Mycotoxin Analysis

A resource for Vermont’s Grain Growers

Ann Hazelrigg,
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FUSARIUM HEAD BLIGHT OR SCAB

- *Fusarium graminearum*
- Overwinters on stubble-corn, wheat
- Blows in
Warm, humid conditions at flowering
White shrivelled “tombstone” kernels
Mold Growth in Grains:

- Change grains’ color, consistency, and smell
- Make grains undesirable to livestock/humans
- Decrease fat, protein, and vitamin content, leading to nutritional deficiencies in livestock
- Mold growth can also lead to mycotoxin contamination.
MYCOTOXINS

- Toxins or chemicals produced by certain groups of fungi
- Not all fungi produced toxins
- Toxins are produced under a certain set of conditions
- Just because the fungus is present, doesn’t mean the toxin has been produced.
- Can’t smell, taste or see if mycotoxins are present
ARE ALL TOXINS HARMFUL?
• Aflatoxin-most harmful toxin
• Penicillin-harmful to fungi/bacteria
• Harmful ones include: aflatoxin, deoxynivalinol or DON, ochratoxin, fumonisin, T-2 and zearalenone
Deoxynivalenol (DON) or Vomitoxin
• Toxin produced by *Fusarium graminiarum*
• Wheat, corn, barley and ensilages
• Vomiting, feed refusal, gastroenteritis, diarrhea, immuno-suppression and blood disorders
• DON-human consumption 1ppm in finished wheat products. (Cows/chickens 5ppm total diet.)
• Important to test if using grain for flour.
DON testing

- Take representative sample-1 quart ziplock bag as harvesting
- Send check made out to UVM for $20.00 from July 1-December 1 (higher prices at other times)
- Sample must be clean with no rocks
- Quick turn around
Mycotoxin Veratox 2/3
.5 to 5 ppm

Fall results-
• variable depending on variety and location
• Range was 0 to 4.1 ppm
Plant Diagnostic Clinic

- Resource for growers for disease, weed and insect identification
- Send samples to Ann Hazelrigg, Plant Diagnostic Clinic, Hills Building or Jeffords Hall, UVM, Burlington, VT 05405.
- Ann.hazelrigg@uvm.edu
- http://www.uvm.edu/pss/pd/pdc/
- 656-0493
What is a PPM?

“One part per million” is a lot to think about. Here are some facts that put 1 ppm into perspective.

• There are approximately 13,960 kernels of wheat in 1 pound. One kernel in 71 pounds is equal to 1 ppm.
• There are approximately 3,500,000–4,000,000 grains of sand per pound. If you take 4 grains out of the pound you have removed 1 ppm.
• There are 2,678,400 seconds in August. In the time it took to read this, approximately 10 ppm has gone by.
• “One part per billion” is 1,000 times smaller than 1 ppm. For example, one second in 32 years is 1 ppb.