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Johne's Disease: It's No Long

Beef cattle are also at risk of infection

In a 2017 USDA NAHMS survey, cow-calf producers were asked about their knowledge of Johne's disease. Over 70% reported "never hearing of it" or "recognized the name, but not much else." Veterinarians have been discussing Johne's disease with dairy producers for many years. This is not true concerning cow-calf producers.

Johne's disease (pronounced Yo-knees) was first discovered in the U.S. in 1908. It is caused by a bacterium *Mycobacterium avium subspecies paratuberculosis*, known as MAP. In cattle and small ruminants, this organism causes chronic, non-treatable bowel disease.

Infection typically occurs in calves during the first six months of life. Infection occurs when the calf consumes feces, colostrum or milk from cows that are shedding this organism. In some cases, a calf can become infected before birth. Older animals can become infected, but this is rare and only occurs in situations when extreme levels of MAP are present in the environment. Although infection occurs at a young age, the median age when clinical signs occur is 5 years. We have diagnosed clinical Johne's in animals as young as 1.5 years.

WHAT TO LOOK FOR

Clinical signs include chronic diarrhea and sudden weight loss. Diarrhea and weight loss occur because the MAP organism produces a chronic inflammatory

response that thickens the small intestinal wall. The thickening eventually prevents the animal from absorbing dietary nutrients (specifically protein) into the blood stream. The presence of high levels of dietary protein in the intestine "pulls" water from the circulation into the bowel — hence diarrhea. Weight loss occurs because the nutrients contained in the diet cannot be absorbed into the animal's system through the intestinal wall. Infected animals can eventually die of starvation, even when provided with an appropriate diet.

In the USDA study mentioned earlier, 7.9% of U.S. cow-calf operations were found to contain one or more Johne's positive cows. In a 2005 Texas study of 115 purebred beef herds, 43.8% of the herds were MAP positive. The prevalence of this disease in Kansas is unknown, but the number of counties with at least one positive herd is shown in Figure 1.

WHY SHOULD COW-CALF PRODUCERS BE CONCERNED?

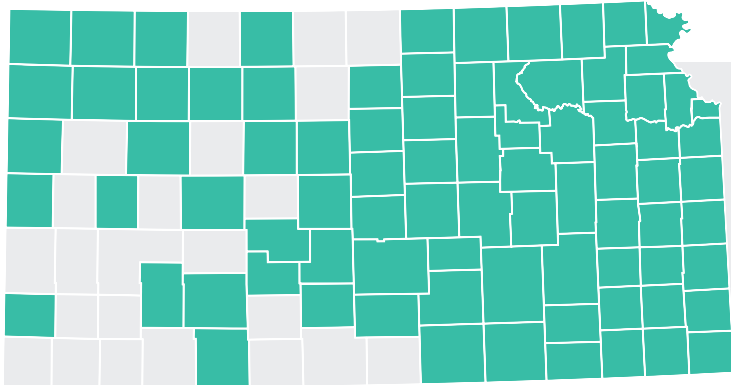
Very little research has investigated the economic impact of Johne's disease on cow-calf production. Several dairy studies have shown that MAP infected cows (non-clinical, test-positive cows) produce significantly less milk and leave the herd at a much earlier age compared to test-negative cows. There is little reason to believe this organism would not have a similar effect on beef cows.

Another area of concern includes MAP's zoonotic potential. A growing number of human medical researchers have published data to support the concept that MAP

"Infection typically occurs in calves during the first six months of life." —Gregg Hanzlicek

er Just a Dairy Disease

KANSAS COUNTIES WITH ONE OR MORE POSITIVE COW-CALF OPERATIONS: 2021 TO 2024



This map does not suggest that some Kansas counties do not contain any Johne's positive herds; it does identify those counties from where at least one positive sample was submitted to the Kansas State Veterinary Diagnostic Laboratory. It is possible every Kansas county contains at least one positive herd.

causes human Crohn's disease. According to the CDC, over 3 million Americans suffer from this disease. Like bovine Johne's disease, human Crohn's is a chronic bowel disease, and in some cases, MAP has been found in human small intestines. Human exposure to MAP is believed to occur through the consumption of contaminated water, dairy products or red meat. This organism has been found in milk, red meat and drinking water in Europe, and in drinking water in the U.S.

Johne's disease is a purchased disease. Keys for a herd remaining non-infected include not purchasing infected replacement heifers, cows or bulls. Purchased replacement heifers and bulls present a particular problem because our current diagnostic tests are not accurate in animals under 2 to 3 years of age. This means testing younger animals before purchase is not appropriate.

The best means of prevention

includes purchasing animals from herds that have tested all, or an appropriate number of adult animals and all tests were negative. A realistic strategy is to ask the source herd's owners if they have observed Johne's disease in their herd. If their answer is no, then testing each purchased animal beginning at 2 years of age and continuing yearly for the next three years will help identify infected animals. Testing should always be completed as close to calving as possible because the key is to prevent exposure of the MAP organism to very young calves.

ANNUAL RISK ASSESSMENT

Preventing the spread of MAP in a herd includes identifying, through either blood or fecal tests, all shedders before calving and either isolating them from the rest of the calving herd or immediately sending them to slaughter. A key to control is to have a yearly Johne's risk

assessment completed by a veterinarian. The risk assessment will help identify those areas of management that provide the greatest risk for young calf infection.

Another key control measure is to minimize the adult manure young calves are exposed to. This can be accomplished by calving in large calving pastures (exactly like neonatal diarrhea prevention), moving each bale ring to a clean area when reloading, frequently moving bunks to clean areas, and if feeding on the ground, feeding in a clean area each day. These activities will minimize the accumulation of adult manure and help minimize calf exposure.

Johne's is a disease that veterinarians, animal scientists and cow-calf producers might want to start discussing before consumer confidence in the food we produce decreases and the pressure from outside sources to instill more regulations on the beef industry intensifies. **BV**