

# Research: Boosting PRRSV-immune sows with vaccines

**Antibody response and maternal immunity upon boosting PRRSV-immune sows with experimental farm-specific and commercial PRRSV vaccines.**



**ABSTRACT:** The porcine reproductive and respiratory syndrome virus (PRRSV) causes reproductive failure in sows and respiratory disease in pigs of all ages. Despite the frequent use of vaccines to maintain PRRSV immunity in sows, little is known on how the currently used vaccines affect the immunity against currently circulating and genetically divergent PRRSV variants in PRRSV-immune sows, i.e. sows that have a pre-existing PRRSV-specific immunity due to previous infection with or vaccination against the virus. Therefore, this study aimed to assess the capacity of commercially available attenuated/inactivated PRRSV vaccines and autogenous inactivated PRRSV vaccines – prepared according to a previously optimized in-house protocol – to boost the antibody immunity against currently circulating PRRSV variants in PRRSV-immune sows.

PRRSV isolates were obtained from 3 different swine herds experiencing PRRSV-related problems, despite regular vaccination of gilts and sows against the virus. In a first part of the study, the PRRSV-specific antibody response upon booster vaccination with commercial PRRSV vaccines and inactivated farm-specific PRRSV vaccines was evaluated in PRRSV-immune, non-pregnant replacement sows from the 3 herds. A boost in virus-neutralizing antibodies against the farm-specific isolate was observed in all sow groups vaccinated with the corresponding farm-specific inactivated vaccines. Use of the commercial attenuated EU type vaccine boosted neutralizing antibodies against the farm-specific isolate in sows derived from 2 farms, while use of the commercial attenuated NA type vaccine did not boost farm-specific virus-neutralizing antibodies in any of the sow groups.

Interestingly, the commercial inactivated EU type vaccine boosted farm-specific virus-neutralizing antibodies in sows from 1 farm. In the second part of the study, a field trial

was performed at one of the farms to evaluate the booster effect of an inactivated farm-specific vaccine and a commercial attenuated EU-type vaccine in immune sows at 60 days of gestation. The impact of this vaccination on maternal immunity and on the PRRSV infection pattern in piglets during their first weeks of life was evaluated.

Upon vaccination with the farm-specific inactivated vaccine, a significant increase in farm-specific virus-neutralizing antibodies was detected in all sows. Virus-neutralizing antibodies were also transferred to the piglets via colostrum and were detectable in the serum of these animals until 5 weeks after parturition. In contrast, not all sows vaccinated with the commercial attenuated vaccine showed an increase in farm-specific virus-neutralizing antibodies and the piglets of this group generally had lower virus-neutralizing antibody titers. Interestingly, the number of viremic animals (i.e. animals that have infectious virus in their bloodstream) was significantly lower among piglets of both vaccinated groups than among piglets of mock-vaccinated sows and this at least until 9 weeks after parturition.

The results of this study indicate that inactivated farm-specific PRRSV vaccines and commercial attenuated vaccines can be useful tools to boost PRRSV-specific (humoral) immunity in sows and reduce viremia in weaned piglets.

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*by Pig Progress* Sep 19, 2013