

LAUDERDALE COUNTY OFFICE  
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October, 27, 2006

## **Congratulations**

Congratulations to Brad Brooks who recently graduated from the Auburn Ag Leaders Program. Brad was able to take a study tour to Australia. Brad is the president of the County Cattlemen Association and is a Regional Vice President for the Alabama Cattlemen Association. We hope to see great leadership from him in the future.



## **Winter Feeding**

Most of this newsletter is focused on winter feeding and stretching your winter feed supply. I know many producers that are concerned about getting through the winter. If I can be of assistance in working up a feed program for you, let me know 766-6223. There is a large amount of corn and cotton crop residue that can be useful in your winter feeding program.

## **Beef Short-Course**

There will be a Beef Short Course via distance learning. It will be November 6 and November 14<sup>th</sup> from 6 to 9 P.M. Cost for the course is \$15 and it will deal with herd health. For more info call me 766-6223.

## **Protecting Hay**

It is worth a reminder to protect the hay supply that you have on hand. Hay stored outdoors can lose 25 to 35% of the hay dry mater during one season of storage. Get the hay up off the ground and cover it.

In research trials, feeding losses have ranged from less than 2% when great care was exercised, to more than 60% where no attempts were made to reduce loss. Feeding losses of 3 to 6% are quite acceptable for most feeding programs, although such low levels of loss are usually associated with systems which require high labor inputs and daily feeding.

Feeding just one day's supply at a time, or only when cattle have cleaned up a meal, can reduce overeating. Research shows that when cows are fed a four-day supply, they will overeat and waste 20-30% more hay than when they are fed one day at a time. That adds up to \$35 or more per cow over a four-month feeding period. Believe it or not, cattle trample, over-consume, foul and use for bedding 25 to 45 percent of hay when it's fed with no restrictions.

Controlled grazing can extend pasture use. Research from the University of Missouri found that allocating a 3-day supply in each strip rather than a 14-day supply, stretched the grazing days by 40%.

## **Corn Residue**

Utilizing corn crop residue as a feed for dry, pregnant beef cows from the middle pregnancy up to 45 days prior to calving is a practical way to reduce winter feed cost. One acre of 100 bushel yield corn crop residue can provide enough feed for a 1,000 lb. mature, pregnant cow for up to 60 days.

Manage or restrict the cows' access to the crop residue by using electric fence to "strip" graze the corn field. Fencing corn fields with electric fence can be accomplished for \$10 to \$15 per acre.

## **Dates to Remember:**

If you have pecan trees you may want to attend the pecan workshop to be at the County Extension office on Thursday November 16<sup>th</sup> at 10:00 a.m. Call to reserve a spot 766-6223.

North Alabama Bull Test Open House to be Saturday, November 25, 2006 at 10:00 a.m. at the Test Station.

The County Cattlemen annual meeting will be Tuesday November 28<sup>th</sup> at Underwood Senior Center.

North Alabama Bull Test Sale Saturday December 9<sup>th</sup> at 11:00 a.m. in Cullman. Lexington producer, Jim Akin has a couple of Charolais bulls on the test.

The National Cattlemen Association will meet at Opryland Hotel in Nashville Jan 29 - Feb 3. Don't miss this opportunity as it only comes to Nashville every six years.

The Alabama Cattlemen Association will be in North Alabama for their annual meeting on Feb. 16 and 17 at the Von Braun Civic Center.

## **Web Site**

If you are on the web don't forget to visit our county website to get the latest info [www.aces.edu/lauderdale](http://www.aces.edu/lauderdale).

Sincerely,

*Randall Armstrong*

County Extension Coordinator

## Using Cotton Stalks to Decrease Winter Feeding Costs

*Johnny Rossi, UGA Extension Animal Scientist*

Winter feeding costs account for about 40% of the yearly costs of maintaining a brood cow. Utilization of crop residue is an excellent way to decrease winter feeding costs. Grazing cotton stalk residue is not a new idea, but the value of cotton stalks is not well established. Some producers have used cotton stalks for grazing, but the opportunity exists for many more producers to take advantage of this cheap feed resource.

A trial was conducted last year at the Southwest Georgia Experiment Station, in Plains, to determine the performance and feed costs of wintering cows on cotton stalks or hay. Fifty-four cows were divided into two groups and allowed to graze cotton stalks or were fed round-baled coastal bermudagrass hay. Both groups were fed a free-choice mineral. Cows were due to start calving in mid-January. The cows averaged 1359 lbs and were in a body condition score of 5.5 at the beginning of the trial. The trial lasted from October 25 to Dec12. The cows grazed 30 acres of cotton stalks for a total of 49 days. Total weight gain was 48 lbs for the cows fed hay and 15 lbs for cows grazing cotton stalks. Because both groups of cows were in good condition, little weight gain was desired. Likewise body condition was essentially unchanged during the trial for each group. Producers can expect similar performance when wintering mature pregnant cows in good condition on hay or cotton stalks. If body condition of cows is less than 5, supplemental feed will be needed to increase body condition score.

The amount of cotton stalk residue available for grazing was determined by collecting all of the cotton stalk residue in two, nine square foot areas per acre. The amount of cotton stalk residue was sampled immediately before and after the cows grazed the cotton stalks. At the beginning of the trial, there was 4,487 lbs of cotton stalk residue per acre. At the completion of the trial, there was 2,873 lbs of cotton stalk residue per acre. There was a disappearance of 1,614 lbs per acre. Cows used about a third of the available cotton stalk residue. Cows will eat little if any of the actual stalk.

The residue eaten by the cows is the leaves, lint, and seed of the cotton residue. Cows should be removed when the cotton lint and all leaves are eaten, or if cows are starting to lose body condition.

The primary reason to graze cotton residue is to decrease winter feeding costs. Cows fed hay consumed 21.2 lbs per day. Valuing hay at \$60 per ton, total cost for hay and mineral was \$0.68 per day. Cows grazing the cotton stalks cost \$0.10 per day for fencing and mineral costs. Total feed costs were \$33.32 for cows fed hay and \$4.90 for cows grazing cotton stalks. Total feed savings were \$28.32 or \$0.58 per day for the cows grazing cotton stalks. Each acre of cotton stalk residue was worth \$25.52. This will vary with the number of days that cows can graze the cotton residue. The rule of thumb is one acre will maintain a cow for 30 days. In this study, one acre maintained a cow for 44 days. As mentioned above, cows should be removed when no cotton lint or leaves are available for grazing.

There are some potential problems that can occur when grazing cotton stalk residue. This study was done with dry pregnant cows and results should not be applied to lactating (nursing) cows. Lactating cows will likely need supplemental energy and/or protein if grazed on cotton stalk residue. Bulls may have reduced fertility because of the gossypol toxicity. To be safe, do not allow bulls to graze cotton fields.

This trial demonstrates that dry pregnant cows can be maintained on cotton stalk residue prior to body condition score between cows wintered on hay or cotton stalks. Feed savings were \$0.58 per cow per day when wintered on cotton stalks versus hay. This trial was conducted with dry pregnant cows, therefore, caution should be taken when applying these results to lactating cows, stocker calves, or replacement heifers. Cotton stalk residue has the potential to greatly reduce winter feeding costs of spring calving herds.

## Drought Forces Farmers To Stretch Hay Supplies

Dr. Darrell Rankins  
Extension Animal Scientist  
Alabama Cooperative Extension System

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Many Alabama cattle producers have inadequate supplies of pasture grass and hay to feed their livestock due to the drought. This lack of grass and hay resulted in local cattlemen selling twice as many cattle in July of this year as last year at most livestock auctions across the state. This article discusses some options that cattle farmers have for providing adequate nutrition with limited amounts of hay. First of all, it is important to remember that cattle are ruminants and thus need some forage (fiber) in their daily diet. In general, the minimal amount required is about 0.5% of body weight which would equate to 5 to 6 pounds for 1,000- to 1,200-pound cows. Because most beef producers use hay in the form of a large round bale, it is difficult to limit hay consumption to 5 to 6 pounds per day. There are only two realistic ways to limit hay consumption with round bales. The hay can be unrolled and offered at a predetermined amount. Another way would be to put an adequate number of rolls in a small area so that the cows can be put into the area for about 2 hours per day in order to control the amount of hay that they consume. With this program it is important that all cows have access to the hay, approximately 1 roll for every 10 cows. If small, square bales of hay are available, then it becomes much easier to offer 5 to 6 pounds of hay per day. Other sources of roughage for cows include peanut hulls, cottonseed hulls, gin trash, cotton motes or any other by-product roughages that may be available in our area. Kudzu is also a roughage option.

Now that the hay has been conserved by some sort of limit feeding system, what is needed to meet the nutrient needs of the cow? For a 1,000-pound cow that has not yet calved, we would need to provide her with about 12 pounds of a grain mix that contains approximately 12% crude protein. One such mix would be to blend 575 pounds of corn with 50 pounds of soybean or cottonseed meal. Another possibility would be to feed soybean hulls, corn gluten feed, whole cottonseed or distiller's grains. Also, check with your local livestock feed dealer to see if they have a blend suitable for your needs.

Once the cows calve and begin lactating, their daily nutrient requirements will increase, and they will require approximately 18 pounds of the grain mix, soybean hulls or corn gluten feed per day plus their hay allowance. With this system, the cows would be fed 12 to 18 pounds of the concentrate per day (depending on stage of production) and given 5 to 6 pounds of forage per day. For this system it is important to have adequate bunk space for feeding the cows to make sure that the boss cows do not consume the majority of the feed. In general, if the cows can access both sides of the bunk, then a 10-foot trough will accommodate 10 to 12 mature cows. It is very important to note that good feeding management is a must when feeding cows in this manner. It would be very easy to founder some cows when feeding this amount of a corn-based supplement per day. Obviously, this system is quite labor-intensive and requires a large amount of daily feeding; however, if hay supplies are severely limited, it may be the only alternative available.

# Using Cotton Byproducts in Beef Cattle Diets

**Johnny Rossi**  
**Extension Animal Scientist — Beef Cattle**

## *Introduction*

The use of crop residues has long been a way to reduce wintering feed costs of cows. Cotton production produces many feed products that can be used by beef cattle. These byproducts include cottonseed, cottonseed meal, cottonseed hulls, gin trash and cotton stalk residue remaining in the field after harvest.

Cottonseed, cottonseed meal and cottonseed hulls are widely used as feed ingredients in beef cattle diets. Cattle producers, however, do not commonly use gin trash and cotton stalk residue. Hay is the primary winter feed source for beef cattle, and wintering feed costs account for about 40 percent of the yearly costs of maintaining a brood cow. Gin trash and cotton stalk residue can be fed as the sole feedstuff or with little supplementation. These byproducts have the greatest potential of any cotton byproducts in lowering wintering feed costs.

## *Potential as a Feed Source*

The southeastern states east of the Mississippi River usually produce 4.5 million acres of cotton each year with a yield of 1.5 bales per acre. One 480-pound bale of cotton also yields approximately 740 pounds of seed and 150 to 200 pounds of cotton gin trash. Cattle can also graze the cotton stalk residue after the cotton is harvested if cows are near cotton fields and temporary fencing is constructed. These are excellent alternatives for cattle producers in cotton-producing areas to lower costs of production by feeding cotton byproducts.

## *Nutrient Composition*

The nutrient composition of cotton byproducts is listed in Table 1. Whole cottonseed is used as a protein and energy source. Whole cottonseed use is limited due to high fat content (17.5 percent) and the potential of gossypol toxicity. The energy content of whole cottonseed is primarily derived from the oil.

**Table 1. Nutrient composition of cotton byproducts (dry matter basis).**

<b>Nutrient</b>	<b>Whole Cottonseed</b>	<b>Cottonseed Meal</b>	<b>Cottonseed Hulls</b>	<b>Gin Trash</b>
Dry matter, %	92.0	92.0	91.0	90.0
Crude protein, %	23.0	46.1	4.1	11.7
TDN, %	95.0	75.0	42.0	46.6

## *Whole Cottonseed*

Whole cottonseed is a unique feed because it can supply protein, energy and fiber to a diet. Whole cottonseed is an excellent supplement to poor quality grass hay for dry and lactating cows because it

supplies both energy and protein in a single feed ingredient. Cottonseed is used in the diets of cows and stocker calves, but do not feed it to young pre-ruminant calves.

Each pound of cottonseed will provide 0.2 pounds of crude protein and 0.87 pounds of TDN on a dry matter basis. It can be included up to 7 pounds per day in mature cow diets. This would provide 1.5 pounds of supplemental crude protein and 6.1 pounds of TDN. It would provide sufficient supplements for lactating cows fed a diet containing hay that is at least 9 percent crude protein and 50 percent TDN. If supplementation is required beyond 7 pounds per day, then other feeds must be blended with the cottonseed.

The high fat content is the primary limiting factor for inclusion in beef cattle diets. Supplementing cottonseed at the maximum recommended feeding rate (7 pounds per day) will provide 1.1 pounds of supplemental fat, which is the maximum amount that should be fed to prevent significant reduction in fiber digestion. Research in Georgia showed that lactating cows fed average quality bermudagrass hay had equal rates of gain when fed 4.7 pounds of whole cottonseed per day or 4 pounds of corn and 1.5 pounds of soybean meal per day. With prices of \$120 per ton for cottonseed, \$100 a ton for corn and \$300 a ton for soybean meal, supplemental feed costs were \$0.28 per day for cottonseed supplemented cows and \$0.43 per day for cows supplemented with corn and soybean meal. Conduct a forage analysis to accurately determine the amount of cottonseed needed to meet the cows' requirements for protein and energy.

In addition, the fat in whole cottonseed has been shown to improve reproductive performance. Fat is a precursor to reproductive hormones, which increases these hormones in the blood. Higher levels of reproductive hormones may improve pregnancy rates and reduce calving interval. This effect is greatest in cows with a body condition score of less than 5.

Stocker calves cannot be fed as much whole cottonseed in the diet as mature cows. The cottonseed should not exceed 15 percent of diet dry matter for stocker calves. When dietary whole cottonseed exceeds 15 percent of diet dry matter, feed intake, daily gains and feed efficiency are decreased. A trial in North Carolina showed a reduction in daily gains of 0.2 pound per day when steers were fed a corn silage based diet containing 24 percent cottonseed, compared with 24 percent of a corn-soybean meal mix. A feedlot study in Texas showed a slight reduction in daily gain of 4 percent and a 10-percent reduction in feed efficiency when whole cottonseed was fed at 15 percent of diet dry matter in a 90-percent concentrate diet. Additional supplemental protein can be derived from either soybean meal another high protein byproduct feed or urea.

### *Cottonseed Meal*

Cottonseed meal is a common source of protein in beef cattle diets and is usually a cheaper source of protein than soybean meal. Cottonseed meal contains 45 percent protein on a dry matter basis and is an excellent source of supplemental phosphorus (1.2 percent). Soybean meal has about 17 percent more protein than cottonseed meal. Soybean meal, however, is often 25 to 35 percent more expensive than soybean meal, making cottonseed meal the preferred source of protein for many producers. Cottonseed meal has similar rates of protein degradability as soybean meal and can replace the soybean meal in most diets. The exception is young calves under 4 months of age. An alternative protein source should be fed to these calves.

Cottonseed meal is often mixed with salt in a 2:1 ratio of meal to salt and fed as a protein supplement to mature cows. Intake of this mix will be approximately 3 pounds per day. In addition, cottonseed meal can be mixed with salt and fed as a high protein creep feed to nursing calves. The creep feed supplement should contain approximately 8 to 10 percent salt. It may be necessary to mix only 2 to 3 percent salt to encourage calves to eat the feed initially.

# Substituting Grain for Hay in Winter Rations for Beef Cows

Shane Gadberry, Extension Beef Cattle Specialist

University of Arkansas Cooperative Extension Service, Little Rock

Rations composed largely of roughages are commonly considered to be most economical for wintering beef cows. Substituting grain for roughage may be economical when roughages are scarce and prices are high relative to grains. Drought tends to shift the economics toward feeding grain as more energy can be transported per ton of feed in this form compared to hay.

Substituting a high energy feed (grain) for a low energy feed (hay) becomes economical when cattle can be wintered to achieve the same level of production but at a lower cost. Since grain usually costs more per pound than hay, a smaller amount of grain must be fed to be economically substituted for hay in such rations. This will require some system of restricted feeding.

## Wintering Objectives

Pregnant cows should be wintered to maintain health and vigor and

to support normal growth and development of the fetus. To rebreed successfully, cows should be fed to reach a moderate body condition (body condition score of 5) by the time of calving.

In wintering breeding stock, a basic question should be, “How can I provide an **adequate** ration at the **least** possible cost?” To find the answer to this question a producer needs to know:

- The animal’s daily nutritive requirements.
- The nutritive value of common feeds.
- The substitution value of available feeds in relation to nutritive properties and cost.

## Nutritive Requirements

Meeting the nutrient requirements of the pregnant cow is the basic underlying objective of any type of a wintering program. This can be done in a number of ways, and economics will normally dictate the

feed combinations that should be considered. However, another concern is that the nutrient availability matches the nutrient needs for the cow during the various phases of pregnancy and lactation.

## Substituting Grain for Hay

**Table 1** shows the TDN (total digestible nutrient) value of various grains compared to prairie, sorghumsudan, alfalfa and grass (bermudagrass, fescue or a mixture of grasses) hay. By using this table, the approximate feeding value of various grains in relation to hay may be determined. For example, on the basis of TDN, corn grain is worth 1.7 times as much as good quality grass hay, or 1 pound of corn will replace 1.7 pounds of grass hay in a beef cow wintering ration.

Table 1. TDN Value of Various Grains Compared to Prairie, Sorghum-Sudan, Alfalfa and Grass Hay<sup>1</sup>

Grain	TDN	Amount of Hay That Can Be Replaced by 1 Pound of Grain			
		Prairie (47% TDN)	Sorghum-Sudan (56% TDN)	Alfalfa (60% TDN)	Grass <sup>2</sup> (53% TDN)
Corn	90	1.9	1.6	1.5	1.7
Barley	84	1.8	1.5	1.4	1.6
Oats	77	1.6	1.4	1.3	1.5
Sorghum, Milo	83	1.8	1.5	1.4	1.6
Wheat	88	1.9	1.6	1.5	1.7
Ear Corn	83	1.8	1.5	1.4	1.6

<sup>1</sup>TDN content of grains and hays is on a dry-matter basis.

<sup>2</sup>Grass hay is bermudagrass, fescue or a mixture of grasses.

**Table 2**, which is based on TDN value of feeds, shows the price that could be paid for various grains in relation to the price of grass hay.

For example, if good quality grass hay costs \$50 per ton delivered, you could afford to pay up to \$4.25 per hundredweight for corn grain or \$3.75 per hundredweight for oats delivered. If grain can be bought for less than the value indicated in **Table 2**, the substitution of grain for part of the roughage in the winter ration of beef cows would be economical.

**Table 2. Comparative Value of Grass Hay\* and Grain for Wintering Cows**

Hay \$/ton	Value of Grain per cwt					Ear Corn
	Corn	Barley	Oats	Sorghum	Wheat	
30	\$2.55	\$2.40	\$2.25	\$2.40	\$2.55	\$2.40
40	3.40	3.20	3.00	3.20	3.40	3.20
50	4.25	4.00	3.75	4.00	4.25	4.00
60	5.10	4.80	4.50	4.80	5.10	4.80
70	5.95	5.60	5.25	5.60	5.95	5.60
80	6.80	6.40	6.00	6.40	6.80	6.40
90	7.65	7.20	6.75	7.20	7.65	7.20
100	8.50	8.00	7.50	8.00	8.50	8.00

The value of the various grains in relation to the price of prairie hay, sorghum-sudan or alfalfa hay can be calculated from the relative energy values shown in **Table 1**. Multiply the price per ton of the hay by the relative energy value of the grain and then divide by 20 to convert to a hundredweight basis. For example, if prairie hay costs \$50 per ton, the amount you could afford to pay for corn would be  $\$50 \times 1.9 = \$4.75/\text{cwt}$ .

## Substitution Guide

In estimating total winter feed needs, the approximate amount of the various grains required to replace a ton of prairie hay, sorghum-sudan hay, alfalfa hay or grass hay is shown in **Table 3**.

**Table 3. The Amount of Various Grains Required to Replace 1 Ton of Prairie, Sorghum-Sudan, Alfalfa or Grass Hay**

	Grain Needed to Replace 1 Ton of Hay			
	Prairie	Sorghum-Sudan	Alfalfa	Grass*
Corn, lb	1052	1250	1333	1176
Barley, lb	1111	1333	1428	1250
Oats, lb	1250	1428	1538	1333
Sorghum, lb	1111	1333	1428	1250
Wheat, lb	1052	1250	1333	1176
Ear Corn, lb	1111	1333	1428	1250

\*Grass hay is bermudagrass, fescue or a mixture of grasses which contain 53 percent TDN on a dry-matter basis.

## Adapting to High Grain Rations

Acidosis, bloat and founder are always a risk when high grain rations are fed to ruminants. Grain should be substituted for only a part of the hay or other roughages. Be aware of the increased risk of digestive problems that may occur with high levels of grain. Adding Rumensin to the diet may help reduce the chances of digestive problems occurring.

To avoid digestive problems, start cattle on grain gradually. It usually takes two to three weeks to adapt to a high grain diet. A minimum roughage level of 0.75 percent of the body weight per day is suggested. If hay is extremely expensive, the daily hay allowance may be reduced to 0.5 percent, but there is an increased risk of digestive problems. **Table 4** shows the minimum hay allowance for cows of various sizes.

**Table 4. Minimum Daily Hay Allowance for Various Sizes of Cows Fed at a Rate of 0.75 Percent of Body Weight Daily**

Body Weight Lb	100% Dry Matter	As-fed (88% Dry Matter)
	lb hay/cow/day	
900	6.75	7.7
1000	7.50	8.5
1100	8.25	9.4
1200	9.00	10.2
1300	9.75	11.1
1400	10.50	11.9

## Some Suggestions on Substituting Grain for Hay

- It is generally best to replace only part rather than all of the roughage. A minimum roughage level of 0.75 percent of the animal's body weight per day is suggested (see **Table 4**).
- The cattle should receive a balanced ration. It should provide adequate amounts of vitamins and minerals as well as protein and energy.
- Be sure you are equipped to feed grain. Grain should be fed in a manner so each animal has an equal opportunity to eat.
- Figure feed, equipment and labor costs carefully. Be sure there is a cost advantage to the specific program you choose.
- If wheat is used, it should make up not more than one-half to two-thirds of the grain portion of the ration.
- Grain sorghum (milo) should be rolled or ground before feeding.
- If practical, use those grains with "built-in roughage" such as barley, oats or ear corn.