

The Effect of Gilt Age at Puberty on Lifetime Reproductive Performance

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Traditionally, gilt “selection” focuses on growth and conformation, with little emphasis on reproductive traits. Typically, replacement gilts are received near market weight and if culled as non-cyclic, accumulate non-productive days (NPD) and loss of revenue. Substantial gilt NPDs can also result from extended entry to service intervals (ESI) and high gilt culling rates due to failure to exhibit heat at pubertal estrus or after weaning the first litter. Late puberty induction increases mature body size and lifetime maintenance costs of sows, raising important economic and welfare issues. In gilt management programs involving early exposure to boars, known cyclic gilts can be “selected” for entry to the breeding herd, and bred at pre-set targets for weight and body condition. Non-responsive gilts can be culled before incurring NPDs and financial penalties. If gilts induced to cycle at an early age can be shown to have good lifetime reproductive performance, producers will be more inclined to adopt this approach to improved gilt management.

Data from two populations of gilts at the Swine Research Unit, and production data from a commercial farm, are being analyzed to establish whether age at puberty affects subsequent reproductive performance. In the first population, boars were introduced at an average gilt age of 160 days. Three groups of gilts were identified for statistical analysis based on age at first estrus; early- (E;155-174 d), mid- (M;175-194 d) and late- (L;>195 d) responders. Gilts were bred at second or third estrus. Preliminary analysis of performance over 3 parities indicates no difference in total pigs born (E = 32.4 ± 5.7 ; M = 32.7 ± 6.6 ; L = 29.3 ± 2.3), despite later maturing gilts being heavier (E = 110 ± 42 kg; M = 126 ± 14 kg; L = 150 ± 12 kg) and having greater P2 backfat (E = 13.7 ± 2.7 mm; M = 15.9 ± 3.8 mm; L = 19.3 ± 5.2 mm) at first estrus. Analysis of the other data sets is being used to make similar comparisons.

Implications

Early puberty induction offers several management advantages and does not affect reproductive output over three parities.