

### FORAGE SAMPLING RECOMMENDATIONS AND WHAT TO WATCH FOR

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Accurate forage analysis is the key to proper ration balancing and forage pricing. However, it's dependent on using the correct sampling techniques for harvested and ensiled forages. Identifying forage analysis objectives is important as well – to get the most return on time and monies spent and to set the best strategies for forage use.

#### Potential Forage Variation Pre-harvest

Understanding the potential variation among and within fields and from hybrid differences is critical for planning where to sample, frequency of sampling, and whether samples should be composited before shipping to a lab. The greater the potential forage variation, the more important it is for forages to be kept separate. Using more specific sampling where variation is expected enables more economic use of each unique forage lot.

#### Sampling Dry Hay and Baleage

The distribution of stems and leaves varies within hay bales and can be influenced by windrow width, baler, and environmental conditions at baling. Generally, the leaf concentration is highest in the lower and tighter parts of square bales; visual appraisal can confirm if leaf separation has occurred. Samples of ground hay are especially subject to leaf separation, particularly on windy days. Proper sampling technique is key for getting representative hay samples from bales. Small square bales should be cored (minimum 3/8" diameter, 12-24" length) at 90° from the end, while large square bales should be cored at a 45° angle from the side. Round bales should be sampled at a 90° angle along the curved side of the bale. When feeding intact round bales subject to outer layer spoilage, the layers likely to be refused by livestock can be removed before sampling.

#### Sampling Chopped and Fermented Forages

Chopped forages are also subject to leaf and stem separation, as well as to grain disparity. Leaves tend to separate to the outside of loads, while stems and grain are found more toward the center of loads. Chopped forages blown into upright silos are also subject to similar leaf, stem, and grain separation and, the drier the forage, the greater the segregation.

Sampling of fermented feeds should be delayed until after ensiling is complete, which is usually three weeks for corn and sorghum silages and four weeks for legume, grass, and small grain silages. Fermented forage samples should be obtained as close as possible to the time of a morning or evening feeding. Samples from upright silos should be taken from unloaders while in operation. Due to possible layer variation, and, more importantly, for safety considerations, bunker and drive-over piles should be faced and then sampled from a safe distance from a forage face. Silo bags should be faced, then safely sampled by hand. Hand sampling across the face of bunkers, drive-over piles, and silo bags before facing poses a risk for considerable variation.

#### Sample Preparation and Shipping

Clean, quart-size or larger sealable plastic bags should be legibly and clearly labeled in a manner relevant for the testing lab and identified in a meaningful way for the forage producer. Place forage samples of approximately 1-2 pounds into the plastic bags, expel all air, and then tightly seal the bags. Samples should then be promptly delivered in person or via overnight transit to the testing lab. Cold packs should be added to shipping boxes during warmer weather to reduce the potential for plant respiration and microbial fermentation during transit. Samples can be frozen if shipping will be delayed, but freezing samples can result in incorrect yeast and mold counts. Best practices include placing samples into a cooler with cold packs as they are collected throughout the day, then



shipping at the end of the day. Too often, samples are placed on a vehicle dashboard and bake throughout the day, then are forgotten in the vehicle overnight.

### Sampling Techniques for Various Forage Types and Storage Structures

Forage Type and Structure	Sampling Technique
<b>Baled dry hay, baleage</b>	
Small square bales	Core <sup>1</sup> 12-20 bales from end at 90°. Composite for 1-to 2-lb sample. <sup>2</sup>
Large square bales	Core <sup>1</sup> 8-10 bales from end at 90° or along the side at 45°. Composite for 1- to 2-lb sample. <sup>2</sup>
Round bales	Remove spoiled outer layers if bales are to be fed intact. Core <sup>1</sup> 8-10 bales along curved side at 90°. Composite for 1- to 2-lb sample. <sup>2</sup>
<b>Chopped Forage</b>	
After chopping, before packing	Collect 3-5 samples (1 lb each) as each wagon or truck unloads. Composite for 1- to 2-lb sample. <sup>2</sup>
Upright silos	Collect 4-6 samples (1 lb each) from operating silo unloader. Composite for 1- to 2-lb sample. <sup>2</sup>
Bunkers or drive-over piles	Face with loader bucket or mechanical facer, then obtain 4-6 samples (1 lb each) at a safe distance from forage face. Composite for 1- to 2-lb sample. <sup>2</sup>
Silo bags	Face with loader bucket, then obtain 4-6 samples (1 lb each). Composite for 1- to 2-lb sample. <sup>2</sup>

<sup>1</sup>Corer should be minimum 3/8" diameter and 12-24" length.

<sup>2</sup>Clean, quart-size or larger plastic bags, expel air and seal tightly.