

Growth Rate and Age at First Estrus: Impact on Managing the Gilt Pool

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Introduction

Identifying “select”(cyclic) gilts below market weight and achieving appropriate weights at first breeding are two essential features of efficient gilt management systems. To attain these two goals, early stimulation with boars to induce first estrus is an important management tool. However, for various reasons, producers delay inducing first estrus (puberty) until 180 to 240 days of age, even though replacement gilts reared under commercial conditions are

Early stimulation with boars to induce first estrus is common, but waiting too long can carry a financial penalty.

quite capable of reaching market weight (115 - 120 kg) before 170 days of age. Retention of non-select gilts once they have reached market weight results in a financial penalty to the producer. Unnecessary delays in stimulating pubertal estrus and breeding gilts increases feed, barn space and labour costs and may

cause welfare problems because of increased physical size of mature sows.

Experimental Procedure

Prepubertal Camborough 22 and L42 gilts (N = 509; PIC Canada Ltd) were allocated to the study at 101.3 ± 5.7 d of age and 60.3 ± 8.8 kg (mean ± SD) body weight. The gilts had ad libitum access to feed and water, were housed in groups of twenty and received 20 minutes direct exposure to an epididimectomized boar daily, starting at 140.0 ± 4.7 d of age. Gilts were deemed to be non-select if pubertal estrus had not been observed by 180 d of age. Select gilts were bred at third estrus, regardless of age or weight.

Results

Our results confirm that at commercially acceptable growth rates (0.55 – 0.80 kg/d) there is no relationship between growth rate (birth to 100 days of age) and age at puberty (r=0.079, P=0.15). As a consequence, inherent differences in age at puberty (Early, Intermediate, Late, Non-responders) affected days from first stimulation to first estrus or designation as non-select, and weight, backfat depth and growth rate at puberty (Table 1).

Implications

Figure 1 illustrates the overall distribution of the age of the gilts that reached puberty. Overall, out of 509 gilts, 59% of all gilts reached puberty within 30 days of stimulation, 77% of gilts were pubertal within 40 days of stimulation and 23% of gilts were considered non-pubertal at 40 days of stimulation (Figure

At 180 days of age, 23% of all gilts were non-pubertal, and nearly 80% of these were above market weight – a possible financial liability.

1). Based on these results, we estimate that if early pubertal stimulation is used as a “selection” technique, 120% of breeding gilt requirements should enter the stimulation phase (expecting 20% not to cycle) to obtain the required number of gilts cycling within 40d.

An important point that producers should consider is the weight of the gilts considered non-responders at 180 days of age (Figure 2). Overall, 23% of all gilts were considered non-

Table 1. Characteristics measured at the onset of puberty (1st estrus)

	Early	Intermediate	Late	Non-Responders ¹	SEM	Group P-Value ¹	Sow P-Value ²
#, Gilts	104	161	114	112	-	-	-
Pubertal Age (d)*	148.5 ^a	159.7 ^b	175.3 ^c	(>180)	0.81	0.0001	0.0289
Days to Puberty (d)	8.5 ^a	19.6 ^b	35.2 ^c	(>40)	0.82	0.0001	0.0364
Weight (kg)	106.1 ^a	118.0 ^b	128.3 ^c	131.3 ^c	2.0	0.0001	0.0001
Backfat Depth (mm)	12.7	13.7	13.7	13.5	0.45	0.2366	0.0001
Growth Rate (kg/d)	0.688 ^a	0.718 ^b	0.722 ^b	0.729 ^b	0.009	0.0014	0.0001

¹ Average age of non-responders was 179.7 days at the time of removal from the experiment.

* Puberty is defined as the first day a gilt exhibits the standing reflex in the presence of a boar.

¹ Group defined as the difference between early, intermediate, late and non-responders.

² Sow defined as the differences between dam at birth.

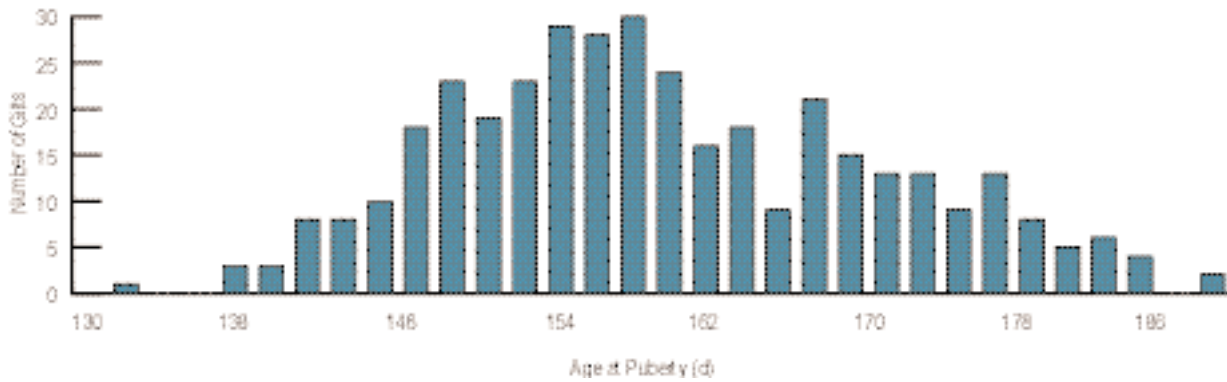


Figure 1: The distribution of gilts reaching puberty

pubertal and nearly 80% of these were above market weight (120 kg), thus resulting in a financial penalty to the producer if these gilts were to be removed as market animals.

Acknowledgements

Strategic program funding provided by Sask Pork, Alberta Pork, Manitoba Pork Council and Saskatchewan Agriculture and Development Fund (ADF). Direct funding for this project was provided by SaskPork, ADF, Alberta Pork and AARI.

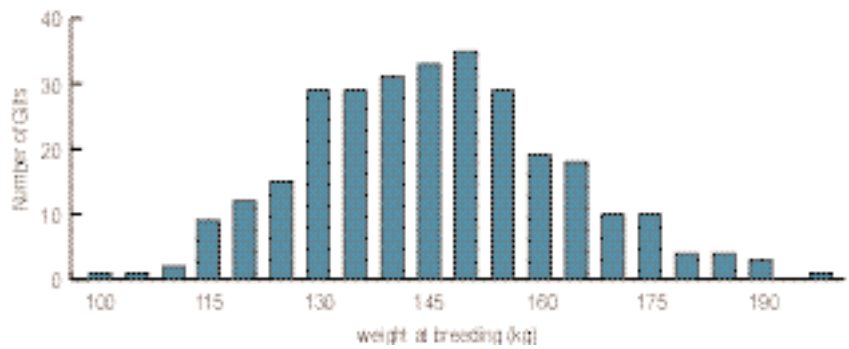


Figure 2: The weight of non-responders at 180d of age (n=88)