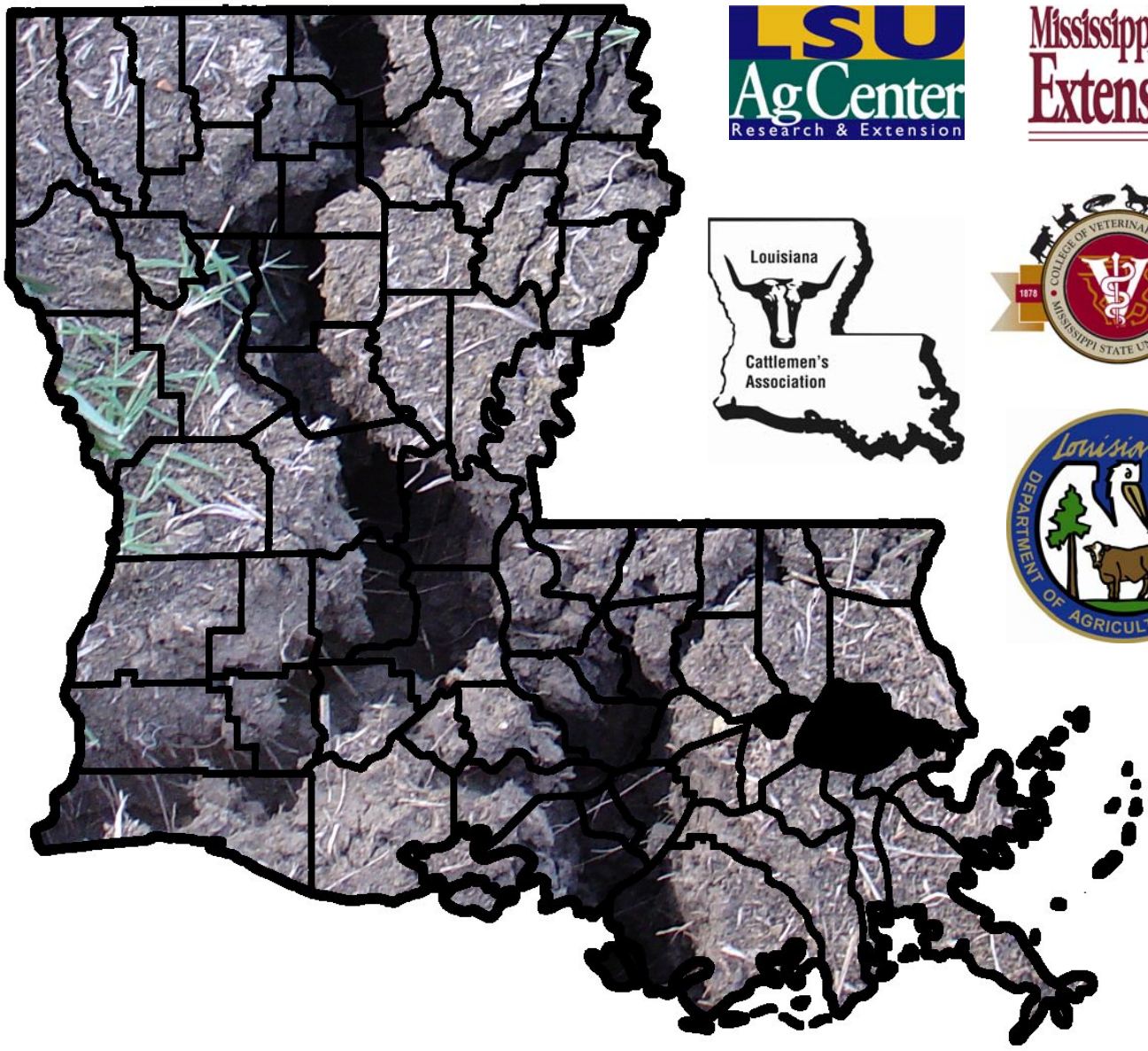
Louisiana Beef Cattle Producer Guide to Coping with Drought Conditions



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In cooperation with the Louisiana Cattlemen's Association and the Louisiana Department of Agriculture and Forestry

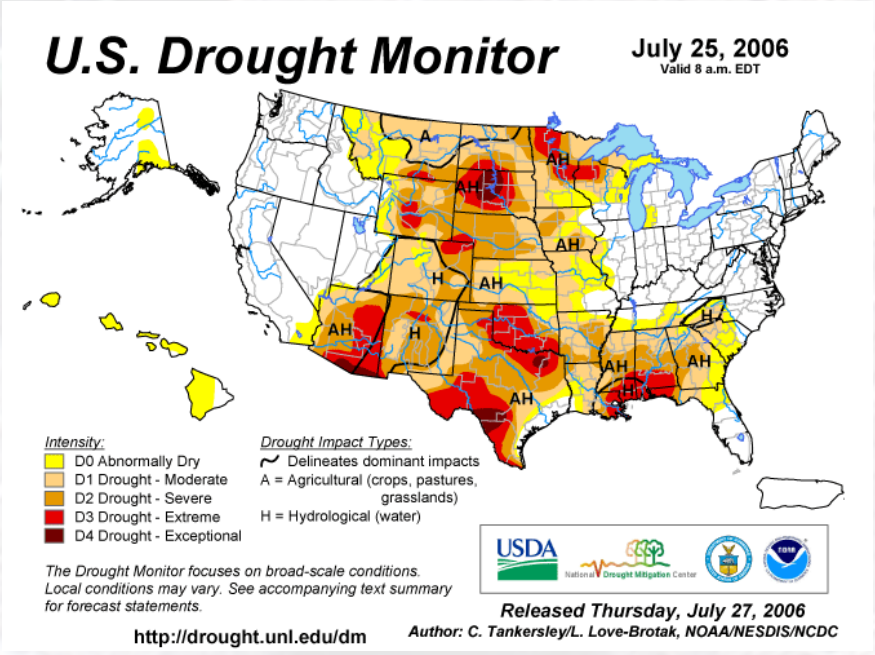
D R O U G H T

Drought on Louisiana Cattle Operations

Louisiana beef cattle production significantly contributes to the state's economy. The Louisiana Ag Center 2005 Agriculture summary reported that despite significant hurricane damage, beef cattle gross farm income was $366.2 million ranking 4th among animal commodities. Louisiana is home to 600,000 beef cows and 12,000 producers. These figures, however, do not completely account for the hurricanes Katrina and Rita which damaged the Louisiana gulf coast in 2005.

The purpose of this publication is to provide Louisiana and Mississippi beef producers with information on drought coping options and related knowledge to assist in making profitable production and marketing decisions. Drought can be expected as part of normal production cycles. The overall cattle operation management plan should include drought preparation and coping plans. Extended periods of dry weather create management challenges for both cow-calf and stocker operations. Droughty conditions greatly impact pasture and hay land productivity as well. Because most Louisiana and Mississippi beef operations are heavily dependent on forage-based nutritional programs, nutritional concerns often become a focal point of cattle production systems during periods of drought-induced poor forage productivity and supplies.

The Louisiana and Mississippi offices of the National Agricultural Statistics Service publish a weekly weather crop report (example report appears in the Appendix). This report details pasture and hay conditions as Excellent, Good, Fair, Poor, or Very Poor with percentages of the state crop rated in each of these categories. This report provides an overall summary of statewide pasture and hay conditions, yet local conditions can vary dramatically across the state. While the local precipitation situation is of most concern to individual producers, statewide, regional, and even national precipitation, soil moisture, and crop conditions impact supply and demand for inputs and marketings from Mississippi beef operations. The U.S. Drought Monitor tracks current drought conditions and impacts on a national scale.



Widespread drought has a number of implications for the cattle market. First of all, the intensity of a drought in major cattle producing states like Texas and Oklahoma makes it difficult to expand the national beef herd. Many producers find it difficult to maintain the herd they have, much less consider increasing cattle numbers. The drought may not halt herd expansion all together, but it will, at the very least, slow the pace of expansion, thus affecting the level of beef production further down the road. Longer term, a reduction in beef production will be supportive of cattle prices. In the short run, forced sales of increasing numbers of cattle will not be good for prices, certainly not at the local market level.

Looking more specifically at stocker and feeder cattle markets, a current drought could affect both supply and demand for calves. On the demand side, drought impacts on winter grazing in key areas can impact demand for calves. On the supply side, poor pasture conditions often lead to large numbers of early sales of calves as producers pull calves as early as possible in order to reduce the nutritional requirements of the cow herd. Many times these calves move through market channels well before the typical marketing seasons. Supply and demand changes resulting from a widespread drought can add some additional uncertainty to upcoming calf markets.

Dry weather can affect feed markets as well. Scarce hay supplies and/or poor grazing conditions are red flags for winter feeding programs. Producers facing these circumstances should immediately be looking at and comparing the costs of alternative feedstuffs. A number of by-product feeds are available around the state. It is often the case that by-product feed prices will increase some along with hay prices due to drought effects on supply and demand of these commodity feeds, but in many instances these feedstuffs may still be a lower cost feeding alternative than traditional hay feeding systems. Availability of alternative feedstuffs can also become an issue, and timeliness of feed booking may be critical to secure supplies and reasonable prices.

Drought conditions are always difficult to deal with. Localized drought creates a variety of management challenges for beef cattle producers. More widespread drought even has the potential to affect national markets. In these situations, producers should, in evaluating all management and marketing decisions, focus on the long-run sustainability and survivability of the operation.

Planning for and Dealing with Drought

- ✓ **Drought can be expected as part of normal production cycles**
- ✓ **Overall management plan should include drought preparation and coping plans**
- ✓ **Drought creates management challenges for both cow-calf and stocker operations**
- ✓ **Widespread drought can impact markets**
- ✓ **Focus on operational long-run sustainability and survival**

Where to Start

Inventory Ranch Resources

One of the first things that Louisiana and Mississippi cattle producers should do when faced with drought conditions is to assess herd, nutritional, and other resources. The usefulness of different management and marketing options varies based on ranch resources, management, and marketing systems. Assessments of cattle nutrient needs, pasture production, stored feed resources (hay, baleage, commodity feeds, etc.), labor resources, facilities (particularly covered feed or hay storage capabilities), and other operational inputs (fertilizer, seed, fuel, etc.) need to be closely quantified. Any shortfalls in nutrient supplies and cattle nutrient needs, for example, must be planned for in a very timely manner.

- ✓ **Evaluate pasture and hay quality and supply**
- ✓ **Determine cattle nutrient needs**
- ✓ **Estimate supplemental feed requirements**

Cattle Nutritional Programs

Nutrient Requirements of Beef Cattle

Cost-efficient drought survival depends heavily upon close matching of nutritional programs and cattle requirements. Overfeeding wastes resources and funds and underfeeding hurts production levels. Priority should be placed on determining nutrient needs of the cattle herd. The best time to improve cow body condition in preparation for calving and breeding is in the months right after weaning. Daily dry matter intake needs approach 2% of body weight for mature cows immediately after calves are weaned. As calving nears, dry matter intake needs will increase, and after calving daily dry matter intake levels should be closer to 2.5% of body weight. Growing cattle can require closer to 3% of body weight in daily dry matter intake. If hay quality/supply appear short and grazing plans cannot provide adequate levels of nutrients for the herd, then supplemental feed may become necessary. For practical purposes, beef cattle dietary requirements and feed formulations presented in this publication primarily consider total digestible nutrients (TDN) and crude protein (CP) levels on a dry matter basis. Mineral, fat, and effective fiber contents of forages and feeds are also important in balancing the overall diet.

For more efficient use of nutritional resources, cattle can be divided into feeding groups based on nutrient needs (Tables 1 to 6). As a general rule, lactating cows have higher nutrient requirements than dry cows, and first-calf heifers have higher nutrient percentage requirements in their diets than mature cows. Young growing cattle tend to require higher percentages of dietary nutrients but lower total dietary pounds of nutrients per day. Heifers can be separated by weight after weaning into feeding groups for more efficient feeding. The better quality forages and feeds should go to the feeding groups with higher nutrient needs. Another approach is to allocate higher quality grazing paddocks to the feeding groups with higher nutrient demands.

Efficient Herd Nutritional Programs

- ✓ **Divide cattle into feeding groups based on nutrient needs**
- ✓ **Allocate forage/ feed supplies to each group to closely match animal requirements**

Growing Steer and Heifer Nutrient Requirements

Table 1. Growing Steer and Heifer Nutrient Requirements, 1,100 lbs. at Finishing

			Diet Nutrient Density		Daily Nutrients / Animal	
Body wt. (lbs.)	**ADG (lbs.)**	**Dry matter intake (lbs/day)**	**TDN (% dry matter)**	**CP (% dry matter)**	**TDN (lbs.)**	**CP (lbs.)**
300	0.5	7.9	54	9.2	4.3	0.73
	1.0	8.4	59	11.4	5.0	0.95
	1.5	8.6	64	13.6	5.5	1.17
	2.0	8.6	69	16.2	5.9	1.39
	2.5	8.5	75	18.9	6.4	1.61
	3.0	8.2	83	22.2	6.8	1.83
400	0.5	9.8	54	8.7	5.3	0.85
	1.0	10.4	59	10.4	6.1	1.08
	1.5	10.7	64	12.1	6.8	1.30
	2.0	10.7	69	14.1	7.4	1.51
	2.5	10.6	75	16.3	8.0	1.72
	3.0	10.2	83	19.0	8.5	1.94
500	0.5	11.6	54	8.4	6.3	0.97
	1.0	12.2	59	9.8	7.2	1.19
	1.5	12.6	64	11.2	8.1	1.41
	2.0	12.7	69	12.8	8.8	1.63
	2.5	12.5	75	14.7	9.4	1.84
	3.0	12.1	83	16.9	10.0	2.05
600	0.5	13.2	54	8.2	7.1	1.08
	1.0	14.0	59	9.4	8.3	1.31
	1.5	14.4	64	10.6	9.2	1.53
	2.0	14.6	69	11.9	10.1	1.74
	2.5	14.4	75	13.6	10.8	1.95
	3.0	13.8	83	15.7	11.5	2.17
700	0.5	14.9	54	8.0	8.0	1.19
	1.0	15.8	59	9.0	9.3	1.42
	1.5	16.2	64	10.1	10.4	1.64
	2.0	16.3	69	11.4	11.2	1.85
	2.5	16.1	75	12.8	12.1	2.06
	3.0	15.5	83	14.6	12.9	2.27

Table 2. Growing Steer and Heifer Nutrient Requirements, 1,200 lbs. at Finishing

			Diet Nutrient Density		Daily Nutrients / Animal	
Body wt. (lbs.)	ADG (lbs.)	Dry matter intake (lbs/day)	TDN (% dry matter)	CP (% dry matter)	TDN (lbs.)	CP (lbs.)
300	0.5	7.8	54	9.4	4.2	0.73
	1.0	8.3	58	11.5	4.8	0.95
	1.5	8.6	63	13.7	5.4	1.17
	2.0	8.6	68	16.2	5.8	1.40
	2.5	8.6	73	18.7	6.3	1.61
	3.0	8.3	80	22.0	6.6	1.83
400	0.5	9.7	54	8.8	5.2	0.85
	1.0	10.3	58	10.4	6.0	1.07
	1.5	10.6	63	12.2	6.7	1.30
	2.0	10.7	68	14.1	7.3	1.51
	2.5	10.7	73	16.1	7.8	1.72
	3.0	10.4	80	18.7	8.3	1.94
500	0.5	11.5	54	8.4	6.2	0.97
	1.0	12.2	58	9.8	7.1	1.19
	1.5	12.6	63	11.2	7.9	1.41
	2.0	12.6	68	12.9	8.6	1.63
	2.5	12.6	73	14.6	9.2	1.84
	3.0	12.2	80	16.8	9.8	2.05
600	0.5	13.2	54	8.2	7.1	1.08
	1.0	14.0	58	9.3	8.1	1.31
	1.5	14.4	63	10.6	9.1	1.52
	2.0	14.4	68	12.1	9.8	1.74
	2.5	14.4	73	13.5	10.5	1.95
	3.0	14.0	80	15.4	11.2	2.16
700	0.5	14.8	54	8.0	8.0	1.18
	1.0	15.7	58	9.0	9.1	1.42
	1.5	16.2	63	10.1	10.2	1.64
	2.0	16.3	68	11.3	11.1	1.85
	2.5	16.2	73	12.7	11.8	2.05
	3.0	15.8	80	14.4	12.6	2.27

Two-Year-Old First-Calf Heifer Nutrient Requirements

Table 3. Two-Year-Old Lactating First-Calf Heifer Nutrient Requirements

			Diet Nutrient Density		Daily Nutrients / Animal	
Mature body wt. (lbs.)	**Months after calving**	**Dry matter intake (lbs/day)**	**TDN (% dry matter)**	**CP (% dry matter)**	**TDN (lbs.)**	**CP (lbs.)**
1000	1	20.4	61.0	10.6	12.4	2.16
	2	21.2	62.1	11.1	13.2	2.36
	3	21.8	59.8	10.4	13.0	2.26
	4	21.2	58.5	9.7	12.4	2.06
	5	20.7	57.1	9.0	11.8	1.87
	6	20.3	56.0	8.4	11.4	1.71
1200	1	22.9	60.4	10.2	13.8	2.34
	2	23.8	61.4	10.7	14.6	2.55
	3	24.5	59.2	10.0	14.5	2.44
	4	24.0	58.0	9.4	13.9	2.25
	5	23.4	56.8	8.8	13.3	2.05
	6	23.0	55.8	8.3	12.8	1.90
1400	1	25.3	60.0	10.0	15.2	2.52
	2	26.2	60.9	10.4	16.0	2.72
	3	27.1	58.7	9.7	15.9	2.62
	4	26.6	57.6	9.1	15.3	2.43
	5	26.1	56.5	8.5	14.7	2.23
	6	25.7	55.7	8.1	14.3	2.08

Table 4. Two-Year-Old Dry (Non-Lactating) First-Calf Heifer Nutrient Requirements

			Diet Nutrient Density		Daily Nutrients / Animal	
Mature body wt. (lbs.)	**Months after calving**	**Dry matter intake (lbs/day)**	**TDN (% dry matter)**	**CP (% dry matter)**	**TDN (lbs.)**	**CP (lbs.)**
1000	7	18.8	48.6	6.9	9.1	1.29
	8	18.9	49.4	7.0	9.3	1.33
	9	19.1	50.7	7.3	9.7	1.39
	10	19.4	52.7	7.7	10.2	1.50
	11	19.9	55.5	8.3	11.0	1.66
	12	20.6	59.1	9.3	12.2	1.92
1200	7	21.5	48.9	6.9	10.5	1.48
	8	21.7	49.7	7.1	10.8	1.53
	9	22.0	51.0	7.3	11.2	1.61
	10	22.3	53.1	7.8	11.8	1.73
	11	22.8	55.9	8.5	12.7	1.93
	12	23.7	59.7	9.4	14.1	2.23
1400	7	24.2	49.1	6.9	11.9	1.67
	8	24.4	49.9	7.0	12.2	1.72
	9	24.7	51.3	7.3	12.7	1.81
	10	25.1	53.4	7.8	13.4	1.96
	11	25.7	56.4	8.5	14.5	2.19
	12	26.7	60.2	9.5	16.1	2.54

Table 5. Mature Lactating Cow Nutrient Requirements (20 lbs./day peak milk production)

			Diet Nutrient Density		Daily Nutrients / Animal	
Body wt. (lbs.)	**Months after calving**	**Dry matter intake (lbs/day)**	**TDN (% dry matter)**	**CP (% dry matter)**	**TDN (lbs.)**	**CP (lbs.)**
1000	1	24.0	59.6	10.5	14.3	2.53
	2	25.0	60.9	11.2	15.2	2.79
	3	25.4	58.6	10.4	14.9	2.64
	4	24.4	57.0	9.7	13.9	2.36
	5	23.5	55.4	8.9	13.0	2.08
	6	22.7	54.0	8.2	12.3	1.85
1200	1	26.8	58.7	10.1	15.7	2.71
	2	27.8	59.9	10.7	16.7	2.97
	3	28.4	57.6	9.9	16.4	2.82
	4	27.4	56.2	9.3	15.4	2.54
	5	26.5	54.7	8.5	14.5	2.26
	6	25.7	53.4	7.9	13.7	2.04
1400	1	29.5	58.0	9.8	17.1	2.88
	2	30.5	59.1	10.3	18.0	3.14
	3	31.3	56.8	9.6	17.8	2.99
	4	30.3	55.5	8.9	16.8	2.70
	5	29.4	54.1	8.3	15.9	2.44
	6	28.6	53.0	7.7	15.2	2.21

Table 6. Mature Dry (Non-Lactating) Cow Nutrient Requirements

			Diet Nutrient Density		Daily Nutrients / Animal	
Body wt. (lbs.)	**Months after calving**	**Dry matter intake (lbs/day)**	**TDN (% dry matter)**	**CP (% dry matter)**	**TDN (lbs.)**	**CP (lbs.)**
1000	7	19.5	46.8	6.5	9.1	1.26
	8	19.8	47.2	6.6	9.3	1.30
	9	20.3	47.9	6.7	9.7	1.35
	10	21.1	48.9	6.9	10.3	1.45
	11	21.0	52.1	7.7	10.9	1.61
	12	21.4	55.9	8.7	12.0	1.86
1200	7	22.4	46.9	6.5	10.5	1.45
	8	22.8	47.3	6.5	10.8	1.49
	9	23.3	47.9	6.7	11.2	1.56
	10	24.3	49.0	6.9	11.9	1.67
	11	24.1	52.3	7.7	12.6	1.86
	12	24.6	56.2	8.8	13.8	2.16
1400	7	25.2	46.9	6.5	11.8	1.63
	8	25.6	47.3	6.5	12.1	1.67
	9	26.2	48.0	6.7	12.6	1.75
	10	27.3	49.1	6.9	13.4	1.89
	11	27.0	52.6	7.8	14.2	2.11
	12	27.6	56.6	8.9	15.6	2.45

Bull Nutrition

Proper post-weaning development of beef bulls is important for future effectiveness as herd sires. Bulls should be separated and managed according to age groups (weanling bull calves, yearling bulls, highly-fitted or gain-tested bulls, 2-year old bulls, mature bulls). Separating younger and older bulls can be particularly important in preventing injuries. Dividing bulls into management groups also allows the different nutritional needs of the different groups to be better met. Yearling bulls still have lots of growth and development ahead of them and should be managed differently than older bulls.

As bulls mature, their nutritional requirements change. Younger bulls require less quantity but higher quality diets. For example, daily nutrient requirements for a 700 lbs. bull gaining two lbs. per day are approximately 16 lbs. of dry matter intake with 11.4% crude protein and 65% total digestible nutrients (TDN) on a dry matter basis, while a 1,500 lbs. bull gaining two lbs. per day needs approximately 34.5 lbs. of dry matter intake with 6.1% crude protein and 63% TDN on a dry matter basis. While daily dry matter intake generally increases with increasing body weight, a bull's crude protein requirement declines as a percentage of dry matter intake with advancing age and body size. Younger bulls require higher protein percentages for the rapid lean muscle growth that is occurring during early development.

Increased physical activity of bulls during the breeding season can result in body condition loss. Adequate bull body condition is important for effective breeding performance. Since it can often be difficult to supplement bulls separately from the remainder of the breeding herd, bulls should be fed to go into the breeding season in at least good body condition without being excessively fat. A body condition score of 6, where 1=extremely thin and 9=obese, is a good goal for bulls at the start of breeding.

Yearling bulls can lose significant amounts of weight during their first breeding season. They must gain this weight back and continue to grow before the next breeding season to remain effective herd sires. It is important to observe growing bulls closely for changes in body condition. Adjustments to bull feeding programs can then be made in a timely manner. A good target is for a 2-year old bull to weigh approximately 75% of his expected mature weight. For example, if a bull's expected mature weight is 2,000 lbs., then he should weigh approximately 1,500 lbs. (2000 x .75 = 1,500) at two years of age.

Bull Nutrition Basics

- ✓ **Younger bulls need less quantity but higher quality diets**
- ✓ **Bulls should begin breeding season in a body condition score 6**
- ✓ **Breeding season activity can reduce body condition**
- ✓ **Target 75% of expected mature weight for two-year old bulls**

Using Body Condition Scoring to Assess Herd Nutritional Status

Doing nothing to address the nutritional needs of cattle on drought-stressed pastures can dramatically impact production and profit levels of the cattle business. Thin cows and lightweight calves are a likely result if nutrient demands of the herd are not met. If cows are allowed to decline to a state of poor condition, then additional nutrients will be required to regain lost body condition. Research has consistently shown that reproductive rates of thin beef females are lower than those of cattle in moderate to high body condition. Dramatic declines in pregnancy rates occur when cows fall below a body condition score of 5 (moderate condition with general good overall appearance with spongy fat cover over ribs and palpable fat cover on either side of tail head) on the 1 to 9 scale for beef cattle. A change of one body condition score on this system equals approximately 75 to 80 lbs. change in body weight on an 1100 lbs. cow. Although there is added expense in supplemental feed, the cost of having thin cattle that do not rebreed or calves that do not grow like they should can be even more costly to profitability. In addition, dramatically reduced weaning weights for calves from inadequate nutrition can hurt profitability.

Body condition scoring is a management tool that can be used to evaluate the nutritional status of beef cattle. Body condition is an indication of the energy reserves of a beef animal and is important in beef production because it influences subsequent reproductive and growth performance. Over-conditioning is expensive and can result in calving problems and lower dry matter intake early in lactation.

Cows and heifers in thin body condition at calving time:

- ✓ **Rebreed slower**
- ✓ **Produce less colostrum**
- ✓ **May not have sufficient nutrient reserves for maximum milk production**
- ✓ **Are less likely to wean a live calf**

Body condition is dependent upon nutritional requirements and past nutrient intake. Nutritional programs should be designed to avoid wild variations in body condition scores. Recommended body condition score at calving is 5 for mature cows. Because heifers are still growing, their nutritional requirements in terms of nutrient percentages are higher than later in life. Therefore, heifers should be managed to calve in a body condition score of 6.

Recommended Times to Body Condition Score the Herd

Body condition scores of females in the breeding herd should fall within a range of 5 to 7 from the beginning of the calving season throughout the breeding season. To properly plan and adjust forage and feeding programs to ensure adequate body condition for optimum reproductive performance, cows and heifers should be condition scored:

- ✓ **When faced with limited forage supplies**
- ✓ **When calves are weaned**
- ✓ **60 days prior to calving**
- ✓ **At calving**
- ✓ **At the beginning of the breeding season**

Key Places to Look for Body Condition

There are several key places to assess body condition in beef cattle (Figure 1). Overall body fat should be evaluated along with fat cover over the tail head, ribs, and shoulder and in the brisket. Muscling should be evaluated to determine if muscle has been broken down for energy and cattle are at the low end of the body condition scoring scale. Visible and palpable bone structure is another essential part of body condition scoring and includes the ribs, backbone, spinous process, transverse processes, hooks (hips), and pins.

BCS 1 = Emaciated

No palpable fat is detectable over the spinous processes, transverse processes, ribs, or hooks. The tailhead and ribs appear very prominent.

BCS 2 = Poor

Animal is still somewhat emaciated but the tailhead and ribs are less prominent. Individual spinous processes are still sharp to the touch. Some tissue cover is present over the ribs towards the top of the back.

BCS 3 = Thin
Individual ribs including foreribs are easily identified but are not quite as sharp to the touch. Some fat can be felt along the spine and over the tailhead. Some tissue cover is present over the ribs towards the top of the back.

BCS 4 = Borderline
Individual ribs may not be visually obvious. Individual spinous processes can be felt when palpated but feel rounded rather than sharp. Some fat cover is present over the ribs, transverse processes and hooks.

BCS 5 = Moderate
Overall appearance is generally good. Fat cover over ribs feels spongy. Palpable fat cover is present on either side of the tailhead.

BCS 6 = High moderate
A high degree of palpable fat exists over the ribs and around the tailhead. Firm pressure is needed to feel the spinous processes.

BCS 7 = Good
Considerable fat cover is present with a fleshy overall appearance. Fat cover over the ribs and around the tailhead is very spongy. Fat “pones” may be forming along side the tailhead.

BCS 8 = Fat
The animal is very fleshy and appears over-conditioned. Palpation of the spinous processes is near impossible. Large fat deposits are present over the ribs and around the tailhead. Fat pones around the tailhead are obvious.

BCS 9 = Extremely fat
The overall appearance is blocky with extremely wasty and patchy fat cover. The tailhead and hooks are buried in fatty tissue with fat pones protruding. Bone structure is no longer visible are barely palpable. Large fatty deposits may even impair animal mobility.

Figure 1. Beef Cattle Body Condition Scoring Guide

Palpation of the animal's condition over the ribs, along the backbone, and over the tailhead is useful in assigning body condition scores. Fat (condition) will be spongy to the touch. Bone structure with little or no fat cover will feel sharp to the touch. Palpation of body condition is particularly beneficial when loose hide or thick hair coat makes visual appraisal of body condition more difficult.

Alternative Feeds for Beef Cattle
Stored forages and feeds should be located, evaluated for nutrient value and price, and purchased or forward contracted. Many hay suppliers fill orders to a regular customer base first before marketing to new customers, especially when hay supplies are tight relative to hay demand. Word of mouth is a common way of locating hay supplies. The Mississippi Market Bulletin and Internet-based hay directories are also potentially useful sources of information on hay suppliers.

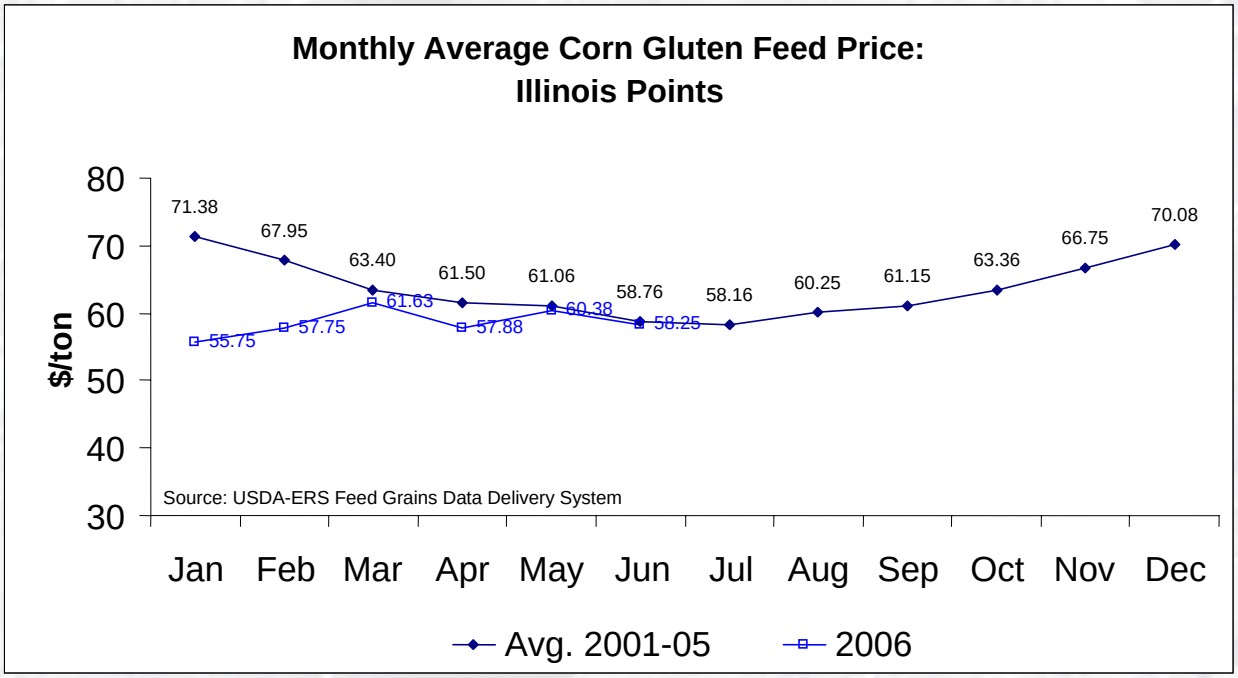
Mississippi Hay Directory
- ✓ **msucares.com/livestock/beef/mshay.html**

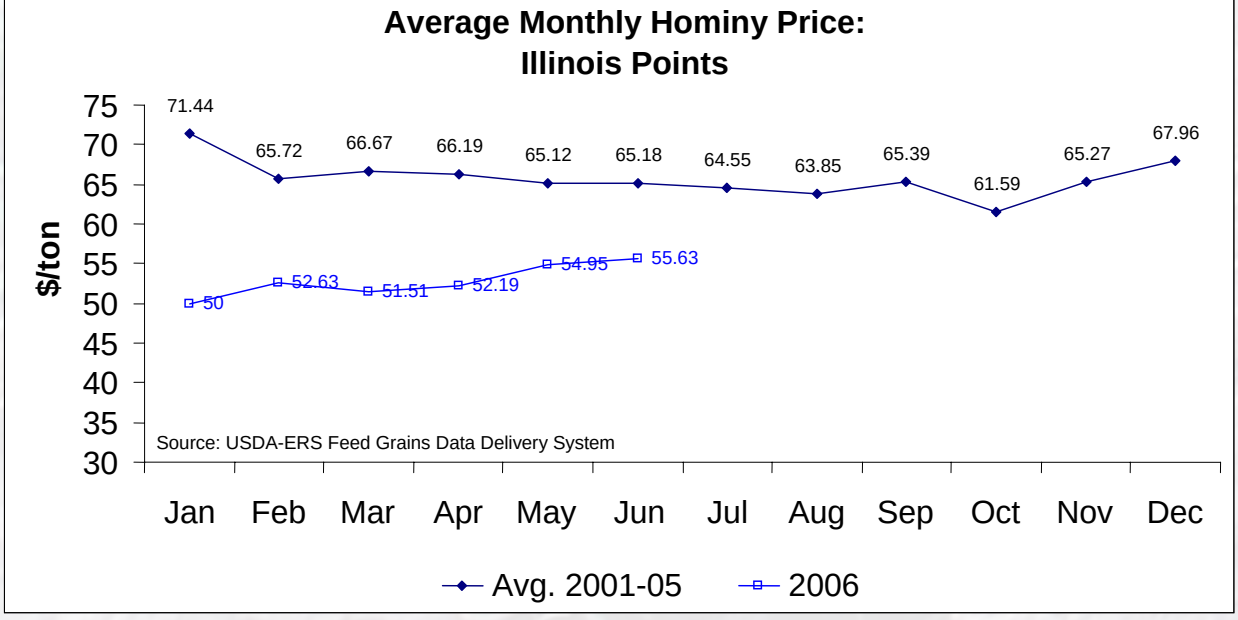
By-product commodities are a viable feed alternative to commercially mixed supplements. Take time to evaluate both commodity feeds and commercial supplements to determine what ingredients price in as the most cost-effective to achieve target production levels. It is useful to reevaluate diets over time as feed prices and availability change to make sure that the cost of the current nutritional program is reasonable in comparison with other feeding options. Two useful resources available on the Internet for regularly updated commodity price information are:

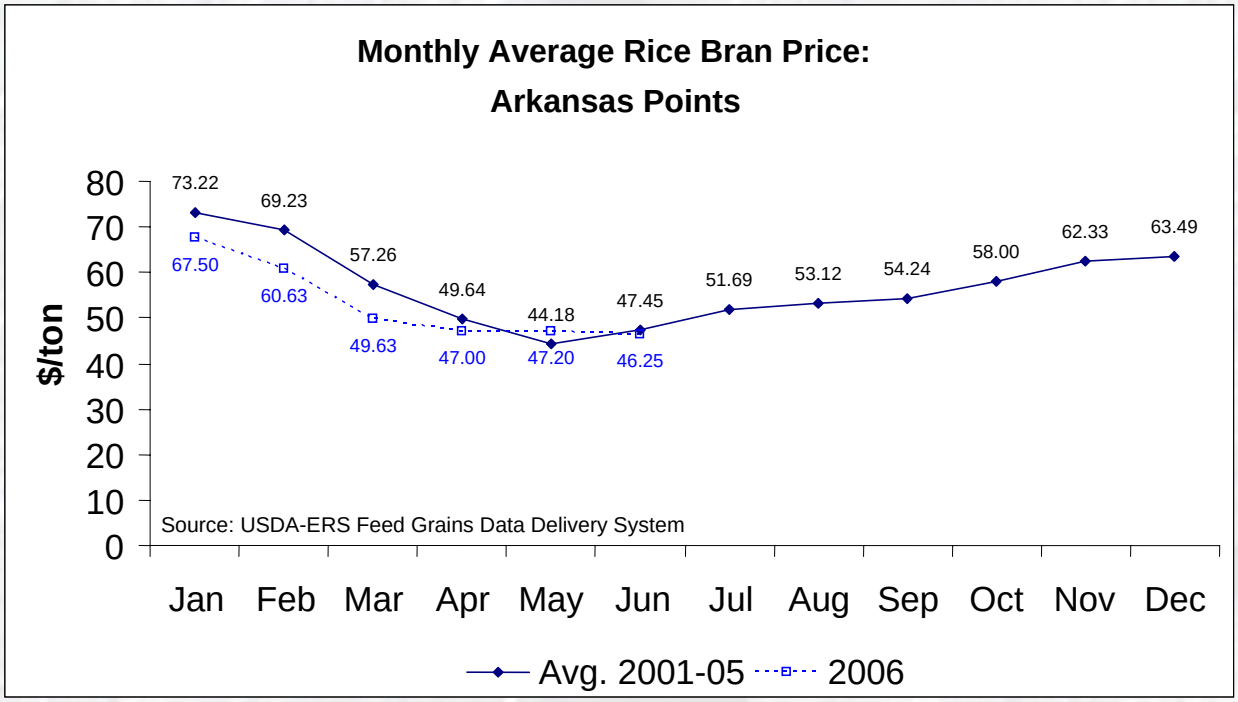
Oklahoma State University Feed Commodity Bulletin
- ✓ **www.ansi.okstate.edu/exten/feedbull/**

Missouri By-Product Feed Page
- ✓ **agebb.missouri.edu/dairy/byprod/**

Commodity Feed Price Trends
By-product commodity prices for many common ingredients in beef cattle diets often follow seasonal price trends (Figure 2). Dried distillers grains usually reach seasonal lows around early autumn. Whole cottonseed prices, on the other hand, tend to start falling after June and usually reach annual lows in October and November. Cottonseed hull prices tend to climb in November and December over September and October prices and then drop again in January and February. The best prices on soybean hulls are typically in early summer, with soybean hull prices often rising after August before starting to decline again after January. Prices of wheat midds are generally lowest in May and reach their peaks in December. Price trends in the current year can always buck the traditional seasonal trend, however, so it is important to stay up to date on current commodity prices. Pool resources with neighbors when possible. Purchasing feed in bulk can often reduce cost per unit.


Monthly Average Corn Gluten Feed Price:
Illinois Points
$/ton
80
70
60
50
40
30
71.38
67.95
63.40
61.50
61.06
58.76
58.16
60.25
61.15
63.36
66.75
70.08
55.75
57.75
61.63
57.88
60.38
58.25
Source: USDA-ERS Feed Grains Data Delivery System
Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec
Avg. 2001-05
2006


Average Monthly Hominy Price:
Illinois Points
$/ton
75
70
65
60
55
50
45
40
35
30
71.44
65.72
66.67
66.19
65.12
65.18
64.55
63.85
65.39
61.59
65.27
67.96
50
52.63
51.51
52.19
54.95
55.63
Source: USDA-ERS Feed Grains Data Delivery System
Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec
Avg. 2001-05
2006



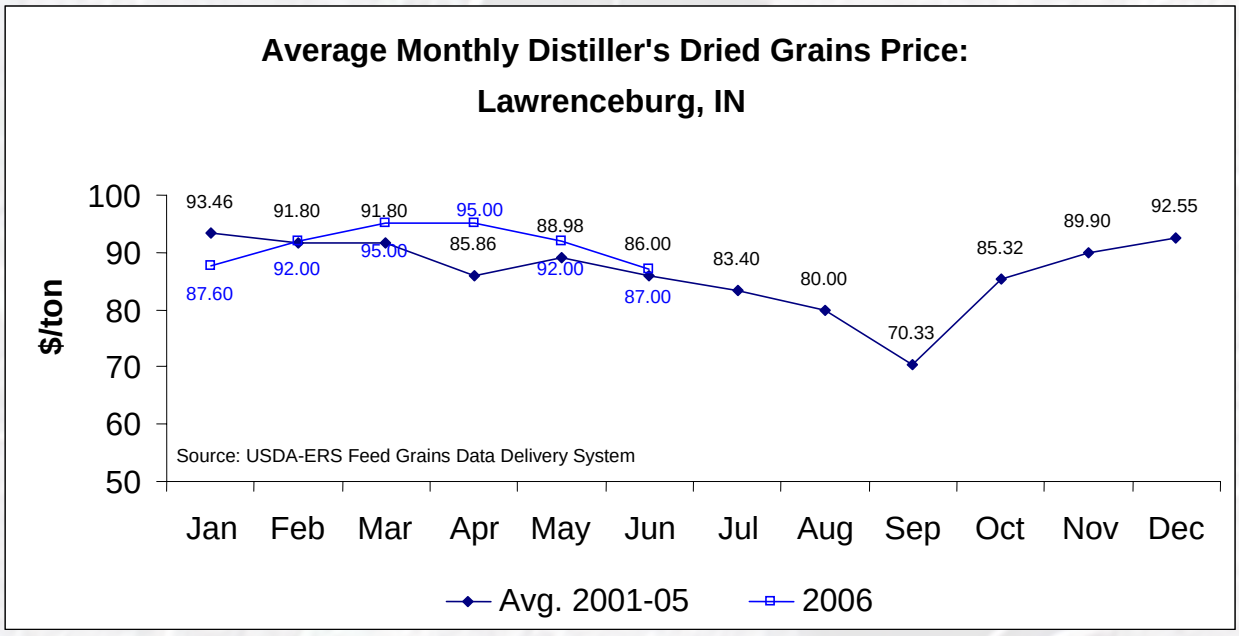


Figure 2. Commodity Feed Price Trend Examples

Nutritional Values of Selected Feedstuffs

Just because certain by-products are cheap in terms of dollars, does not mean that they are necessarily a good value. The nutritional makeup of feeds and what they will contribute to beef cattle performance determine their true value (Table 7). Some feeds can be fed free-choice in self feeders, while others required daily hand feeding. Because each feed has its own unique feeding advantages and limitations, it is worth the time to visit with someone who is competent in formulating beef cattle diets to avoid any potential nutritional problems or disorders in the herd.

Table 7. Nutrient Content of Selected Beef Cattle Feeds on a Dry Matter Basis[1]

Feed	Dry Matter %	Total Digestible Nutrients %	Crude Protein %	Crude Fiber %	Crude Fat %	Calcium %	Phosphorus %
Energy Feeds							
Whole Shelled Corn	90	90	9	2	4	0.03	0.32
Hominy Feed	90	91	11	7	8	0.06	0.58
Soybean Hulls	90	80	12	39	2	0.60	0.17
Wheat Midds	89	77	18	9	5	0.15	1.00
Rice Bran	90	70	16	12	15	0.10	1.73
Cane Molasses	74	72	6	1	0	0.01	0.10
Citrus Pulp	90	80	6.5	13	4	1.90	0.13
Protein Feeds							
Corn Gluten Feed	90	83	24	10	4	0.07	0.95
Whole Cottonseed	93	90	24	22	18	0.20	0.73
Cottonseed Meal	92	76	41	13	3	0.18	1.21
Soybean Meal	90	84	48	7	2	0.34	0.70
Peanut Meal	88	77	53	2	2	0.32	0.66
Dried Distillers Grains	92	86	27	12	10	0.26	0.83
Brewers Grains	24	69	26	15	11	0.30	0.57
Roughages							
Cottonseed Hulls	91	42	4	48	2	0.10	0.07
Cotton Gin Trash	92	46	8	38		0.60	0.20
Peanut Hay	91	48	11	33		1.20	0.15
Peanut Hulls	91	22	9	63		0.20	0.07
Corn Stalks	85	50	6.6	34	2	0.50	0.10
Soybean Stubble	88	40	5	44		1.00	0.06
Wheat Straw	92	40	4	42	2	0.17	0.04

[1]The nutrient values presented are intended as a general guide to nutrient qualities of feedstuffs. Significant variation in nutrient values exists among different feed sources.

Economic Replacement Value of Feedstuffs

The relative value of feeds can be compared in terms of dollar value for TDN and CP content as compared to whole shelled corn and soybean meal base feeds. Table 8 shows prices at which selected by-product feeds would be relatively equivalent to corn and soybean meal at the given prices. Being able to purchase by-product feeds for less than these relative values would be good deals compared to feeding corn and soybean meal base diets at the given prices. This does not account for roughage levels needed in the diet or other feeding considerations but can be useful in quick overall comparisons of feed prices and nutrient replacement values.

Table 8. Relative Value of By-Product Feeds with Selected Corn and Soybean Meal Prices[1]

	Corn Price, $/ton					
Feed	**70**	**80**	**90**	**100**	**110**	**120**
Whole cottonseed	$105.22 $121.56	$113.25 $129.59	$121.28 $137.62	$129.31 $145.65	$137.34 $153.68	$145.37 $161.71
Cottonseed hulls	$37.71 $38.13	$42.91 $43.34	$48.12 $48.54	$53.32 $53.75	$58.53 $58.95	$63.74 $64.16
Soybean hulls	$71.29 $76.24	$79.36 $84.30	$87.42 $92.37	$95.48 $100.43	$103.55 $108.49	$111.61 $116.56
Corn gluten feed	$95.39 $113.33	$101.33 $119.27	$107.27 $125.21	$113.21 $131.15	$119.15 $137.09	$125.09 $143.03
Hominy feed	$76.76 $78.96	$86.78 $88.98	$96.81 $99.01	$106.83 $109.03	$116.85 $119.05	$126.88 $129.08
Dried distillers grains	$110.79 $133.72	$116.80 $139.72	$122.80 $145.72	$128.80 $151.73	$134.80 $157.73	$140.80 $163.73
Wheat midds	$87.17 $99.93	$94.15 $106.91	$101.14 $113.90	$108.12 $120.88	$115.11 $127.87	$122.09 $134.85
Rice bran	$70.42 $79.06	$76.78 $85.42	$83.14 $91.78	$89.49 $98.13	$95.85 $104.49	$102.21 $110.85
Cane molasses	$47.54 $44.68	$55.55 $52.70	$63.57 $60.71	$71.58 $68.73	$79.60 $76.74	$87.62 $84.76

[1]Top values are estimated based on soybean meal costing $150/ton. Bottom values are estimated based on soybean meal costing $200/ton.

Feed Storage and Handling Considerations

Farm feed storage (Table 9), mixing, handling, and feeding capabilities also determine the feasibility of using different ingredients and diets for the herd. Specific feeds can have characteristics that require special handling considerations, as in the case of the flowability limitations associated with fuzzy whole cottonseed. A cornstarch coating process for whole cottonseed shows promise for alleviating this handling problem though. Sacking feeds is useful for feeding and storage in many cases but typically costs extra.

Table 9. Feed Storage Requirements for Selected Beef Cattle Feedstuffs

	Feed Storage Requirement		
Feedstuff	**lbs./bushel**	**lbs./ft.^{3}**	**ft.^{3}/ton**
Whole corn	56	45	42
Corn silage		35	57
Soybean hulls	18	14	142
Soybean meal	53	42	48
Corn gluten feed	41	33	61
Hominy feed	35	28	72
Whole cottonseed	25	20	100
Cottonseed hulls	19	15	134
Cottonseed meal	48	38	53
Cotton gin trash		7	286
Wheat midds	25	20	100
Wet brewers grains	82	65	30
Dried brewers grains	19	15	134
Dried distillers grains	19	15	134
Rice bran	25	20	100

Corn

Corn is typically considered the gold standard energy feed for beef cattle and is heavily used in beef cattle diets including finishing diets.

- ✓ **Extremely high energy feed**
- ✓ **Quite palatable to cattle**
- ✓ **Contains low calcium, high phosphorus levels like most feed grains**

Soybean Hulls

Soybean hulls are a by-product of the soybean oil milling process.

- ✓ **Very palatable and digestible feed**
- ✓ **TDN value varies depends on amount fed and type of diet**
- ✓ **Roughly equal to corn as a supplement at 0.5% of body weight or less on high-forage diets**
- ✓ **Decent protein source but can vary widely from load to load**
- ✓ **High fiber content not effective fiber, adequate roughage source also needed**
- ✓ **Can be fed in self-feeders along with hay or pasture**
- ✓ **Conducive to bloat when fed at high levels (over 7 lbs. per day)**
- ✓ **Bulky, dusty, best when pelleted or mixed with silage or molasses to reduce dust**
- ✓ **Good source of calcium but low in phosphorus**
- ✓ **Widely used ingredient in Louisiana and Mississippi beef cattle diets**

Soybean Meal

Soybean meal is another by-product of the soybean oil milling process.

- ✓ **Excellent protein source**

Corn Gluten Feed

Corn gluten feed is a by-product of the corn milling process which produces high-fructose corn syrup used as a sweetener. It consists primarily of the bran and meal remains from the grain after starch removal.

- ✓ **Good protein content but protein quality too low for poultry and swine diets**
- ✓ **Works as a protein and energy supplement**
- ✓ **At 0.5% of body weight or less on high-forage diets, TDN value about equal to corn**
- ✓ **Often prices in as a cost-effective feed ingredient**
- ✓ **Should not make up more than 50% of daily dry matter intake**
- ✓ **Can be fed in self-feeders along with hay or pasture, but caking possible in humid conditions**
- ✓ **Excessive processing heating lowers feed value and palatability and darkens color**
- ✓ **Wet form use only practical in areas relatively close to mills**
- ✓ **Low in calcium**
- ✓ **Can contain high sulfur levels that necessitates mixing with other feeds in the diet**

Hominy Feed
Hominy feed is made up of the corn bran, germ, and part of the starchy portion of the corn kernel from degermed corn meal production,

- ✓ **Roughly equal to ground corn in feeding value**
- ✓ **Very palatable to cattle**
- ✓ **Higher protein levels than corn grains**
- ✓ **Fat content normally 6% or more**
- ✓ **Low fat form has less energy**
- ✓ **Finely ground product suitable for mixing with other feeds**
- ✓ **Can be stored, handled, and fed similarly to ground corn**
- ✓ **Best to use up supplies in one month or less to avoid stale smell**

Whole Cottonseed
Whole cottonseed is a major by-product of the cotton ginning process.

- ✓ **Excellent beef cattle feed, good energy and protein levels**
- ✓ **2 lbs. cottonseed roughly equal to 1 lb. each of corn and cottonseed meal**
- ✓ **Readily available in cotton-producing areas**
- ✓ **High fat content limits use levels to 25% or less of total dry matter intake**
- ✓ **Feed no more than 5 to 6 lbs. per head per day to mature cattle**
- ✓ **Feed no more than 2 to 3 lbs. per head per day to weaned calves**
- ✓ **Do not feed at more than 20% of the diet for cattle in stocker or finishing programs**
- ✓ **Must be hand fed**
- ✓ **Flow limitations in feeding bins and equipment, difficult to auger or gravity flow**

Cottonseed Hulls
Cottonseed hulls are a by-product of the cotton industry.

- ✓ **Extremely palatable**
- ✓ **High in crude fiber, lowly digestible**
- ✓ **Can be used as the sole roughage source in cattle diets**
- ✓ **Good hay-replacer diet ingredient or alternative to chopped hay in mixed feeds**
- ✓ **Bulky with excellent mixing qualities at low levels in concentrate diets**
- ✓ **Should not exceed 10 to 25% of diet for growing or finishing cattle**
- ✓ **Often expensive**

Cottonseed Meal
Cottonseed meal is a by-product of the cottonseed oil milling process.

- ✓ **Excellent locally available protein source**
- ✓ **Works well in a hot-mix (mixed with salt and offered free-choice)**

Cotton Gin Trash
Cotton gin trash is a by-product of the cotton ginning process. Gin trash contains boll residues, leaves, stems, and lint.

- ✓ **Bulky**
- ✓ **Unpalatable, high fiber, low energy feed**
- ✓ **Inexpensive feed with limited uses**
- ✓ **Practical use is in hay-replacer diets when mixed with other feeds**

Cotton Mote
Cotton mote is the cotton extracted by a gin's lint cleaner during the cotton ginning process.

- ✓ **High fiber, low energy feed**
- ✓ **Palatability usually not a problem**
- ✓ **Most baled into 4' x 4' x 5' bales**
- ✓ **Can be handled and fed with same equipment used for large round hay bales**
- ✓ **Practical use is in hay-replacer diets with other supplemental feeds**

Wheat Middlings (Midds)

Wheat midds result from the wheat milling process.

- ✓ **Good energy and protein content**
- ✓ **Available as loose meal or pellets**
- ✓ **Pelleted form cannot be stored for any length of time during hot, humid weather**
- ✓ **Practical use in Louisiana and Mississippi only during winter**
- ✓ **Should be combined with other ingredients to reduce risk of founder and bloat**
- ✓ **Limit to 50% or less of total dry matter intake**
- ✓ **Moderately palatable**
- ✓ **High phosphorus levels relative to calcium levels**

Wheat

- ✓ **Should be mixed with other ingredients to reduce acidosis risk**
- ✓ **Feed at no more than 0.5% of animal body weight**
- ✓ **Coarsely cracked or rolled wheat is more digestible than whole grain wheat**
- ✓ **Not commonly used as a feed grain in Louisiana and Mississippi**

Peanut Hay

Peanut hay is composed of the vines and leaves of peanut plants after the peanuts are havested.

- ✓ **Protein content is fair to good, energy content is low**
- ✓ **Extremely palatable to cattle**
- ✓ **Highly susceptible to spoilage and losses unless stored under wrap or cover**
- ✓ **Can be used as the primary forage in cattle diets when supplemented properly**

Peanut Hulls

Peanut hulls are the by-product of the peanut shelling process.

- ✓ **Extremely bulky and difficult to handle**
- ✓ **High in fiber, extremely low in energy and protein**
- ✓ **Availability depends upon proximity to shelling plant**
- ✓ **Uses in hay-replacer diets and as an extender in stocker concentrate diets**
- ✓ **<u>Do not</u> use finely ground or pelleted peanut hulls (health risk to cattle)**

Peanut Skins

Peanut skins are the result of skin removal from the peanut kernel.

- ✓ **Very limited potential in beef cattle diets**
- ✓ **Difficult to handle, light, bulky, flow problems, can be blown by wind**
- ✓ **Moderate protein and energy levels**
- ✓ **High tannin levels that reduce protein digestibility and decrease palatability**
- ✓ **Do not use at levels of more than 10% of dietary dry matter**

Raw Peanuts

Raw, whole peanuts are typically valued higher for uses other than as cattle feed.

- ✓ **Very good energy and protein levels, high fat content limits feeding levels**
- ✓ **Maximum of 4 lbs. per day should be fed to mature cattle**
- ✓ **Must be introduced to cattle gradually**
- ✓ **Check aflatoxin levels before feeding (do not exceed 200 ppb in cattle diets)**

Rice Bran

Rice bran is a by-product of the rice milling process.

- ✓ **Finely ground material, handling and storage in bins difficult, blending improves flow**
- ✓ **Moderate protein levels**
- ✓ **High fat content unless defatted, limit to no more than one-third of diet**
- ✓ **Substantially less energy than soybean hulls even with high fat levels**
- ✓ **High fat rice bran less palatable and susceptible to rancidity in warm weather**
- ✓ **High phosphorus content**

Rice Millfeed
Rice millfeed is a by-product of the rice milling process.

- ✓ **Finely ground material**
- ✓ **Combination of rice hull and rice bran**
- ✓ **Often highly variable in composition**
- ✓ **Founder is possible when fed at high levels**
- ✓ **Handling characteristics similar to rice bran**
- ✓ **Typically less expensive and longer storage life than rice bran**

Rice Hulls
Rice hulls are a by-product of the rice milling process.

- ✓ **Extremely low nutritional value in beef cattle diets**

Brewers Grains
Brewers grains are a by-product of beer production.

- ✓ **With wet brewers grains, 75% of product transported is water**
- ✓ **Shelf life is a concern with wet feed**
- ✓ **Should be stored in anaerobic conditions or stacked and fed rapidly**
- ✓ **Good protein content**
- ✓ **Usefulness limited due to high water content**

Dried Distillers Grains
Distillers grain is a by-product from the fermentation of grain to produce alcohol (e.g., ethanol).

- ✓ **Availability generally limited to areas near distilleries and ethanol plants**
- ✓ **Excellent source of protein and energy**
- ✓ **Can be fed as a majority of the total diet**
- ✓ **Drying facilitates storage, transportation, and handling**

Cane Molasses
Cane molasses is a by-product from sugar manufacture.

- ✓ **Extremely palatable**
- ✓ **Excellent energy source**
- ✓ **Commonly blended with vitamins and minerals**

Citrus Pulp
Citrus pulp is made by shredding, liming, pressing, and drying the peel, pulp, and seed residues from citrus fruit.

- ✓ **Availability and cost-effectiveness for use in Louisiana and Mississippi is limited**
- ✓ **Good energy supplement**
- ✓ **Very digestible, low protein, high fiber feed**
- ✓ **Excellent feed if acquired, best deals usually in mid-winter**
- ✓ **Should be limited to one-third or less of the diet for growing beef cattle**
- ✓ **Initial palatability problems with calves quickly overcome**
- ✓ **Often pelleted to facilitate transportation**
- ✓ **Darkening toward a black color indicative of overheating**

Ionophores and Implants
Using ionophores (monensin or lasalocid) in cattle diets can improve gains on high-roughage diets and efficiency of high-grain diets. Consider incorporating ionophores into beef cattle nutritional programs. However, be cautious about using these products where other classes of livestock such as horses are relying on the same feeding areas or equipment as ionophore ingestion in small quantities can be fatal to these animals. Growth promoting implants may also be good options for improved growth rates and efficiency if adequate nutrition is supplied to support targeted gains. Be careful to read implant labels to determine proper use.

Calcium and Phosphorus

Dicalcium phosphate is 22% calcium and 19.3% phosphorus and is added to beef cattle diets to balance the calcium to phosphorus ratio. It adds both calcium and phosphorus to the diet. Limestone is 34% calcium and is added to beef cattle diets to increase the calcium levels of the diet. The calcium to phosphorus ratio should ideally be close to 1.6:1 and should be within the range of 1:1 to 2:1. Complete mineral supplements including needed trace minerals and vitamins should be available to cattle at all times.

Hay Replacer and Supplementation Diets

Hay Replacer Diets

Hay replacer diets are formulated with high levels of roughage to make up for forage shortfalls. Growing cattle require different dietary nutrient levels than mature cattle. The diets listed in Table 10 are intended for mature cattle.

Table 10. Hay Replacer Diet Alternatives for Mature Cattle

	Lbs./ton				
Ingredient	**Diet 1**	**Diet 2**	**Diet 3**	**Diet 4**	**Diet 5**
Corn		730		325	
Cottonseed hulls	887	950	546	1300	700
Cottonseed meal		295	152	150	100
Soybean hulls			1283		
Corn gluten feed	1089				
Oats					1180
Cane molasses				175	
Limestone	13	14	6		
Dicalcium phosphate			2	10	
Urea				20	
Trace mineral salt	9	9	9	20	20
Vitamin ADE premix	4 million IU Vitamin A	4 million IU Vitamin A	4 million IU Vitamin A	4 million IU Vitamin A	4 million IU Vitamin A

Supplementation Programs for Forage

Forage is an important component of beef cattle nutritional programs in Louisiana and Mississippi. With shorter hay supplies as a result of drought conditions, it is critical that hay is used properly. Available hay should be evaluated for quality and then matched with an adequate supplementation program to meet body condition and growth targets (Table 11).

Table 11. Daily Cottonseed Meal (CSM) and Shelled Corn Supplementation Schedule with Various Quality Forages

Forage Analysis Results			Replacement Heifers[1]		Dry Cows[2]		Lactating Cows[3]	
Forage Quality	**Crude Protein %**	**Total Digestible Nutrients %**	**Lbs. CSM**	**Lbs. Corn**	**Lbs. CSM**	**Lbs. Corn**	**Lbs. CSM**	**Lbs. Corn**
Excellent	>11.2	>56	0	2.5	0	0	0	0
Good	9.5-11.1	>56	0	2.5	0	0	1.0	0
		53-56	0	2.75	0	0.5	1.0	1.0
		50-53	0	3.25	0	1.0	1.0	2.5
Fair	8.2-9.5	54-56	0.5	2.25	0	0.5	2.0	0
		51-54	0.5	2.5	0	1.0	2.0	1.5
		<50	0.5	3.0	0	2.0	2.0	2.5
Poor	7.3-8.2	53-55	1.0	2.5	0	0.5	2.5	0.5
		51-53	1.0	2.75	0	1.0	2.5	1.0
		<50	1.0	3.25	0	2.0	2.5	2.0
Very Poor	<7.3	<48	1.5-2.0	2.0-5.0	1.0	2.0	3.0	3.0

[1]Heifers weighing 550 lbs. targeted to gain 1.25 lbs./day at this rate of supplementation
[2]Dry cows weighing 900-1100 lbs. during last three months of pregnancy
[2]Superior milking cows weighing 900-1100 lbs. during first three months of lactation

For mature, lactating cows, other supplementation options for good quality hay might include: 1) protein blocks, 2) liquid protein, 3) 2.5 lbs. of low-fiber range cubes, or 4) 2.5 lbs. of whole cottonseed. Additional supplementation options for fair quality hay might include: 1) protein blocks designed for 3 to 4 lbs. daily consumption, 2) 4.5 lbs. of low-fiber range cubes, or 3) 4.5 lbs. of whole cottonseed. Alternative supplementation options for poor quality hay might include: 1) 6.5 lbs. of low-fiber range cubes, or 2) 6 lbs. of whole cottonseed. Cows on very poor quality hay could be supplemented with 7.5 lbs. of low-fiber range cubes.

In situations where pastures are short or grazed off and stored forage must be fed, supplementation alternatives can be as follows:

Pregnant, Dry Cows.
Option 1. Feed hay free choice. If hay is poor quality, then 1) feed 1 lb. cottonseed or soybean meal per head daily or every other day at double the amount, 2) provide 30 to 35% protein liquid supplement or protein blocks free choice, 3) feed 2 to 3 lbs. of 20% protein range cubes per head daily, or 4) provide a hot-mix of 25% plain salt and 75% cottonseed meal free-choice.
Option 2. Limit feed corn or sorghum silage to 40 lbs. per head per day plus 1 lb. of cottonseed meal, soybean meal, or free-choice liquid supplement or protein blocks.
Option 3. Limit grazing of winter annual pastures up to two hours every other day to supplement free-choice hay or silage feeding programs. Stocking rate should be between two to four cows per acre depending on forage availability.

Lactating Cows.
Option 1. Provide good quality hay free-choice. Supplement hay with one of the following protein and energy combinations: 1) 4 to 5 lbs. of whole cottonseed, 2) 1 to 1 ½ lbs. cottonseed meal or soybean meal plus 2 lbs. corn (can be via range meal mix), or 3) free-choice liquid supplement or protein blocks plus 2 lbs. corn. Poor quality hay will require additional protein and energy supplements above what liquid supplements and blocks can provide.
Option 2. Feed 50 to 60 lbs. corn silage per head or offer free-choice. Provide additional protein with one of the following: 1) 1 ½ to 2 lbs. of cottonseed meal or soybean meal (can be via range meal mix) or 2) 4 to 5 lbs. of range cubes.
Option 3. Feed 50 to 60 lbs. sorghum silage per head or offer free-choice. Provide additional protein with one of the following: 1) 2 to 2 ½ lbs. of cottonseed meal or soybean meal (can be via range meal mix), 2) 5 lbs. of whole cottonseed, or 3) 6 to 7 lbs. of range cubes.

Option 4. Limit grazing of winter annual pastures two to four hours per day or four to six hours every other day to supplement free-choice hay feeding programs. Stocking rate should be between two to three cows per acre depending on forage availability.

Replacement Heifers.

Option 1. Provide 10 to 14 lbs. good quality hay fed free-choice along with 1 lb. cottonseed meal or soybean meal and 3 lbs. corn (can be via range meal mix). Add 1 to 2 lbs. of corn if hay quality is fair or poor.

Option 2. Provide 25 to 30 lbs. corn silage fed free-choice along with 1 ½ lbs. cottonseed meal or soybean meal (can be via range meal mix).

Option 3. Provide winter grazing free-choice plus 2 to 4 lbs. of hay per day. Stocking rate should be between one to two heifers per acre depending on forage availability.

Option 4. Provide winter grazing or corn silage free-choice. Stocking rate should be between one to two heifers per acre depending on forage availability.

Stocker Cattle.

Because stocker cattle must gain weight at moderate or higher rates to be profitable and have different nutrient requirements the mature breeding cattle, separate nutritional programs must be established for stockers. Like cow-calf nutritional programs, stocker cattle nutritional programs can take advantage of by-product feedstuffs when economical. Example stocker cattle diets using common by-product feeds appear in Table 12.

Table 12. Stocker Cattle Diet Alternatives Using By-Product Feedstuffs[1]

	Lbs./ton			
Ingredient	**Diet 1**	**Diet 2**	**Diet 3**	**Diet 4**
Corn[2]	750	990	1150	850
Fiber[3]	800	685	700	350
Whole cottonseed	450			
Soybean hulls				700
Corn gluten feed		325		
Cottonseed meal			150	100

[1]These diet formulations are designed to achieve approximately 2.0 lbs. gain/day. All diets should be supplemented with Vitamin A to provide at least 100,000 IU Vitamin A per pound of mineral or by adding 3 million units per ton of feed. Provide a mineral containing approximately 9 to 12% calcium and 6 to 9% phosphorus.
[2]Substitute up to 50% of corn as wheat, milo, cookie meal, or other starch source if economics dictate.
[3]Fiber source can be cottonseed hulls, cotton gin trash, ground hay, or peanut hulls. Hay should be provided free choice as well.

Limit Feeding

Weaned Calves. Limit feeding is an intensive management strategy that can be used in times of limited roughage source availability. This strategy involves growing cattle at moderate rates of gain using a limited amount of high concentrate ration. This can be an economical approach to stockering calves during a drought, but skilled management is required. Adequate bunk space must be available to allow all calves to eat at once. Small pens work best for ensuring that calves gather around the feed troughs. Feed must be weighed out daily. Roughage feeds must be available to work cattle up to the limit-fed diet. Once cattle are on full feed of a traditional diet, the roughage level can be gradually reduced until cattle are consuming the desired amount of the high concentrate ration (Table 13). The limit fed ration offered is increased slightly every two weeks to account for increasing calf weights. Small quantities of high concentrate rations can be used to achieve moderate rates of gain in this system. Cattle managers must carefully observe cattle when using this intensively managed feeding program.

Table 13. Limit Feeding High Concentrate Calf Diet Example

	Lbs. per Ton
Ingredient	**Diet 1**
Alfalfa pellets	157.6
Corn	1318.4
Cottonseed meal	269.4
Cottonseed hulls	99.6
Cane molasses	83.6
Soybean meal 48	47.6
Limestone	17.4
Trace mineral salt	5.6
Vitamin A-30	0.4
Bovatec 68	0.4
TOTAL	2000
	% Dry Matter
Nutrient	**Diet 1**
TDN	80.8
Crude Protein	15.8
Crude Fiber	8.3
Crude Fat	3.5
Calcium	0.54
Phosphorus	0.42

Mature Cows. Hay can be limit fed to the cow herd to improve efficiency of hay use. Part of the increased efficiency is likely due to less hay waste and part is due to increased digestibility of the forage when limit fed. One caution before trying this strategy is that limited access time to hay will decrease dry matter intake and can result in reduced weight gain, particularly in young cattle. Strategic supplementation may be needed to maintain adequate body condition in cattle with limited forage access.

Limiting Feed Intake

Hand feeding is an effective means of limiting feed intake by limiting and controlling feed offering. Labor requirements may make this a less attractive option to some producers compared to the use of self feeders. Intake limiting ingredients can be added to beef cattle diets when using self feeder systems. Salt is the most commonly used feed intake limiter. Mature beef cattle require less than one ounce per head per day of sale, but will tend to voluntary consume levels about requirements. There are practical limits to the amount of salt cattle consume, and it can be used to restrict the consumption of highly palatable feeds such as grains. Particle size must be similar for all ingredients in the diet for uniform salt distribution. A useful rule of thumb is that daily voluntary intake of salt will be about 0.1 pounds of salt per 100 pounds of body weight for most classes of cattle. It is important to keep plenty of water out for cattle consuming salt. There is notable variation in the amounts of salt individual animals will eat, so salt is not a precise regulator of intake. Salt can also contribute to corrosion of metal feeders, hastening the need for feeder repair and replacement. Some commercially available feeds are premixed with an intake limiter other than salt. There is often a trade-off between feeding convenience and price with these feeds. Cattle may overconsume “hot mixes” or salt-limiting supplements during periods of low forage availability such as drought. Supplemental forage must be provided to avoid this situation.

Forage-Related Options and Concerns

Stockpiling Late Summer and Early Fall Forage

When summer hay and grazing production is severely impacted in a drought, it is vital that any late summer or early fall moisture is utilized to “stockpile” excess pasture growth for use during the winter. The stockpiling of forage can save on the costs associated with hay production and feeding and will help take the pressure of limited hay stocks during the early winter period. Bermudagrass, bahiagrass, and tall fescue can all be stockpiled during the late winter and early fall.

Stockpiling Bermudagrass and Bahiagrass

Stockpiling warm-season grasses usually involves accumulating extra growth in August, September, and early October for grazing during the late fall and winter. This can be an effective way to bridge the gap between the end of warm-season growth and the time when there will hopefully be enough cool-season forage to graze. The amount of stockpiled bermudagrass needed to achieve this will depend on the length of the "gap" in forage growth. In Louisiana/ South Mississippi, the use of annual ryegrass as the major source of cool-season forage means that bermudagrass might have to be grazed longer into the winter to give the annual ryegrass time to get established and grow enough forage for grazing. However, the growing season of bermudagrass is also longer in South Mississippi, so the overall time spent grazing the stockpiled bermudagrass may be as short as two months. In North Mississippi, cool-season grasses such as tall fescue can generally be utilized much earlier in the fall, so there is often less need for stockpiled bermudagrass. In fact, in North Mississippi, tall fescue offers a better option for stockpiling forage for the winter then bermudagrass does.

Some preparation is required for areas where bermudagrass will be stockpiled. Quality of the stockpiled forage will be much better if old forage growth is removed beforehand and the pasture is fertilized to promote fresh growth. Pastures that have just had hay made in mid-late August are ideal for stockpiling. Applying 50 to 100 lbs. nitrogen (N)/acre in late August will promote fresh forage growth through September and October. Depending on climatic conditions, this should be between 2000 and 3000 lbs. of stockpiled forage dry matter per acre by November.

Nutrient levels in bermudagrass will vary depending on the amount of growth accumulated, fertility, and the weather during and after stockpiling. Bermudagrass will not typically hold its quality during the winter as well as tall fescue will, as the plant tissue is dead and more prone to weathering. It is always a good idea to forage test your stockpiled grass to determine whether additional supplementation is required. The need for supplementation may become more likely the longer stockpiled forage is grazed into winter. Stockpiled bermudagrass will generally be above 10% crude protein and between 47 to 55% total digestible nutrients (TDN) during November and December, which is more then adequate to graze gestating beef cattle.

With forage utilization of 70 to 80%, an acre with 3000 lbs. of stockpiled bermudagrass could hold 25 gestating cows for a week. This would mean that about 15 to 20 acres would be needed to graze these 25 cows from November 1 through the end of January with minimal hay required (or 0.6 to 0.8 acres/cow). To ensure good forage utilization, it is important to reduce the potential for wastage by not giving the animals any more than two weeks worth of grazing at a time. Using the 25-cow example above, do not allow cattle to graze an area greater than two acres as any one time (or 12.5 cows/acre). Strip grazing behind a temporary electric fence is the best way to ensure good forage utilization.

Stockpiling Tall Fescue

Producers in the northern half of Mississippi who are growing tall fescue in their pastures have a great opportunity to accumulate forage for winter feeding. Tall fescue is one of the best forages for stockpiling as it maintains its nutritional value better that other grasses during cold, frosty weather. Depending on the availability of moisture, tall fescue will start to grow again in September and will continue to grow through December in many places. Therefore significant amounts of forage can be accumulated during this time for feeding during January and February when hay feeding requirements are generally at their greatest.

Unlike annual ryegrass, tall fescue is a perennial forage. Tall fescue fields established this fall need to be pampered during establishment and not grazed until next spring. Therefore, do not plan for acreage established this fall into tall fescue to be part of the stockpiling or winter feeding plan for this year. Instead, it should be considered a component of a long-term winter-feeding plan where additional cool-season forage production is desired.

To prepare for stockpiling established tall fescue acreage, pastures should be clipped to remove any old growth, weeds, or seedheads in early to mid September. Much of the soluble nitrogen will have been removed from the soil during the summer. Therefore, an application of 50 to 80 lbs. N/acre in mid September is recommended to give tall fescue a boost and ensure that stockpiling potential is not limited by nutrient levels. Where clover is a 20 to 30% component of the tall fescue pasture, the N application can be cut back to 30 lbs./acre.

By starting to stockpile tall fescue in September, 2000 to 3000 lbs. of dry matter/acre could be accumulated by December. This could hold one dry cow/acre for two to three months with minimal supplementation required. As with bermudagrass, strip grazing with temporary electric fencing is the best means of ensuring high utilization levels (>70 to 80%). The nutritional quality of stockpiled tall fescue is generally around 12 to 16% crude protein and 58 to 65% TDN, which is better than most hay will be at a fraction of the cost.

Annual Ryegrass

Plan cool-season grazing to limit the amount of hay and supplemental feed needed. Cool-season forage production is often a significant limiting factor in Louisiana and Mississippi beef cattle operations, but it is even more so when hay stocks are reduced after a drought. Tall fescue can be utilized in the northern half of the state, but the most common winter forage used in Louisiana and Mississippi is annual ryegrass. Annual ryegrass is a reliable forage in most years, yet there are times when fall production is too low to offer any grazing. The primary seeding times for annual ryegrass (September through November) are also historically the driest times of the year in Louisiana and Mississippi, which can impact the success of these plantings. Early plantings of annual ryegrass are also susceptible to damage from Blast, a fungal disease. There are other cool-season annual forage crops that can be utilized as an alternative or in combination with annual ryegrass to obtain more early growth and help spread the risk. These include the small grains and forage brassicas.

Small Grains

Small grains, or cereals, include rye, wheat, and oats. These crops are commonly used as grain crops but are also valuable as a forage crop with nutritional quality similar to annual ryegrass.
The small grain crops typically have a shorter growing season during the spring than annual ryegrass, and total annual yield may be slightly lower than annual ryegrass. However, the small grain crops are often faster out of the ground and can provide better early fall and winter growth. The small grains are typically more tolerant of wet and cold weather than annual ryegrass and are resistant to the fungal disease Blast, which can devastate annual ryegrass pastures.

Which Small Grain is Best?

There are some differences in the suitability of different small grain crops for different soil and climatic conditions. In general, cereal rye is more tolerant of acidic soils than wheat and oats, whereas wheat is more tolerant of wet heavy soils than cereal rye or oats. Oats may also be less tolerant of winter freezing and may suffer significant winterkill in the northern end of the state. Given the wet soils and/or low pH problems in both states, cereal rye and/or wheat are likely to be the most productive.

Establishing a Small Grain Forage Crop

The methods for establishing small grain crops are much the same as annual ryegrass. While a prepared seedbed and grain drill will provide the best chance of a good stand, small grains can also be successfully broadcast over perennial summer pastures. Although there are some differences in the seed sizes of small grains, a general seeding rate of 90 to 120 lbs./acre is recommended. When using conventional tillage and a seed drill, the lighter rate of 90 lb/acre can be used, as seed placement is generally better for germination and establishment. Ideally the seed should be sown at a depth of one to two inches. Where seed is broadcast either on a prepared seedbed or overseeded in existing summer pasture, the higher rate of 120 lbs./acre will result in a better stand. As with annual ryegrass, it

is important to maximize seed-soil contact by clipping or grazing pastures to be overseeded as close as possible. It may be necessary to scratch up the ground with a light disking where the bermudagrass or bahiagrass sod is too thick for the seed to fall to the soil. Sometimes animals can be used to tread the seed into the ground while keeping the summer pasture short enough to remove competition. However, make sure that the animals are removed before or shortly after germination to allow the crop to establish. Seeding at the correct time is another important factor in establishing a small grain crop. Recommended seeding dates for small grains used as a forage crop are usually three to four weeks earlier than seeding dates for grain production, or four to eight weeks before the average first frost date. Table 14 shows different recommended seeding dates for small grain crops.

Table 14. Louisiana and Mississippi Seeding Dates for Small Grain Crops used as Forage

Region	Seeding Dates
North LA/ MS and Central MS	August 15 to September 15
Delta	August 20 to September 25
South LA/ MS	September 1 to October 1
Coastal LA/ MS	September 15 to October 15

Adapted from Larson, 2005.

While small grains are effective as a pure crop, they can also be utilized effectively in a mix with annual ryegrass and/or annual clovers. Mixing with annual ryegrass will extend the growth season of the crop through May and will act as an insurance policy if the annual ryegrass is affected by Blast in the fall. When seeding with annual ryegrass, use 60 to 90 lbs./acre of small grain seed mixed with 20 to 30 lbs./acre of annual ryegrass seed.

Fertilization of Small Grain Forage Crops

As with any forage crop, it is important to soil test and follow the solid test recommendations for lime, phosphate and potash applications. Like most cool-season grasses, the small grain crops are very responsive to nitrogen with linear yield responses up to 200 lbs. of actual N/acre. Usually split fall (two weeks after establishment) and early spring (February) applications, totaling 150 units of N/acre, are more than enough to achieve good forage yields.

Grazing Management of Small Grains

The management principles for small grain crops are much the same for all cool-season grasses. The aim should be to maximize utilization and regrowth potential by careful rotational or strip grazing. The first grazing should occur when the plants are at least eight to twelve inches tall and firmly anchored in the ground (this can be tested by pulling a handful of leaves to make sure that the leaves tear off before the plants are uprooted). Post-grazing residuals should not be less than three to four inches to encourage regrowth, and the rotation length will vary form fourteen to twenty-eight days depending on growth rate (i.e., each section of pasture will get seven to fourteen days rest before being grazed again). With some small amount of supplemental feeding and good fertility, an acre of small grains should provide enough nutrients for two lactating cows, four dry cows, or three 500 lbs. stocker cattle if good grazing management is employed.

If the winter is particularly cold and the plants stop growing, the rotation will need to be slowed to 50 to 80 days. The level of supplemental feeding should also be increased to take the pressure off the forage crop. During times of slow growth the small grain crops can be limit grazed for two to three hours a day, which will ensure a longer period of utilization of the crop and can help lessen trampling damage if pastures become wet. In spring it will be difficult to keep on top of the rapid forage growth, and a fast rotation or continuous stocking will be necessary to prevent the plants from maturing and setting seed. It may be necessary to section off an area to accumulate the excess growth for hay or silage production. Small grains should be harvested for hay or silage at the boot or early head stage, and the quality is generally similar to annual ryegrass.

Crop Residues
Crop residues harvested for hay typically are low in nutrient content. However, during periods of drought the quantity of dry forage which can be baled makes them an attractive haying option. Anhydrous ammonia treatment of corn stalks and wheat straw greatly improves harvested forage quality. Grazing crop residues is also an option for cattle forage that may best fit when coping with reduced grazing and hay supplies due to drought conditions.

It may be tempting to salvage drought-stressed dryland corn by grazing. Get a nitrate test first! Drought-stressed corn is a prime candidate for nitrate accumulation at levels that may be toxic to cattle. The highest risk typically occurs one for three days after a rain. There is some evidence that ensiling can reduce nitrate levels in drought-stressed corn. However, nitrates will not be eliminated, so testing nitrate levels before feeding and using extreme caution when diluting with other feeds is advisable.

Do not offer cattle a supplement containing urea or non-protein nitrogen when feeding or grazing soybean stubble. Check labels on range cubes, liquid protein supplements, and protein blocks to determine urea content. Raw soybeans contain urease. The combination of raw soybeans and urea in cattle diets can result in animal illness or even death. Soybeans should also not be fed to swine or horses. High fat content of raw soybeans can scour cattle if not eased onto them in the diet. If raw, whole soybeans are fed, limit them to 25% of the daily dry matter intake (5 to 6 lbs. for mature cows and 4 to 5 lbs. for yearling cattle). Avoid soybean consumption with young calves. Rancidity problems can occur in hot weather with cracked or rolled soybeans. Do not allow more than a one- to two-week supply to be stored, and do not feed moldy beans to cattle without first having a mycotoxin analysis performed. In addition, soybean stubble harvested for hay makes a loose bale and should be stored under cover to minimize losses.

Forage Brasiccas

Common forage brassicas include turnips, rape, kale, and turnip x rape hybrids. While these crops may be more commonly associated with human food and wildlife food plots, they can also provide excellent livestock feed. The brassicas are high in crude protein (20 to 30%) and very digestible (>80%). Brassicas are not very drought tolerant, but they can use late summer moisture and their rapid establishment to provide forage before the drier months of fall arrive. Turnips, rape, and the hybrids are the best options for fall forage production in the South. These brassicas can be planted during August through October and can be ready to graze in 40 to 60 days. Kale needs to be planted later in the fall and takes longer to mature (100 days+), so is not likely to provide the early forage needed. Many seed companies now market brassica varieties bred specifically for forage production. “Pasja” rape hybrid and “Appin” turnip have been tested in small plots at Mississippi State University and found to be very productive in the fall when planted in August. These varieties were bred for multiple grazings (good regrowth potential) and will provide forage throughout the fall and winter if managed.

Brassica Seeding Rates and Establishment
Brassicas can be used to overseed summer pastures or seeded on a prepared seedbed. Seeding rates for brassica crops are between 3 to 5 lbs./acre, and the seed can be either broadcast or planted with a seed drill (use a clover box if available) at a seeding depth of ½ to 1 inches. Brassicas prefer a pH close to 6 and adequate soil phosphate and potassium. Brassicas are not legumes, so they need N fertilization similar to annual ryegrass (30 lbs./acre after emergence and then additional 30 to 50 lbs./acre applications after each grazing. Turnips and the hybrids can also be sown with annual ryegrass and/or the small grains. Use a 2/3 seeding rate for the grasses and the full seeding rate for the brassicas.

Grazing Management of Brassicas Crops

Brassicas are strictly a grazing crop and can be used to make hay or silage. The new turnip, rape, and hybrids are bred for regrowth. Therefore, they require some form of rotational or strip grazing in order to avoid overgrazing and allow regrowth. Start to graze the brassicas when they are 12 to 20 inches tall, and try to leave 3 to 4 inches of stubble after grazing. Turnips have a "bulb" under the ground that cattle will also eat. Rape and Hybrids do not have a bulb.

Due to the high nutritive quality of brassica crops, it is recommended to introduce animals to them slowly by limit grazing (1 to 3 hours/day) for a week or so and then increasing the time spent grazing. Brassicas should not make up more than 75% of the diet as the high digestibility can cause rumen problems. Feed hay or give animals access to stockpiled grass while grazing brassica crops. Sowing the brassica crops with annual ryegrass and/or small grains can also add much needed fiber to the diet as well as stretching out the growing season.

Stretching Forage Supplies

Forage Quality Evaluation

Knowing forage quality in terms of nutrient contribution to beef cattle diets is critical to planning an accurate and efficient nutritional program. Forage testing is highly recommended to determine forage quality (Table 15). Forage test samples from Mississippi producers can be sent to either the Mississippi State Chemical Laboratory or the LSU AgCenter Forage Quality Lab. Sample submission forms are included in the Appendix of this document.

Table 15. Forage Quality Standards for Beef Cattle Diets

Forage Type	Standard	Total Digestible Nutrients[1]	Crude Protein[1]	Moisture	pH
Silage[2]	Excellent	65% or above	8% or above	70% or below	4.2 or below
	Good	60 to 64%	7 to 8%	71 to 74%	4.3 to 4.7
	Fair	55 to 59%	6 to 7%	75% and above	4.8 to 5.1
	Poor	Below 55%	Below 6%	75% and above	5.2 or above
Grass Hay[3]	Excellent	58% or above	12% or above		
	Good	55 to 57%	10 to 11%		
	Fair	52 to 54%	8 to 9%		
	Poor	Below 52%	Below 8%		
Legume Hay[3]	Excellent	64% or above	18% or above		
	Good	60 to 63%	16 to 17%		
	Fair	57 to 59%	14 to 15%		
	Poor	Below 57%	Below 14%		

[1]Dry matter basis.
[2]Determine silage quality by total digestible nutrients rating. If silage does not meet either crude protein or moisture requirement for quality, lower one standard.
[3]Determine hay quality by total digestible nutrients rating. If hay does not meet crude protein requirement or is less than 83% dry matter, lower one standard.

Rotational Grazing

Rotational grazing is a good method for managing forage utilization, particularly during a drought. Do not overgraze pastures. While this might sound difficult with low forage growth rates, try to keep at least three inches of post-grazing residual on pastures. Water loss through evaporation is much greater on bare ground than where a good plant cover is present. To avoid overgrazing, try to limit graze animals

for a few hours a day and then move them to an area where hay or other supplemental feeds can be fed. Pastures that are not overgrazed will also retain more water and recover more quickly once moisture does arrive. Simple electric fencing systems can be useful for rotational, limit, or strip grazing.

Forage Availability

Forage availability is the most important factor affecting forage intake on pasture. Intake is restricted when insufficient forage is available such as during a drought. On good quality pasture, intake is adequate when available forage is 1000 to 1500 pounds per acre dry forage. Cattle harvest forages with their tongues, so very short forage height can limit bite size. With low levels of available forage, the amount that can be collected with each bite is small and the animal will have to walk further to take more bites, thus allowing less time for chewing and ruminating.

The proportion of leaf to stem can greatly affect the bite size as the animal seeks out leaves. Higher proportions of stems effectively reduce bite size even though total forage available is adequate. When stocking rate is high, cattle on rotationally stocked pastures may be forced to eat more stem or low quality forage, which can reduce intake. This is in contrast to a continuously grazed pasture where they usually have a greater opportunity for selectivity unless the pasture is overstocked and has low forage availability. Warm-season perennial grasses (bermudagrass, bahiagrass, dallisgrass) with a higher proportion of stem may require the animal to harvest more but smaller bites to obtain the desired forage. Cattle eat little dead material if green leaf is available, thus bite size may be restricted as the grazing animal seeks out green leaves. Increased grazing time is often not enough to compensate for the effects of reduced bite size on forage intake when cattle are grazing short pasture.

Minimizing Hay Storage and Feeding Losses

Hay supply is easily measured as hay is produced. Useful hay production and storage records should be noted for each cutting and include: field ID, acreage harvested, date harvested, forage type, number of bales, storage location, average bale weight, and forage analysis results. When possible, plan hay storage to match forage test results. For instance, hay with higher total digestible nutrients (TDN or energy) and crude protein levels would be better for indoor storage than hay with lower nutrient levels, given that storage waste is higher with outside storage.

Conserve the hay crop that is available by minimizing hay storage and feeding losses. Barn storage is ideal for hay, but there are many other methods of hay storage (tarps, on wooden racks, on gravel, proper site selection and bale orientation, etc.) that will reduce storage losses compared to outside storage on the ground. Hay storage losses of 30% or more are common in the Southeastern U.S. over several months of outside storage on the ground. Feeding losses from trampling, refusal, and leaf shatter can exceed 50% of hay dry matter in extreme cases. Do not allow cattle unlimited access to hay. Hay racks and rings will help reduce hay feeding waste. Also feeding high quality hay can result in less animal refusal.

Use of CRP Ground for Grazing during a Drought

The Conservation Reserve Program (CRP) is a voluntary program for agricultural landowners that encourages farmers to convert highly erodible cropland or other environmentally sensitive acreage to vegetative cover, such as tame or native grasses, wildlife plantings, trees, filterstrips, or riparian buffers.

Farmers receive an annual rental payment for the term of the multi-year contract. The program is funded through the Commodity Credit Corporation (CCC). CRP is administered by the Farm Service Agency (FSA), with the Natural Resources Conservation Service (NRCS) providing technical land eligibility determinations, conservation planning and practice implementation. For more information on CRP, contact your local FSA office or visit FSA's website at *www.fsa.usda.gov/dafp/cepd/crp.htm*. Mississippi county FSA office contact information is available online as well at *www.fsa.usda.gov/ms/cof.htm*. Local FSA offices can answer questions about CRP grazing restrictions and options in times of drought.

Forage and Pasture Concerns

Nitrate Poisoning Risks

Drought stressed plants may accumulate toxic levels of nitrate, especially if nitrogen fertilizer has been applied. If nitrogen fertilizer has been applied to drought-affected pasture, then it is prudent to get a nitrate test conducted at the state chemical laboratory to make sure nitrate levels are below those considered toxic before grazing or making this forage into hay. Try to keep any N applications during a drought around 30 lbs. N/acre or less to help reduce the risk of nitrate toxicity and to give the plants a better chance of using the N if the weather remains dry.

Identify areas of the farm that have better water-holding capabilities and apply fertilizer inputs on these areas only. While this may not always be the case, most producers will have a mixture of soil types on their farms. It is often very easy to see these in a drought, as the ridges become brown and the valleys or bottoms stay green. If these different areas are identified, then it is better to put your nitrogen fertilizer on the ground with better water-holding capacity and avoid wasting fertilizer by applying it to the more drought-prone soils.

The Mississippi State Chemical Laboratory offers two nitrate tests. The qualitative test is $15 per sample and indicates whether or not nitrates are present in the forage sample. The quantitative test is $35 per sample and indicates a specific nitrate level present in the forage sample. Nitrate levels should be evaluating according to the guidelines in Table 16.

Table 16. Forage Nitrate Level Guide for Beef Cattle

Nitrate Concentration[1][2]		Recommended Management
0.0 to 0.5%	0 to 5000 ppm	Safe to feed
0.5 to 1.0%	5000 to 10,000 ppm	Risk to pregnant animals and to cattle that are not accustomed to high nitrate containing forage
1.0 to 2.0%	10,000 to 20,000 ppm	Not more than half of the diet
>2.0%	>20,000 ppm	Do not feed

[1]If nitrate-N values are needed, multiply the nitrate concentration values by 0.23.
[2]If potassium nitrate values are needed, multiply the nitrate concentration values by 0.14.

Signs of nitrate poisoning in cattle include bluish discoloration of the skin, bluish-brown mucous membranes, labored or rapid breathing, muscle tremors, lack of muscle control, staggering, weakness, diarrhea, frequent urination, dark- to chocolate-colored blood, rapid pulse, possible coma, and eventual suffocation. Necropsy results often reveal brown-colored and badly coagulated blood. Pregnant females that survive nitrate poisoning may abort due to lack of oxygen to the fetus. Abortions generally occur ten to fourteen days after exposure to excess nitrates.

Nitrate Poisoning Concerns

- ✓ **Nitrogen fertilization during drought increases risk**
- ✓ **Nitrate tests are available for forage samples (Test before feeding!)**
- ✓ **Sorghum-sudangrass, pearl millet, corn, and bermudagrass are susceptible**
- ✓ **Haying or ensiling does not eliminate nitrate problems**
- ✓ **Watch for signs of nitrate poisoning in cattle and treat immediately**

If forage has high nitrate levels, they will not fall once it is made into hay. Depending on the nitrate level, forage containing nitrates will need to be "diluted" with other feed sources to make the total nitrate levels less that 1% on a dry weight basis for feeding to beef cattle.

A quick field test of forage nitrate concentration can be a useful tool in deciding whether significant risk exists for harming livestock. A widely available field test kit uses 0.5 g of diphenylamine in 20 mL of distilled water with concentrated sulfuric acid added to make a total volume of 100 mL. Nitrate test kits based on this solution are often distributed in amber dropper bottles to protect the solution from light. To test for nitrate, drop some solution onto the suspect tissue. Split stems of corn and other coarse grasses and drop the solution on the inner portion near the base. Nitrate tends to accumulate there, so low levels in the lower stem generally indicate low levels throughout the shoot. Development of a blue color indicates the presence of nitrate. If a dark blue color develops within a few seconds, dangerous levels of nitrate may be present. Multiple locations within a field should be tested to account for normal variability in plant composition. A positive response on this qualitative test should be followed up by collecting a sample for laboratory testing.

Poisonous Plants

Perilla mint (purple mint) (pictured right), nightshades, bracken fern, lantana, mountain laurel, and pigweed are examples of poisonous plants that can cause problems in cattle when consumed. Buckeye (horse chestnut), wild cherry (black cherry), and oak trees can also cause potential livestock disorders if their leaves or nuts are consumed. In most cases grazing cattle with a good supply of forage and or hay will not consume poisonous plants. However, with limited forage availability, pastures should be searched for poisonous plants common in Louisiana and Mississippi and cattle should be checked for problems on a regular basis.

Poisonous Plant Essentials

- ✓ **Scout pastures and hayfields for poisonous plants**
- ✓ **Cattle are more likely to consume poisonous plants when forage is limited**
- ✓ **Quickly recognize and treat signs of poisoning in livestock**

Common Poisonous Plants

- ✓ **Perilla mint (purple mint)**
- ✓ **Nightshades**
- ✓ **Bracken fern**
- ✓ **Lantana**
- ✓ **Mountain laurel**
- ✓ **Pokeweed**
- ✓ **Pigweed**
- ✓ **Buckeye (horse chestnut)**
- ✓ **Wild cherry (black cherry**
- ✓ **Oak buds and acorns**

Pasture Weed Identification Pictures

- ✓ **www2.msstate.edu/%7Ejbyrd/pastureweed.html**

Vitamin A Deficiency

Vitamin A deficiency can be a problem on drought-stressed forages. Actively growing forages normally provide acceptable levels of Vitamin A to beef cattle. Supply cattle with a complete mineral supplement at all times. Include at least 200,000 units per pound of Vitamin A in the diet. Vitamin ADE premixes are readily available for mixing in mineral or feed. Vitamin A is required for normal night vision, epithelial cells that line body surfaces and cavities, and bone growth.

Cattle Management Options

Early Weaning

Early weaning is often used to improve cow condition for rebreeding, particularly when forage is limiting. The nutrient requirements of a dry (non-lactating) cow are approximately 50% lower than the nutrient requirements of a lactating cow nursing a calf (Figure 15). Research shows that when the stress of lactation is removed by early weaning, cows gain body weight and condition. A Florida study reported that early weaning thin cows resulted in a significant reduction in the amount of total digestible nutrients (an indicator of dietary energy often referred to as TDN) needed to support cow body weight gain. Early weaning also effectively initiated postpartum estrus in these cows. Improved pregnancy rates in cows with early-weaned calves have been documented by numerous researchers. Early weaning may be most beneficial in years when pasture production is inadequate to support herd nutritional needs. Do not wait until the cowherd has lost significant body condition and forage availability is very limiting to early wean.

Advantages of Early Weaning

- ✓ **Allows for more efficient feed utilization during drought**
- ✓ **More cows can be carried on a limited feed supply**
- ✓ **Excellent feed conversion of early weaned calves can result in cheaper gains**
- ✓ **Reduces herd energy requirements**
- ✓ **Helps cows to cycle earlier and improves rebreeding rates**

Disadvantages of Early Weaning

- ✓ **Calf management and nutrition must be excellent**
- ✓ **Labor, facilities, and feed must be available for feeding small calves**
- ✓ **Seedstock cattle must wean within defined age windows for breeds to accept data**

Calves can achieve dry matter feed conversion rates of 5 to 8 lbs. of dry matter per 1 lb. of gain. Because early-weaned calves can gain weight efficiently, it may be advantageous to retain calves and feed them for a period of time. This allows for more flexibility in calf marketing. By feeding early-weaned calves a concentrate-based diet (Table 17) from weaning time until the time they would be conventionally weaned, research consistently shows that their body weights will be equal to or greater than the body weights of calves nursing their dams up to conventional weaning age. Operations developing heifers for replacements may want to consider less aggressive preweaning nutritional management strategies to prevent negative impacts on long-term productivity. Choosing the most appropriate early weaning diet should take into account whether or not calf ownership will be retained through the feeding period and feed cost and availability. Steers weaned at approximately five months of age versus seven months of age have been shown to have lower feedlot feed intake and better feed conversion. Research indicates that early-weaned calves tend to gain less in the feedlots, have lower carcass weights, and have similar yield grades compared to calves weaned at traditional ages.

Early Weaning Calf Feeding

- ✓ **Start calves with a high-energy, high-protein diet designed for early weaning**
- ✓ **Hand feed diet for 10 to 14 days until up to 4 to 5 lbs. per head per day**
- ✓ **Gradually increase to self-feeder as total intake increases**
- ✓ **Manage scours and coccidiosis if a problem**
- ✓ **Use a single diet for best performance through normal weaning age**

Table 17. Early Weaning Calf Diet Examples

	Lbs. per Ton	
Ingredient	**Diet 1**	**Diet 2**
Corn	327	916
Oats	450	
Soybean hulls	438	
Soybean meal	298	350
Cottonseed hulls	450	600
Cane molasses		80
Limestone	26	38
Dicalcium phosphate	1	9
Trace mineral salt	9	6
Vitamin ADE premix	1	1
TOTAL	2000	2000
	% Dry Matter	
Nutrient	**Diet 1**	**Diet 2**
TDN	71.2	71.7
Crude Protein	16.3	15.4
Crude Fiber	23.3	16.6
Crude Fat	2.8	2.6
Calcium	0.71	0.98
Phosphorus	0.32	0.40

One of the challenges with early weaning is getting calves started eating and drinking. In situations where calves are weaned at a very young age (less than three months), intensive management may be necessary. These extremely young, lightweight calves are highly stressed from weaning and may display a wide variation of eating and drinking behavior. It is critical to get these young calves trained to a feed bunk and water trough as quickly as possible to reduce the risk of illness.

To both lower the risk of health problems and promote calf growth, implementing proper vaccination programs in consultation with a veterinarian and getting calves accustomed to concentrate feeds is essential prior to weaning. Furthermore, low-stress weaning techniques such as fenceline weaning or fitting calves with anti-nursing devices may be valuable in early weaning programs. A coccidiostat may be fed to early weaned calves if coccidosis is a problem.

Increased labor and feed costs are typically associated with early calf weaning and subsequent backgrounding along with the need for a separate feeding or pasture area. These increased costs may be easily justified during drought conditions or when herd females are thin and run the risk of low rebreeding rates. Early weaning just part of the herd could be a good option as well. Start by early weaning young, pregnant cattle. With seedstock cattle, make sure that breed association weaning age windows are adhered to for performance reporting purposes when considering early weaning. Contact the respective breed association for weaning age requirements.

Creep Feeding

Generally, creep feeding will not greatly reduce grazing pressure on pastures nor reduce the strain that nursing calves are putting on their dams. However, the weaning weight advantages of creep feeding have been documented in numerous research trials. Creep supplementation may be attractive in situations of low forage quality where calf nutritional needs to support acceptable growth are not being met. In fact, the most profitable time to creep feed is probably during a summer drought. Early weaning may be a better alternative to creep feeding when forage quantities are extremely limiting.

Creep Feeding Considerations

- ✓ **Will improve calf weaning weights**
- ✓ **Will not greatly reduce pressure on pastures or lactating dams**
- ✓ **Good option when calf nutritional needs are not being met (poor forage quality)**
- ✓ **Early weaning may be a better alternative when forage supply is limiting**

The decision to supplement nursing calves impacts preweaning and postweaning performance and should take into account cost and availability of feed and forage supplements, replacement heifer concerns, calf prices, and calf marketing plans. The value of improvements in calf gains and marketability should offset the cost of supplementation. Look at creep supplementation as a management decision that is evaluated with each calf crop instead of as a management practice conducted each year.

Profitability of creep feeding may depend in large part upon current market conditions. Typically, when calf prices are high, creep feeding becomes a more viable and profitable option than when calf markets are lower. Seedstock producers should also consider how increased average daily gains and weaning weights due to creep supplementation affects and in many cases improves marketability of bulls.

Cattle Culling Decisions

During drought or other conditions where forage and feed resources are limited, culling deeper into the herd than normal is often appropriate. This does not mean that producers must liquidate their herds to survive a drought. Instead, animal nutrient demands should be closely matched with nutrient supplies based upon the economics of providing the nutrients for various cattle numbers and associated nutritional needs. Culling can help alleviate grazing pressure on drought-stressed pastures and decrease overall operation demand for supplemental feed or forage. Stocker operators running short of forage may want to consider shipping cattle to feedlots early and can still take advantage of retained ownership opportunities as they pencil out. In cow-calf operations, prime candidates for culling are open (non-pregnant) cows, cows without calves, cows with physical defects (cancer eye, bad udder, feet and leg soundness problems), older cows (10 years old and older), poor producers, late calving cows, cows outside of the desired calving season, and bad temperament cows.

A logical culling order that may be used is as follows:
Open old cows
Open replacement heifers (still young enough to feed out and meet fed market targets)
Old cows with unsound mouth, eyes, feet and legs
Open cows of any age
Thin cows over 7 years old (body condition score < 4)
Very late bred 2 year olds
Healthy bred cows that are over 7 years old
Healthy bred young cows 2 or 3 years old
Healthy bred cows 4 to 7 year old cows

Cattle Culling Highlights

- ✓ **Pregnancy check early to find open cattle**
- ✓ **Establish a preferred culling order**
- ✓ **Decide on how deep to cull**
- ✓ **Cull in a timely manner to conserve forage and feed supplies**
- ✓ **Consider custom grazing and retained ownership options**

Cull cow price levels and seasonal trends should be taken into consideration when deciding when to sell cull cows. When cull cows prices are trending upward, it is often advantageous to wait to market cows if the increasing values can cover added production expenses from holding over cull cows. It may also be advantageous to retain cull cows until weight and body condition can be added. Unlike feeder cattle prices, cull cow prices generally increase on a per pound basis with increasing cattle weights. If cull cow prices are trending downward, however, it may be advisable to market cull cows in a timely manner before more money is invested in cow maintenance, particularly if this investment will not likely be recovered. In Mississippi, the traditional seasonal highs for cull cow prices usually occur in March, while the seasonal lows usually occur in November.

Alternatives to culling that reduce animal pressure on farm forage and feed resources include custom grazing and retained ownership programs. Breakeven cattle feeding calculations can be performed with

simple spreadsheets to help decide whether retained ownership is a good option at the current time. Contact a local Extension office for assistance with breakeven calculations. Some cattle feeders will provide cash advances on cattle and partner with producers on percentages of their cattle. Make sure to visit with prospective feedyard managers in advance to learn about these services and feeding terms and conditions.

Cattle Management during Hot Weather

Water

Cattle need access to clean water and a proper mineral supplement at all times. Ponds that are drying up may not provide adequate fresh, clean water for cattle. Alternate water sources may be necessary. Cattle should not have to travel long distances for water. Water requirements of cattle depend on a number of factors including air temperature, water temperature, milk production level, pregnancy status, physical activity, growth rate, diet type, moisture level in the diet, salt intake, and dry matter intake. Temperature increases from 50 degrees F to 90 degrees F can increase daily water requirements by 2.5 times.

As water levels recede in ponds and other livestock water sources, conditions become more favorable for water quality problems such as blue-green algae toxicosis. Blue-green algae (cyanobacteria) can be a problem for cattle, particularly during summer in warm, stagnant water with abundant nutrients. Blue-green algae can produce toxins that can cause sudden death in cattle when high concentrations are ingested. Muscle tremors or convulsions, extreme thirst, watery or bloody diarrhea, coma, and death within four to twenty-four hours following ingestion are possible clinical signs of blue-green algae toxicosis. Surviving cattle may become sensitive to light and have increased liver enzymes. Cattle should be immediately removed from suspect water supplies. Contact a veterinarian immediately to discuss treatment options. Copper sulfate (0.2 to 0.4 ppm) can be added to the water to control cyanobacterial growth, but cattle must be removed from the affected water source for a minimum of five days following treatment to avoid exposure to high toxin levels.

Shade

Ample shade should be provided (at least 30 to 40 ft^2 per head for mature cows on pasture). If cattle crowd too closely together, limited shade can be worse than no shade at all. Shade options include natural (trees), permanent (barns and sheds), and portable shades. Strategic planting of trees along the west side of a pasture will help provide afternoon shade. If a metal roof is used on a permanent shade, make sure that it is insulated and does not radiate heat like an oven. Portable shades are usually less expensive than permanent shades and can be moved to accommodate different grazing systems.

Shade placement should be strategic since it will affect cattle distribution and forage utilization. Shades need to be high enough (at least 10 feet off the ground) to allow adequate airflow. Good ventilation and airflow is also recommended for confined cattle.

Cattle Working Strategies

Arrange to work cattle during cooler parts of the day instead of during the heat of the day. While working cattle in the late evening may seem like a good idea, cattle build up a heat load during the day and need at least six hours to dissipate heat and cool down from an extremely hot day. Researchers have observed cattle body temperatures reaching daily maximums at 10 p.m., well after outside temperatures peaked. If possible, try to work cattle early in the morning before the temperature rises to uncomfortable levels.

Make an effort to limit the amount of time cattle must spend in a confined area with limited air movement when working cattle. If cattle remain in a confined area for an extended period, then attempt to provide access to fresh, cool water. Very excitable cattle are particularly prone to heat stress. Practices that reduce cattle stress are beneficial during hot weather. Implementing a few precautionary

measures to help the herd beat the heat can make the difference in avoiding production losses associated with heat stress.

Feed Intake during Weather Extremes

Extreme temperatures and weather can impact feed intake. As temperatures rise above the animal's thermal neutral zone upper critical temperature (the point at which heat stress begins), dry matter intake falls. Likewise, as temperatures drop below the animal's thermal neutral zone critical temperature (the point at which cold stress begins), dry matter intake increases. Temperature-based stress on cattle impacts their energetic efficiency. The effects of temperature on feed intake depend upon the animal's thermal susceptibility, acclimation to the conditions, and diet. Temperature effects on feed intake are heightened by mud, precipitation, humidity, and wind. The duration of these adverse conditions may also be important. Adaptability of cattle to the environment can be important as it relates to feed intake and cattle productivity.

Hot Weather Management Tips

- ✓ **Keep water sources clean and readily available**
- ✓ **Provide adequate shade at all times**
- ✓ **Work cattle early in the morning**
- ✓ **Plan nutrition programs knowing that feed intake levels may be reduced**

Giving Cattle Advantages through Good Herd Health

Common Conditions for Grazing Cattle

During the summer months, there are the usual disease problems that we see in grazing cattle. However, in times of drought, an increase in the incidence and severity of these conditions is often observed. As forage gets shorter and the temperatures rise, cattle will spend more time under shade or in ponds trying to keep cool. With this behavior comes an increase in pathogen buildup that causes disease.

The organism that causes "footrot" is continually shed by the animals and resides between the toes. As cattle spend more time standing in water, the area between the toes becomes softer and more susceptible to trauma. This may lead to an increase in the disease. "Pinkeye" problems may also increase due to increased eye irritation from dust and flies. Also, disease spread is enhanced as cattle spend more time in close proximity to each other under the shade source or around water. It is also common to see an increase in "anaplaz" in cows and "summer pneumonias" in calves for many of the same reasons. Decreased nutrition due to forage shortages, increased fly numbers, lowered milk production by the cows, and heat stress all work together to increase the potential for disease in the herd.

Treatment and prevention programs for these conditions should be discussed with a veterinarian. Normally, catching and confining the cattle represents the major portion of the cost of treatment. There are long-acting antibiotics on the market that can give three to seven days of effective drug levels from a single injection. Oral medications can be put in the feed or mineral to control these conditions. Vaccines do exist for some of these diseases, but their economic benefit should be carefully scrutinized.

Parasite Control Programs

Internal and external parasites are an additional burden on the cow herd and stocker calves alike. External parasites (Face, Stable, and Horn flies) are the main external parasites to worry about. Horn flies feed on the blood of the animal causing decrease animal performance and milk production. Face flies have a critical role in the transmission of "pinkeye", and stable flies can act as a severe cattle irritant. If allowed to flourish unchecked, these flies can add significantly to the amount of heat stress suffered by cattle. This is due to the energy that the cattle expend trying to rid themselves of these parasites and the fact that high fly numbers may actually drive cattle out from under shade sources.

If there is any good news to drought conditions, it has to do with internal parasites. Normally the pasture contamination by parasite eggs and larvae in the Southeast is lowest during the hot part of the summer. Lack of moisture will ensure that parasite survival on these pastures is even lower. However, when there is a stressful situation for the cattle such as nutritional stress during drought, even these parasite loads can take on extra concern. Once it begins to cool off in the fall, worm burdens will increase in all classes of cattle. This will be especially difficult on cattle that have been stressed by drought and are carrying lower than normal condition. A mid- to late-summer treatment for internal parasites will make the fall transition easier for the cattle by having them enter this time of year parasite free. Summer is a good time to discuss this program with a veterinarian.

"Calf Comfort" for Weaned Calves

Many producers may be considering a different weaning program due to the drought conditions. Whether early weaning a calf crop or planning to precondition them to try and capture some additional weight, there are some things that need to be considered in approaching the health program. Young calves do have the benefit of having a relatively high level of maternal antibodies (from colostrum) present when early weaned. Therefore, they should be fairly resistant to disease if presented with a low-stress weaning process. However, when forage is limited, calves may be weaned having marginal levels of copper, zinc, and selenium in their systems. These micro-minerals are necessary for proper immune function. Therefore, if calves are handled incorrectly, increased levels of sickness and death loss may result.

There are some general considerations that need to be addressed for any weaning program. If early weaning calves, do working facilities fit this smaller-sized calf? In other words, the best diet in the world will not matter if the calves cannot reach it in the feed bunk. This is even more critical for water sources. Lack of adequate feed and water will decrease immune function and minimize vaccination program benefits.

Dust control in the working facility and holding pens is required to minimize the irritation to the calves' respiratory tracts. Dust irritation will lead to pneumonia in the calves. Spraying down pens with enough water to settle the dust needs to be done on an as needed basis. Walk through the handling facilities to look for protruding nails, gate latches, or sharp metal surfaces that can injure the calves. Weaning is stressful enough when everything goes well, so take the time to evaluate the entire process.

In normal circumstances, try to get two doses of vaccines in the calves prior to weaning. The second dose should be administered at least three weeks after the first and at least three weeks prior to weaning. However, pasture conditions may force producers away from this normal schedule. If only able to give one dose of the vaccine prior to weaning, then try to give the calves at least two weeks to respond. The second dose can be given within two days of weaning.

There is some evidence to support waiting 24 to 48 hours after weaning to give the second dose. This gives the calf a short time to get over the initial stress of weaning. However, in most instances, giving the vaccine on the same day the calf is weaned is usually more convenient from a labor standpoint. If the calves cannot be removed from the cows and vaccinated before the hottest part of the day, then vaccination should be delayed until the following morning. Significant heat stress will decrease immune function in cattle. Again, it is critical to work with a local veterinary practitioner on setting up these programs.

Utilize the Beef Quality Assurance Guidelines

Beef Quality Assurance (BQA) involves more that just how injections are given in cattle. Beef Quality Assurance has been described as producing a wholesome product in a humane manner. There are many things that are covered in this publication that are related to BQA. Culling decisions that are being driven by drought, vaccine handling guidelines for your animal health program, "calf comfort" considerations for those early weaned calves, cattle handling in hot weather, and using antibiotics correctly to treat sick animals are all

topics related to BQA. All of these topics, in turn, are related to the quality of the product produced. Educational material for the Louisiana and Mississippi BQA programs is available online at *msucares.com/livestock/beef/bqa/* or from local Extension personnel. This information is available for use without certification requirements, but the BQA program is well worth the effort to participate.

Herd Health Recommendations

- ✓ **Hot dry weather can increase the incidence and severity of common diseases**
- ✓ **Parasite control programs must address both internal and external parasites**
- ✓ **"Calf Comfort" is a critical component for successful weaning**
- ✓ **BQA guidelines are even more important for cattle stressed by drought**
- ✓ **Nutritional stress will have a negative effect on immune function**
- ✓ **Work with a veterinarian to make needed program adjustments**

Useful Websites List

Weather Information Sources
MSUcares Weather Resources
http://msucares.com/weather/

Hay and Feed Source Information
Mississippi Hay Directory
http://msucares.com/livestock/beef/mshay.html

Mississippi Market Bulletin
http://www.msmarketbulletin.org/

Alabama Hay Directory
http://www.agi.alabama.gov/market_news

Arkansas Hay Producers Database
http://hayproducers.uaex.edu/

Commodity Feed Sources for Arkansas Producers
http://www.aragriculture.org/livestock/beef/nutrition/commodity_feed_sources.htm

Kentucky Department of Agriculture Hay Sales Directory
http://www.kyagr.com/buyky/corral/haysales.htm

Missouri By-Product Feed Price Listings
http://agebb.missouri.edu/dairy/byprod/bplist.asp

Missouri Hay Market Listings
http://agebb.missouri.edu/haylst/

National Internet Hay Exchange
http://hayexchange.com/

Oklahoma Hay Directories
In State: http://www.oda.state.ok.us/forms/mktdev/haydir.pdf
Out of State: http://www.oda.state.ok.us/forms/mktdev/haydiroos.pdf

Tennessee Hay Directory
http://www.tnfb.com/hay.htm

Texas Department of Agriculture Hay and Grazing Hotline
http://www.agr.state.tx.us/producer_info/hay_grazing/com_hayhotline.htm

USDA Memphis Weekly Feed Report
http://www.ams.usda.gov/mnreports/lr_gr210.txt

USDA Southeast Weekly Hay Report
http://www.ams.usda.gov/mnreports/MG_GR310.txt

Helpful Drought-Related Links
Alabama Drought Emergency Relief Effort Website
http://www.aces.edu/drought/

Dealing with Drought: A Resource for Cattle Producers (Angus Journal)
http://www.angusjournal.com/drought/

National Drought Mitigation Center
http://www.drought.unl.edu/

NOAA Drought Information Center
http://www.drought.noaa.gov/

U. S. Drought Monitor
http://www.drought.unl.edu/dm/

United States Department of Agriculture

National Agricultural Statistics Service

Weekly Weather Crop Report

In cooperation with

Mississippi Department of Agriculture and Commerce

Phone:601-965-4575
Facsimile:601-965-5622
www.nass.usda.gov/ms/
nass-ms@nass.usda.gov/

Week Ending July 23, 2006

Released: 3:00 P.M., July 24, 2006

According to the National Agricultural Statistics Service in Mississippi, there were 6.2 days suitable for fieldwork for the **week ending Sunday, July 23, 2006.** Dry conditions continue to be a problem for Mississippi. Scattered rains are helping, but are still not enough to bring many operations out of the drought for more than a few days. Due to poor conditions, many row crops may have lower yields this year. An unusual situation has arisen with a few reports of aphids on peanuts. Some pastures are bouncing back with the much needed rain that they received while others are still struggling with insufficient moisture. Soil moisture was rated 60 percent very short, 28 percent short, and 12 percent adequate.

Progress In Percentages						Conditions in Percentages				
Item	Event	This Week	Last Week	2005	5-Yr Avg	Very Poor	Poor	Fair	Good	Excellent
Corn	Silked	100	100	100	100	19	22	20	37	2
	Dough	97	87	87	89					
	Dent	78	60	53	60					
	Mature	18	1	1	8					
	Silage Harvested	68	46	41	34					
Cotton	Squaring	100	98	100	98	10	19	28	34	9
	Setting Bolls	83	67	80	81					
Peanuts	Pegging	100	70	--	--	3	9	23	65	0
Rice	Heading	58	32	34	43	0	5	16	65	14
Sorghum	Heading	99	94	96	94	4	4	35	57	0
	Turning Color	76	43	25	38					
Soybeans	Blooming	99	97	99	93	11	21	30	32	6
	Setting Pods	93	85	87	79					
	Turning Color	21	5	2	4					
Hay (Warm Season)	Harvested	65	62	69	64	16	24	26	34	0
Sweetpotatoes	Planted	100	90	100	100	0	20	35	40	5
Watermelons	Harvested	93	90	76	79	0	25	52	23	0
Blueberries						0	13	11	76	0
Cattle						13	19	29	32	7
Pasture						27	34	27	12	0

County Agent Comments

"Non-irrigated crops are burning up, but irrigated crops are holding up pretty well. Pastures are burning up. Hay will be short this year."

— Jimbo Burkhalter, Tallahatchie

"The pasture situation has deteriorated to critical in most of the northern Mississippi counties. Producers are looking at utilizing abandoned crops such as corn and soybeans as a hay source. Hay feeding in most areas has been underway for more than three weeks."

— Mike Howell, Lee

"Recent rains have only prevented further rapid deterioration of the crop. Additional rains are needed to get soil moisture to levels that will significantly improve our situation."

— Ernest Flint, Attala

Mississippi Hay Directory Listing Submission Form

Print Form

Submit by Email

Contact Name

Farm Name

Address

Street

City

State **Mississippi**

Zip Code

Mississippi County

Daytime Phone

Evening Phone

Fax Number

E-mail Address

List all hay types that are available (ex: 300 bales 2nd cut bermuda; 100 bales mixed grass)

List bale type and approximate bale size. (Check all that apply)

- ☐ Small squares
- ☐ 45-55 lbs.
- ☐ 55-65 lbs.
- ☐ 65-75 lbs.
- ☐ >75 lbs.
- ☐ Large rounds
- ☐ 4' x 5'
- ☐ 5' x 5'
- ☐ 5' x 6'

What services are available? (Check all that apply)

- ☐ Forage test results
- ☐ Delivery within ____ miles
- ☐ Pre-purchase for later delivery
- ☐ Buyer must pick up hay at farm
- ☐ Pre-purchase for later pick-up by buyer
- ☐ Loading for buyers with advance notice

Priced by:

- ☐ Bale
- ☐ Ton
- ☐ Negotiable

Additional hay description, if any:

By completing this form, I understand that the information provided on this form will be posted on the MSUcares.com website. Listings will expire after 30 days.

msucares.com/livestock/beef/mshay.html

Please complete and return to: Jane Parish, Extension Beef Cattle Specialist, Box 9815, Mississippi State, MS 39762. 662-325-7466 (office), 662-325-8873 (fax), jparish@ads.msstate.edu (e-mail)

For answers to forage-related production questions, please contact your local Extension office or Dr. Richard Watson, Extension Forages Specialist, Department of Plant and Soil Sciences, Mississippi State University, rwatson@pss.msstate.edu, 662-325-5463.

Mississippi State University

Mississippi State Chemical Laboratory

Industrial and Agricultural Services Division
P.O. Box CR • Mississippi State, MS 39762
Telephone: 662-325-3324
Fax: 662-325-7807
Web Page: www.mscl.msstate.edu

Send samples to:

Mississippi State Chemical Lab
Hand Lab, Room 1145
Morrill Road
Mississippi State, MS 39762

SAMPLE SUBMISSION FORM

1. Please print or type.
2. Detailed information will produce better and faster service.
3. Be certain that samples are adequately identified and labeled.
4. Charge policy and other information on Price List, and on Web Page.

FOR LAB USE ONLY
Lab Number _____
Date Received _____
Date Reported _____

1. **NAME** (Owner or person to whom report and invoice will be mailed — 3. **DATE**

2. **ADDRESS** (Owner) — 4. **TELEPHONE** (Owner)

5. **SUBMITTED BY** (If other than owner, please give name, address, telephone number below. Copy of Analysis Report: ___ Yes.)

6. **TYPE OF SAMPLE** (Use separate Submission Form for different sample types.)

7. **ANALYSIS REQUESTED**

8. **DESCRIPTION OF PROBLEM AND OTHER REMARKS**

Send to:
Southeast Research Station
Forage Quality Lab
P. O. Drawer 567
Franklinton, LA 70438

SAMPLE SUBMISSION FORM FOR FORAGE QUALITY LAB ANALYSIS

Client Name or Number: If client number other info not needed
Parish/County:
Address:
City:
State/Zip:
Primary Enterprise (Beef, Dairy, Hay, etc.)

Sample Description	1	2	3
Product (Bahiagrass, ryegrass, etc.)			
Or Product Code			
Type (hay, silage, greenchop, etc.)			
Or Type Code			
Sample Identification (cutting, field, date, etc.)			
Mineral Analysis? Check Box if Needed			

Product Codes

Clover 9
Alfalfa 10
Misc. Legumes 11
Bahiagrass 12
Bermudagrass 15
Summer mix grass 16
Crabgrass 17
Millet 18
Ryegrass 19

Winter mix grass 20
Wheat 22
Oats 23
Sorghum/sudangrass 29
Corn silage 30
Forage sorghum 31
Grain sorghum 32
Misc. summer grass 39
Corn grain 40

Soybean meal 41
Cottonseed meal 42
Brewers grain 43
Corn/sbm 44
Tmr 45
Mix feed 46
Misc. Concentrate 47
Chicken litter 48
Mineral mix 49
Cottonseed 50

Type Codes

Pasture 1
Hay 2
Chopped silage/hay 3

Baleage 4
Greenchop 5
Tmr 6

Concentrate 7
By-product 8