

Frank's Note

In pork production, there's always something to learn, revise and adjust as the drive toward continuous improvement is strong. Pork producers have done a tremendous job over the years of managing replacement gilts that turn into productive sows.

Everyone involved in U.S. pork production should be proud of their contributions that deliver wholesome, affordable, sustainable pork products that feed millions of consumers at home and overseas. Equally important, those actions also drive economic growth and innovation in U.S. rural communities.

The National Pork Producers Council recently released an economic report that outlines pork production's impact on the U.S. agricultural and general economy. Key points include:

- The pork industry supports more than 573,000 direct and indirect U.S. jobs.
- Approximately 60,000 pig farms sold more than 149 million hogs worth \$27 billion in gross cash receipts in 2023.
- The pork industry supports more than \$37 billion in personal income and boosts economic activity in related services and other rural-based businesses.
- In 2023, 25 percent of U.S. pork was exported, equaling nearly 7 billion pounds valued at more than \$8 billion. Those pork exports support approximately 143,000 U.S. jobs.
- The pork industry generates significant economic activity through its input purchases. For example, corn and soybean meal purchases are valued at nearly \$13 billion annually.

For more, go to nppc.org/The-Pork-Industry.

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Frank Brummer
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Gilt Selection, Development and Retention: Start With the End in Mind

Replacement-gilt selection starts at birth, but the end goal is to ensure she progresses past parity 1.



It's a universal truth that replacement gilts are the foundation of a farm's future production, and the quality of the candidates matters. You wouldn't build a hog barn on an inferior foundation or with subpar materials, but too often gilts are selected that should never enter the breeding herd. Yes, there are breeding targets to hit and pig quotas to meet, but short-term decisions can derail long-term goals.

Gilt selection, development and retention drive sow longevity. "We believe that gilt management starts at birth. Selecting the best gilts and setting them up for a productive lifetime is key to maximizing sow productivity and longevity," says Jennifer Patterson, swine research associate, University of Alberta.

She challenges producers to think differently about gilt management. "It doesn't just stop at the gilt's first breeding," she says. "Maybe we should expand it to parity-1 (P1) development. I think that would have positive effects on retention, longevity and lifetime productivity."

Jennifer Patterson, research associate,
swine industry liaison, University of Alberta

Goal: A Productive Lifetime

Sow lifetime productivity is the breeding herd's Holy Grail, and Patterson cites these key components:

- **Longevity** — How long the gilt or sow remains in a herd.
- **Productivity** — How many pigs she has in a lifetime.
- **Fertility** — How efficiently the female achieves those targets.

She points to North American data that show 8 percent to 10 percent of selected gilts do not farrow, and only about 30 percent that are bred remain in the herd to P6 or so. The typical loss from P1 to P2 ranges from 14 percent to 19 percent, with losses of 10 percent to 13 percent in subsequent farrowings.

Match Diets to the Gilts' Changing Needs

Gilt development involves a wide range of strategies, including meeting the changing nutritional needs of a growing animal. “We need to get her through breeding, gestation and lactation, and hit dietary targets for maintenance, growth and reproduction,” says Spenser Becker, swine nutritionist, AB Vista. “We want to set her up not only for productivity and longevity but also the survivability of her piglets.”

This requires dietary targets different from those for finishing hogs. For example, for developing gilts, reduce the lysine-to-energy ratio to 97 percent to 98 percent of market-hog requirements. Calcium and phosphorus levels need to be 7 percent to 8 percent higher to accommodate bone growth and mineralization.

“Allow gilts to eat *ad libitum* during the growing period,” she says. Restrict feed later if the gilt’s bodyweight needs correction. Adding fiber can help dilute the diet. “Recent studies have shown that fiber can benefit the gastrointestinal tract, provide additional nutrients and reduce diet costs.”

Adding organic trace minerals is also beneficial. “Organic minerals have been shown to improve lameness and hoof health,” Becker says.

Ahead of the gilt’s first breeding, flush feeding may be an option. This involves increasing feed intake 7 to 10 days prior to breeding, with the goal of improving ovulation. “If you’re not able to breed the gilt on the first or second estrus, there’s the risk she will get too heavy,” she says.

You don’t want gestation feed intake to reduce lactation feed intake. “Some interesting work has shown that increasing meal frequency 2 to 4 days before farrowing offers benefits in performance and for her second litter,” Becker notes.

Get the gilt up twice a day to evaluate her, and encourage her to eat and drink. Clean out stale feed and check the waterers.

“Getting diets and feed intake right can be a struggle; take time to evaluate your program so you know what’s happening with that young female,” she says.

“We’re not converting those P1 females into P2 productive sows. That is a lost opportunity,” Patterson notes, adding that a 10 percent loss between parities would be a reasonable goal.

Of the P1 to P2 losses that occur, 30 percent are due to death and euthanasia, and 70 percent are due to culling. The top three culling reasons are:

- 1) **Reproductive** — “Usually, this means no heat, return to estrus or not in pig,” she adds.
- 2) **Lameness** — Feet, legs and skeletal structure.
- 3) **Low productivity.**

The parity goal has long been for sows to reach P3, both from a profitability standpoint and because sows that reach that level tend to remain in the herd longer.

However, it may be time to re-evaluate that payback timeline, says Matt Romoser, Iowa State University (ISU) swine field specialist for southeast Iowa. “Today’s sow is different from 15 to 20 years ago when those economics were calculated. We wean more pigs per sow but with higher input costs and cull-sow prices. So, the return-on-investment parity is unclear.”

Selection Starts at Birth

There are many traits to consider when selecting replacement gilts, but birthweight is first and non-negotiable. “Gilts weighing less than 2.2 pounds at birth can be written off as candidates,” Romoser says. “Data shows that low birthweight is a risk for high pre-wean mortality, poor growth and a lower retention rate in the breeding herd.”

The physiological development of the reproductive tract starts early in life, and a low-birthweight gilt is already stunted. That will continue into the post-natal and pre-weaning period, he adds.

Once born, the first 24 hours are critical for candidate gilts. Manage colostrum intake through split suckling, and consider nursing gilt and boar piglets separately. Then cross-foster piglets as needed to



Spenser Becker, swine nutritionist,
AB Vista

reduce competition and maximize this early growth period.

Weaning age is another factor, points out Spenser Becker, swine nutritionist for AB Vista. “If we can extend weaning age out to 23 or 24 days, we see benefits not only in performance but also immunity and intestinal health.”

As they move into the nursery, the goal is to keep gilts healthy and growing. It’s the post-nursery phase where gilt development kicks in to high gear, she adds. (See sidebar.)

Pre-selection Stage No. 2

Once gilts reach approximately 150 days of age, they’re ready for the next stage of the gilt development unit (GDU). “Gilts growing less than 1.3 pounds per day, have any defects, are unthrifty or have poor health should not enter the GDU,” Patterson says.

As the gilts grow, evaluating body composition must be part of the selection process. This can be challenging because there’s some subjectivity to the evaluation, but it also requires a trained eye. “Think movement, confirmation and structure,” Romoser says. “If the gilt’s shoulder or rear legs are too straight and her movement is restricted, or she has a narrow body shape, those are all strikes against her.”

Reproductive traits like underline quality and teat number are easy to spot and use for elimination. Another reproductive trait to consider is vulva size. Romoser was involved in an ISU study that found it can be a useful tool to select gilts even earlier than puberty onset. Researchers measured vulva width on 15-week-old gilts and correlated that with fertility. “We found for gilts with a wider, larger vulva at that age,



Matt Romoser, Iowa State University
swine field specialist, southeast Iowa

a higher percentage reached P1 and had more total born and pigs born alive through P2," he notes. "It effectively identifies gilts with more reproductive potential."

A gilt's body size is influenced by genetics, but bodyweight is something caretakers can manage. It's critical to monitor body condition throughout development because not only will extra weight lead to reproductive problems, those females also eat more and cost more to maintain.

"There are many things with sows that we can't control, but keeping body condition in check and recognizing gilts that are too thin or becoming too fat is something we can control," says Derek Henningsen, gilt flow manager at JBS Live Pork.

Excess weight can also affect the gilt's skeletal structure and movement ability

long-term. Because lameness remains the No. 2 reason why gilts and sows are removed from the herd, "it needs to be addressed at selection," he adds.

Caretakers should monitor the animal's movement daily, especially the feet and legs; flag concerns; and take action as needed. Slat quality can impact the evaluation, too. Make sure there are no sharp edges that can damage foot pads.

No one trait dominates the selection process. "A multiple-strike method is a good choice," Henningsen says. "If there are several questionable traits, the gilt needs to go."

Final Selection Stage

In the next stage, gilts are maturing and approaching breeding eligibility. Boar contact is key to making the final selection. "Boars are the most efficient way to stimulate puberty in gilts," Patterson notes, "and direct contact is better than fence-line contact. I know that can be a challenge because of the labor component."

Equally important is having a consistent supply of mature, high-libido boars sized for gilts. "Often, I see boars that are older,

friendlier and easy to move," she adds, "but not necessarily good gilt puberty-stimulation boars." Plan to bring in new boars at least twice a year.

Even though the gilts have made it this far, you need to distinguish between gilt availability and eligibility. "Just because a gilt is available doesn't mean it's a good candidate to breed," Romoser says. "It can't be overstated how much impact the eligibility components can have in getting the gilt to the first litter and beyond."

Patterson equates key gilt-eligibility components to four tires on a well-running car. Each one is equally important:

- 1) **Age at puberty** — Start puberty stimulation by 170 days of age at the latest. Data shows gilts that reach puberty early remain in the herd longer.
- 2) **Heat no service (HNS)** — The gilt has recorded one HNS by about 200 days of age. "We want to breed gilts on the second detected estrus and only delay to a third estrus to meet the minimum bodyweight requirement," she notes.
- 3) **Weight at breeding** — Breed gilts once they reach 300 to 350 pounds, and avoid going beyond that.



4) **Age at breeding** — 240 days of age is a general cutoff; any older and they're likely to be overweight.

Data collection is important to track the gilt's progress and make decisions about the broader development program. But data must be recorded accurately and consistently, Patterson says.

"We have lots of great data collected on sow farms, but that's not always the case in the GDU," she adds. Important data points are individual identification, birth dates for each gilt, HNS dates, weight at recorded first HNS, service date, removal date and all the production data. "Those are key data points that provide the reports to track the GDU's success."

A Word About the GDU


The GDU is a specialized unit and needs to be prioritized. Many pieces must align to develop a productive gilt that transitions into a productive sow.

Replacement gilts are not market hogs and should not be fed or handled as such. Stocking market hogs at 7 to 8 square feet per animal works with the help of a first cut. That same space gets tight for 300-pound gilts, increasing their risk of injury, limiting feed and water access, even challenging boar exposure. A better option is to allow 12 square feet per gilt.

It's not uncommon for staff assigned to the GDU to also oversee the gestation barn, do routine heat checks or handle the boars. "It can become a secondary priority

to manage the GDU because they have so many high-value jobs to do," Romoser says. "Labor shortages and turnover only add to the challenge."

Not only does the GDU need its own dedicated staff but also the time and tools to do the job correctly, Patterson says. "For example, have enough boars for puberty stimulation and heat detection."

Retention rate and non-productive sow days are measures of the GDU's success. "How the gilt progresses to P1 and how well she rebounds and moves to P2 and beyond reflect how well the GDU is performing," Romoser notes. "When we talk about gilt development and retention it's easy to list what to do, but it is a challenging job." 

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