MycoMan
Harvest bulletin

UNITED KINGDOM – Wheat 2020

Mycotoxin contamination of newly harvested grain is a very important parameter to consider. This grain will be used to feed animals for the whole year until the next new harvest. Knowing the level of contamination, we can consider how we should best use this grain, which animal species to feed it to, what inclusion level to use in the complete ration and which product from the MycoMan Program to use to decrease possible negative effect of contamination on animal performance and health.

Sampling

55 Total number of samples

Collected directly from farms and animal feed production sites, before storage

Analyzed by liquid chromatography tandem mass spectrometry (LC MS/MS) in ECCA laboratory, Belgium

16 ?

Screening for 16 mycotoxins:
fumonisin B1 (FB1), fumonisin B2 (FB2), aflatoxin B1 (AFB1), aflatoxin B2 (AFB2), aflatoxin G1 (AFG1), aflatoxin G2 (AFG2), zearalenone (ZEA), alfa-zearalenol (AZEA), beta-zearalenol (BZEA), deoxynivalenol (DON), 15-acetyldeoxynivalenol (15ADON), 3-acetyldeoxynivalenol (3ADON), nivalenol (NIV), ochratoxin A (OTA), HT-2 toxin (HT-2), T-2 toxin (T-2).

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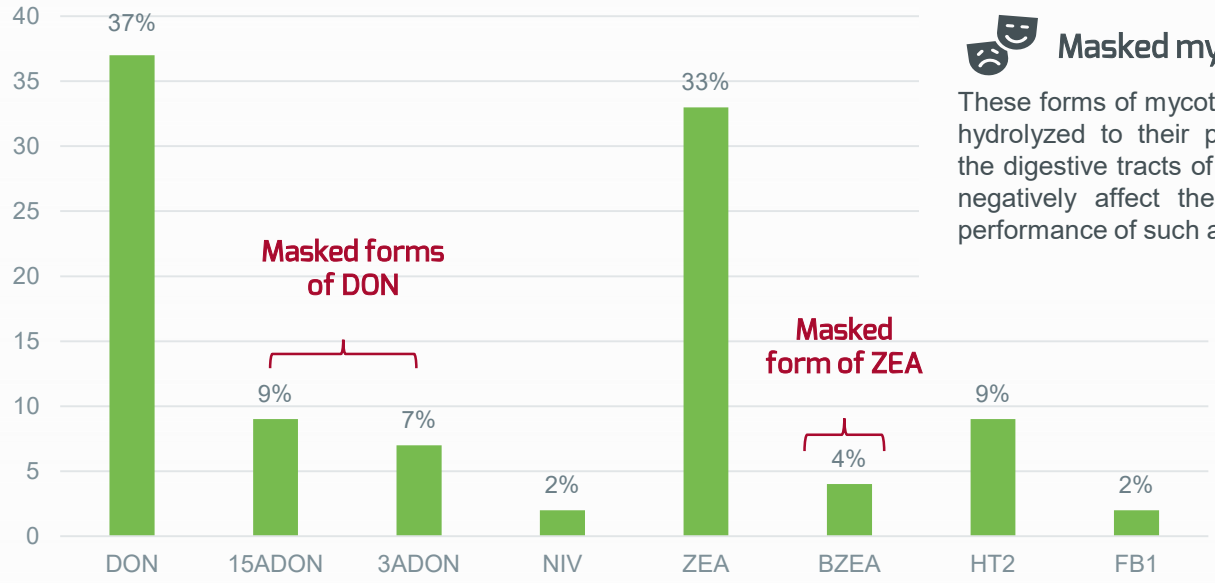
Mycotoxin occurrence in newly harvested wheat, UK 2020.



Masked mycotoxins

These forms of mycotoxins can be hydrolyzed to their precursors in the digestive tracts of animals and negatively affect the health and performance of such animals.

Key outcomes

37% Samples contaminated with **Deoxynivalenol**

- **Highest sample: 1,700 µg/kg**
- **Average [ ]: 606 µg/kg**

Masked forms:

- 9% **15ADON** 388 µg/kg
- 7% **3ADON** 50 µg/kg

Low risk for all animal species.

33% Samples contaminated with **Zearalenone**

Masked form:

- 4% **BZEA** 8 µg/kg

- **Highest sample: 270 µg/kg**
- **Average [ ]: 62 µg/kg**

Low risk for all animal species.

Non-detection levels were based on the limits of quantification (LOQ) of the test method for each mycotoxin: AFB1, AFB2, AFG1, AFG2 <0,5 µg/kg; ZEA, AZEA, BZEA <10 µg/kg; DON, 15ADON, 3ADON <75 µg/kg; FB1 <125 µg/kg; FB2 <50 µg/kg; OTA <1 µg/kg; T-2, HT-2 < 4 µg/kg, NIV <200 µg/kg.

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Big picture

Wheat contamination levels in 2020 in UK and risk assessment.

	DON	15A DON	3A DON	NIV	ZEA	B ZEA	HT2	FB1
Number of tested samples	55	55	55	55	55	55	55	55
% of positive samples	37	9	7	2	33	4	9	2
Average concentration of positive samples [µg/kg]	606	388	49,75	490	62	8	15	54
Maximum concentration [µg/kg]	1700	630	67	490	270	9	32	54

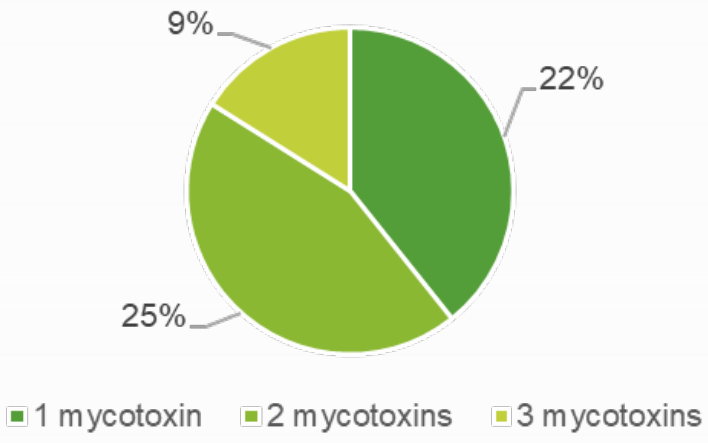
Low risk
Medium risk
High risk

HT-2 toxin with the highest concentration found in a single sample was 32 µg/kg. The average HT-2 concentration was 15 µg/kg which is low and present low risk for all animal species. 2% of samples were contaminated with FB1 and an average concentration was low at 54 µg/kg. Maximum concentration of FB1 recovered was 54 µg/kg which again is low risk for all species.

Risk of synergies

Considering all mycotoxins, we found that 56 % of samples were contaminated with one or more mycotoxins. There was multiple mycotoxin contamination with 2 to 3 mycotoxins present in 34% of samples. When considering the impact of mycotoxins it is important to take into account possible synergism between multiple mycotoxins (eg. DON and ZEA). The presence of multiple mycotoxins, even at low to medium levels, can have negative effects on health, reproduction and performance of animals.

Average mycotoxin number per sample



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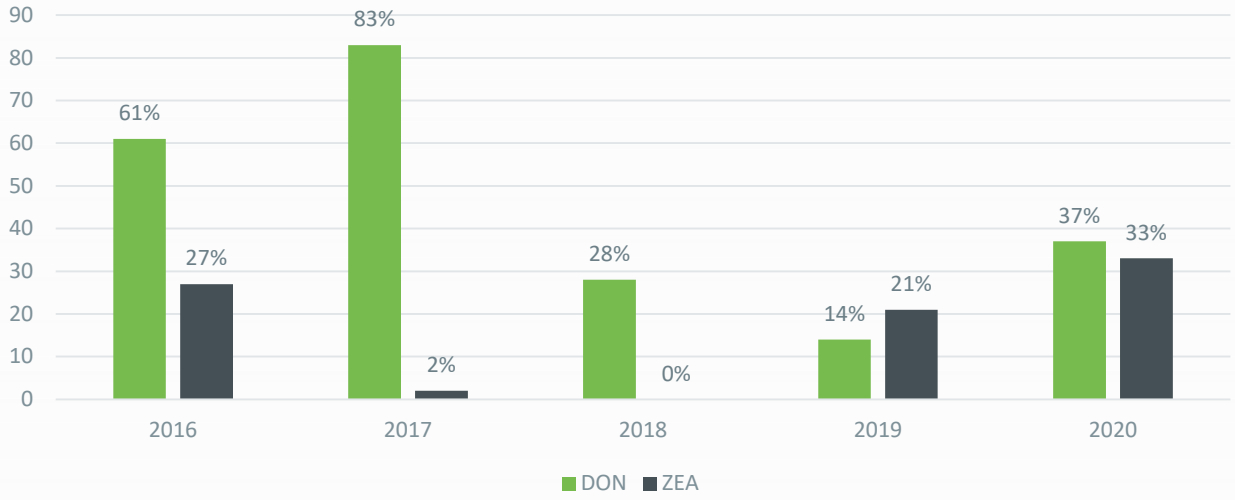
Multi-year risk

Mycotoxin occurrence in wheat in UK in 2016-2020, %



This figure compares average annual concentration of DON and ZEA in µg/kg during the period 2016- 2020. DON was detected at 606 µg/kg in 2020, at 123 µg/kg in 2019, 69 µg/kg in 2018, 222 µg/kg in 2017 and 373 µg/kg in 2016. The average concentration of DON in wheat in 2020 was the highest in the last 5 years, but this level still represents low risk for all animal species.
Average ZEA level this year was much higher than in previous years (52 µg/kg in 2016, 28 µg/kg in 2017, 0 µg/kg in 2018, 123 µg/kg in 2019 and 606 µg/kg in 2020).

The word of our expert

Julia Dvorska
Global Scientific & Technical Manager
Mycotoxin Management

The average level of total B-trichothecenes (1534 µg/kg) was the highest detected in the past five years and according to our risk assessment presents a medium risk to sensitive animals. Levels of ZEA, BZEA, HT2 and FB1 were low and present a low risk for the animal health and performance.

Considering the mycotoxin levels detected and the likelihood of multiple mycotoxins (detected in 34% of samples), there is a greater probability of observing negative effects of the mycotoxicosis when wheat is used in levels above 50% of the ration.

Based on the results of this survey conducted by Adisseo, the 2020 wheat crop in the UK and Ireland is of variable quality and should not **automatically** be considered safe for inclusion in finished feed rations for all animal species.

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