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Predictive equations of alfalfa quality (PEAQ)

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Abstract

From research on the relationships of measurable plant characteristics to forage quality has come a quite simple and relatively accurate estimate of the feeding quality of the standing alfalfa crop.

The method requires:

- The target average forage quality to be stored. (Example 150 RFV [relative feed value])
- A 2-square-foot frame
- A simple definition for alfalfa maturity based on easily identifiable traits.
- An estimate of the approximate percent harvest loss expected (10 percent loss under the best conditions; 15 percent may be average. (Expect higher losses under less than optimal harvest conditions.)

Keywords

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Disciplines

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Crop Production

Predictive equations of alfalfa quality (PEAQ)

by Stephen K. Barnhart, Department of Agronomy

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The method requires:

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Estimating preharvest alfalfa quality using PEAQ:

STEP 1: Choose a representative 2-square-foot area in the field.

STEP 2: Determine the maturity stage of the most mature stem in that area using the following criteria:

Stage	Stage Description
Vegetative	Stem over 12 inches tall with no visible buds or flowers.
Bud	Buds present on stem tip.
Flower	An open flower anywhere on the stem.

STEP 3: Measure the height (in inches) of the tallest stem in the 2-square-foot area. Measure from the soil surface (at the base of the crown) to the tip of the stem (not the tip of the highest leaf). Note that the tallest stem may not be the most mature stem.

STEP 4: Use a height/stage table or PEAQ stick (square yard stick that has the table information printed on three sides).

STEP 5: Repeat steps 1–4 in five representative areas of the field. Sample more times if the field is larger than 30 acres. Calculate or determine table values for RFV for each sample, then average the values. Tables also are available to estimate neutral detergent fiber (NDF) and acid detergent fiber (ADF).

Note: This procedure estimates quality of the standing alfalfa crop and does not account for changes in quality due to wilting, harvesting, and storage. Harvest and storage losses will raise NDF and ADF and lower RFV values.

STEP 6: Adjust the PEAQ estimate for anticipated harvest and storage loss:

Example: The average PEAQ estimate for May 15 plants is 190 RFV; subtract about 15–20 RFV units for an adjusted stored quality value; compare this with the stored forage quality target. Repeat this assessment of “adjusted” PEAQ estimates of standing crop quality every few days. Plan for and be ready to harvest when you reach the adjusted quality point.

An example:

Following this set of collection data, RFV of the standing crop is declining at a rate of about 3 to 4 RFV units per day through May, and the producer’s goal is to store the crop at an average of 150 RFV. For a producer harvesting a relatively small amount of alfalfa, then the results of the May 20 PEAQ estimate would indicate that harvest should begin on about May 23 or 24 to achieve the stored forage quality target. A producer with several fields might use the data from the May 20 data as a guide to begin harvest and achieve an average stored RFV near the target for all fields.

Sample Date	PEAQ Est. RFV (Relative Feed Value Index)	Harvest/Storage "Adjustment"		"Adjusted" RFV of Forage in Storage if Cut on Date
May 5	230	(230 x 10% = 23 RFV points)	=	207
May 10	210	(210 x 10% = 21 RFV points)	=	189
May 15	190	(190 x 10% = 19 RFV points)	=	171
May 20	175	(175 x 10% = 17 RFV points)	=	158
May 25	165	(165 x 10% = 16 RFV points)	=	149

If a producer will require 6 to 8 days to harvest all of the first cutting, consider beginning harvest a few days earlier than the exact target quality, so that the average forage quality stored is at the target level.

Other site-related or local conditions that may influence the decision:

- South-facing slopes develop faster than north-facing slopes.
- Stands on lighter textured soils develop faster than on heavier textured soils.
- Winter-injured stands should not be considered for a high-quality harvest and should be allowed to mature into early to mid-bloom stage to recover vigor.

- Newer, high-quality varieties may hold quality 2 to 3 days longer than standard varieties.

The PEAQ procedure is most accurate on good stands of healthy alfalfa and should not replace standard laboratory analysis, hay, or silage for ration balancing.

PEAQ sticks can be purchased from the Midwest Forage Association, using an order form found at <http://www.midwestforage.org/peaq.pdf>.

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Plant Diseases

Soybean rust update and potential early season activities

by X. B. Yang and E. M. Del Ponte, Department of Plant Pathology

As the planting season progresses, there have been questions on possible spore movement from overwintering regions to the Gulf Coast states, such as Mississippi, Louisiana, and Texas, which are considered more epidemiologically important sources to spread inoculum to the northern states. It is expected that each new event reported may lead people to think of its potential impact on the future spread of the disease. This article addresses some of the issues.

Current status: According to reports from the eastern-southern states, soybean rust has been confirmed in a kudzu patch in central Alabama with a few leaves showing symptoms. The infected plants have been removed. No new infections were found in a previously infected kudzu patch in Georgia, where infected plants have been destroyed. There has been no new sporulation noticed in kudzu in northern Florida,

possibly due to lack of rainfall and dry conditions. Recent rainfalls in the southern region are likely to favor rust development, although the level of activity is yet to be determined.

There are two active source areas for soybean rust in the eastern-southern region that includes Florida and Alabama. New development from current regions will depend on rains during this and next week. New development is more likely to be seen in a few weeks after the effects of recent rains take place. Last week, findings of yet-to-be-confirmed activity of soybean rust in a Mexican soybean growing area have been a consideration for potential reintroduction of the fungus to the continental United States. In the same way, new detections in May in other southern states could affect the disease in fields in those regions if favorable weather conditions continue.