

RELATIONSHIPS AMONG TESTING RESULTS OF CALIFORNIA ALFALFA HAY SAMPLES

by Dan Putnam¹

ABSTRACT

A group of 231 alfalfa hay sample results received by a commercial lab over 4 years of hay testing in the San Joaquin Valley of California were examined for the relationship between various lab results. ADF² and NDF were linearly related in this data set (90% of the variation in NDF is explained by the ADF value = R²). There was a very poor relationship between ADF value and CP (R² of 26%), which confirms that no direct inference about protein can be reliably derived from the fiber value. RFV is an index for rating hays and is calculated ADF and NDF lab results, and commonly used in midwestern states but not in California. ADF alone explained 95% of the variation in RFV, and NDF alone explained 99% of the variation in RFV. It is likely that with the mostly pure alfalfa hays grown in California, a single observation of NDF (or with slightly less confidence ADF) can adequately duplicate an evaluation of hay which uses RFV. RFV has the disadvantage of utilizing two separate analysis (ADF and NDF, each with its own range of error) for the calculation. The calculated RFV values from the California samples for each category indicate little agreement between CA standards (based on ADF) and the Midwestern RFV standard. If the RFV standards which are currently in place for midwestern states were adapted here in California, the categories of hay for each group would automatically increase approximately 1 full category in many cases, lowering the standards significantly. It is unlikely that market conditions in California would reflect these standards. Therefore, RFV is not recommended for use in California at this time.

Table 1. Relationship of Currently-used ADF Standards, NDF values at those ADF levels, and calculated RFV values.

A	B	C	D	E	F
Category	ADF (Current Standards)	NDF (Average at given ADF)	RFV (CA Samples)	RFV (Midwestern Standards Currently Used)	ADF Equivalent (from Midwest Standards)
Supreme	<27	<33.9	>186.2	>180	<27.8
Premium	27-29	34-36.2	70.5-186	150-180	27.9-32.1
Good	29-32	36.3-39.6	150.4-170.5	125-150	32.2-36.7
Fair	>35	>43.0	<133.5	100-125	>42.8

Notes: Column A=CA & National Hay Standard Categories; B=ADF values for each category; C=NDF calculated at the given ADF (CA Data); D=RFV calculated from ADF & NDF for each category (CA data); E=RFV used in midwestern standards; F=ADF equivalent value calculated for the given RFV values from the Midwest Standards, using the relationship found in CA hays. These (F) indicate the ADF values which would be used if the midwestern RFV standards were adapted.

¹Forage Specialist, Dept. of Agronomy and Range Science, University of California, Davis 95616.
Published IN 28th California Alfalfa Symposium, 3-4 December, 1998. Reno, NV. UC Davis.

²Abbreviations: ADF = Acid Detergent Fiber, NDF=Neutral Detergent Fiber, TDN=Total Digestible Nutrients (calculated from ADF), CP=Crude Protein, RFV=Relative Feed Value.

