

Mycotoxin

Insider

Experts in the Field

2018

Neogen: Your Trusted Partner

04

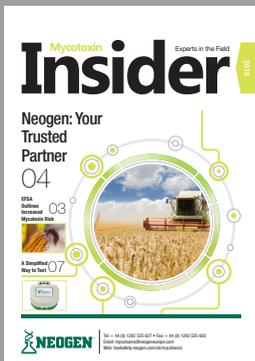
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EFSA
Outlines
Increased
Mycotoxin Risk



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A Simplified
Way to Test



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First Microwell Test for Aflatoxin with Aqueous Extraction

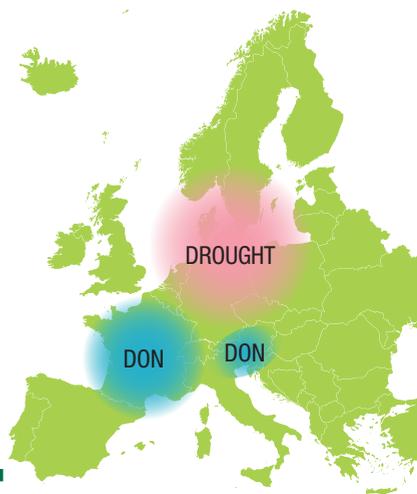
Take a look at the Veratox® MAX for Total Aflatoxin Test

Welcome

It's harvest time, and we are back with another instalment of Mycotoxin Insider

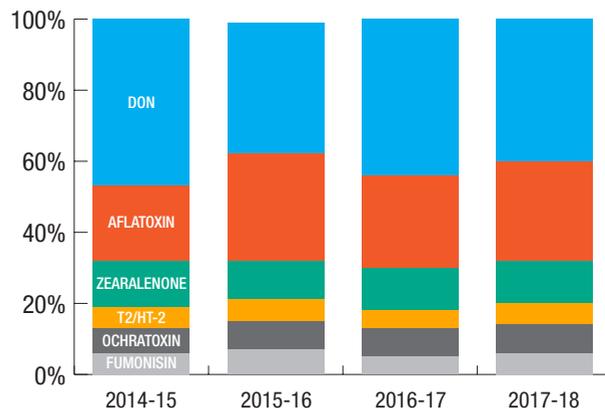
Climate change is having a bigger impact on the cereal industry, with parts of Europe battling with extreme drought, while other regions are experiencing an increase in mycotoxin contamination, especially DON, due to a wet, early summer.

In this issue we look at the prognosis of the European Food Safety Authority on future mycotoxin risks, outline the benefits of having an established mycotoxin testing partner, and provide you with helpful information to support you in your mycotoxin testing. We also look at a new reader for mycotoxin analysis, as well as a Total Aflatoxin test with water-based extraction. We hope you enjoy this issue! ■



Mycotoxin Analysis Trends

Mycotoxin occurrence in Europe, Middle East and Africa (EMEA) 2014 – 2018



Figures taken from Neogen mycotoxin analysis information from June 2014 until May 2018

European Food Safety Authority Outlines Increased Mycotoxin Risk



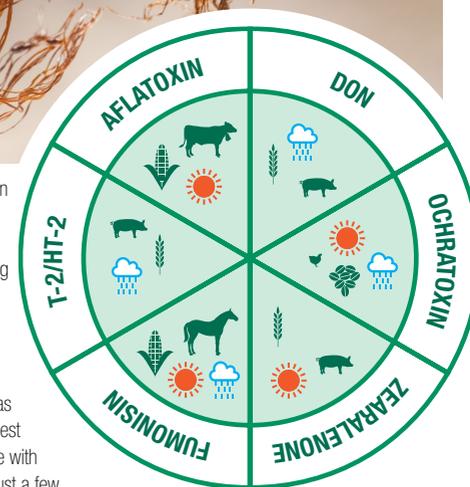
As the climate in significant parts of our planet becomes increasingly hot and wet, experts are advising that we'll see changes in the development and prevalence of mycotoxins.

The European Food Safety Authority (EFSA) has reported that the gradual increase in temperature seen on the continent in recent decades, along with higher concentrations of carbon dioxide in the air and changing rainfall patterns, is leading to increased amounts of mould in regions that previously were not as greatly affected.

Aflatoxin is one such mycotoxin that has become a big deal during the warm,

humid summers of Southern Europe, especially in maize. As the weather in parts of Central Europe starts looking a little more like that of the south, experts are concerned that aflatoxin will become a bigger hazard there. Research by EFSA has shown that the likeliest highest risk of mycotoxins will come with a temperature increase of just a few degrees.

In the graphic above you can see the primary animals and plants affected by the six main mycotoxins, as well as the weather conditions in which these mycotoxins are most likely to develop ■



Read our full blog here: <http://blog.neogen.com/european-food-safety-authority-outlines-increased-mycotoxin-risk-in-parts-of-europe/>

Neogen: Your Trusted Partner

From test kits and training to expert advice and external lab services, it's important to know that your mycotoxin testing partner is with you every step of the way, through to results you can trust.

With over 30 years industry led experience, Neogen offers the total package to suit your mycotoxin testing needs. Our full range of solutions combines quality, performance, support and reactivity to help you test at all stages; from harvest, to storage to finished food and feed products.

But it is not only our testing solutions that make us a trusted industry partner: our teams can be

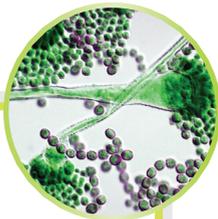
on site when you need them, and are backed by a support network of more than 200 employees within Research & Development, Technical Services, and Production, providing you with great customer service that you know you can trust. Whether it is a technical question regarding a test, or a validation query for a new matrix, our dedicated technical support team are available to help, and we have the capacity and experience to help when needed during outbreaks.

In addition, we have several other elements that can support you with your mycotoxin analysis, such as ring trials, mycotoxin reference material, and our contract laboratory services ■

Ring Trials

Mycotoxin testing is an essential tool for the cereal industry – but how do you make sure that your test procedures are effective?

Proficiency tests, or ring trials, for food safety are carried out for many types of analysis, including mycotoxins, and can help you verify the efficiency of your testing procedure and the precision of your results. Neogen offers a regular ring trial programme for the main regulated mycotoxins, allowing you to verify the accuracy of your testing procedure, to ensure you meet regulatory requirements ■



Mycotoxin Reference Material

Internal evaluation of your testing procedures is important within a comprehensive mycotoxin testing programme and to help, Neogen can provide Mycotoxin Reference Material (MRM).

Neogen's MRM is naturally-contaminated with toxins at different confirmed levels. Using this resource as part of training or internal verification programmes can help you to quickly and confidently evaluate sampling, extraction and testing techniques. These techniques are crucial in preventing false positives or negatives in mycotoxin testing, allowing you to provide high standards, without compromise ■

Testing Solutions

When it comes to mycotoxin testing, Neogen offers a comprehensive range of testing options to help you accurately test your samples and identify

mycotoxins. From rapid lateral flow tests to immunoaffinity columns, our experts can help you find the right solution to meet your mycotoxin testing needs ■



Lateral Flow Tests – Neogen's Reveal® tests are single-step lateral flow quantitative assays that provide results in minutes and only require minimal training and equipment. Our newly developed Reveal Q+ MAX tests utilise a water-based extraction method, eliminating the need for hazardous materials in your testing process benefiting both you and the environment.

- Easy to use
- Simple, safe, water-based extraction
- Fast test time: In as little as three minutes



ELISA Tests – Neogen's Veratox® for mycotoxins are quantitative microwell assays that compare up to 19 samples at a time against test controls. Through the use of a microwell reader, these tests provide accurate sample results in parts per million or parts per billion.

- Fully quantitative
- Low initial set-up costs
- Minimal training required



Immunoaffinity Columns – Neogen's NeoColumn™ range efficiently cleans and concentrates toxins prior to analysis by HPLC, fluorometric reader, or Neogen's Veratox test kits.



Contract Laboratory Services

New matrices, restriction of space and resource onsite, or regular verification may require the use of an external partner for mycotoxin analysis. In cases like these, Neogen's Contract Laboratory Services can offer you the additional resource or support you need.

Our laboratory services for the detection and verification of natural toxins use a variety of expert techniques and knowledge to suit a range of testing requirements with turnaround times to suit you. At Neogen, we offer alternative testing solutions when you need them, as well as confirmation or verification of your own onsite test results. Mycotoxin testing in our laboratory is available for the analysis of a wide variety of matrices using ELISA and PCR methods, with flexible turnaround times of same, three, five and ten days ■





WE'VE GOT YOU COVERED

Neogen's Contract Laboratory

Whether you are looking for a contract lab to carry out your full testing requirements, or simply looking for a partner to verify your own results, we are here to help!

Our laboratory offers flexible turnaround times, from five and three days to same day express. All results are fully confidential and carried out by our specialist team.

Contact us today to see how Neogen can help support your testing.

Tech Team's Top Tips

We have compiled a few of the most common questions we get asked in regards to mycotoxin analysis:

Is the particle size of a ground sample important?

Yes it is. Mycotoxins are embedded in different grain particles and need to be released so that they are properly extracted. For consistent results, samples should be fully ground to 0.5 mm and homogenised.



What's the difference between mycotoxin advisory limits and regulatory limits?

Advisory limits are just that; advisory levels set by experts within the regulatory community, advising on limits that would be agricultural best practices. However, being above those limits is not cause for a recall. This is different from a regulatory limit which the European Commission, FDA etc. can set in order to institute a recall if a particular foodstuff is over that limit. Users should be aware of regulatory limits where they are operating but also where they are exporting to.

What is the typical percentage CV of mycotoxin levels from rapid test kits?

10–15% CV or relative standard deviation is typical. But remember that test kits are only a portion of the total error contributed during analysis. Method variation also takes into account the technician, instrumentation or equipment itself, as well as sampling variability. These all come together as the total error for the method.



A Simplified Way to Test

The next generation of mycotoxin testing is here: **Raptor® Integrated Analysis Platform**

Neogen's new reader for mycotoxin testing has been developed taking into account users most requested wishes: a simplified workflow without additional input, flexibility to run various samples at once, and streamlined data transfer. The result is a powerful yet simple instrument that is key to improving efficiency in laboratory testing ■

Data Manager Software

Review test results and create reports on your computer

Workflow

Just add an extracted sample. Raptor starts and finishes the test on its own

Connectivity

Offers multiple modes of data transfer (USB, Wifi, Ethernet), as well as LIMS compatible file formats



Elimination of User Errors

Remove common errors with the automation of critical parameters like time and temperature

Scalability

Raptor can run up to 3 samples independently and simultaneously – like having 3 readers

Increased Productivity

Start a new test while another is already running

How do we know if an analyst is proficient?

As a check on their proficiency, analysts should participate in a proficiency programme. Neogen offers programmes that provide proficiency testing samples on a regular basis. These samples are tested as normal, and their results are then reported. The analysts' proficiency is then gauged against other users of that test method by determining how closely the analyst came to the correct answer, and the overall variability of the analyst's test results.

Does it matter how I sample?

One of the major problems with assessing the presence of mycotoxins in feed and raw materials is their uneven distribution, even within a single ear of corn. Different parts of the sample may contain different concentrations of mycotoxins and hotspots can occur. Sampling can account for up to 90% of sample to sample variation. There are different sampling guidelines depending on commodity and geographic regions. EC 401/2006 lays down the methods of sampling and analysis for mycotoxins in the EU.

How long is a sample valid for before running a test?

Because the mycotoxins in the sample aren't soluble for an infinite period of time, we typically recommend the analysis should be performed within 4 hours of extraction. Generally, this means that if it's extracted in the morning, analysis should be carried out before lunch, likewise if the sample is extracted in the afternoon perform the analysis before going home ■

If you have any other questions, please don't hesitate to get in touch with us using the contact details below

Product Feature: Veratox[®] MAX for Total Aflatoxin

The first microwell ELISA assay for Aflatoxin using water-based extraction

Neogen's Veratox MAX for Total Aflatoxin and Veratox MAX for Total Aflatoxin HS are the first microwell tests available for Aflatoxin utilising an aqueous extraction, an environmental- and user-friendly alternative to using harsh chemicals in your lab.



MAX-Water-Based Extraction

Most mycotoxins are not water-soluble, which historically required the use of harsh chemicals like ethanol or methanol in the extraction process. With our MAX aqueous extraction method you can eliminate these hazardous materials from your workflow – all you need to add is water.



Superior Cross-Reactivity

Both tests present superior cross-reactivity when compared to other available ELISA tests for aflatoxin, presenting the confidence needed that this test will detect any of the four main types of aflatoxin (B1, B2, G1, and G2).



Range of Quantitation

Veratox MAX for Total Aflatoxin can detect a concentration of 5-300 ppb with dilutions. The High Sensitivity version of this test, specifically developed to support companies in complying with the low regulation levels of the European Commission on aflatoxin, has a range of detection of 1-10 ppb.



About Aflatoxin

Aflatoxin is the most potent, naturally occurring carcinogenic mycotoxin, and maximum levels of aflatoxin in commodities are highly regulated by bodies such as the EU and the FDA. With no definitive method to eliminate this mycotoxin, regular and accurate testing in raw materials, feeds and food is the best protection against aflatoxin ■

We also offer comprehensive and innovative onsite testing and external laboratory solutions for:

- ✓ Allergens
- ✓ Marine Biotoxins
- ✓ Speciation
- ✓ Hygiene Monitoring
- ✓ Pathogens and Spoilage Organisms
- ✓ Traditional and Rapid Microbiology

Contact us today



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