

Priming PRRS vaccine

THE topic of porcine reproductive and respiratory syndrome (PRRS) virus raises a lot of questions, some answers and a whole heck of a lot of debate.

One of the few absolutes in PRRS discussions is that it is the most significant disease in the swine industry today, costing the industry millions of dollars each year in lost performance.

While the goal is currently to eradicate the virus, and local area control has been shown to be effective, strategies ranging from vaccinating herds to closing herds and raising biosecurity protocols to "just living with it" have all been tried, with some success and some failure. Re-infection is an ever-present specter.

With vaccination, several protocols are available, including subunit-based killed vaccines that are administered with the hope of further stabilizing a sow herd and improving the chance of producing PRRS-negative pigs, according to a presentation Darwin Reicks gave at the 2010 Allen D. Leman Swine Conference.

Reicks noted that MJ Biologics and Sirrah Bios have released killed vaccines and said both need to be evaluated since they offer different

Research

with
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paths to induce immunity.

While the data Reicks discussed at the Leman Conference are being prepared for the peer-review process in a scientific journal, Bill Marks, president and chief executive officer of MJ Biologics, told *Feedstuffs* that this is the "first time in the history of this disease that an inactivated (killed) vaccine showed significance in a heterogeneous pregnant gilt study."

Field efficacy

Drs. Patrick L. Graham of Ghrist Veterinary Clinic and Peggy Anne Hawkins of Veterinary Provisions Inc. presented a case study at the 2011 American Association of Swine Veterinarians (AASV) annual meeting that shows one example of going from a goal to eliminate PRRS virus to a virus control program that did not work and, finally, to using a killed vaccine as part of a program

| | 3rd quarter of 2008 | Weeks 4-8 of 2009 | Weeks 13-18 of 2009 | Weeks 25-30 of 2009 | First 3 quarters of 2010 |
|-------------------------|------------------------|----------------------|------------------------|------------------------|-----------------------------|
| Pigs born alive | 10.9 | 9.4 | 9.4 | 11.3 | 11.7 |
| Stillborn, % | 7.4 | 9.5 | 6.8 | 4.7 | 6.4 |
| Mummy, % | N/A | 11.4 | 17.2 | 3.5 | 1.9 |
| Prewaning mortality, % | 22.1 | 24.5 | 34.7 | 15.8 | 11.0 |
| Farrowing rate, % | 77.1 | 75.6 | 68.6 | 82.9 | 86.0 |
| Average weaned per week | 2,448 | 1,487 | 1,570 | 2,891 | 2,939 |

to produce full-value PRRS-negative pigs.

Graham and Hawkins said the 6,400-sow farm was in the process of trying to eradicate PRRS through redesigned animal and personnel flows as well as stricter biosecurity procedures. However, all that resulted after a period of time with poor-quality pigs and short pig placements were "disgruntled owners, disgruntled workers and higher costs."

The owners then changed their focus from PRRS eradication to PRRS control with a goal to improve the number of "good-quality pigs" regardless of the PRRS status of the sow herd. Scrapping the PRRS eradication program led them to explore other PRRS management strategies, including trying a killed PRRS vaccine in the sow herd, Graham and Hawkins said, but using that vaccine did not show a production improvement.

Finally, the herd virus was sequenced and a grouping was determined at MJ Biologics, and an inactivated vaccine containing the same virus group linked by an epidemiological profile was used, with very positive results.

Graham and Hawkins explained

that the first attempt at PRRS control was to give two doses of a killed PRRS vaccine to replacement gilts during acclimation. Additionally, the killed vaccine was given to all sows in weeks 44 and 48.

However, approximately 12 weeks after beginning the killed vaccination program, there was an increase in preweaning mortality, stillborn and mummy rates, and there were 37 late-term abortions.

Blood samples showed 100% PRRS virus-positive results yielding the same PRRS virus.

Graham and Hawkins said they decided to try MJ Biologics' vaccine.

The PRRS virus sequences were submitted for evaluation and characterization of viruses based on grouping technology. Vaccine containing the appropriate virus group was given twice, four weeks apart, to the entire sow herd and all the way through gilt isolation. The booster (second vaccination) of the vaccine was given to all sows in the herd.

By the fourth week after the first dose of the vaccine, mummy rates had dropped from 17.0% to 3.5% and continued to inch their way down to 1.9% (Table).

The stillborn rate also decreased —

may offer viral control

from 6.8% to 4.7%.

Pigs remained positive for PRRS until the sixth week after the initial vaccination or two weeks after the booster.

Graham and Hawkins noted that research has been presented that supports the use of inactivated vaccine to aid in PRRS control and increasing the number of full-value weaned pigs. They cited Reicks' Leman Conference data describing the use of a commercial attenuated virus vaccine in a study comparing positive control gilts to those given attenuated-only and those given attenuated/killed vaccine.

Graham and Hawkins said Reicks' results emphasize the importance of "priming the animals" with live virus prior to using the killed vaccine.