



# FORAGE FACTS

Publication Series

## RELATIVE FEED VALUE MEASURES FORAGE QUALITY

### INTRODUCTION

The most widely accepted measure of the quality of alfalfa is Relative Feed Value (RFV). RFV is an index used to compare the quality of forages relative to the feed value of full bloom alfalfa. RFV is used to compare similar forages for two important qualities—how well it will be consumed and how well it will be digested.

Alfalfa RFV is determined by its content of Acid Detergent Fiber (ADF) and Neutral Detergent Fiber (NDF). ADF evaluates the content on cellulose and lignin in a forage and is closely related to digestibility. ADF is also used to calculate the energy (NEM, NEL and NEG) content of a forage. NDF is an evaluation of the total fiber content which includes hemicellulose in addition to the cellulose and lignin content. The NDF content is related to intake because it evaluates the bulkiness of a forage.

RFV is calculated from the estimates of Digestible Dry Matter (DDM) and Dry Matter Intake (DMI) as follows:

$$\%DDM = 88.9 - (0.779 \times \%ADF)$$

Example:

$$\text{If } \%ADF = 30\%: \%DDM = 88.9 - (0.779 \times 30) = 65.5\%$$

$$DMI = 120 \div \%NDF$$

Example:

$$\text{If } \%NDF = 40\%: DMI/body\ cwt. = 120 \div 40 = 3.0\%$$

$$RFV = (\%DDM \times \%DMI) \div 1.29$$

$$RFV = (65.5 \times 3.0) \div 1.29 = 152$$

RFV has no units, instead, it is to be used to rank similar forages for potential dry matter intake. The RFV of alfalfa will be higher than other high-quality forages since the ratio of NDF to ADF is lowest in alfalfa. Therefore, RFV should be used to compare forages

within the same species. The RFV of excellent-quality corn silage will not be as high as excellent-quality alfalfa, but that does not mean that corn silage is an excellent form of energy. Table 1 shows the RFV of various forages.

RFV of alfalfa can be too high when it is a major component of the forage program. Some extremely high quality alfalfa may test in excess of 200 RFV. Usually, an all alfalfa forage program with 180 or higher RFV will result in too rapid of a rate of passage of forage. Lower RFV forage should be included with unusually high RFV hay to slow the rate of passage.

*Table 1. Relative Feed Value of various forages.*

Forage	ADF (%)	NDF (%)	RFV (%)
Alfalfa, pre-bud	28	38	164
Alfalfa, bud	30	40	152
Alfalfa, early bloom	32	43	138
Alfalfa, grassy	39	54	101
Brome, late vegetative	35	63	91
Brome, late bloom	49	81	58
Corn silage, well eared	28	48	133
Corn silage, few ears	30	53	115
Sorghum silage	32	52	114

When RFV is calculated, the protein content of the forage is not included in the calculation. Since protein is an expensive nutrient, the protein content of alfalfa should be considered along with RFV when evaluating its quality.

The best use of RFV is for selecting forages to be used in rations which require high nutrient density such as high producing dairy cows. Alfalfa with a RFV less than 140 should not be considered good enough for early lactation cows. However, alfalfa with a RFV of 125 to 140 could be fed to dairy cows in late lactation. Lower RFV alfalfa would be adequate for growing heifers.

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