

Efficacy of the “Tooth Extraction” (test-and-remove) protocol in commercial swine farms in Vietnam

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Industry Summary:

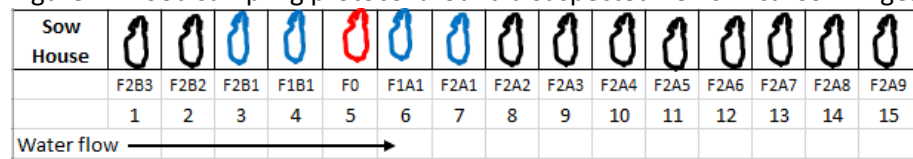
Vietnam has lost ~6 million pigs to ASFV since the first reported outbreak in February 2019. The national swine herd has returned to 88.7% of its pre-ASFV level, but the risk of ASFV recurrence is high because of new and on-going ASFV outbreaks (Report #VM2021-0042, USDA & GAIN, May 11, 2021).

Because of the increased value of pork in Vietnam due to reduced supply, standard ASFV control measures have centered around a modified “test-and-remove” or “Tooth Extraction” protocol. A common “Tooth Extraction” protocol for a sow farm is to remove any sow exhibiting clinical signs compatible with ASF (taking a whole blood sample for ASFV PCR testing) plus the two sows in stalls on each side of the index (clinical) animal (Yaros, Leman, 2019).

The **objective** of this study was to test the efficacy of the “Tooth Extraction” protocol.

For each "ASFV event" (identified by farm caregiver), whole blood samples were collected from the index sow plus 14 animals in gestation stalls on each side of the index sow (see Figure 1). Samples were tested for ASFV DNA by real-time ASFV PCR within 24-hours of arrival to the laboratory. The proportion of positive animals was analyzed as a function of the gestation stall distance from the index sow.

Figure 1. Blood sampling protocol around a suspected ASF clinical sow in gestation^{†‡}



[†]F0=index sow, F1= direct/closest contact neighbors, F2= indirect contact neighbors; A= “down” row, B= “up” row

[‡](The rationale for the sampling distribution was due to an assumption drinking water flowed down a common water trough)

Results. 766 whole blood samples from 52 ASFV events were collected and tested for ASFV DNA by PCR. 85 samples were positive for ASFV DNA by PCR.

Key learnings:

- a) In 17 (33%) of the 52 events, the index sow and 14 neighbor sows were ASFV PCR negative.
- b) In 35 (67%) of the 52 events, the index sow was ASFV PCR positive.
 - a. Among all sows detected as ASFV PCR positive, 39 (78%) were located outside of the index animal and her direct contact neighbors (F0, F1A1, F1B1). Thus outside of the index animal *and* her contact neighbors (F0, F1A1, F1B1), 10% of all animals tested were ASFV PCR positive, compared to the direct contact animals alone (F1A1, F1B1), representing 18% of the all animals tested.
 - b. If the index sow and 4 direct/closest contact neighbors were removed (F0, F1A1, F1B1, F2A1, F2B1), there was a 50% probability that additional ASFV PCR positive (but unidentified) sows remained.
- c) ASFV DNA was detected in blood from sows showing no clinical signs.

The results of this study suggest “Tooth Extraction” is not sufficient to eliminate ASF from a pig farm.