

How much do porcine reproductive and respiratory syndrome (PRRS) cost to US?

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Key Points

- Porcine Reproductive and Respiratory Syndrome (PRRS) is economically important to the swine industry, which accounts for a large part of the American meat economy
- Vaccinating for PRRS helps to mitigate negative effects of the disease, but vaccinated farms are still negatively affected by the disease
- In the absence of regulatory framework, it is important for producers to coordinate efforts to address the issue

In 2015, pork production accounted for 24% (\$19.3 billion) of the value generated by meat industries in the US, demonstrating the central role that the swine industry plays in the country. Such high level of production has been reached through an incredible transformation over the last decades, intended to gain efficiency. The number of farms has decreased, and the number of animals and the level of specialization have increased within premises. The industry has also moved progressively into a vertical integration by concentrating several operations into single owners or by contractual relationships between producers. Those changes have contributed towards high productivity and control over production variables, but have also resulted in an increase in long-distance animal movements which may facilitate the spread of diseases, such as the porcine reproductive and respiratory syndrome (PRRS).

PRRS is one of the most costly diseases to the swine industry, and because of the importance of the industry in the country, it is also a major threat to the US economy. Although vaccination helps to reduce the impact of the disease, PRRS still decreases the productivity of vaccinated farms. We recently measured the impact of PRRS. We compared weekly production and seven performance indicators in a cohort of vaccinated sow farms in the Midwest after a PRRS outbreak, compared to pre-outbreak (baseline) figures. We then used an average market price for weaned pigs during the time of the study (\$45.20) to estimate the impact of the disease on net farm revenue.

Results here demonstrate that PRRS has a lingering negative effect on weaned pig production for an unexpectedly long period of time. We observed a 5% decrease in production and an increase in the number of abortions, one week before the outbreak was declared. Production dropped consistently until the 6th week post-outbreak, when it reached its maximum failure in production with 24% (min= 13%, max=28%) fewer weaned pigs-per-week than the baseline. After the 6th week post-outbreak, we observed a moderate recovery in production, although with a second wave of decline between the 11th and 18th week post-outbreak. All performance indicators decreased at some point in time, either the week before, at, or immediately after the outbreak was reported.

Results suggested a slight decrease in the number of farrowing per sow/year, from 2.3 times/year (min=1.8, max= 2.8) to 2.2 times year (min= 1.8, max=2.7) in absence and presence of an outbreak of PRRS respectively. This slight change would imply a 6% drop in the number of sows farrowing annually. Consequently, a corresponding 6% increase in the number of sows requiring repeated service was reported, while a slight increase in the number of pre-weaned pigs' deaths per sow/year, and an overall 0.01 increase in chances of abortion sow/year were described. Finally, there was an annual decrease of 1.92 weaned pigs per sow (min=0.51, max=3.72), leading to \$86.6 reduction in revenue per sow/year (min=\$22.9, max=\$168.2).

Considering only direct losses (i.e. decay of output production), PRRS caused on average ~8% (min=4%, max=13%) yearly decrease in the value of production. Taking into account the scale of farms analyzed in our study, this is roughly \$393,506 decrease in annual revenue per farm (min=\$178,969, max= \$664,299). Because we only measured direct production losses, the full economic impact of the disease certainly exceeded our estimations. Furthermore, the impact would be higher in unvaccinated farms.

In summary, PRRS is still one of the most important diseases affecting the swine industry and the country. In the absence of a regulatory framework, coordinated efforts among producers is the most effective strategy to mitigate its impact.