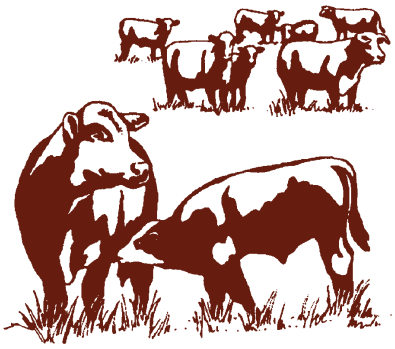


Beef Cattle Handbook

BCH-5405

Product of Extension Beef Cattle Resource Committee

Cow Body Condition Scoring Management Tool for Monitoring Nutritional Status of Beef Cows

Dale A. Blasi, Extension Livestock Specialist, Kansas State University
Rick J. Rasby, Extension Beef Specialist, University of Nebraska
Ivan G. Rush, Extension Beef Specialist, University of Nebraska
Connee R. Quinn, Elanco Animal Health, Inc., Chadron, NE

Meeting cow/calf performance goals for growth, reproduction, replacement rates and market weight are important. Yet, beef managers must also recognize that controlling costs is a vital component of the profitability equation. For example, feed costs represent the largest single annual expense, amounting to 50 - 70 percent of the total cost of maintaining a beef cow. Thus, the objective of any good feeding program should be to ensure optimum fertility and production, from every female in the herd as economically as possible. Research and economic studies clearly demonstrate that well-formulated rations and efficient use of the forage resource base, generally reduces feed costs.

When used by cow/calf producers, university educators and veterinarians on a consistent and regular basis, body condition scores can be used to monitor the effectiveness of beef cow nutrition programs as environmental conditions and nutrient needs change. However, according to a recent survey conducted by the USDA's National Animal Health Monitoring System, only 5.5 percent of 799 cow/calf operations surveyed routinely condition score their cows.

What are Body Condition Scores?

For years, progressive cow/calf producers have recognized the important relationship between the physical appearance of their cowherd and reproductive performance outcomes. Body condition scoring merely formalizes this time practiced procedure by placing a quantitative score on the relative degree of fatness or energy reserves that can be observed or palpated.

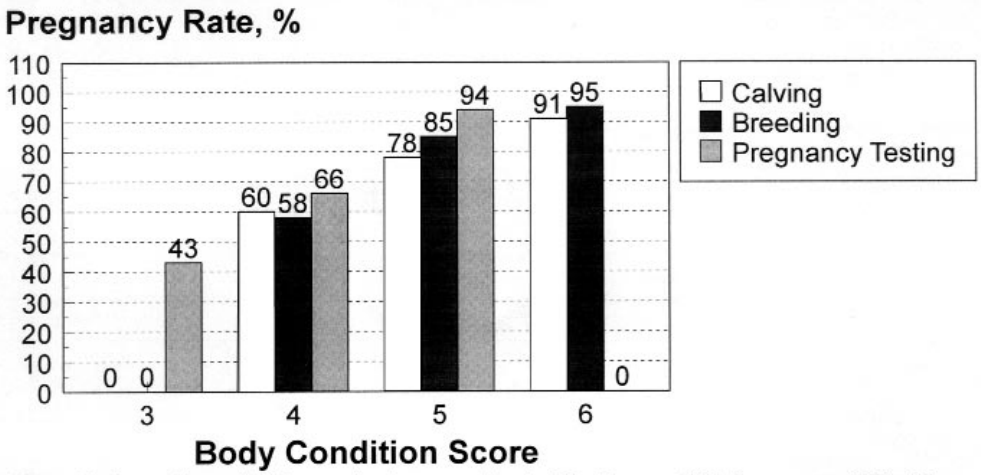
Body condition scoring is an excellent way to describe cows. For example, a body condition score three cow (this will vary by breed) will often weigh 925 to 975 pounds, if of English breeding. She will show no fat cover and, if slaughtered, her carcass would have approximately nine percent fat. In contrast, an English-bred cow with a body condition score of five will often weigh from 1,085 - 1,135 pounds and have a carcass with 18 percent fat. A similar cow with a body condition score of seven will be in the range of 1,245 - 1,295 pounds and have a body fat content of 27 percent.

Besides being more convenient than weighing cows, body condition scores are also a more reliable indicator of nutritional status than is body weight. For example, an 1,100 pound cow may actually be a 1,000 pound animal with an additional 100 pounds of body reserves or a 1,200 pound cow which has lost 100 pounds of condition. In addition, body weight will seasonally vary because of gut fill and pregnancy as dictated by breeding season, forage quality and availability.

Body condition scores also allow producers to group cattle according to their nutritional requirements, thereby improving the efficiency of nutrition programs. Furthermore, body condition scores standardize the description of body condition in beef cows which greatly enhances communication among cow/calf producers, university educators, veterinarians and industry advisors. Body condition scoring of cows allows for analysis of present management practices and application of research results and recommendations for individual cowherds.

The scale of the most commonly used system ranges from 1 to 9, with a score of 1 representing very

Figure 1. Relationship of Body Condition When Scored at Calving, Breeding or Pregnancy Testing to Pregnancy Rate



Compilation of results from studies conducted in Texas, Oklahoma and Florida; Kunkle et al., 1994

thin body condition, and 9 extreme fatness. A cow possessing a minimum body condition score of 5 would portray a target that cow/calf producers should strive for by calving time. Body condition scores of 3 - 7 will encompass the vast majority of beef cows in the Great Plains region. The visual appearances and descriptions for this range of body condition scores are included in this article for an to immediately condition score their beef cows.

How Should Body Condition Scores be Assigned?

When condition scoring cows, the evaluator should focus attention on those areas of the body where accumulation or loss of fat reserves typically occurs. Areas of the body to evaluate are the brisket, spine, ribs, hooks, pins, and tail-head. A thin cow looks very sharp, angular and skinny, while a fat one looks smooth and square with bone structure hidden from sight or feel. When convenient, palpation would be of particular value in situations when cows exhibit thick hair coats, are shrunk and when in the late stages of pregnancy. Shrink can alter the appearance and feel of cows by as much as one score, while late pregnancy will tend to make a cow look fuller and fatter. Evaluators are encouraged to initially determine whether a cow is greater than or less than a body condition score of 5 because this degree of body condition by calving is associated with a higher probability of attaining successful cowherd reproductive performance goals.

Why are Body Condition Scores Relevant?

To be most productive on an annual basis, a beef cow must consume sufficient quantities of feedstuffs which contain adequate nutrient levels to meet her maintenance requirements, besides come into estrus promptly, conceive early in the breeding season, nourish a developing fetus, deliver a live calf without difficulty and nurse it for 6 - 8 months. In order to produce a calf every 12 months, a cow must conceive within 80 days of the birth of her calf. Sustaining this consistent level of productivity requires the producer's astute attention to the critical periods of the beef cow's reproductive cycle in relation to existing body condition and prevailing environmental conditions. It is much easier and more economical to increase body condition prior to calving than it is after calving.

The critical periods in the beef cow's reproductive cycle are at calving through rebreeding, and during the last 60 - 80 days prior to calving. It is during these periods when body condition has a tremendous effect on reproductive performance and overall productivity. A compilation of several recent research studies described in Figure 1 have thoroughly documented the effect of body condition score at calving, breeding time and at pregnancy testing, on pregnancy rate. When compared to herdmates with body condition scores of 5 and greater at calving and breeding, beef cows scoring less than 5 will have longer postpartum intervals and subsequent lower pregnancy rates if dramatic nutritional and managerial measures after calving are not taken.

Furthermore, underfeeding during the last trimester of pregnancy: (1) lowers calf birth weight but does not decrease calving difficulty; (2) increases calf losses at birth; (3) reduces colostral quality, increasing susceptibility of calves to scours; and, (4) decreases weaning weight as a consequence of reduced milk production. The body condition of a productive beef cow may fluctuate one or two (75 to 180 pounds) condition scores over the production year in relation to metabolic demands, milk production levels, associated forage quality and availability, and most importantly, climatic conditions.

To be reproductively and economically efficient,

mature beef cows should be at least a body condition score 5 at calving. In contrast, two-year-old heifers require a body condition score of 6.0 at calving, simply because of the additional nutrient requirements for growth. This slight increase in condition in young cows will help compensate for additional nutrient demands for growth and help these cows resume cycling in a timely manner.

When Should Cows be Condition Scored?

Table 1 lists the strategic times during the cowherd management calendar to ensure cows are at least a target score of 5 by calving. Cows should be evaluated during late summer while still on grass. If thin to borderline moderate during this time and forage availability is sufficient, supplementation with natural protein to improve forage intake and increase forage digestibility is recommended. In most instances, the weaning season provides a logical time for producers to sort cows by body condition and age, and feed according to target body condition scores desired by calving.

For example, a producer who has a set of cows that are in a body condition score of 4 at 80 - 100 days prior to the start of calving must formulate a nutritional program that will enable those cows to reach moderate body condition by the time they calve. Research conducted to date, indicates that a cow will need to gain or lose about 80 pounds of body weight to change by one body condition score. To increase body condition, cows need more energy (TDN).

Figure 2 illustrates this concept and demonstrates the various daily weight gains necessary for cows to improve one or two body condition scores at different times from calving and breeding. For example, cows in thin condition 120 days before calving must gain 260 pounds or 2.2 pounds per day to advance two body condition scores. In contrast, thin cows 60 days prior to calving must gain over 4 pounds per day. Daily gains greater than 2.5 pounds per day for gestating or lactating beef cows are neither realistic nor economical.

Differences in body condition are also observed in cows after calving. It is important to recall that cows are also nursing calves at this point, which creates an additional demand for dietary energy and makes rapid and economical weight gains difficult, if not impossible, for cows after calving.

In contrast, thin body condition scores are more detrimental to pregnancy rates of cows that calve later in the calving season (Table 2). Cows that calve earlier could be one condition score less at the beginning of the breeding season than cows that calve later and still have the same probability of conceiving if attentive management is provided. This indicates that early conception during the breeding season of the current season can affect the likelihood of pregnancy in future years. This is precisely the reason why yearling heifers should be managed to calve early as two-year-olds. As mentioned earlier, younger cows are the ones most likely to be thin.

Producers with cowherd body condition scores of 5 or better at weaning can capitalize on the additional energy reserves gained during the late summer and early fall by reducing the amount of supplemental feed needed to sustain good pregnancy rates and calving intervals if favorable environmental conditions exist.

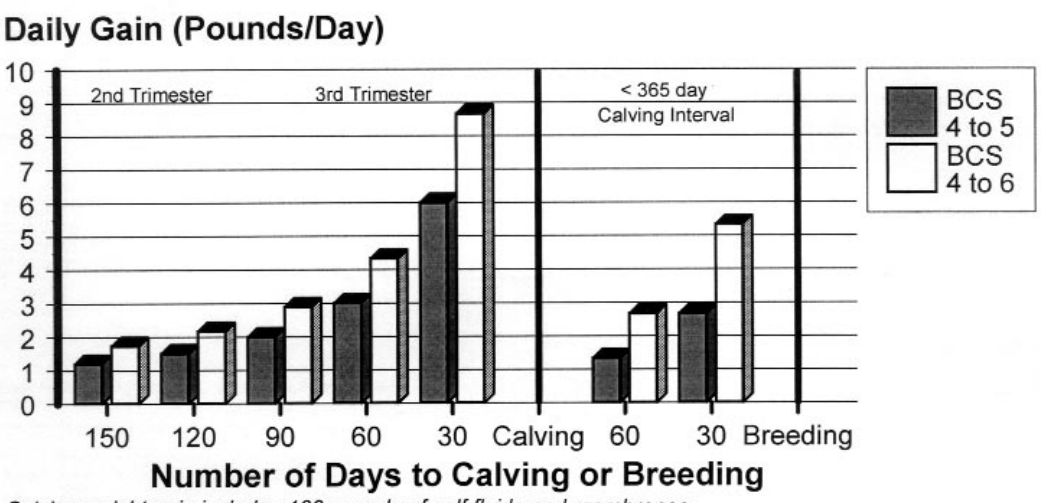
Ideally, producers should inventory their forage supply by quality and use higher quality forages for cows in thin condition. Producers must also ensure that ration intake is sufficient for projected weight gains. Supplementing with high energy grain or fiber by-products such as corn gluten feed, distillers grains, soybean hulls and wheat midds is an effective means for augmenting energy intake if available forages are average to low quality or in short supply.

Depending upon forage quality and availability, ionophores can improve feed utilization and weight gain of beef cows. Research has shown that with moderate to high quality forage, ionophore supplementation in har-

Table 1. How to Utilize Body Condition Scores at Various Stages of Production

Production Period	Management
Late lactation (2 months prior to weaning)	Depending upon current forage availability, supplementation and/or a modified weaning strategy may be necessary. Wean thin cows, especially young and older
Weaning	Pay particular attention to young cows weaning their first calf and cows beyond their prime age; they are most likely to be thin at this time.
100 days before calving	Last opportunity to gain body condition. This would be a good time to separate thin cows from cows in good condition and increase feed to thing cows.
Calving	If cows are thin, a change in the feeding program is needed. It is expensive to increase condition on thin cows after calving.
Breeding season	If cows are thin at this time, additional supplementation and/or implementation of an early weaning strategy may be necessary.

Figure 2. Effect of Current Body Condition and Days to Calving or Breeding on Daily Gains Necessary to Increase One or Two Body Condition Scores



Calving weight gain includes 100 pounds of calf fluids and membranes
One body condition score = 80 pounds of liveweight

vested forage diets can result in a .13 to .44 pound increase in prepartum gains.

Over time, possession of historic production data such as body condition scores that are recorded at critical periods of production will allow the operator to objectively determine if a shift in current management philosophy is justified. For example, the decision whether to incorporate early weaning strategies or change the average herd calving date to conserve summer weight gains and minimize supplement inputs will be easier to evaluate. Most importantly, access of herd performance data will enable the operator to critically evaluate the breeding program and ask the question, "Does this cow type fit my resources?"

Summary

Several characteristics of successfully managed cowherds are obvious where optimum reproductive efficiency is sustained on an annual basis. The managers of these herds: (1) ensure the availability of quality feedstuffs containing ample nutrient levels to meet the elevated nutrient requirements of their cowherd during important production periods; (2) regularly monitor forage quality and availability; (3) recognize that cow body condition ebbs and flows over time in relation to productivity and climatic conditions, and are able to accurately evaluate the status of their cows' body condition stores in relation to future levels necessary for key production periods; and (4) use economically sound supplement programs which not only correct for nutritional deficien-

Table 2. Effect of Body Condition on Reproductive Performance[a]

Body Condition Score at:	Early Calvers[b]						Late Calvers[c]					
	2	3	4	5	6	7	2	3	4	5	6	7
Probability of conceiving in the first 21 days of the breeding season												
Calving	–	.51	.58	.65	.72	.77	–	–	.41	.56	.70	.81
Breeding	.29	.44	.60	.75	.85	.92	.23	.36	.50	.65	.77	.86
Probability of becoming pregnant during a 60-day breeding season												
Calving	–	.88	.93	.96	.98	.99	–	–	.88	.93	.96	.97
Breeding	.81	.91	.96	.98	.99	1.00	.60	.80	.91	.97	.99	.99

[a] *Pruitt and Momont, 1988.*

[b] *Early calvers = > 60-day postpartum at the beginning of breeding season.*

[c] *Late calvers = ≤ 60-day postpartum at the beginning of breeding season.*

cies, but also complement and improve the utilization of the base forage.

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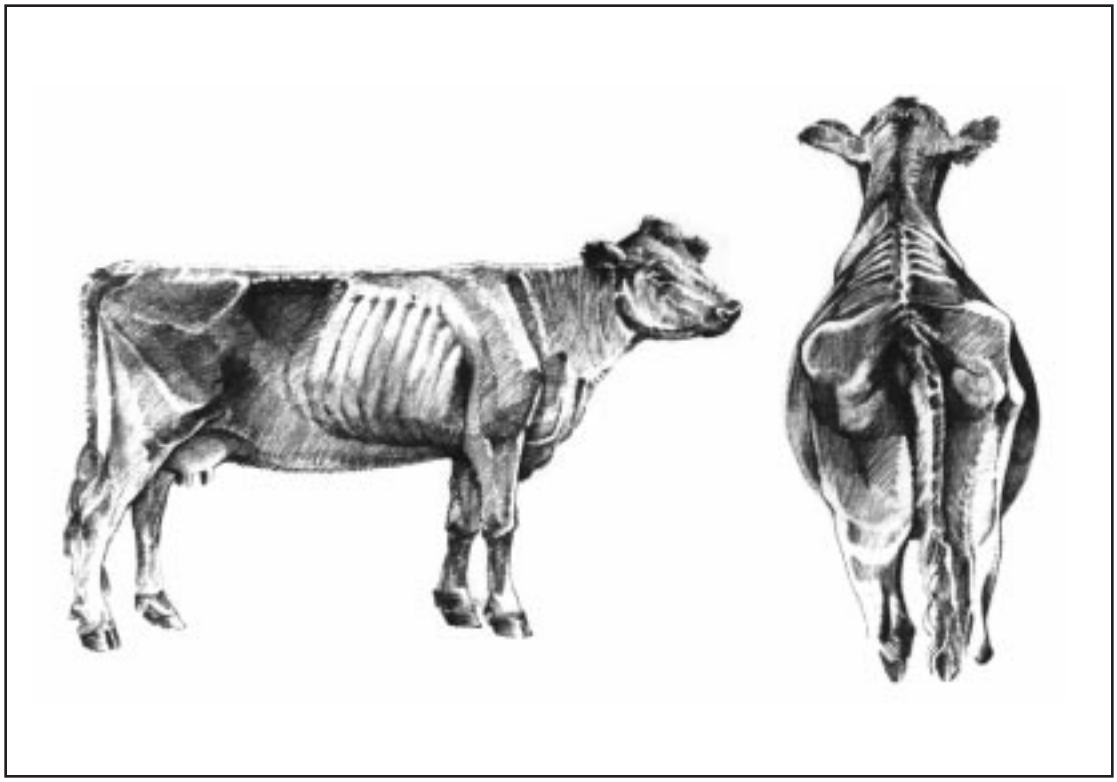
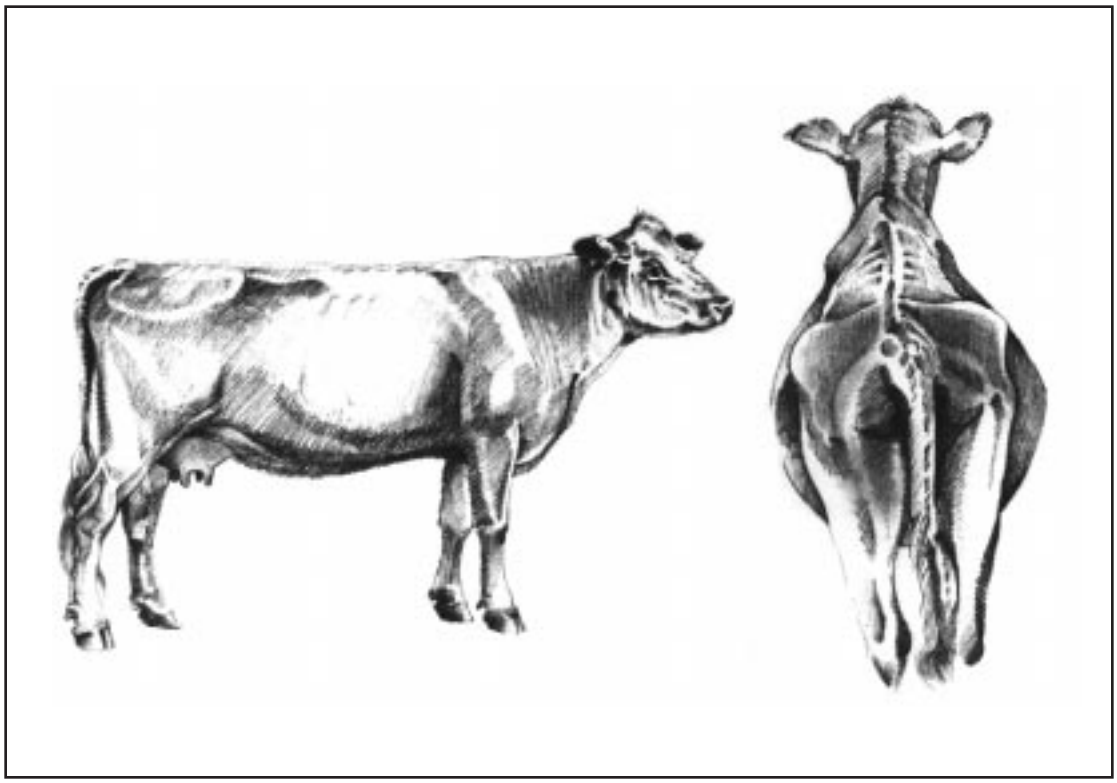
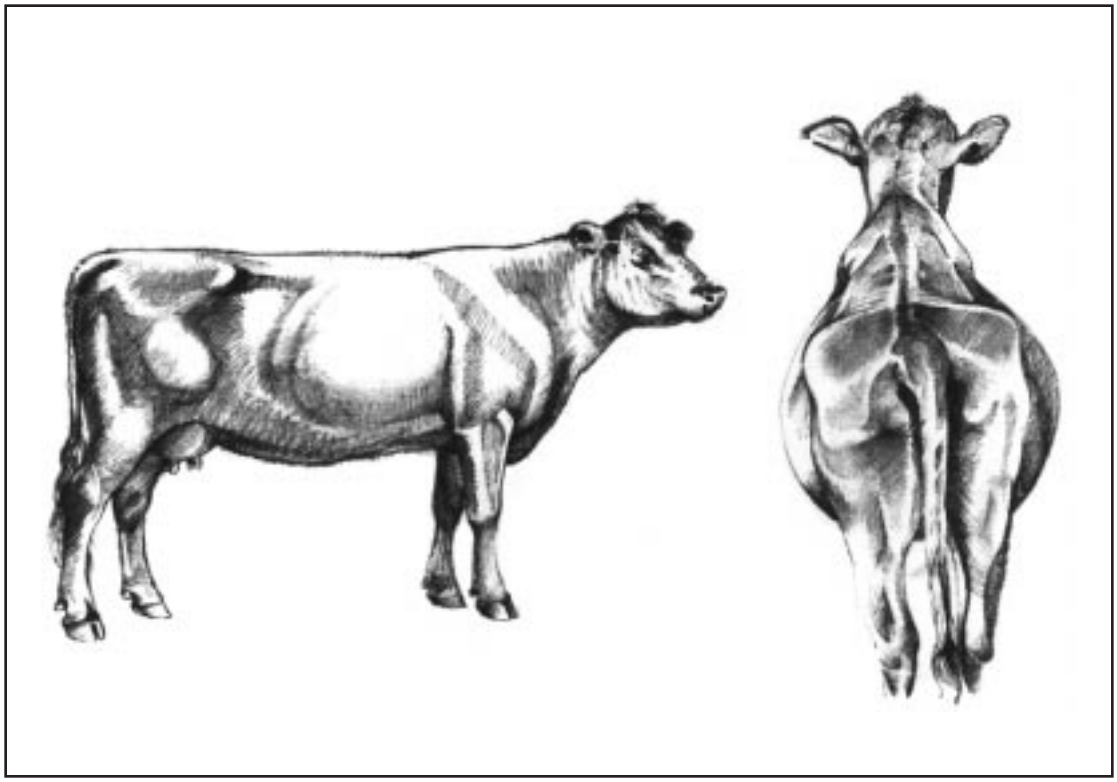
Appreciation is expressed to Elanco Animal Health for the use of Body Condition Score illustrations.



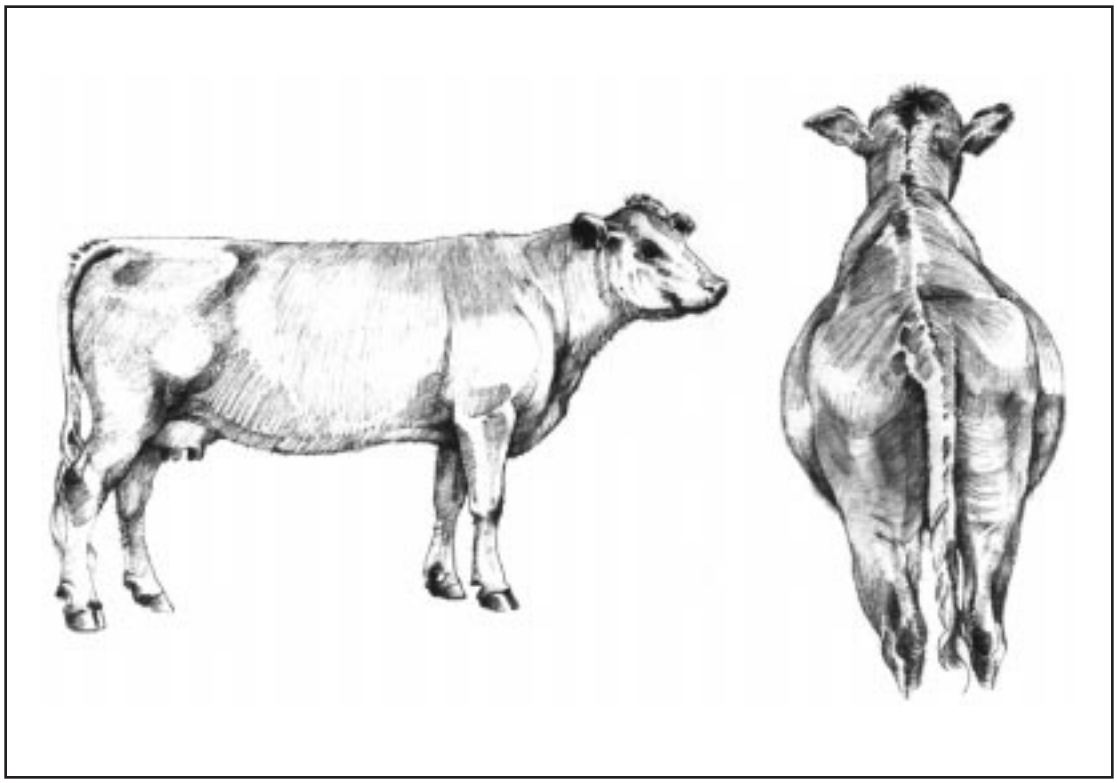
Body Condition Score 3: Very thin, no fat on ribs or brisket, and some muscle still visible. Backbone easily visible.



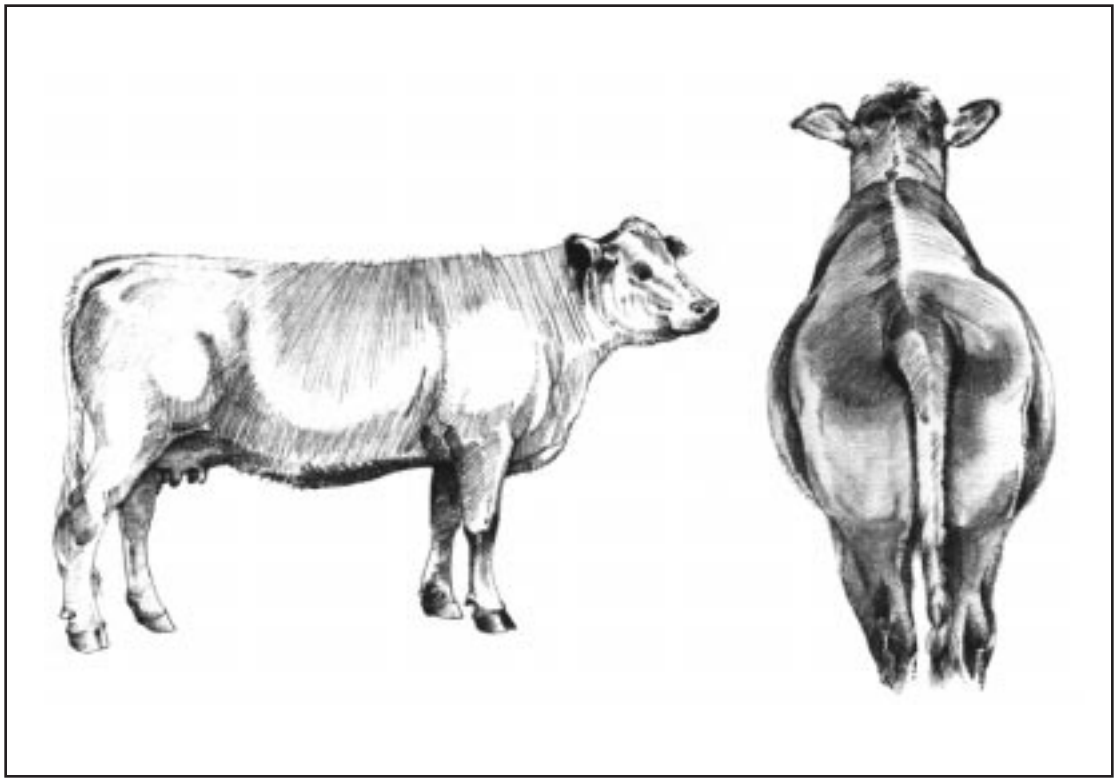
Body Condition Score 4: Thin, with ribs easily visible, but shoulders and hindquarters still showing fair muscling. Backbone visible.



Body Condition Score 5: Moderate to thin. Last two or three ribs can not be seen unless animal has been shrunk. Little evidence of fat in brisket, over ribs or around tailhead.



Body Condition Score 6: Good smooth appearance throughout. Some fat deposits in brisket and over tailhead. Ribs covered and back appears rounded.



Body Condition Score 7: Very good flesh, brisket full. Fat cover is thick and spongy, and patchiness is likely. Ribs very smooth.

Authors:
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Connee R. Quinn, Elanco Animal Health, Inc., Chadron, NE

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