

THE SECRET RECIPE FOR MAKING HIGH-QUALITY HAY

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Dennis Hancock, Forage Extension Specialist
The University of Georgia

A certain Kentucky Colonel used to brag about how he kept his recipe of 11 herbs and spices secret. Last summer, a highly publicized cookbook author claimed he had finally cracked the code and published the recipe. (My wife was really excited when we tried it, but she was rather disappointed when I said I would still rather have a cheeseburger.) I bet that old Colonel wished he had a nickel for every time somebody asked him for his secret recipe. Lately, I have been wishing the same thing; only folks have been asking me “what is the secret to making high-quality hay?”

The Definition of High-Quality Hay

First, it is important to clarify what is “high-quality” hay, since this is a term that can mean different things to different people. For some segments of the industry, the esthetic value (e.g., color, texture, softness, smell, etc.) determines quality (and the price). However, if your intent is to get a return on your hay dollar, the focus needs to be on the nutritional value of the hay. The definition of “high-quality”, in a nutritional sense, is hay that is highly digestible (i.e., high in total digestible nutrients, or TDN) and capable of being consumed in sufficient quantities by the livestock (i.e., capable of sustaining high levels of dry matter intake, or DMI). There are many factors that can affect TDN and DMI. However, if one follows the secret recipe below, high quality hay can be made every time.

1) Cut the Hay When it is Vegetative.

The most important factor affecting forage quality (**BY FAR!**) is the age/maturity of the crop being cut. This is true regardless of the forage species. For bermudagrass, hay should be harvested every 3 ½ - 5 weeks. Just like cooking a steak too long, good hay is ruined if it goes too long. As a rule of thumb, every day that bermudagrass is allowed to go uncut after 4 weeks of age will result in about 0.5 percentage points drop in TDN. Further, as forages get more mature, the added fiber reduces DMI.

2) Don't Obsess About Rain Damage.

Certainly, rainfall will decrease TDN and DMI. However, the fear of rain generally lowers forage quality much less than rainfall actually does. A week delay in harvesting bermudagrass attempting to avoid a ½ inch rain is may result in as much as a 3.5 percentage point decrease in TDN. A ½ inch rain is likely only going to cause a 1.0 percentage point drop in TDN. Though this is a broad generalization, it illustrates the point that a little rain damage is much better than a lot of mature hay.

3) Take Full Advantage of Good Drying Conditions.

The accuracy of multi-day weather forecasts is low for projections beyond 3 days out. If it is time to harvest, begin cutting the crop early in the day (immediately before or soon after the dew is off) so that the days known to provide good drying conditions can be fully utilized. By waiting later into the day to cut, the drying time is pushed back, sometimes by a full day or more. This exposes the curing hay to more risk of weather-damage. In fact, one could go so far as to say that it is okay to cut a crop in the rain or just after a rain as long as the conditions will be suitable for hay drying soon afterwards and damage is not being done to the field. Research has shown that a light rain (<0.25 inches) on a freshly-mown bermudagrass hay crop has no significant effect on forage quality.

4) Use a Mower-Conditioner.

A conditioning-mower will greatly aid crop drying. Studies have shown that the drying rate of a hay crop is 15-25% better when a conditioner is used. The difference in drying rate is most pronounced in the first 12 hours after cutting, which is very helpful in reducing respiration losses.

5) Use the Right Conditioner for the Crop Being Harvested and Set it Correctly.

There are two basic types of conditioners: an impeller (also known as flail) and a roller-crimper. The impeller conditioners should generally be used on finer-stemmed grasses. Impeller conditioners are much more aggressive in their conditioning action. Excessive leaf shatter will occur if an impeller conditioner is used to harvest legume crops or thicker-stemmed forages. If these crops are to be harvested, use a roller-crimper conditioner. In either case, the conditioning action should be adjusted in accordance with the manufacturer's specifications and the crop conditions.

6) Spread Out the Harvested Swath.

Most forage harvesters can lay the swath out narrow or wide, depending on its wings' setting. Usually, the widest swath setting is best. The hay producer's best friend is sunshine. When sunlight is intercepted by the drying plant material, the energy of the light heats the plant and speeds drying. Therefore, it is important to use every square inch of the field to intercept the sunlight. One exception to this rule is when a hay crop is being cut when the soil is still wet. In this case, it may be best to lay the forage in a narrow swath at first, allow time for the soil to dry out some, and then use a tedder to spread the forage out.

7) Use the Tedder, but Use it Wisely.

A hay tedder inverts, stirs, and spreads out the hay crop. The proper use of a hay tedder can substantially increase the drying rate of a hay crop (by 15-30%). It is usually best to use a hay tedder on the morning after the crop was cut. (On some occasions, it may be necessary to run the hay tedder within 3-4 hours of the mowing operation, especially if large clumps of forage occurred during the hay mowing operation or the forage was placed in a narrow swath.) One should use caution, however, when using the hay tedder. Running the tedder after the dew has completely dried or when the forage is too dry can lead to excessive leaf shatter and losses. It is usually best to complete all tedding operations before late morning.

8) Get the Hay Dry Before Baling.

In the first two to three weeks after it is baled, hay will heat up (referred to as "going through a sweat"). The heat is generated by fungi, which are feeding off of and consuming the available sugars. This is a loss of dry matter and, most importantly, the fraction of the energy in the hay that is most digestible. Consequently, the TDN goes down and DMI generally decreases. If bales are formed when the hay is at the appropriate moisture (15% for round bales; 18% for square bales), the heat cycle is brief and has relatively little consequence on forage quality.

9) Fertilize According to Recommendations.

It is a popular misconception that fertilization has a major effect on forage quality. Fertilization does have a major effect on crude protein (specifically, increases in N fertilization generally increases CP). However, fertilization generally does not have much effect on TDN or DMI. In practice, though, fertilization does influence the amount of digestible forage produced per acre. So, it is still a critical part of the recipe for making lots of high-quality hay.

10) Use the Best Ingredients.

It is important to ensure that all the right ingredients are in place. Aside from plant maturity, the most important ingredient affecting forage quality is the forage species that is being used. If starting from scratch, plant the highest-quality grass species and variety that will persist in your environment. In Georgia, this will generally be a hybrid bermudagrass (i.e., Tifton 44 or Russell above I-20; Tifton 85 south of I-20), except for those in the Limestone Valley/Mountain region who primarily grow tall fescue. If these aren't available, high-quality is still possible if the forage is cut at an early maturity. However, this generally is more difficult and results in a higher "per ton" cost to the hay because yields are lower and inputs are generally the same.

11) Keep Good Records and Track Your Success.

The only way to know if management changes are improving hay quality is to tie regular forage quality test results back to information about when and how the crop was harvested. It is also helpful to compare your forage quality results to those of other producers in your county, state, or region. The most convenient way to do this is to enter your forage quality samples in the Southeast Hay Contest (for more on this, see www.georgiaforages.com).

So now that the 11 "herbs and spices" recipe is no longer a secret, I encourage you to use these tips to produce high quality hay. I also encourage you to learn more about these individual points by attending the 2010 Hay Production School. This year's School will be held at the Sunbelt Ag Expo site at Spence Field in Moultrie, GA. To learn more about this, visit our website at www.georgiaforages.com or contact your local University of Georgia Cooperative Extension office at 1-800-ASK-UGA1.