Prevalence of *Tritrichomonas foetus* in Tennessee beef bulls

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*Trichomonas foetus* is a venereally transmitted protozoan of cattle in which diseased bulls tend to be asymptomatic carriers, while infections in cows and heifers may result in embryonic and fetal loss, vaginitis, or pyometra. It has been estimated the disease has the potential to cost the U.S. beef industry over $650 million annually. While the reported individual bull prevalence rates of trichomoniasis in the U.S. were 0 to 7.8 %, the prevalence in Tennessee beef bulls and the direct cost to the Tennessee beef industry were unknown. The objective of this study was to estimate the prevalence of *T. foetus* infections in Tennessee beef bulls through prospective and retrospective surveys. According to the National Agricultural Statistics Service, there were approximately 950,000 beef cows in the state of Tennessee in 2012, and assuming a bull:cow ratio of 1:20, there were approximately 47,500 beef herd bulls in the state. The target sample size was calculated using the Epi Info Version 7.0 software from the Centers for Disease Control and Prevention (Atlanta, GA). Given an estimated prevalence of 3% (and not less than 1.5%) a confidence interval of 95% and a population of 47,500 herd bulls, 492 bulls were needed to estimate the prevalence of *T. foetus* in Tennessee beef bulls. To date, the prospective survey has included 380 Tennessee beef bulls sampled between March 2014 and January 2015. Preputial smegma was collected from the 380 bulls with a bull rasper (Tricamper®) and cultured in an InPouch® *T. foetus* culture pouch (BioMed Diagnostics). All bulls were aged via dentition, individual identification numbers, as well as the breed of the bull recorded at the time of collection. The samples were evaluated microscopically every other day for seven days for any growth resembling *T. foetus*. An aliquot of the culture medium from each sample was used for DNA extraction and subsequent real-time PCR using the VetMAX-Gold Trich Detection *T. foetus* DNA detection Kit (Life Technologies, licensed by the USDA). Of the 380 bulls cultured in the prospective survey, two (0.53 %) cultures were considered suspect on microscopic evaluation. However, all real-time PCR-based assays were negative for *T. foetus*, suggesting that the samples were most likely contaminated and contained fecal trichomonads. The retrospective analysis included 1,118 *T. foetus* tests (culture and/or real-time PCR) performed at the Tennessee Department of Agriculture Kord Animal Health Diagnostic Laboratory in Nashville, TN and the University of Tennessee College of Veterinary Medicine Biomedical and Diagnostic Sciences in Knoxville, TN between November 2013 and January 2015. These dates were chosen according to the time of diagnosis of two confirmed cases of bovine Trichomoniasis in Tennessee. Of the 1,118 samples from Tennessee bulls included in the retrospective analysis, *T. foetus* was observed and subsequently confirmed by real-time PCR in samples from two (0.18 %) of the bulls. When considering the results of the prospective and retrospective surveys, the estimated prevalence of bovine Trichomoniasis may be lower for Tennessee compared to other surveyed areas.

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