Professor Daniel C. L. Linhares
Iowa State University - College of Veterinary Medicine
Works with ISU Field Epi, a team of 23 post-DVM graduate students on "development and evaluation of strategies to improve health and productivity of swine populations under field conditions"

Boehringer Ingelheim

Download document on **PRRS.com**

Understanding the practical value

A recipe for success: Follow these 5 easy steps to control PRRS in your system

The 5 Step process helps to remain focused and successful. Follow this simple and systematic plan to control PRRS in your system:

Date of implementing 5 Steps approach in the system:

Name of production system:

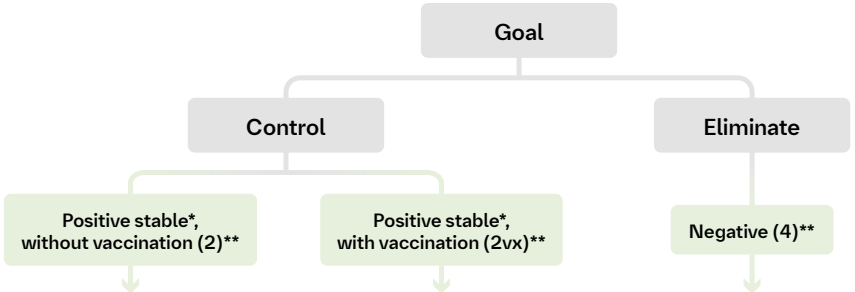
Responsible Veterinarian:

Step 1: Identify desired goal

The first step in controlling PRRS is to set clear and attainable goals. In general, the focus is either on PRRS control or PRRS elimination. Check the boxes and select a realistic ambition.

*PRRS stable = weaning consistently PRRSv negative piglets

**This is AASV status 2, 2vx, 4



Biomanagement	Very high	High	Very high
Pig density area	Low/Moderate	Moderate/High	Very low
Risk of wild-type PRRSv exposure (think number of neighbors, proximity to highways, terrain, etc)	Low-Moderate (outbreaks every 2-3 years)	Moderate-High (outbreaks every 1-2 years)	Very low (outbreaks only every 3 years or longer)
Expected virus circulation	No wild type virus circulation without the ongoing use of MLV in sows or gilts	No wild type virus circulation; ongoing use of MLV in gilts and/or the breeding herd	No PRRSv should be circulating (herd should be PCR and ELISA negative)
Choose your goal	☐	☐	☐

Step 2: Determine the current PRRS status by strategic sampling

For sow herds:

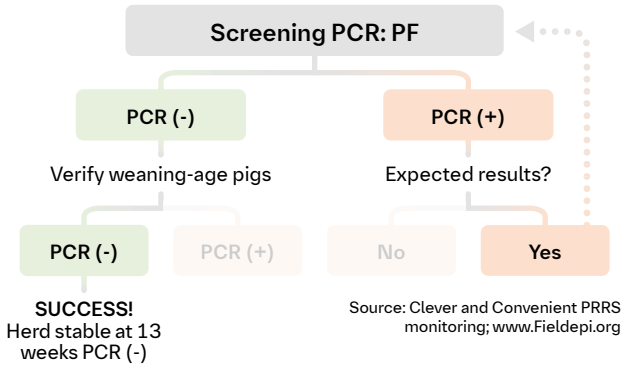
Strategic PRRSv monitoring allows the precise and consistent characterization of the current PRRSv activity. This will clarify the potential opportunity to move up or maintain status.

Start with processing fluids (PF) PCR. If male pigs are not physically castrated use tongue tip fluids (TF).

1 pooled PCR of all litters/all crates per week. The first weeks will be positive (right part of flow chart), continue sampling until 4 consecutive negative weeks.

As prevalence has dropped, adapt sampling and run 1 pcr ≤35 crates until you reach 8 consecutive negative weeks.

Now it is time to verify status of weaners by oral fluids or blood samples.



Source: Clever and Convenient PRRS monitoring; www.Fieldepi.org

The benefit of sequencing: It is recommended to genotype PRRSv (lowest Ct available submitted to whole genome sequencing if possible) to characterize the baseline virus(es) present. This will allow future troubleshooting in case of slow recovery or unexpected PRRSv-associated clinical signs or detection in diagnostic monitoring.

Discover all about **PF, TF and OF**

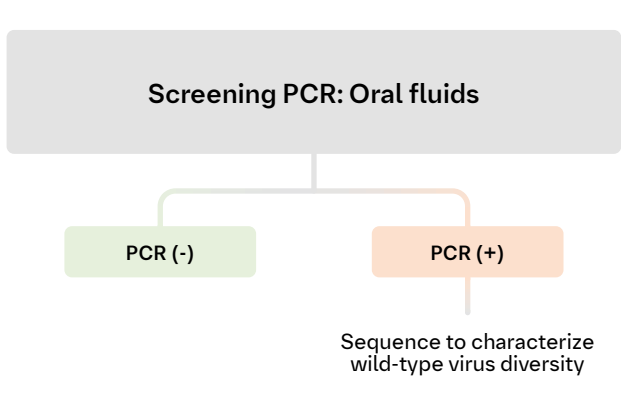
How to classify my breeding herd?

Category	Description	Condition for entry	Current status
1a	Positive unstable/High prevalence	Untested/insufficiently tested herds. Outbreak	☐
1b	Positive unstable/Low prevalence	75% of PCR tests for 90 days negative for PRRSv	☐
2vx	Positive stable with ongoing MLV exposure on incoming gilts or sows	Wild-type PRRSv negative for 90 days (molecular testing)	☐
2	Positive stable not vaccinating	PRRSv PCR-negative for 90 days	☐
3	Provisional Negative	ELISA negative tests in sentinel gilts, 60 days post entry into the breeding herd	☐
4	PRRSv naïve	ELISA negative tests	☐

For grow-finish herds:

Strategic PRRSv monitoring answers key questions such as: **What stage(s) of grow-finish are pigs exposed to PRRSv? How many strains are affecting them? Are these strains the same of the sow herd, or different ones?**

Place 4-6 oral fluids (1 OF/pen/80 pigs, for larger pens use 2 ropes) in the beginning and end of each phase (e.g., post-weaning, ~10, 17, and 24 weeks of age) to understand PRRSv challenge. Test by PCR (1 PCR/3 ropes). Additional genotyping allows to characterize the wild-type virus diversity.



Boehringer Ingelheim

Step 3: Understand current constraints:

Biomanagement is an important pillar of the 5-Step Process. Digital biosecurity tools, such as COMBAT enables us to analyse, visualize, benchmark and improve biomanagement.

Based on your biosecurity assessment, list 6 most important constraints in the system:

1.	4.	Notes:
2.	5.	
3.	6.	

Beside biomanagement, what other constraints should I consider?

- Other pathogens: Common examples affecting the global swine industry include PCV2, *Mycoplasma hyopneumoniae*, porcine enteric coronaviruses, and parvoviruses.
- Labor availability: are the qualified personnel ready to implement the necessary protocols?
- Diagnostic capacity: is there infrastructure to allow the collection, transport, storage, and testing of samples?

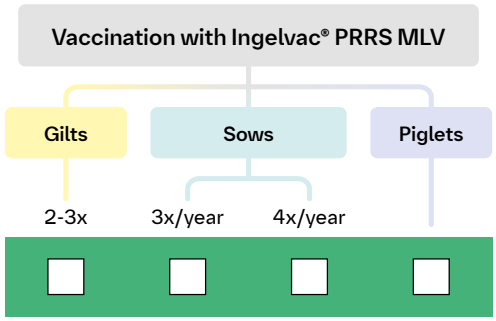
Check, Plan, Improve **COMBAT**

Step 4: Develop and implement solutions

Based on your biomanagement assessment, list 3 important actions that will be implemented:

1.
2.
3.

Implement whole herd PRRS vaccination (sows and piglets), if applicable.



Reach out to your representative from Boehringer Ingelheim for additional support.

Further examples include:

- Ensure the gilt flow will allow the introduction of immunized non-shedding gilts into the herd.
- Do not move older pigs back to younger rooms, waiting for weight gain before weaning.
- Do not move sows from older rooms to younger rooms.
- Wash & disinfect (& complete dry if possible) hallways immediately before pig movements (sows transfers, piglet weaning events).
- Implement load-close-expose.

Boehringer Ingelheim

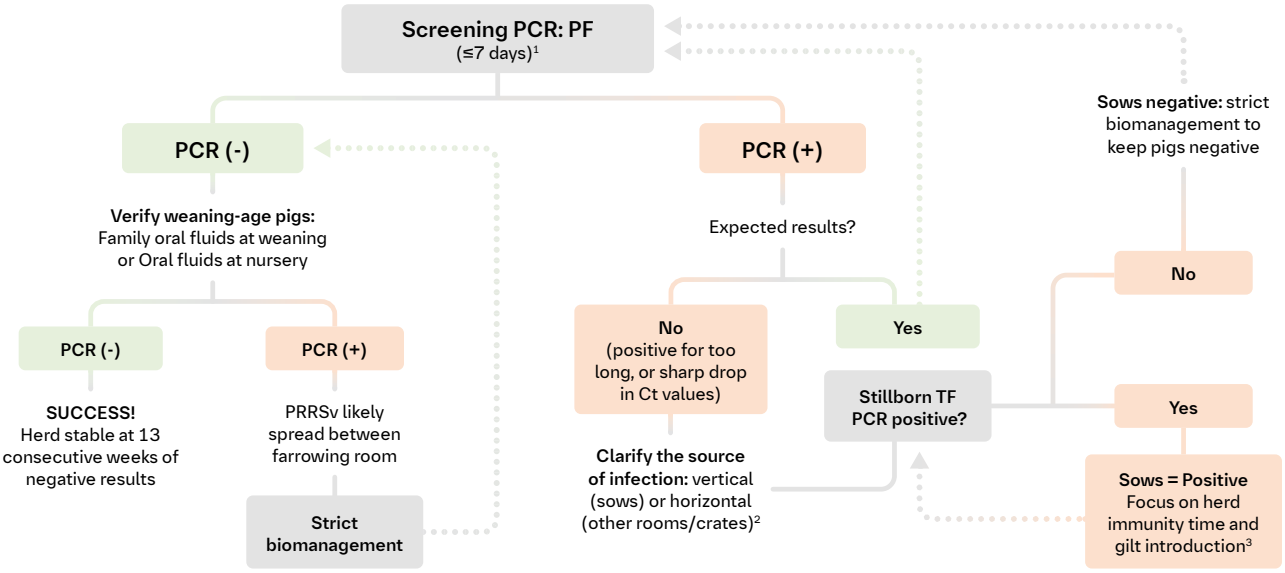
Step 5: Monitor outcomes

An efficient way to monitor the success of the program is to track diagnostic & pig performance data. Usually clinical parameters recover first, but PRRSv may be still present and circulate at low prevalence and can jeopardize the long term success of the control program.

Follow this practical decision tree, and remain on the right path.

For sow herds:

This straight forward decision tree, guides the monitoring plan to verify the outcomes of the implemented solutions.



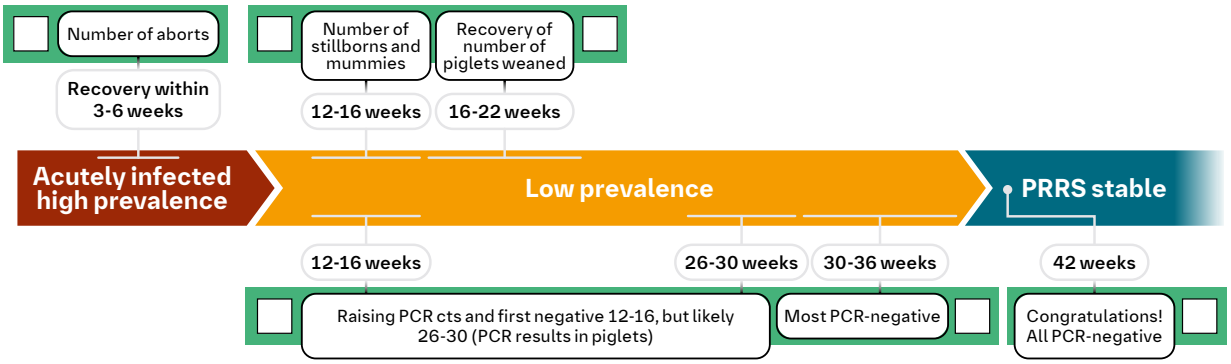
[1]Processing Fluids (PF):
- Screening: 1 PCR / week: pooled sample with all pigs processed that week, until negative.
- Intensify: 1 PF per ~ 30-35 crates for 8 consecutive weeks.

[1]Use Tongue tip Fluids (TF) if male pigs are not phisically castrated:
- Separate Stillborns/Newborns.
- Start will all rooms and all creates, once negative go down to 20-100 per bag.

[2]In unexpected persistent PF positive results, TF from stillbirths and newborn pigs can be implemented to define timing of infection. PCR positive from stillbirth TF suggest vertical transmission, active PRRSv infection in the breeding herd. PCR negative results of stillbirth TF while PCR-positive on PF suggest that pigs are being born PRRSv-negative, and getting infected laterally in farrowing barn.

[3]Check if additional sow mass vaccination is needed and verify gilt acclimation protocols.

Check for milestones: if recovery is delayed, refer to decision tree (above) and implement actions.



For grow-finish herds:

Track progress on key performance indicators including survivability, average daily weight gain, feed efficiency and antibiotic use.

At the whole-system level (breed-to-market):

- ☐ Reduced wild-type incursions (i.e., increase the interval between outbreaks).
- ☐ Reduced wild-type virus diversity (i.e., less number of distinct strains).
- ☐ More herds at the Stable or Negative status (i.e., less acutely infected or endemically infected).
- ☐ Better productivity!