

Risks to animal health associated with imported feed ingredients

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An epidemic of African swine fever is currently spreading throughout China. Reporting of new cases by the Chinese government is unreliable, but this epidemic is clearly causing great concerns. Importantly, although the epidemic raises obvious animal welfare and economic issues for the swine industry in China, it also raises issues for the United States.

African swine fever is classified as a foreign animal disease. Thus, identification of African swine fever virus (ASFV) in the United States would immediately stop the export of pork products, costing the US economy \$16.5 billion in the first year. The United States imports approximately 2 million metric tons of agricultural products—things such as meat, grain, vitamins, minerals, and amino acids—from China annually. Virus has been detected in livestock feed ingredients in China, and a recent study¹ found transmission of ASFV to pigs following consumption of contaminated feed. It has also been documented that ASFV can survive for at least 30 days in many ingredients the United States imports from China, including multiple soy products, choline chloride, pork sausage casings, complete swine feed, and several types of pet food.² In addition, ASFV has been detected on the shoes of visitors and vendors at local Chinese meat and vegetable markets, indicating that the viral load in the environment is increasing and raising the risk that raw materials will be contaminated.

The US swine industry has responded to the possibility that contaminated feed ingredients imported from high-risk countries may serve as vehicles for entry of ASFV to the United States, with the National Pork Board, the National Pork Producers Council, the American Association of Swine Veterinarians, and the Swine Health Information Center taking proactive steps to manage the risk. These organizations, along with the National Bio and Agro-Defense Facility Fund, funded the original proof-of-concept studies showing that ASFV can potentially survive transboundary shipping in contaminated feed ingredients and are now funding projects to determine the half-life of ASFV in feed ingredients, calculate the minimum oral infectious dose in feed, and validate the efficacy of mitigation strategies to reduce the risk of importing contaminated feed ingredients. They are also organizing educational materials on ASFV and

holding training sessions to develop plans to manage viral entry, should it occur. An excellent example is the feed ingredient safety decision tree available from the Swine Health Information Center.³

Veterinary practices have also stepped up, developing novel approaches to manage the risk associated with importing feed ingredients from countries where ASFV is endemic. One approach, known as Pipestone Responsible Imports, that has been advocated across the swine industry is to use the following factors when considering whether to import essential feed ingredients from countries of high risk:

- **Necessity:** is importation of the ingredient an absolute necessity?
- **Alternatives:** can the ingredient be obtained from a country free from foreign animal diseases?
- **Virus:** which virus is causing the concern?
- **Viral half-life:** is there published information on the half-life of the virus in the designated ingredient?
- **Transport time:** what is the projected time for delivery of the ingredient from the source to its destination?
- **Viral load:** are there safe products that can be added to the ingredient to reduce viral load during transport?
- **Storage period:** is there published information on storage time and temperature that will eliminate residual virus from the ingredient prior to use?

In addition, US companies that supply essential feed ingredients from China, such as B vitamins, have begun to scrutinize their manufacturing processes and to document that adequate temperature and pH have been used to reduce the risk of ASFV survival. As a first line of defense, products are stored for calculated periods prior to shipment to feed mills and then stored for an additional 30 to 45 days at the farm.

Practicing veterinarians can contribute by educating clients about the risk of contaminated imported feed ingredients and by seeking out information on the sources of ingredients used to feed animals under their care. This should include questioning suppliers such as pet food manufacturers and feed mills about whether ingredients used to formulate client feeds come from countries other than the United

States and particularly from countries where foreign animal diseases are present. Veterinarians should question suppliers about their quality control practices, protocols for reducing or eliminating feed contamination and cross-contamination after processing, and monitoring practices. Suppliers should be willing to provide documentation and to change if their current program is not adequate.

Finally, although we cannot afford to be complacent, we have been through similar situations before. Whether it is melamine, porcine epidemic diarrhea virus,⁴ or *Salmonella* organisms, feed ingredients can transport multiple contaminants into the United States. And, on the basis of our survival data, it is possible that ASFV has already been transported into the United States via contaminated feed. Fortunately, as of this writing, transmission to pigs in the United States has not occurred. However, with the expanding epidemic in China, viral load in the environment will continue to increase, resulting in an increased risk of contamination of feed and greater frequency of viral transport.

To meet this challenge, the veterinary profession, swine industry, governmental agencies, and feed industry must work together to address the ASFV crisis. As has been done with meat products, we must consider the possibility of restricting the import of soy-based products from countries where ASFV is present. Further, to ensure the safety of essential feed ingredients that are imported, the factors discussed previously should be considered.

The possibility that contaminated feed may be a source of infection across all animal industries is important and calls for the development of control and monitoring protocols based on available scientific data for pathogens of interest. Such scrutiny is critical to the preservation of our livestock, companion animals, and client well-being.

Finally, it is important to remember that risks associated with imported feed ingredients are not a swine-specific concern. Therefore, veterinarians across the profession should consider the topic of feed risk as it pertains to their own clients, along with ideas on how to manage that risk with the best available science. Together, we can make a difference.

References

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