

## Factors Effecting Quality of Hay

Species of the hay may have some effect on its quality. Legumes are usually better than grasses because:

- Intake is better (quicker passage through rumen)
- More leaves/ higher nutrient value
- More digestible
- More Crude Protein
- Higher concentration of Ca, Mg and other minerals

Some other things to consider with species are:

- Alfalfa and Red Clover decline faster in quality than Ladino Clover because of leaf loss. Ladino Clover has a higher leaf % initially.
- Ladino petioles are more digestible than stems of Red Clover or Alfalfa even at mature stages.

**Leafiness** closely relates to the nutritive value of the forage. The leaves contain two-thirds of the protein found in hay, therefore it is important that they stay on the stem. If they fall off easily there will be considerable loss by the time the animal is fed the hay. Leaves are most critical with legumes and first-cut grass hays. Young leafy forage is better than old stemmy growth.

**Maturity** has a direct impact on nutritive value and intake. As maturity increases:

- Yield increases
- % Fiber increases
- % TDN decreases
- % Crude Protein decreases
- Intake (% Body Weight) decreases
- Animal performance decreases

There is also a species difference in hays. The quality of legumes will decrease less with maturity than does the quality of grasses. When determining the stage of maturity for alfalfa hay look at the reproductive parts and the texture and woodiness of the stems. If alfalfa has been cut in the Bud-Stage there will be no purple flower petals. It is also usually very leafy, the stems are also relatively small and pliable. The next stage to look for is the Early-Bloom stage. This stage of maturity will have some purple flower petals. You can also use the number of visible stems with purple flowers to determine how far in the bloom stage the alfalfa was cut. If there is one stem out of 10 that has bloom, the stage would be one-tenth bloom, if there are 5 of 10 stems that have blooms on them then the crop was harvested half or 50% of the way through the bloom stage. Weather makes this method of maturity determination somewhat difficult because some weather will cause excessive blooming and other will cause lack of bloom. Although hay cut in the Late-Bloom stage will have a definitely larger, woody stem with fewer leaves and a

stemmy appearance. If the alfalfa has been cut after the Full Bloom stage then the stems will be large and there will be seed pods (they resemble snail pods), and not very many leaves.

Determining the maturity of clover is done similarly to alfalfa. When clover hay is past the Bud-Stage you will need to examine the color and condition of the bloom and the maturity of the seeds, if present. If the hay was cut no later than Full-Bloom stage and not weathered while being cured there should be many heads showing flower color. Which will be red or purplish-red in red clover and crimson clover will have crimson red flowers. White and subterranean clover will have pinkish-white or white blossoms. Clover that was cut in the Full-Bloom stage will have no seeds at most a few that are shrunken. The brown color of all the clover heads and the presence of yellowish-brown seeds will indicate the stage between Full-Bloom and Full Maturity. The dark-brown color of the clover heads and the presence of plump, mature seeds indicate full Maturity.

**Smell** or odor may have a more significant effect in horses but a bad odor may indicate a potential digestive problem in livestock. The general comparison is the smell of freshly mown hay. Mildew, mustiness, or rotten odors indicate a lower quality and less acceptance by livestock.

**Color** gives the indication that the hay was cured under good conditions. If the hay is green in color it goes more favorably for the hay. Do not be fooled into using color alone as a determining factor in the quality of hay. Green hay may also be of inferior nutritional quality to off-colored hays and some brown hays. Sun bleaching could cause green hay to lose its color but still be of high quality. If leaching from excess rain has caused the green hay to lose its color then the nutrients could be low. Another process that will lower the quality of green hay is bailing when too much moisture is present. This could cause the hay to become dark green, brown or possibly even black.

Sun Bleached hay will have a light golden yellow color, if the hay hasn't lost too much quality there will still be parts of the bale with bright green color. Stems that were bleached by the sun are usually harsh and brittle.

Dark brown or black discolored appearance is an indication of hay that was exposed to rain or heavy fog and dew.

Brown colored hay has usually been through a heat and/or fermentation. This is a result of storing hay at high moisture content. The proteins in this hay have usually been chemically altered and become unavailable to animals. There may be a musty odor and the appearance of the hay could be caked.

Yellowing hay, especially if it is grass hay, is an indication that the plant were over-mature when they were cut. To distinguish this type of hay from the sun bleached it will be yellow all over.

**Texture** or Softness is important because intake will be greater for soft hay as opposed to brittle hay. If hay is brittle it may still have nutritive value but if the animals have trouble eating it then intake will definitely be lower.

**Purity** is more of a marketing scenario concern. Hay that brings top dollar on the market is usually pure, but impure hay can sometimes be more beneficial to the animal because of the increased nutrient value, as is the case for immature legumes mixed with mature grass hay.

**Condition of bale** is also another marketing point. If the bale is poorly shaped it will be harder to handle and more apt to break. This would be a concern of those feeding small square bales a few at a time. Poorly shaped bales are harder to store and load for transportation and they increase the chances of loss. Hay should also be free from must and mold and from insect and disease damage. There should be no dust.

Penalties are incurred from weeds, which may be toxic, and the presence of mold indicated animals will not consume as much of the hay. Mold is an indication of potential nutrient loss because of improper curing, for example it could have been baled too wet. Dirt and other foreign materials, which may be harmful to animals, take away from the hay's quality.

Use the following as a guide when Judging Hay: If you use the numbers as a ranking system the lower the total number the higher quality the hay is.

#### Stage of Harvest

- |  |                                     |
|--|-------------------------------------|
| 1. Before heading or bloom<br>brown      | 1. 0-5% of leaves are old and       |
| 2. Early heading or bloom<br>and brown   | 2. 6-15% of leaves are old          |
| 3. Mid-to late-heading or bloom<br>brown | 3. 16-30% of leaves are old and     |
| 4. Seed stage (stemmy)                   | 4. >30% of leaves are old and brown |

#### Leafiness

1. Very leafy
2. Leafy
3. Not leafy
4. Few leaves

#### Steminess

1. None or only small diameter stems
2. Few or medium diameter stems
3. Many or large diameter stems
4. Mostly stems or very coarse diameter stems

#### Color

1. Natural green color of crop
2. Light green to slightly brownish
3. Yellow to straw to brownish
4. Brown or black

#### Odor

1. Clean
2. Dusty
3. Moldy - Musty
4. Burnt

#### Softness

1. Very soft and pliable
2. Soft
3. Slightly harsh
4. Harsh and brittle

Also remember to penalize hay with foreign objects and insects.