

FORAGER



Agronomics with livestock in mind!



High Quality Hay Production

Since hay is such a widely used and available stored feed, it is important to understand the factors that influence hay quality and the criteria used to evaluate hay quality. This information can then be used to develop a feeding program that will be the most effective and efficient in meeting each producer's goals.

Hay quality is usually measured by the amount and availability of nutrients contained in the hay. The estimation of protein, fiber and digestibility of hay can [cumulatively] be used to determine quality. The ultimate test of hay quality, however, is animal performance. Quality can be considered satisfactory when animals consuming the hay perform as desired. Three factors which influence animal's performance are:

1. Intake – hay must be palatable if it is to be consumed in adequate quantities to produce the desired performance.
2. Digestibility & Nutrient Content – once the hay is eaten, it must be digested and converted to animal products.
3. Toxic Factors – the hay must be free of components which are harmful to the animals.

There are many factors that will influence hay quality, some of which can be manipulated by the producer. These include such things as plant species to be used for hay, the stage of maturity of the plant, curing and handling conditions, soil fertility and seed quality. Let's examine each of these and the impact they have on hay quality.

PLANT SPECIES: The species of forage will have a large impact on hay quality. Legumes are generally higher quality than grasses, and cool-season grasses such as tall fescue and orchardgrass are higher quality than warm-season grasses such as bermudagrass. Within each class there can be a wide range of quality, however. When properly cut a mixture of a grass and legume usually produces high-quality hay.

Perennials such as alfalfa, orchardgrass, timothy, fescue, bermudagrass, etc. are usually more economical as hay crops than annuals, although some annuals such as millet, small grains and ryegrass can be used effectively.

STAGE OF MATURITY WHEN HARVESTED: As grasses and legumes advance from the vegetative to the reproductive (seeds) stage, they become higher in fiber and lower in protein, digestibility and palatability. Forage quality deteriorates rapidly as the forage matures, even though yield continues to increase. Within each forage species, the most important factor that affects hay quality – and the one where the most improvements can be made – is the stage of maturity when it is harvested. As plant maturity advances, increased fiber levels and decreased crude protein and digestibility result in a drop in dry matter intake and milk production by cows consuming the hay.

CURING & HANDLING CONDITIONS: After mowing, poor weather and handling conditions can lower hay quality. Rain, for instance, can cause leaf loss and nutrient leaching from plants during curing. Sunlight can reduce vitamin A content

through bleaching. Raking dry, brittle hay can cause excessive leaf loss. Crushing stems (conditioning) at the time of mowing will cause stems to dry at nearly the same rate as leaves. This process has been shown to reduce drying time for long-stemmed plants by about one day and results in less leaf and nutrient loss. Plants with an 80% moisture content must lose approximately 6,000 pounds of water to produce a ton of hay at 20% moisture. Raking while hay is moist (40% moisture) and baling before hay is crisp (18% moisture) will help reduce leaf losses, while maintaining much of the nutrient value.

SOIL FERTILITY: Adequate amounts of lime, nitrogen, phosphate, potash and certain minor elements are necessary to produce high yields of hay. Maintaining a high level of fertility will also help to maintain the stand of desirable plants and prevent weed encroachment. A soil test is recommended as a guide in determining the amount and type of fertilization needed for economical hay production. High yields of hay will remove large amounts of nutrients from the soil.

SEED QUALITY: Plant certified seed of a recommended variety for your area, helping to ensure both the quality of seed to be planted and varieties that are adapted to your local conditions. Fall seeding needs to be done early enough for establishment before cold weather stops or slows growth. Late winter and early spring seeding should be made early enough to provide a vigorous stand that can survive the potential of summer drought and heat, as well as weed competition. Clean seed (free from weed contamination) is also important, especially when planting perennial hay crops. Weeds generally reduce hay quality by adding material lower in palatability and digestibility, and some may be harmful or toxic if ingested. Look for quality seed. It is one more step in ensuring quality hay and a good feeding program.

EVALUATING HAY QUALITY:

It is important to analyze your hay, determining its quality and nutrient value. This is done through chemical analysis, providing information that is useful in feeding a balanced ration. Although not as accurate or reliable as forage testing, a visual evaluation of forages can also be helpful.

Producing high quality hay should be the goal of each producer. It can have a positive impact on productivity and profitability!

(edited from an article by Dr. J. Burns, Un of TN Ag Extension Service)

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