Nutrition and Sexual Maturation in the Gilt

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Production of market pigs emphasizes leanness of the carcass and maximum output. For the breeding herd, the goal is to produce gilts that exhibit puberty and conceive at a young age and continue to conceive at regular intervals throughout their lives. However, we do not understand the relationships between production and reproduction traits in commercial genotypes.

For instance, factors that determine when a gilt will reach puberty remain to be resolved. A review of the literature reveals conflicting views concerning the effect of management on gilt development. Puberty has been correlated with a number of production traits such as weight, growth rate, fatness and lean growth rate.

An experiment was devised to examine the effects of prepubertal nutrition on the age of puberty in gilts. Two diets were formulated to achieve two groups of gilts; 1) maximizing lean growth rate 2) limiting lean growth rate. Gilts were fed these treatment diets from 50 kg weight until the attainment of their pubertal estrus. From 135 days of age gilts were exposed to a mature vasectomized boar daily. Weekly measurements of weight, backfat, loin and feed intake were taken. The following data were collected at pubertal estrus.

Trt	Age (d)	Wt (kg)	Loin (mm)	Backfat (mm)	GR (kg/d)
1	155.6	108.9	51.5	16.9[a]	.69[a]
2	157.6	106.5	50.7	14.6[b]	.67[b]

[a,b] means within column with different superscripts differ P≤0.05
GR - growth rate from birth to the onset of puberty

Implications: Although the treatment diets resulted in slight differences in growth rate and backfat, age at puberty was the same. We can conclude that all gilts had achieved a minimum threshold of growth so that age at puberty would not be affected. These results and those of an ongoing replicate will provide insight to answer important questions as to how producers should most effectively feed their replacement herd. This research is supported by the Alberta Pork Producers and the AARI.