



2023 U.S Harvest Analysis Report

Mycotoxin insights
to empower your
nutritional strategy



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Mycotoxin risk assessment reveals regional variation

What are this year's key insights?

- Dry conditions in the **West showed more fumonisin risk**, while the later, rain-affected harvest in the **East showed a high DON risk**.
- In general, the **mycotoxin challenge in corn grain and corn silage is lower in 2023** than in recent years. However, there are still pockets of **higher risk in the Midwest and the South**.
- A surprisingly high risk of **aflatoxin B1 was identified in Iowa this year**. Another surprising find was **Penicillium present in grains**, since they are typically a concern in forages.
- A good amount of corn went into storage at 14% moisture this year. **It will be crucial to monitor corn coming out of storage**, as it may be at higher risk now than when it was first stored.

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.

91.5%
Samples with two or more mycotoxins



Sample date range:
08/30/2023 -
11/16/2023



418
samples tested in total using Alltech 37+®



4.9
Average number of mycotoxins per sample



Figure 1: 2023 Alltech® US Harvest Analysis key figures



General overview

Inconsistent weather patterns led to variability in mycotoxin risk around the United States. An earlier harvest in the West and a later harvest in the East led to differing levels of mycotoxins and a variety of mycotoxins present. It will be critical for those in the U.S. feed and livestock industries to monitor grain in storage and act swiftly if a potential mycotoxin problem is recognized.



Samples analyzed with Alltech 37+®

Alltech teams worked with our customers and partners to collect new crop grain and forage samples on-farm, at grain intake, and in the feed mill. Once collected, all samples were tested at the Alltech 37+ lab in Nicholasville, Kentucky. The lab's LCMS-MS based test method can detect up to 54 individual mycotoxins in each ingredient.

Corn silage results



**08/30/2023 to
11/16/2023**
Sample
date range



**Highest risk
mycotoxins**

- Fumonisin
- Type B trichothecenes
- Fusaric acid



5.6
Average mycotoxins
per sample



97%
Samples with two or
more mycotoxins

Mycotoxin occurrence (%) and average and maximum concentrations (ppb)			
Mycotoxin Group	Average	Maximum	Occurrence (Above LOQ)
Fusaric acid	324.8	2,388	94.9
Type B trichothecenes	1,357.8	29,853	86.0
Emerging mycotoxins	64.8	987	74.2
Fumonisin	968.4	44,774	50.4
Type A trichothecenes	19.4	601	29.2
Zearalenone	45.6	1,171	26.3
<i>Other Aspergillus</i>	1.0	196	3
REQ	157.9	2,359	-



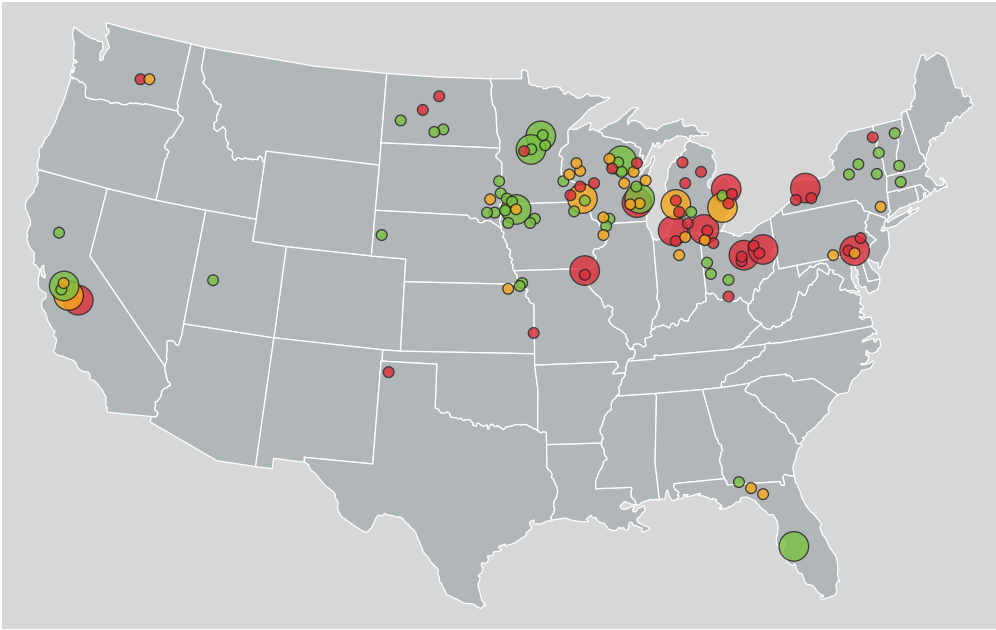
Figure 2: Corn silage samples with multiple mycotoxin risk. Analyzed by Alltech 37+.

Distribution of corn silage samples throughout the U.S.

Corn silage in the West was affected by severe drought early in the harvest season. The stress of dry conditions followed by moisture allows certain molds to flourish, particularly Fusarium molds. In the East, mycotoxin risk appears varied.

This is why testing is crucial, due to micro-climates causing differing risk.

Additionally, continuing to monitor and test silage in storage every 60 to 90 days will inform producers of the mycotoxin risk they are facing.

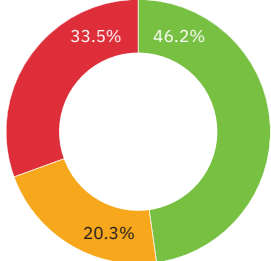


Mycotoxin risk by location. **REQ:** Risk Equivalent Quantity.
■ Low <62 ■ Moderate 63-138 ■ High >138

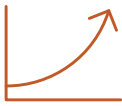
Figure 3: The multiple mycotoxin risk in corn silage samples. Analyzed by Alltech 37+.

How will this impact dairy and beef cattle?

Dairy cows

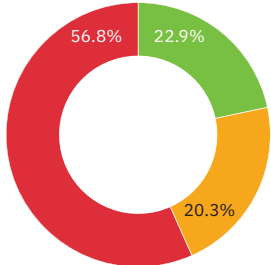


-0.36 l/cow/day
Estimated daily milk loss per cow

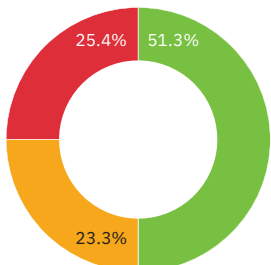


+52.45%
Estimated increase in SCC

Calf/heifer



Beef



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 B1.



Figure 4: Analysis of the REQ and performance effects of mycotoxin contamination of corn samples.

Corn grain results



09/05/2023 to 11/21/2023
Sample date range



Highest risk mycotoxins

- Fumonisin
- Type B trichothecenes
- Fusaric acid



4.4
Average mycotoxins per sample



87%
Samples with two or more mycotoxins

Mycotoxin occurrence (%) and average and maximum concentrations (ppb)			
Mycotoxin Group	Average	Maximum	Occurrence (Above LOQ)
Emerging mycotoxins	239.4	6,485.0	80.0
Fumonisin	1,560.3	22,019.0	56.3
Fusaric acid	31.1	756.0	54.2
Type B trichothecenes	603.3	44,265.0	45.8
Zearalenone	11.8	1,032.0	8.9
Aflatoxin B1	0.8	101.0	3.7
Type A trichothecenes	2.1	181.0	3.2
<i>Other Aspergillus</i>	0.6	23.0	3.2
Penicillium	0.5	34.0	2.6
REQ	111	2,951	-



Figure 5: The multiple mycotoxin risk in corn grain samples. Analyzed by Alltech 37+.

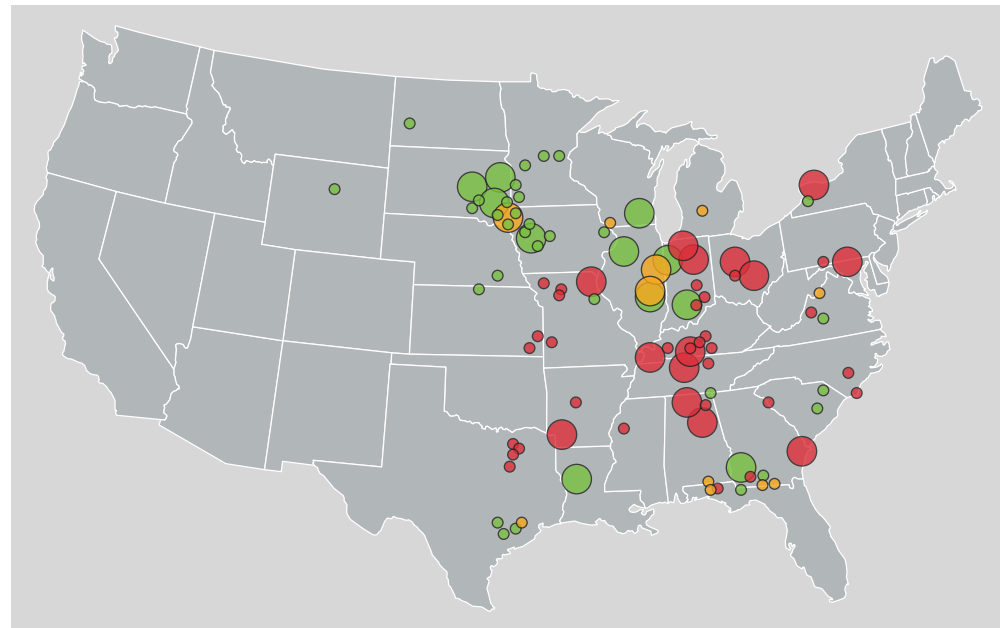
Distribution of corn grain samples throughout the U.S.

Mycotoxin levels in corn grain continue to be higher in the East and Midwest, specifically for DON mycotoxins.

Another concern is a high level of aflatoxin B1 being identified in Iowa. Producers in that area should be vigilant about testing their grains.

The earlier harvest and drier conditions in the West show a lower risk. However, producers there should be aware of a higher fumonisin risk.

An increased mycotoxin risk is seen in the South this year due to variable weather.

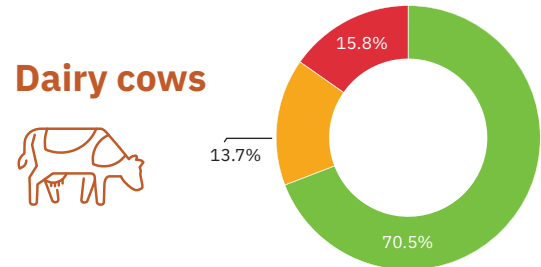


Mycotoxin risk by location. **REQ:** Risk Equivalent Quantity.

Low <22 Moderate 23-46 High >47

Figure 6: Alltech mycotoxin assessment map (Alltech REQ) for multiple corn

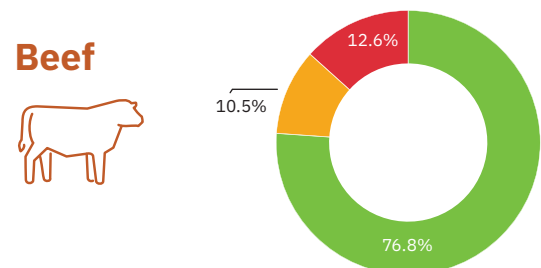
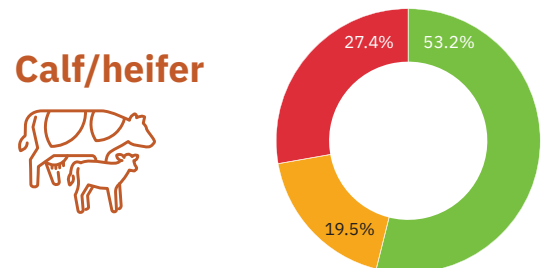
How will this impact dairy and beef cattle?




-0.21 l/cow/day
Estimated daily milk loss per cow



+30.7%
Estimated increase in SCC



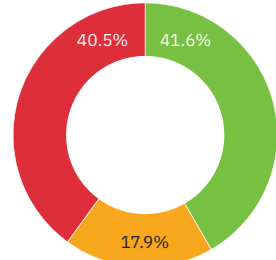
Percentage of samples at lower, moderate or higher risk for each species. **REQ:** A measurement of the cumulative impact of mycotoxins in reference to aflatoxin B1.

■ Low
 ■ Moderate
 ■ High

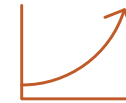
Figure 7: Analysis of the REQ and performance effects of mycotoxin contamination of corn samples.

How will this impact swine?

Nursery pigs

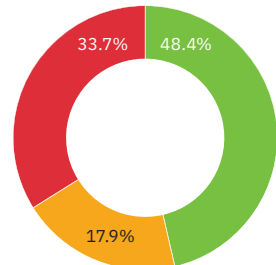


-15.38 g/day
Estimated loss in ADG

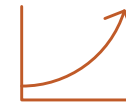


+0.02%
Estimated change in FCR

Grow-finish pigs

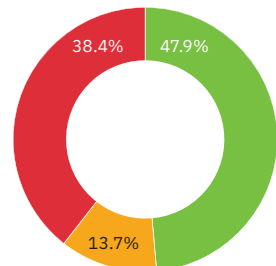


-50.53 g/day
Estimated loss in ADG



+0.08%
Estimated change in FCR

Sows



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 B1.

■ Low
 ■ Moderate
 ■ High

Figure 8: Analysis of the REQ and performance effects of mycotoxin contamination of corn samples.

How will this impact poultry?



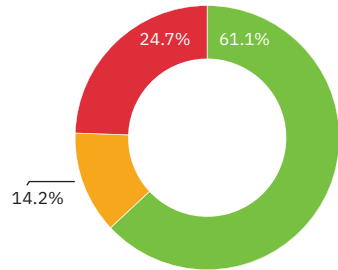
Percentage of samples at lower, moderate or higher risk for each species. **REQ:** A measurement of the cumulative impact of mycotoxins in reference to aflatoxin B1.

■ Low
 ■ Moderate
 ■ High

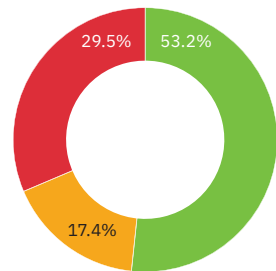
Figure 9: Analysis of the REQ and performance effects of mycotoxin contamination of corn samples.

How will this impact poultry?

Turkeys



Ducks



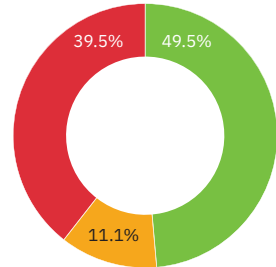
Percentage of samples at lower, moderate or higher risk for each species. **REQ:** A measurement of the cumulative impact of mycotoxins in reference to aflatoxin B1.

■ Low
 ■ Moderate
 ■ High

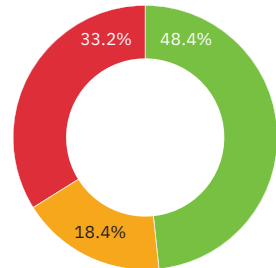
Figure 10: Analysis of the REQ and performance effects of mycotoxin contamination of corn samples.

How will this impact other species?

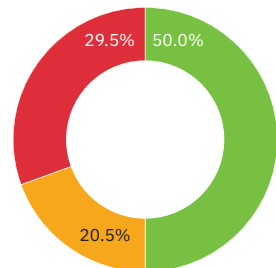
Horses



Pets



Aqua



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 B1.

■ Low
 ■ Moderate
 ■ High

Figure 11: Analysis of the REQ and performance effects of mycotoxin contamination of corn samples.



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 challenges 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.





For more information, please visit knowmycotoxins.com

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