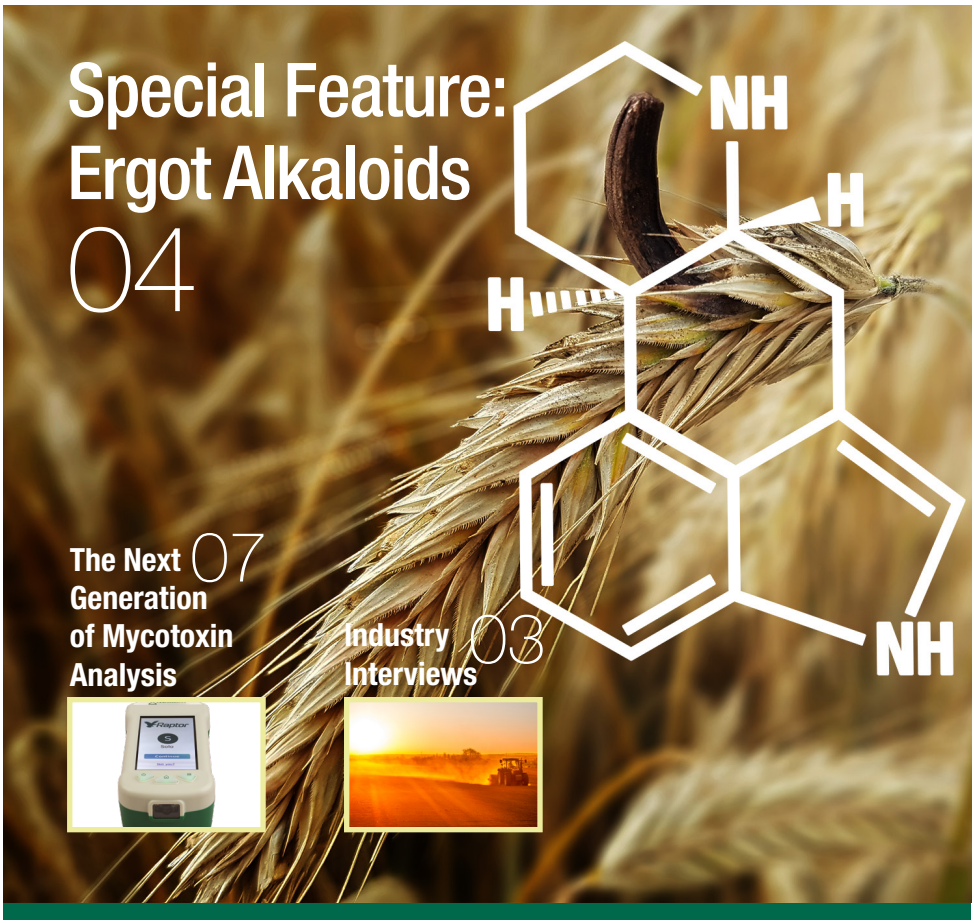
Mycotoxin

Insider

Experts in the Field

2019



NEOGEN®

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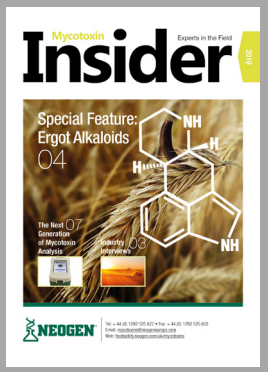

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Welcome

In this new Mycotoxin Insider we look at relevant news and updates affecting those in the cereal industry. With the EU expected to publish legislation on maximum levels of ergot alkaloids, well known toxins in grains, we have a special feature focused on these chemical compounds.

Also in this edition, we interview experts from French trade bodies Intercéréales and the FNA; we review which Neogen reader option might suit you best, and look at some upcoming mycotoxin events. We hope you enjoy this issue! ■

A Safer Way to Test

Mycotoxins are generally not water-soluble, which historically meant that harsh solvents like ethanol and methanol had to be used to properly extract these toxins from a sample. Now you can improve the safety of your staff and the environment whilst still ensuring the safety of your grains, cereals and products.

The innovative Reveal Q+ MAX range combines the latest testing technology with an aqueous extraction process that helps eliminate hazardous chemicals from your workflow. The result is a fast and easy-to-use lateral-flow test format with a safe and environmentally friendly water-based extraction.

Available for aflatoxin, DON, ochratoxin, T-2/HT-2 and zearalenone, the Reveal Q+ MAX tests only require minimal training and equipment, can be stored at room temperature, and provide accurate and reproducible quantitative results to help you maintain the quality standards of your products ■

Specifications of the Reveal Q+ MAX Tests for Mycotoxins

	Testing Time	Range of Detection*
Reveal Q+ MAX Aflatoxin	6 min	3-300 ppb
Reveal Q+ MAX Don	3 min	300-30000 ppb
Reveal Q+ MAX Ochratoxin	5 min	2-100 ppb
Reveal Q+ MAX T-2/HT-2	5 min	50-3000 ppb
Reveal Q+ MAX Zearalenone	5 min	25-1500 ppb

*range of detection with dilutions

To learn more about our Reveal Q+ MAX range, why not visit **foodsafety.neogen.com/uk/reveal-q-plus-max** or contact us at **neogen_emea@neogeneurope.com**

A Challenging Time for the European Cereal Industry

Intercéréales

The French cereal sector which represents 20% of the total agricultural production of France – the largest agricultural producer in Europe* – faces external as well as internal challenges. Insider speaks to Pascal Pusset and Bruno Barrier-Guillot, two experts from professional organisations within the French cereal sector who share their knowledge on what the future holds for the cereal industry in Europe.

"Production costs as well as environmental taxes and constraints, and the increasing importance of Eastern European countries mean the cereal industry is more challenging now than before", explains Pascal Pusset, Quality Manager at Armbruster Frères SAS and member of the Quality Commission of the FNA (Fédération du Négoce Agricole), an agricultural trade body within France. "Consumers are also pushing for an agriculture industry which is more environmentally-friendly which could shape consumer preferences in years to come."

According to Pusset, the impact of climate change is less of an immediate issue for France since it has diverse climate and crops. "We already have crop varieties genetically adapted to warmer or dryer weather for late harvest", says Pusset. "However, warmer temperatures could lead to the development of mycotoxins like aflatoxin and ochratoxin A in areas where there aren't any just now."

Ergot Alkaloid Regulations

Discussions on new regulations on ergot alkaloids are taking place within the European Union. These amendments are to apply to straw cereals such as oat, wheat, barley, rye. "We expect the regulations will have quite a strong impact on the cereal industry", explains Bruno Barrier-Guillot, technical and scientific director at Intercéréales, an organisation representing all professions of the French cereal sector. "Everyone will be concerned by it, from production to processing, especially in areas with higher levels of ergots."

Changes in regulation applying to tropane alkaloids are also in Brussels' pipeline, namely the introduction of regulatory limits for the level of the toxins mainly produced by genus Datura. "The new regulation will apply to summer cereals such as corn and sorghum –in which the presence of tropane alkaloids is increasing– and more specifically their use in all foodstuffs", says Barrier-Guillot. "These regulatory limits will mean the complete absence of Datura seeds in corn and sorghum before they can be processed."

Commenting on the 2019 harvest, whilst it is too early to predict anything definite, volumes are looking good following a soft winter, but frost and drought can still occur until harvest is due, warns Pascal Pusset ■

Neogen offers a comprehensive range of mycotoxin testing solutions in food and feed, why not contact us to find out more?

*European commission, Sept 2016

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What are Ergot Alkaloids?

Ergot alkaloids have been causing havoc with human and animal health for centuries. We take a closer look at these mycotoxins.

Did you know?
In 1938, Swiss biochemist Albert Hoffmann, derived Lysergic Acid Diethylamide from ergot alkaloids and then by accident discovered its hallucinogenic properties – the substance is now commonly known as the drug LSD

What are Ergot Alkaloids?

Ergot alkaloids are highly toxic natural toxins, produced as secondary metabolites of the fungi of the *Claviceps* genus, that commonly infects cereals and pasture grasses, particularly Rye. In Europe, the most common species of this fungus is *Claviceps purpurea*, which usually affects crops during wet and cool harvest periods.

The main characteristic of fungal infections with *Claviceps* are dark kernels that grow in infected cereal flowers, mimicking the grain, but often appearing larger and darker – they are scientifically known as ergot sclerotia. These kernels contain varying amounts of ergot alkaloids, which can enter the food chain if the sclerotia are not separated successfully from the healthy grain.

Did you know?
Over the years, more than 50 types of ergot alkaloids have been discovered

The nature of ergot sclerotia makes visual and mechanical screening methods possible, which are widely implemented. However, these methods might not always be enough to ensure that toxic ergot alkaloids are not present in the grain and products. Just a fraction of sclerotia due to breakage or inaccurate screening could contain a level of toxins high enough to produce adverse effects when consumed by humans or animals.

What are the Effects of Ergot Alkaloids?

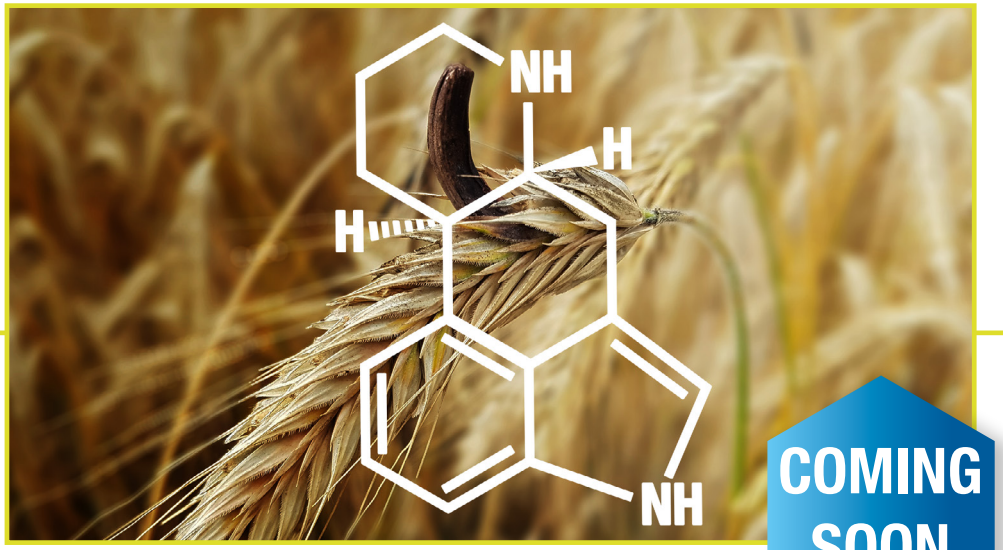
The ingestion of ergot alkaloids can cause ergotism in humans and animals, a disease that has been known in Europe since 857 AD, although it took until 1853 to discover its cause. During the Middle Ages, severe outbreaks of ergotism in Europe resulted in thousands of deaths. There are two forms: gangrenous ergotism and convulsive ergotism. The first is characterized by inflamed body parts with violent, burning pains, dry gangrene, loss of limbs and death. The second's symptoms include convulsions, tingling sensations and spasms in the limbs, as well as hallucinations and manic episodes. There are theories that ergotism played a role in the Salem Witchcraft incidence, as well as other cases of "bewitchments" throughout the Middle Ages

Did you know?
Ergotism was historically known as Holy Fire, due to the strong burning sensation it caused, which was perceived as being a punishment from God. It was also called St. Anthony's fire, as the monks of St. Anthony's order erected hospitals and cared for those affected by the disease

But ergot alkaloids are not only known for their toxicity – they have long been used in medicine for purposes such as inducing childbirth, to reduce excessive bleeding after childbirth, or to treat migraines. Drugs have also been derived from ergot alkaloids ■

If you would like to know more about testing for ergot alkaloids, please email **neogen_emea@neogeneurope.com** or phone **+44 (0) 1292 526 093**

Neogen to Launch First Lateral Flow Test for Ergot Alkaloids



COMING SOON

A new addition is coming to Neogen´s Reveal Q+ MAX range for mycotoxins. With Reveal Q+ MAX for Ergot Alkaloids, Neogen will offer the first rapid lateral flow test for these mycotoxins available on the market.*

The test will detect the 6 main ergot alkaloids that the European Food Safety Authority (EFSA) has identified of major importance to human and animal health: ergometrine, ergotamine, ergosine, ergocristine, ergocryptine and ergocornine (along with the corresponding -inine epimers).

**Assumption correct as of 03/May 2019*

Upcoming Regulations

EFSA is currently reviewing the need for regulations for ergot alkaloids, with new EU legislation expected to be published soon. Reveal Q+ MAX for Ergot Alkaloids was developed specifically to help cereal producers and processors deal with the new challenges and testing needs that this law will create. This test is intended for the quantitative analyses of rye and wheat between 50 and 5000 ppb.

Aqueous Extraction

As with all tests from Neogen's MAX range, Reveal Q+ MAX for Ergot Alkaloids utilises our aqueous extraction method, reducing health and environmental risks ■

- **Test type:** Rapid lateral flow
- **Test time:** 8 minutes
- **Range of detection:** 50 – 5000 ppb
- **Validated matrices:** Rye and Wheat

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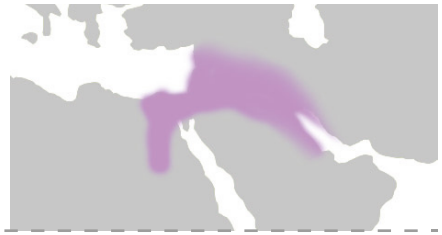
Did You Know?

Archaeological records suggest that wheat was first cultivated in the regions of the Fertile Crescent (also known as the cradle of civilization) around 9600 BC

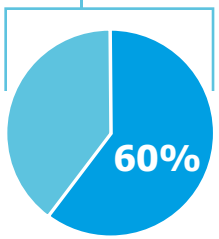


Wheat is grown to some extent on every continent

except Antarctica

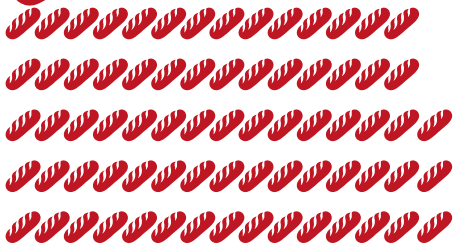
World trade in wheat is larger than for all other crops combined

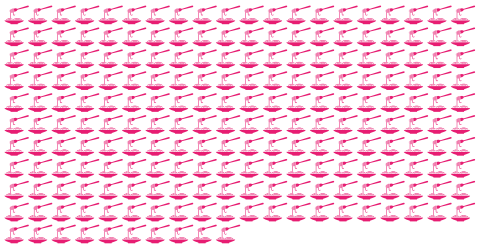
Today, the world has more than 50000 edible plants,



yet just three commodity crops rice, maize and wheat provide 60% of the plant-derived calories we eat

A single bushel of wheat can be used to make around 73 loaves of bread or 210 servings of spaghetti





Raptor®: The Next Generation of Mycotoxin Analysis

Neogen's new platform for mycotoxin testing offers two powerful readers for lateral flow test strips. The system provides an easy way to objectively analyse and store the results of Neogen's Reveal Q+ and Q+ MAX tests for Mycotoxins*. Raptor offers the user an improved workflow and accuracy with reduced hands on time through automation. Just add your extracted sample and walk away, Raptor does the rest.

- Bar-coded test strips provide test type, lot and expiry information to save on data entry
- Controls temperature, time and readings throughout the analysis
- Easy data integration through Wifi, USB, Ethernet and LIMS connectivity
- Data analysis, reporting and tracking with Neogen Data Manager Software

The Right Option for Your Needs:

☑ Scalability:

To run multiple tests at the same time, Raptor offers you the perfect platform to increase your productivity

Raptor®

☑ Portability:

For testing on-the-go, the handheld and battery-operated Raptor Solo is the ideal solution

Raptor® Solo

*Please check with your Neogen representative for the local availability of these tests

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Mycotoxin **Insider**

Preparing for the Harvest with Neogen

Spring 2019 in Germany and France

This spring, Neogen is hosting a series of workshops to support mycotoxin customers in the run up to harvest.

These exclusive workshops will be held in May and June in several locations in France and Germany and will include training on best practice in lateral flow and ELISA test procedures, the opportunity for customers to have their testing equipment checked, updated and calibrated and a review of new developments in mycotoxin analysis.

Customers will have the chance to meet up with industry colleagues and Neogen representatives to discuss developments in mycotoxin testing, share experiences and knowledge, and get up-to-date on their usage of mycotoxin test kits ■

If you are a current mycotoxin customer and would like to register please email **events@neogeneurope.com**

Additional Neogen events will follow so why not follow us on Social Media:

Visit Us at World Mycotoxin Forum

14th-16th October 2019, Belfast, NI

We are excited to announce that we will be returning to sponsor and exhibit at the World Mycotoxin Forum this October.

We will be showcasing our comprehensive range of testing solutions available to the industry, so why not stop by and chat to our talented team and see how we can support your mycotoxin testing? ■

Already attending? Why not arrange a meeting with us today.

Find out more about the event and register to attend here **www.worldmycotoxinforum.org/**

Contact us today

NEOGEN®

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