P1 development strategies for peak performance

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Gilt development is among the most important areas of reproduction management, and it is a very exciting topic thanks to the impact it can have on whole herd performance and achieving genetic potential. Kendall Weger, Technical Services Specialist at PIC, presented a lot of great data and tips around P1 development in her presentation at the PSC Producer Meetings. The industry is currently challenged by large sow losses of 15-19% between the first and second parity (P1-P2). The main reasons for sow removals are reproduction-based including failure to conceive (~21%) and failure to get back in heat (~18%). Another 10% is lost due to lameness. These factors can partially be prevented with good gilt development.

A sustainable P1 development program should consist of three important areas, including selection intensity, gilt eligibility at first mating and parity 1 preparation. The first step in a P1 development program is selection intensity, which is all about the gilt pool and making sure the right quantity and quality of gilts are available for selection decisions to start off with the best females. There are two main components of selection intensity. The first one is making sure the gilts' vital needs are met, including feed, water, space, health, and environmental conditions. All these factors determine growth performance of the gilts. It is important not to limit growth because that can affect the reproductive outcome and the expression of estrus. The second component to selection intensity is puberty management. This includes starting puberty stimulation at the right time to ensure that gilts are bred at the right age and weight and on their second heat. This results in a bigger pool of gilts so we can have better selection intensity.

Gilt selection is a two-part process. The first part is removing gilts to be culled. Most farms do a good job removing gilts that are growing slowly, have belly ruptures and other obvious defects. Oftentimes, the selection process stops here; if a gilt has the right plumbing and she can walk, she gets bred. However, farms should be doing a second step to select gilts to be 'prime' because that's how we can optimize sow lifetime performance. This step includes evaluating the vulva, teats, legs, hooves, and locomotion.

> "A solid gilt program is an essential part of the foundation for improved retention."

In order to maximize the quantity and quality of gilts available for the selection process, make sure to troubleshoot fall outs prior to selection. If you have a high mortality rate before the selection process starts, you get too few animals to choose from and you have to breed sub-par animals to maintain the herd flow. Also review the placement plan for the gilt development unit (GDU), including limitations and bottlenecks. These often include a limitation of space and the age at which gilts are received, which is sometimes older than ideal to start puberty stimulation. Also think about managing the sow inventory and the GDU flow to avoid disruptions. Ask yourself what you're doing with the non-select gilts. The culls and pigs in hospital pens often get the most space. However, the space should really be optimized to be used for prime gilts.

After gilt selection, the next step in a sustainable P1 development program is gilt eligibility at first mating. There are four elements that are important in this aspect: age at puberty, age at breeding, body weight at breeding, and number of estruses. When all four aspects are combined, there

is a synergistic effect on lifetime performance and retention. Unfortunately, it is a common scenario that farms struggle to achieve all four. For PIC gilts, the ideal situation (ideal fertility quadrant) is to hit puberty at an age younger than 195 days, age at breeding between 200 and 225 days, body weight at breeding between 135 and 160 kg, and have one heat-no-service (HNS) before breeding (so breed on the second estrus, or the third estrus if the gilt is too light). Breeding within the ideal fertility quadrant improves farrowing rates, lowers sow removal rates, improves gilt utilization and results in more pigs weaned. In a field example, gilts that hit the ideal fertility quadrant had 17% lower removals due to reproductive reasons, 27% lower removals due to locomotion reasons, 7 points higher retention up to P2 and 2 more pigs weaned up to P2 compared to gilts that didn't hit the ideal fertility quadrant.

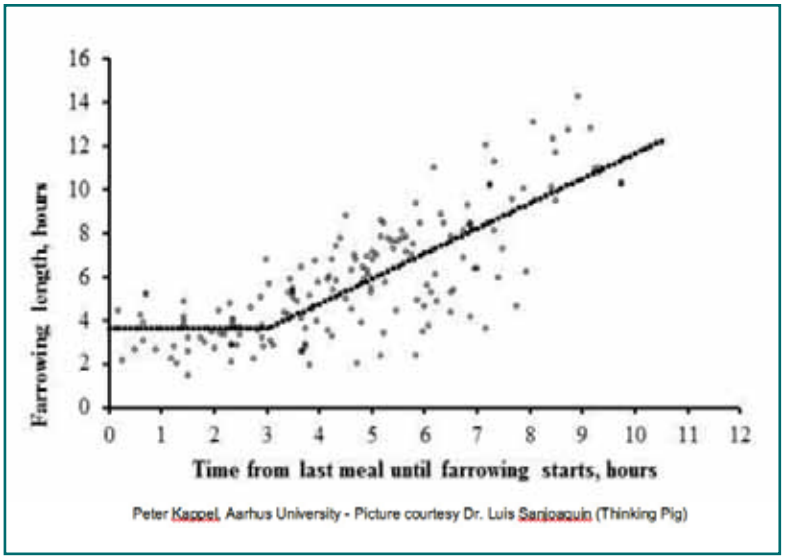

Figure 1. Connection between time from last meal until start of farrowing and the length of farrowing.

Getting a first estrus by the age of 195days is a critical step in hitting the other three targets. This is done by starting boar exposure no later than 24 weeks of age to stimulate puberty. Direct boar contact is best to induce puberty. An early response to effective boar stimuli is a critical selection tool. This allows the 'select' gilts to be bred at second estrus and at an acceptable target weight. Make sure to allocate enough labor and high-quality boars to the puberty stimulation program. While most farms will measure things like farrowing rate, pre-wean mortality, sow death loss etc., many farms won't measure key performance indicators (KPIs) in the GDU. Consider measuring things like gilt utilization rate, age and weight at first heat, % of gilts bred over 160 kg, and % of gilts bred over 225 days of age to get an idea of where you're at and where you could improve.

Trouble shooting fallouts prior too selection will help to maximize the quality and quantity of gilts available.

The last area of the P1 development program, which is often overlooked, is preparation of gilts for their first farrowing and lactation. This starts with feeding management in gestation. Don't underfeed gilts in gestation as they are still growing. Consult with your nutritionist for appropriate feeding levels. Body weight at first mating and body condition at farrowing entry are the most relevant time points for P1s. Measure the weight with a weight tape rather than a caliper because calipers don't provide an accurate measurement of gilt body condition. Pre-farrowing management is important to reduce the farrowing duration and post-partum recovery. Water intake and feed management pre-farrow are key basic sow care practices. Figure 1 shows that farrowing length is increased when there's more time between the sow's last meal and the start of farrowing. As increased farrowing length results in a higher risk of stillborns, it is recommended to feed several small meals per day, rather than one large meal per day. It is recommended to not feed females full feed pre-farrow.

It is also important to make sure that the gilts know how to drink and are drinking well at least 24 hours before farrowing, which is when they are the most active and drink the most. In the hours and days after farrowing, activity level and water intake go down. Getting P1s to eat well soon after farrowing is finished is important because sows that start with a low feed intake after farrowing never catch up to sows that eat well right away. Low feed intake during lactation will result in more body weight loss and a higher chance of sow removal by P2. Higher and consistent feed intake in lactation is associated with better reproductive performance and lower body weight loss in lactation. To stimulate voluntary water and feed intake, get sows up twice a day. Also check for fever and other problems at this time. Take steps early on to reduce the need for preventable interventions.

Some KPIs that are good to track P1 success are pigs weaned per farrow and the percent of P1s weaning 0 pigs. Some gilts will get sick, dry up, are not eating or drinking, or are otherwise unable to take care of their litter, so getting data on how many P1s weaned 0 pigs is a good indicator for how successful our P1 development program is.

In summary, a solid gilt program needs to be considered a foundation for improving retention, lower sow death rate and maximum weaning performance. Tracking is the first step to achieving results because you can't improve what you don't measure. And remember that a solid HNS program drives the decision making at breeding.