

Feed Toxicity Reviewed

GEORGE F.W. HAENLEIN
Extension Dairy Specialist
University of Delaware

When Aflatoxin-Containing Feeds Are Fed

Alarming reports about farm milk being condemned in several areas of the United States have come to my attention recently: "Texas study finds aflatoxin worst in 5 years; 40-60% of samples exceed safe levels, some as high as 2,000 ppb." One ppb (part per billion) is 1 microgram per 2.2 lb grain, or one 28,350,000th of an oz. per 2.2 lb. grain.

Another trade journal reports that producers with tests of less than 20 ppb will be able to sell their corn at prevailing market prices, while those with tests of 20-100 ppb will be docked 10 cents/bu. For levels in the 100-300 ppb range, there will be a discount of 30-50 cents/bu. as much as \$18.5 million worth of corn in one state alone will not be marketable at all, with the total loss predicted at more than \$30 million.

Even more disconcerting is another recent study which shows that aflatoxin and all the undesirable molds in the mycotoxin family are not only a frequent problem in Southern states, where it is often warm and humid and ideal for mold growth, but also a persistent concern in Midwestern states. In Nebraska, Minnesota, Iowa, Illinois, Indiana, Michigan and Ohio, the study found 1 in 4 samples to have mycotoxin levels.

Not too many years ago here on the Delmarva peninsula we also experienced weather conditions that produced detectable mycoto-

xin levels on corn. And corn is not the only crop affected. Peanuts have long been a problem, depending on the kind of storage, as has cottonseed. Though greatly underestimated, our corn silage on the peninsula, especially in the big horizontal bunkers, often has a lot of mold growth on the surface as secondary invasion following opening and improper loosening of the silage's surface. Few people have a thorough appreciation of the hidden menace these molds carry for farm animals and people.

Symptoms of aflatoxicosis are several, depending on the level: abortion, repeat breeding, drop in milk production, reduced feed intake, nasal discharge and runny eyes, scours, mastitis, unthrifty calves and even death. Adult cattle may recover in many cases, but calves can be affected longer.

It is difficult to guess which grains or feeds have mycotoxin levels. Unlike the non-toxic, even beneficial, green or white molds that we know from penicillium, for example, or from Camembert or Danish blue cheeses, the mycotoxin molds generally require so-called blacklight testing or chemical analyses in a specially equipped laboratory. And not all levels are seriously bad. For lactating cows (and dairy goats probably, too) a safe level in the daily ration must be less than 20 ppb. For yearling heifers the safe level may be up to 100 ppb. Prolonged feeding will be a problem.

Recent guidelines from the University of Georgia indicate that corn with mycotoxin levels to some extent can, for instance, be

used. When aflatoxin levels exceed 200 ppb, serious consideration should be given to ammonia treatment of the corn in order to detoxify aflatoxin. Estimated cost for treatment with ammonia, anhydrous or aqua ammonia a few years ago was 12-15 cents/bu to reduce aflatoxin levels to where it can be fed. Georgia Extension Bulletin #869 gives details. Ammoniated corn will be golden to dark brown in color and will be eaten readily by dairy cattle.

Safe levels of feeding can be calculated by changing proportions of safe and unsafe grains in a concentrate mixture. Corn with 100 ppb aflatoxin mixed at 800 lb/ton with concentrates will test only 40 ppb, bringing it down to the maximum allowable level of 20 ppb, if the concentrates make up no more than 50% of the daily dry matter feed intake of dairy cattle, and that safe hay and silage make up the other 50%.

For 80 ppb aflatoxin corn, 1000 lb could be used in a concentrate mixture resulting in 40 ppb, and still giving only 20 ppb safe levels when intake remains 50%. If cows are eating 20 lb of that concentrate mix and 25 lb of dry matter from silage and hay for a total of 45 lb daily intake, then the cows would be getting 20 lb times 40 ppb divided by 45 lb for a total of 17.7 ppb in the entire ration per day. However, if the same cow ate 25 lb of that concentrate mix, then she would increase her daily intake up to 22.2 ppb. If you want to feed corn with a 500 ppb level for a short time to heifers, for example, at a level of 100 ppb,

then 100 ppb divided by 500 ppb results in a 20% limit of such corn to be used in a total ration.

Other strategies include specific silicate salts of calcium, sodium and aluminum that can reduce aflatoxin effects by binding and excreting in the feces after they have been mixed with the concentrates at 1% (20 lb/ton) and consumed at 0.2 lb/cow/day. The costs may be around \$8/ton.

Now that corn has been harvested, close attention must be given to correct bin management. Air must be circulated to keep moisture below the magic 12%, the point at which molds love to grow. When outside air temperatures are 10 degrees Fahrenheit or more below grain temperature, then air again must be circulated until temperatures are closer

together. Humidity must be held below 65% to prevent moisture addition to the grain. Aeration should not be used when grain temperatures are below outside temperatures. Again, a Georgia Extension Bulletin (#712) gives details.

If you suspect mycotoxins in your feeds including silages this fall and winter, don't panic. Have the feeds tested in a reliable lab before you feed them, and adjust your ration intake per cow and heifer below the unsafe levels to protect the health and reproductive efficiency of your animals. This will ensure their profitability for you as well as produce safe milk for human consumption, because certain molds are found as metabolites in milk.

Ag Offices Move To New Location

SUNBURY (Northumberland Co.) — The offices of the Northumberland County Conservation District, USDA Soil Conservation Service, and the USDA Agricultural Stabilization and Conservation Service recently moved to a new location.

The three offices moved from their old location on Route 61 to new facilities on Plum Creek Road, RD 3, Sunbury. Plum Creek Road is located just off Route 890, 1.1 miles south of the Route 61-Route 890 intersection. The new office is 0.7 miles east of the Route 890-Plum Creek Road intersection.

The new mailing address for all three agencies is RD 3, Box 238-C, Sunbury, PA 17801. Phone numbers have not changed.

Farmland Saved

HARRISBURG (Dauphin Co.) — The Pennsylvania Agricultural Land Preservation Board last week approved a plan to save prime farmland in Franklin County and authorized the purchase of easement rights on a Chester County farm.

The board approved an easement purchase for the Janet and David Mast farm in Chester County, bringing to 21 the number of farms preserved under the state program. Another four farms in Lancaster County and one in Chester County were protected through easements purchased exclusively with county funding.

Located in West Nantmeal Township, the 109-acre Mast family farm produces wheat, corn and soybeans.

Pennsylvania now has 2,082 acres of prime farmland permanently protected from development.

DAIRY FARMERS!!

JOIN



NOW

**WE WANT TO IMPROVE YOUR INCOME--
DON'T WAIT UNTIL IT'S TOO LATE!**

**COME TO ONE OF THE FOLLOWING MEETINGS
TO FIND OUT HOW YOU CAN HELP:**

THURSDAY, DECEMBER 13, 1990

**1:00 PM HOFFMAN COMMUNITY BUILDING
QUARRYVILLE, PA**

**7:00 PM HONEYBROOK GRANGE HALL
RT 10 SOUTH
HONEYBROOK, PA**