

# NEWS *from* NEOGEN

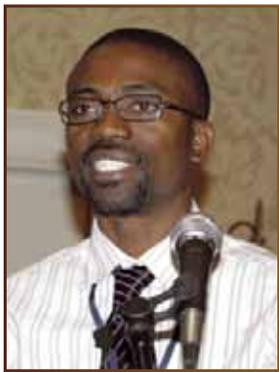
FOR THE MILLING, GRAIN  
AND ETHANOL INDUSTRIES

NEOGEN CORPORATION  
a Leader in Food Safety Solutions

## Mycotoxin Impacts on Animals

Neogen chats with Dr. Chidozie Amuzie, DVM, Ph.D.

Michigan State University Department of Pathobiology and Diagnostic Investigation



**Neogen:** What types of mycotoxin research does your lab conduct?

**Dr. Amuzie:** We are conducting research on the use of biomarkers to indicate the effect of mycotoxins on animals. The most consistent indices of effect are cytokines—which are proteins that cells use to communicate with each other. We have seen an increase in cytokines from DON and others have reported

similar changes with aflatoxin. Both mycotoxins have been associated with forms of growth reduction/growth faltering. We have determined that in growing mice, cytokine increase is associated with a growth deficit and reduction in circulating growth-associated proteins.

**Neogen:** Why is this research important?

**Dr. Amuzie:** Mycotoxins, specifically aflatoxin, have been shown to impair growth rates in humans as well as livestock. If we can get a better understanding of the effect pathway of mycotoxins and the relevant concentrations of concern, we will be better able to assess animal and human safety. Currently we don't have as much knowledge about the effect of mycotoxins in chronic low-dose levels. We understand what can happen at extreme levels but low to mid levels we really don't have a good understanding. We also don't have a good understanding of the effects of other mycotoxins that are present at the same time in low concentrations. For instance, in various research observations it has been evident that other mycotoxins were impacting animal performance even though DON levels were considered relatively low.

The use of biomarkers of effect will allow the industry to determine when mycotoxins become a concern as well as identify the current mycotoxin exposure. This information could then be used in an iterative fashion, to refine mycotoxin regulations/guidance and enhance animal and human safety.

**Neogen:** Have there been any studies on the new grain-based co-products and by-products that the feed industry is using, like DDGS?

**Dr. Amuzie:** A few years ago there was a lot of interest in studying DDGS for optimal feeding levels. I think the interest is still there. However, neither I nor anyone known to me are actively performing studies in this area.

**Neogen:** How does the concern about mycotoxins vary between underdeveloped countries and developed countries?

**Dr. Amuzie:** As I said before, aflatoxin and other mycotoxins have been shown to impair growth in humans and animals due to elevated cytokine levels. Growth “faltering” has been reported in African countries. My sense is that the human population in developing countries is at increased risk due to monotonous diets, poorer quality grains and inadequate food supply. In addition, the concern for mycotoxins in some developed countries is based on other factors, such as resorting to the lowest precautionary concern level. The perception of risk due to mycotoxins is inherently tied to sociopolitical and economic realities in developed countries. Since the science on mycotoxins is similar across countries, the regulatory differences across countries is, in my view, a reflection of risk perception/management differences. Unfortunately, these differences can and do create trade barriers.

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#### Related Websites:

- U.S. Wheat and Barley Scab Initiative, Fusarium Focus: [scabusa.org](http://scabusa.org)
- U.S. National Library of Medicine: Research papers by Dr. Amuzie [www.ncbi.nlm.nih.gov/pubmed?term=amuzie percent20cj](http://www.ncbi.nlm.nih.gov/pubmed?term=amuzie+percent20cj)
- MSU Department of Microbiology & Molecular Genetics: [www.mmg.msu.edu/about-microbiology.html](http://www.mmg.msu.edu/about-microbiology.html)
- Society of Toxicology newsletter: <http://www.toxicology.org/ai/pub/SP11/SP11.asp>

Dr. Chidozie Amuzie is an instructor/resident in Michigan State University's Department of Pathobiology and Diagnostic Investigation. Dr. Amuzie earned a double major Ph.D. from

Michigan State University in Comparative Medicine and Integrative Biology, and Environmental and Integrative Toxicological Sciences. He also received a DVM from the University of Nigeria. Dr. Amuzie is a member of the American Association for the Advancement of Science, Society of Toxicology, Society of Toxicologic Pathology, and African Society for Toxicological Sciences. Dr. Amuzie has the distinction of being awarded the 2009 McClellan Award for his research. Dr. Amuzie's extensive experience includes over 10 co-authored peer reviewed papers on mycotoxins as well as presentations at U.S. and Canadian Fusarium Head Blight Forum, California Animal Nutrition Conference and others.

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## July 2011 grain crop summary and quality report

The 2011 growing season has been very challenging, and in many ways it is starting out like 2009.

- Much of the **corn** planting was late due to very wet fields across major growing areas. In addition to delayed planting, the cooler than normal soil temperatures have slowed corn's emergence. June brought warmer temperatures and corn development is progressing.



The USDA reported that corn acres are 6 percent behind last year. Also, the severe flooding along the Mississippi and Ohio rivers early this year cut corn acres and production.

Many commodity market observers are nervous with low carryover stocks and the prospect of reduced acres and lower yields. The stock-to-use ratio is the third lowest low level since 1926. Significant global demand for corn may push prices even higher and any quality concerns will impact markets further.

- The **wheat** crop is also under significant pressure from extreme weather: Too wet in the east and too dry in the west. Southwestern Kansas, Oklahoma and much of Texas have been plagued by drought in 2011.

Much of the wheat is already headed out and may result in below-average yields. In the eastern corn-belt where winter wheat is grown, the very wet spring has raised serious concern for scab (FHB) and the potential for vomitoxin (DON) is quite high in Ohio, Michigan, Kentucky, Pennsylvania, Indiana and Tennessee.

The USDA reports that over 41 percent of the wheat acres are

rated "very poor or poor" at this time. Winter wheat is nearly headed out which is in line with last year and the five year average. Both spring wheat and barley planting were behind this year. Barley acres were late, especially in North Dakota, but were progressing in June.

- **Soybeans** also are running late with 8 percent in bloom, down 10 points from the five-year average.

The stock-to-use ratio for soybeans is below earlier projections, putting pressure on the protein markets.

- **Rice** development is near its five year average at only 2 points behind the five-year average and the outlook for production is improving.

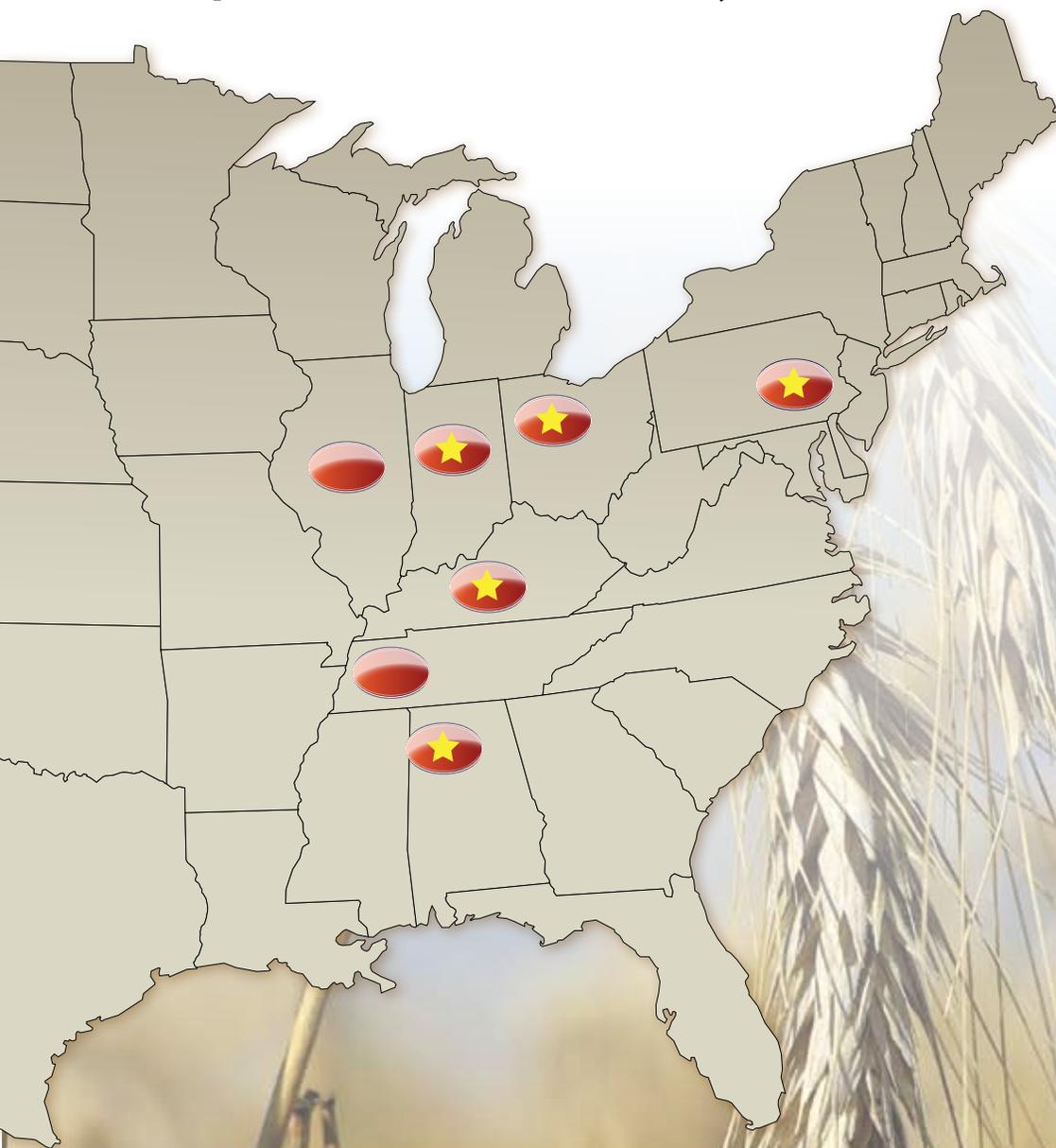
Many of the major trends in grain consumption are anticipated to continue in 2011, such as nearly 40 percent of total U.S. corn production being used for ethanol. The resulting production of DDGS for both domestic use and export markets is growing, with higher inclusion rates in feed.

High energy prices causing high grain and feed prices will continue to pressure livestock producers for the foreseeable future.

Quality concerns for stored grain remains an important factor to monitor in these uncertain times. When grain prices rise, inventory shrinkage or deterioration in quality becomes even more significant so testing grain for heat damage, mold, infestation and mycotoxin presence is critical. A number of studies show that the synergistic impact from various mycotoxins can have serious effects on livestock.

Our milling, grain and feed experts can provide a number of resources to help answer your quality questions. For more information, please contact our sales team at **800/234-5333**.

# DON Report for Wheat and Barley



Current map represents crop conditions as of July 11, 2011

 Areas of concern for DON potential in soft winter wheat. Possible scab, blight or other damage characteristics may be present.

 Confirmed levels of DON in new crop winter wheat.

Alabama: Early reports showing detectable levels less than 2 ppm

Kentucky: Early harvest < 1 ppm

Indiana: 1–8 ppm

Ohio: 2–10 ppm

Pennsylvania: up to 6 ppm

Neogen compiles mycotoxin reports from numerous third party sources and develops a map showing key areas impacted by aflatoxin, fumonisin and DON in grains. A current sample map like this one is available at no cost or obligation, as well as our Mycotoxin Handbook. **Note:** Outbreak areas are continuously updated from various sources and subject to variability. Please contact us to receive regular updates as close and convenient as your inbox: **800/234-5333** or **foodsafety@neogen.com**.

## LINKS

*for further reading*

- Current crop and weather reports from the USDA:  
[www.usda.gov/oce/weather/pubs/Weekly/Wwcb/index.htm](http://www.usda.gov/oce/weather/pubs/Weekly/Wwcb/index.htm)
- DON-FHB predictions in the upcoming wheat crop:  
[www.scabusa.org/?id=26](http://www.scabusa.org/?id=26)
- Article from the Southeast Farm Press about aflatoxin risks from late corn planting:  
[www.southeastfarmpress.com/grains/late-planted-corn-may-trigger-more-aflatoxin](http://www.southeastfarmpress.com/grains/late-planted-corn-may-trigger-more-aflatoxin)



## We have your mycotoxin testing solutions

Neogen offers an array of natural toxin test kits to detect aflatoxin, deoxynivalenol (DON), fumonisin, ochratoxin, T-2/HT-2 toxins and zearalenone. Each provides results in minutes, and requires only a minimal amount of training and equipment.

# NEWS *notes*

## Neogen's BetaStar® Plus dairy antibiotic test approved by FDA/NCIMS

Neogen has received approval from the FDA and National Conference on Interstate Milk Shipments (NCIMS) for its quick and easy **BetaStar® Plus** assay, developed for use in the United States to detect dairy beta-lactam antibiotic residues, including ceftiofur, in milk.

This approval allows milk producers and processors in the U.S. to use Neogen's new test to comply with FDA regulations that require the testing of raw milk tankers for dairy antibiotic residues.

BetaStar Plus is an extremely simple dipstick test that requires only minimal training and equipment to produce consistently accurate results. It detects penicillin, ampicillin, amoxicillin, cephapirin, ceftiofur and cloxacillin at or below U.S. FDA regulatory levels.

Neogen's other solutions for the dairy industry include: rapid milk allergen tests, rapid food-borne pathogen and indicator organism tests, an unequaled sanitation monitoring ATP system, a full line of cleaners and disinfectants, rodenticides, and animal care instruments, including needles and syringes.



## Neogen's Milling & Grain Group Welcomes New Team Member

We are excited to introduce Erica Mroczek as a New Territory Development Sales Representative.

Erica graduated from Michigan State University last year with her Bachelor of Science degree in Food Industry Management and brings a great perspective to our sales division, said Pat Frasco, Director of Milling & Grain. Her educational background in food production systems, Ag Econ, supply chain management and commodities will help her assist customers on quality issues impacting their business.

She will focus on developing new customer relationships across the spectrum of companies we serve in the milling and grain industry including business that focus on grain, feed, milling, ethanol and grain inspectors. Additionally, Erica will provide customer service and technical support to customers calling Neogen.

Welcome to Erica!



Mroczek

## Upcoming trade show

Come see our Milling & Grain Team at this upcoming show:

- **NGFA Country Elevator Conference and Trade Show**  
Dec. 11-13, 2011 • Chicago Marriott Magnificent Mile

## GRAINS OF TRUTH

*"You can't build a reputation on what you were going to do."*  
—Henry Ford



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