

Proper feed sampling procedures first step in reliable test results

By **SARAH WEILAND***

FEEED and ingredient samples are collected for many reasons, including confirming diet composition, checking that feed requirements are met, evaluating the quality of ingredients used, validating the biosecurity status of ingredients and evaluating new products and feed techniques.

It is instructive to understand the procedures outlined by the Association of American Feed Control Officials (AAFCO) in 2014 regarding sampling to ensure that processes are in line with accepted standards (Table). To obtain reliable information, samples must accurately represent both the quality and

quantity of ingredients in the feed. Thus, the proper sampling technique must be followed to obtain reliable results.

The proper sampling technique depends on the type of sample and the testing purpose. Sample standard operating procedures (SOPs) should be in place for both routine surveillance or investigational purposes and should be followed by all personnel.

If routine sampling is necessary, a routine sampling schedule can be determined that takes into consideration the lot size, the type of products within the location and variation within the product. Investigative sampling can be completed any time more information is needed regarding feed or ingredients.

When developing an SOP, outline options for sample collection tools, and specify which tools should be used based on the sample type and condi-

tions. Options for sample collection tools include sampling probes, sampling triers, cups or, in some cases, collection by hand. When choosing a sampling tool, ensure that the tool can consistently collect a representative sample in the feed or ingredient type.

The sampling SOP should also specify the proper sampling containers. The following should be considered when choosing a sample container:

- Can the sample container be plastic, or should it be made of glass?
- Does the sample container need to be sterile?
- How large does the sample container need to be?
- Is the sample container leakproof?

Sample containers must also have an area that allows for clear, permanent labeling.

The SOP should clearly specify the in-

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AAFCO Quick Reference Sampling Guide

Sampling device(s)	Sampling media	Sampling procedure: *maintain integrity of lot*	Sample size
Single/double tube trier	Bagged feed: free flowing, coarse, textured, small to medium-size pellets	= > 11 bags: sample 10 bags (10 cores) 1-10 bags: sample all bags (10 cores) = < 4 bags: sample all bags (= > 5 cores)	Minimum: 18 oz. (500 g) Preferred: 2.2 lb. (1 kg)
Flour/slotted trier	Bagged feed: powdered	= > 11 bags: sample 10 bags (10 cores) 1-10 bags: sample all bags (10 cores) = < 4 bags: sample all bags (= > 5 cores)	Minimum: 18 oz. (500 g) Preferred: 2.2 lb. (1 kg)
Hand grab	Bagged feed: cubes, wafers, large pellets	= > 11 bags: sample 10 bags (10 cores) 1-10 bags: sample all bags (10 cores) = < 4 bags: sample all bags (= > 5 cores) Take equal amounts from each bag	Minimum: 18 oz. (500 g) Preferred: 2.2 lb. (1 kg)
Single or double tube trier / closed compartment / grain probe / stream sampler / hand grab	Bulk feed: free flowing, coarse, textured, small to medium-size pellets, cubes, wafers, large pellets	10 cores / probes or Cut stream 10 times at equal intervals over duration of loading/unloading or 10 grabs	Minimum: 18 oz. (500 g) Preferred: 2.2 lb. (1 kg)
Specialty probes or hand grab	High-fiber products: cottonseed hulls, almond hulls, gin trash	4 probes per car or 1 probe per section of car or 10 grabs at equal intervals during loading/unloading	10 lb.
Scoop	Wet brewers, distillers grain	Collect at equal intervals a composite sample totaling 25-30 lb., then mix and quarter until sample is reduced to desired sample size	3-4 lb.
Liquid bomb / liquid zone / Texas tube / liquid tube / delivery lines-valves / site gauge	Liquid products	Collect sample per device directions or Properly flush delivery line(s) and/or valve and then collect sample or If equipped, remove site gauge, flush and then collect sample	Minimum: 17 oz. (500 mL)
Approved container for hot liquids	Fats and oils	Sample from fat blender equipment or Valve/nozzle on mixer or Valve on delivery vehicle	32 oz. (946 mL)
Hand grab	Haylage and silage	Tower silo: 10 grabs at intervals while unloading Bunker silo: 10 grabs off fresh face at equal intervals across material being fed (only enter bunker silo if area is secure and sample can be taken safely)	5 lb. (2.3 kg) tightly packed and kept cool
Hay corning device / hand grab	Forages	Baled hay: hay corer is preferred to hand grab Loose hay: sample from fresh face at equal intervals across material being fed	Baled hay: 20 randomly selected cores Loose hay: 20 cores or 10 grab samples

Note: Table includes a portion of AAFCO Quick Reference Sampling Guide.

formation to include on sample labels, such as sample type, sample identification, lot information (if applicable), date of collection, name or initials of the individual who collected the sample, how long the sample should be retained and other identifiers deemed necessary.

Samples should be taken from unopened bags or containers, unless a specific sample is needed for investigational purposes. When obtaining samples from unopened bags or containers, all bags should be from the same production lot. If this is not possible, bags from various lots should be sampled at random, not all from the same pallet, row or pile.

Sampling SOPs should include guidelines on how to homogenize prior to sample collection, how many bags or containers should be pulled from in order to create the submitted sample and how large the final sample needs to be

for submission.

When obtaining samples of feed in the feeders, work by Jones et al. (2018) showed that sampling probes were less variable than sampling via hand and suggested that samples be pulled from six feeders, homogenized and then subsampled for optimal sample quality.

The SOP should specify if one sample is sufficient or if multiple samples are needed, in which case a riffle splitter can be used to evenly split dry samples.

Liquids can be sampled from well-homogenized drums or barrels using a tube of glass or stainless steel that is 3/8 in. to 1/2 in. in diameter and several feet long (Herrman, 2001).

The Bottom Line

Having SOPs in place for employees to be trained on and follow can help en-

sure accurate and consistent feed and ingredient sampling, which is a crucial first step in generating reliable data.

References

Association of American Feed Control Officials. 2014. Feed Inspector's Manual, 5th edition.

Herrman, T. 2001. Sampling: Procedures for feed. Kansas State University Extension Publication MF-2036. Kansas State University.

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