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Spatio-temporal epidemiology of Tritrichomonas foetus infection in Texas bulls based on state-wide diagnostic laboratory data.

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Abstract

Texas is the largest cattle producing state and suffers severe economic losses due to abortions caused by the protozoan parasite Tritrichomonas foetus. The objective of this study was to use data from the state-wide diagnostic laboratory system of Texas to investigate the occurrence and spatio-temporal distribution of bovine trichomoniasis (BT) in Texas, and to identify spatial disease clusters within the state. The study population consisted of bulls tested for BT in 2010 by the Texas Veterinary Medical Diagnostic Laboratory system that performs at least 95% of all T. foetus testing in the state. Preputial samples were cultured and diagnosis was made by real-time polymerase chain reaction (PCR). Data on BT was aggregated at the county level with time aggregation of one month. The scan statistics was used to identify spatial disease clusters. The database included 31,202 test results with a proportion of positives of 3.7%. As expected, BT was present throughout Texas. Testing prevalence was highest in the summer (5.5%). The scan statistics identified a spatial cluster in southeastern Texas, which could only partially be explained by cattle herd density. The findings of this study provide baseline data to monitor the success of BT control activities in Texas and aids in generating hypotheses regarding specific risk factors for the disease. The identification of high-risk areas and periods is also essential to improve intervention efforts.