



Cattle Producer's Handbook

Nutrition Section

345

Sampling and Interpreting Feed Analyses

Doug Dean, Livestock & Range Management Extension Agent—Tri River Area, Colorado State University, Delta

David Bohnert, Associate Professor, Eastern Oregon Agriculture Research Center

Oregon State University, Burns

Michael Mehren, Livestock Nutritionist, Hermiston, OR

The best use of any feed, whether pasture, harvested forage, grain, or supplement, begins with an understanding of the nutrient content and quality of available feedstuffs along with the target animals' nutrient requirements (see fact sheet 300). Cattle producers can then use this information to develop rations that economically meet their management objectives (see 310 for specific information on ration balancing). Proper sampling of the available feedstuffs and accurate analyses by a certified lab are essential to obtain reliable estimates of the nutrient content of the feedstuffs. A list of certified laboratories, detailed forage sampling procedures, and the most common types of hay probes can be found on the National Forage Testing Association's web site (www.foragetesting.org).

Sampling

The primary reasons to test feedstuffs include: (1) determination of feedstuff value (marketing); (2) comparison of similar feedstuffs (feedstuff selection); (3) economic formulation of rations (lower feed costs); (4) determine potential deficiencies/toxicities/antagonism (animal health concerns); and (5) accurate prediction of animal performance.

Proper sampling is of the utmost importance since the sample that will actually be tested by a certified lab often weighs less than a gram and can represent many tons of feed. Therefore, strict protocols should be adhered to so that a representative sample is obtained. One of the first steps is to identify a lot/stack/load of feed for sampling. Do not mix different lots/stacks/loads as there may be significant variation in quality. Also, it is advisable to sample feeds as close to feeding or selling as possible. The concentration of nutrients can change depending on environmental conditions and length of time that the feedstuff has been stored.

Hay Sampling

Hay bales should be sampled with a probe that takes small "cores" from baled hay. Probe tools may attach to hand drills and/or hand braces or push and auger types. The National Forage Testing Association web site provides a list of recommended hay probes along with information about where they can be obtained.

Core samples should be taken from the end of rectangular bales, between the strings/wires, so that you get a good cross section of material. Always take the core sample from a 90 degree angle or perpendicular to the bale and go at least 12 to 18 inches deep. Do not take samples from the side or top as the core will only come from one "flake" and, therefore, will not be representative of the bale.

For small bales (2- and 3-tie bales) take a single core per bale. For large bales (>500 pounds) take two to three samples from the ends making sure to spread out the sampling locations between the upper portion and the lower portion of the bale. For large round bales, take two to three samples per bale remembering to sample from the round side where the strings or netting are located for a representative cross section.

Sample at least 20 bales from each lot/field to account for possible variability in quality. Loose hay stacks, rake bunches, and windrows need to be sampled by taking handfuls of the harvested forage. Take at least 20 samples (three handfuls per sample) of forage from different areas in the stack/bunch/windrow.

Always handle samples correctly (<http://www.foragetesting.org>). Place each composited sample of forage in a well-sealed plastic bag and protect from heat and sun. Refrigeration of forage samples may be helpful for dry matter (DM) measurements, especially if