

FEED BIOSECURITY FOR SWINE PRODUCERS

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Research and Extension



Farm biosecurity to minimize pathogen entry onto the farm has been a top priority for swine producers for many years. Research shows that feed may serve as a vector for pathogens. Hence, the need for researchers and producers to improve feed biosecurity measures.

Much of the research on feed as a vehicle for pathogen entry has focused on porcine epidemic diarrhea virus (PEDV) and Salmonella, both present in the United States. As foreign animal diseases such as African swine fever virus (ASFV) and foot and mouth disease (FMD) have become concerns, research has shifted to the prevention, detection, and possible elimination of these pathogens in feed. While not all pathogens can survive in feed, understanding the risks will help improve farm biosecurity practices.

Feed biosecurity begins with the producers of the feedstuffs, whether a facility for making vitamins, premixes, and amino acids, or a farm that produces corn, soybean meal or other commercial feedstuffs. The producer has little control over the sourcing of the feed mill, but a discussion about common biosecurity practices can offer insight into unforeseen feed safety concerns. Consider asking the following questions when talking to feed mill employees about biosecurity practices.

Has the mill been through any third-party biosecurity or quality audits? If so, what were the results?

A biosecurity audit helps the mill better understand where risks lie and enables continuous improvement of biosecurity protocols in areas found to be of concern during the audit.

Has the mill implemented an animal food safety plan as called for in the Food Safety Modernization Act (FSMA)?

The FSMA was passed to prevent foodborne illness in food and feed production systems instead of responding to outbreaks.

Has the mill conducted a hazard analysis within the last 12 months? How often do they do one?

As part of the FSMA plan, under provision known as the Hazard Analysis and Risk-Based Preventive Controls for Food for Animals, facilities that produce animal food for consumption in the U.S. are required to conduct a hazard analysis of agents that can cause illness or injury to humans or animals through the food animals consume.

What is the biosecurity plan at the mill? Is there a written biosecurity plan on site? Are steps being taken to ensure the plan is being properly implemented and reviewed?

In case of a foreign animal disease outbreak, an up-to-date and functioning biosecurity plan allows a mill to resume production quickly in accordance with any government regulations and restrictions that have been implemented. See an example of what is evaluated during a feed mill biosecurity audit and other [feed safety resources](#) on the animal sciences and industry website.

Are any of the products used being supplied directly from high-risk countries? If so, are any prevention or mitigation procedures being implemented?

Ingredients from high-risk countries (i.e., countries where the virus is present and could contaminate

feedstuffs) have a greater risk of carrying viral pathogens; however, thermal heating and extending storage are practices that can reduce the viral load of any potentially contaminated feedstuffs.

How many other swine producers utilize this mill? If there are others, what is the health status of those operations? Are there systems in place to inform farms about changes in health statuses of other customers? Are there protocols for dealing with changes in health statuses of other farms?

Pathogens can spread via vehicles and be picked up at common hubs like feed mills. Knowing the health status of other farms will allow for changes in delivery order or routes to avoid high-risk farms. Understanding how the mill delivers its feed is also important. Do they own all the trucks entering or exiting the mill, or are producers bringing personal feed trucks? Knowing this, producers and mill managers can discuss what biosecurity measures should be implemented if bringing a personal truck onto the mill property (i.e., days down, clean tires and undercarriage, and so forth).

Does the mill utilize lines of separation or segregation for incoming people and/or ingredients?

Limiting the number of people in certain areas of

the mill decreases the chance of contamination from human contact (i.e., boots tracking viral or bacterial particles).

Does the mill utilize pit covers on receiving pits? Is there a funnel for the receiving pit?

Covering pits until trucks are parked and ready to unload decreases the chances of pathogens from the truck's tires and exterior entering the pits and contaminating the feedstuffs. Funnels also reduce the chance of spills when unloading feedstuffs. By eliminating spillage, feed mills can reduce the risk of contaminated feedstuffs being swept into the pit.

What do employee training modules teach about biosecurity? How often are employees tested on their knowledge, and do they utilize continuing education?

What sequencing and flushing protocols does the mill have in place?

If pathogens such as PEDV or Salmonella are introduced, running whole ingredients such as ground corn or wheat hulls through the mill without incorporating them into diets can flush out or carry away contaminants and reduce the risk of contaminated feed.



What measures are in place for mitigation of pathogens?

Are feed additives such as formaldehyde and medium chain fatty acids (MCFA) used to inhibit pathogens? How about heat treatment (i.e., pelleting)?

What is being done to prevent pathogens — dust removal, for example?

Dust should be thrown away and not added to complete feed. This also applies to feed spilled on the ground. The feed mill should discontinue the use of its scales for feed ingredients or live animals originating from outside. Establish boundaries or zones to reduce traffic in areas where contamination risk is higher (i.e., micro bins for trace ingredients).

Understanding biosecurity measures implemented by the feed mill prompts producers to look at their own farms. Contamination is still possible after feed production, whether with mitigants (i.e., MCFA or heat treatment) or without. The producer can improve overall feed safety by evaluating biosecurity risks such as feed bin locations and the route the feed truck takes around the farm.

Producers should coordinate with the feed mill to sequence the loading and unloading of the feed truck. It is important for the feed truck to be loaded and unloaded so the diets of the most susceptible populations enter and exit first, and the diets of the least susceptible enter and exit the truck last. Diets should be loaded in the following order: 1) lactation, 2) gestation, 3) gilt development unit, 4) nursery, and 5) finisher.

Arrange for diets for high-risk populations to enter and exit the truck first to reduce potential contact with residues from diets for low-risk populations that may be contaminated. As a precaution, feed truck drivers should wear boot covers and gloves when exiting the cab. To further reduce the chances of a truck carrying pathogens onto the farm, consider using one of two methods for accepting feed truck deliveries.

The first option is washing the tires before the truck enters the farm (Figure 1). This method allows the driver to access all of the bins and is the easiest for the driver and farm manager to implement.

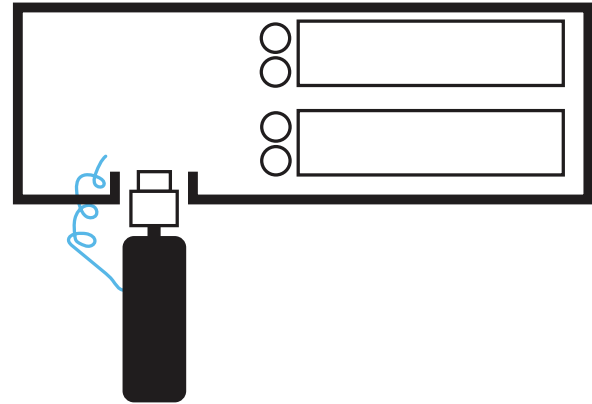


Figure 1. A hose provides access to water for washing truck tires before entering the farm.

The second option is maintaining a line of separation between the feed bins and the truck so only the augur crosses the fence (Figure 2). With this method, the driver does not have to enter the farm. On the other hand, someone from the farm has to be there during delivery to help the driver open bins. This applies to most sites, but there are automatic options for opening bins.

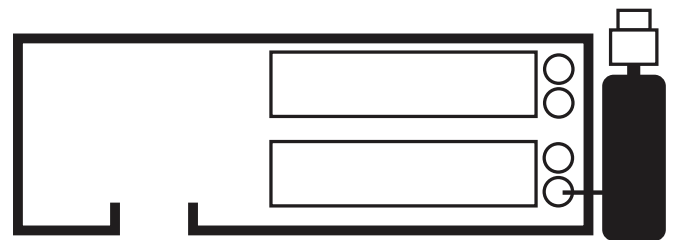


Figure 2. The truck remains outside the farm perimeter.

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