MANAGING AFLATOXIN-CONTAMINATED FEEDSTUFFS IN SWINE

By Hyatt Frobose, Kansas State University

Background…

Aflatoxin is a toxic metabolite produced by *Aspergillus flavus*, commonly associated with ear rot fungus in corn. This fungus thrives when hot, humid conditions are present during the grain-filling period.

The effect of feeding diets containing aflatoxins to pigs depends on both the age of the pig and the concentration of the toxin. Short-term, low level exposure may have minimal effects such as reductions in feed intake and immune suppression. However, feeding aflatoxins at high levels or longer time periods can cause the toxin to build up in body tissues and can result in increased mortality.

Keep in mind that aflatoxins are also carcinogenic and can be transmitted from lactating sows nursing pigs via the milk. Additionally, aflatoxin-contaminated diets need to be withheld prior to slaughter to prevent the toxin from being deposited in meat.

Maximum Tolerable Levels…

Nursery pigs (less than 50 lbs)…… < 20 ppb

Gestating and lactating sows…… < 100 ppb

Growing-finishing pigs…….. < 200 ppb

Late-finishing pigs…… < 20 ppb

Grain Management Tips…

- A black light has been used to detect aflatoxins in grains. If the black light reveals a bright greenish-yellow fluorescence, the grain is most likely contaminated and should be sent for laboratory analysis. While this method is easy and low-cost, there is a high probability of false positives and negatives and therefore it cannot be used as a definitive test.
- Aflatoxin analyses can be conducted at most commercial or university veterinary toxicology laboratories. Be sure to collect samples from multiple sites to send a representative sample.
- Blending is the simplest method to deal with contaminated corn for on-farm use. Contaminated corn can be blended with clean corn to reduce aflatoxin to an acceptable level.
- If possible, screening damaged kernels before storage can reduce toxin levels by up to 50%.
- Fungal growth can continue even after harvest if the corn is stored improperly. Ideally, store contaminated grain at less than 15% moisture and proper aeration will limit further growth.
- If aflatoxins are present, adding propionic acid at 0.5% prior to storage can limit additional growth. However, this addition will not affect the aflatoxin already present in the grain.
- Closely monitor levels of aflatoxins in DDGS. Toxins are approximately 3 times as concentrated as in the original corn source.

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Feeding Recommendations…

- Save clean corn (less than 20 ppb) for nursery pigs and lactating sows. Direct corn containing over 20 ppb to growing-finishing pigs apart from those in late-finishing.
- Diets containing up to 200 ppb of aflatoxin can be fed to growing-finishing pigs although performance reductions up to 10% can still be expected.
- When forced to feed diets containing aflatoxin above recommended levels, consider adding one of several flow agents/pellet binders to offset growth reductions. These can lessen the effects of aflatoxins by reducing their absorption in the pig's digestive tract.

Feed Additives…

- Hydrated sodium calcium aluminosilicates (HSCAS), sodium bentonite (or bentonite clay) and calcium bentonite have all shown benefits in multiple published research trials.
- While the cost of each product must be taken into account, HSCAS have shown the most consistent response. Bentonite clays can vary widely in quality which may limit effectiveness.
- At inclusion rates of 0.5% (10 lb/ton) in the final diet, these feed additives have the potential to reduce the negative effects of aflatoxins (up to 3 ppm) by 60 to 90%.

Examples of commercially-available products:

HSCAS	**Sodium bentonite**	**Calcium bentonite**
Novasil Plus®	***Volclay 90®*** or	***AB20®***
BASF Corporation	***Volclay FD-181®***	Prince Agri Products, Inc.
1.973.245.6000	American Colloid Company	1.217.222.8854
1.800.526.1072	1.847.851.1700	www.princeagri.com
www.basf.com	1.800.426.5564	
	www.colloid.com	

There are numerous other flow agents and anti-caking agents that may provide similar benefit to the products listed above. Those listed above have been effective in multiple research trials.