

# Quality Hay For Winter

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**T**he primary objectives in efficient beef cow-calf production are to feed the cow as cheaply as possible while obtaining good reproduction and high calf weaning weights. One important aspect of this is to have hay of sufficient quality to meet the winter needs of the cow with little supplemental feeding of energy and protein. Spring and summer are the time of the year when cattle producers determine the quality of hay that will be fed next winter. Good planning at this time of year can do a lot to reduce winter feed supplement costs.

The amount of hay needed per cow will vary greatly, depending on pasture management and location in the state. Dry, pregnant cows will need approximately 15-18 pounds of hay/day and cows with calves will need 25-28 pounds/day during winter if pastures are providing little or no grazing. If you know about how many days you will need to feed, it is easy to calculate approximate hay needs in an average winter. Extra hay should be on hand for longer winter periods or for possible summer and autumn droughts.

Many cattle producers think of hay needs only in terms of how many bales or rolls they produce and have on hand. It is equally important to think about the quality of that hay. Poor quality hay is not cheap as it will require more supplemental feed if cows are to rebreed and produce decent calves.

## What is hay quality?

What do we mean by hay quality? When hay is tested for quality in the laboratory, two main values will be reported to the producer - total digestible nutrients (TDN) and crude protein (CP). In the University of Georgia testing laboratory, TDN is calculated from neutral detergent fiber analysis and is basically a measure of digestible energy. A low TDN value means that the hay contains a large amount of indigestible lignin which reduces intake by the cow. A

high TDN value means that lignin content is low and that the hay is highly digestible. The crude protein (CP) content of hay is determined by analysis for nitrogen and multiplied by 6.25. Some benchmark values of nutrient needs of beef cows can be used to assess hay quality. Dry pregnant cows require hay of 50% TDN and 7-8% CP. The requirements increase sharply for lactating cows: 60% TDN and 10-12% CP.

## Hay testing

These figures don't mean much unless you have your hay tested and know what you are feeding. Getting your hay tested can be a big help in determining when to feed different lots of hay to cattle. Even though you are attempting to produce good quality hay, weather conditions may prevent cutting at the correct time and hay will be overmature. However, low-quality hay can be fed to dry pregnant cows in late autumn and early winter while higher quality hay can be saved and fed later when cows have calved and need better nutrition. Hay testing can be useful in determining if supplemental protein and energy feeding is needed, often saving money.

## What affects hay quality?

Cool season annual grasses such as ryegrass, wheat, and oats as well as clovers are high in TDN and CP. Perennial grasses such as bermuda, bahia, and tall fescue are lower in quality but adequate hay for beef cows. Since bermudagrass and tall fescue are by far the most important hay plants in our region, what factors affect quality of hay produced from them? Obviously, nitrogen fertilization improves the crude protein content of grass hay. Two other factors are the most important in determining hay quality: maturity at harvest, and how the hay was stored.

Coastal bermudagrass cut at 4-week intervals will have 58-62% TDN and 10-12% CP. This will be adequate for lactating beef cows. Bermudagrass cut at

8-week intervals will have only 45-50% TDN and 6-8% CP, less than adequate to meet the nutritional needs of a dry pregnant cow without supplementation. As the grass ages, lignin content increases and the forage becomes less digestible and crude protein declines. Tall fescue cut at boot (stem elongated and top of stem swollen) stage will have 60-65% TDN and 12-15% CP which is high-quality hay. When tall fescue is harvested at seed dough stage, hay quality drops to 50-52% TDN and 8-10% CP. As the tall fescue plants age, stem content increases. Autumn-harvested tall fescue hay is normally of high quality because it is mostly leaves and contains few stems. As these examples illustrate, cutting hay at an early stage of development can greatly improve hay quality. In fact, it is the most important factor in determining hay quality.

Another factor affecting hay quality is how it was stored. Large round bales stored outside on the ground over much of the summer will deteriorate and result not only in substantial losses (20% or more) of dry matter but also reduction in TDN and CP. Coverage with plastic wrap reduces losses by 50% or more but storage under cover in a barn virtually eliminates nutrient losses. The nutrient losses during storage substantially increase the cost of hay actually consumed by the cattle.

## Summary

Late spring and summer is the time to think seriously about hay quality for winter feeding. Better quality hay can be produced by harvesting at an earlier stage of maturity, fertilizing adequately, and improving storage of the bales. Hay with higher nutrient quality will reduce the amount of energy and protein supplements needed for lactating cows and growing heifers. Hay testing will assist in determining when the different quality hay lots should be fed to meet the nutrient needs of cows during pregnancy and lactation.