

HARMFUL HITCH-HIKERS: SURVIVAL OF VIRAL PATHOGENS IN FEED INGREDIENTS

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INTRODUCTION

Effective biosecurity protocols are essential towards protecting the health status of swine farms. In the US, tremendous resources have been invested to reduce the risk of viral pathogens, such as porcine reproductive and respiratory virus entry into susceptible populations. Protocols including shower in-shower out, transport sanitation, quarantine and testing of incoming genetics and the filtration of incoming air are commonplace throughout the US swine industry, particularly at the level of the sow farm. In contrast, prior to the entry of porcine epidemic diarrhea virus (PEDV) in the US swine population during May 2013, the role of feed as a vehicle for pathogen transport and transmission had not been considered, despite the fact that feed is delivered to swine farms on a daily basis in the absence of any biosecurity protocols. Since the identification of this novel risk factor, scientists across North America have conducted numerous studies to understand its relevance. Based on the proactive response by the CFIA and the CPC, Canada clearly understands the risk of feed. I applaud each and every one of you for the marvellous national program that has set the standard for global agriculture. Therefore, I am hesitant to spend too much time re-hashing what may be “old news” to many of you. Therefore, I have tried to balance this lecture with a brief review of the science of feed risk, provide an update on what’s happening in the US as we try to follow your lead, as well as share some exciting new data, still focusing on the risk of feed, but doing so via a novel approach called the “Demonstration Project”.

ESSENTIAL LEARNING

Here is a general introduction to are the topics for the lecture:

1. The Science

- a. Survival of viruses in feed and feed ingredients.
 - i. What are the “high risk combinations” of virus and ingredient?
- b. Transmission and oral infectious dose of PEDV and ASFV in feed.
 - i. Can pigs become infected through consumption of contaminated feed?
- c. Half-life of ASFV in feed ingredients.
 - i. How long does ASFV actually live in feed?

2. The Response

- a. Seaport analysis
 - i. Where does the soy come from?
- b. Industry: Responsible imports and feed additives.
 - i. What is the US swine industry doing to mitigate risk in the absence of a national program?

- ii. Do feed additives effectively reduce the risk of contaminated feed?
- c. Governance activity.
 - i. Can science effectively influence policy?

3. The Latest

- a. Using demonstration projects to validate laboratory-based viral survival in feed.
 - i. What is this all about?

CONCLUSIONS AND TAKE HOME MESSAGES

1. Contaminated feed is a well-documented risk factor for the domestic and transboundary movement of viral pathogens.
2. Viruses which can survive and be transmitted in feed ingredients include PEDV, ASFV, SVA, PRV, CSFV, PRRSV 174, with FMDV in process.
3. Across all ingredients tested, soy-based products appear to be the most protective.
4. The 3 primary countries supplying soy imports to the US are China, Russia and the Ukraine.
5. The ports of San Francisco, Oakland and Seattle is where the majority of these products enter the US.
6. Responsible Imports is a science-based approach to safely introduce essential ingredients from high-risk countries.
7. A variety of feed additives tested appear to have some anti-viral effect and positively impact swine health and performance.
8. The US industry is actively attempting to influence imports from high risk countries though policy and specific requests to the Secretary of Agriculture.
9. Demonstration projects support laboratory data.

RECOMMENDED READING

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