# The impact of gilt introduction in sow herd immunity

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## **Introduction**

The main goal of any production system is to produce healthy piglets with high performances at low costs. In general, healthy piglets are produced from immune and stable sow herds. Stability of sow herds largely depends on a strong gilts introduction program. I have been a practitioner for the same integrated company in Canada for the past 20 years and I wish to share with you some of my experience. During my career I have been faced with two major changes which have dramatically impacted on sow herd immunity. The first one was to go from a farrow-wean system to multiple sites production. This made sow herds more susceptible and less immune since nursery piglets were not playing their role in providing a certain immunity to the sow herds anymore. The second important change was the introduction of naïve replacement gilts into the conventional sow herds. The high genetic value naïve gilts were then exposed to all microbes of the high challenged sow herds resulting in sick gilts producing sick piglets. Consequently to these changes, we have adapted our systems and I will share with you some of the actions that we have put together to get immune stable sow herds.

## **Factors impacting sow herd immunity**

According to my experience, immune stability of a sow herd depend on five major factors :

- 1. The health status of replacement gilts
- 2. The replacement rate
- 3. The gilt acclimatization program
- 4. The segregation of parity one
- 5. The vaccination program

## Impact of replacement gilts health status on sow herd immunity

Healthy replacement gilts are essential to maintain the sow herd immunity. Clinical signs associated to any disease in gilts will have a direct impact on downstream pig flow.

We know that introducing PRRSV or Mycoplasma hyppneumoniae unstable gilts will automatically impact the sow herd health. We experienced in the past the impact of introducing new strains of H. parasuis or Salmonella typhimurium trough replacement gilts which also impacted the whole flow of pigs from the multipliers to slaughter pigs (Figure 1). Controlling clinical expression of disease at the multiplier level is fundamental. A good vet to vet dialogue with the nucleus farm, which supplies the multiplier herd is also crucial in correcting the situation.

## **Replacement rate**

F. Ménard experienced a replacement rate greater than 55% for many years. This level of replacement rate impacted sow herd immunity trough a high number of low immune gilts. This situation was even more important since gilts were not acclimatized during that period of time. Our sow herds were then challenged with E. Coli scour, Strep suis piglets arthritis and meningitis and production of Mycoplasma and PRRS positive piglets.

In 1997, we intentionally imposed a limit of 47% replacement rate in all sow herds trough a monetary incentive to employees. We also put in place our gilt acclimatization program at the same moment. From then on, we observed a net improvement in clinical signs associated with these diseases on nursing piglets as well as on nursery and finisher pigs.

### **Gilt acclimatization program**

Gilt acclimatization is the most important factor in sow herd immune stability. We developed a gilt acclimatization program in the late '90s and since then, we were able to get a gilt to be introduced to the sow herd at a high immune level.

By exposing future replacement gilts to the microbes of the recipient sow herd, it decreases the health challenge at their introduction and help maintain a stable sow herd immunity.

Our gilt acclimatization program consist of exposing gilts at 45 days of age and 20 kg to all the microbes present at the sow herd level. If for example, PRRS, Mycoplasma and Influenza are clinically active in the sow herd, we will expose the young gilts trough feedback, sero exposure and culled sows in order to get some immunity against these agents. Exposure is done into a gilt acclimatization barn away from the sow herd and away from other pig units. Each sow herd is merged with their own gilt acclimatization unit to provide an individual flow to their specific exposure (Figure 2). After exposure, the future gilts are provided with a very long "cool down period" (>300 days) permitting the immunity development. This strategy has been excellent for PRRS stabilization and eradication when needed (Figure 3). It also restabilize the sow herd for Mycoplasma, helping to produce serologically and clinically Mycoplasma hyopneumoniae stable pigs.

Gilt acclimatization is an excellent tool to restabilize sow herds faced with any new bacterial or viral introduction thus making the sow and its replacement gilts obtain the same immune state.

#### **Parity one segregation**

Along with the gilt acclimatization barn, we have also developed sections within the sow barns. This enables us to keep away the gilts up to their first weaning. It also allows time for a perfect cool down as well as preventing the shedding of gilts and exposure to older sows. This model has been developed over the years in regards to Mycoplasma which was always a challenge at gilts introduction (Mycoplasma negative gilts into Mycoplasma hyopneumoniae positive sow herds) (Figure 4).

#### Vaccination program

Vaccination is a great tool in stabilization of a sow herd. Success of vaccination is however different for different agents. We have been vaccinating the sow herds against Mycoplasma since the past 10 years and we think that it has been helpful in our Mycoplasma control program. We did use H. parasuis and Influenza vaccination when needed. Vaccination however has some limits. For example Strep suis vaccine available on the market has not been very efficacious in our farms.

We do use a very intensive vaccination program against Mycoplasma hyopneumoniae and other agents in future replacement gilts before the beginning and during acclimatization. We always have to remember that vaccination cannot replace the gilt acclimatization program. These two programs compliment each other.

#### In conclusion

Gilt introduction is having a major impact on sow herd immunity. Health status of the replacement gilts, number of gilts in the sow herd, acclimatization prior to entry and isolation post-entry are all different factors influencing sow herd immunity. Amongst all of them, gilt acclimatization is the one having the most important impact. There is however not one single acclimatization program. Each of them need to be adapted to each type of operations. Moreover, details put into the acclimatization technique will be the key to future success.







# Figure 3



## Figure 4



References :

Batista, L, Pijoan C, Torremorell M. Experimental injection of gilts with porcine reproductive and respiratory syndrome virus (PRRSV) during acclimatization. *J Swine Health Prod*. 2002;10(4):000-000.