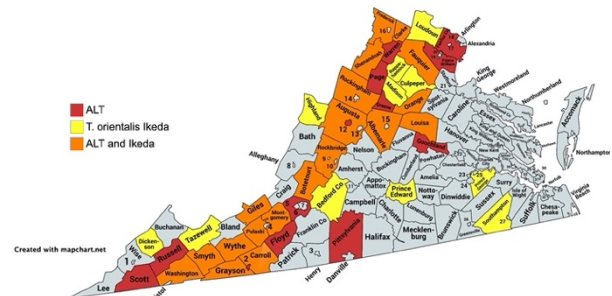


## ***Theileria orientalis* Ikeda genotype in cattle**

### Key points:

- *Theileria orientalis* Ikeda genotype has been identified in Virginia, West Virginia, Tennessee, North Carolina, Pennsylvania, Kentucky, and Kansas.
- Clinical signs are similar to anaplasmosis and include anemia, fever, lethargy
- Most clinical cases are occurring September-November and April-June but can be year round.
- Like *Anaplasma marginale*, animals have acute disease and are persistently infected.
- Some differences have been noted in that *Theileria* cattle may:
  - Be less aggressive than cattle with anaplasmosis
  - Have less distended spleens than anaplasmosis cattle on necropsy
  - Include sick calves
- *T. orientalis* Ikeda genotype has been found in 31 counties to date: Albemarle, Augusta, Bedford, Botetourt, Carroll, Clarke, Culpeper, Dickenson, Fauquier, Fredrick, Giles, Grayson, Green, Highland, Loudoun, Louisa, Madison, Montgomery, Orange, Pulaski, Prince Edward, Prince George, Rappahannock, Rockbridge, Rockingham, Shenandoah, Smyth, Southampton, Tazewell, Washington, and Wythe. **(9 new counties)**
- Transmission is primarily by the Asian Longhorned tick (ALT), which has been found in Virginia along with 16 other states to date. **(5 new states)**
- There is no approved treatment for *T. orientalis* in the US.
- Collaboration between the Virginia-Maryland College of Veterinary Medicine (VMCVM) and the Virginia Department of Agriculture and Consumer Services (VDACS) is investigating the distribution and virulence of this organism. **Prevalence of Ikeda in adult cattle is increasing in surveillance testing.**
- Virginia Tech Animal Laboratory Services has developed a duplex PCR that will detect *Theileria orientalis* and *Anaplasma marginale*. Validated sample is EDTA blood, but spleen may also be tested if needed.



In early fall of 2017, a Virginia veterinarian received a call from a beef producer with a previously healthy, adult beef cow acutely affected with severe lethargy, weakness and anemia with a history of other deaths on the farm. After a farm call, the veterinarian highly suspected anaplasmosis. Blood was negative for anaplasmosis but positive for a *Theileria* species. Follow up testing of the index animal and a representative sample of herd mates resulted in confirmation by the National Veterinary Services Laboratory (NVSL) of *Theileria orientalis*, a previously undiagnosed blood-borne parasite in Virginia. Further workup at VMCVM identified this as the virulent Ikeda genotype. Most *Theileria spp.* are confined to regions in Asia and Africa associated with the geographical distribution of their vector ticks, except for the worldwide distribution of the apathogenic *T. orientalis* Buffeli genotype. The parasite has also been found in Australia and New Zealand. This disease represents no threat to human health.

*Theileriae* are obligate intracellular protozoan parasites. *Theileria* sporozoites are transmitted to susceptible animals in the saliva of ixodid ticks or by direct blood transmission (e.g. needles). The invasive ALT recently identified in Virginia, *Haemaphysalis longicornis*, is known to spread *Theileria* in other parts of the world. Usually, a tick must be attached for 48–72 hours before it becomes infective; however, if environmental temperatures are high, infective sporozoites can develop in ticks and may enter the host within hours of attachment. The incubation period is 8–48 days. Signs in infected cattle are those associated with severe anemia and include lethargy, lack of appetite and exercise intolerance. Clinical signs often resemble anaplasmosis and include pale mucous membranes or jaundice as the periplasms precipitate destruction of red blood cells. Fever is common throughout the course of infection. Anorexia develops and there can be severe dyspnea due to pulmonary edema. The mortality rate for theileriosis can vary from three to nearly 90 percent. After initial infection, animals become chronic carriers and can relapse in periods of stress.

Work is ongoing at VMCVM to evaluate the organism, determine likely pathogenicity and investigate its distribution in the region. In the meantime, if you suspect you may have a similar case, please contact VMCVM or VDACS. Methods to reduce tick exposure or tick populations are recommended. Submit an accession form and EDTA blood sample on ice to:

Virginia Tech Animal Laboratory Services (ViTALS)

245 Duckpond Dr.

Blacksburg, VA 24061

Contact Dr. Kevin Lahmers ([klahmers@vt.edu](mailto:klahmers@vt.edu)) at VMCVM, PMM, or VDACS if you have additional questions.