

Estimate First Crop Alfalfa Quality in the Field Using PEAQ

by Brian Lang, ISU Extension Agronomist

Climatic variations impact alfalfa growth and development making it impossible to use a calendar date each spring to best determine when to harvest the first crop. However, the University of Wisconsin developed a simple procedure that takes climatic variations into account to estimate RFV of standing alfalfa to better predict when to harvest first crop.

This procedure is called PEAQ. PEAQ stands for Predictive Equations for Alfalfa Quality. The method uses alfalfa stand height and maturity stage to estimate the RFV. PEAQ is most appropriate for good stands of pure alfalfa with healthy growth.

In general, it is recommended to harvest alfalfa at about 150 RFV for milking dairy herds and 125 RFV for heifers, stocker cattle and lactating beef cattle. First crop alfalfa standing in the field can drop 3 to 5 points of RFV per day. A one-week delay of first crop harvest could cost at least 20 RFV points in feed quality.

While PEAQ provides an estimate of standing crop quality in the field, you still have to adjust for harvest loss. Under the best conditions, 10 to 20% of the forage dry matter will be lost at harvest. This loss equals about 15 RFV units for haylage, and about 25 RFV units for hay. Therefore, to end up with 150 RFV alfalfa, it is recommended to harvest when PEAQ measurements predict 165 to 175 RFV for the standing forage.

How to PEAQ Your Alfalfa Harvest:

Step 1. Choose a representative area in the field.

Step 2. Determine the most mature alfalfa stems in the area. Use the definitions at the top of Table 1 to determine if the most mature stems are vegetative, bud or flower stage.

Step 3. Measure the tallest stems in the area. The tallest stems may not be the most mature stems. Measure from the soil surface to the tip of the stem. Straighten the stem for an accurate measure of its height.

Step 4. Based on stem maturity and stem height, use Table 1 to estimate the RFV of the standing alfalfa crop.

Step 5. Subtract 15 to 25 RFV units to account for harvest losses during the haylage or hay harvest process, respectively to estimate harvested forage quality.

Step 6. Determine your optimum harvest time using the PEAQ estimate, your livestock forage quality needs, considerations of upcoming weather forecasts favorable for harvest or not, and the general assumption that RFV drops about 4 points per day.

Table 1. Stage of the Most Mature Stem			
Height of the Tallest Stem From soil surface to stem tip.	Late Vegetative Stage No buds visible.	Bud Stage 1 or more nodes with visible buds. No flowers visible.	Flower Stage 1 or more nodes with an open flower.
Inches	RFV	RFV	RFV
18	224	212	198
19	217	207	193
20	211	201	188
21	205	196	183
22	200	190	178
23	195	185	174
24	190	181	170
25	185	176	166
26	180	172	162
27	175	168	158
28	171	164	154
29	167	160	151
30	163	156	147
31	159	152	144
32	155	149	140
33	152	145	137
34	148	142	136
35	145	139	131
36	142	136	128
37	138	133	126
38	135	130	123

IOWA STATE UNIVERSITY
University Extension

The U.S. Department of Agriculture (USDA) prohibits discrimination in all its programs and activities on the basis of race, color, national origin, gender, religion, age, disability, political beliefs, sexual orientation, and marital or family status. (Not all prohibited bases apply to all programs.) Many materials can be made available in alternative formats for ADA clients. To file a complaint of discrimination, write USDA, Office of Civil Rights, Room 326-W, Whitten Building, 14th and Independence Avenue, SW, Washington, DC 20250-9410 or call 202-720-5964.