

***Theileria orientalis* and the Asian Longhorned Tick**

Key Takeaways

- *Theileria orientalis ikeda* (*T. orientalis*), a blood-borne parasite, is a specific strain of the *Theileria* organism more severe to cattle, causing infectious anemia.
- This disease behaves similarly to anaplasmosis, and producers may notice pale mucus membranes, elevated heart rate, high fever as well as signs of anemia, jaundice, weakness, lethargy, and even late abortions in infected cattle.
- It is known to have a high mortality rate, ranging anywhere from 5-90% of infected animals.
- The most common vector of *T. orientalis* is the Asian Longhorned Tick (ALT). Since first being found in the United States in 2017, the ALT has been recorded in 17 states, including Tennessee.
- In early June of 2022, the first known cases of *T. orientalis* were recorded in a cattle herd in Maury County, Tennessee. This particular herd has seen a 20% death rate of infected animals indiscriminate of age or health status.

Questions

1. How much regulatory oversight should the state have pertaining to *T. orientalis*?
2. How much knowledge is there about *T. orientalis* in Tennessee?
3. Are you familiar with the One Health initiative in Tennessee state government?

Background

***Theileria orientalis ikeda* (*T. orientalis*), a blood-borne parasite, is a specific strain of the *Theileria* organism more severe to cattle, causing infectious anemia. This disease behaves similarly to anaplasmosis, and producers may notice pale mucus membranes, elevated heart rate, high fever as well as signs of anemia, jaundice, weakness, lethargy, and even late abortions in infected cattle. It is known to have a high mortality rate, ranging anywhere from 5-90% of infected animals. In the event animals recover from illness, they become life-long carriers and can spread the disease to other non-infected cattle. There is currently no treatment or vaccine for *T. orientalis*, so the most effective methods of management are prevention and isolating infected animals.**

The most common vector of *T. orientalis* is the Asian Longhorned Tick (ALT). Since first being found in the United States in 2017, the ALT has been recorded in 17 states, including Tennessee. These ticks are most found in pastures and forest edges, thriving in the spring and summer months. Ticks infected with *T. orientalis* can remain infected for up to

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two years in desirable conditions. Before the COVID-19 pandemic, the tick had only been detected in Tennessee east of Putnam County.

Although *T. orientalis* has been found worldwide, U.S. cattle are naïve to the disease, meaning they have never been infected and their immune systems have not yet adapted to it. In early stages of disease spread, cattle are more susceptible to a higher severity of illness. However, once cattle are infected and survive illness, chances of becoming sick again are considered low, but animals can still spread the disease to other cattle through other ticks or dirty needles. In order for the U.S. cattle herd to become endemic to the disease, cattle which become infected must survive the illness, develop immunity, and pass immunity to offspring, which takes time. In the meantime, the economic impact to cattle producers can be detrimental with such high mortality rates.

In early June of 2022, the first identified case of *T. orientalis* was documented in a cattle herd in Maury County, Tennessee. This particular herd has seen a 20% death loss of infected animals. The herd is currently being quarantined and the Tennessee Department of Agriculture (TDA) is working with the owner on alternatives for disposition should the owner choose to sell the animals. The University of Tennessee Institute of Agriculture (UTIA) is performing ongoing surveillance of this premises and many premises in Tennessee to determine prevalence of the tick in Tennessee. It is not yet known whether the ALT is established in the environment in most areas of Tennessee. UTIA is working to develop mapping of known tick populations and established ALT populations.

Because of the known detection of *T. orientalis* in Tennessee, the time has come for producers to be highly vigilant about prevention and management of the disease and infected animals. UTIA and TDA have released information and resources about the tick and the disease as well as management tips. To learn more, visit <https://www.tn.gov/agriculture/businesses/animals/animal-health/theileria.html> and <https://animalscience.tennessee.edu/theileria-orientalis-ikeda-in-tennessee/>.

TDA is working with UTIA on tick collection and identification. Tick identification kits can be provided at no cost, but producers wanting to blood test their animals must incur a cost

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and have blood samples sent to other labs outside of Tennessee. It is highly encouraged for producers to work with their local veterinarian to see about testing their herds. The U.S. Department of Agriculture (USDA) and Farm Service Agency (FSA) do not currently offer indemnity services for cattle who are known to be infected and are directly taken to slaughter.

TDA currently does not have authority to condemn animals infected with the disease, and other states surrounding Tennessee with known cases have chosen not to regulate infected animals. Some options include an emergency order, which is an order lasting anywhere from three to six months; a permanent rule, which requires legislation; or leaving the burden of management of the disease up to the individual producer. Benefits of potential governmental oversight include an attempt to slow down the spread of *T. orientalis* in its early stages of spread. On the other hand, any regulation in Tennessee could be seen as a red flag to trade partners, which could result in trade restrictions from other states and countries.

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