

S-T-R-E-T-C-H-I-N-G HAY SUPPLIES

Warren Gill, Professor
University of Tennessee Animal Science Department

The droughty conditions which prevailed around the state have resulted in a difficult situation for cattle producers. It is a “Bad News - Good News” story:

The Bad News: Many beef producers started feeding hay as early as August and September and others will start earlier than usual. This has resulted in many beef cattle producers being short of hay. Corn prices are high and may go higher. Stockpiled fescue may give lower yield because of the drought.

The Good News: Some hay is available for sale in certain areas and in nearby states. Supplies of some alternate feeds are relatively competitive.

Following are some suggestions for stretching limited hay supplies.

1. Assess the situation

●**Cull the herd.** This is the time to look closely for the non-producers, the cows with bad teeth, the late calvers. Pregnancy check and do not over-winter open cows. From these, consider culling cows that wean light calves, have temperament problems or are extreme in size. Consider saving fewer heifers.

●**Estimate Hay Needs.** A cow can often eat 25 to 30 pounds of hay a day and waste a couple of more pounds, so allow 30 to 35 or more pounds per day per cow. Allow about half this amount for weanling calves and about three-quarters for yearlings. Plan to feed until April 1, at least. If you are feeding hay from October 1 until April 1, this is 6 months or 180 days. This could easily be over 5000 pounds of hay per cow in the winter of 2006 - 07.

●**Estimate Hay Available.** Remember, large round bales often do not weigh as much as we think they should. It is very typical for so-called thousand pound bales to weigh eight hundred or even less. Plus, bales stored outside on the ground may easily lose 20 to 30 percent. Even covered bales can lose 10 to 15 percent, especially if a portion of the bales are in contact with soil. Bottom line: if storage conditions are not ideal and bale weights are suspect, it may be wise to adjust the hay inventory to obtain more realistic estimates.

Example with 10 cows: If feeding cows 30 pounds a day for 150 days, 4500 pounds is needed per cow or 45,000 total pounds. Bales weighed 925 in June but lost 15% in storage so now weigh 761. Divide 45000 by 761 to see it may take 60 bales to feed these 10 cows. If, however, the bales actually weighed over a thousand pounds and there was little loss, it may only take 40 to 45 bales to feed the same number of cows.

2. Look for Additional Forage

●**Purchase Hay.** Some producers may have hay for sale, but supplies may be tight by now. The Tennessee Department of Agriculture publishes a hay directory that may be helpful. Call (615-837-5160) or go to www.picktnproducts.org on the internet.

●**Consider Forage Alternatives.**

A popular forage substitute is commercially prepared pasture cubes. These cubes, or large pellets, are generally fed on clean sod, and are designed to substitute for some portion of the hay.

Other possibilities include straw, gin trash or cottonseed hulls. These alternatives (and others) will need careful supplementation to be successfully utilized.

●**Use Crop Residues.** When available, crop residues can trim many days off of the winter hay feeding period. Inexpensive, easily erected temporary electric fencing may make this a more viable option in certain situations.

3. Stretch Hay Supplies with Supplements

This may be the best strategy for many producers because concentrate feedstuffs are available at competitive prices and are likely to remain competitive during much of the winter feeding period. The challenge is to develop the best, most economical feeding program for your situation.

●**Start with a forage test.** A forage test will give a relatively accurate assessment of hay quality and serve as a basis for supplementation decisions.

If using the University of Tennessee Forage Testing Service, please note on the form if you plan to use the results of the test to “stretch” forage supplies. In general practice, the UT Forage Testing Service balances rations to maximize the use of home-grown hay and only recommends adding enough concentrate to overcome nutrient deficiencies. If forage is limited, however, the strategy changes and concentrate is added to “substitute” for forage. If possible, provide the alternative concentrates that are preferred and available. Then the Forage Testing Service can develop suggestions for substituting concentrate feeds in place of limited hay.

●**Understand Basic Nutritional Principles that Apply.**

Understanding a few basic nutritional principles can help when you are trying to stretch hay supplies:

Principle: High starch feeds may depress consumption and utilization of forage. Research shows that high starch feeds, such as corn, fed at as little as 0.4 percent of body weight may depress consumption and utilization of the base forage.

Practical interpretation: If you feed a lot of corn to cattle, expect them to eat less forage. In "free choice" forage situations, such as stocker calves on pasture, feeding too much corn can work against converting forage to gain. This fact also often leads producers to avoid feeding more than 5 or 6 pounds of corn to cows on hay or, more likely, to consider lower starch alternatives that may actually improve the utilization of the base forage. These could include soy hulls, wheat midds or commercial mixtures containing these or other lower-starch feeds which still have enough TDN (total digestible nutrients) to help keep cow condition up. See Table 1 for additional guidelines for using alternative feedstuffs.

Principle: Corn may be substituted for hay. This may seem to contradict the preceding principle, but really does not. High starch feeds, such as corn, do decrease utilization of forages in a "free-choice" forage situation. However, when forage is limited, corn can be used to "stretch" the hay supply, especially when corn is relatively inexpensive. Always adapt cattle slowly to corn over a 7 to 10 day period. The rate of substitution is about 1 pounds of corn for 2 pounds of hay. Avoid providing any more than half the ration energy as corn for cows. Bottom line: try 5 pounds of corn to replace about 10 pounds of hay.

Practical alternatives since corn is becoming more expensive: Corn can be used as a hay substitute, but other feed sources may be less expensive sources of energy, and may have less negative effects on forage utilization. Possibilities include wheat midds, whole cottonseed, soybean hulls, distiller's grains, corn gluten or commercial mixtures containing least-cost mixed proportions of these and other feedstuffs. Substitute at the same rate as corn: 1 pound of feed for 2 pounds of hay. Avoid feeding more than 3 to 4 pounds of whole cottonseed per head to calves or more than 5 to 6 pounds per head to cows.

Commercial blends are available in a number of forms. According to data on the hay crop for 2006, a commercial blend testing 12 – 13% CP (crude protein) and 70% TDN (total digestible nutrients), would be a good complement to this year's hay crop. Feeding 3 to 5 pounds of a 13% CP feed may substitute for 6 to 10 pounds of hay, and allow cows to maintain body condition.

In some cases, commercial blends are available as pasture cubes, which decrease the need for bunk space.

Processing may or may not help. For example, many feedstuffs (milo, whole soybeans) need to be at least coarsely ground or hammered to make nutrients available, but others do not. Most research has shown that only marginal benefits are gained from grinding corn. In fact, fine grinding of corn increases dust and makes it more likely to cause digestive upset. The best argument for using a coarsely ground or cracked corn is that it improves mixing with other ingredients.

Principle: protein often improves forage utilization, especially with low quality forages. This is because the protein requirements of the rumen microbes must be met if forage is going to be optimally utilized.

Practical interpretation: If hay alone doesn't meet the protein requirements of the

animal, add supplemental protein. For example, adding as little as a pound a day of a 30 to 40 percent protein feed could increase the utilization of the hay and assist in keeping cows in optimal body condition. However, the protein may actually increase hay consumption if the hay is provide free-choice (see section on hay feeding).

●**Suggested protein feeds:** Soybean meal, cottonseed meal, corn gluten feed, whole cottonseed, commercial mixtures.

Principle: meet mineral requirements. Minerals do not have to be expensive to work, but rarely are the "cheapest" alternatives the best. This is especially true for managers who have selected for good milk production and improved calf growth. Genetically superior cattle have higher mineral requirements. This becomes even more apparent if nutritional needs are being stretched in a difficult weather situation.

●**Pick a supplement that fits the situation.**

The best prices will be obtained when bulk quantities of feeds are purchased. Bulk feeds can be either commodity feeds or blends. Many producers do not have time to carefully balance rations and mix ingredients. Some do not have time for daily feeding. Some products, such as whole cottonseed, are excellent sources of both energy and protein, but generally require considerable labor.

Consider labor and equipment in selecting a feed to stretch forages. However, most of the low-labor alternatives cost more. This is often termed the "cost of convenience." A feed which is expensive to one producer may be a bargain to another.

Producers with small herds and those with time constraints often do not have storage capacity and are willing to pay higher feed bills for the convenience. However, producers who are profit motivated may utilize various means to store bulk feeds (both commodities and commercial feeds.) Self-feeders, bins, gravity wagons, the floors of abandoned dairy parlors, a stable that has been converted to a feed box, floors of barn sheds, etc. are being utilized to store bulk feed.

Table 1. Suggested Amounts of Various Feedstuffs for Stretching Hay in the Cow-Calf Herd

Feedstuff	Amount suggested (Lbs per cow per day)	Notes
Corn	5 to 8	Relatively expensive this year
Corn gluten feed, dry	5	Generally limit to 0.5% of body weight; blends well with corn or soybean hulls if higher consumption is desired
Soybean hulls	5 to 10	Can feed even higher, but cost is a factor
Distiller's dry grains (DDG)	5 to 8	8 – 10 % fat makes energy comparable to corn; research shows it lowers hay consumption
Distiller's wet or moderately wet grains	Same as DDG on dry matter basis, except water increases weight ¹	Price at source is often good relative to dry, but trucking and storage costs may limit utilization
Wheat Midds	5	Often priced competitively; not as palatable
Whole Cottonseed	5 - 6	Can be fed on dry sod; usually handled with front-end loader or scoop shovel, so more labor
Commercial blends	By label, but often between 0.5 to 0.75% of bodyweight	Available in many forms such as bagged or bulk; bulk more economical; useful to include feed additives in certain situations

¹For example, if feeding a 60% moisture product, the dry matter percentage is 40%. If you want to feed 5 pounds of dry matter with this product you divide by the dry matter percentage / 100. Therefore, you would feed 12.5 pounds of the feed on an "as fed" basis. (5 ÷ 0.4 = 12.5)

● Ionophores for increasing efficiency in the beef cow-calf herd

Currently, only one ionophore, monensin, is cleared for using as a feed additive for the entire cow-calf herd. This is sold as Rumensin® and is of particular interest during a drought because many beef cow-calf producers across the state have had to start feeding hay early and this feed additive has been shown to increase feed efficiency by five to ten percent, without sacrificing body condition or reproductive rate.

The product is cleared to be fed at a rate of 50 to 200 mg. (Milligrams) per head to the cow herd. It must be fed in a minimum of one pound of supplement. At least 16 pounds of roughage must be fed when using Rumensin® in beef cow rations. See feed dealers for their current selection and feeding guidelines for products containing this feed additive.

In general, research has shown that increasing the level of Rumensin®, up to 200 mg., decreases consumption without harming production. Plan on about 5 percent decrease in consumption at 50 mg. to about 10 percent decrease at the 150-200 mg. rate.

It is important that the nutrient requirements of the cows be met for the product to yield predicted results. The best way for this to be known is to test the hay and balance a

ration based on the results of the forage test. The University of Tennessee Forage Testing Laboratory will gladly work with producers on forage testing and balancing rations.

Hay quality may also dictate the preferred rate of feeding Rumensin®. Research indicates that the 50 mg. rate is preferred with lower quality hay (40 to 42 % TDN), 100 mg with medium quality hay (43 to 48 % TDN) and 150-200 mg. with hays that are greater than 48 % TDN. Do not use Rumensin with forages that are below 40 % TDN.

Rumensin® is not cleared for breeding bulls, however research at present has not revealed any negative influence on bull soundness or reproductive rate.

Feed no more than 100 mg. during the first five days of product use. Do not provide on a "free-choice" basis. Do not exceed recommended feeding levels. Follow all label directions.

Do not use Rumensin® around horses. Ingestion of Rumensin® may be fatal to horses.

4. Manage Feeding.

When feed supplies are tight, feeding management becomes critical. Every day of the winter brings a new set of questions. Do I need to feed tonight or tomorrow morning? There is a little hay left in the rings; do I make the cows clean it up or is the quality of the remnant hay too poor? Is there too much mud around the hay racks; should I move the rings to another location?

Every manager must answer these and other questions to the best of their ability, and no one will answer all the questions correctly every time, but the manager who makes consistently wrong decisions will find poor results at the end of winter and on into rebreeding time. The manager who makes consistently correct decisions will have animals that are more healthy, more likely to rebreed in a timely manner and to wean a heavier calf.

●**Feed in Hay Rings.** Most cattle producers know this, but it is important. Consider unrolling hay, but only if the amount that can be fed in one feeding can be unrolled. If too much is unrolled, cows will use the excess for bedding. Cut and remove the strings on hay fed in hay rings. Do not leave the strings in the field.

●**Avoid Excessive Mud.** Walking through mud burns energy quickly. Many days of this in a row can definitely decrease performance and body condition. It is also hard on the person who does the feeding. If rock outcrops or old road beds are available, use them. Many producers are constructing hay feeding areas with crushed run gravel over geotextile. Discuss this with U. T. Extension agents or N.R.C.S. representatives.

●**Learn when to feed more hay.** This is easier said than done. Sometimes the last 1/4 to 1/3 of a large round hay bale is weather damaged and spoiled and has low nutritive value. Forcing cattle to eat this may cause decreased production or decrease body condition. Conversely, replenishing hay before the cattle have eaten the "good parts" of previously fed hay is inefficient and can be wasteful in a year with limited hay supplies. Developing the knack to correctly feed may require that the manager carefully observe the remnant hay in the feeder to assess quality.

●**Increase hay allotment in cold weather.** Nothing makes body heat better than microbial digestion of plenty of good hay. The technical term for this heat is “heat increment” or “heat of fermentation.” Corn does not increase body heat as well as hay. A little protein (see principles above) may allow cows to better digest hay and increase body heat.

5. Watch the cows!

Carefully observe the body condition of the cow herd. Strive to keep the herd average in the 5.5 body condition score range (only minimal ribs showing; back bone and hooks visible but covered). When too many ribs and backbones are showing, increase hay or supplement. Cows with body condition in the 4.0 range have been shown over and over to be slower to rebreed and less likely to breed at all. This is particularly true with first calf cows.

Calves born to undernourished cows are likely to be lighter in weight at birth, and more susceptible to scours and pneumonia. More weak calves are born when energy and, especially, protein deficiency is in evidence. These calves often will not suckle and may die. Severely undernourished cows may not have adequate colostrum to prevent disease. Avoid calf losses by making certain that the cows get adequate nutrition.

If the point is to survive the year with a short feed supply, managers must exercise judgment constantly to maintain the cowherd in reasonable condition so as not to affect future performance while maintaining acceptable performance under present conditions. Some drastic short-term measures may have to be considered, but consider the long-term affect and decide if any sacrifices made now can be overcome later before the final decision is reached.