

ERADICATION OF PRRS IN A BREEDING HERD

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Introduction and Objectives

Following infection with Porcine Reproductive and Respiratory Syndrome (PRRS) virus in a nucleus herd with 190 Sows, eradication of the virus was attempted. This was facilitated by the detailed recording system used for the herd. PRRS seronegative replacement stock was used and, after weaning at three weeks of age, piglets were transported to a separate unit.

The attempt of the PRRS eradication was based on the importance of this herd as a breeding stock. The sows, which were specified-pathogen-free (SPF) represented an important genetic potential.

Material and Methods

Within about 1 week after the PRRSV-outbreak, a 10-month vaccination programme (Table 1), using live vaccine (Ingelvac® PRRS MLV, Boehringer Ingelheim) was introduced as the key control measure in this herd. Sows were vaccinated twice, initially after diagnosis of the disease and a second one after eight weeks. The booster vaccination was made between the 40th and the 60th day of pregnancy. Serological profiles analyzed by IDEXX-ELISA at the IVD laboratory (Innovative Veterinär Diagnostik, Hannover) were obtained at regular intervals to monitor infection and evaluate the success of the vaccination programme. Using the immunoperoxidase-monolayer assay (IPMA) a differentiation of antibodies against EU- or US-strain could be made. To find out if sows with high titers of PRRS antibodies were virus carrier, an isolation of the PRRS virus (EU-or US-Strain) was performed on tonsil scrapes. They were analysed by the nested reverse polymerase chainreaction (RT-PCR) (bioScreen, Münster). Organs of aborted or stillborn piglets were similar analysed.

Table 1. Vaccination programme

group of pigs	vaccination	characteristic	day
sows	herd vac. 1	independent of day of pregnancy	21.01.2001
	herd vac. 2	independent of day of pregnancy	02.04.2001
	continual-vac.	about 40 th of pregnancy	05.05.-20.11.2001
gilts	vac. 1	in separate pen	arrival
	next vac.	equal the sows	02.04.2001
piglets	no vac.		

vac = vaccination

Results

Transmission of the virus was controlled within a short period after which no further clinical signs were observed. The serological investigations in the nucleus herd during the time of one and a half year, showed a constant reduction of PRRS antibodies. Antibody differentiation was performed about 11 months after the initial PRRS outbreak: only 10% of the sows had antibodies against PRRS-EU-virus (fieldvirus) and 50% against PRRS-US-virus (vaccinevirus). PRRS-virus (EU or US) couldn't be found in any of the tonsil scrapes and the organs of aborted or stillborn piglets, which were tested with PCR. Replacement gilts remained seronegative after their introduction in the vaccinated herd and also weaners, sold from the herd, remained seronegative up to date, which is now 3 years from the original PRRSV outbreak.

Discussion

The nucleus herd had a SPF-status; PRRS seronegative replacement stock was used and pigs were weaned at three weeks of age. These conditions didn't seem to be enough for an eradication. The start of the herd vaccination was very close to the probable time of infection. The purpose was to block the virus circulation in the herd as soon as possible. The time of the booster vaccination between 40th and the 60th day of pregnancy was chosen, to avoid any transplacental transmission or other contact of vaccine virus to piglets. The serological investigation showed a clear decrease of the level of PRRS-antibodies. Although a small number of sows did show a very slow serological reduction.

According to serological and virological diagnostic results the eradication appears to be successful. The negative PCR result in all samples tested is the most important confirmation of success. Additionally, the fact that neither replacement gilts did seroconvert after introduction in the vaccinated herd nor weaners seroconverted against PRRS after transport from the nucleus herd, the eradication appears to be successful. After removing the last seropositive sows from the herd, a definitive statement will be possible.

References

1. Kranker, S et al. 1998. Vet. Microbiol. 61, 21-31
2. Lager, K et al. 1997. Vet. Microbiol. 58, 113-125
3. Nielsen, J et al. 1998. Veterinary Society Congress Birmingham, UK, 127