

# Identification, Selection and Improved Utilization of Superior Boars for Pork Production.

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Improvements to the efficiency of the breeding herd can be made through identification and removal of sub-fertile sires. Current literature suggests that 10-15% of boars at stud have reduced fertility despite meeting semen quality standards. The use of single-sire AI with low sperm numbers per dose allows for the evaluation of each sire's contribution to production. Removal of the lowest performing individuals can improve reproductive efficiency. The primary objective of this study is to introduce single-sire evaluations with low sperm numbers per dose as a routine procedure for the evaluation of AI boars. The ultimate step in optimizing the use of elite terminal sires would be to use boars of "known fertility" in AI programs with reduced sperm doses, improving the impact of the genetics of these sires on pork production systems.

With collaboration from a 3,500 sow production system (Cronin Farms, Ontario) and a commercial boar stud (Hilltop Sires, Ontario), semen from successive cohorts of boars was evaluated and single-sire doses of 2 billion sperm per AI dose were processed. Boars with commercially acceptable semen characteristics (i.e. better than 75% motility and <15% abnormal sperm) were retained (n=26) and used to breed at least 40 sows/boar. Relative boar fertility was established based on farrowing rate and total born per litter. Boars were then separated into low, intermediate and high reproductive efficiency groups based on these parameters. Preliminary results show an improvement of 1.2 pigs in total born and 14% in farrow rate between the low and high reproductive efficiency boars.

**Implications:** Evaluation of boars at reduced sperm doses allows for the identification and use of higher fertility boars to produce a larger number of semen doses and allows the AI stud to remove boars with lower fertility and genetic merit. This increases the genetic impact of elite sires and increases the value of the progeny produced.