# Summary of AHDB mycotoxin data from 2018 to 2023

## Background

This report is a summary of the 2018 to 2023 mycotoxin results for feed wheat, barley and oats, plus wheatfeed and oatfeed from the AHDB Cereals and Oilseeds testing programme, which was put in place to evaluate the occurrence of the following mycotoxins.

* DON - Deoxynivalenol
* ZON - Zearalenone
* T2 + HT2

DON, T2 and HT-2 and ZON are produced by *Fusarium* species of mould, and ochratoxin by *Aspergillus* and *Penicillium* species. *Fusarium* mycotoxins develop while the cereal crop is in the field with climatic and weather conditions during key growth stages and at harvest affecting the extent of Fusarium mould development, and therefore mycotoxin prevalence in the grains. Penicillium and Aspergillus are however storage fungi, meaning that Ochratoxin A develops after harvest if drying and storage conditions are not ideal.

To show the distribution against the threshold ranges of the mycotoxin levels found in the samples tested they are presented in a graphical form. An amalgamation of the cereal and byproduct data are presented because the mycotoxin results are generally low compared with guidance limits for animal feed. The exception to this is the sum of T-2 and HT-2 where oats and oat byproducts have a significantly higher incidence of issues so are displayed separately from the T-2 and HT-2 results for wheat, wheat feed and barley. Threshold limits are presented for feed according to Commission Recommendation (EU) 2013/165 and Commission Recommendation 2006/576/EC.

## DON (Feed Wheat, Barley and Oats; Wheatfeed and Oatfeed)

Total 365 samples, average 61 per harvest.

The relevance of the ranges selected are as follows:

|  |  |
| --- | --- |
| Level | Limit |
| 10ppb | Limit of quantification of analysis |
| 900ppb | Guidance level for compound feed for pigs |
| 2000ppb | Guidance level for compound feed for young animals (except piglets) |
| 5000ppb | Guidance level for other compound feeds |
| 8000ppb | Guidance level for feed materials (except maize) |

### Summary DON

The results across the period shown suggest that in some years a low percentage of DON results have exceeded the guidance level for pig feed. An annual risk assessment of cereal ingredients intended for feeding to pigs is therefore considered prudent, supported by a testing programme to capture and monitor numbers of batches that exceed the guidance limit so appropriate action can be taken.

## ZON (wheat, barley, oats, wheatfeed, oatfeed)

Total 365 samples, average 61 per harvest

The relevance of the ranges selected are as follows:

|  |  |
| --- | --- |
| Level | Limit |
| 2.5 ppb | Limit of quantification of analysis |
| 100 ppb | Guidance level for compound feed for piglets & gilts |
| 250 ppb | Guidance level for compound feed for pigs (except piglets & gilts) |
| 500 ppb | Guidance level for other compound feeds |
| 2000 ppb | Guidance level for feed materials (except maize) |

### Commentary

The results across the period shown suggest that some years, most recently in 2021, ZON results exceed the guidance levels for pig feed. Although the number of cases when this occurs is low, an annual risk assessment of cereal ingredients used in diets, including a review of the weather conditions during the growing and harvesting seasons, is advised, and a sampling programme implemented to manage the associated mycotoxin risk.

## T2 + HT2

### Wheat, Barley & Wheatfeed

Total 266 samples, average 44 per harvest

The relevance of the ranges selected are as follows:

|  |  |
| --- | --- |
| Level | Limit |
| 10ppb | Limit of quantification of analysis (10 ppb for each mycotoxin) |
| 100ppb | Guidance level for wheat & rye |
| 200ppb | Guidance level for barley & maize |
| 250ppb | Guidance level for compound feeds |
| 500ppb | Guidance level for cereal feed materials (except oats) |

### Commentary

Over the past 6 harvests there was just one result in 2018 of 260 ppb which exceeds the guidance level for compound feeds. Although the incidence of T-2 and HT-2 appears to be low, risk assessment of this mycotoxin in cereals and their byproducts remains a prudent exercise, including a due diligence testing program.

### Oats/ oat byproducts

Total 99 samples, 16 average per harvest

The relevance of the ranges selected are as follows:

|  |  |
| --- | --- |
| Level | Limit |
| 10ppb | Limit of quantification of analysis |
| 250ppb | Guidance level for compound feeds |
| 1000ppb | Guidance level for oats |
| 2000ppb | Guidance level for oat products |

### Commentary

A large proportion of the oat results exceed the 250 ppb T-2 and HT-2 guidance level for compound feed by a significant margin, which is a concern. Feed businesses using oats and oat byproducts in compound feeds should carry out a rigorous risk assessment of oats and oat feed which includes a review of inclusion rates in the diet and a robust monitoring programme to protect animal health and maintain feed safety.

## Conclusion

The monitoring programme of UK grown cereals over recent years would suggest that in most cases there is no real concerns for the feed industry in most years. Companies producing feed for pigs particularly should take account of weather conditions during key points of the growing season, and at harvest to assess when carrying out their risk assessment of key mycotoxins in purchased cereals and cereal products, and in final feeds. Particular attention should be paid to the risk of oats and byproduct content of T2 + HT2 to ensure that finished feeds do not exceed feed guidance limits for the species intended.