

# Building the Barn to Fit the Gilt

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## ■ Introduction

In the fall of 1999, Big Sky Farms critically reviewed its gilt development procedures with the objective of improving overall fertility rates. At the time, Big Sky operated three 2400 sow units, including one multiplication and two commercial herds, as well as two 600 sow FF herds. Typically, gilts were purchased from the source farm at about 5-6 months of age and placed in group pens with fence-line boar contact and self feed. The gilt development program was pretty traditional, in that gilts entered at breeding age and were allowed to cycle prior to their first fertile breeding. Although attempts were made to cycle once and breed on estrus 2, gilts may have been bred on their first, second or subsequent estrus depending on the weekly breeding numbers compared to target. All gilts were bred with 1 natural followed by 1 or 2 AI matings, as we believed that the natural mating was useful for identifying the onset of standing heat, while the majority of ova would be fertilized in late estrus using semen of high quality AI boars. The natural matings were performed in boar pens, generally in close proximity to the gilts. The gilts were then returned to a breeding stall for their remaining AI matings. Because many of the gilts were housed with fence-line boar, it is likely that some became refractory to boar stimulation, hence reducing mating quality and subsequent fertility. Unfortunately, the overall fertility rates were sub-optimal and the gilt replacement rate was high.

Big Sky has a limited capacity on its gilt multiplication farm(s). Like the majority of the industry, gilt multiplication farms are essentially gilt finishers, a situation that has developed over the years due to the dramatic improvement in ADG, the 3-party multiplication model and fiscal realities in the industry. However, we believed that there was considerable opportunity for improving and expanding our gilt development and stimulation programs, either in the sow unit or gilt finisher (multiplication) farms.

When developing a new 5,600 sow unit in the spring of 2000, Big Sky had the opportunity to re-engineer the gilt development area and procedures using many of the concepts originally described and published by Drs. Foxcroft and Aherne, University of Alberta. To alleviate some internal concerns with respect to housing 5,600 animals under one roof, parity segregation was introduced by separating gilts and P1 from older sows in their respective breeding/gestation areas. With the new breeding barn, we immediately improved our ability to stimulate and select the most fertile gilts, guarantee a fertile breeding on estrus 2 and manipulate the diets to feed the fertile gilt to an appropriate body condition (P2 fat) or body weight. Our inability to properly feed gilts to an adequate P2 or body weight during the gilt development period was noted as a major impediment to superior productivity and longevity of our F1 females. Furthermore, we saw some immediate advantages of parity segregation with human resources and training, as the “best” breeders could be designated to breed gilts and P1 sows, which typically have longer WSI’s and shorter, less visible heats. However, there were some concerns with the large size of the 5,600 sow design, and specifically with long distances that pregnant females would walk in a breeding-gestation-farrowing cycle. Considerable thought was put into the most feasible barn layout to minimize the distances walked to and from the farrowing crate. There were also some concerns with respect to animal welfare and the ability to house sows in stalls in the future. Therefore, the barn design included as many slatted floors as possible to more easily enable a retrofit to group pens, should that be required in the future.

## ■ Gilt Development Area

The gilt development area was designed with several key concepts in mind.

- Gilts were to be purchased at 150 days of age (85-90 kgs) and intensely stimulated after arrival. Gilts would be housed in groups of 10 at arrival, with 15 sq f./gilt in totally slatted pens.
- The bred gilt requirements were about 50/week, but up to 100/week would be purchased and stimulated. As they cycled, the top 50-75% would be identified for future fertile breeding while the bottom 25-50% (least fertile animals) would be culled at slaughter weight.
- No royalties to the breeding company would be paid on any culled gilt.
- Gilt stimulation would include once or twice daily direct contact with a sterile boar for a minimum 30 minutes/day, and a sterile breeding on estrous 1 (E1). Sufficient records would be maintained to determine the entry to DiDi interval (EDI), and entry to fertile breeding date.
- It was anticipated that 75% of gilts would cycle within about 28 days and most would be DiDi bred.

- Sufficient pens were available in the gilt stimulation area to allow for a four week turnover interval.
- Gilts would be fed a high quality gilt breeder diet (~3.4 Mcal DE; 0.65% total lysine) via a self feeder from entry to DiDi breeding.
- The first 50-75% of gilts in the batch to be bred with a sterile boar would be transferred to breeding stalls where they would reside until breeding on E2. Gilts would be fed the same high quality breeder diet and all efforts would be made to ensure feed intake was not compromised after day 7 of their cycle.
- Gilts would be heat checked twice daily using a stimulatory boar and bred with 2–3 doses of semen on E2. Following their final mating, the served gilts would be moved to an implantation stall in a separate “quiet” area of the BG barn for an additional four weeks.
- Following mechanical pregnancy testing with RTU between day 23-25, the pregnant gilts would be moved to the gestation barn (stalled) and open gilts returned to the breeding pool for a subsequent service.
- Prior to farrowing, pregnant gilts would be moved to 1 of 28 farrowing rooms (32 crates per room) where they would be co-mingled with older animals in the same air space. With eight farrowing rooms filled per week, the potential existed to segregate gilts into “gilt only” farrowing rooms if deemed necessary to facilitate feeding or acclimation. The piglets were to be weaned at about 19 days (2 rooms x 4 days per week). There was no plan to parity segregate the progeny at weaning.
- At weaning, P1’s would be moved back to the gilt breeding stalls in a designated row designed with sufficient capacity for a 10 day WSI.
- At weaning, older sows (P2 and above) would be transferred to the sow barn, which was divided into breeding/implantation and gestational rooms. The weaned sow row was built with sufficient pens to allow a 7-10 day WSI. All sows were bred 100% AI. After their final mating, the bred sows were moved to an implantation area, then a gestation room if pregnancy tested positive.

## ■ Other Design Considerations

An additional row of small, 60 sq. ft. pens was constructed in the implantation area, to accommodate small numbers of cull sows and/or gilts. The stall width varied according to the age of animal it housed as follows:

- gilt breeding - 21” O.C.
- P1 breeding, gilt implantation and gestation -22’ O.C.
- sow breeding/implantation/gestation - 24’ O.C.

The feed system was designed to allow 4 unique diets formulated specifically for: gilt development & breeding, gilt gestation, sow gestation and lactation. The breeding, gestation and lactation areas, excluding the group pens, were to be fed multiple times per day using a shock drop system.

The barn was designed with a mature herd parity structure in mind (ie 35-40% gilt and P1's). It was clearly understood that operating the barn as designed would be impossible until the herd age structure matured. During the period from start up to mature herd, the design considerations would be compromised but the most suitable alternatives adopted.

**Figure 1. 5000 sow breeding/gestation/farrowing unit (Big Sky Farms Inc.)**

