Beef Cattle Myth Buster

Dr. Don Llewellyn[1], Gary Rohwer[2], and Sarah Dreger[1]
[1]WSU Department of Animal Sciences and WSU Extension, Pullman, WA
[2]Bar Diamond, Inc., Parma, ID

When you request forage quality analysis from a laboratory, do all methods of analysis result in the same results?

Feed/forage analysis is an important part of developing feeding strategies for beef cattle. Knowing the composition of feeds helps us be confident that we are meeting cattle nutrient requirements. Meeting or not meeting those requirements has long-term implications as to how cows perform through the annual production cycle. Depending on the quality of the feed, sometimes we must supplement to make up for nutrient deficits in the base feed. As we regularly tell our students here at WSU, "you don't know what you need until you figure out what you have." Therefore, it is essential to test our feeds for chemical composition to predict quality. When producers take representative samples to a feed lab, the selection of the correct type of analysis is important to answer the question presented in this column. The answer is that it depends on the type of feed being tested.

Upon delivery of feeds to the testing lab, you will likely be asked to select the method of analysis. Let's look at the options and the pros and cons to think about when selecting the method. In general, there are a couple of options for feed/forage quality testing: 1) wet chemistry, and 2) Near Infrared Reflectance Spectroscopy (NIRS). In the first case, wet chemistry is simply the use of chemical analysis by standard methods which are published by the Association of Official Analytical Collaboration (AOAC) International – Official Methods of Analysis. AOAC standard procedures are well tested, are reproducible, and provide the same consistent results from different laboratories. In general, wet chemistry is more labor-intensive has more preparation time, more steps, and costs more to account for chemicals, labor, and safety precautions.

NIRS is typically less expensive and certainly less time-consuming. NIRS works by measuring the amount of light that is reflected from the sample and then the instrument compares that to a standard set of values that were originally derived from wet chemistry to estimate the chemical composition (i.e. crude protein, NDF, ADF, lignin, etc.). However, this doesn't mean that NIRS is the best choice for all feeds. The subject sample must have a wide set of wet chemistry analyses to create a calibration to compare the sample to.

So, the bottom line is that NIRS is best applied in the analysis of more common feeds, and wet chemistry can be applied to a wide variety of feeds with great success. Here's an example: Say you have two different samples of forages that you want to have analyzed by your favorite feed testing laboratory, one is third cutting alfalfa hay and the other is clipping from fields of cover crops that have a wide variety of forage species (barley, pea, forage radish, and turnips). Alfalfa is a good candidate for NIRS analysis because many thousands of wet chemistry samples have contributed to the NIRS calibration for alfalfa. This holds true for grass hays, legume/grass hay mixtures, and some grains. On the other hand, more "exotic" mixes of feeds and forages don't lend themselves very well to an analysis by NIRS.

If nothing about the feed sample is unusual and the laboratory has the proper NIRS calibration equations for the feed type, NIRS will give good estimates of wet chemistry analysis. If proper NIRS equations are not available or the feed is unusual or a mixture, stick to wet chemistry.

There you have it; the myth is busted! Always, consider the type of feeds you are sending for analysis before you decide on the method that will be performed.