** This news release from K-State Research and Extension is available online at https://ksre-learn.com/african-swine-fever-biosecurity

Note to online editors: A video to accompany this story is available at https://youtu.be/4-qDVAucgLQ

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K-State researchers develop tests to detect African Swine Fever on surfaces

Scientists say technique adds layer of biosecurity to swine industry

By Pat Melgares, K-State Research and Extension news service

MANHATTAN, Kan. – Kansas State University researchers have published the findings of a study that looks at a seemingly simple way to add another layer of protection for the U.S. swine industry against a crippling, viral disease.

K-State swine production specialist and veterinarian Jordan Gebhardt said scientists have used some common household items to test their ability to detect the presence of African Swine Fever on equipment and surfaces where animal feed is transported.

African Swine Fever is a severe, viral disease affecting domestic and wild pigs. It is usually fatal and no treatment or vaccine is available in the United States. The disease has caused significant pig losses in Asia, Europe and Africa; it has never been found in the United States.

“This virus would be devastating to our domestic swine herd and would immediately shut off our export of pork products to other countries,” Gebhardt said. “So keeping the virus out is really important, and this is an area where a lot of research efforts are directed.”

Detecting the presence of the African Swine Fever virus on the surfaces of trucks, shipping containers and other materials entering the United States, “seems like such a simple research question,” Gebhardt said, “but there’s a lot of complexity in how that is done.”

The research, originating from fieldwork conducted by K-State scientists in Vietnam, relies on diagnostic tests known as polymerase chain reaction, or PCR, which use DNA or RNA from a sample to diagnose infectious disease. In most cases, a PCR test can give a reliable result within 24 hours, often much more quickly.

Many consumers have become familiar with PCR tests in recent years, even if they don’t know it; tests for the COVID-19 virus are PCR tests.

K-State scientists relied on simple techniques to collect PCR samples. Gebhardt said they swabbed surfaces that have come in close contact with feed using four materials that might be found in any consumer's home: a four-inch square cotton gauze, polyester tipped swabs, sponge sticks and a dry sweep cloth.

"If we want to test a surface -- whether that be a truck or a shipping container or a surface on a farm – we need to know how to collect a sample from that surface and then get the best diagnostic result we can to determine if the virus is present or not," Gebhardt said. "We call that process environmental sampling. To date, there hasn't been a strong set of qualified research projects that have done a great job characterizing the simple question of what's the best way to collect that sample."

He said K-State's work helps to fill the gap that existed and should lead to another layer of biosecurity for the swine industry.

"We're doing this work to help prevent an introduction of African Swine Fever," Gebhardt said. "But in the event of an incursion into the United States, we could use these techniques to understand more rapidly where the virus is and how we can implement additional control measures to prevent further spread of the pathogen."

Gebhardt said testing on the reliability of the PCR tests is ongoing, but the results so far look promising.

"At K-State, we focus on the ability to use practical diagnostic testing to aid in improving biosecurity practices," he said. "So we're also looking at the question of if we find viral DNA or viral RNA on a surface, is it just a fragment of that virus, or is it an intact virus that is capable of causing infection."

"It's a really important research question, and sometimes can be quite challenging, particularly with feed samples or environmental surface samples."

Gebhardt noted the work was funded by the Cross-Border Threat Screening and Supply Chain Defense center at Texas A&M University, which is funded through the U.S. Department of Homeland Security.

A full description of K-State's study is published online by the National Center for Biotechnology Information, a program supported by the U.S. National Institute of Health.

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FOR PRINT PUBLICATIONS: Links used in this story

Cross-Border Threat Screening and Supply Chain Defense center (Texas A&M University), https://cbts.tamu.edu

K-State journal article (National Center for Biotechnology Information), https://pubmed.ncbi.nlm.nih.gov/39091398

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