Mitigating the risk of African Swine Fever virus entry into boar studs in the USA

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Introduction

With the presence of African Swine Fever (ASF) in Asia and Europe, and recently diagnosed in the Caribbean, it is important that the United States (U.S.) swine industry take steps to help protect herds from ASF. In the event of an ASF introduction into the U.S., understanding how to manage production practices and ways to mitigate risk of disease introduction for all aspects of the industry, including boar studs, is critical.

The Secure Food System (SFS) team at the University of Minnesota (UMN) is currently conducting a proactive risk assessment (RA) that systemically evaluates the potential risk of ASF transmission via liquid cooled semen movements from an uninfected boar stud in a control area during an ASF outbreak, to farms in an ASF negative area. Additionally, the RA enables the identification of different mitigation strategies in order to decrease potential risk. Information on boar stud management practices and possible mitigations were provided to the UMN SFS team by a collaborative group of regulatory officials, industry professionals, academicians, and boar stud subject matter experts that voluntarily participated as the advising Working Group (WG) for this RA.

Methods

The information regarding boar stud management practices and possible mitigations were collected in our regularly scheduled meetings with the WG. The management practice areas included were: people, incoming boars, mortality and cull boar management, fomites, feed and water, geographic and aerosol transmission, biological materials, insects and arthropods, and finally wild and peri-domestic animals.

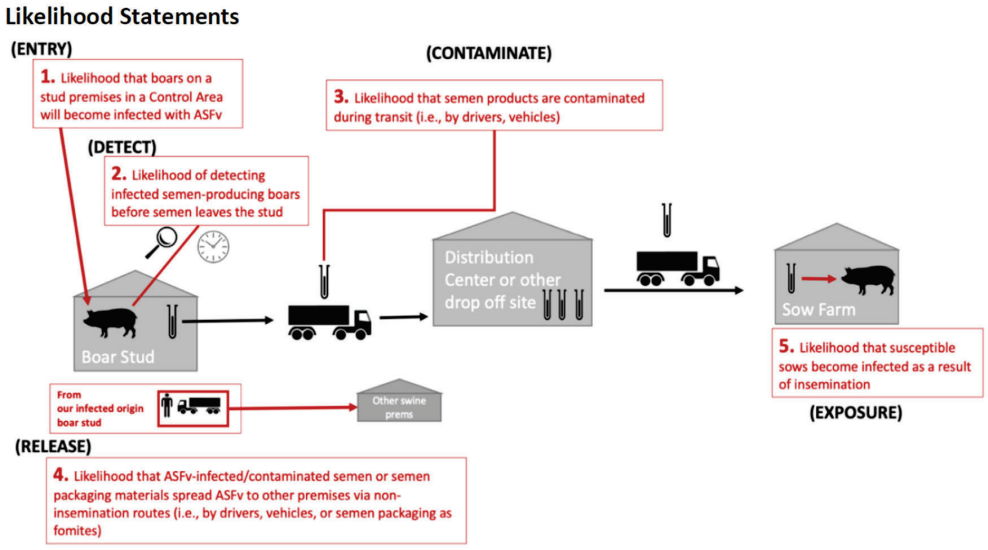

Figure 1. Likelihood statements of the
1. Entry,
2. Detection,
3. Contamination,
4. Release, and
5. Exposure
of and to ASFv, used for pathway analysis throughout the risk assessment.

Results

The RA process provided a map of possible infection pathways for ASF entry, described as "likelihood statements" (Fig. 1). The process also provided details on management practices that can be changed to help mitigate the risk of ASF introduction into the boar stud via each pathway. Some mitigation measures are already in place such as all-in/all-out movement of boars in isolation. Others, such as boar stud employees delivering semen directly to the sow farm would need to be changed or stopped completely in the event of an ASF outbreak. Additionally, there are management practices whose mitigation efforts might be difficult such as ASF vaccines, or mitigation efforts whose effectiveness is unknown, such as truck washing in cold temperatures. All of this information is then used to assign a risk rating to each pathway/likelihood statement. For example, preliminary analyses yielded a risk of either "negligible to low" or "low to moderate" for pathway 1 – Entry (Fig. 1). The final rating is still pending and further work is being done to assign ratings to the other four likelihood statements (Fig. 1).

Risk ratings are valuable tools for disease response by allowing producers, veterinarians, and officials to make informed, evidence-based decisions about when, where, and how enact mitigations during an ASF outbreak.

Conclusion

Conducting an RA to determine risk and mitigation processes is just the first step in decreasing risk of ASF introduction. Through this RA, we will be able to estimate the risk of an ASF introduction into a boar stud, how mitigations in place could reduce this overall risk, and what necessary additional information may be needed in the future. It is also our intention to further expand this work to sow farms and growing pig sites in order to provide the best protection to the broader U.S. swine industry.