



American ASF Research: Learn or Get Burned

By Geoff Geddes for Swine Innovation Porc | March 11, 2021



Dr. Paul Sundberg from SHIC presented during our webinar on ASF on January 6, 2021.

They say that “what you don’t know, can’t hurt you”, but try that in a mine field. When it comes to combatting African swine fever (ASF), the more we know, the better it will go. Though considerable work is ongoing in Canada regarding ASF, there is also much we can learn from our partners to the south. With that in mind, Dr. Paul Sundberg presented “ASF Research: An Update from the USA” for SIP’s webinar at the 2021 Banff Pork Seminar.

Clearly, Dr. Sundberg brings a wealth of knowledge to the subject area in terms of swine health. Formerly vice-president of science and technology with the National Pork Board, he currently serves as executive director of the Swine Health Information Centre (SHIC) in Ames, Iowa.

“I want to emphasize the point that ASF is an issue for both Canada and the United States,” said Dr. Sundberg. “We have a North American pork industry, so collaboration and communication around ASF and other emerging diseases is extremely important.”



In large part, the mission of the SHIC summarizes the key elements in preparing for ASF:

“Protect and enhance the health of the U.S. swine herd through coordinated global disease monitoring, targeted research investments that minimize the impact of future disease threats, and analysis of swine health data to help the pork industry and producers.”

Disease dollars

Any discussion of ASF will begin and end with money, so part of American research involves an economic analysis of the potential effects of the virus in the U.S. Total losses are estimated at \$15 billion if the virus is controlled in two years, and \$50 billion dollars – as well as 140,000 lost jobs - if it takes 10 years to reign in ASF. American producers would see a 47% reduction in pig prices in the first year of an outbreak and a 30% drop in production over 10 years.

Money is also critical in avoiding those losses by funding vital research.

“In 2019 with the help of the National Pork Producers Council (NPPC), our centre secured a \$1.7 million grant from the USDA [United States Department of Agriculture] Foreign Agricultural Service to address ASF in Vietnam. Section 1 of the grant, which is headed up by the University of Minnesota, is focused on sharing knowledge and ideas. It will fund webinars, seminars and informative material for Vietnamese veterinarians in both government and private practice. The idea is to perform outreach that ensures everyone is on the same page as far as epidemiology, virology and vaccinology.”

Field trips

Section 2 of the grant supports the implementation of field projects and analysis of samples. The SHIC did a call for proposals in early 2020 and selected a number of them for funding, beginning with work around ELISA assays. The enzyme linked immunosorbent assay (ELISA) is a powerful method for detecting and quantifying a specific protein in a complex mixture.

“We are trying to look over the hill and be prepared should ASF come to North America, get into production and pose a threat of becoming endemic. Some of our efforts focus on longer term issues such as detection, control, elimination and eradication of ASF, and ELISA is part of that whole process.”

Two projects for ELISA evaluation are included in section 2 of the grant, including both serum and oral fluids. The National Pork Board will then analyze the results to ensure industry has a complete picture of ELISA’s capability regarding ASF.

“In Vietnam, we are also looking at the potential of rodents to be both a mechanical and biological vector for ASF. We have examined rats and mice at outbreak farms and found none of the virus in them, so this is a promising area of research.”

In another project, researchers are assessing the diagnostic performance of pen-side tests. The use of such tests would require a policy change in the United States, but industry wants to be prepared to manage and control ASF if the need arises.

The grant also funds research on the time and temperature required for complete inactivation of ASF.

“Baking of trailers is something we do now for a number of pathogens, so we want to make sure that this biosecurity measure is validated for ASF.”

On the path to success

As well, there is much interest in identifying pathways of entry for ASF into farms. Researchers will go on outbreak farms and conduct epidemiological surveys to identify probably pathways in the event of an outbreak in the U.S.

In a related study, scientists are determining pathways for ASF introduction into boar studs and the risk of transmission via semen movements during an outbreak.

Then there is the work on validating protocols for the targeted removal of individually housed sows that are infected, in order to move the herd to a negative status.

“If we can identify infected animals quickly, either individually or in group housing, and remove them, we may be able to stop the virus in its tracks and save the rest of your production.”

As an additional source of knowledge, researchers are looking at the potential of using ASF outbreaks in Romania to augment the data already being gathered in Vietnam on the use of swine oral fluids as a monitoring and surveillance tool.

Determining risk is central to addressing ASF, and industry is responding with the U.S. Pork Industry National Biosecurity Risk Assessment.

“In collaboration with Pork Checkoff, the American Association of Swine Veterinarians and the NPPC, we are taking a broad look at the biosecurity risks in the U.S. industry. This includes everything from imports to markets to movements, and is key to virus prevention. We must ensure that we don’t miss anything and can close all the windows necessary to keep ASF from our borders.”



Another program is responding to the realization that, if ASF appears, the U.S. lacks enough accredited swine veterinarians to collect samples in a biosecure manner. In response, the National Pork Board – with funding from the USDA – is organizing a collection training program. Under the auspices of accredited veterinarians, people on farm will be able to collect, handle and submit samples during an attack of ASF.

All told, considerable time, effort and money is being directed to ASF research, but if it helps industry navigate the viral minefield, it will be well worth the trouble. 🙄

Additional information...

Dr. Paul Sundberg is executive director of the Swine Health Information Centre in Ames, Iowa. Visit the Centre's website [by clicking here](#).

[Click here to view a recording of the webinar "African swine fever: How is Canada getting prepared?"](#) » that took place on January 6, 2021.

Acknowledgements

Publication of this article has been made possible by Swine Innovation Porc within the Swine Cluster 3: Innovating for a Stronger Pork Sector research program. Funding is provided by the Government of Canada under the Canadian Agricultural Partnership, provincial pork producer organizations and industry partners.