

## FORAGE QUALITY TESTING PROCEDURES

It is not uncommon for hay buyers and hay growers to submit more than one forage sample when testing for feed quality. When the analysis is different from two independent testing labs there is a temptation for growers to use the highest score, while buyers prefer using the lower score. Experts argue the results will never be exactly the same, even when a sample is divided and analyzed at the same lab. How could that be?

Dr. Dan Undersander, Forage Agronomist at the University of Wisconsin, explained the differences at the recent Utah Hay and Forage Symposium. His vast experience in forage quality analysis at Purdue, Texas A & M, and Clemson Universities, in addition to work with farmers in North and South America and Eastern Europe made his presentation most interesting.

Undersander spoke of the difficulty of getting consistent samples from the stack or field. Variation in forage analysis is natural and unavoidable because the pinky sized ground-up sample the lab analyzes (approx 75 grams) must represent tons and tons of alfalfa hay from the stack or field. The sample must fairly represent the leaf/stem ratio, which varies throughout the bale, as well as the weed composition of the hay, which varies considerably across the field. Protein and fiber of leaves and stems are quite different, so following a definite protocol in hay sampling is very important. Consider the following recommendations.

First, choose a good, sharp coring device. The inside diameter of the cutting edge should be at least 3/8 inch and no more than 5/8 inch. The cutting edges should be at right angles to the shaft, and always kept sharp. Dull probes will cause material to be pushed out of the core so samples will not fairly represent the leaf/stem ratio of bales. Poor samples will also come if bales are probed from the sides because the probe usually slides past the stems. Selecting samples from the butt end of the bale, and at least 12-18 inches into the bale, is always preferred. Hay probes can be examined and ordered at <http://foragetesting.org>. We also have probes for checkout at the Extension office.

Sample at random by walking around the entire stack and by sampling bales at various heights. That will usually require the use of a ladder. Do not purposefully avoid some bales or selectively choose others. Try to obtain cores from as broad a group of bales as possible. Undersander's research group has shown that there is greater variation between small rectangular bales than between midsize or large bales. One can expect a higher concentration of leaves on one side of small bales and there will often be differences between the center and corners of large square bales. Tops of mid-size bales had higher fiber than faces of the bales. When sampling small rectangular bales, Undersander recommends sampling a minimum of 20 bales. A random sample of 12 mid-size or ton bales is usually sufficient, unless there is a lot of variation in the stack. Collected samples should not be exposed to heat or direct sunlight. Get the samples to the lab as quickly as possible.

Some growers divide an un-ground forage sample and send to different labs expecting similar results. Experience shows that the results will never be the same. First, it is impossible to exactly divide the sample and if that were possible labs do not follow the same procedures when doing tests. Formulas are often different and replications are needed to get identical analytical results. If a grower desires a

second reading from another lab, it is best to request the ground sample be returned and used again. Undersander recommended growers and buyers select a preferred forage testing lab and then stick with it. Nutritionists generally adjust rations to work well with lab results. It is much easier to be consistent if the same lab procedures are used again and again. Certified NFTA labs are listed at [www.foragetesting.org](http://www.foragetesting.org).

Growers were reminded that accurate measurement of forage quality depends on the representativeness of the sample. If growers and buyers really want to have full confidence in the results, Undersander recommends submitting three subsamples and taking the mean of the three values. His experience shows that most of the time a fourth sample will not make any difference.