

## Effect of semen collection method on semen quality in developing bulls

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Breeding soundness examinations (BSE) are commonly utilized to provide an objective indication of sire fertility. Although semen collection method is thought to influence BSE outcomes, limited evidence supports the use of 1 method over another. The objective of this experiment was to quantify the effects of 2 common semen collection methods on semen quality, and test the hypothesis that semen quality and BSE outcomes are affected by semen collection method. Angus bulls ( $n = 48$ ;  $332 \pm 47$  days of age) enrolled in an 84 day development program were randomly assigned to 1 of 2 initial collection methods [transrectal manual stimulation (MAN;  $n = 24$ ) or electroejaculation (EE;  $n = 24$ )] performed by a trained technician. Semen was collected on day 21 utilizing the initial assigned method. Thereafter, semen collection method was alternated within bull for each of 3 subsequent semen collections that occurred on days 42, 63, and 84 ( $416 \pm 47$  days of age). Duration of each collection procedure was standardized at 120 seconds of transrectal stimulation for MAN and 15 seconds of pulsed electrostimulation utilizing a programmed electroejaculator for EE. Immediately following collection, progressive motility was determined via light microscopy. Duplicate slides were prepared for morphological analysis and analyzed in duplicate by each of 2 technicians. Semen samples were weighed and sperm quantified via photometry using a standard sample volume and expressed as total sperm per ejaculate. Data were analyzed using analysis of variance and logistic regression to determine the main effect of collection method on all response variables and likelihood of BSE failure, respectively. Day of experiment and bull were included as fixed blocking factors in each model and independently accounted for a significant ( $p \leq 0.01$ ) portion of the variation in all response variables. Electroejaculation resulted in less total volume ( $4.6$  versus  $8.0$  ml x collection<sup>-1</sup> for EE versus MAN, respectively; SEM = 0.4;  $p < 0.0001$ ) and fewer total sperm ( $2.4 \times 10^9$  versus  $3.0 \times 10^9$  sperm x ejaculate<sup>-1</sup> for EE versus MAN, respectively; SEM = 0.2;  $p < 0.05$ ), but a greater percentage of progressively motile sperm ( $52.9$  versus  $46.9\%$  for EE versus MAN, respectively; SEM = 1.2;  $p < 0.001$ ). Electroejaculation also decreased the percentage of abnormal sperm ( $38.4$  versus  $43.3\%$  for EE versus MAN, respectively; SEM = 1.5;  $p = 0.02$ ), which corresponded with an increased percentage of normal sperm ( $61.6$  versus  $56.8\%$  for EE versus MAN, respectively; SEM = 1.5;  $p < 0.05$ ). Semen collection method altered total abnormal sperm ( $0.7 \times 10^9$  versus  $1.2 \times 10^9$  sperm x ejaculate<sup>-1</sup> for EE versus MAN, respectively; SEM = 0.1;  $p < 0.0001$ ) but not total normal sperm ( $1.6 \times 10^9$  versus  $1.7 \times 10^9$  sperm x ejaculate<sup>-1</sup> for EE versus MAN, respectively; SEM = 0.13;  $p = 0.51$ ) or the likelihood of BSE failure ( $X^2 = 1.83$ ;  $p = 0.18$ ). Although collection method affected semen quality parameters to a small degree, BSE passage rate was not affected by semen collection method. Therefore, it is concluded that semen collection method should not influence BSE outcomes.

**Keywords:** Breeding soundness examination, bull, semen

