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A review of PRRS CAP regional PRRS projects

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Introduction

A regional **control** program can be defined as "*reduction of disease incidence, prevalence, morbidity or mortality to a locally acceptable level as a result of deliberate efforts. Continued intervention measures are required to maintain the reduction*." A regional control program might just entail testing herds, surveillance, sharing information & acting accordingly. In contrast, a regional **elimination** program is a: "*reduction to zero incidence of a pathogen in a defined geographical area as a result of deliberate efforts. This requires continued measures to prevent re-establishment of virus transmission*." Either approach creates the opportunity to lessen the impact of PRRS. (http://www.cdc.gov/MMWR/preview/mmwrhtml/su48a7.htm)

The term "disease eradication" often refers to draconian efforts, such as the historical CSF and PRV programs of the 1960's and 1990's. Disease eradication is driven by statutes and enforced by the authorities. In contrast, the implementation of regional PRRS virus elimination projects is motivated by a desire to increase profitability. The process is driven by communication, education and local leadership. Immediate benefits include improved biosecuity and an increased awareness of the impact of infectious disease. In the longer term, these efforts culminate in the stable elimination of PRRS. In the much longer term, the infrastructure developed to eliminate PRRSV will lead to the elimination of other infectious diseases that impact animal health and profits. In a voluntary control/elimination program there is no assurance of 100% participation. However, 100% success is not dependent on 100% participation. Some predictors of success include:

- Local unified leadership from producers and veterinarians,
- Good communication among participants,
- A long term commitment and willingness to adapt as new challenges arise,
- Few pigs entering the region from PRRS-positive or herds with unknown PRRSV status.
- The presence of natural borders (mountains, rivers, etc.) or a low density of herds at the perimeter of the region,
- Few exhibition pigs in the region or the willingness of hobby farmers to participate,
- In general, the higher the herd density in a region, the more difficult the process.

Brief history of PRRS projects

The first regional project aimed at controlling PRRS virus spread started in 2002 in eastern Rice Cy, Minnesota. Some progress was made but in retrospect, the region did not have the ideal attributes to determine whether a **voluntary, regional, coordinated, PRRS control and elimination** program is feasible. A second regional project started in 2004 in Stevens County in west central Minnesota and the project has been a resounding success. Approximately 90% of the producers in the county have participated and the prevalence of PRRS has decreased from approximately 50% of sites to no known sites having PRRS. The project has expanded twice and now includes all of Minnesota, north of highway 212.

Getting started

Having defined a "region", and leadership, the first step in developing a regional elimination project is to get the word out. Engaging local producers is a never ending task and is ideally done at the local level by producers and veterinarians. The elements of a plan can be as follows.

1. Establish a leadership team, establish meeting frequency & communication methods. Transparency in communication is important.
2. Discuss the risks of disclosing status and how the group wants to mitigate this risk (producer agreement, hold harmless).
3. Map all locations with pigs, preferably with GPS coordinates. Categorize each site in terms of type of production and approximate size.
4. Characterize the presumed PRRS status for every location. PRRS status needs to be openly discussed by regional elimination. As discussed below, there are risks to the disclosure of PRRS virus status.

5. Determine the biosecurity risk of participating farms by conducting a PADRAP evaluation. This is a detailed questionnaire that describes biosecurity management for a site and the risk of the farm for introducing and maintaining PRRS virus infection.
6. Develop a pig flow map for the entire region. (The region size may change based on pig flow.)
7. Develop herd plans for eliminating the virus at the herd level, including sampling. Get exhibition folks on board right away including biosecurity training and innovative programs to incentivize showing PRRS negative pigs.
8. Go for early successes. Producers watch and respect local experiences more than research results from elsewhere. There will be much skepticism at the beginning, however, once positive results appear, a change in mindset follows.
9. Establish a protocol for outbreak investigation and notification.
10. Education program. Bring in guest speakers to discuss various aspects of PRRS control, sampling, share experiences, etc.
11. Once a PRRS-negative status is achieved maintain a risk-based testing system to assure that regional status is maintained.

Current projects

With the success of the N212MN project, PRRS CAP allocated 10% of its budget to initiate six other regional projects around United States. Each of these projects has a coordinator listed below in Table 1.

Each project's progress and challenges

The projects vary in their progress and challenges. For example, the N212MN project (Dr. Montse Torremorell) has an extremely large area with 3 clusters of pork production and the majority of the region being very low density. As well, with Stevens having no known sites being PRRS positive, the region employs a risk-based surveillance system to identify sites with higher risk that deserve more frequent testing. The north central IL project (Dr. Noel Garbes) has the challenge of relatively large farrow to finish single sites. Also, they are using attenuated PRRS vaccines in their region and will need to eliminate this virus as well in the long term. The west central IL project (Dr. Dyneah Classen) has struggled with participation rate and is in the process of designing a survey of attitudes so we can learn about factors affecting perceptions about adoption rate of regional, voluntary, coordinated PRRS control and elimination. The Iowa County project (Dr. Derald Holtkamp) is trying to gain understanding of the impact of pigs entering the control region. The Cuming County project (Dr. Alan Snodgrass) is working with BI to incorporate a novel mapping program (BioPortal) that includes PRRS virus sequence as well as location and PRRS status of farms. And finally, the Pennyslvania project (Dr Tom Parsons) has been studying the role of geographic location and topography on apparent lateral transmission of PRRS virus.

Each project coordinator submits a quarterly progress report (all available for review at PRRSCAP.Org). The progress report includes a table summarizing herd inventory and PRRS status for the region and a bar chart showing change in PRRS status of sow herds over time. See Table 2.

Table 1: Coordinator chart

Region/Project	Principal Investigator	Contact Information
Illinois - DeKalb Area	Dr. Noel Garbes	Phone: (815) 756-3279
Bethany Swine Health Services		Email: ngarbes@bethanyswine.com
Illinois - Western - Tri-County	Dr. Dyneah M. Classen	Phone: 217-357-2811
Carthage Veterinary Service, Ltd.		Email: dclassen@hogvet.com
Iowa - Iowa County	Dr. Derald Holtkamp	Phone: 515-294-9611
Iowa State University		Email: holtkamp@iastate.edu
Michigan-Allegan & Ottawa Area	Dr. James A. Kober	Phone: 616-355-7447
Michigan Pork Producers		Email: svsmi@sbcglobal.net
Minnesota - Northern Minnesota	Dr. Montse Torremorell	Phone: 612-625-1233
University of Minnesota		Email: torr0033@umn.edu
Nebraska - Cuming County	Dr. Alan Snodgrass	Phone: 402-380-2499
Nebraska Veterinary Service		Email: nebvet@hotmail.com
Pennsylvania	Dr. Thomas D. Parsons	Phone: 610-444-5800 ext 2554
University of Pennsylvania		Email: thd@vet.upenn.edu

Table 2: Example of regional progress report from north-central Illinois

Region	North-Central IL		Density sows: 27.8/sq. mile		
Year/quarter	Q1 2011		Density pigs: 194.6/sq. mile		
	Sow herd size				
	< = 100	101-600	601-1500	1501-3000	> 3000
Farrow to wean			1	4	3
Farrow to feeder			1	2	
Farrow to finish	2	7	3		1
TOTAL	2	7	5	6	4
	Sow herd status by size				
	< = 100	101-600	601-1500	1501-3000	> 3000
Unknown	2	2		1	1
Positive		4*	4†	5*	3‡
Positive stable		1			
Negative provisional					
Negative			1		
TOTAL	2	7	5	6	4

24 sows, 6 nurseries, 52 finishers
Found several empty finishing sites that were initially for unknowns in 2010 Q1
* - Positives are MLV strain
† - 3 of 4 are MLV strain
‡ - 1 of 3 is MLV strain
‡ - 3 of 4 positive farms are MLV strain

Discussing the risks of disclosure

A key part of a voluntary, regional, coordinated disease control program is the sharing of disease status. There will be a range in reactions from "sure" to "no way!" One fear is that a participating producer might be held liable by a neighbor for alleged spread of virus. And as a region makes progress, anticipate increasing attention and collective pressure being given to new breaks. To help manage the risk of disclosure, most projects have all participants sign a participation agreement (consent letter) &/or a hold harmless contract that discusses the risks of the project and gives the project coordinator access to the farm status. Despite having these agreements in place, there might be an unexpected negative reaction to a new disclosure. Service to a PRRS virus positive farm might be discontinued by one or more commercial truckers, the farm might be turned away from one or more local feed mills or by manure pumping contractors. A source farm may terminate delivery, commercial rodent control service may refuse service, and other externally provided services may be in jeopardy. Also, a producer might feel pressured to instigate a control or elimination program more quickly than h/she would otherwise have done. These are all unlikely possibilities, but need to be discussed before they occur.

- Knowing a neighbor's PRRS status is a privilege.
- Pressure a neighbor or withdraw services and a project runs the risk of driving PRRS underground.

Developing a budget

Testing - The major project cost for a region will be diagnostic testing. This will include veterinary costs and diagnostic lab fees. Many producers in the region may already be testing and might continue to pay those costs. Some producers who are not currently testing may pay for the tests at their farms. A challenge will be paying testing costs for farms that are willing to participate but not willing to cover the costs.

Coordination - There may also be costs for a project coordinator, travel, and communications (phone, etc). Volunteer

time on the part of producers and veterinarians may cover the coordination, education, communications, etc.

Vaccine - In some regions, some producers may include PRRS vaccine as part of their control approach.

The challenge for all regions is to evolve into financially sustainable projects that are totally funded by the producers. Contact Dr Morrison to obtain information on external funding opportunities, which might include support from pork producer associations, USDA PRRS CAP, pharmaceutical firms, state and local governments and others.

Looking ahead

There is much enthusiasm for regional PRRS projects with at least 20 projects underway in North America. As we might expect, challenges arise as we tackle this complex problem. There are 4 working groups currently addressing the following issues:

- Develop a standard of practice (SOP) that might serve as a template for managing and sampling sow herds as we work to eliminate virus.
- Develop a generally accepted minimum sampling program for sow herds in low dense or PRRS free regions. Secondly, develop sampling guidelines for growing pig sites.
- Incorporate oral fluid sampling into the sampling guidelines.
- Develop guidelines for managing the risk of disclosure.

Dramatic progress has been made in relatively few years going from 1 to over 20 regional projects in just two years. We are already seeing some regional projects coalescing as the interest in regional PRRS control grows. With the advent of filtering sow farms in hog dense regions and the negative pig flow resulting from such effort, one can imagine the industry entering a new era of **voluntary, regional coordinated disease control and elimination.**