PRRS CONTROL: HAS IT CHANGED POST PCV2?

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Introduction:

Porcine Respiratory and Reproductive Syndrome (PRRS) continues to be a major problem for producers worldwide. Successful control of this virus has proven to be a challenge. Control programs are varied and none have been completely successful. PRRS is a complicated disease and many factors have to be considered when formulating a control program.

The economic impact has been estimated to be $560 million a year in the United States. Preventing the circulation of PRRS virus (PRRSv) within and between swine farms can be very important in controlling other diseases on a swine farm. This was very apparent with the introduction of Porcine Circovirus Virus Type 2 (PCV2). The clinical picture and impact of PCV2 was much more severe in a PRRS positive unstable herd than in a negative or stable herd. This led many to believe that controlling PCV2 could lead to better control of PRRS. This has not proven to be the case for herds in our practice area.

This paper is an outline of how we control PRRS in a very swine dense area. PRRS control is different in many areas of the world.

Viral Characteristics:

The PRRS virus is a single stranded RNA virus. It is classified in the order Nidovirales family, Arteriviridae and genus Arterivirus. The virus is a host-specific virus only capable of infecting pigs.

The ability of the virus to survive outside pigs is affected by high temperatures, changes in pH (<6 and >7.65) and prolonged exposure to UV light. Chemical inactivation with disinfectants has been demonstrated.

Virus Transmission:

Virus transmission is primarily via the infected pig. Virus has been detected in saliva, feces, and urine.[1] Virus can persist in pigs for up to 157 days post infection.[2]

Semen is also an important source of transmission with infected boars becoming long-term carriers.

Mechanical transmission can occur in a number of ways. Dirty facilities can be a source of virus between groups of pigs. Transport vehicles have been well documented as a source of infection in outbreaks. Needles used on viremic pigs can be a risk to negative pigs in the same population. Farm personnel and visitors can also be mechanical vectors.

Insects have been proven to be able of transporting virus from infected farms.

Airborne spread of the virus has now been proven as well.

Fomites such as supplies can also be a source of virus. Pig meat, lagoon effluent and dead carcasses are a less important source of the virus.

PRRS Control:

Breeding herd stability is the first step in any PRRS control program. This is accomplished by controlling virus circulation and giving animals time to clear the virus.

To stop virus circulation, the herd is loaded with gilts, immunity is 'homogenized', and the herd is closed for an extended period of time.

The variables seen in the industry with this program are 1) What tool and process is used to homogenize immunity, and 2) How long the herd is closed.

During this period of closure, another key component of stopping viral circulation is the management of suckling piglets. Management schemes that involve transfer of piglets between litters later than 24 hours following birth can allow the virus to persist in a herd.

A systematic approach to reduce the spread of bacteria and PRRS virus among suckling pigs was developed by Dr. Monte McCaw and given the name McRebel (Management Changes to Reduce Exposure to Bacteria to Eliminate Losses). It involves:

- Cross-fostering only during the first 24 hours of life,
- Do not move sows or piglets between rooms,
- Eliminate nurse sows,
- Euthanize sick piglets that are unlikely to recover,
- Minimize handling of piglets,
- Do not transfer smaller pigs back to younger litters,
- Stop all feedback of porcine tissue.

This management practice has been very effective in helping herds clear the virus.

Once viral circulation has been stopped and no virus is detected in the herd, a decision must be made whether to keep the herd negative or continue to immunize the herd and its replacements.

The PRRS status of replacement gilts is very important to any control program. A negative source of gilts is needed. An isolation facility is also very important to this process. In a negative/naïve herd, the negative gilts are isolated and tested negative prior to entering the herd. In a herd that chooses to remain positive and 'homogenize' the immune status of gilts, the isolation unit is needed to allow these gilts to be intentionally exposed to field virus or immunized with modified live vaccine virus, and subsequently clear any field or vaccine virus prior to introduction into the breeding herd.

There are also some new tools that have been made available to producers to help prevent the introduction of new viruses into the herd.

The prevention of new virus introduction is very important to sow herd stability. This has proven to be the most challenging part of any PRRS control program. Fortunately there are now some tools that have been made available to help in the prevention of new virus introductions.

The PRRS Risk Assessment (PRA) for the breeding herd was developed to help producers determine what biosecurity risks they are taking and what opportunity they have to minimize those risks. The computer-based questionnaire is designed to allow producers to benchmark their breeding herd biosecurity profile against others that have participated in the assessment. The PRA takes into account factors that increase both internal and external factors that increase the risk of virus introduction.

The other tool that is being developed to help with prevention of virus introduction in herds is air filtration. There are some exciting results being obtained from research done

in the field to show that filtered facilities are at considerably less risk of virus introduction. Boar studs in the world have already adopted this tool and sow applications are now being evaluated as well. These tools allow us to avoid many of the problems with having herds in pig dense areas.
PRRS control in the nursery finisher of production is predicated on factors such as:

- Animal flow,
- Facility location – risk of area spread,
- Immune status.

Placing negative or naive pigs in an area where other pigs are positive can be a very risky thing to do. Immunization of these pigs with a modified live vaccine can offer heterologous protection that will minimize clinical disease and virus shedding.
Commingled pig flows are problematic from the standpoint of keeping all pig sources of the same health status. Continuous flow sites can be a problem if infected and the incoming source is negative.
A Grow Finish PRRS Risk Assessment is being developed that will allow producers to assess what risks are present and what opportunities are available to minimize these risks.

Monitoring & Maintenance:

Once a control program is in place and the goal of elimination or stabilization has been achieved, a monitoring program is needed to ensure the status of the herd is being maintained.
Monitoring of the sow herd involves using the PRRS PCR and PRRS ELISA tests to:

- Establish that replacement gilts are truly negative,
- Establish that exposed/immunized gilts are not viremic prior to entering the herd,
- Establish that weaned pigs are not viremic at weaning,
- Accurately diagnose the cause of any sows with clinical signs (off feed, aborting),
- Boar studs remain negative.

Traditionally this has been by testing serum. New research has shown that oral fluids can now be used to help monitor for PRRSv circulation.
Statistical testing also enters into the monitoring protocols. Statistical testing allows for reduced cost without loss of accuracy and sensitivity. Without a monitoring program it is very difficult to sustain a PRRS Control Program.

Summary & Discussion:

PRRS control continues to be a source of frustration to most producers and veterinarians. However we are continually learning more about this virus and developing new tools that will help us eradicate it and/or successfully manage endemic infection. A plan to control PRRS must be based on current scientific knowledge, be communicated to all concerned, and be monitored on a regular basis.
Specifics of any program will vary depending on a farms' location, producer's goal and the ability to implement the program.

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