.

**Procedure:**

- We recommend the submission of 50 samples per herd. This will result in 10 pools of 5 animals each, which will be prepared in our lab.
- Each fecal sample is collected and identified individually. Samples may be submitted in a variety of containers, but snap cap milk tubes are preferred. Whirlpack bags are also acceptable. Please do not submit samples collected in gloves or OB sleeves.
- Please fill out our general lab submittal form and ship the samples to the address on the submittal form. Please list the animal numbers on the second page of the submittal form or an additional sheet of paper.
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