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Practitioner panel's descriptions of typical commercial sow farm and response to a PRRSV disease event or outbreak in breeding herd in their practice area or production system

Bill Hollis, Carthage Veterinary Service

Farm description in case study:

Sow inventory:

2400 to 6400

Farm type:

Farrow-to-wean

Farm ownership / decision making structure:

Board of Directors, Production Supervisor,
Veterinarian

PRRS status prior to the break:

Negative

Gilt source, development, acclimation:

- External gilt supplier of PRRS and *Mycoplasma* naïve gilts into on-site nursery with separate shower.
- Gilts enter monthly. Gilts are tested naïve to PRRS and then vaccinated for HPS, Circovirus, *Mycoplasma*, SIV, Parvo, Lepto, Erysipelas, and Ileitis

PRRSV related acclimation / manipulation of immunity:

None if naïve

Regional or location risks:

Low; 5 mile pig separation

Unique bio-security related infrastructure:

Good location; strong culture with a convincing biosecurity enforcer

Response to PRRSV outbreak in case study:

Additional PRRSV diagnostics

Sequence, compare; save serum if needed again

Therapeutic interventions

Sows - CTC in gestation and Pulmotil® in farrowing for (30 days) included with individual injection of Banamine to sows.

Piglets – Excede™ of Draxxin™ to piglets

Immune system stimulation or exposure

Sows – Inoculation 2× followed by closure

Gilts – Inoculation 2×

Piglets - None; although history would recommend “McREBEL” driven euthanasia of most viremic piglets should be projected (Ex.: 1005 2 wks; 50% 2 wks; 25% 2 wks)

Animal movement or animal flow modifications

Sows – None

Gilts – No gilt delivery for 6 months then fill – one time fill of negative gilts once herd negative.

Piglets – (See immune notes)

Modifications in ongoing operations after near-term interventions

Sows – Aggressive piglets and sow herd rating

Gilts – None

PRRSV-Status at conclusion of intervention

– Negative

Other notes:

1. Once PRRS is confirmed, gilt entry is stopped and/or alternative gilt development location is identified. On-site GDU of 7 months of space allows 210 days of no entry past inoculation. PRRS serum is diluted and inoculated to all animals (except weaned pigs) twice approximately 30 days apart.
2. Positive PRRS seroconversion of a negative sow herd has tremendous economic consequences; however, negative pig supply has such excellent benefits already examined; our goal is to close and return negative as soon as possible in nearly all cases where biosecurity, location, gilt supply, and economics will allow.
3. Our practice is early in identification of the benefit of killed PRRS vaccination or subunit vaccination as a means of preventing a break or reducing severity of a break.

Luc Dufresne, Seaboard Foods

Farm description in case study:

Sow inventory:
1200 to 13,000

Farm type:

All Seaboard Foods' sow farms are farrow to wean.

Farm ownership / decision making structure:

All sow farms are company-owned farms. Health decisions are made by the Live Operations Management Team and the Health Assurance Department.

PRRS status prior to the break:

PRRSV positive

Gilt source, development, acclimation:

Gilts are produced within the Seaboard Foods system. The flows are divided into production Pods that contain a multiplication unit, a GDU, a group of sow farms (2 to 5), and a group of dedicated nursery and finisher, or wean-to-finish, barns for the flow. There is only one multiplication unit and GDU per pod, but the multiplication unit and GDU may be shared between two pods.

PRRSV related acclimation / manipulation of immunity:

Gilt are vaccinated with a commercial PRRS modified live vaccine at 12 weeks of age and 2 weeks prior to entry into the commercial sow farms. Gilt live virus exposure was discontinued in most of the farms in 2004 and in all farms in 2006. The sow herds do not receive routine vaccination for PRRS.

Regional or location risks:

The farms are located in the Oklahoma Panhandle, Central Oklahoma, Western Kansas, and Eastern Colorado. Epidemiological surveys indicate that most of the outbreaks are due to regional spread between farms in the same region and the introduction of shedding animals from the GDU into the commercial sow farms.

Unique bio-security related infrastructure:

Truck washes are segregated between multiplication units, inner sanctum/commercial units, and market hogs. 100% of the system is using the needleless injector.

**Response to PRRSV outbreak in case study:
Additional PRRSV diagnostics**

We use an economic index to graph the economical significance of the PRRS Break. PRRS PCR testing is performed on aborted sows or off feed animals when abortions rise above 3% of the weekly output

or if we see a significant increase in off feed animals. If the samples are positive, the virus will be sequenced and added to a company specific phylogenetic tree.

Therapeutic interventions

Sows - No herd specific interventions are performed. Affected animals may receive aspirin or banamine

Piglets – Currently piglets do not routinely receive any treatments during a PRRS outbreak. The use of long acting antibiotics at weaning in the face of an outbreak is currently under investigation.

Immune system stimulation or exposure

Sows – As soon as samples confirm a PRRS infection, the herd will be vaccinated with a commercial modified live vaccine. The vaccination will be repeated 30 days later. The vaccine used on the sows is the same vaccine used for the gilt acclimation.

Gilts – They continue to receive the same vaccination program at 12 weeks of age and 2 weeks before delivery to the sow farm.

Piglets - No special vaccination programs are in place during the outbreak.

Animal movement or animal flow modifications

Sows – Farms with confirmed diagnostics will be moved down on the biosecurity positioning list. The sequence of gilt deliveries, piglet pick ups, in warehouse deliveries and maintenance visits will be modified to ensure the farm is visited according to its new position within the biosecurity list. The farm is not closed and will continue to receive gilts at the same frequency (gilts are routinely vaccinated at 12 weeks and 2 weeks prior to delivery to the sow farm).

Gilts – Gilts movements in and out of the GDU occur as usual, but the sequence during the day may be modified to fit the new biosecurity positioning list.

Piglets – Minimal cross fostering is performed for the first 24 hours to place litters according to the functional teat capacity of the sows. No cross fostering is performed afterward. In commercial nurseries and finishers, our standard SOP is to allow single source rooms only. Most sites are all-in-all-out by site. Piglets continue to be move according to standard SOP.

Modifications in ongoing operations after near-term interventions

Sows – None

Gilts – None

PRRSV-Status at conclusion of intervention
– PRRS positive

Practitioner panel's descriptions of typical commercial sow farm and response to a PRRSV...

Mark Wagner, Fairmont Veterinary Clinic

Farm description in case study:

Sow inventory:

500 to 5,000 sows

Farm type:

- 90% Farrow to wean
- 10% Farrow to finish

Farm ownership / Decision making structure:

- 80% of farms are individually owned. Majority of owners involved in day to day on farm. Majority of owners grow some percent of their corn/soy. Decisions made by owner and farm veterinarian with input from staff.
- 20% of farms have multiple owners ranging from two to eight. These are farms managed by a third party. Owners not involved with day to day activities. Owners do raise some percent of their corn/soy. Decisions made by ownership with input from farm management, farm veterinarian, unit manager, and staff.

PRRS status prior to the break:

PRRSV positive

Gilt source, development, acclimation:

- Gilts purchased as PRRS naïve
- Age at arrival 30 to 70 days old. Receive gilts every 42 to 70 days.
- Majority of farms have ownership in multipliers
- Majority of gilt isolation/acclimation barns run continuous flow with multiple ages in barn. PRRS naïve gilts separated by solid panels penning. Other units may utilize wean to mature gilt barns operating all in all out, or two site with true isolation that is run all in all out and separate acclimation barn run continuous flow
- Barn may be on site separated from sow unit, on site connected to sow unit, or off site

PRRSV related acclimation / Manipulation of immunity:

- Gilts receive serum inoculated with farms most recent field virus.
 - ◆ Two doses give 2-4 weeks apart
 - ◆ Timing of inoculation is 90 days of age and 120 days of age

- Sow herd generally utilizing one of following options
 - ◆ A mid gestation live PRRS serum inoculation (all sows between 30 to 60 days gestation) given each month
 - ◆ No intervention
 - ◆ A killed subunit PRRS vaccine

Regional or location risks:

Very hog dense area

Unique bio-security related infrastructure:

None

Response to PRRSV outbreak in case study

Additional PRRSV diagnostics

- PRRS sequencing requested of positive samples from viremic piglets
- Large quantity of serum saved for possible exposure protocols
- Quantitative PCR test completed on serum to obtain a baseline for viral load

Therapeutic interventions

- Aborted sows
 - ◆ Treated with Banamine, Two days. Given a prostaglandin
- Clinically sick sow
 - ◆ Treated with Banamine and Ampicillin. Two days.
- Sow herd
 - ◆ Placed on aspirin via water. Pulses of 5 days on 5 days off
 - ◆ Pulsed on vitamin and electrolytes via water. 7-10 day treatment
- Nursing piglets
 - ◆ CO2 euthanasia to all low viable pigs
 - ◆ Utilized a drying agent that pigs are powdered with during day 1-5
 - ◆ Excede™ or Draxxin™ prior to wean

Immune system stimulation or exposure

Sows

- ◆ Farm virus exposure with serum implemented within 7 to 14 days post clinical signs.

Mark Wagner

- ◆ All sows weaned through 80 days of gestation exposed. Other animal between 81 to due to farrow and all in farrowing skipped
- ◆ All open animal in unit exposed
- ◆ This repeated to entire sow herd 30 days later
- ◆ 30 days after blanket inoculation, implement mid gestation strategy for additional four months. When completed all sows should receive a minimum of two doses of farm serum

Gilts

- All gilts from 80 days to breeding age inoculated with farm serum
- Repeated four weeks later

Piglets – No intervention

Animal movement or animal flow modifications

Sows – Continue to enter gilts into gestation as before

Gilts – Continue to enter new gilts as before

Piglets – No movement past Day 1 for 6 weeks

Modifications in ongoing operations after near-term interventions

If not detecting PRRS PCR negative pigs at weaning after 70 days post initial inoculation, Re-evaluate strategy

PRRSV-status at conclusion of intervention

– PRRSV positive

Practitioner panel's descriptions of typical commercial sow farm and response to a PRRSV...

Rodger Main, Murphy-Brown Western Operations

Farm description in case study:

Sow inventory:

3,600 to 7,500

Farm type:

Farrow-to-wean

Farm ownership / Decision making structure:

Company-owned sow farms. Decisions driven by regional management team (General Manager, Production Manager, Veterinarian) with support/alignment with divisional management in Ames.

PRRS status prior to the break:

PRRSV Positive

Gilt source, development, acclimation:

Gilts internally produced with approximately 10% of farm's matings being maternal. Gilts are grown from weaning-to-entry in the farm-specific gilt development unit (GDU). The GDU is located on the same site farm as the sow unit, but is not physically attached.

PRRSV related acclimation / Manipulation of immunity:

Gilts are being acclimated at 10-14 weeks of age to the most recent PRRSV that has caused clinical PRRSV in the sow unit. Sows would seasonally be receiving a killed PRRSV vaccine.

Regional or location risks:

Located in High-Plains, common truck-wash with farms of multiple health-statuses, history of lateral transmission linked to mixture of within-production system (non-pig) transmission, local or regional spread, and undetermined sources of infection.

Unique bio-security related infrastructure:

None

Response to PRRSV outbreak in case study:

Additional PRRSV diagnostics

PRRSV sequencing completed to aid in epidemiology along with an on-site investigation about any unique occurrences prior to the disease outbreak.

Therapeutic interventions

Sows - CTC pulse in feed to sow unit with individual treatment with Banamine.

Piglets – Excede™ or Draxxin™ to piglets prior weaning

Immune system stimulation or exposure

Sows – natural exposure within the sow unit is accelerated by movement of sick/aborted/off feed sows throughout breeding and gestation. Serum from weak-born piglets diluted saline is used at the tail-end of the clinical PRRSV episode to ensure all sows have been exposed to the PRRSV causing abortion storm.

Gilts – gilts in GDU down to 4 weeks from previous PRRSV exposure would be exposed with same diluted serum used in sow unit.

Piglets - none

Animal movement or animal flow modifications

Sows – Sow unit and GDU collectively looked at as a singular population of animals and no new animals would be added to this population for approximately 20 weeks.

Gilts – herd closure of GDU described above.

Piglets – fostering minimized to at day 1 only.

Modifications in ongoing operations after near-term interventions

Sows – PRRSV isolate from most recent PRRSV-break would be included in regional operation's multivalent killed PRRSV vaccine.

Gilts – following herd closure described above, PRRSV negative multi-aged gilts would be brought in from external source to fill now empty space in on-site GDU, and be acclimated to the most recent PRRSV causing outbreak. Internal placement of maternal-line gilts into GDU would then resume.

PRRSV-Status at conclusion of intervention

– PRRSV positive.

