

Piglet Vaccination



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Highlights

When we vaccinate the piglets to reduce the impact in the nursery, the first premise that must be fulfilled is that the infection in the farrowing quarters is stable or almost stable.

The practical efficacy of the vaccination may be affected by the handling practices that help to spread the infection on the farm.

The vaccination of the piglets against the genotype 1 virus can help to reduce its transmission and to significantly delay the spreading of the infection if applied together with a monitoring and internal biosecurity plan.

The mass vaccination on a farrow-to-finish farm aims to reduce the global excretion of field viruses and to lower the probability of infection. The efficacy of this measure will be variable.

To answer this question, we must first determine which is our main goal with the vaccination of the piglets. From a theoretical viewpoint, the vaccination of the piglets can have two different goals: a) reducing the impact of the infection in the nurseries and fattening quarters or, b) helping in the global control of the infection on a farrow-to-finish farm.

In the first case (minimising the impact of the disease), we aim to achieve the lowest possible percentage of animals to be infected, and if the infection occurs, that it happens as late as possible. The first premise to fulfil is that the infection in the farrowing quarters is stable or almost stable; if not, the birth of viraemic piglets will result in the spreading of the disease to whole litters in the farrowing quarters, so when mixing animals in the

nursery, the spreading of the infection will happen very quickly, and the majority of the piglets will become infected halfway through the nursery period. Bearing in mind that the immunity generated by the vaccination will take at least 2-3 weeks to provide a significant protection, the efficacy of the vaccination will depend, mainly, on the vaccination of healthy animals that will not be exposed to the virus at least until the second or third week post-vaccination. This scenario is only possible with low infection pressures in the farrowing quarters (probably below 5% of the farrowings or 1% of the born piglets). All this can be worsened by the handling practices, mainly by fostering (that will spread the virus between litters), the flow of animals in the nursery and the staffs movements. So, it is essential to establish a correct monitoring plan of

the farrowing quarters based, at least, on the PCR testing of the piglets at weaning. It is also necessary to develop an internal biosecurity plan at the same time. In any case, we would be considering the vaccination at three weeks of age with a live attenuated vaccine. Recent data (Pileri *et al.* 2015) have shown that the vaccination can significantly reduce the transmission of the genotype 1 virus in piglets, obtaining a global protection close to 50%, and delaying the transmission at least 14 days in the cases in which it happens. On the second case (mass vaccination on a farrow-to-finish farm),

the determining factors are different. In this scenario, we aim to reduce the global excretion of the field virus and to lower the probability of infection. Based on these premises, what we must consider is that this action only has sense as an alternative to farm depopulation or to the cessation of farming, and it relies on vaccinating all the pigs present and on maintaining the vaccination programme for a period of at least 1-2 years. We must bear in mind that because the protection conferred by the vaccines is partial and variable between strains, the efficacy of this measure may be very irregular.

Figure 1. Evolution of the infection in the farrowing quarters and nurseries with a circulation of the PRRS virus in the farrowing pens. Unless the proportion of viraemic pigs born is very small (equal or less than 5-10% of the farrowings) the infection will epidemically spread very quickly. In the example; assuming a batch with 12 farrowings in which viraemic piglets are born in two litters (1.5% of viraemic piglets; 16% of the farrowings), at three weeks after weaning probably more than half of the piglets will already be infected.

References

- Pileri *et al.* 2015. Vet Microbiol, 175: 7-16.

