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Johne's Disease: What's the best test?

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Johne's disease testing requirements for herds participating in the U.S. Johne's Disease Control Program are spelled out in government documents available on the web at:

http://www.aphis.usda.gov/vs/nahps/johnes/

Herd owners wanting to test for Johne's disease but not participate in the state or federal voluntary program have had less guidance. In fact, many producers and practitioners were confused about what test for Johne's disease to use. The situation was corrected at the end of 2006.

Five U.S. Johne's disease experts have taken the guesswork out of deciding which test is best for Johne's disease. The expert panel consisted of Dr. Mike Collins, University of Wisconsin, Dr. Ian Gardner, University of California-Davis, Dr. Frank Garry, Colorado State University, Dr. Allen Roussel, Texas A&M University, and Dr. Scott Wells, University of Minnesota. Under contract from the USDA-APHIS-VS they studied the problem for over a year and then provided summary recommendations for commercial and seedstock dairy and beef cattle herds in a single table. That table, adapted from their final report to USDA, is provided with this article on the following page.

Critical to deciding which test to use us deciding exactly why you are testing. This may sound simple and obvious, but many practitioners and dairy producers don't stop to think about this before collecting samples.

The recommendations cover six specific situations when Johne's disease tests might be called for, and consider test accuracy and the cost-benefit of testing to different types of cattle operations. The recommendations were accepted by the National Johne's Disease Working Group and the Johne's Disease Committee of the U.S. Animal Health Association at their meetings last October in Minneapolis, Minnesota.

The final report was published in the December 15, 2006 issue of the *Journal of the American Veterinary Medicine Association* (JAVMA), and the Journal provided free access to the article on its website. Portions of that report are reproduced here with permission of JAVMA, but readers are encouraged to download and read the full seven-page article to understand the finer points. Simply go to:

http://avmajournals.avma.org/doi/abs/10.2460/javma.229.12.1912

Critical to deciding which test to use, is first deciding exactly why you are testing. This may sound simple and obvious, but many practitioners and dairy producers don't stop to think about this before collecting samples. And, different situations require different tests.

Tests are also needed to prevent buying M. paratuberculosis-infected cattle. This is called biosecurity. The experts again made the decision of what to do quite simple for

herd owners by making decision charts like the one shown here. These are separate charts for commercial diary herd owners, commercial cow-calf operations, and all seedstock (dairy and beef) herds. The charts allow owners to "pick their own level of risk". Just like deciding whether to buckle your seat belt when getting in your car, owners can choose to practice risky or very safe cattle buying practices.

Buying cattle exposes your herd to every disease that the purchased animal may carry or may have been exposed to before arrival in your herd. If you buy many cattle each year from many herds of unknown Johne's disease status, you will almost certainly bring Johne's disease into your herd. If you few cattle and only buy from a few source herds and require some level of Johne's disease testing on those source herds. You can spend money to prevent Johne's disease or you can wait until your herd is infected and then spend money trying to control the infection. Herd owners have a choice.

The Johne's biosecurity chart for commercial dairy herds is shown here (reproduced with permission of the JAVMA).

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Similar charts for commercial cow-calf beef herds and all seedstock herds can be found in the original report at:

http://avmajournals.avma.org/doi/abs/10.2460/javma.229.12.1912

Whether your herd is not infected and you want to prevent Johne's disease from affecting your herd or your herd is infected and you need to control the problem, or you simply do not know the Johne's status of your herd, there is a "Best Test" for your situation. Some of the best experts in the world have done a lot of work to create a simple to use, producer and practitioner-friendly report that recommends which test suits your needs. Our advice: USE IT.

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http://animalscience-extension.tamu.edu/dairy/wdn.html

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Recommended test regimen for Johne's disease in cattle based on herd type and testing purpose.

	Dairy		Beef	
Testing Purpose	**Commercial**	**Seedstock**	**Cow-Calf**	**Seedstock**
1. Classify herd as infected	FC-env	FC-env	Herd test Target test FC-env	Herd test Target test FC-env
2. Precise estimation of within herd prevalence	N.R.	N.R.	N.R.	N.R.
3. Control disease: Known infected, high prevalence (>10% ELISA-pos), with clinical disease and/or the owner is concerned	ELISA	FC-Ind	ELISA	FC-Ind
4. Surveillance: Bioburden estimation	FC-env	N.R.	Confirmatory test of clinical suspects	N.R.
5. Eradication: Eliminate M. paratuberculosis infections from the herd	FC-Pool FC-Ind	FC-Pool FC-Ind	FC-Ind	FC-Ind
6. Confirm a clinical diagnosis in herds:				
(a) no prior confirmed cases of Johne's disease	Necropsy FC-Ind PCR-Ind	Biopsy or Necropsy FC-Ind PCR-Ind	Necropsy FC-Ind PCR-Ind	Biopsy or Necropsy FC-Ind PCR-Ind
(b) with prior confirmed cases of Johne's disease	ELISA FC-Ind PCR-Ind	Biopsy/PM FC-Ind PCR-Ind	ELISA FC-Ind PCR-Ind	Biopsy/PM FC-Ind PCR-Ind

Table and test abbreviations and definitions:
FC-IND: *Culture of individual animal fecal samples on solid or in liquid culture media.*
FC-POOL: *Culture of pooled fecal samples (5 samples per pool) on solid or in liquid culture media.*
FC-ENV: *Culture of fecal samples collected from areas of cattle commingling.*
PCR-IND: *M. paratuberculosis gene-based test on individual animal fecal samples.*
ELISA: *ELISA using serum or milk samples from individual animals using tests with a reported specificity of at least 99%.*
N.R.: *not recommended*