



# Hay Judging

J.L. Caddel  
Forage Extension Agronomist

Earl Allen  
Director; Soil, Water, and Forage  
Analytical Laboratory

Oklahoma Cooperative Extension Fact Sheets  
are also available on our website at:  
<http://osufacts.okstate.edu>

## Importance of Evaluating Hay

Hay can be defined as herbage of forage plants that is harvested and dried for animal feed. Hay represents the most common way of storing forages. It is important for production of many classes of livestock because it is a major source of essential fiber, energy, protein, vitamins, and minerals.

Hay differs from many other agricultural commodities because it is so variable and because it is made from many different species and mixtures of species. Hay produced in Oklahoma consists of grass hay (such as bermudagrass, lovegrass or tall fescue), legume hay (such as alfalfa, clovers or lespedeza), native hay (whatever is growing in a pasture or range site), and mixtures of these.

Most hay produced in the state is fed on-farm to classes of beef cattle and is marketed as animal products. Nevertheless, high quality alfalfa hay (in high demand by dairies) is treated as a cash crop by many producers. There is also an important market for high quality hay for the race horse and recreational horse industries. As a group, other classes of livestock form a relatively small market for hay.

The two main purposes for judging hays are: 1) to determine the best hay exhibited at a hay show; and 2) to determine its market value. In both cases, both chemical and physical characteristics should be evaluated.

This fact sheet summarizes some of the important factors that should be considered when judging hay. A combination of chemical analysis results and physical attributes assessed by sight, smell, and feel is the best way to develop an overall evaluation of hay.

There is no single set of criteria acceptable for judging all hays because the eventual use of hay is critical to its correct evaluation. As the use of the hay changes, so does the relative importance of the various criteria used in its evaluation.

As an example, alfalfa can be used as a primary source of protein and energy for dairy cattle, or it can be utilized as a source of roughage for dry beef cattle.

The high relative feed value (RFV) and high protein required for high producing dairy cattle are not required for beef animals. Therefore, hay for these two different uses should not be judged on the same scale. Top quality hay for horses has more to do with leafiness, color, softness, and absence of blister beetles than an ability to supply the necessary fiber or protein.

The examples of hay judging score cards (Table 1) illustrate how factors can be weighted differently depending upon the use of the hay. Each of the factors should be considered in judging hays, but their relative importance should change according to the intended use of the hay. Copies of Table 1 can serve as the score cards for hay shows or as a record of a particular lot of hay for sale. The evaluator should clearly indicate which column is used for scoring. For particular circumstances evaluators may want to reassign weights to the various criteria and create another score card.

## Judging Components

Hay judging should evaluate both physical and chemical aspects of hay. The chemical components evaluated should include at least crude protein and RFV. "Forage Quality Interpretations", a Fact Sheet available at the County Extension Office, concentrates on Forage Quality with emphasis on interpreting the chemical analysis.

Several different factors should be considered when evaluating the physical characteristics of hay. A brief discussion of each follows.

**Leafiness** is a factor closely linked to nutritive value. Most of the readily digestible plant nutrients are contained in the leaves. It is important that the leaves remain attached to the stems. Many loose leaves are lost during handling and feeding.

**Maturity** is normally a main factor in assessing hay quality as it has a direct impact on nutritive value and

intake. Immature plants normally provide more nutrients because they contain less fiber and are more digestible than mature plants. Animals normally consume immature hays faster than more mature ones.

**Odor** is especially important to horses. They will not normally eat hay with moldy odors. Bad odors may also indicate the hay will cause digestive problems in some livestock.

**Color** is important because green hay is an indication that hay has been cured under good conditions. However, judging hay on color alone is a mistake because green hay may be of inferior nutritional quality to off-colored hays, and some brown hays are better than some green hays. Sun bleaching causes hay to lose its green color, but bleached hay may be as good as green hay. If, on the other hand, the green coloration is lost because of excess rain while in the windrow, the lack of green may be an indication that nutrients leached out. Hay baled with an excessively high water content usually turns dark green, brown, or even black and may or may not be of high nutritional quality.

**Softness** (or texture) is important because soft hay will be eaten in greater quantities than brittle hay. Brittle hay may or may not be nutritious, but if animals have trouble eating it, they will not perform well because of low intake.

**Purity** may or may not be linked to the nutritive value of hay. Sometimes the impurities can be better for animals than the main hay, ie. immature legumes in mature grass hay. Nevertheless, hay that brings the top price is usually pure. Ration formulation is easier with uniform hay lots. Hay containing a single forage species, is also more likely to be uniform from bale to bale.

**Condition of bale** is particularly important for those feeding small rectangular bales, a few at a time. The more hay is handled the more apt poorly shaped bales are to break. Well-shaped bales are easier to store and load on trucks, and they decrease losses.

**Penalties** in hay judging occur when negative factors, often anti-quality factors, are detected. Certain weeds may be toxic although many weeds make good forage. Seeing or smelling **mold** in hay indicates animals will not eat it readily and the nutritive value may

be low because the hay was cured improperly (usually too wet). **Dirt and other objectionable foreign material** may be harmful to animals and they distract from hay quality. However, certain foreign material can be removed with magnets during the grinding process.

Experienced hay judges can quickly assess these and other factors related directly or indirectly to hay quality. Judges sometimes have to predict what will happen in addition to what they actually see, feel, and smell. One may predict that **wet-feeling** hay will mold if stored more than a few weeks. Hay may be discounted even though there may be no mold present at the time. **If leaves break off the stems** easily, judges may predict that the leaves will be lost before animals can eat them.

In these examples chemical analyses may indicate that the hays are highly nutritious. The judge, however, takes into account factors that are impossible to detect with chemical analyses. Consequently, both physical and chemical evaluations are important in determining the value of a particular lot of hay.

## Hay Shows

Hay shows serve several purposes. First, they illustrate quality factors desired by buyers and users of hay. If the judging is based on factors used in the industry, hay shows help producers better define the best type of hay to produce. Producers learn how to produce the type hay in highest demand.

Another important purpose of hay shows, especially in areas where hay is a cash crop, is to attract the attention of prospective buyers to an area and its hay producers.

Incentives of cash prizes at hay shows probably help encourage producers to strive for the "best hay." Improved visibility leading to higher hay prices is an incentive for cash crop producers and may be worth more than prizes.

Perhaps the most important purpose of hay shows is improved marketing potential. The prospects of a larger market with more buyers can boost an industry state wide or in a region. Buyers will return to a region known for the quality hay they want.

**Table 1. Hay Judging Score Cards.**

**HAY SAMPLE NO.**

<b>CHEMICAL ANALYSIS</b>		Possible Scores For Types Of Usage				SAMPLE SCORE
		General	Beef	Horse	Dairy	
<b>1. PROTEIN</b>	<b>MAX =</b>	<b>50</b>	<b>25</b>	<b>40</b>	<b>45</b>	
Prime	>19%	45-50	24-25	35-40	40-45	
	17-19%	38-44	19-23	29-34	30-39	
	14-16%	24-37	15-18	21-28	20-29	
	11-13%	15-23	10-14	14-20	10-19	_____
	8-10	5-14	5-9	7-13	6-9	
Poor	<8%	0-4	2-4	0-6	0-5	
<b>2. RELATIVE FEED VALUE</b>	<b>MAX =</b>	<b>50</b>	<b>75</b>	<b>60</b>	<b>55</b>	
Prime	>151	45-50	70-75	51-60	50-55	
	125-151	38-44	58-69	41-50	44-49	
	101-124	24-37	43-57	31-40	33-43	_____
	86-100	15-23	28-42	21-30	20-32	
	77-85	5-14	13-27	11-20	7-19	
Fair	<77	0-4	0-12	0-10	0-6	
<b>SUBTOTAL (1 and 2)</b>	<b>MAX =</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>	
<b>APPEARANCE, SMELL, &amp; FEEL</b>						
<b>3. LEAFINESS</b>	<b>MAX =</b>	<b>30</b>	<b>25</b>	<b>15</b>	<b>30</b>	
1. Very leafy		27-30	18-25	14-15	27-30	
2. Leafy		22-26	16-17	11-13	22-26	_____
3. Slightly stemmy		17-21	14-15	5-10	11-21	
4. Stemmy		0-16	10-13	0-4	0-10	
<b>4. MATURITY AT HARVEST</b>	<b>MAX =</b>	<b>25</b>	<b>20</b>	<b>15</b>	<b>30</b>	
1. Before bloom or heading		18-25	19-20	14-15	27-30	
2. Early bloom or early heading		16-17	17-18	11-13	22-26	_____
3. Mid-to-late bloom or heading		14-15	15-16	5-10	11-21	
4. Ripe Seed		5-13	10-14	0-4	0-10	
<b>5. ODOR</b>	<b>MAX =</b>	<b>15</b>	<b>15</b>	<b>20</b>	<b>10</b>	
1. Clean		14-15	14-15	19-20	10	
2. Dusty		11-13	11-13	17-18	8-9	_____
3. Moldy/Mousey		8-10	7-10	15-16	4-7	
4. Burnt		0-7	4-6	0-14	0-3	
<b>6. COLOR</b>	<b>MAX =</b>	<b>10</b>	<b>15</b>	<b>15</b>	<b>10</b>	
1. Natural green color		10	14-15	14-15	10	
2. Light green/slightly brown		8-9	11-13	11-13	8-9	_____
3. Yellow to brownish		4-7	5-10	5-10	4-7	
4. Brown or black		0-3	0-4	0-4	0-3	
<b>7. SOFTNESS</b>	<b>MAX =</b>	<b>10</b>	<b>15</b>	<b>20</b>	<b>10</b>	
1. Very soft and pliable		9-10	14-15	17-20	9-10	
2. Soft		7-8	11-13	11-16	7-8	_____
3. Slightly harsh		5-6	5-10	5-10	5-6	
4. Harsh and brittle		0-4	0-4	0-4	0-4	
<b>8. PURITY (Other Forages)</b>	<b>MAX =</b>	<b>5</b>	<b>5</b>	<b>5</b>	<b>5</b>	
1. < 5%		4-5	5	5	5	
2. 5 to 20%		2-3	2-4	2-4	2-4	_____
3. > 20%		0-1	0-1	0-1	0-1	
<b>9. CONDITION OF BALE</b>	<b>MAX =</b>	<b>5</b>	<b>5</b>	<b>10</b>	<b>5</b>	
1. Well-shaped & firm		4-5	4-5	7-10	4-5	
2. Somewhat misshapen		2-3	2-3	3-6	2-3	_____
3. Badly misshapen & broken		0-1	0-1	0-2	0-1	
<b>10. PENALTIES MAX NEGATIVE POINTS =</b>	<b>35</b>	<b>35</b>	<b>35</b>	<b>35</b>	<b>35</b>	
1. Molds		0-20	0-20	0-20	0-20	
2. Weeds		0-5	0-5	0-5	0-5	_____
3. Dirt/Other Foreign Matter		0-10	0-10	0-10	0-10	
4. Excessively Moist or Dry		0-25	0-30	0-35	0-35	
<b>SUBTOTAL (3 through 10)</b>	<b>MAX=</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>	
<b>TOTAL (1 through 10)</b>	<b>MAX =</b>	<b>200</b>	<b>200</b>	<b>200</b>	<b>200</b>	

General Scoring:

180 & Above = Excellent; 160 - 179 = Good; 130 - 159 = Fair; Below 130 = Poor.

## The Oklahoma Cooperative Extension Service Bringing the University to You!

The Cooperative Extension Service is the largest, most successful informal educational organization in the world. It is a nationwide system funded and guided by a partnership of federal, state, and local governments that delivers information to help people help themselves through the land-grant university system.

Extension carries out programs in the broad categories of agriculture, natural resources and environment; family and consumer sciences; 4-H and other youth; and community resource development. Extension staff members live and work among the people they serve to help stimulate and educate Americans to plan ahead and cope with their problems.

Some characteristics of the Cooperative Extension system are:

- The federal, state, and local governments cooperatively share in its financial support and program direction.
- It is administered by the land-grant university as designated by the state legislature through an Extension director.
- Extension programs are nonpolitical, objective, and research-based information.
- It provides practical, problem-oriented education for people of all ages. It is designated to take the knowledge of the university to those persons who do not or cannot participate in the formal classroom instruction of the university.
- It utilizes research from university, government, and other sources to help people make their own decisions.
- More than a million volunteers help multiply the impact of the Extension professional staff.
- It dispenses no funds to the public.
- It is not a regulatory agency, but it does inform people of regulations and of their options in meeting them.
- Local programs are developed and carried out in full recognition of national problems and goals.
- The Extension staff educates people through personal contacts, meetings, demonstrations, and the mass media.
- Extension has the built-in flexibility to adjust its programs and subject matter to meet new needs. Activities shift from year to year as citizen groups and Extension workers close to the problems advise changes.

Oklahoma State University, in compliance with Title VI and VII of the Civil Rights Act of 1964, Executive Order 11246 as amended, Title IX of the Education Amendments of 1972, Americans with Disabilities Act of 1990, and other federal laws and regulations, does not discriminate on the basis of race, color, national origin, gender, age, religion, disability, or status as a veteran in any of its policies, practices, or procedures. This includes but is not limited to admissions, employment, financial aid, and educational services.

Issued in furtherance of Cooperative Extension work, acts of May 8 and June 30, 1914, in cooperation with the U.S. Department of Agriculture, Robert E. Whitson, Director of Cooperative Extension Service, Oklahoma State University, Stillwater, Oklahoma. This publication is printed and issued by Oklahoma State University as authorized by the Vice President, Dean, and Director of the Division of Agricultural Sciences and Natural Resources and has been prepared and distributed at a cost of 20 cents per copy. 1203