

Sampling Hay Bales and Pastures for Forage Analysis

T. L. Provin and J. L. Pitt
Extension Soil Chemist and
Extension Associate—Soil, Water and Forage Testing Laboratory
The Texas A&M University System

Forage analysis can help you determine both the nutritive value and potential toxicity of forage, as well as the need for protein and mineral supplements. Accurate analysis requires that forage be sampled properly so that representative samples are delivered to the testing laboratory.



Sampling Bales

The common practice of pulling samples from the ends and edges of bales can cause the nutritive value of forage to be underestimated. Decayed and low-quality leached forages are often found on the outer edges of weathered hay bales. Cattle often reject this hay when they have access to more palatable forages in other parts of the bale.



The ideal method of sampling hay bales is to use a bale probe. A number of probes are available; most probes cut a 1-inch-diameter core from the bale. Consult your county Extension agent for information on purchasing a bale probe.

Round Bales

Sample cores should be taken midway up the side of the bale and toward the center of the bale. Sampling near ends or bottoms of bales may not yield a representative sample.

Remove the outer $\frac{1}{2}$ inch of the bale surface before sampling so the sample will not be contaminated by dust and debris from the field. Next, drill or core into the bale 12 to 18 inches deep. Carefully pour the sample into a container. Good sample containers include manilla mailing envelopes, sealable plastic bags

(only if dry) and small paper sacks (fertilizer and feed sacks are not appropriate sample containers). Continue sampling four to five other bales from the same field and cutting. Mix the samples thoroughly and submit this composite sample to the laboratory



along with the laboratory submittal form. One composite sample should be collected for every 25 to 30 bales per field and cutting.

Square Bales

Take sample cores from the ends of bales toward the center.

First, remove the outer $\frac{1}{2}$ inch of hay. Drill into the bale 12 to 18 inches deep. Carefully pour the sample into a container. Continue sampling six to eight other bales from the same field and cutting. Mix the samples thoroughly, label the composite sample, and submit it to the laboratory with the submittal form. One composite sample should be obtained for every 400 bales per field and cutting.

Field Sampling Pastures to be Grazed

It is harder to obtain proper forage samples in the field than from hay bales. You must be aware of the height at which the hay will be harvested, the forage height after grazing, and differences in fertilization from one area of the pasture to another. Do not make a composite sample from areas of the field that have received different rates of manure or fertilizer because this will skew the final laboratory analysis. Trouble spots, areas under different management and fertilization practices, and areas with different types of grass should be sampled separately.

To gather a subsample, cut or tear the forage at the final forage height after grazing. Be careful not to pull the entire plant out of the ground. Gather subsamples from ten to fifteen areas within a given pasture or field (not to exceed 40 acres). Combine all subsamples and place them in an appropriate



paper sack or envelope (do not use plastic bags, fertilizer bags or feed sacks, as these containers may skew the analysis). Label the container with appropriate identification for the field and sample and submit it with the laboratory submittal form.

Submitting a Sample

Complete the Forage/Feed/Plant Tissue Sample Information Form available from your county Extension agent. The form is also available at the Soil, Water and Forage Testing Laboratory Web site (<http://soiltesting.tamu.edu>). Enclose payment (do not send cash) and the completed form in the package with the samples. If samples are moist put the form and payment in a plastic bag. Mail the package to: Extension Soil, Water and Forage Testing Laboratory, Texas A&M University, Soil and Crop Sciences Department, College Station, Texas 77843-2474, (979) 845-4816.

The Soil, Water and Forage Testing Laboratory offers a number of forage testing services to meet most producers' needs. These include crude protein, fiber, minerals and nitrate analysis.

For additional information, please visit:
<http://soiltesting.tamu.edu>. or
<http://soilcrop.tamu.edu>

Produced by AgriLife Communications and Marketing, Texas A&M System
Extension publications can be found on the Web at: <http://AgriLifebookstore.org>

Visit the Texas AgriLife Extension Service at <http://texasextension.tamu.edu>

Educational programs of the Texas AgriLife Extension Service are open to all people without regard to race, color, sex, disability, religion, age, or national origin.

Issued in furtherance of Cooperative Extension Work in Agriculture and Home Economics, Acts of Congress of May 8, 1914, as amended, and June 30, 1914, in cooperation with the United States Department of Agriculture. Edward G. Smith, Director, Texas AgriLife Extension Service, Texas A&M System.