

GENETIC REPLACEMENT PROGRAMS IS INTRODUCTION OF 5 KG GILTS AN OPTION FOR YOU?

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Genetic advancements in swine production in the last 10 – 20 years have been phenomenal. These advancements have been in reproductive traits (litter size) and growing traits (leanness, feed conversion, growth rates). A challenge faced by all producers is to balance the need for genetic introduction against the need for health stability. Total emphasis on genetic introduction without regard for health will likely have serious negative consequences on health. Conversely, total emphasis on health control such that the producer is paralyzed to bring in replacement stock will seriously limit genetic improvements.

For the commercial producer, the idea of running a closed herd with an internal genetic development program is generally not practical. The pool of purebred animals that are necessary to run an acceptable genetic program is too large to be practical for the commercial producer. In addition, a primary focus of the commercial producer is to be as efficient as possible to be competitive, and generally this producer does not have the interest to run a proper genetic breeding program. For this reason, nearly all commercial producers will bring in their replacement animals in one way or another. A method that is becoming more popular is the introduction of newly weaned gilts, more commonly referred to as the introduction of 5 kg gilts.

There are a variety of options available for a producer to secure replacement gilts. These include:

- Herd closure with an internal genetic program
- Introduction of mature replacement gilts (with or without quarantine)
- Introduction of feeder (25 kg) gilts (with or without quarantine)
- Parity one introduction in a network with a dedicated P-1 sow herd
- Introduction of weaned pigs (5 kg) gilts (with or without quarantine)
- Variations of 5 kg gilt introduction:
 - Introduction of 5 kg F-1 gilts
 - Introduction of 5 kg purebred gilts with internal multiplication

All of these options have advantages and disadvantages. The purpose of this presentation is to present the option of 5 kg gilt introduction with a review the advantages and disadvantages of this approach.

Porcine Reproductive and Respiratory Syndrome (PRRS) has been a devastating disease for many producers, but at the same time this disease has been a great educator. PRRS has taught us many things about the dynamics of health with large populations of pigs, and the strategies that are necessary to control health. Porcine Circovirus (PCV2) is going to help educate us further. We have much to learn yet about both these viruses; I am sure some of the control strategies will be the same for PRRS and PCV2, but likely some of the control strategies will be different. We understand that proper gilt acclimation is a critical component to sow herd stability for PRRS virus. I think we will find that the same is true for PCV2. Sow herd health stability is one reason that the 5 kg gilt introduction program deserves serious consideration.

The principles of the 5kg replacement program are as follows:

- The field strains of the bacteria and viruses of the commercial farm will provide the best exposure for development of herd specific immunity. This immunity will be more specific than commercial vaccines are able to provide.
- The best source of these field strains of bacteria and viruses are the young growing pigs of the commercial farm as their maternal immunity decreases and natural exposure to these microbes occurs.

- “Clean” replacement gilts that are naive to many of the commercial farm microbes adapt well to the same age group of animals with lower health status, as both groups will develop their active immunity at the same time.
- The shedding of microbes that occurs as natural immunity develops takes place with both the naive replacement gilts and the commercial piglets. The small group of naive gilts has no impact on the overall health stability of the herd.
- The long time period for exposure to the herd microbes, development of immunity, and cessation of shedding provides very stable groups of replacement gilts to enter the sow herd.
- Stable replacement gilts are an important component to helping maintain stable sow herd health.
- These principles apply to all bacteria and viruses. However, PRRS virus highlights these principles very effectively. We know there are multiple PRRS strains and commercial vaccines may or may not provide cross protection. We also know that PRRS shedding can last for several months after initial exposure to the virus. Both of these facts support the idea of early exposure to the host PRRS virus(es) in order to have stable gilts at the time of mating.⁴

The protocol of the 5kg replacement program is as follows:

- Gilts are introduced to the commercial farm around weaning age (18 to 25 days).
- The gilts should be introduced into quarantine, with appropriate testing, before they enter the main barn. The length of the quarantine will be dependent upon the health status of the main herd. If the sow herd is *Mycoplasma spp.* and PRRS positive then PRRS may be the only disease to be monitored. PRRS PCR testing 7 – 10 days after arrival can be done to ensure that the PRRS naive gilts have not been recently infected.
- After release from quarantine, the gilts are placed into clean, disinfected nursery pens with a ratio of one commercial piglet to each four gilts.
- The vaccination and medication program for the replacement gilts will be identical to the program used for the commercial piglets. If desired, a prophylactic antibiotic program can be used for these gilts but generally there is not a need to provide any additional medication over what is used for the commercial piglets.
- The gilts will go through the grower and finisher units with the commercial animals. At about 150 days of age the gilts should be moved to a gilt development area to begin a gilt development and maturation phase.
- It is important to remember that these gilts are the replacement females for the herd so attention to proper flooring, space allotment, and feeding programs should be done to ensure as successful gilt development as possible.

Advantages and disadvantages of the 5 kg replacement program:

- The 5 kg replacement program provides a long acclimation program to the natural microbes of the commercial herd. This is an ideal program for a farrow to finish operation located on one site. For a multi-site system, the biosecurity and health status of the nursery and finisher units must be at the same level as the sow unit. This program may not be recommended for systems that co-mingle the production from more than one sow into the nursery and finisher flow.
- A very common concern with the 5 kg program is the thought that the naive gilts will disturb the health stability by going through a period of active shedding of the microbes of the herd. This does not appear to be the situation at all. It is important to remember that the commercial piglets also actively shed these microbes as they lose their maternal immunity and develop natural immunity.
- Veterinarians are going to recommend a quarantine period regardless of the type of gilt introduction program that is used. The 5 kg program requires only a small, relatively inexpensive quarantine facility.
- The replacement gilts take some space that is intended for commercial animals. It is important to not compromise the gilt development by crowding if there is a shortage of space.

- The 5 kg replacement program gives the producer the opportunity to pay special attention to gilt development principles such as defined gilt nutrition programs, and controlled boar exposure. On the other hand, the commercial producer is now taking on some of the responsibility that is expected of the breeding stock supplier.
- The 5 kg program will have an economic benefit for the producer. The producer can expect lower gilt medication costs. The selection rate of the gilts is at the discretion of the commercial producer, and he may choose to select a less than perfect gilt for only one or two parities if necessary. In addition, if the 5 kg program enhances sow herd stability then the economic benefits extend well beyond the gilt replacement costs alone.
- A variation of the 5 kg replacement program that is ideal for many farms is to purchase 5 kg purebred females. These females are used to produce internal F-1 replacement gilts. With this program the number of gilts introduced to the farm each year will be about 5% of the sow inventory instead of 45% of the inventory as is expected if F-1 gilts are introduced. The approach provides a significant biosecurity advantage.

Sow herd health stability is vital to both good reproductive performance, and good grow – finish performance. The approach used for gilt introduction will have an effect on health stability. Introduction of gilts as 5 kg animals is a method that many producers may find beneficial to their operation. This program is ideally suited to many farrow to finish operations, but can also be applied to multi-site operations as long as biosecurity and health points are kept in consideration.

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