Alltech®

2023 European Harvest Analysis Report

Mycotoxin insights to empower your nutritional strategy

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Meeting the mycotoxin challenge

Welcome to the Alltech 2023 European Harvest Analysis report, a detailed region- and species-specific analysis of this year's mycotoxin risk. Alltech is proud to provide this vital resource as part of our support for the agriculture community in Europe and around the world.

Based on expert laboratory testing of more than 900 grain and 200 new crop forage samples, this comprehensive report gives you all the information you'll need to pinpoint potential challenges and make effective management decisions about feeding grains and silages over the coming months.

Such information is especially crucial in 2023. While Europe enjoyed a reprieve this growing season from the extreme drought conditions of the past 2–3 years, rains that fell close to harvest time in northern and western Europe caused delays that created ideal conditions for dangerous mold and mycotoxin development.

Read on for details on this year's mycotoxin situation across the continent, and feel free to reach out to your local Alltech team at any time for further insights and advice on elevating your feeding and production efficiency.

Yours sincerely,

Patrick Charlton

Patrick Charlton, vice president of Europe, Alltech

Continued collaboration with SGS

Alltech is again working with SGS, a world leader in mycotoxin testing services, to expand the reach of this year's European Harvest Analysis by collecting and analysing corn samples for Central-Southeast Europe. Combining these resources with findings from our Alltech 37+® mycotoxin analysis allows us to continue to deliver a robust assessment of the mycotoxin landscape right across the continent.

High mycotoxin risk in 2023

What are this year's key insights?

- Persistent rains close to harvesting have led to **significant *Fusarium*-related challenges** in wheat and barley crops across northern and western Europe.
- **Barley shows the highest risk of the small grains**, with an average of 6 mycotoxins per sample.
- In general, the **mycotoxin challenge in corn is lower in 2023** than in recent years. However, there are still pockets of **higher risk in central and southern Europe**.
- The ***Penicillium*** risk continues to dominate in forages. In particular, **grass silage in the UK and Ireland is heavily contaminated** and presents an ongoing management challenge for dairy producers there.

The final mycotoxin risk will ultimately depend on the animal species and groups being fed and the mycotoxin concentrations and combinations in the finished diet.

20
countries analysed across Europe

Sample date range: 21/07/2023 - 15/11/2023

>1,100
new crop samples tested in total between Alltech 37+® and SGS

4.4
Average number of mycotoxins per sample

Figure 1: 2023 Alltech® European Harvest Analysis key figures

A look around the regions

Western Europe

- Wheat and barley samples are generally low risk across the UK and Ireland
- Emerging mycotoxins are the most common group detected
- Forages such as grass silage and corn silage are higher risk, with average *Penicillium* toxin levels of 193 ppb and an REQ of 346 ppb

Northwestern Europe

- Type B trichothecenes are most prevalent in forages, but *Penicillium* toxins are driving most of the risk
- Straw is high risk again this year in Denmark, with type B trichothecenes representing the greatest risk, probably due to delayed harvesting
- The average REQ for wheat and barley is moderate to high, with the delayed harvest contributing to a higher-than-usual presence of *Fusarium* toxins

Central and Southern Europe

- The risk to German wheat is generally low, but German forages are at higher risk; as in Western Europe, the main risk is coming from *Penicillium* mycotoxins
- The most prevalent mycotoxins in corn from this region are aflatoxins, fumonisins and ochratoxins, and the overall risk is moderate for monogastric animals
- Aflatoxin levels are lower than in recent years, but some samples have shown high contamination (max. 126 ppb), with an average of 6.8 ppb

Eastern Europe

- Wheat and barley samples are testing high risk, with the most risk coming from type B trichothecenes and *Penicillium* mycotoxins
- Forages are also high risk, with average levels of *Penicillium* mycotoxins above 350 ppb
- Straw in Lithuania is high risk, with average levels of type B trichothecenes at almost 2,000 ppb

Corn results

01/09/2023 to 15/11/2023
Sample data range

Highest-risk mycotoxins

- Zearalenone
- Deoxynivalenol
- T2-HT2 toxins
- Ochratoxins

3.4
Average tests per sample

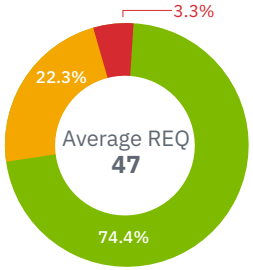
Occurrence (%) and average and maximum mycotoxin concentrations (ppb)

Mycotoxin Group	Occurrence (Above LOQ)	Average	Maximum
Aflatoxins, total	68.4	6	126
Ochratoxins	35.8	28	1,855
Deoxynivalenol	28.4	207	1,629
T2-HT2 toxins	21.7	51	553
Fumonisins	51.7	827	5,703
Zearalenone	15.8	81	575

Figure 2: The multiple mycotoxin risk in corn samples. Analysed by SGS.

How will this impact species and animal groups?

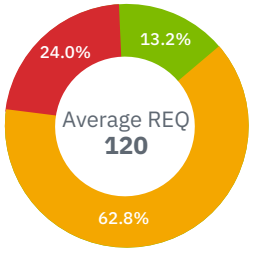
Dairy Cows



Change in milk production, litres/ cow/day

Change in somatic cell count, %

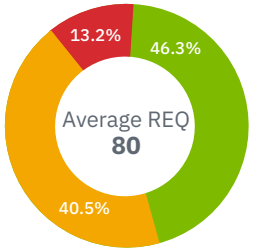
Grow/ finish pigs



Change in average daily gain, grams/day

Change in feed conversion rate, %

Broilers



Change in average daily gain, grams/day

Change in feed conversion rate, %

Percentage of samples at lower, moderate or higher risk for each species. **REQ:** A measurement of the cumulative impact of mycotoxins in reference to aflatoxin B_1.

Low Moderate High

Figure 3: Analysis of the REQ and performance effects of mycotoxin contamination of corn samples.

Barley results

24/07/2023 to 15/11/2023
Sample data range

Highest-risk mycotoxins

- Type B trichothecenes
- Emerging mycotoxins
- Type A trichothecenes

6.0
Average mycotoxins per sample

97%
Samples with 2 or more mycotoxins

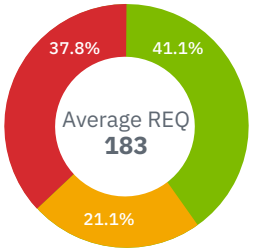
Occurrence (%) and average and maximum mycotoxin concentrations (ppb)

Mycotoxin Group	Occurrence	Average	Maximum
Emerging mycotoxins	98.9	926.3	5,145
Type B trichothecenes	67.8	922.3	28,988
Type A trichothecenes	65.6	51.7	517
Fumonisins	22.2	6.3	127
Other *Penicillium* mycotoxins	21.1	12.1	322
Zearalenone	13.3	37.4	925
Fusaric acid	7.8	2.1	58
Ergot toxins	4.4	2.3	120
Other *Aspergillus* mycotoxins	1.1	0.2	14

Figure 4: The multiple mycotoxin risk in barley samples. Analysed by Alltech 37+

How will this impact species and animal groups?

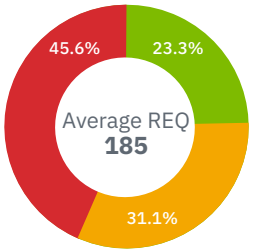
Dairy cows



Change in milk production, litres/ cow/day

Change in somatic cell count, %

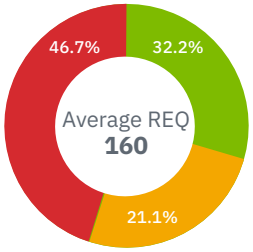
Grow/ finish pigs



Change in average daily gain, grams/day

Change in feed conversion rate, %

Broilers



Change in average daily gain, grams/day

Change in feed conversion rate, %

Percentage of samples at lower, moderate or higher risk for each species. **REQ:** A measurement of the cumulative impact of mycotoxins in reference to aflatoxin B_1.

Low Moderate High

Figure 5: Analysis of the REQ and performance effects of mycotoxin contamination of barley samples.

Wheat results

03/08/2023 to 15/11/2023
Sample data range

Highest-risk mycotoxins

- Type B trichothecenes
- Other *Penicillium* mycotoxins
- Type A trichothecenes

3.5
Average mycotoxins per sample

90%
Samples with 2 or more mycotoxins

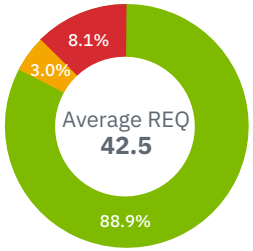
Occurrence (%) and average and maximum mycotoxin concentrations (ppb)

Mycotoxin Group	Occurrence	Average	Maximum
Emerging mycotoxins	97	54.0	653
Type B trichothecenes	53.5	104.9	2,280
Type A trichothecenes	19.2	5.0	132
Fumonisins	16.2	18.6	414
Ergot toxins	7.1	28.7	1,753
Other *Penicillium* mycotoxins	6.1	15.2	517
Zearalenone	3.0	1.0	120
Fusaric acid	1.0	0.2	15

Figure 6: The multiple mycotoxin risk in wheat samples. Analysed by Alltech 37+

How will this impact species and animal groups?

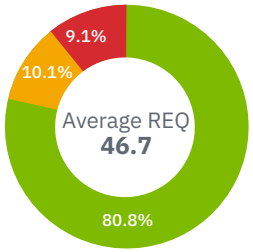
Dairy cows



Change in milk production, litres/ cow/day

Change in somatic cell count, %

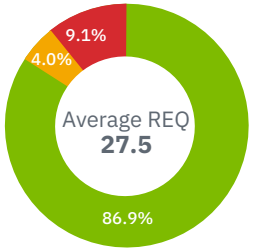
Grow/ finish pigs



Change in average daily gain, grams/day

Change in feed conversion rate, %

Broilers



Change in average daily gain, grams/day

Change in feed conversion rate, %

Percentage of samples at lower, moderate or higher risk for each species. **REQ:** A measurement of the cumulative impact of mycotoxins in reference to aflatoxin B_1.

Low Moderate High

Figure 7: Analysis of the REQ and performance effects of mycotoxin contamination of wheat samples.

Forage results
Grass silage, corn silage and straw

21/07/2023 to 15/11/2023
Sample data range

Highest-risk mycotoxins
- Other *Penicillium* mycotoxins
- Type B trichothecenes
- Type A trichothecenes

3.9
Average mycotoxins per sample

91%
Samples with 2 or more mycotoxins

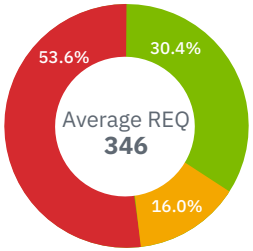
Occurrence (%) and average and maximum mycotoxin concentrations (ppb)

Mycotoxin Group	Occurrence	Average	Maximum
Emerging mycotoxins	80.9	235.1	5,737
Type B trichothecenes	59.8	727.8	11,374
Fusaric acid	45.4	90.6	4,491
Other *Penicillium* mycotoxins	41.8	189.5	3,294
Type A trichothecenes	16.0	16.6	415
Zearalenone	8.8	45.5	3,299
Fumonisins	5.7	13.2	721
Ergot toxins	2.6	5.9	509
Other *Aspergillus* mycotoxins	1.5	4.9	548

Figure 8: The multiple mycotoxin risk in forage samples. Analysed by Alltech 37+

How will this impact species and animal groups?

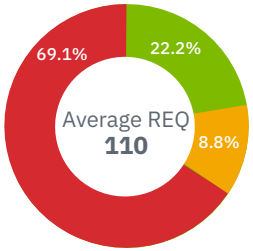
Dairy cows



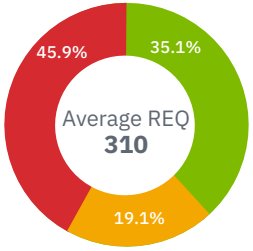
Change in milk production, litres/ cow/day

Change in somatic cell count, %

Calf/Heifer



Beef cattle



Percentage of samples at lower, moderate or higher risk for each species. **REQ:** A measurement of the cumulative impact of mycotoxins in reference to aflatoxin B_1.

Low Moderate High

Figure 9: Analysis of the REQ and performance effects of mycotoxin contamination of forage samples.

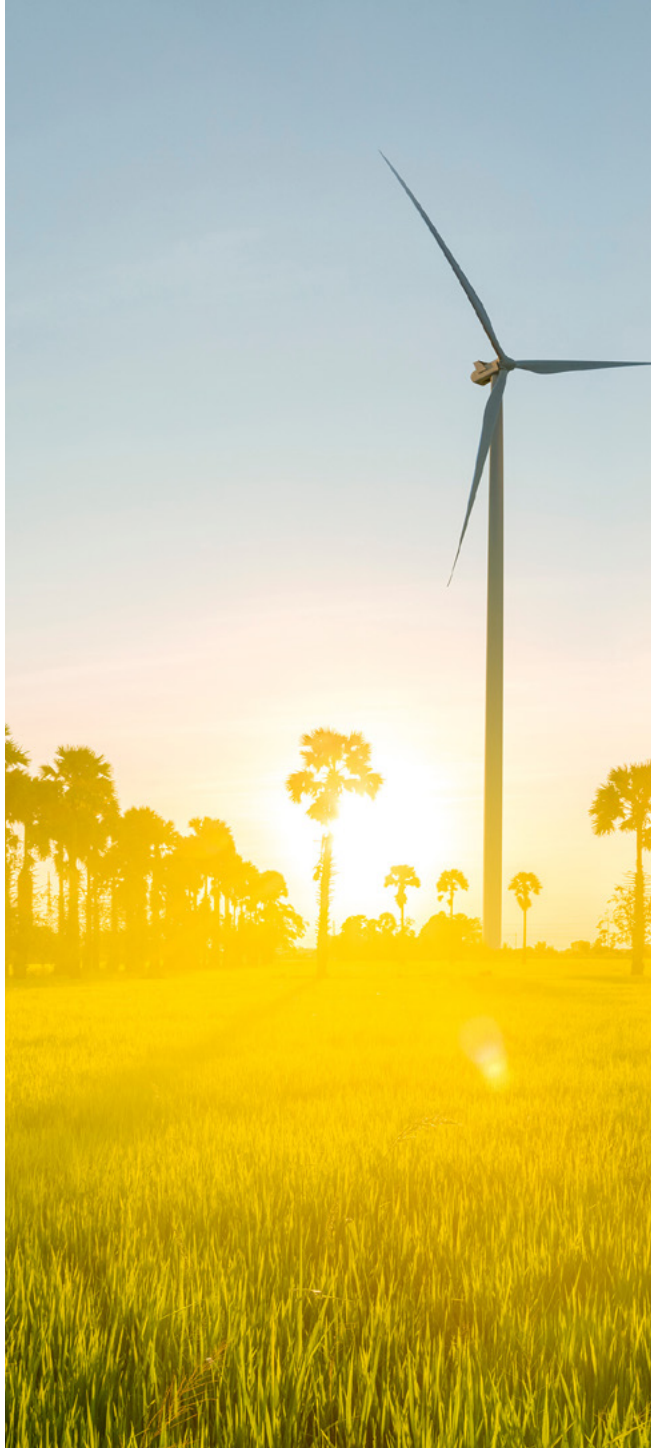
Sustainability suffers under a mycotoxin challenge

A mycotoxin challenge leads to more than just risks to animal health and business profitability. By combining mycotoxin contamination data with the impacts on animal health and performance, we are learning more about how mycotoxins also contribute to the overall carbon footprint of an agricultural operation — the greater the scale of the challenge, the greater the impact.

Using carbon footprint models developed by **Alltech E-CO_2**, we are able to forecast what particular mycotoxin risk levels may mean in terms of increased environmental impact. The scenario below represents the impacts on an average European dairy farm.

125-cow dairy, average production of 8,000 litres per cow per year

	Wheat/barley diet (moderate risk)		Corn diet (higher risk)		The difference in emissions intensity (g CO_2e/ kg FPCM) between the baseline and a diet containing mycotoxins is equivalent to:
	Difference from baseline	% difference	Difference from baseline	% difference	
Emissions intensity (g CO_2e/ kg FPCM)	43.8	3.41	42.7	3.33	Flights around the world: 25 / 25 Cars off the road for a year: 14 / 14



A proven program from Alltech® Mycotoxin Management

Alltech believes that effective mycotoxin management is about seeing the whole challenge, from the farm to the feed mill and from risk assessment to feed management. To effectively manage the inevitability of feed mycotoxin contamination, it is crucial to understand the level of mycotoxin challenge so that the right steps can be taken to mitigate any adverse effects on animal performance, production efficiency and food safety.

Learn more about **Alltech® Mycotoxin Management,** our services and solutions and the latest information on the threat of mycotoxins at **knowmycotoxins.com.**

01	02	03	04	05
Risk **education**	Risk **identification**	Risk **quantification**	Risk **mitigation**	Risk **evaluation**
Harvest analysis programs Podcasts and media knowmycotoxins.com	Alltech 37+® Alltech RAPIREAD®	Mycotoxin Management Portal Alltech PROTECT™ (REQ) Alltech DIET™ Estimator	Mycosorb® family of mycotoxin adsorbents	Mycotoxin technical team On-farm support Feed mill services

The mycotoxin testing methods used across both the Alltech 37+ and SGS laboratories will differ and utilise separate limits of quantification (LOQ). The mycotoxin occurrence numbers in corn reported on page 6 are based on a higher LOQ than the wheat and barley data on pages 8 and 10.

For more information, please contact our office:

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