County Agent News Dan Folske October 3, 2016

## What to do with High VOM Grain



High VOM levels in both spring wheat and durum has further reduced the value of this year's crop when prices are poor already. In many cases VOM levels are high enough to make the crop almost unmarketable.

What is VOM? Vomitoxin is a term commonly used for Deoxynivalenol (DON), which is a mycotoxin that may be produced in wheat, durum, and barley grain infected by Fusarium head blight (FHB) or scab. FHB may infect grain heads when

Source: www.ag.ndsu.edu Fug

wet or humid weather occurs during the flowering and grain filling stages of plant development. The occurrence of FHB does not automatically mean that DON is present, but a high level of scabby kernels in the harvested grain means DON will likely be present. However, levels of DON do not necessarily correlate with levels of physical damage in grain.

FHB infection during very early kernel development can reduce yield by decreasing kernel numbers. Slightly later infections cause shrunken, chalky white or discolored scabby kernels, which often are referred to as tombstones. Kernels infected late in their development by FHB may show no visible damage, but still have elevated levels of DON.

The concentrations of DON in grain are expressed as parts per million (ppm). One ppm is equivalent to 1 pound in 1 million pounds or 1 wheat kernel in 80 pounds of wheat. A Canadian study of FHB infected wheat kernels conducted a number of years ago found an average level of 1 to 1.2 ppm of DON in normal appearing kernels, 2 to 5 ppm in shriveled kernels, 174 ppm in white tombstones, and 274 ppm in pink tombstone kernels. The majority of the DON is present in the seed coat or bran in wheat and the process of milling wheat into white flour or durum semolina typically results in the reduction of DON by approximately 50 percent.

High levels of vomitoxin can cause digestive upsets in people and non-ruminant animals. It can also affect flavors in foods and processing performance and cause feed refusal and poor weight gain in some livestock if fed above the advisory levels. While grain with vomitoxin would have to be ingested in high amounts to pose a health risk to humans, the Food and Drug Administration has established a limit of 1 ppm for DON in finished grain products for human consumption. However, individual millers or food industries may have stricter requirements than 1 ppm. Most export markets also have specifications built into their purchase agreements to limit DON levels. The typical standard is 2 ppm maximum for whole grain but some countries have advisory levels as low as 0.5 ppm. Because of these factors, grains infected with vomitoxin are often subject to market discounts. Market reaction to DON levels can vary depending on which market elevators are selling into, how much of their local draw area was affected and the availability of blending stocks.

But I used a fungicide! Fungicides are a useful tool for managing fusarium head blight (scab) but research shows that the best applications of available fungicides provide about a 50% reduction in VOM levels. In most years that might drop grain from 4 ppm to 2 ppm or from 3 to 1.5. However in years of extremely high VOM even a 50% reduction still leaves VOM levels so high that grain can be unmarketable.

What do I do with the grain? Grain with VOM will eventually move into normal marketing channels although there will be significant discounts and producers may need to store the grain for long periods of time before it can be sold. When VOM levels are over 10ppm crop insurance may consider the grain to be of zero value and pay producers crop insurance based on zero yield. If a producer accepts this determination they will be required to destroy the crop. If a producer does not accept this determination there are some possibilities of marketing the crop as feed but they are very limited.

Poultry and cattle can tolerate some VOM in their diets. The Food & Drug Administration advises a limit of 10ppm in the grain and a maximum of 5 ppm in the diet for these species. Research conducted in North Dakota and Minnesota has suggested growing and finishing cattle can tolerate higher levels (up to 18 ppm based on research at the Carrington Research Extension Center). Wheat and durum should not be fed at high levels anyway so blending down to a 5 ppm level for the diet is not difficult.



Source: www.ag.ndsu.edu

Another consideration may be to clean the grain. FHB blight affects the kernel in a variety of ways that may permit the scabby kernels to be removed from good quality wheat to reduce the DON level. The kernels may be deformed enough that they can be removed by screening. The kernels typically have a lighter test weight, so the very light kernels can sometimes be removed by airflow. However, the best seems to be to sort and clean by density with a gravity table. The amount of scabby grain and the amount of wheat lost during cleaning is different for each lot of grain, so a small quantity would need to be cleaned to determine how effective cleaning would be in reducing DON levels and the economics of the cleaning operation. Unfortunately in terms of the ability to reduce DON by cleaning, DON levels this year seem to be high in samples without visible damage. Market thresholds can play an important part in determining to clean or not to clean. If you can drop VOM levels into lower discount categories by cleaning it can easily pay the cost of cleaning and the volume lost by cleanout.

Is the straw a concern? VOM is sometimes present in the straw and in unthreshed or partially threshed heads contained in the straw. If you want to grind, mix and feed the straw as part of a mixed ration it should be checked for VOM but using the straw for bedding should not be a big concern unless cattle were being under fed forcing them to consume large amounts of the straw.