



Highlights of NAHMS Johne's Disease on U.S. Dairy Operations, 2002

In 2002, the National Animal Health Monitoring System (NAHMS) conducted a study of dairy operations in the United States. The Dairy 2002 study was conducted in 21 major dairy States¹ and was designed to provide information to both participants and industry from operations representing 83.0 percent of U.S. dairy operations and 85.7 percent of U.S. dairy cows. Data were collected between February 25, 2002, and January 9, 2003.

The following highlights were excerpted from a report released in February 2005: Dairy 2002, Johne's Disease on U.S. Dairy Operations, 2002. Data for this report were collected from three distinct components of the Dairy 2002 study, and all three are presented separately in the following sections:

- **Section I** provides descriptive inferences based upon question responses to the population of dairy producers in study States.
- **Section II** provides descriptive inferences based upon the completed risk assessments to the population of dairy producers in the study States.
- **Section III** provides sample- and herd-level test results and no inferences to a larger population.

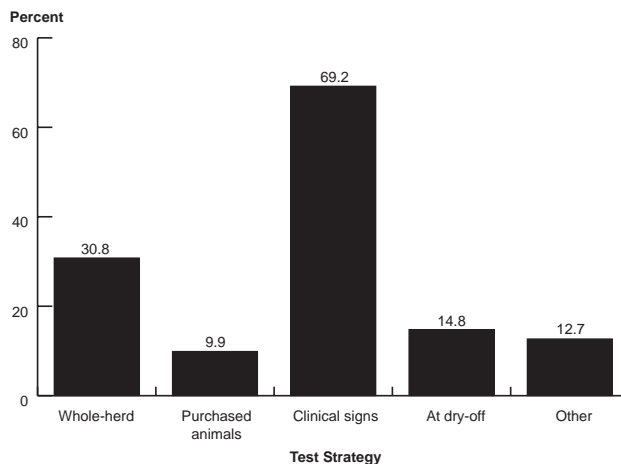
Section I: Population estimates—Johne's disease familiarity and herd-level management factors

- Dairy '96 revealed that 17.7 percent of producers were fairly knowledgeable about the disease, while 9.9 percent had not heard of it. Dairy 2002 reported that 45.3 percent of producers were fairly knowledgeable about Johne's disease, while only 1.0 percent had not heard of it.
- Overall, 47.8 percent of operations had ever observed at least one cow in their herd with clinical signs consistent with Johne's disease.

¹California, Colorado, Florida, Idaho, Illinois, Indiana, Iowa, Kentucky, Michigan, Minnesota, Missouri, New Mexico, New York, Ohio, Pennsylvania, Tennessee, Texas, Vermont, Virginia, Washington, Wisconsin

- The majority of operations (69.6 percent) observed no cows in their herd with clinical signs of Johne's disease during the 12 months prior to the 2002 study interview.
- The source of the first cow in the herd to exhibit clinical signs of Johne's disease differed by herd size. A higher percentage of medium operations (65.6 percent) reported that the first cow with clinical signs was a purchased animal compared to small operations (44.4 percent).
- The majority of operations (63.6 percent) reported that home-raised cows were the source of the youngest cows to display clinical signs of Johne's disease. Since clinical signs may not be observed prior to the shedding of *Mycobacterium avium* subspecies *paratuberculosis* (MAP)—the causative agent of Johne's disease—purchased cows may infect home-raised calves.
- During the 12 months prior to the 2002 study interview, a higher percentage of large and medium operations (38.3 percent and 39.5 percent, respectively) performed any testing for Johne's disease, compared to 20.4 percent of small operations. Overall, 25.7 percent of operations tested for Johne's disease.
- For operations that tested for Johne's disease during the 12 months prior to the 2002 study interview, the majority (69.2 percent) tested cows with clinical signs of Johne's disease. Whole-herd testing was done on 30.8 percent of operations.

For Operations that Tested for Johne's Disease During the 12 Months Prior to the 2002 Study Interview, Percentage of Operations by Testing Strategy*



*Operations may have selected more than one strategy

- Nearly 7 out of 10 operations (67.6 percent) that tested for Johne's disease used only a serum ELISA to test at least one cow during the 12 months prior to the 2002 study interview. Only 5.7 percent used fecal culture exclusively to diagnose Johne's disease. Approximately one-fourth of operations (26.7 percent) used both fecal culture and serum ELISA to test for Johne's disease.
- The percentage of operations participating in Johne's disease certification, control, or herd-status programs increased between the Dairy '96 and Dairy 2002 studies (0.9 and 11.2 percent, respectively). However, there was no difference in program participation by herd size within each study year.
- During 2001, bred heifers and lactating cows were the classes of cattle brought onto the most operations, with 15.8 percent of all operations reporting that bred heifers were added and 16.4 percent of operations reporting that lactating cows were added. Any class of beef or dairy cattle was brought onto 45.7 percent of all operations.
- There was no difference between Dairy '96 and Dairy 2002 in the reported percentage of operations that required testing for MAP infection prior to bringing animals onto the operation.
- Exposure of newborn calves to fecal pathogens can be minimized by providing separate maternity housing. In 2002, 53.1 percent of operations provided separate maternity housing compared to 45.4 percent of operations in 1996.
- Although the trend toward removing newborn calves before any nursing occurs continued during the 1996 and 2002 studies (47.9 percent and 52.9 percent of operations, respectively), many producers still allow calves to nurse from their dams.
- Pooling colostrum from more than one cow increases the risk of spreading milk-borne pathogens to more than one calf. Overall, 27.0 percent of operations pooled colostrum. A much higher percentage of large operations (70.6 percent) pooled colostrum than did medium operations (37.4 percent) and small operations (22.1 percent).
- Pasteurizing colostrum is being investigated as a method to reduce MAP transmission. Only 0.6 percent of operations pasteurized colostrum. A higher percentage of large operations (3.6 percent) fed pasteurized colostrum than did medium and small operations (0.8 percent and 0.4 percent, respectively).
- Waste milk was fed to dairy heifer calves on 87.2 percent of operations. Waste milk was pasteurized prior to feeding on only 1.0 percent of operations. However, a higher percentage of large operations (11.3 percent) pasteurized waste milk than did medium operations (1.0 percent) and small operations (0.5 percent). Pasteurizing waste milk significantly reduces—and in some cases eliminates—pathogens in milk, thus reducing calves' exposure to these pathogens. Since consumption of contaminated waste milk can occur repeatedly over time—resulting in multiple doses of MAP—an individual calf's exposure to MAP can be overwhelming. Pasteurization, even without complete destruction of MAP, can result in a significant decrease in the quantity of organism ingested and, potentially, the number of calves infected.
- Using the same equipment for manure removal and feeding increases the risk of transmitting fecal-borne pathogens. Nevertheless, 58.8 percent of all operations used the same equipment to handle manure and feed cattle.
- Of operations that used the same equipment to handle manure and feed cattle, 54.2 percent washed the equipment with only water or steam after handling manure, while 5.7 percent washed and chemically disinfected the equipment after handling manure. No cleaning procedures were performed after handling manure on 15.2 percent of operations that used the same equipment for manure and feeding cattle.

Section II: Population estimates—risk assessment

Five different management areas were assessed: calving, preweaned heifer calves, postweaned heifer calves, bred heifers, and cows. Within each of these areas, multiple practices were assessed, either through questions or visual observations. The majority of questions and observations were assigned a risk score for the specific management area in order to account for different risks associated with different age groups. Within each management area, risk scores were summed to produce a total score. The total risk score for each management area was used to quantify potential risk and predict which area(s) was most likely to contribute to MAP transmission.

Calving

Only 15.5 percent of operations never used the area where cows normally calved for more than one cow. Nearly one out of two operations (47.0 percent) always used calving areas for more than one cow.

The majority of operations (84.8 percent) never kept cows suspected of having Johne's disease or showing clinical signs of Johne's disease in areas where cows normally calved.

Almost a third of operations (29.3 percent) always allowed newborn calves to stay with their dams for more than 3 hours after birth.

Preweaned heifer calves

More than half of operations (56.3 percent) never fed pooled colostrum.

The majority of operations (89.2 percent) fed colostrum from cows with an unknown Johne's-disease test status. Very few operations used colostrum from test-positive cows (0.1 percent)

Pooled milk was fed to calves on 53.9 percent of operations, and 0.9 percent of operations pasteurized pooled milk prior to feeding.

Half of operations (50.0 percent) never housed preweaned heifers near cows.

Nearly two out of three operations (64.1 percent) had no cow-manure contamination in milk, feed, water, or the housing areas used for preweaned heifers.

Postweaned heifer calves

One-fifth of all operations (20.8 percent) always housed postweaned heifers near cows.

The majority of large operations (71.7 percent) and medium operations (59.8 percent) never housed postweaned heifers near cows.

The majority of operations (59.8 percent) had no cow-manure contamination of feed, water, or the housing areas of postweaned heifers.

Bred heifers

Nearly one out of two operations (49.1 percent) always housed bred heifers near cows.

Over half of large operations (52.4 percent) had no manure contamination of feed, water, or bred-heifer housing areas.

Cows

Half of operations (50.1 percent) never spread manure on forage ground grazed by or harvested for cows.

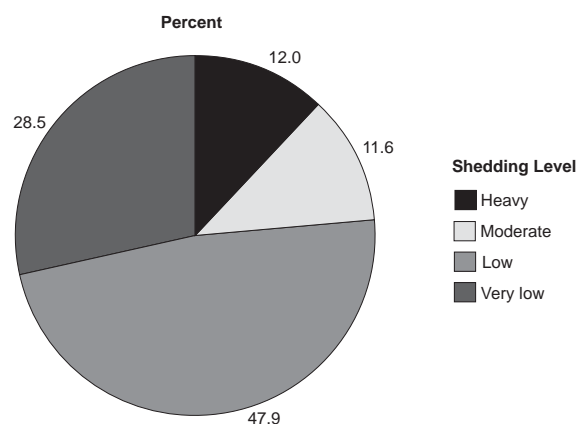
Summary

Calving area management had the highest average risk score (of all five management areas assessed) across all herd sizes and regions and accounted for almost 50 percent of the total risk score.

Section III: Johne's disease test results

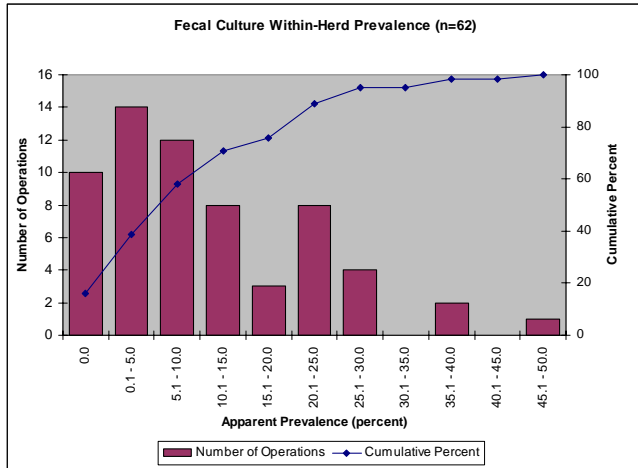
- Of the 7,272 fecal samples tested, 8.6 percent cultured positive for MAP.
- For culture-positive samples, the highest percentage of positive cultures (47.9 percent) was reported as low shedders (see graph below).

Percentage of Positive MAP Fecal-Culture Results by Shedding Level

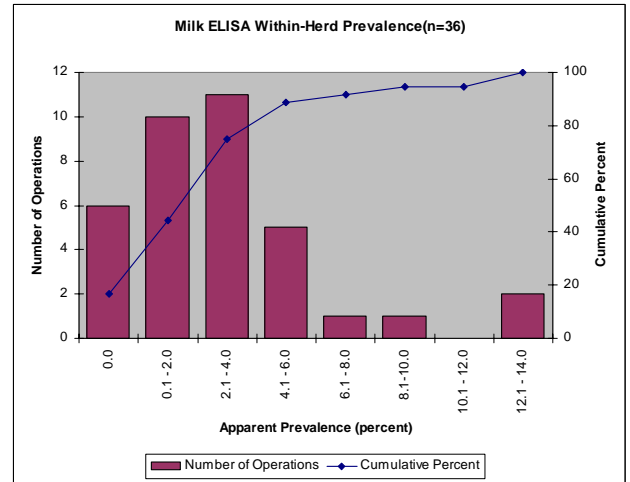


- Of the 19,378 serum samples tested, 5.5 percent were either positive or strong positive.
- Of the 15,167 milk samples tested, 2.6 percent tested with ELISA were positive or strong positive.
- Of the 98 operations tested, 70.4 percent had at least one environmental culture-positive sample.
- More than half of all environmental samples (52.3 percent) collected from parlor exits were culture positive for MAP.
- The majority of cows (86.7 percent) classified as high MAP shedders (based on fecal culture) tested either serum-ELISA positive or strong positive.
- The majority of cows classified as high MAP shedders (76.9 percent) were detected by milk ELISA.
- Milk ELISA performed comparably to serum ELISA in identifying cows that were fecal-culture positive.

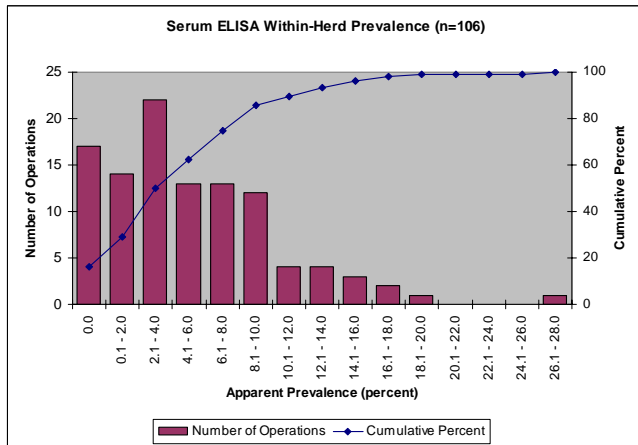
- A total of 62 operations were tested using fecal culture methods. Of these, 16.1 percent had no cows test fecal culture positive. Approximately 6 out of 10 herds (58.1 percent) had an apparent within-herd prevalence of 10 percent or less.



- A total of 36 operations performed milk-ELISA testing. Compared to fecal culture and serum ELISA results, milk ELISA had a similar percentage of operations (16.7 percent) with no animals that tested positive. More than 9 out of 10 operations (94.5 percent) had milk-ELISA prevalence of 10 percent or less.



- A total of 106 operations participated in serum-ELISA testing. Of these operations, 17 (16.0 percent) had no animals test serum-ELISA positive. Seroprevalence was 10 percent or less on 85.9 percent of operations.



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