

Hay Efficiency

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It's finally here...that time of year where our warm-season grasses are coming out of dormancy and gearing up for their peak production time. For many cattlemen, with this time of new growth comes preparation for the upcoming hay production season. Hay is the most common form of stored feed used in cattle operations in the Southeast, and it is often fed for 90 to 150 days per year. When we consider all of the inputs associated with making hay, it can be quite a costly commodity. In order to get the most "bang for our buck" out of this forage source, we must make sure we are using this resource efficiently. Really, the decision to increase efficiency starts now and requires us to do some "forward thinking" as we make provisions to have a high quality feed for the winter months. The following are some considerations for the upcoming hay production season and how to improve 'hay efficiency' in your operation:

1) Check and Repair Equipment

This point is somewhat self-explanatory. I think many of you have been in that situation where you think you have everything lined up to start cutting hay, and then the unexpected equipment breakdown occurs. Or maybe there is that noise you heard at the end of last season that you meant to check out before the start of this year's production season. Certainly, there are some things we cannot control, but it is always a good idea heading into the production season to check all hay equipment to make sure you are seemingly starting out on the right foot. For balers specifically, check for broken pickup tines, assess if belts are worn or loose, change hydraulic filters, and grease wear points.

2) Visually Evaluate Hay Fields

As warm-season forages start to become more productive, take a walk through your hay field(s) and visually assess the stand. How much of the desired forage is present? What about weeds? Bare ground? Based on the percentage of these in the stand, determine if weed control is needed.

3) Fertility

Conduct a routine soil analysis for summer hay fields. This can be used as a guide to determine the amount of fertilizer and lime needed in your operation. Proper fertility management is important for high quality hay production and persistence of the forage being utilized. Knowing and maintaining correct soil pH and nutrient concentrations are critical for achieving a high level of forage production. Also, fertilization helps replenish nutrients to the soil as a given hay crop is removed. Our Extension soil scientist often states that if you take off one ton of bermudagrass hay from a field, you remove 50 pounds of nitrogen, 10 pounds of phosphate, and 40 pounds of potash. This is especially the case with high-yielding hybrid bermudagrasses, and illustrates how critical fertility is to improving hay production.

4) Stage of Maturity at Harvest

In the case of quality, timing is everything. Focusing on the appropriate stage of maturity at harvest is key to getting forage at its peak nutritional value. Within a given forage species, this is the most important factor influencing forage quality. As forages mature from a vegetative to reproductive (seed) stage, they decrease in nutritional value. This is mainly because of increasing stem contribution, decreasing leaf percentage, and increasing fiber concentration. Yield continues to increase as forages mature; however, nutritional value begins to be sacrificed. The following table illustrates the effect of harvest frequency on quality of Coastal bermudagrass.

Table 1. Harvest frequency effects on Coastal bermudagrass nutritive value.

Cutting Interval	Crude Protein,%	Total Digestible Nutrients, %
4	16	62
5	15	59
6	13	58
8	10	51

Adapted from Burton et al., 1963

Harvesting forage in the vegetative stage of production gives us a better chance of meeting the nutrient requirements of livestock, improving the efficiency of its use.

5) Don't Let Weather Worries Take the Cake

You may have heard the popular saying that the threat of rain can lower forage quality more than rainfall itself. Remember that the accuracy of weather forecasts can vary significantly beyond three days out, and short rain showers are common during the summer months. A ½ inch of rain or less on the day forage is cut may decrease TDN by 1 to 2 percentage points. However, delaying harvest of bermudagrass by a week may result in more than 3 to 4 percentage points difference. Look for a window of opportunity in the three day forecast (low chance of rainfall, less than ½ rain expected) and harvest forage early in the day to maximize the drying within this time frame.

6) Storage Considerations

Once hay has been put up, how you store hay can affect the efficiency of its use at the time of feeding. The first thing we want to do is minimize hay nutrient and dry matter losses until its time of use. Exposure to moisture drives these losses. When bales are stored outside for up to 9 months, dry matter losses can exceed 20% of the total weight of the bale. By elevating bales off of the ground (storing on pallets, tires, gravel, etc.), dry matter losses can be reduced when stored outside (10 to 15% total loss). When stored in an enclosed barn or under the roof of an open-sided building, total dry matter losses decrease to 2 to 5% of the total dry matter. Determine what resources are available in your operation to minimize storage losses, and plan to implement them with this summer's hay crop.

7) Test

Conducting a forage analysis a guaranteed way to understand nutritional value from the start. These results can be compared to animal nutrient requirements, and a

supplementation plan can be developed to help address any nutrient deficiencies. By doing this, the efficiency of the use of this forage can be improved at the time of feeding. This analysis also enables us to reflect on current production practices and determine what steps might be needed to improve quality during the next harvest. Collecting forage samples from each lot of hay being put up can provide a sense of overall quality and if your targets are being achieved. By refining production practices based on these results, the efficiency of our hay production systems can be further improved.

Certainly, there are many factors to be considered during hay season. Ask yourself what steps can be taken to improve the efficiency of using hay in your operation, and begin with the end in mind to have a successful production season.