

Mycotoxins in swine

By Dr. Darwin Kohler

The issue of mycotoxins in corn is usually not an area of concern for most corn producers if they simply sell their corn. It can, however, be of great concern for swine producers. Mycotoxins are produced as secondary metabolites during fungal metabolism and can cause potential problems in ingredients used in foods or feeds. This mold growth can be triggered by temperatures, moisture, insect damage, harvesting, and drying conditions. It is important to note that the presence of mold growth doesn't always mean there are mycotoxins present. Likewise, mold counts may be low but toxins could be present. Mycotoxins produced from molds can cause detrimental effects on pig growth and reproductive performance when fed in their diets.

Those of greatest concern for swine production are aflatoxin, zearalenone, deoxynivalenol (DON, also known as vomitoxin), fumonisin, and T-2, with zearalenone being the most common one I see. The effects of delayed heats, false heats, vulva swelling and in some cases abortions are often quite apparent.

Testing for mycotoxins in grain or feed

Due to the diversity of structure and function of the various mycotoxins, analyzing grain or feed samples for mycotoxins involves specific tests for the mycotoxins of interest. It is important to point out that after suspected clinical symptoms of mycotoxicosis are observed in animals and it is suggested to take a feed or grain sample for testing, the contaminated grain may have already been consumed and a "new batch" of grain may have arrived.

In Table 1, a summary of specific symptoms of mycotoxicosis are listed along with cautionary dietary levels of each toxin. These cautionary concentrations shown indicate levels of concern and are simply guidelines.

Table 1. Major symptoms and suggested cautionary levels in diets for pigs.			
Mycotoxin	Crops commonly affected	Major symptoms	Cautionary Levels
Aflatoxin	corn, peanuts, cottonseed	Reduced weight gain and feed intake, liver damage, systemic hemorrhages, thymic atrophy, reduced immunity	0.02 ppm
Zearalenone	corn, wheat, barley, rye	Hyperestrogenism, reduced reproductive performance, infertility	0.5 ppm
Vomitoxin (DON)	corn, wheat, barley, rye, oats	Reduced feed intake, feed refusal, vomiting, reduced body weight gain	1.0 ppm
Fumonisin	Corn	Reduced body weight gain and feed intake, liver disease, pulmonary edema	5.0 ppm
Ochratoxin	barley, oilseed crops	Reduced weight gain and feed intake, kidney dysfunction, increased water consumption, polyuria, reduced immunity	0.2 ppm
T-2	wheat, barley	Reduced body weight gain and feed intake, dermatitis, necrosis of lymphoid tissue, reduced sow fertility	0.5 ppm
These levels indicate levels of concern and are simply guidelines			
Adapted from van Heugten, 2001			

*Ask your feed representative how to control mycotoxins in your swine enterprise.