Body Condition Score as a Nutritional Management Tool

Body condition score (BCS) is an easy-to-use tool that describes the relative fatness of beef cattle. A nine-point BCS scale can be used to manage the cow herd. For example, there is a strong correlation between body condition of a cow and her reproductive performance and productivity. Percentage of open cows, calving interval, and calf vigor at birth are all closely related to the BCS of cows both at calving and during the breeding season.

Diving a bit deeper, BCS functions as a measurement of body fat (Table 1). Beef cows store energy in the form of fat when energy intake exceeds energy requirements. This stored energy may be used, at some future point, if the cow’s energy requirements exceed her dietary energy intake. In addition to aiding in leveling out peaks and valleys resulting from seasonal feed supply, energy stored as fat contributes greatly to insulating the cow against severe cold weather by reducing heat loss.

Generally, a change in one BCS equates to about 100 pounds of live weight in beef cows. Thus, for example, a 1,250-pound BCS 4 cow might be expected to weigh 1,350 pounds at BCS 5 and 1,450 pounds at BCS 6. It is important to remember that these weight changes are merely estimates. These estimates do not include weight of the fetus (growing at least one pound per day during the last trimester), fetal membranes, or fetal fluids, which can add up to 125 to 155 pounds for cows in late gestation. Thus, it is important to distinguish body weight differences due to degree of fatness and body weight changes resulting (and required) by fetal growth. When appraising a group of late-gestating cows, if weight is not increasing during the last trimester of gestation, cows are likely losing body condition.

Assigning a BCS requires observation of key areas for determination of degree of fatness. The appraiser must observe fat deposits over the backbone, ribs, hooks, pin bones, tailhead, and brisket (Figure 1). Most often, experienced cattlemen and cattlewomen “call” BCS based on visual appraisal of these areas alone. However, for a more precise scoring technique, determining beef cow BCS may rely on a combination of visual appraisal and palpation of key bone structures. Palpating cows for fatness along the backbone, ribs, and tailhead will help refine skills to visually score body condition. One of the advantages of using a BCS system is that, with practice, visual indicators alone can be used and BCS can be measured in the field without gathering or working cattle.

Table 1. Percentage of empty body fat corresponding to each body condition score on a scale from 1 to 9.

<table>
<thead>
<tr>
<th>BCS</th>
<th>Empty Body Fat (%)</th>
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<tbody>
<tr>
<td>1</td>
<td>3.8</td>
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<tr>
<td>2</td>
<td>7.5</td>
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<td>3</td>
<td>11.3</td>
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<td>4</td>
<td>15.1</td>
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<td>5</td>
<td>18.8</td>
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<tr>
<td>6</td>
<td>22.6</td>
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<td>7</td>
<td>26.4</td>
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<td>8</td>
<td>30.2</td>
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<tr>
<td>9</td>
<td>33.9</td>
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Nine-Point Body Condition Scoring System

The most important characteristics describing the nine-point scale of body condition scoring system, according to the *Nutrient Requirements of Beef Cattle* (2016), are as follows:

1—Emaciated.

The cow is severely emaciated and physically weak. Bone structure of shoulder, ribs, back, hooks, and pins are sharp to the touch and easily visible. No evidence of fat deposits or muscling. This body condition score is rarely observed in the field.

2—Very Thin.

The cow appears emaciated but not weak. No evidence of fat deposition. Muscle atrophy is significant in the shoulder, over the loin and rump, and through the hindquarters. The spinous and transverse processes, hooks, and pins feel sharp to the touch and are easily seen.

3—Thin.

Very little fat cover over the shoulder, loin, and rump. The foreribs have slight evidence of fat deposition, but the last three or more ribs can be seen. The backbone is still highly visible. Processes of the spine can be identified individually by touch and may still be visible. Spaces between the processes are less pronounced. There is evidence of muscle loss in the hindquarters.

4—Borderline.

Foreribs are slightly noticeable and the 12th and 13th ribs are still easily visible. Muscle atrophy is still noticeable over shoulders, loin, and hindquarters, but is approaching normal. The transverse and spinous processes can be identified only by palpation (with slight pressure) and feel rounded rather than sharp. The hooks and pins are covered in minimal fat and easily identified.

5—Moderate.
There is slight evidence of fat deposition in the brisket. Muscle expression in the shoulder, loin, rump, and hindquarters is normal. The last two ribs (12th and 13th) can only be seen if the cow has less than normal gut fill. Individual spine and transverse processes cannot be seen, can only be felt with firm pressure, and feel rounded. Spaces between the processes are not visible and are only distinguishable with firm pressure. Areas on each side of the tailhead are starting to fill. Hooks and pins are covered with a layer of fat, but still distinguishable.

6—Good.

The cow exhibits a smooth appearance throughout. Ribs are fully covered and are not noticeable to the eye. Hindquarters are plump and full. Noticeable springiness over the foreribs and on each side of the tailhead. Firm pressure is now required to feel the transverse processes. Fat deposition in the brisket is evident.

7—Fleshy.

The brisket is full, but not distended. Spinous and transverse processes are embedded in fat and can only be felt with very firm pressure. The topline is beginning to take on a square appearance. Spaces between processes can barely be distinguished. Abundant fat cover on either side of the tailhead with evident patchiness.

8—Obese.

The cow’s neck appears short and thick. Brisket is distended with fat. Animal takes on a square and blocky appearance over the topline and smooth along the sides. Bone structure cannot be seen anymore. The pins are embedded in fat on both sides of the tailhead. Evidence of fat deposition in udder.

9—Very Obese.
Rarely seen. Bone structures are not easy to identify. The tailhead is buried in fat. The cow appears short-necked with a full, and distended, brisket. Significant fat deposition in the udder. The animal’s mobility may be impaired by excessive fat.

When to Condition Score Cows

The greatest single factor influencing rebreeding performance of beef cows is BCS at calving. However, if producers wait until calving to determine and manage their herds' body condition, they will find it difficult to rectify. For instance, it is particularly expensive (and challenging) to increase BCS of a lactating cow. Therefore, the best way to manage the cow herd is to monitor BCS during key times throughout her cycle. For example:

Weaning

As weaning nears, producers should BCS cows and heifers in the herd to properly plan and adjust forage and feeding programs. This may mean using management tools such as early weaning, supplementation, or both. This helps ensure adequate body condition for optimum reproductive performance. Because first-calf heifers are still growing, they are most likely to be thin at weaning and may benefit if segregated from mature cows and supplemented with grains or good quality forage. The ideal BCS at weaning is 5 to 6.

90 Days Before Calving

The last opportunity to get condition back on cows economically occurs 90 days prior to calving. This would be the time to separate thin cows from cows in good condition and feed them separately, paying attention to those young cows and heifers. It is much easier to get condition back on cows before calving because their nutrient requirements are lower compared to those during lactation. The ideal cow BCS 90 days before calving is 5 to 6. The ideal BCS for a first-calf heifer 90 days before calving is 6 to 7 because she will have a hard time keeping enough condition to get rebred with the demands of lactation and growth once she calves.

Calving

Economically, it is difficult to get condition on cows after calving. Due to greater energy requirements of lactation, it takes large amounts of good-quality feed to add condition after calving. Thin, mature cows at calving may reflect a mismatch between genetics and availability of feed resources. Thus, calving and/or weaning management must be matched to feed resources. If cows are thin at calving, producers may want to change the pre-calving feed program or the weaning date to better holistically manage the system. The ideal BCS at calving is 5 to 7, with the optimum target for most heifers at 6 to 7.

Breeding

Thin cows at breeding may, again, indicate a poor match of calving season to feed resources. For example, thin cows at breeding may result in herds where calving occurs too early in the spring when grazing resources are unavailable and supplemental feeds are inadequate. Body condition score at breeding is crucial because it impacts the female’s ability to get pregnant. Often, we look for heifers to come into the breeding season with more condition than cows (BCS closer to a 7), knowing that she will have more demands on her reserves for growth, lactation, and pregnancy maintenance. The ideal cow BCS at breeding is 5 to 6. The ideal BCS for first-calf heifers at breeding is closer to 7.

Conclusion

Body condition scoring is simply a tool that may help producers better manage the system by matching the feed program to the needs of the cows. It is important to take time to record BCS at the critical time-points during the year in order to adjust the feed program when necessary. Early weaning calves from thin cows or segregating and supplementing thin cows are options to increase BCS in that group. Factors affecting BCS play an important role in the economics of a beef cow-calf operation by ultimately affecting the percentage of viable calves each year. Monitoring condition using the nine-point BCS scale can increase the profit potential of the cow-calf enterprise.

For More Information

“Body Condition Scoring Beef Cows: A Tool for Managing the Nutrition Program for Beef Herds.” University of Nebraska–Lincoln, 2014..


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