Mycotoxin Detection – accurate, low level detection by industry leader.

Symbio Alliance is one of Australia's leading independent laboratories that specializes in the provision of specialist residue analysis servicing the agriculture and food industries. As a major contributor to residue surveillance as part of the National Residue Survey, Symbio Alliance has recently expanded its capability to include low level detection of a range of mycotoxins.

The 2010/2011 grain harvest has been unique across Eastern Australia with rain falling before, during and after harvest. Signs of mould are appearing on grain samples from the across the eastern states with many buyers concerned that e white and pink mould evident on weather-damaged wheat and barley samples may be toxic. Mouldy grain can impact negatively on animal performance with some moulds being more toxic than others. A white mould on freshly harvested cereal grains has been confirmed as containing a toxin known as Deoxynivalenol a Tricothecene, also known as DON or vomitoxin. Other moulds of concern are T2 and HT2, also members of the Tricothecene family of mycotoxins, Zearalenone, Ochratoxin A and Fumonisin.

Mycotoxins standards for grains and finished feeds vary depending on the market, but upper limits for mycotoxins are usually expressed as micrograms per kilogram or parts per billion (equivalent to measuring a second in 32 years) so the equipment required to achieve this level of accuracy is highly sophisticated and sensitive.
The other challenge in mycotoxin analysis is obtaining a representative sample. Mycotoxins do not occur uniformly throughout a load and so accurate sampling for mycotoxin analysis is extensive, time consuming and requires substantial quantities of grain. For this reason, the international body Codex Alimentarius has formulated a code of practice for the correct sampling for mycotoxins in cereals which requires mixing and splitting 6 kilos of original sample to obtain a representative sub-sample for analysis. Symbio Alliance is one of the few laboratories in Australia set up and approved by the National Residue Survey to conduct mycotoxin analysis based on the Codex requirement.

This diagram shows 6 kilos of original sample being placed in the sample splitter.

Next the grain is equally allocated to each of the sub sample tubes while the drum rotates ensuring equal distribution of any mould affected grains.

This image shows the final split of grain within each of the chambers:

A split sample is then selected at random, homogenized and ground through a mill.10% of the original sample is then directed into the laboratory for testing.

Analysis for the following individual mycotoxins by Liquid Chromatograph Mass Spectrometer can be completed:

- Aflatoxin B1
- Aflatoxin B2
- Aflatoxin G1
- Aflatoxin G2
- Deoxynivalenol
- Nivalenol
- HT2 toxin
- T2 toxin
- Ochratoxin A
- Patulin
- Zearalenone
- Fumonisin

The level of detection for these compounds is in the order of parts per billion so low level reporting is assured. Results can be expected in 7 working days making Symbio Alliance one of the few laboratories in Australia offering rapid, accurate and precise determination of mycotoxins in grain and finished feed and food products.

For further information please contact:
Elizabeth Owens, eowens@symbioalliance.com.au or phone 07 3340 5702