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PRRS Regional Elimination

Reviewer

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For certain animal diseases, regional elimination of the pathogen has been the only effective way to control the disease. Regional elimination programs have been reported for diseases such as foot and mouth disease (FMD) where mass vaccination and movement restrictions have proven to be effective.

Recently, Chile reported the successful elimination of PRRSv from the country after a national surveillance program revealed the presence of infected herds in 2000. After coordinated cooperation between governmental authorities, local industry and swine veterinarians, the National PRRSv elimination program was completed through a combination of depopulation / repopulation and herd closure measures. In 2007, no positive samples were detected through the national surveillance program. Financial support from 2001 to 2004 originated from pork producers (Pinilla et al., 2006).

A similar experience was reported in Sweden (Wallgren et al., 2008). This country had not had a case of PRRSv until 2007 when a seropositive herd was detected. In 10 days, through an epidemiologic investigation, the government identified seven other infected herds located in two regions of the country. Farms were linked either through personnel, equipment or transport. By destroying all positive animals in those herds together with strict cleaning and disinfection practices, the virus was eliminated from the country.

PRRSv Regional Elimination in Stevens County, Minnesota

In the U.S. the first regional elimination program started in Stevens County in west central Minnesota. During 2004, a group of pork producers and local veterinarians decided to seek short and long term solutions for regional PRRSv control. Producers were aware that PRRSv could be eliminated from a herd. However, they had experienced re-infections in their herds and they were determined to seek a long term, sustainable strategy that would allow them to produce pigs without PRRSv. The producers and veterinarians organized structured meetings inviting all producers in the county to discuss the feasibility and interest in initiating a county wide elimination program. It was clear from the beginning that this program would be completely voluntary due to the fact that PRRSv is not a reportable disease in the US since it is not a zoonotic disease.

Since the start of the project, 87 farms have been located as well as one hog-buying station and one truck cleaning facility. As of today, 83 farms have participated with 19 farms having at least one sow, eight farms having only nursery pigs, two farms being boar studs, three being boar stud isolation units and the remaining 51 sites housing nursery and / or finishing pigs. Of the 19 sow sites, four are herds that produce replacement animals and the remaining 15 are commercial sow herds. In total, the estimated number of sows in Stevens County in 2010 was 17,844 sows, with 16,700 (93.5%) sows owned by 5 entities. Most

of the pigs weaned from these sow farms either stayed at the same location or were moved off-site within the county. Eight of the 51 finishing farms receive pigs from neighboring counties of which four are owned by Stevens County producers.

Producers were contacted to schedule a visit for sample collection. Blood samples were drawn from sows and / or finishing pigs. Samples were then tested using ELISA (HerdCheck 2XR, IDEXX, Maine, US) and PCR. Farms that tested positive through PCR and/or ELISA would be classified as positive. Farms that had >0% and <10% positive ELISA results would have those positive samples tested again through indirect immunofluorescent antibody (IFA) assay, and if there were no positive results, farms would be classified as negative. Owners of farms that tested PCR positive were encouraged to implement a PRRSv elimination program. Three producers with 200, 3000 and 3400 sows eliminated the virus by herd closure. One 1200 sow farrow-to-feeder operation eliminated the virus through depopulation / repopulation. These four sow farms provided pigs to 24 sites in Stevens County and all of these sites eliminated the virus by partial or complete depopulation.

One single source nursery site of note had a 10,000-head capacity and was managed continuous flow. After planned exposure / closure, the sow site was monitored monthly for PRRSv in suckling pigs. The nursery was partially emptied and with strict biosecurity, virus was eliminated. Virus was subsequently eliminated from 16 different finishing sites through all-in, all-out to pig flow, cleaning and disinfection and strict biosecurity measures.

In 2004, 29 pig farms were thought to be infected with PRRSv, four of which were sow farms. Nineteen pig farms tested negative and the remaining herds had not been tested at that time (Figure 1). In 2006, the number of positive herds decreased to 16 and the number of negative farms increased to 51 and the remaining farms had an unknown PRRSv status (Figure 2).

In 2009, there was one finishing producer that unknowingly introduced PRRSv infected pigs into the region. The producer of this farm was very conscious of the threat these pigs represented to the regional program and decided to eliminate the virus through strict biosecurity and by moving the infected pigs to an off-site facility. Six months after the initial virus detection, the producer successfully eliminated the virus from the site.

Presently there are four herds that still need to be tested (Figure 3). However, all herds besides these four herds have tested negative for PRRSv or are empty proving the concept that regional control and elimination is possible.

Because of the voluntary nature of the program, active surveillance is limited. Voluntary surveillance has decreased since most, and possibly all of farms have eliminated the virus from the region. Most producers are aware of the high risk of re-infection in the county and maintain regional biosecurity protocols and restricted pig movement within and between counties. Additionally, the fact that there are four herds producing and selling breeding stock and two boar studs in Stevens County has a tremendous effect since these herds do have active PRRSv surveillance programs in place. Most commercial sow farms have regular veterinary visits through which diagnostic investigations are regularly conducted but still an active surveillance program of high-risk herds is needed.

Voluntary PRRSv regional control and elimination programs can be accomplished through coordinated events being conducted by local producers and veterinarians. Communication among local producers and their veterinarians is a key piece for success. Due to the fact that the industry is aware of how costly PRRSv can be and that the trend towards PRRSv herd level elimination continues, regional programs can become a powerful tool to avoid re-infections. Additionally, regional control programs raise awareness among local producers with regards to the risk of disease introduction, thus, highlighting the importance of biosecurity measures not only for PRRSv but for all other swine related diseases with the objective to decrease regional disease spread.

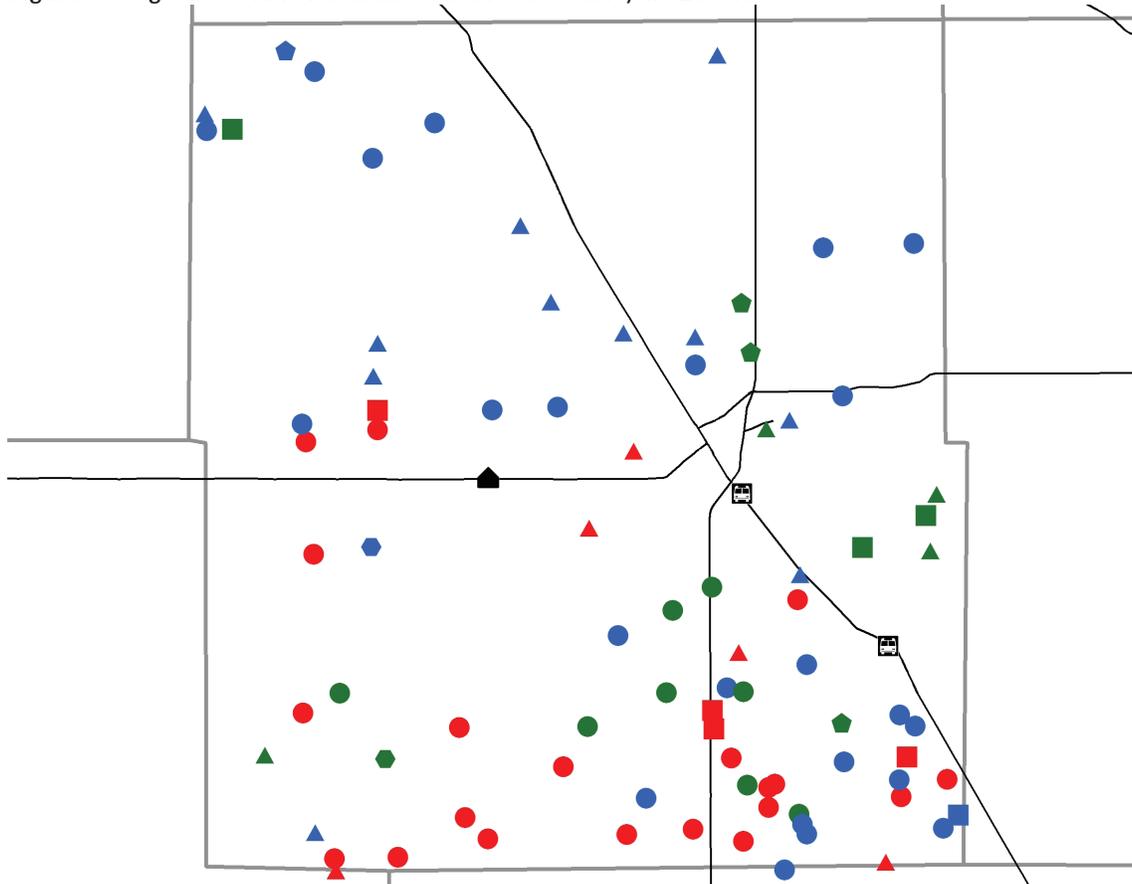
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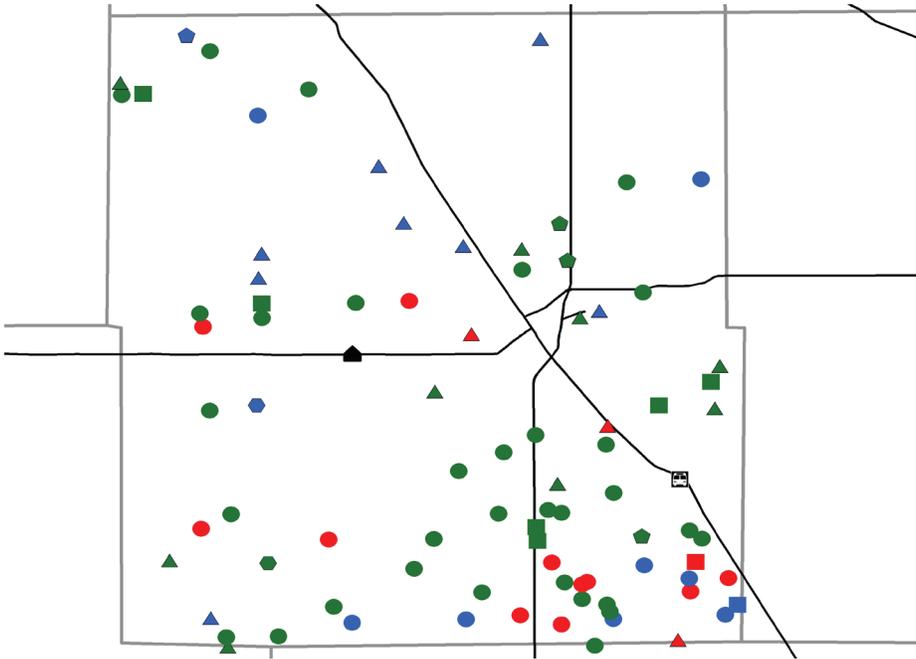
* This article is an excerpt of a manuscript accepted for publication in Virus Research.

Figure 1. Pig farm PRRSv status in Stevens County in 2004.



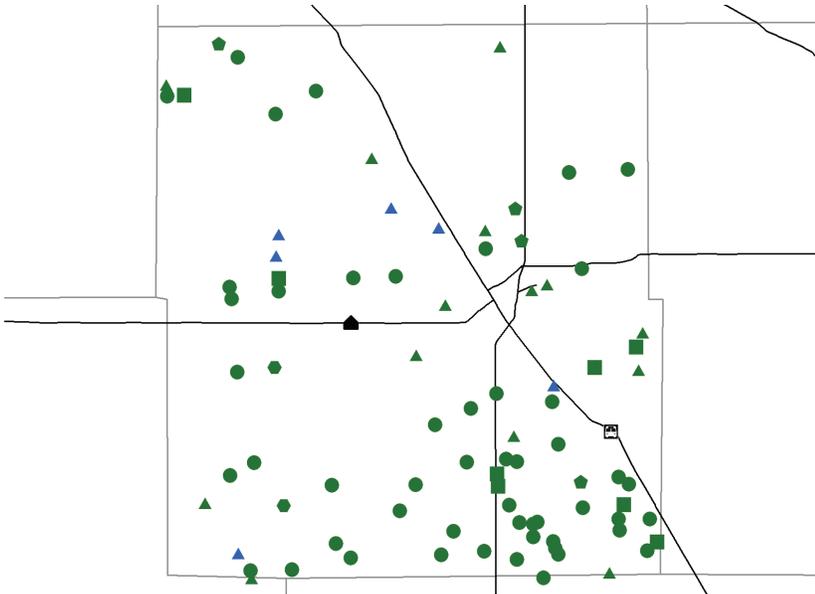
Triangles represent sow farms, squares represent nurseries, circles represent finishing sites, pentagons represent boar studs and hexagons represent show pigs. Black pentagon indicates a hog buying station and black-white square represent a truck washing facility. Green indicates negative test results, red indicates positive test results and blue indicate unknown status.

Figure 2. Pig farm PRRSv status in Stevens County in 2006.



Triangles represent sow farms, squares represent nurseries, circles represent finishing sites, pentagons represent boar studs and hexagons represent show pigs. Black pentagon indicates a hog buying station and black-white square represent a truck washing facility. Green indicates negative test results; red indicates positive test results and blue indicate unknown status.

Figure 3. Pig farm PRRSv status in Stevens County in 2010.



Triangles represent sow farms, squares represent nurseries, circles represent finishing sites, pentagons represent boar studs and hexagons represent show pigs. Black pentagon indicates a hog buying station and black-white square represent a truck washing facility. Green indicates negative test results and blue indicate unknown status.

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