MISSISSIPPI STATE UNIVERSITY
EXTENSION

Body Condition Scoring Beef Cattle

Body condition scoring is a management tool used to evaluate the nutritional status of beef cattle. Body condition (fat cover) indicates the energy reserves of a beef animal. It is important in beef production because it influences subsequent reproductive and growth performance. Cows and heifers in thin body condition at calving are slower to rebreed, produce less colostrum, may not have sufficient nutrient reserves for maximum milk production, and are less likely to wean a live calf. On the other hand, over-conditioning is expensive and can result in calving problems and lower dry matter intake early in lactation.

Body condition scores in beef cattle range from 1 (extremely emaciated) to 9 (very obese). Body condition can be evaluated easily by visual appraisal while driving or walking through a herd (Figure 1). It can be assessed when cattle handling may be impractical. Body condition is a more reliable indication of nutritional status than live weight. Changes in shrink, gut fill, and the weight of the fetus and fluids associated with pregnancy limit live weight from being an accurate indicator of nutritional status.

Two animals with the same body condition score may have dramatically different live weights. Similarly, cattle with the same live weight may have distinctly different body condition scores. Weight differences between condition scores vary depending on the score and where the animal is in the production cycle. These weight differences often range from 70 to 140 pounds. The percentage of body fat associated with each distinct body condition score appears in Table 1.

Figure 1. Beef cattle producer body condition scoring a herd at pasture.

Table 1. Beef cattle body condition score and associated body fat percent and shrunk body weight.

Body Condition Score (BCS)	Body Fat (%)	Shrunk body weight (% of BCS 5)
1	3.77	77
2	7.54	81
3	11.30	87
4	15.07	93
5	18.89	100
6	22.61	108
7	26.38	118
8	30.15	130
9	33.91	144

Source: NRC, 2000. Adapted from NRC *Nutrient Requirements of Beef Cattle*, 7th revised edition.

Using Table 1, the body weight change needed to move from one body condition score to another can be calculated. For example, a 1,200-pound cow at a body condition score of 5 would need to weigh 108 percent of its current weight to achieve a body condition score of 6. This cow would need to gain 96 pounds (1,200 × 1.08 = 1,296; 1,296 - 1,200 = 96) to move up one body condition score. Table 2 gives an example of weight differences between body condition scores for different body weights.

Body condition depends on cattle nutritional requirements and past nutrient intake. Design nutritional programs to avoid dramatic variations in body condition scores. The 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, manage heifers to calve in a body condition score of 6. Cattle require increased percentages of total digestible nutrients, in particular, in their diets above requirements for maintenance and performance to increase body condition score. Nutrient requirements to increase body condition score of mature cows are listed in Tables 3.1, 3.2, 4.1, and 4.2.

Table 2. Weight changes needed to increase body condition score by 1 point.

Body Condition Score (BCS)	Animal Weight (lb)	Weight Change Needed (lb)
1	770	40
1	924	48
1	1,078	56
2	810	60
2	972	72
2	1,134	84
3	870	60
3	1,044	72
3	1,218	84
4	930	70
4	1,116	84
4	1,302	98
5	1,000	80
5	1,200	96
5	1,400	112
6	1,080	100
6	1,296	120
6	1,512	140
7	1,180	120
7	1,416	144
7	1,652	168
8	1,300	140
8	1,560	168
8	1,820	196
9	1,440	-
9	1,728	-

Source: NRC, 2000. Adapted from *NRC Nutrient Requirements of Beef Cattle*, 7th revised edition.

Table 3.1. Diet nutrient density requirements to increase body condition score of mature beef cows from 4 to 5 during the last 90 days of pregnancy.[1]

Mature Body Weight at BCS 5 (lb)	DMI (lb/day)	DMI (% of BW)	TDN (% DM)	NE_m (Mcal/lb)	CP (% DM)	Ca (% DM)	P (% DM)
1,000	20.5	2.1	60	.59	7.7	.36	.20
1,100	22.0	2.0	60	.58	7.5	.35	.20
1,200	23.5	2.0	59	.58	7.4	.34	.19

[1]BW = total body weight = shrunk body weight or 96% full body weight; TDN = total digestible nutrients; NEm = net energy for maintenance; CP = crude protein; Ca = calcium; P = phosphorus

Source: NRC, 2000. Adapted from NRC Nutrient Requirements of Beef Cattle, 7th revised edition.

Table 3.2. Daily nutrients required to increase body condition score of mature beef cows from 4 to 5 during the last 90 days of pregnancy.[1]

Mature Body Weight at BCS 5 (lb)	DMI (lb/day)	DMI (% of BW)	TDN (lb)	NE_m (Mcal)	CP (lb)	Ca (lb)	P (lb)
1,000	20.5	2.1	12.3	12.1	1.57	.074	.040
1,100	22.0	2.0	13.2	12.8	1.65	.078	.043
1,200	23.5	2.0	13.9	13.6	1.74	.081	.045

[1]BW = total body weight = shrunk body weight or 96% full body weight; TDN = total digestible nutrients; NEm = net energy for maintenance; CP = crude protein; Ca = calcium; P = phosphorus

Source: NRC, 2000. Adapted from NRC *Nutrient Requirements of Beef Cattle*, 7th revised edition.

Table 4.1. Diet nutrient density requirements to increase body condition score of non-pregnant mature beef cows.[1]

Mature Body Weight at BCS 5 (lb)	Current BCS	Days to gain 1 BCS	DMI (lb/day)	DMI (% of BW)	TDN (% DM)	NE_m (Mcal/lb)	CP (% DM)	Ca (% DM)	P (% DM)
1,000	3	30	18.8	1.9	64	.65	6.1	.28	.16
1,000	3	60	17.7	1.8	57	.55	6.4	.23	.15
1,000	4	30	20.5	2.1	66	.67	5.9	.27	.16
1,000	4	60	19.0	1.9	58	.56	6.4	.23	.15
1,100	3	30	20.3	1.8	65	.66	6.0	.29	.17
1,100	3	60	19.0	1.7	58	.56	6.4	.24	.15
1,100	4	30	22.2	2.0	67	.69	5.9	.28	.16
1,100	4	60	20.4	1.9	58	.57	6.4	.24	.15
1,200	3	30	21.0	1.8	65	.69	6.2	.30	.18
1,200	3	60	20.3	1.7	58	.56	6.4	.24	.15
1,200	4	30	23.5	2.0	67	.68	5.9	.28	.16
1,200	4	60	21.8	1.8	58	.56	6.3	.23	.15

[1]BW = total body weight = shrunk body weight or 96% full body weight; TDN = total digestible nutrients; NEm = net energy for maintenance; CP = crude protein; Ca = calcium; P = phosphorus

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1,000	3	30	18.8	1.9	12.0	12.2	1.14	.053	.031
1,000	3	60	17.7	1.8	10.1	9.8	1.14	.041	.026
1,000	4	30	20.5	2.1	13.5	13.8	1.21	.056	.033
1,000	4	60	19.0	1.9	11.0	10.7	1.21	.044	.028
1,100	3	30	20.3	1.8	13.2	13.4	1.22	.058	.034
1,100	3	60	19.0	1.7	11.0	10.6	1.22	.045	.029
1,100	4	30	22.2	2.0	14.9	15.3	1.30	.062	.036
1,100	4	60	20.4	1.9	11.8	11.6	1.30	.048	.030
1,200	3	30	21.0	1.8	13.7	14.5	1.30	.063	.037
1,200	3	60	20.3	1.7	11.8	11.3	1.30	.048	.031
1,200	4	30	23.5	2.0	15.7	16.0	1.38	.065	.038
1,200	4	60	21.8	1.8	12.6	12.3	1.38	.051	.033

[1]BW = total body weight = shrunk body weight or 96% full body weight; TDN = total digestible nutrients; NEm = net energy for maintenance; CP = crude protein; Ca = calcium; P = phosphorus

Source: NRC, 2000. Adapted from NRC *Nutrient Requirements of Beef Cattle*, 7th revised edition.

Key Places to Look for Body Condition

There are several key places to assess body condition in beef cattle (Figure 2). Overall body fat should be evaluated along with fat cover over the tailhead, ribs, and shoulder, and in the brisket. Muscling should be evaluated to determine if it has been broken down for energy. This occurs when cattle reach 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 processes, transverse processes, hooks (hips), and pins.

Palpate the animal's condition over the ribs, along the backbone, and over the tailhead to assist 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 a thick hair coat makes visual appraisal of body condition more difficult.

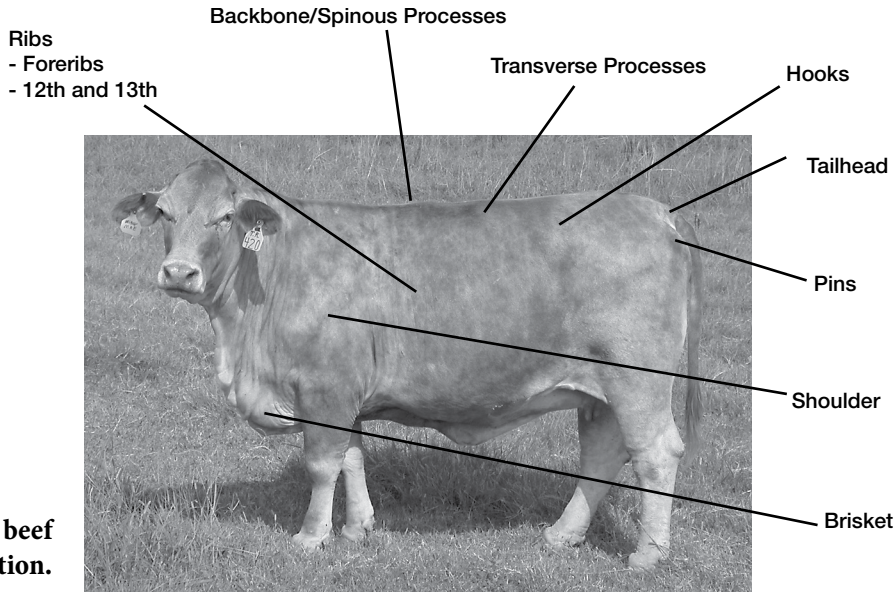

Figure 2. Key places on a live beef animal to evaluate body condition.

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. Condition score cows and heifers in the herd to properly plan and adjust forage and feeding programs. This helps ensure adequate body condition for optimum reproductive performance. The following are ideal times to body condition score beef cattle:

- When calves are weaned
- 60 days prior to calving
- At calving
- At the beginning of the breeding season

Proper body condition is also important for bulls to be fertile and active breeders. Target a body condition score of 6 for bulls at the beginning of the breeding season. Monitor bull body condition during the breeding season to identify bulls that become too thin. Hand feeding or bull rotation may be necessary to maintain adequate body condition for active breeding.

Keep good records of body condition scores in the herd on a routine basis. This is an easy and important step in developing a successful herd nutrition program. Assign feeding groups based in part on body condition score to meet cattle nutrient needs and most efficiently utilize feed and forage resources. Consider early weaning as another option for managing thin cows for successful rebreeding.

Nutrition-related costs make up a significant percentage of cash costs in most cow-calf operations in Mississippi. Monitoring body condition in the herd is a simple technique that can be used to make cost-effective herd nutrition decisions that optimize performance. For more information on body condition scoring beef cattle, contact your local MSU Extension office.

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

The 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 toward the top of the back.

BCS 3 = Thin

Individual ribs, including the 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 toward 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

The 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" or "rounds" may be starting to form along the tailhead.

BCS 8 = Fat

The animal is very fleshy and appears over-conditioned. Palpation of the spinous processes is nearly 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 and is barely palpable. Large fatty deposits may even impair animal mobility.

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