

THE FORAGER

Agronomics with livestock in mind!

Timing First Cutting Alfalfa for High Quality

There are many factors that can impact hay quality. The most important factor is the stage of maturity of the crop when it is harvested. If alfalfa is harvested in the vegetative stage of growth there are many quality factors that are at a maximum. Hay harvested at this stage will be more palatable and will be consumed in larger quantities by livestock than alfalfa cut at later stages of growth.

One way the hay industry has tried to standardize the measurement of quality is to use the Relative Feed Value (RFV) index. RFV is an index used to rank cool season perennial forage crops by their potential intake of digestible dry matter. The RFV index is then used to allocate the correct amount of forage to specific animal performance and to price hay. The RFV is figured by using the following formula and plugging in the numbers that can be supplied by most labs that offer feed analysis.

$$\text{RFV index} = (\text{DDM} \times \text{DMI}) \times 0.775$$

$$\text{Digestible Dry Matter (DDM)} = 88.9 - (0.779 \times \% \text{ADF})$$

$$\text{Dry Matter Intake (DMI)} = 120/\% \text{NDF}$$

Acid Detergent Fiber (ADF)

Neutral Detergent Fiber (NDF)

Once the crop has been harvested and tested then the hay can be classified into relative quality grades.

GRADE	QUALITY	RFV	ADF	NDF
Premium	Excellent Dairy Hay	Over 175	<31	<40
Prime	Good Dairy Hay	152-175	<31	<40
1	Dairy Hay	125-151	31-35	40-46
2	Good Feedlot Hay	103-124	36-40	47-53
3	Average Feedlot Hay	87-102	41-42	54-60
4	Poor Hay	75-86	43-45	61-65
5	Very Poor Hay	Under 75	>45	>65

For the producer that wants to try to predict the RFV of his first cutting hay crop, charts have been developed. The chart (top of next column) uses both the stage of growth and the height of the tallest stem to predict the RFV of the hay crop.

Other factors that will affect the RFV of a hay crop include:

Thick stands/Thin stands invite weed pressure that lowers the feed value. Thick stands have a higher leaf-to-stem ratio, which often increases the RFV of the hay crop. Thick stands also extend the stand life of the field.

Insect and diseases substantially affect forage quality. Insects such as alfalfa weevil and potato leaf hoppers can defoliate or damage leaves, resulting in dramatic loss of quality. Diseases that cause leaf loss will also lower forage quality.

Mechanical harvesting systems that conserve the leaf mass in the hay crop increase the RFV. Likewise, systems that decrease the time it takes to dry the hay crop increase quality by reducing the time the crop is in the field and at risk to weather that can drastically reduce the quality of the crop.

The optimum harvest time is a compromise between quality, vigor and yield. The vigor of the stand can be reduced by repeatedly cutting alfalfa plants in the vegetative state. Alfalfa plants need to

(continued in next column)

(continued from first column)

PREDICING FIRST-CUT ALFALFA RFV USING PEAQ

Height of Tallest Stem Soil to Stem Tip	Late Vegetative No Buds Visible	Early Bud 1-2 Nodes w/Visible Buds	Late Bud More than 2 Nodes w/Visible Buds	Early Flower 1 Node w/ 1+ Open Flower(s)
Inches	RFV			
16	234	220	208	196
18	223	211	199	188
20	213	201	191	181
22	204	193	183	173
24	196	185	175	167
26	187	178	169	160
28	180	171	162	154
30	173	164	156	148
32	166	158	150	143
34	160	152	145	138
36	154	146	139	133
38	148	141	134	128
40	142	136	130	124
42	137	131	125	120
44	132	126	121	116
46	128	122	117	112
48	123	118	113	108

develop beyond the vegetative stage, to the reproductive stages of growth, at least once each growing season to replenish carbohydrate reserves in the plant. If these reserves drop too low, the plant loses vigor and stands can start to thin out. Only after plants start to show 10% bloom do these reserves start to build in the plants. One way to maintain vigor in fields that are cut first each year (often in the vegetative stage) is to change the cutting rotation and let them show 10% bloom before they are cut. This will allow those fields to replenish the carbohydrate reserves and maintain stand vigor without delaying that cutting for all of the fields in the rotation.

Rain on the crop can have a critical impact on the quality of first cutting hay. Any rain on the crop after it is cut will cause the crop to lose quality that will show up in a lower RFV test.

One way this quality is lost is that the hay will start to mold, which reduces the palatability and nutrient content of the hay. Once that quality is lost all that can be done is to get that cutting off as soon as the hay is dry enough to bale, so to not slow down the regrowth of the next cutting.

Good management of alfalfa and other hay crops can provide a valuable nutritional compliment to the total forage and feeding program on any farming operation.

(Edited from an article by Crop Production Services)

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