



Interpreting Forage Quality of Grass Hay

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Have you ever had two lots of alfalfa with the same relative feed value (RFV), on one lot the cows milked great - ate it like candy - and on the other lot, the production dropped and the cows didn't seem to like the forage? Or have you ever tested the quality of your grass hay and been disappointed at the low RFV even though the cows seemed to do very well on it?

When you get results like this you may be wondering what's wrong with the results or the hay. Actually, nothing may be wrong.

For years, RFV has been widely used to determine the quality of forage and therefore add some objectivity to determining a market value for forage. It was initially developed primarily for alfalfa for the dairy industry.

While RFV has been very valuable for marketing alfalfa hay, it has not been as useful or reliable as would be desired in predicting livestock performance and or building rations, especially for grasses.

To understand this, one must realize that RFV uses two types of fiber to calculate RFV: the acid detergent fiber (ADF) and the neutral detergent fiber (NDF). The NDF helps estimate intake while ADF estimates energy. However, this system assumed all fiber had the same digestibility. We know that is not true and it especially misrepresents the forage quality of grasses. Fiber from grass and legumes naturally differs in digestibility, as it also does when grown under different ambient temperatures. Grasses typically have higher fiber fractions (ADF and NDF) and they also have lower lignin content than the lignin fibre associated with legumes. The greater fiber digestibility associated with grasses is made up by legumes having more cell contents (non-NDF material) that are highly digestible thus elevating energy concentrations to higher levels than in grasses.

So how can we differentiate fibre utilization in forages?

A new test has been developed called relative forage quality (RFQ) that measures the actual digestibility of the fiber (NDF), thus doing a better job of estimating forage quality of grasses. Since fiber digestibility (NDFD) also affects potential intake this is where RFQ fits as a replacement for RFV providing a better index of how forage will perform in an animal diet.

An advantage of the RFQ prediction is that it differentiates legumes from grasses. Because of the higher NDF in grasses RFQ will be a better predictor of quality than RFV. RFQ emphasizes fiber digestibility while RFV uses digestible dry matter intake.

RFQ is also a better fit when looking at the digestibility when forages are grown under cooler conditions. First cut will tend to have more highly digestible fiber than later cuttings growing under higher temperatures. RFV of first-cutting alfalfa will be similar to that of second and third cuttings harvested at similar stages of maturity. However, fiber fraction digestibility from each cutting will be different, as this is influenced by ambient temperatures at the time of growth and development. The RFQ calculation may take into account how cows may perform differently when fed forages from different cuttings.

While this new RFQ test is especially useful when testing grassy hays, it also has been proven to be better with alfalfa and other legumes. RFQ gives more credit for digestible fiber in grasses and grasses will typically have higher RFQ than RFV but will still be less than many legumes. So when you test forages in the future, look for labs that offer relative forage quality. Your numbers will be more accurate.