Estimate First Crop Pre-Harvest Alfalfa Quality in the Field Using PEAQ

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, University of Wisconsin agronomists developed a simple procedure that takes climatic variations into account to estimate the relative feed value (RFV) of standing alfalfa to better predict when to begin first crop harvest.

This procedure is called Predictive Equations for Alfalfa Quality or PEAQ. 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 three to five points of RFV per day.

While PEAQ provides an estimate of standing crop quality in the field, adjustments must be made for harvest loss. Under the best conditions, 10-20 percent 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 two square foot area in the field.

Step 2. Determine the stage of the most mature stem in the area by using the definitions at the top of Table 1 and illustrations in Figures 1 and 2.

Step 3. Measure the tallest stem in the area. The tallest stem may not be the most mature stem. Measure the stem from the soil surface to the tip of the stem; not to the tip of the leaf. Straighten the stem for an accurate measure of height. Based on stem maturity and stem height, use Table 1 to estimate the RFV of standing alfalfa crop.

Step 4. Repeat steps 1-3 in five representative areas across the field.

Step 5. To estimate harvest quality, subtract 15-25 RFV units to account for harvest losses during the haylage or hay harvest process, respectively.

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 three to five points per day.

Figure 1. Buds visible.

Figure 2. Open flower.

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Table 1. Predictive equations for alfalfa quality (PEAQ).

	Stage of the most mature stem		
Height of the tallest stem From soil surface to stem tip.	**Late vegetative stage** 16 inches or more with no visible buds.	**Bud stage** One or more nodes with visible buds. No visible flowers.	**Flower stage** One or more nodes with an open flower.
Inches	**RFV**		
16	237	225	210
17	230	218	204
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
39	132	127	121
40	129	124	118

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