

Genexpert

Genetiporc's Toolkit

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Genetics of sow feed intake during lactation

Dan Hamilton, PhD
Technical Director, Genetiporc USA

The sow's requirement for nutrients is increased during lactation. Genetic selection for increased litter size, reduced backfat and greater growth rate has resulted in heavier milking sows with greater maintenance requirements. It is becoming more common to find whole herds averaging greater than 12.7 pigs born alive and 11 weaned at an average wean weight of 14.5 lbs or more. In many cases, sows fail to eat extra nutrients during lactation to compensate for their greater output and end up mobilizing more body fat reserves resulting in poorer body condition scores, delayed wean to service interval and poorer overall reproductive performance. Many management and nutritional approaches have been investigated to improve this situation and in some cases have shown marginal value but by no means has the problem been resolved.

Genetiporc has invested heavily to find ways to directly measure lactation feed intake accurately and efficiently in order to develop improved maternal genetics that are easier to manage and able to reach their genetic potential. After extensive research, Genetiporc installed electronic sow lactation feeding systems (Gestal FM, JYGA Technologies, QC, Canada). (Figure 1) in all farrowing crates on several sow farms including two nucleus farms. The Gestal FM is unique as it allows the sow to eat on an ad-libitum basis



Figure 1. Gestal FM

and automatically record the data and send it through wireless technology to a central computer location. This system brought us the capacity to record individual feed intake for genetic selection purposes. But more importantly, Genetiporc quickly realized the benefits of this equipment in terms of maximizing sow feed intake to improve body condition and subsequent reproductive performance while saving on labor.

Initial reports from using the Gestal FM showed that there was a great deal of sow to sow variation for lactation feed intake (Figure 2). Few trials have been reported on the topic of genetic selection on sow lactation feed intake. One researcher demonstrated that the heritability estimates for lactation feed intake defined as separate traits for each of the first 3 parities ranged from 0.17 to 0.28 (Hermesch, 2007). In addition, Hermesch (2007) also showed genetic correlations between lactation feed intake recorded in different parities were 0.45 ± 0.33 and lower suggesting that lactation feed intake of first parity gilts is genetically a different trait than lactation feed intake of sows recorded in later parities. Others have also commented on the fact that first parity sows are more subject to low lactation feed intake relative to older parity sows since they have smaller body reserves, lower feed intake and need extra energy for body weight gain (NRC, 1987). These data along with those being collected by Genetiporc highlight the potential for a balanced multi-trait selection strategy including sow lactation feed intake.

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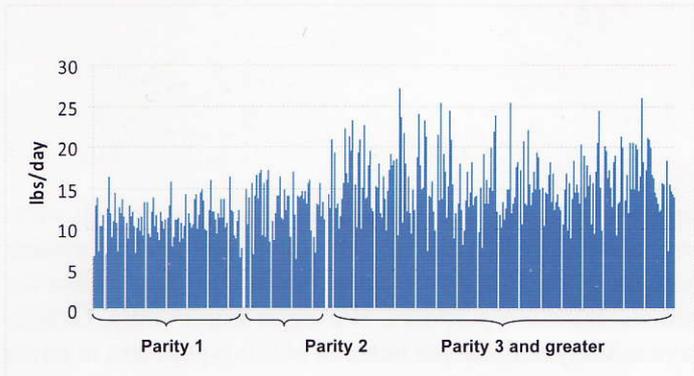
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Figure 2. Variation in lactation feed intake and breakdown by parity 1, 2, and 3 or greater. Average lactation duration was 20.5 days. Each line represents one sow's average lactation feed intake.



The goal leading to installation of the electronic feeding system was to evaluate the potential to use this system as a tool to select maternal lines with greater lactation feed intake. For the past few years, the Gestal FM system has been busy collecting data on each pure line for multiple generations in order to generate an EBV (estimated breeding value) for the new lactation feed intake trait. Not only do we have to collect information on lactation feed intake but also other traits such as born alive, milking ability, wean to service interval and longevity in order to fully understand how these traits are related so proper indexes can be developed. We are presently in the final stages of initial data gathering to generate this new EBV for lactation feed intake and should be introducing it into our selection index in the near future.

In conclusion, the industry realizes that sow lactation intake is an important topic that directly relates to sow reproductive success and sow longevity, however, it is less clear how to get the desired results via management, housing or nutritional techniques without adding significant costs to the system. Thus, Genetiporc is committed to producing sows that have the capacity to consume more nutrients during lactation and convert them more efficiently, in order to produce a sow that is easier to manage and capable of realizing her full genetic potential. Genetiporc's new lactation feed intake trait will allow Genetiporc females to optimize their genetic potential in terms of productivity and ease of management.

Hermesch, S. Genetic analysis of feed intake in lactating sows. 2007. *Proc. Assoc. Advmt. Anim. Breed. Genet.* 17: 61-64.

NRC. 1987. *Predicting Feed Intake of Food Producing Animals.* Natl. Acad. Press, Washington, DC.

Gilt Developing Tips

By George Douthit
Production Services Specialist

Gilt retention and lifetime productivity are very important in establishing a productive sow herd. In this article, important tips are provided that will help improve both. Implementing each one would be ideal and would yield the best results, but with the varying facility and management styles used in different operations, this may not be possible. The more tips used the better the results.

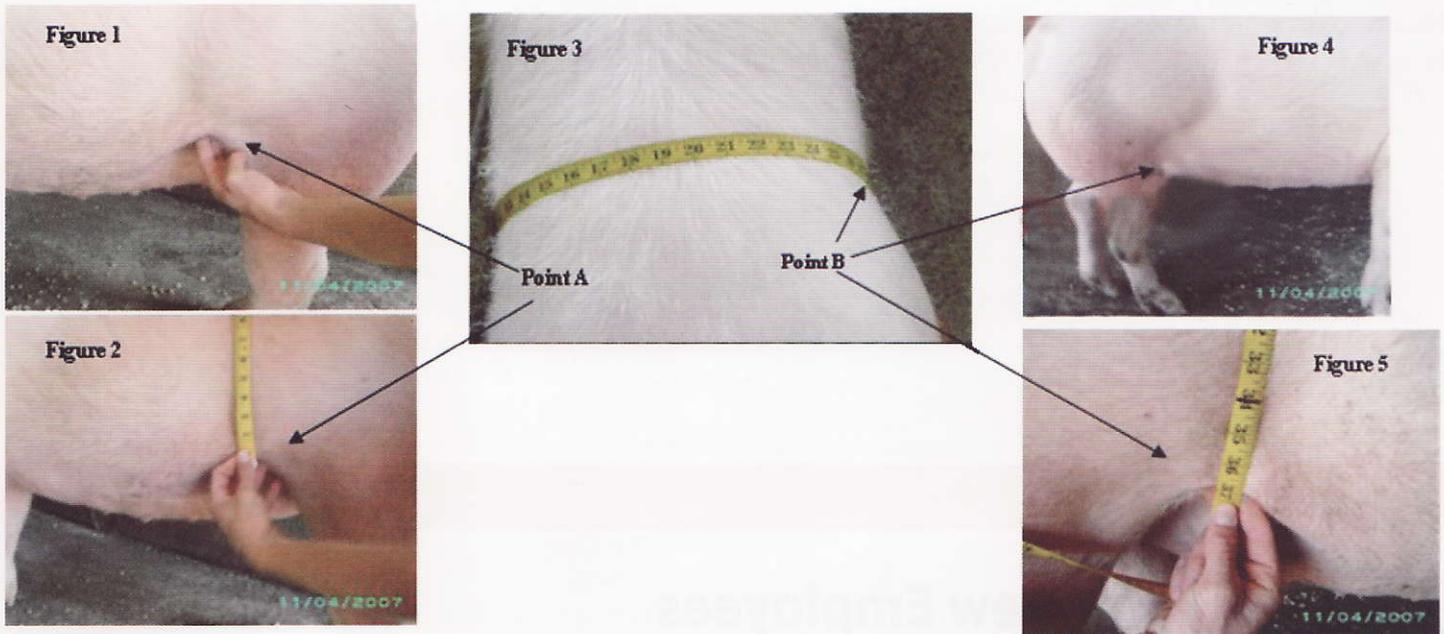
Listed below are a few minimum standards that will help improve gilt retention and lifetime productivity:

- Ensure that new gilts are properly acclimated to the sow herd:
 - It is very important that vaccinations and feedback programs be performed properly.
 - Allow sufficient time with medications to offset weight loss due to acclimation.
- Provide ad lib feed access (explained in detail in the June 2009 GenExpert issue) for continued growth and development.
- 200 – 250 pound gilts should be housed at 10 sq ft. per gilt.
- 250 – 300 pound gilts should be housed at least 14 sq. ft. per gilt.
- Teaser boars should be at least 10 months old and sexually active.
 - One boar per 12 gilts for in-pen exposure.
 - One boar per 24 gilts for fenceline exposure with person moving gilts in the pen.
 - Rotate boars daily to reduce familiarity between the animals.
 - Move boars past other boars before using them for stimulation. It helps to spike hormone levels for better pheromone exposures.

Day to day procedures:

- At 200 to 250 pounds, provide fenceline boar exposure daily with once a week in-pen exposure. Fenceline should be accompanied by a person in the pen moving gilts to the boar.
- Record the cycle date for each gilt.
- At 250 pounds plus, provide daily in-pen boar exposure.
- After first or second recorded heat no service (HNS), move gilt to crate for 14 days.

- At 300 pounds plus, begin flank to flank measurements (see picture diagram and procedure description below).



Using a cloth tape measure, start at the bottom of the loose skin in the flank on one side of the gilt (Figures 1 and 2). Go straight up and over the back/hip (Figure 3), and then straight down the other side to the bottom of the loose skin of the other flank (Figures 4 and 5). While holding your finger at that point on the tape, read the inches from flank to flank to get the measurement.

- A minimum of 36 inches flank to flank measured along with two recorded HNS is required for best results. There are major benefits to waiting until a 36 inch flank measure, such as a reduction in:
 - the number of stillbirths;
 - retained pigs;
 - gilts that need help farrowing because of a very small pelvic opening.
- Girth tape is good, but flank to flank has shown to give more consistent results for predicting higher born alive and fewer farrowing complications.
- Gilts that have not stood but have shown signs of cycle should have that data recorded, so they can be administered PG600 at 17-18 days after suspected cycle. They should also continue to receive boar exposure to help promote standing heat within seven days.
- All gilts should be placed in crates before breeding and not moved for at least 45 days after the last breeding.
- All weaned gilts (parity 1) should have ad lib feed access from weaning until bred.

For help in developing an individual program for your system, please contact your Genetiporc Sales Representative, or Alicia Wohler, toll-free at 1-866-632-7656, or send an e-mail to awohler@gcctv.com