



Cargill

Dr Bata

Interheat

Novogen

Ziggity

Sampling feeds for mycotoxins

Feeds can become contaminated in the field or during storage. Most statutory requirements for the sampling of feeds for mycotoxins relate to aflatoxins and approaching 100 countries have regulations with regards to mycotoxins in human foods and/or animal feeds.

Much mycotoxin detection is based on the assumption (not always correct) that what is found in the small sample of feed tested is representative of the whole feed lot. Thus, a lot of effort has to be given to obtaining a truly representative sample because if the sample does not truly represent the feed lot it came from then that lot may well be wrongly classified. Sampling plans help to minimise this.

Testing procedure

The sample is the representative batch of feed taken from the original lot upon which testing will ultimately be done. This can usually be divided into sampling, sample preparation and the actual analytical procedure.

Two types of uncertainty can be associated with sampling. Accuracy is used to define the degree of closeness of the measured values to the true value and precision is the closeness of measured values to each other and variance, standard deviation and coefficient of variation can be used as measures of the latter. If we combine these two terms we can have four outcomes, namely, high precision, low accuracy; low precision, low accuracy; low precision, high accuracy and high precision, high accuracy and in the ideal world we should always be achieving the latter. The worst scenario is a sampling plan which gives low precision and low accuracy.

Sampling

The ideal sampling method should ensure that every piece of feed has an equal chance of being sampled. This is not the case, for example, when the sampling probe is shorter than the sample depth or if the sample has not been adequately mixed.

As contaminated particles may not be evenly distributed through a feed, many small portions of feed taken from throughout the lot should be taken to make the sample that is going to be used for the actual testing (the test sample). These many samples constitute what is known as the bulk sample and if this is too big it can be blended and subdivided to produce the test sample. Lots of feed can either be static, for example in a bin or hopper, or dynamic, for example feed moving along a conveyor. For static lots there can be problems reaching all parts of, say, the bin, whereas dynamic lots are easier to sample, for example, a sample per minute.

Preparation of test sample

The bulk sample has to be thoroughly mixed and this usually necessitates grinding. Grinders that produce small particles produce more homogeneous test samples and their mycotoxin concentration will more closely match the true value of the lot. If the amount of material thus obtained is too great, a subsample can be taken for testing purposes.