EVALUATION OF MASS VACCINATION AND UNIDIRECTIONAL FLOW FOR ELIMINATION OF PRRS

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Introduction
Veterinarians and researchers have developed strategies for controlling the spread of PRRS virus (PRRSv) and preventing clinical disease. Partial depopulation (PD) has been an effective strategy in controlling or preventing the spread of PRRSv in infected nursery or finishing populations (1-5). The strategic use of a modified-live PRRS vaccine (Ingelvac® PRRS MLV, Boehringer Ingelheim Vetmedica, Inc., St. Joseph, Missouri) along with pig flow modifications has been shown to be effective at eliminating PRRSv from populations of finishing pigs (6-7). A 60-day period of herd closure and unidirectional pig flow were also components of this approach (6). This protocol offers a strategy for the control of PRRSv spread without the complete depopulation of a swine facility. A question that remains is whether similar results can be achieved without the use of vaccine. This paper describes a study that evaluated attempted elimination of PRRSv in finishing populations utilizing facility closure and unidirectional pig flow with or without vaccination.

Materials and Methods
Farm study qualification criteria
1) Employed segregated multi-site production with 2 or 3 site production flow.
2) Finishing sites that employed all-out by room pig flow (continuous pig flow by airspace or facility).
3) Diagnostic evidence of PRRSv circulation in non-vaccinated finishers for 3 consecutive months.
4) Had a PRRS-negative source of nursery pigs.
5) Had the ability to divert nursery pig flow for a 60 day period to an off-site facility or by sale of feeder pigs.

Treatments
1) Treatment 1 represented 4 finishing facilities that employed the protocol of mass vaccination and unidirectional flow with herd closure.
2) Treatment 2 represented 4 finishing facilities that employed the protocol using unidirectional flow and herd closure only, but did not vaccinate.

Treatment 1 pigs were vaccinated en masse with Ingelvac® PRRS MLV (2.0 ml I.M.). Vaccination was repeated 30 days later. The finishing facility was closed to any new animal entries from the nursery for a period of 60 days starting from the first vaccination by diverting pigs to an alternative finishing facility or sale as feeder pigs. Following the 60-day period of facility closure and diverted nursery pig flow, the flow of non-vaccinated PRRS-negative pigs from the nursery to the finishing facility was re-established. Treatment 2 pigs (non-vaccinated sites) utilized the same pig flow and facility closure protocol as Treatment 1.

Criteria for success
Following the 60 day period of facility closure and diverted pig flow (with or without vaccination), all sites were re-opened to re-establish the flow of PRRS-negative non-vaccinated pigs into the normal flow. All newly stocked rooms were then blood sampled monthly for 4 months using 30 total samples per building for detection of PRRSv transmission utilizing the Herd Chek PRRS ELISA test (IDEXX Labs, Inc.).

Results and Discussion
The four farms that employed mass vaccination were all successful in eliminating the PRRSv (4/4 successes). During the 4-month repopulation process PRRS-negative non-vaccinated pigs co-existed in a continuous airspace with infected-vaccinated pigs at all times. Antibodies to the PRRSv were not detected in any of the non-vaccinates after resuming normal pig placements. The results are consistent with the creation of a noninfectious population via intensive immunization.

In contrast, the four farms that employed the protocol without vaccination all failed to eliminate the PRRSv (0/4 successes). Antibodies to the PRRSv were detected at each of these four farms following the resumption of normal pig placements. The results indicate continued transmission of PRRSv from infected pigs to naïve susceptible pigs and failure to control and eliminate the virus. Site closure and unidirectional pig flow alone did not control or eliminate transmission of PRRSv. Immunization with an effective modified live PRRSv vaccine was an essential component for achieving PRRSv elimination.

References