



# BEEF CATTLE TIME

Vol. 24, No. 4

Fall 2006

## Manage Hay Feeding to Reduce Waste and Improve Performance

*James B. Neel, Extension Beef Specialist  
Animal Science*

Winter feeding of the beef cow herd is likely to be more expensive this year because drought has limited hay supplies across the state. About 30 percent of the hay fed cows during the winter is wasted due to poor management, but the type of feeder used can reduce losses and lower the winter feed bill as well as improve cow performance.

Michigan State University animal scientists studied four types of hay feeders: cone, ring, trailer and cradle. All types allowed approximately 14.5 inches for each animal. Dry matter hay waste was 3.5 percent, 6.1 percent, 11.4 percent and 14.6 percent for the cone, ring, trailer and cradle feeders, respectively. Differences in the behavior of cows at the feeders may explain the differences in wastage. Cows eating from the cradle feeder had about three times as much butting and displacement and four times as many entrances compared to cows feeding at the other types of feeders. The researchers determined that slanted bar designs encourage animals to keep their heads in the feeder for longer periods.

Normally, when cattle are allowed unlimited access to large round bales (LRB), a large percentage of the hay will be wasted. Texas A & M trials showed that feeding LRB free choice resulted in 24 percent hay loss. Purdue reported up to 30 percent.

Larry Moorehead, Extension agent in Moore County, has been measuring hay loss when it is fed in a cone feeder. He reported feeding losses of less than 1.0 percent.

Current price per ton of good quality grass hay in LRB ranges from \$50.00 to \$60.00 per ton. A late-winter-early-spring-calving cow needs approximately 1.5 tons of hay over the winter, which would cost from \$75 to \$90. A 25 to 30 percent loss during feeding would add an extra \$18.75 to \$27.00 to the winter feed bill for a total of \$93.75 to \$117.00 per cow. By reducing the

loss to 5.0 percent, the feed bill would be increased only \$3.75 to \$4.50 for a savings of \$15.00 to \$22.50 per cow.

The Dickinson North Dakota Research Extension Center evaluated the effect of feeding method on the performance of mature beef cows. Methods evaluated included: 1) rolling round bales out on the ground, 2) a PTO driven round bale processor that shredded round bales into windrows, and 3) a tapered-cone round bale feeder engineered with a center tapered cone creating a manger around the inner circumference of the feeder. Pregnant cows were fed for 58 days to document feed waste and cow performance (weight gain, change in body condition score and hay intake). Labor inputs and feeding time were also considered in the economic analysis.

Cows eating at the tapered cone feeder had increased ending weight as well as improved body condition score, and they used less hay. In the economic analysis model, feeding with a tapered-cone round bale feeder offered substantial cost savings per cow arising from a combination of lower hay usage and reduced equipment operating time. Feeding costs per cow for rolling out bales, shredding bales with a processor and feeding bales in a tapered-cone feeder were \$97.99,

### Video Library Available on the Web

Are you interested in using new technology to learn more about beef cattle management practices? If your answer is yes, then you need to check out the University of Tennessee Animal Science Web site. The address is <http://animalscience.ag.utk.edu/beef/beef.htm>. Look for the heading called The Tennessee Cattle Lane - Video Library. Clicking on this link will let you read an article on beef production or see a three to five minute video. We recommend viewing the videos using a high speed internet connection. Dial-up connections are generally too slow to play video clips well, but the article that accompanies the video will still be available. The videos are being produced by Clyde Lane, Jr., an Extension beef specialist in the Department of Animal Science.

\$107.44, and \$85.36, respectively. Using a PTO driven bale processor to shred bales into windrows before feeding was the most expensive due to the higher equipment ownership cost and higher hay loss per cow compared to the tapered-cone bale feeder. Rolling bales out on the ground or shredding into windrows with a bale processor both resulted in increased hay usage and winter feeding costs without enhancing cow performance.

In addition to the economic benefits to producers from reducing hay waste, cows in better body condition will show improved reproductive performance, will have calves stronger at birth and will increase milk production.

Although some hay will always be wasted during feeding, these losses can be minimized through good feeding practices. This winter would be a good time to observe your hay management practices. How much hay is wasted? Remember, hay wasted is profit lost.

## **Process Verification Program (PVP)**

*Emmit L. Rawls, Professor  
Agricultural Economics*

You may have heard about the Process Verification Program (PVP) or PVP cattle sales. In simple terms, PVP is a USDA program for verifying certain product (cattle) attributes. The attributes, in the case of Tennessee and other states in the Southeast Livestock Network (SLN), are the age and source of cattle. The Tennessee Livestock Network (TLN) was recently organized and chartered to facilitate the sale of PVP cattle. A little history might help one to know how this came to be.

Following the first case of BSE in Washington State in December 2003, USDA established the Beef Export Verification program in which Mexico and later other countries agreed to start buying our beef again, if we would verify through dentition (examination of teeth at harvest) that the beef was from cattle under 30 months of age. That program has worked satisfactorily, but Japan wanted stronger requirements. — cattle under 21 months of age. USDA inspectors could not, to Japan's satisfaction, identify such cattle through dentition but they did convince Japan that they could identify carcasses from cattle called A40. "A" maturity means a carcass showing evidence by the color and hardness of its backbone to be 30 months of age or less. An A40 carcass would be from an animal 15 to 18 months of age. The other criteria under which Japan would accept beef was with documentation from birth records, breeding records, etc. to prove the beef was from cattle under 21 months of age. Last December, Japan began accepting beef that met either of the above criteria: the A 40 rule or acceptance in a PVP, which means there are documented records subject to audit or verification that the beef was from cattle under 21 months old. Estimates are that only 10 percent of the fed cattle harvested could meet the A 40 rule. Consequently, packers and feedlots have shown increased interest in cattle with properly documented age and source information.

As a point of clarification, both Quality System Assessment (QSA) and a PVP can meet the age and source requirement. There are several QSAs which have been developed by feedlots, beef packers or animal health companies in order to try to control or line up a supply of cattle to meet the requirements of the Japanese market. However, once a producer has met the criteria for a particular QSA of say a beef packer, cattle marketed under that QSA must be sold to that packer to meet the Beef Export Verification for Japan. Furthermore, the producer identification moves forward with the cattle through the marketing, feedlot and packer system. In contrast, if producers are certified as PVP (they have met the pre-audit requirements), the only pieces of information required are the birthdates, the identification numbers of the cattle and that they are source-verified. This information can move forward through the system if it is requested by order buyers, feedlots or packers. In addition there are no restrictions as to which feedlot or packer the cattle are sold to.

The SLN, headquartered in Lexington, Kentucky, is a Data Sharing Network. Its PVP operates under an "umbrella agreement" with AgInfoLink, whose quality policy is to "supply the food industry with accurate, reliable, and secure linked information and traceability to provide enhanced business performance, regulatory compliance and overall food security." Beef producers provide a verified product — identified with a unique, tamper evident identifier — to the beef supply chain. They provide verifiable data about the product to AgInfoLink's Private Data Sharing Network. Product suppliers (beef producers) maintain auditable records for three years to support the data. In addition, 10 percent of those enrolled in the PVP must be audited each year to ensure that records on birth dates and farm of origin are available and accurate.

The TLN facilitates the sale of PVP cattle by working with tag dealers, markets and data management in the state. Through September, there have been five sales with cattle that met the PVP criteria. In at least one sale, a buyer was interested only in PVP cattle and bought some of those cattle. In all of these sales, the cattle had been through a full preconditioning program and had some other favorable attributes as well, so it is difficult to credit very strong prices solely to them being PVP cattle. Several individuals from the Tennessee Department of Agriculture (TDA), as well as some veterinarians and Extension agents, have been trained to enroll producers and conduct a pre-audit to ensure that all birth and origin records are in place. Once the producer is enrolled, the TDA will be responsible for conducting the follow-up audits on 10 percent of the enrollees. Individuals interested in the program need to contact the TLN (currently housed at the TDA) at (615) 837-5183 for further information. At the present time, the program seems to be best suited to cow-calf producers who can supply birth date records and those participating in special graded sales.

## Body Condition Scoring of a Beef Herd

Clyde Lane, Jr., *Extension Beef Specialist*  
Animal Science

Body condition scoring (BCS) is a management practice all producers should perform. It provides the information needed to evaluate pasture and feeding programs. Since the BCS is linked to the productivity of the herd, it is important that animals be maintained in an acceptable body condition score.

The most widely used body condition scoring system is a 1 to 9 scale (Table 1) with “1” being extremely thin and “9” being obese (See table below). In general, body condition scores of one to four should be considered “thin,” five to seven to be in the “normal” range and eight and nine to be “fat.” In general if cows are too thin, they are likely to have trouble rebreeding and probably need improved forage or supplementation with concentrates. This is extremely important for first-calf heifers and bulls. Cows with a BCS of 5 may need some additional supplementation or plenty of stockpiled fescue or high quality pasture. Cows in the 6 or 7 range will need minimal adjustment in their nutritional program. Cows with an eight or nine body condition score are too fat.

It is not necessary to individually score each cow to come up with a body condition score for a herd. A herd is managed as a group and changes in the feeding program are done on a herd basis. Decide on a body condition score that fits the majority of the animals. If most are in the 5 to 7 range, little nutritional adjustment is needed. Next take a look at those animals that are either too thin (BCS 1 – 4) or too fat (BCS 8 – 9). Some of these animals are too fat because they are not pregnant or failed to have a calf. They should be sent to market. If cows are too thin, a determination must be made as to cause and whether it can be corrected. Use the BCS as an indicator of the cow’s ability to wean a calf of sufficient weight and quality to make a profit.

Any animal that doesn’t fit the group should be considered for culling since it probably cannot be fed and managed individually.

## Pasture Management Tips to Improve Profitability

Gary Bates, *Professor*  
Plant Sciences

High quality, productive pastures are a key to a successful cow-calf operation. Here are a few things that all producers can do to improve the profitability of the forage component of their farms.

**Be efficient with fertilizer.** Fertilizer prices have increased dramatically, and there is no reason to think prices will be going down.

- Fertilize and lime according to soil test results. Don’t apply more potash and phosphate than necessary. A soil test will show the pH of the soil and indicate whether any lime is needed. Forages use fertilizer most efficiently if the pH is above 6.0. Below 6.0, some of the fertilizer applied will not be used.
- Apply nitrogen only when soil moisture is adequate for plant growth. If soil moisture is limited, nitrogen fertilizer will not be well used. Moisture is not usually limiting for the spring growth of cool-season grasses; but, if you are using warm-season grasses like bermudagrass or trying to stockpile tall fescue in the fall, adequate moisture is essential.
- Use clover to replace nitrogen application in the spring. Tall fescue/red and white clover mixtures can yield as much as tall fescue fertilized with 60 pounds of nitrogen per acre. Seeding clovers into tall fescue will reduce the fertilizer bill and improve pasture quality.

**Keep weeds under control.** Weeds reduce yield and quality of forage by using nutrients that should be used by a forage plant. Letting weeds grow in a pasture for a couple of years can severely reduce productivity. There are many broadleaf herbicides available for use in tall fescue pastures. Identify weeds and choose the best herbicide program for control.

**Choose a strategy and deal with the endophyte in tall fescue.** The endophyte *Neotyphodium coenophialum* costs millions of dollars in reduced performance in Tennessee cattle each year. This fungus cannot be seen

**Table 1. Body Condition Scoring Guidelines**

Trait	Condition Score								
	1	2	3	4	5	6	7	8	9
Visible Ribs	all	all	most	3-5	1-2	0	0	0	0
Visible Spine	++++	+++	++	+	No	No	No	No	No
Brisket Fat	No	No	No	No	No	+	++	+++	++++
Tail Head Fat (Pones)	No	No	No	No	No	No	+	++	+++
Muscle Loss	+++	++	+	No	No	No	No	No	No

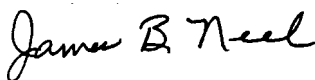
on the outside of the tall fescue plant, but its presence inside causes reduced food intake, poor reproductive rates, elevated body temperatures and less gain than animals not grazing toxic tall fescue. If grazing KY-31 tall fescue, cattle are suffering from some level of toxicosis, whether you realize it or not. Here are several ways to deal with this issue:

- Replace toxic varieties with MaxQ tall fescue. This variety is infected with a non-toxic form of the endophyte. This non-toxic endophyte helps the tall fescue persist under drought and grazing conditions without causing toxicosis.
- Plant red and white clover with KY-31 tall fescue. Adding clovers will not eliminate toxicosis, but it will reduce it by as much as 50 percent. The gains will not be as good as with MaxQ, but it will reduce toxicosis without replanting.

- Shift to other cool-season grasses like orchardgrass. This method will also eliminate the endophyte problem, although stand life will not be as long as with KY-31 tall fescue or MaxQ so replanting every few years may be necessary.

Graze pasture efficiently. It doesn't make sense to spend money producing forage and then do a poor job using it. Following these simple steps will improve pasture efficiency on most farms. Efficient use of resources is key to profitability.

---



James B. Neel, Professor  
Animal Science

## Beef Cattle Time

**From:**

---

**Leader/Agent**

Visit the UT Extension Web site at  
<http://www.utextension.utk.edu/>

THE UNIVERSITY of TENNESSEE

21M E12-4415-00-002-07 07-0055

Programs in agriculture and natural resources, 4-H youth development, family and consumer sciences, and resource development.  
University of Tennessee Institute of Agriculture, U.S. Department of Agriculture and county governments cooperating.  
UT Extension provides equal opportunities in programs and employment.