

## Change in RFV and RFQ of Alfalfa During Spring Growth

by Dan Undersander, University of Wisconsin

RFV has been used to determine when to harvest first cutting for consistent quality for over 20 years. Alfalfa quality declines at a constant rate near harvest in the spring. However, the quality decline differs among years (Figure 1). If 180 RFV is the harvest quality goal, this point was reached around May 18 in 1999-2001 but not until June 2 in 2002 and 2003.

Thus, it is important to measure quality in the field before harvesting. UW-Extension, cooperating with others, has coordinated a scissors clip program where forage was sampled, analyzed for quality and the results reported. More recently, forage quality has been more easily estimated with the forage quality (PEAQ) stick. With this stick (or a yardstick) measure the height of the alfalfa, determine the stage of the most mature stem, and estimate quality of the standing forage.

The value of digestible fiber for estimating energy of forages to better balance rations is well documented and recommended by the National Research Council (NRC). To be consistent with NRC changes, the Relative Feed Value (RFV) which used fiber only, has been changed to Relative Forage Quality (RFQ) which uses the summative TDN (including digestible fiber) and adjusts intake for digestible fiber. Digestible fiber varies at similar fiber levels. RFV and RFQ will be the same when digestible fiber is average. Since digestible fiber is usually higher than average on first cutting, the relationship between RFV and RFQ will not be constant among cuttings. However, the concern is first cutting which is typically the largest tonnage cutting and is usually targeted for the dairy herd.

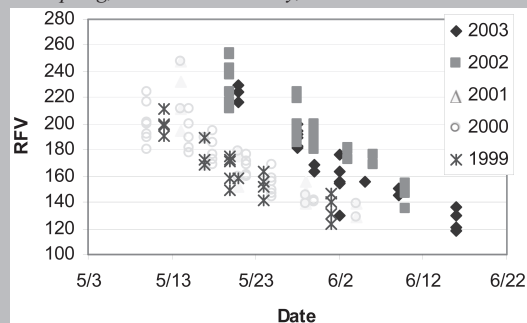
Analyses were run of scissors clip samples from multiple cuttings and sites to determine the relationship between the two indices. One important finding - that the rate of RFQ change was linear near harvest, as has been the case with RFV (Figure 2). This is significant because it allows the grower to project when forage will be ready to harvest based on the reading of any given day.

The second goal was to determine the relationship between RFV and RFQ. The data illustrates the relationship between RFV and RFQ for both years, the correlation was 0.99 for 2007 and 0.96 for 2006 (Figure 3). However, the relationship was not quite the same between years. In 2007, RFV and RFQ values were similar through the harvest range, whereas in 2006 RFQ was 50 units higher than RFV. This would indicate that the fiber was generally more digestible in 2006 than 2007.

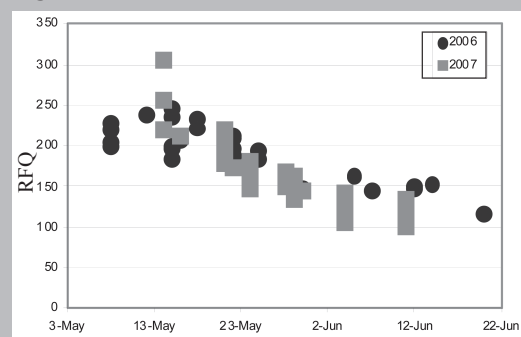
It appears that forage quality (PEAQ) sticks can be used to estimate the RFQ of standing alfalfa to determine when to first cut. It appears from these and other data that RFQ will be as high, or higher than RFV on first cutting. Thus, without any forage analysis, using the forage quality stick may err on the side of RFQ estimates.

Greater accuracy can be achieved by analyzing a single forage sample to determine the relative digestible fiber average and then adjusting all readings from the forage quality stick accordingly.

**Figure 1.** Alfalfa quality loss with advancing maturing in the Spring, Fond du Lac County, WI.



**Figure 2.** Change of RFQ during 2007/2008 in WI.



**Figure 3.** Relationship of RFV to RFQ during spring sampling.

