

Environment's Effect On Hay Quality



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This is another year of weather extremes – cool and wet, followed by hot and dry. The recent hotter-than-normal temperatures are stressful for cattle, pastures and us, especially while hay harvesting.

Environmental factors are known to have a significant impact on the quality of forage plants, particularly those grown in environments with varying degrees of different stress. Stress occurs when an environmental factor is not ideal for plant growth; examples include too low or too high a temperature, water logging, drought, shading or a soil nutrient deficiency. Stress can result in large variations, between seasons and years, in forage yield and quality.

Temperature is the driving force behind most physiological processes that occur in a plant. These processes include photosynthesis, respiration, translocation of nutrients, carbon partitioning and cell wall formation. It stands to reason that changing temperature will have a dramatic impact on what goes on inside the plant.

As the temperature of the growing environment increases, it has the following overall effects on plant growth and forage quality: decreased stem diameter, accelerated rate of maturity, increased lignifications, decreased plant height, decreased leaf stem ratio and decreased digestibility.

While the weather has recently been hot and dry, we received copious amounts of rain while harvesting hay. Keep in mind that even a slight amount of rain on curing hay can cause seri-

ous losses of feed quality. The losses occur because much of the nutrition in the plant is water soluble and can be removed by leaching. Studies have shown that rainfall of only 0.05 inch on hay that is partially cured is sufficient to cause leaching losses. Increasing amounts of rain cause even greater losses by leaching and also by knocking off the leaves, which contain much of the protein in the hay.

The use of hay conditioners to crush the stems of the plants as they are cut has been an effective method of reducing the period of time the crop is on the ground and exposed to damage from rain. In some cases, the time has been reduced to as much as half that of conventionally-mowed hay under identical weather conditions.

This has been a trying year for hay harvesting. Remember that key environmental factors like temperature and soil moisture status cannot be disregarded when trying to explain or predict forage quality characteristics. Making a prediction of forage quality based solely on morphological stage often is erroneous when confounding environmental conditions exist. These environmental factors are interactive. For example, dry conditions which are ideal for prohibiting plant disease may also limit plant growth and yield.

Due to weather volatility during hay production this year, you may want to have the nutritive value of hay tested prior to feeding. Forage quality testing is a valuable management tool that can assist in formulating nutritionally balanced rations, resulting in a more predictable animal response, minimizing waste, and evaluation of forage management practices (growing, harvesting and storage). Δ

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