

# Don't Abuse That Hay Test!

Ever have a hay sale go bust because your forage analysis didn't come back with the same results as the buyer's? Ever have a high-testing hay not "milk" as expected? You're not alone. Arguments over the consistency of hay tests are as common as rain on your first cut or maybe even cheeshead hats at a Packers game. It's a part of the hay-trade landscape.

Growers often point fingers at forage-testing labs that do, at times, create discrepancies. But it's my view that hay buyers and sellers deserve some of the blame for forage-test debates, due to unrealistic expectations, misunderstandings and even deliberate trickery. These are issues with the abuse of lab values, not with the values themselves. Here is a list of five common abuses of the hay-testing process, with comments likely heard from farmers concerning each one:

**Abuse No. 1: Utilizing improper sampling methods.** *"I took a flake to the lab, but it tested very poorly." "I took three cores from a 1,000-ton stack for lab analysis."*

These are clearly bad sampling techniques. Improper sampling is one of the biggest abuses of the hay-testing process. Since a teaspoon-sized sample (see photo below) must represent a large, variable mass of hay, it's not surprising that sampling methods often cause large differences

in results. Proper sampling protocols will greatly reduce – but not eliminate – variation due to sampling.

**Solution:** Always use standardized sampling methods that include the use of sharp hay probes and 20 composite cores to obtain about a half-pound sample on a defined "lot" (single cut, single field, 200 tons maximum). And use a random, proper technique. The National Forage Testing Association (NFTA) has a certified method of sampling. You can learn it, take the online test and become a certified sampler at [www.foragetesting.org](http://www.foragetesting.org).

**Abuse No. 2: Failing to expect some variation in hay tests.** *"My customer wanted 170-RFV hay, but mine tested 166 RFV, so he refused it." "I need 20% crude protein (CP) hay, but the test came back at 19.7%, so I'm not buying."*

Expecting this degree of precision with a heterogeneous product such as hay is downright ridiculous. I've measured individual probes in a hay stack, and they can vary as much as 10 points ADF or NDF and 5 points CP or 30 points RFV from neighboring bales! Customers should always expect some variation in lab tests.

**Solution:** Associate a plus-or-minus (+/-) term on each measurement, such as a minimum of +/- 0.7% ADF, +/- 1% NDF, and +/- 0.5% CP

(about 6 points RFV and 0.5 points TDN). If you include the variation due to sampling, between-lab variation or lab imprecision, this amount may double. Note: A well-collected sample, or one sent to an "A-grade" NFTA lab, should have less lab variation. But always expect some variation in hay tests.

**Abuse No. 3: Encouraging lab bias.** *"My lab usually gives results two points below what other labs report. I will insist upon that lab, since I get to pay less for my hay."*

Clients' preferences for low or high RFV, CP or TDN numbers for financial gain can result in labs catering

**"Always expect some variation in hay tests."  
– Dan Putnam**

to those preferences – hence "dairy" labs or "hay-seller" labs. This falls into the category of "giving the customers what they want" and is clearly an abuse, since accuracy is sacrificed. Don't reward labs that do this.

**Solution:** Buyers and sellers need to put pressure on labs to give a high degree of accuracy and not low or high results. Encouraging bias only reduces confidence in the testing system. Only reward labs that are members of NFTA and exhibit a high degree of independence and interest in accuracy.

**Abuse No. 4: Confusion over dry matter.** *"My hay had 24% CP at 100% dry matter (DM), but only 20% on an as-received basis. My buyer said forage quality should be based on an as-received basis, and therefore should be lower in price."*

The expression of any lab value at a lower DM content makes the value appear to be lower. But that's just an illusion. For example, a 24%-CP hay (100% DM) expressed on an 84%-DM basis would be about 20%. This is an example of obfuscation – okay, trickery – in the hay trade. Moisture in

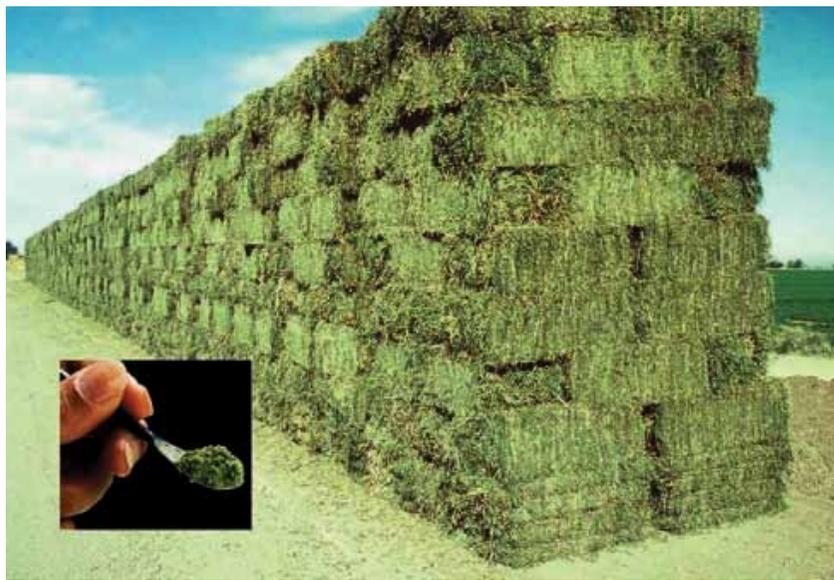


PHOTO: DAN PUTNAM, UNIVERSITY OF CALIFORNIA



hay comes and goes and should not be considered in evaluation of relative quality in the trading of hay – other than indicating excessive wetness or dryness.

**Solution:** Evaluate quality based only on 100%-DM data. Yield or tonnage can be adjusted, but not quality.

**Abuse No. 5: Failing to account for other quality factors.** *“I bought a high-quality, 57%-TDN (175-RFV) hay, but my cows really didn’t milk well. There must have been something wrong with the test.”*

All tests have limitations in predicting animal performance. Most of the hay trade currently is based on RFV or TDN – which are based solely on fiber measurements (ADF and/or NDF).

However, nutritionists have known for years that several other factors are important indicators of animal response, including fiber digestibility, rumen-degradable protein, ash and lignin content. Weeds, odors, molds and texture can also have effects on intake and milk production. Fiber and crude protein measurements, the most common measures of quality, do not measure everything needed to predict milk production.

**Solution:** Understand the limitations of the standard fiber-based, hay-testing systems. These are good first approximations, but additional measurements – such as NDFD, ash, rumen-undegradable protein, lignin and visual evaluation – are very helpful in predicting the feeding value of hay.

**In conclusion,** routine analyses of hay quality have been invaluable tools for predicting feeding values and in pricing hay. But problems with hay testing are often caused by clients rather than by labs themselves. We can best avoid these abuses by following the suggested solutions outlined here. Hay testing at its best is an instrument to facilitate scientific ration balancing and determine value for trade. It is not a hammer used to bludgeon or inflate prices. ♦