

Scientists use traffic-light system to manage mycotoxin risk in wheat

■ Being able to accurately predict mycotoxin risk will enable growers to segregate any high-risk grain, thereby limiting the impact of price deductions for quality.

Last year's relatively dry summer meant the mycotoxin deoxynivalenol (DON) hardly put in an appearance in crops, but Sarah Wynn of Adas Boxworth, who is monitoring field samples to improve risk assessment, warns it won't have gone away for good.

"Luckily for growers, last summer was relatively dry during flowering, save for the occasional heavy downpour. But DON is an ongoing threat to wheat grain, since just 1,250ug/kg in unprocessed cereal grain renders it unsaleable for human consumption."

FUSARIUM HEAD BLIGHT RISK

She and her team are measuring DON in industry-collected samples with a known risk of fusarium head blight infection to confirm the relationship between fusarium infection risk and mycotoxin development.

It is expected that grain at high risk of the disease is likely to be high risk for DON contamination, which is caused by *Fusarium culmorum* and *Fusarium graminearum*.

The hope is that by linking live daily rainfall data to crop flowering progress (GS59-69), growers can be alerted to the potential risk of fusarium infection denoted by a traffic light colour code. On current AHDB risk assessment maps, updated weekly from May to July, green means low risk, amber means moderate and red means high risk.

"We are using the AHDB risk assessment rainfall categories and linking those with the proportion of crop in flower during particular spells of rain, therefore, identifying where crops are more or less likely to be at risk of fusarium infection. We will try to validate the forecasts of risk with increased levels of DON." She adds that growers could do with this information to manage field and storage operations.

The chances of being able to apply a T3 spray to protect the ear are slim if rain is an issue, suggests Ms Wynn. Growers would need to be using weather forecasts to preempt a rain period during flowering.

Winter wheat starts flowering next month and now is the time to keep an eye on the mycotoxin risk assessment page of the AHDB's website. *Sarah Henly* reports on research aiding its development



BLACKBURN ARABLE

KEEP HIGH-RISK GRAIN SEPARATE

But while the knowledge may come too late to allow growers to prevent DON contamination through ear wash applications, it could minimise the mycotoxin risk in their grain by alerting them to segregate high-risk crops in store, she explains.

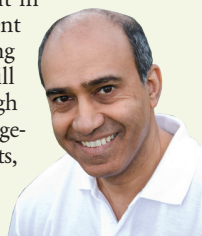
"Different varieties flower at dif-

ferent times, so risk may vary across the farm. Growers could choose to store crops at high risk in a separate area where feasible, so as not to jeopardise the sale of all their grain."

AHDB perspective by Dhan Bhandari

Research and knowledge transfer manager

■ "Fusarium infection of wheat crops can result in the production of mycotoxins and this can present challenges in the supply chain. Through reporting regional fusarium risks during flowering, we will help growers manage fusarium head blight through better targeted ear-wash sprays and storage management. By identifying potential mycotoxin hotspots, we will also help the whole supply chain improve risk management."



Research reasons

■ The project will improve our knowledge of wheat



fusarium infection risk during flowering, to raise awareness of the mycotoxin contamination risk and to aid the accurate completion of the risk-assessment form at point of sale.

Project Fusarium risk reporting – based on real-time data collection

Timescale April 2015-December 2017

Researchers involved Adas and AICC

Funders AHDB

Cost £88,421 from AHDB

Key points

- Live monitoring of fusarium infection risk and rainfall events during flowering will improve accuracy of current risk assessment methods
- Linking fusarium risk to mycotoxin levels in field

Furthermore, the early indication of fusarium infection risk should provide grain merchants with an early warning of mycotoxin hotspots. That could help to focus DON testing of grain purchased from high-risk regions.

After two more seasons, Ms Wynn hopes to confirm whether improving accuracy of recording rainfall at flowering increases the accuracy of the overall risk assessment sufficiently to robustly forecast the DON risk.

There is some suggestion that relative humidity plays a part, though recent work failed to consistently demonstrate this fact.

The outcome of the research is likely to raise awareness of mycotoxins and other risks influencing fusarium, such as the previous crop and the cultivation method employed, she says.

It will also undoubtedly help growers fill in the mycotoxin risk-assessment form for marketing purposes, she concludes.