Rapid sampling and testing grain lots for mycotoxins

With rapidust®, Eurofins offers an innovative dust sampling and on-site screening technology for mycotoxins in grain lots. This proprietary procedure allows taking representative samples even out of large batches.

Furthermore, the characteristics of the specific dust sample are ideal for rapid analyses on-site. Based on the fact that the contamination of the overall sample and its dust particles can be correlated, the system provides reliable results that allow fast decisions on the acceptance or rejection of grain lots.

Basic principle

Dusts from harvesting, threshing or abrasion during transport are ubiquitous in unprocessed grain. Mycotoxins accumulate on small particles in food or feed bulk. Consequently, dusts are often highly contaminated with mycotoxins.

Our experts identified a dust fraction, in which the mycotoxin concentration is highly correlated with the respective content in the grain. Extensive data models were set up and continuously improved for relevant mycotoxins in various grains. These models allow reliable calculations of the contamination in the grain based on concentrations determined in respective dust samples.

Dust sampling

For analysis of mycotoxins in grains, sampling is the most critical step in the whole analytical chain. Especially for heterogeneously distributed storage mycotoxins, common sampling procedures are either not representative or - if representative - are not competitive and applicable in terms of needed workforce and time.
In-process control

Dust sampling is representative and fast. Dust samples of whole lots can easily be collected during handling processes as e.g. loading, unloading, or transportation of grain. The rapidust® sampling device separates relevant particle sizes. Due to filter-free technology, samples can directly be analysed.

Delivery control

Alternatively, a sieve tower can be combined with the rapidust® technique. In a sieve tower, even large volumes from combined subsamples of up to 10 kg of grain can efficiently be sieved. Dust is separated for rapid analysis in delivery control.

Fast decisions based on rapid analyses

The dust samples can directly be extracted. No grinding or homogenisation step is needed. The natural enhancement of the mycotoxin contamination in the dust facilitates on-site analyses of mycotoxins even at low legal limits. The rapidust® lateral flow strip tests are adapted to dust and can be read out quantitatively after few minutes (e.g. 2 min for DON).

The results of the rapid tests are immediately converted and displayed as contamination of the grain lot in the rapidust® app. Hence, a reliable judgement is possible within few minutes. The customised traffic-light system of the app facilitates rapid decisions on the acceptance or rejection of tested lots and can serve as indication for process control measures. A server-based data management system supports continuous monitoring and centralised quality management.