



# Anaplasmosis Continues to Plague Midwestern Producers

**While there is still no proven vaccine to combat Anaplasmosis, producers continue to battle the costly disease.**

by **Nicole Richardson**

**P**revention can often be the best treatment. In agriculture, farmers and ranchers are always on the lookout for new ways to avert an illness or crisis in their operation, rather than struggling to find a cure or solution once the problem has occurred. For many, prevention is the key to success.

This theme of prevention was made evident by Kansas State University (K-State) Assistant Professor Kathryn Reif, Ph.D., and her team, as they courteously hosted the Second Annual Anaplasmosis Symposium in Manhattan, Kan., May 20. Reiterating

the concept producers should be innovative and forward-thinking when it comes to herd health, Reif and her contemporaries outlined strategies to incorporate for Anaplasmosis disease prevention in cattle. Including credible presenters with a surplus of knowledge, this event proved to be valuable for producers, students and veterinarians alike.

## **Anaplasmosis unpacked**

*Anaplasma marginale* is a tick-borne disease that cannot always be diagnosed by visual analysis. Clinical

signs of lethargy, loss of appetite, rapid weight loss and pale skin are typically seen in cows two years of age and older. Younger cattle may contract and carry the disease but may not show physical signs of infection.

The Veterinarian Feed Directive (VFD) has left producers and veterinarians and their staff in a quandary as they navigate through the new legal realms of livestock treatments today.

Chlorotetracycline (CTC) is the most common treatment for Anaplasmosis. VFD restricts veterinarians from prescribing any FDA approved drug for extra-label use. In previous years, CTC may have been prescribed for an extra day or possibly top-dressed — both of which are considered extra-label use by the Food and Drug Administration (FDA).

K-State Frick Professor Mike Apley, Ph.D., says overall sales of CTC have decreased nearly 50% since 2017. While there are no direct facts linked to this decrease, it does correlate with the implementation of the VFD on Jan. 1, 2017. Apley emphasizes, “On a mass scale like that it’s hard to put direct causes to it but it’s hard to ignore the correlation with VFD.”

Brian Whitlock, Ph.D., associate professor from the University of Tennessee’s Institute of Agriculture, shared his findings on his study of infected herds with true prevalence today compared to the apparent prevalence numbers from studies three decades ago. He notes an increase in positive testing cases from previous studies and solidifies the accuracy of his findings with a 95% sensitivity cELISA test. The cELISA test was not available previously and has a higher accuracy rate than tests used for prior studies.

Confirming the regional distribution of Anaplasmosis, Whitlock’s study provided positive test results concentrated in the Southern and Southeastern United States. These regions are known to have a tropic to subtropic climate during the peak vector season. This climate increases the number of vectors prone to the area and makes managing them a greater task. Although all bovine are susceptible to Anaplasmosis, Whitlock concluded beef herds are approximately three and a half times more likely to fall victim to the infection than dairy herds. There is no tangible evidence as to why dairy breeds are less likely to contract this infection.

During his study, Hans Coetzee, Ph.D., K-State professor, observed several significant influences on herd production involving cases testing positive for Anaplasmosis. The largest of those impacts was a 3.6% loss of calf crop, a 30% reproductive failure and a 30% mortality rate in clinically infected cows.

Observation of the physical damage of Anaplasmosis can be apparent in the clinical infection stages, but what does that mean to a producer’s pocketbook at the end of the day? “The best plan of action if you suspect infection is to test every head, and always test new incoming head,” Coetzee says.

Across the U.S., Anaplasmosis costs roughly \$300 million each year. Those costs include mortalities, slowed production, treatments and preventions. Each clinical case is estimated at a \$425 loss. Injectable treatments hover near \$5 daily



per head while medicated mineral plans are about \$.15 daily per head. Diagnostic testing can cost anywhere from nothing to \$9 per test depending on the state where producers are located.

### Treatment by prevention

“The take home is from an economic standpoint I’m not sure we fully understand or are appreciating the impact of Anaplasmosis,” Coetzee emphasizes. With all these costs compounding, the question arises regarding what the best method is to keep herds healthy and losses to a minimum. Again, the importance of prevention and management is emphasized.

The most positive way to combat an infection is to prevent it, starting with proper biosecurity measures. While working cattle, it may not be necessary to change needles after every cow, but a healthy protocol must be enforced. Since younger cattle are less susceptible to infection, the number of head processed between needles can be more than when working older cattle. Sanitizing other working equipment, such as tattoo pliers, implant guns, etc., will also help lower the chance of infection. Ensuring all employees and hands working cattle are performing under the same standard operating procedures can help solidify a prevention plan.

Tick population decrease is another way to prevent a problem before it becomes an epidemic. Burning fields is not a reliable method of controlling the tick population as demonstrated by Mark Spare, a K-State graduate student. His study concluded whether producers burned between 20 and 50% of their fields, the burning had no significant impact on the positive cELISA test results for Anaplasmosis in those herds tested.

Instead, his studies highlight the importance of a proper prevention plan to eradicate ticks. Pour-ons, dusts and fogging are all ways to topically combat tick populations on cattle. Other feed-through options are available, as well – such as sulfur salt and/or garlic. If fed, these options can combat tick problems from the inside out. The feeding of sulfur and garlic alters the taste and smell of the animals, making them less attractive to be bitten by ticks, flies and other insects. While the initial cost of these prevention methods may seem daunting, the issues they prevent are vastly significant.

History has provided the cattle industry with a few vaccine options for Anaplasmosis, yet they have not proved viable as a long-term solution.

One of the issues facing vaccine development is the multitude of strain variations within the *A. marginale* infection. Reif identified 208 strains within 45



A panel of animal scientists gathered at the Second Annual Anaplasmosis Symposium in Manhattan, Kan., May 20, to discuss prevention strategies for Anaplasmosis.

different beef cattle herds located in Kansas alone. Ninety-five of those strains were labeled new to present as they had not been previously identified. On top of exhibiting a vast number of different strains, cattle may also be infected with more than one strain. This complication makes developing and testing a vaccine applicable to herds across the U.S. a feat most have found impossible in past attempts.

Within the same study, Reif also tested K-State’s closed herd. In 2004, members of the closed herd tested positive for 11 different strains. In tests performed in 2017 and again in 2018, there were 24 different strains. This information leads researchers to believe the *A. marginale* strains can evolve over time even without the introduction of an outside source.

Currently the vaccine available on the market is manufactured by University Products LLC out of Baton Rouge, La. Plazvax® is a killed vaccine originally developed by scientists at Louisiana State University in 1990. It was initially licensed to Pitman-Moore, which was acquired by Mallinckrodt during the licensing process.

Several years after Mallinckrodt completed licensing of Plazvax, it was acquired by Schering-Plough, which decided to halt production and marketing of the vaccine. After a petition to the United States Department of Agriculture to resume production of the vaccine, University Products LLC has been producing and selling the vaccine, yet it is still labeled as experimental use by the FDA. The effectiveness of this vaccine has also been brought into question, as there are no studies proving its positive outcomes in different stages of clinical infections.

Phil Perry, owner of a 400-head operation from Oskaloosa, Kan., attributes

his low Anaplasmosis rates to being adamant about his herd and pasture management strategies. “I have about the same concern level on Anaplasmosis as I do about calf scours. It could be there, but it is preventable,” Perry states.

Since the implementation of VFD, Perry has discontinued his use of free-choice CTC mineral. Instead of trying to treat the problem, he started working to prevent it. Perry identified one pasture where he lost one or two head due to Anaplasmosis over the course of two years. He rotated his herd to graze only cows less than two years old at that location and moved his older cows to a different pasture. Becoming stricter on culling the older cows from the herd has also helped keep his level of persistent infection to a minimum. “Herd management is key,” Perry notes.

It has also become prevalent that biosecurity is a key factor in prevention of initial infection. Tyson Johnson, Sooner Cattle Co., runs an operation of about one hundred thousand head of beef cattle in and around Pawhuska, Okla. “You have to ensure that your employees are all on the same page,” Johnson says. “We stress operating by the Beef Quality Assurance [BQA] guidelines for working cattle in the chute. Change needles every ten head and disinfect equipment.” By being strict about biosecurity measures, producers can ensure the infection is not spreading due to human disregard.

“I’m a big proponent of testing and trying to find a baseline of where our cow herd is,” Johnson highlights. “It is something we will do with Anaplasmosis going forward.” Having a base to reference future tests against will aid in the analyzation of the herd as it ages. Preventing Anaplasmosis infection is the most economical way to combat the epidemic. Establishing prevention measure protocols will save money, loss and stress in the long run. **HW**

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