

## Factors associated with bulls not classified as satisfactory potential breeders

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Bull breeding soundness evaluation (BSE) is an economically important component of cattle herd management. Breeding soundness depends on adequate semen quality, physical soundness, and serving capacity. Most extrinsic factors affecting BSE classification are unknown. Objective was to determine the prevalence of and factors associated with unsatisfactory and decision deferred BSE classifications at our Veterinary Medical Center. Data were obtained on all bull BSE conducted by clinical veterinarians between 2008 and 2018. Data included date of evaluation, bull age, breed, body condition, physical abnormalities of feet and legs, reproductive tract, examining veterinarian, and previous BSE. Others were scrotal circumference (SC) and semen quality traits (progressive motility, percentage of normal, primary, and secondary morphologic defects). Bulls were classified as satisfactory, decision deferred, or unsatisfactory. For analysis, bull BSE classification was further categorized as pass (satisfactory) or failed (a combination of decision deferred and unsatisfactory). Cochran-Armitage test for trend was used to assess yearly trends in temporal distribution of apparent prevalence of BSE failure. Both univariable and multivariable logistic regression analyses were performed in SAS9.4 to test possible associations among various factors and BSE failure. Of 1,405 records of BSE recorded between 2008 and 2018, 30 were deleted due to missing information for year of examination, BSE results, or attending veterinarian. Out of 1,375 bulls, 1,049 (76.29%) were satisfactory and 326 (23.71%) failed. Out of failed, 239 (73.31%) were because of abnormal sperm morphology and 28 (8.59%) because of SC. Trend in the prevalence of failed BSE significantly decreased from 18.6% in 2008 to 7.8% in 2017. In univariable logistic regression analysis, bulls were more likely to have a failed BSE if they had reduced gross and progressive motility, abnormal sperm morphology, or previous BSE. Other significant factors were breed, body condition, examining veterinarian, year and quarter of the year BSE was completed. Both age and SC followed a cubic effect pattern. Thus, the likelihood of failed BSE was only evident in young and old bulls and in those with small and extremely large SC. Bulls in between these extremes had reduced likelihood of failed BSE. So far, this study has demonstrated the possible human bias of the examining veterinarian on the outcome of bull BSE. If consistent in the multivariable analysis, this shows that bull BSE should be performed by veterinarians with training in theriogenology.

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