

# Effective assessment of boar fertility and semen quality

A.L. Ruiz-Sanchez, R. O'Donoghue and G.R. Foxcroft

Swine Research & Technology Centre, AFNS, University of Alberta, Edmonton, AB T6G 2P5;  
*Email:*george.foxcroft@ualberta.ca

Semen assessment techniques for predicting relative male fertility, rather than simply infertility, are still needed. The principal objective of this study was to compare in vitro fertilization (IVF) and routine laboratory semen evaluation characteristics with in vivo fertility to determine effective measures of semen quality. From 7 months of age, three rotations of three boars were collected twice weekly over 8-month periods. The first sperm rich fraction of all ejaculates was evaluated for motility, morphology and concentration, diluted to 1.5 billion morphologically normal sperm in 50mL BTS extender, and used to breed at least 55 gilts. At least seven times (replicates) during this period, aliquots of the sperm-rich fraction were evaluated by IVF procedures.

Boars differed consistently for pregnancy rate (73-98%;  $P < 0.0003$ ) and farrowing rate (71-98%;  $P < 0.0003$ ). Total born was affected by both boar (8.8-12.0;  $P < 0.001$ ) and time (9.5-11.1;  $P = 0.038$ ), but no boar x time interaction was found. Two boars (G1, R1) were identified as being less fertile. A boar x time interaction for sperm motility (80-90%;  $P < 0.001$ ) and percentage normal sperm (82-97%;  $P < 0.05$ ) at collection (d0), and no difference among boars, suggested that these characteristics were not reliable indicators of proven fertility. However, boar affected motility in extended semen at d3, 7 and 10 ( $P < 0.0001$ ) and at d10 motility in semen from boars G1 and R1 was lower ( $P < 0.05$ ) than in the four most fertile boars. IVF characteristics studied showed very low correlations with proven fertility.

## **Implications:**

Use of low sperm numbers per dose for AI and determination of pregnancy rate at d30, and motility of extended semen after 10 days storage, may identify relatively infertile boars that can be excluded at an early stage from commercial use.