



How Were Our New Mycotoxin Packages Developed?

In January, Dairyland Labs introduced our new mycotoxin testing program. We made the decision to move to all one method (HPLC/MS/MS) of analysis and move all mycotoxin testing in-house. This change has provided us with several opportunities to better serve our clients. We now have more flexibility to design mycotoxin testing packages that will provide optimum value by covering the most common use cases for our customers. Here's some background on how our new packages were developed.

New Mycotoxin Packages Based on Data Review

As we were designing our mycotoxin packages, we reviewed 3 primary sources of data:

1. Mycotoxin occurrence based on source of mold contamination

Animal feeds may become contaminated with mycotoxins because of mold growth during the *growing season, at harvest, or in storage*. Three mold species have been identified by FDA as concern for producing mycotoxins. Our packages have been designed to be as economical as possible while also providing data on toxins produced by all 3 known toxigenic mold species.

- *Aspergillus* – hot, dry growing conditions
- *Penicillium* – very prevalent storage mold found in the lab when running Mold ID, which led to our expansion of offerings for some potential Penicillium Mycotoxins; Ochratoxin A, Citrinin, and Patulin.
- *Fusarium* – cool, wet growing conditions which are very common as some point in almost every growing season. Fusarium Mycotoxins are detected more often than other mold toxins in the lab, which led to our expanded analysis options; Vomitoxin (DON), Zearalenone, T2, HT2, Fumonisin, Fusaric Acid, Neosolaniol, DAS, Nivalenol, and Fusarenon X.

2. FDA ORA Laboratory Manual of Mycotoxin Analysis (Revised May 2020)

We ensured that the mycotoxins that were of active concern by the FDA were also covered in our new packages. In addition, FDA guidance on these mycotoxins are covered in all of our new fact sheets for each toxin. They include: Aflatoxins, Fumonisin, Trichothecenes (includes Vomitoxin (DON), and T2/HT2), Ochratoxin A, Patulin and Zearalenone.

3. Dairyland Labs internal review of mycotoxin dependency

How often do we find one toxin positive when another toxin of interest is positive? Here are some examples:

T2/HT2: When T2 Toxin is found positive, then ~85% of the time HT2 is also positive. On the flip side, when we find HT2 positive, we only find T2 positive ~19% of the time. That said, we detect HT2 around 4.4 times as much as T2, which tells us it's just as important or you could argue more important to analyze for HT2 at the same time you request T2.

Fumonisin: when we detect Fumonisin B1, we also find Fumonisin B2 ~39% of the time, and Fumonisin B3 ~15% of the time. Furthermore, when we find Fumonisin B2 positive, we find B3 ~33% of the time. This validated the importance of including all 3 Fumonisin in any package that we analyze for Fumonisin.

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Ochratoxin A: We detect Ochratoxin A around 71% of the time when we find a positive Aflatoxin. This validated the importance of including both analytes in our Mycotoxin Packages.

All One Method – HPLC-MS/MS

When you send samples to Dairyland Labs you can be assured that we are using one method of analysis that is suitable for all feed types.

- HPLC-MS/MS is the Gold Standard Method/State of the art technology
- We can perform multiple toxins in 1 analysis
- Confidence in Identification – This method determines mycotoxins on a molecular weight basis (mass to charge ratio) by identifying the compound of interest and fragments this compound for confirmation and quantitation.
- Consistent Results across feed types
- Reduced matrix interference – especially true for samples that are forage based or TMRs.
- Decrease incidence of false positive results
- HPLC-MS/MS technology is highly accurate, has great specificity, and is very repeatable

All In-House

By moving our mycotoxin testing services in-house at Dairyland we are ensuring customers reliable results from the lab they trust, while vastly improving the turnaround time for results to 2-5 days in the lab. Dairyland is one of the few commercially independent labs in the US offering In-House HPLC-MS/MS Mycotoxin Analysis

HPLC-MS/MS technology was the largest single equipment purchase in our history. This investment was the best decision to provide superior value to our customers and the industry moving forward. This Gold Standard method provides superior accuracy. Dairyland Mycotoxin Packages are designed to provide broad coverage at a very competitive price. Finally, with the technology in-house, we've expedited the turnaround time substantially to provide quick, accurate, and cost-effective means of mycotoxin analysis.

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