



JOHNE'S DISEASE – DAIRY

A cooperative effort of the National Institute for Animal Agriculture, USDA, APHIS, Veterinary Services, in association with the National Johne's Working Group & United States Animal Health Association

New York Dairy Producer – Lesson Learned the Hard Way

Many Johne's disease experts urge dairy producers to not buy-in Johne's disease and to always purchase animals from low-risk herds. That's advice that the partners of Moserdale Farm, Copenhagen, N.Y., say they wish they were familiar with when they expanded their herd in 1999.

"After we went through our first expansion in 1999, we started noticing that we were selling a lot of cows prematurely and became concerned," states Andy Moser who owns and manages Moserdale Farms in partnership with his father Douglas and Patty Beyer.

"With the help of our veterinarian, Dr. Mark Thomas from Countryside Veterinary Clinic, LLP in Lowville, Johne's disease was identified as the culprit."

Herd testing using fecal culture and ELISA showed a Johne's disease incidence rate of 25% to 30%.

"Working with our veterinarian, we took immediate action and enrolled in the New York State Cattle Health Assurance Program (NYSCHAP) and developed best management protocols," Andy states. "Basically, our whole management philosophy changed."

"It was more difficult to make the initial changes in our heads than it was physically difficult to implement them. We were so used to doing things a certain way, and we were needing to change some of those ways. Now we do it routinely and don't think anything of it. But at the time, we really had to change our mindset in regards to management protocols."

One protocol implemented



Moserdale Dairy LLC partners, left to right, Andrew Moser, Patty Beyer and Doug Moser acknowledge their veterinarian, Dr. Mark Thomas, far right, and his role in helping them conquer Johne's disease. Thanks to testing and best management practices, the 400-head dairy has lowered its Johne's disease incidence by as much as 22%.

immediately—and which remains in place today—was the culling of any cow showing clinical signs of Johne's disease.

Another protocol put into place was that cows testing positive for Johne's disease are reported as "Do not breed back." These cows and suspicious cows are freshened in the free stall barn or outside, not in a fresh pen. After calving, these cows are moved into the main free stall barn. They are also reported as Johne's positive in the operation's herd management software program.

For the past 10 years, Moserdale Farm has discarded colostrum from positive cows, uses colostrum only from a single source rather than pooling colostrum and does not feed

waste milk. Calves are removed immediately from their dams, with a newborn moved to a heated pen. Maternity pens have been remodeled so it's easier to clean between cows.

Baby calves are housed in separate facilities away from the cows, and heifers are also at a separate facility.

"And heifers are not fed refusals," Andy interjects. "While feeding refusals might save us money, we simply can't risk contamination."

Minimizing risk of contamination stays at the forefront at Moserdale Farm. As such, the dairy uses separate feeding and manure-handling equipment. One skid-steer is used to push up feed and clean out managers while another is used to handle manure. *(Continued on Page 2)*



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Hard Lesson (continued)

"At first, we used separate attachments for one skid-steer, but that practice changed," Andy states.

The dairy also practices general good hygiene, with the "Be as clean as possible" rule applicable wherever relevant—from hands, boots and clothing to tractors and barn equipment as well as pens and walkways.

Testing

Testing for Johne's disease shows that Moserdale Farm is progressing in its fight against Johne's disease.

"We currently have a Johne's disease incidence rate of 8 percent," Andy tells, "And I think we can get our incidence rate down even further, say to 2 or 3%."

"While we can't eradicate it overnight, we can get it down to 2% or 3% and that certainly won't be as hard on our bottom line as when it was 25% or higher."

Andy says the three partners are becoming pretty darn good at

identifying cows with Johne's disease.

"By the time they show clinical signs, their milk production has dropped and they have been on our radar screen," he states. "Usually clinical signs show at third lactation or later."

Moserdale Farm continues to work closely with its veterinarian, talking to him two or three times a week about various topics. Johne's disease management protocol is reviewed once or twice a year.

"Our veterinarian played a major role in helping us develop and implement our best management protocols," Andy states. "The financial cost associated with each practice was considered, and we found some practices easy to implement at little to no cost."

"One standard practice now is that we buy animals only from a known source. Once we brought heifers in from all sources, and that's probably a key reason why we had such a high incidence level. We just expanded again a year ago and only purchased

baby calves from a known source."

Unlike many dairy producers who prefer to purchase heifers when expanding, Moserdale Farm opted to purchase calves. And this time when expanding their dairy, they turned to local farmers—known entities with known management practices.

"We know each calf source's colostrum protocols, and know that they are clean herds," Andy says. "While no herd can be guaranteed as Johne's free, each place where we purchased calves operates with best management practices implemented through the NYSCHAP program."

"Our goal is to never buy Johne's disease again—and to have management practices in place that help control and prevent Johne's disease. It's just a smart way of operating."

New Johne's Disease Test Approved for Use on Milk Available

IDEXX Production Animal Services has released IDEXX® M. pt. Antibody Test Kit, a new Johne's disease test that detects antibodies for *Mycobacterium paratuberculosis* (M. pt.) in milk, serum and plasma samples.

"This USDA-licensed enzyme-linked immunosorbent assay (ELISA) is designed to help dairy and cattle producers manage the impact of *Mycobacterium paratuberculosis*, also known as Johne's disease," states Nevena Djuranovic, Regional Marketing Manager at IDEXX. "The test is highly sensitive and will minimize the need for retesting while ensuring quick turnaround time for producers."

She adds that, because the test can be run on milk, dairy producers can eliminate the cost

of sample collection by requesting *Mycobacterium paratuberculosis* testing on milk samples that are already routinely evaluated for milk quality.

"This is the first product IDEXX brings to the North American market as a result of our 2007 acquisition of Institut Pourquier in France," said Olivier te Boekhorst, General Manager, IDEXX Production Animal Services. "We are excited to introduce this proven technology with its simple and rapid test protocol. The milk claim will reduce the cost of testing for dairy farmers while use of this test can have a real impact on dairy productivity."

Editor's Note: This information is provided as a service to readers and is not intended as an endorsement of any product.



When expanding its herd, Moserdale Farm purchased calves only from known sources with known best management practices.

To learn more about Johne's disease prevention and control, please contact your state Designated Johne's Coordinator.

A list of state DJCs is available online at www.johnesdisease.org.

Johne's Disease Research Underway

Scientists at the Agricultural Research Service's National Animal Disease Center (NADC) have a professional mission: To find a better way to detect Johne's disease-infected animals early on.

"*MAP* (*Mycobacterium avium* subspecies *paratuberculosis*) is like a stealth organism," states NADC microbiologist Judy Stabel. "It shelters in the host's white blood cells and stays at low levels until stress makes the disease apparent. And it's one of the hardest organisms to work with in the field."

Since the *MAP* genome—which contains all its genes—has been sequenced, researchers have information about the different proteins that comprise those genes.

From an array of 96 proteins, three proteins that consistently drew the strongest attacks from serum antibodies—a level of immune response that clearly linked the three proteins with the onset of Johne's disease—have been identified. NADC researchers continue to focus on these proteins, noting that the segment might provide crucial building blocks for development of a diagnostic tool for Johne's disease.

"This protein array is the only one like it in the world," states NADC researcher John Bannantine. "Because we've been so careful in selecting the *MAP* proteins for our array, we're confident that the antibodies are responding to *MAP* proteins—not similar proteins produced by another *Mycobacterium* species."

NADC studies have also cleared up another aspect of *MAP* infection.

"When an animal is first infected, there is a cell-mediated response to the bacterium," he explains. "We thought that another type of immune response—the one that produces antibodies—developed much later. But, in experimentally infected animals, we can use this array to detect exposure to *MAP* as early as 70 days after the animal is infected—much earlier than previously reported in field studies."

The next step in the research is to determine if these early-detected antigens are recognized by infected cattle in the real world.

"We also need to determine the extent of cross-reactivity these proteins have with other environmental mycobacteria, because one problem with some Johne's disease tests is the lack of specificity," Bannantine states.

Stabel has been studying more about the early stages of the cell-mediated response to *MAP* and finding ways to diagnose the disease in young animals.

"We've found a way to use

information about the cell-mediated response to detect *MAP* in naturally infected calves that are only 6 months old," she says. "When animal this young are diagnosed, then the produced can decide how best to respond—either by removing the animal from the herd or looking at other options."

Animal models for *MAP* research have been developed and are being evaluated, with a smaller ruminant model—for goats or sheep—showing promise.

"But then these animals are slightly quicker to reach a clinical disease state," she interjects.

Research Project: Genomic and Immunological Characteristics of Johne's Disease

Start Date: Nov. 07, 2006

End Date: Nov. 06, 2011

Objectives:

Objective 1: Systematically identify and characterize novel and specific antigens from the *M. paratuberculosis* genome sequence project.

Objective 2: Determine the genetic variability among *M. paratuberculosis* isolates and examine the transcriptional profile of the *M. paratuberculosis* genome.

Objective 3: Develop and evaluate methods to evaluate the host immune responses to *M. paratuberculosis* in early and late infection to distinguish elements of protective immunity.

Objective 4: Evaluate the sensitivity and specificity of cell-mediated diagnostic tests in sheep and cattle for early detection of *M. paratuberculosis* infection.

Approach:

Within Objective 1, unique antigens of *M. paratuberculosis* will be evaluated as immunogens with particular emphasis on their utility as diagnostic reagents or vaccine candidates.

Objective 2 will compare and contrast the genetic content of various strains of *M. paratuberculosis*, both within and between species of animals to provide information on the characteristics of infectivity and pathogenicity for different strains.

The host immune response to *M. paratuberculosis* infection will be evaluated in Objective 3 in both experimentally and naturally infected animals to gain an understanding of how the disease progresses from a subclinical to a more clinical state.

Objective 4 will examine the efficacy of skin testing and a blood assay for the early detection of disease in naturally infected and non-infected cattle and sheep.

New Johne's Disease Q&A Brochure *FREE*, Packed with Info

Dairy producers who have culled one or more animals for unresponsive chronic diarrhea combined with reduced milk production and thin condition might want to learn more about Johne's disease—and find out if their herds are infected with Johne's disease. A good source of information about Johne's disease is a recently released 16-page brochure that is free to dairy producers and veterinarians.

The new brochure describes how animals become infected with the organism that causes Johne's disease, details measures producers can take to help prevent and control Johne's disease and explains herd testing strategies. The brochure, which is underwritten by USDA-APHIS-VS and produced by the National Johne's Education Initiative overseen by the National Institute for Animal Agriculture, is science based and

written in plain language. Johne's experts agree that the incidence of Johne's in dairy herds can be reduced significantly when producers know about Johne's disease and implement measures—including testing—to control the disease-causing organism.

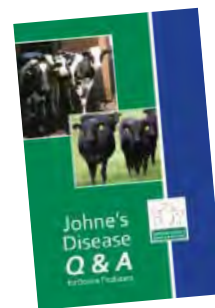
"Johne's disease causes significant economic loss for producers whose animals have the disease, and the goal of every producer should be to prevent getting it on their farm if they don't have it or control the disease to reduce the economic impact in herds with the disease," states Dr. Micheal Carter, National Johne's Disease Control Program Coordinator, National Center for Animal Health Programs, USDA-APHIS-VS.

Johne's disease is estimated to be present in 68 percent of U.S. dairy operations. A National Animal Health

Monitoring Systems study found that infected dairy herds experience an average loss of \$40 per cow in herds with a low Johne's disease clinical cull rate while herds with a high Johne's disease clinical cull rate lost on average of \$227 per cow.

To obtain your free copy of the new 16-page Johne's disease question-and-answer brochure, go to www.johnesdisease.org or call the National Institute for Animal Agriculture at (719) 538-8843.

Check out this brochure online at www.animalagriculture.org. Just click on the "Johne's Initiative" tab at the top of the web page.



Free Online Course for Producers Takes Just 60 Minutes or Less

To help dairy producers understand Johne's disease and become acquainted with preventive measures, two online courses have been developed specifically for dairy producers. One course is in English, and the other dairy producer course is in Spanish.

Underwritten by a grant from USDA and developed by the University of Wisconsin-Madison School of Veterinary Medicine, the online courses cover the causes of Johne's disease, how Johne's disease spreads, how to prevent Johne's disease from entering your herd, how to test for Johne's disease and management practices to use to control infections. The course also explains how the Voluntary Bovine Johne's Disease Control Program works and how producers can participate in the national program.

"Each course is free to producers," states Dr. Elisabeth Patton, Designated Johne's

Coordinator for Wisconsin and co-chair of the Committee on Johne's Disease, U.S. Animal Health Association. "Plus, producers can complete their respective module in less than 60 minutes."

Taking the Johne's disease online course involves six simple steps. The first five steps take about five minutes to complete. The final step—working through the course—will involve about 30-45 minutes.

Step #1: Go to the University of Wisconsin School of Veterinary Medicine web site, www.vetmedce.org, where you'll see the home page titled "Veterinary Continuing Education." Once at this page, click on "Courses" written in red at the lower left of the page.

Step #2: Once at the "Courses" web page, click on "Johne's Disease" located in the left-hand column.

Step #3: A new web page will appear. On this page, click on "Johne's Disease Courses

for Producers."

Step #4: You're now at a new web page that lists the six Johne's disease courses, and you need to simply click on the "Dairy Producer" course title.

Step #5: Once at your species page, a list of what you'll learn is listed along with other relevant information.

Step #6: Begin your species-specific course. Producers wanting a certificate of course completion are asked to register before taking the course, and will be required to take a quiz after they watch and listen to the presentation.

The dairy producer online module is like sitting in a classroom, only you're sitting at your computer. Two speakers share information, and information is shown on slides.

"If you have a computer, then you can add to your knowledge base about Johne's disease," Dr. Patton states "What a great investment of a producer's time."