

Independent effect of breeding at 1st vs. 2nd estrus on litter size, birth-weight and early post-natal growth

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Effective management of the gilt pool is important in increasing the overall reproductive and economic performance of the herd. Effective gilt pool management strategies includes set targets for physical (body weight, back fat, growth rate) and physiological (age, estrus at breeding) maturity of bred gilts to maximize lifetime productivity of the female. Most studies are consistent in showing an increase in number of piglets born alive in gilts bred at 2nd second compared to 1st estrus, as long as reduced feed intake before breeding producers do not limit the potential increase in litter size. There are no reliable data to our knowledge to indicate if increased uterine development as the result of uterine exposure to progesterone during the first estrous cycle conveys additional advantages to the progeny of litters born to gilts bred at 2nd vs. 1st estrus. The objective of this trial was to determine the effect of breeding gilts at 1st vs. 2nd estrus on litter size born and piglet birth weight and post-natal growth, independent of effects of litter of origin, and weight and age at breeding.

Pairs of littermate, pre-pubertal gilts were allocated to be bred at either 1st (pubertal) or 2nd estrus. To remove the effect of body condition and physiologic age, littermate gilts were bred at the same weight and chronological age by adjusting the time of puberty induction (approx.140 or 155d of age) between litter-mates. Total piglets born, piglets born alive, individual birth and weaning weights were recorded. Preliminary results show an increase in total born (11.1 ± 0.4 v. 10.0 ± 0.3 ; $P < 0.05$) in gilts bred at 1st v. 2nd estrus, respectively. No differences were detected in piglet birth-weight (1.2 ± 0.02 v. 1.2 ± 0.02 kg) or weaning weight (5.7 ± 0.08 v. 5.6 ± 0.1 kg) between groups ($P > 0.05$).

Implications:

Results confirm that breeding gilts at 2nd estrus will improve first litter size, and that this effect is independent of age or weight at breeding. Furthermore, increased first litter size does not compromise birth weight or early postnatal growth, suggesting that priming of the uterus effectively matches increased ovulation rates with increased uterine capacity in gilts bred at 2nd estrus.