

Gilt Pool Management for Improved Production

The efficiency with which gilts are managed in the gilt pool and introduced to the breeding herd has a major impact on breeding herd efficiency (reducing animal replacement rates to a target of <45%, improving sow “fitness”, decreasing sow death losses and increasing labor efficiency and space utilization).

Three goals of an efficient gilt management program should be to:

1. Implement a strict selection program that identifies 75-80% of the most fertile animals.

Gilts entering the gilt pool should undergo an effective selection process involving three steps, Pre-Select 1, Pre-Select 2 and Final Selection. To enter the next phase, gilts must achieve certain requirements. At each step, gilts are classified as Non-Select, Opportunity, or Select (Figure 1).

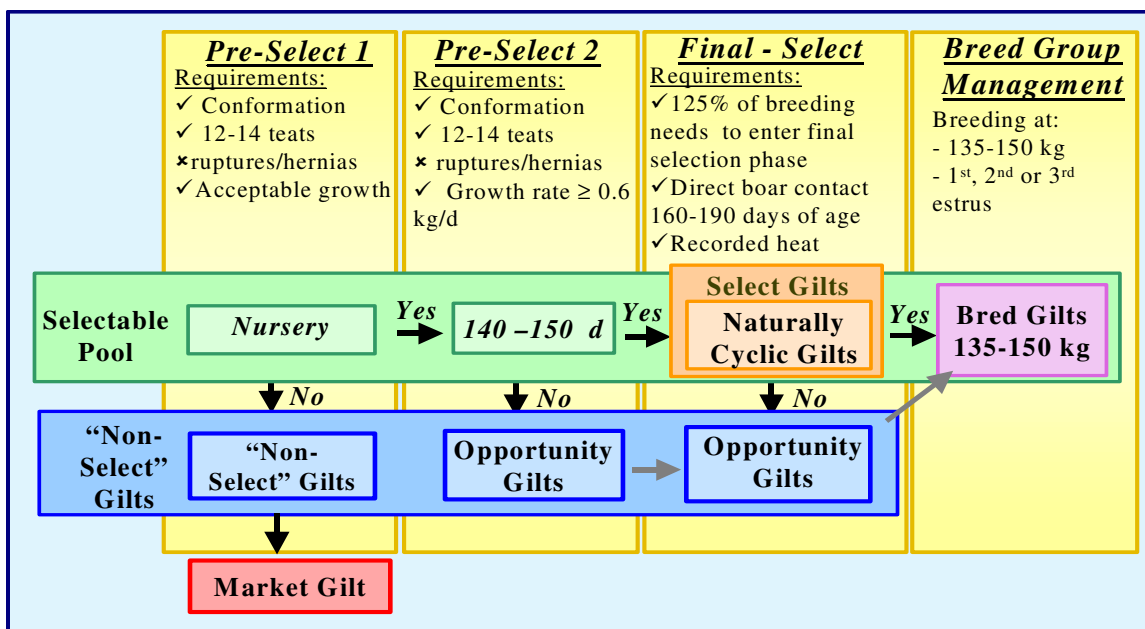


Figure 1. Schematic diagram of an efficient gilt management system.

Pre-Select 1. Gilts that have good conformation, acceptable growth performance, adequate numbers of viable teats, and are free of ruptures and hernias exiting the nursery will enter the selectable pool of gilts. If they fail to meet any of these requirements, they are classified as Non-Select and never enter the selectable pool again.

Pre-Select 2. At the Swine Research and Technology Centre (SRTC) at the University of Alberta, Pre-Select 2 occurs at approximately 140-150 days, when gilts are weighed to determine weight and growth rate. All gilts achieving adequate growth rates (>0.6 kg /d) will enter the Final Select phase. Any gilt that fails to meet the growth requirements will be classified as an “Opportunity” gilt.

Final Selection. To obtain the required number of cyclic gilts (heat-no-serve) within 40 days (Unpublished data, SRTC), approximately 125 % of the breeding herd gilt requirements should enter the stimulation phase. Expecting 22 % of gilts not to cycle during the defined stimulation phase and 3 % to be culled.

We recommend that **puberty induction begins when gilts reach 160 days of age and continues until they exhibit their first estrus or until 190 days of age**, whichever comes first. Ideally, puberty stimulation should consist of at least 15 minutes of daily direct boar exposure, with a gilt:boar ratio of no greater than 10:1.

Any gilt that exhibits the standing reflex between 160-190 days of age is considered a “Select” gilt and can be managed to enter the breeding herd. If a gilt does not exhibit first estrus between 160-190 days of age, she is considered an “Opportunity” gilt. Efficient protocols to introduce “Opportunity” gilts for breeding must be established.

2. Achieve appropriate weights at first breeding to sustain maximum lifetime performance.

It is recommended that gilts be **bred between 135 and 150 kg**.

Emma Clowes will examine the importance of weight at breeding on subsequent performance in a subsequent short article.

3. Minimize accumulation of non-productive days (NPD) in the gilt pool.

Low growth rate, unnecessary delays in stimulating pubertal estrus and breeding gilts, and inefficient allocation of gilts to breeding groups, are the largest contributors of gilt NPD’s in the herd. To minimize NPD strict culling procedures (Figure 1), early stimulation (160 – 190 days of age), and targeting the appropriate weights at breeding are essential.

			<u>AGE AT PUBERTY</u>							
			160	165	170	175	180	185	190	
GROWTH RATE (KG/D) AT 140 D OF AGE	0.50	WEIGHT (KG) AT 140 DAYS OF AGE	70	116	109					
	0.55		77		84					
	0.60		84		68					
	0.65		91			47				
	0.70		98			25				
	0.75		105			8				
	0.80		112							
	0.85		119							
	0.90		126							

PREDICTED ESTRUS AT BREEDING

1st estrus 2nd estrus 3rd estrus 4th estrus 5th estrus 6th estrus 7th estrus

Figure 2. Actual growth rate at 140 d versus predicted NPD and estrus at breeding

To meet breeding targets, or in start-up situations, it may be necessary to retain “Opportunity” gilts as part of the breeding herd (see Figure 1). However, retention of “Opportunity” gilts within

the herd would incur costs of additional NPD. For example, a gilt growing at 0.5 kg/d at Pre-Select 2 (140 d) and early maturing (160 d) will accumulate 116 NPD and need to be bred at 7th estrus to meet the target weight requirements (Figure 2). So to minimize NPD, **gilts should be bred at 3rd estrus regardless of whether they meet the minimum weight range.**

For a complete review of this information, please refer to <http://www.xxxxxx>

Jennifer Patterson
Research Coordinator, Swine Research & Technology Centre
Telephone: (780) 492-0063
E-mail: jennifer.patterson@ualberta.ca