

Body Condition Scoring With Dairy Cattle

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The Importance of Body Condition Scoring

Body condition scores provide an indication of the energy status of dairy cattle. Condition scores can be used on both heifers and cows, although primarily they are used on the lactating dairy herd. Essentially, body condition scoring provides an objective indication of the amount of fat cover on a dairy cow. This evaluation is accomplished by assigning a score to the amount of fat observed on several skeletal parts of the cow. Various point systems are used to score the animal. The most commonly used system ranges from 1.0 to 5.0, in increments of 0.1 or 0.25. One point of body condition equals 100 to 140 pounds gain in body weight. Larger frame cows require additional body weight to increase one point, compared to smaller frame or narrow cows.

Body condition scores show gradual change over a normal lactation. In the table entitled "Ranges of Ideal Body Condition Scores," stage of lactation indicates the appropriate score for the cow. Because the cow puts on fat more efficiently while lactating, she should go dry with a body condition score of 3.5 to 4.0. If the cow is in good body condition at drying-off, she should calve at approximately the same body condition score.

Older cows should calve at 3.5 to 4.0 body condition score. Cows should freshen in good flesh with a good reserve of tissue to enable them to produce more milk in early lactation. One pound of extra body fat equals about 7 pounds of 4 percent fat-corrected milk. Because cows cannot

eat enough to meet their energy needs in early lactation, this fat is necessary to allow them to mobilize energy for high production in early lactation. However, you should avoid fat cows at calving since they are more prone to metabolic problems, such as dystocia or calving trouble, retained placenta, milk fever, ketosis and downer cow syndrome.

Cows that are too thin are also more prone to metabolic problems and diseases and have decreased milk yield. Studies indicate that cows with lower body condition scores and loss of weight have lower conception rates and decreased efficiency of heat detection, compared to cows that are gaining weight and have higher body condition scores. As cows increase in milk-producing ability, this extra flesh becomes important because cows must eat more in early lactation to produce greater milk. It is usually 50 to 60 days after calving before they are in a positive energy balance. (See graph on next page.)

As a result of this negative energy balance, cows have their lowest body condition score at approximately one to two months postpartum. (See table on next page.) This body condition score should be approximately 2.5. The goal of a good nutrition program is to minimize the variation between the high body condition score and the low body condition score. In general, the average decrease in body condition score from calving to the lowest score should not exceed one point. However, the body condition score of an individual cow may vary as much as 1.5 without marked effects on the performance of the cow.

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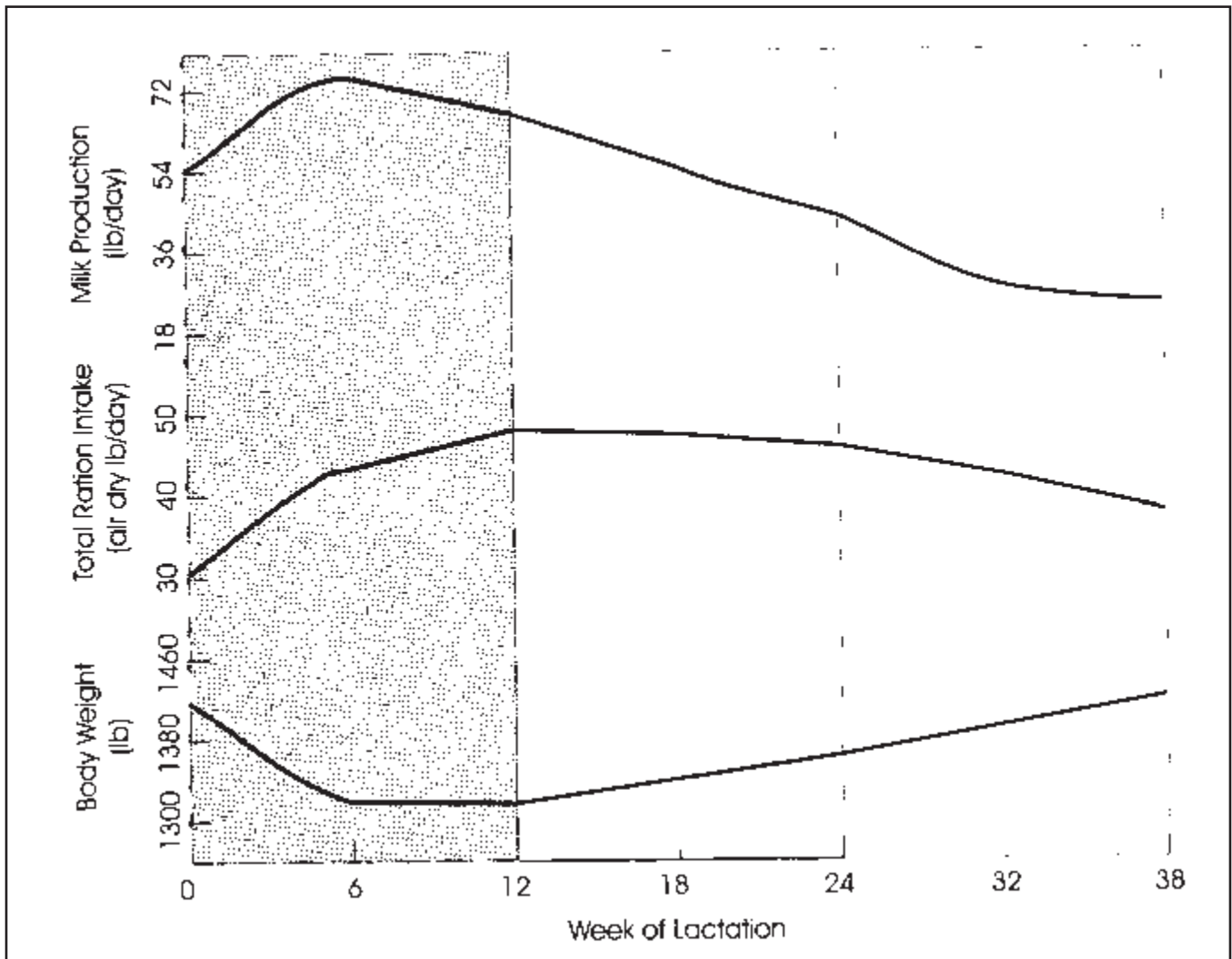
Ranges of Ideal Body Condition Scores	
Stage of Lactation	Score
Drying-off	3.5 - 4.0
Calving (older cows)	3.5 - 4.0
One-month postpartum	2.5 - 3.0
Mid-lactation	3.0
Late lactation	3.25 - 3.75
Calving (first lactation)	3.5

Feeding your herd properly allows you to avoid extremes in body condition score; i.e., 2.0 or less and above 4.0. It is important to balance the ration for the cow in early lactation so that her body condition score is not less than 2.5, while at the same time feeding the cow that is toward the end of her lactation so that her body condition score is not above 4.0. To do this, the feeding program must be fine-tuned so that total mixed rations for one group are balanced for its level of production. Also, if you are feeding your cows as

one group or herd out of the parlor, then you must feed more grain to your higher-producing cows compared to your lower-producing cows.

The graph below shows the typical lactation curve for a lactating cow and the energy intake and body weight for the cow. It is necessary to feed a higher-producing cow more compared to the lower-producing cow. She may not be able to consume enough to meet her energy needs. The higher-producing cow will then be losing weight and will be more apt to be a problem breeder by either not being detected in heat or having a reduced conception rate. In general, a typical cow will be in a negative energy balance until around 50 to 60 days in milk and will begin to gain 4 to 5 pounds of body weight per week. (If one body condition score is 125 pounds and she is gaining 5 pounds per week, then it will take 25 weeks for her to gain one body score.) If she is already 8 weeks into lactation before she gets into the positive energy balance, then she will be near the end of lactation before she completely gains one body condition score.

Effect of Lactation Stage on Milk Production, Ration Intake and Body Weight



No Matter How You Look At It...

Body Condition Scoring

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In the dairy cow, body condition is an indicator of the amount of stored energy reserves and changes with different stages of lactation. Fresh cows in peak lactation tend to be in a negative energy balance and therefore lose body condition. Late lactation cows, dry cows and low producers are in a positive energy balance and gain condition. There is no one ideal body condition score. There is a range of desirable scores which change for individual cows over the different stages of each lactation.

Dairy farmers should regularly evaluate the body condition of their cows and heifers so they can fine-tune feeding and management practices. Adequate body reserves are necessary to maintain health, production and reproductive efficiency. Underconditioned cows are prone to reduced milk production and poor persistency of lactation. Overly conditioned cows are predisposed to calving difficulties, fatty liver syndrome, impaired reproduction and metabolic disorders.

Body condition scoring of cattle is an essential management tool for the progressive dairy farmer. It can be mastered with a little training and good observation skills, using both sight and touch to evaluate each cow.



BCS = 3



BCS = 1



BCS = 4



BCS = 2



BCS = 5

No Matter How You Look At It...

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BCS = 1

Deep cavity around tailhead. Bones of pelvis and short ribs sharp and easily felt. No fatty tissue in pelvic or loin area. Deep depression in loin.



BCS = 2

Shallow cavity around tailhead with some fatty tissue lining it and covering pin bones. Pelvis easily felt. Ends of short ribs feel rounded and upper surfaces can be felt with slight pressure. Depression visible in loin area.



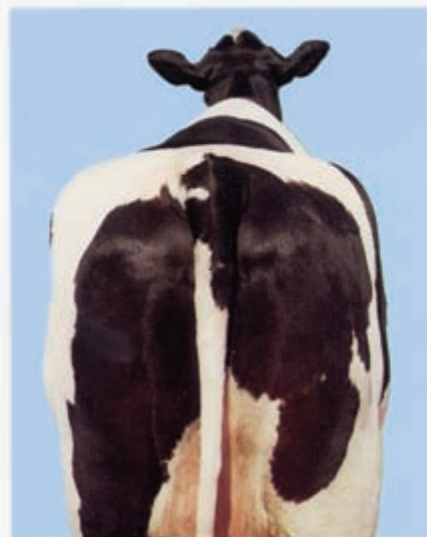
BCS = 3

No cavity around tailhead and fatty tissue easily felt over whole area. Pelvis can be felt with slight pressure. Thick layer of tissue covering top of short ribs which can still be felt with pressure. Slight depression in loin area.



BCS = 4

Folds of fatty tissue are seen around tailhead with patches of fat covering pin bones. Pelvis can be felt with firm pressure. Short ribs can no longer be felt. No depression in loin area.



BCS = 5

Tailhead is buried in thick layer of fatty tissue. Pelvic bones cannot be felt even with firm pressure. Short ribs covered with thick layer of fatty tissue.

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Sudden changes in body condition scores allow you to detect health problems in your herd. If a cow is sick and quits eating, her body condition score can change dramatically in less than a week. For example, if a cow has a displaced abomasum (a twisted stomach) soon after calving, her body condition score can drop from 4.0 to 2.0 in less than a week if she quits eating and is still producing reasonable quantities of milk. This example would be the extreme in using body condition scores to indicate health problems in the herd. Other examples might include low scores in heifers or cows that have a heavy parasite load. These animals will generally not put on flesh like animals that are in good health. Also, cows or heifers that have a low-grade respiratory infection will not be maintaining or increasing body condition scores like healthy animals. A cow with John's disease (paratuberculosis) may be an isolated example in a herd of otherwise healthy cows. Her body condition score of less than 2.0, in extreme cases, would contrast to the remainder of the herd, which should range from 2.5 to 4.0.

Both the herd's health and feeding can be related to low body condition scores. Excessive feeding of concentrate in the ration, especially when feeding low quality forages, can result in acidosis and a decrease in body condition score.

How to Evaluate Body Condition Score

Body condition scores will range from 1.0 to 5.0, using increments of 0.1, and will vary from one evaluator to the next. The point system itself may vary. As long as the same individual evaluates the animals each time and that person is consistent in assigning scores to a cow, the information will be very useful. Changes in body condition score are what are important.

Several aids are available to assist you in body condition scoring.

Pages 3 and 4 of this fact sheet are a body condition card provided by Elanco Animal Health (Lilly Corporate Center, Indianapolis, IN 46285). For dairy replacement heifers, a body condition scoring guide is available from Roche Animal Nutrition and Health, Hoffmann-LeRoche, Inc., 340 Kingsland Street, Nutley, New Jersey 07110-1199, Attention: Agridex.

Arm and Hammer (Church and Dwight Company, Inc., 469 N. Harrison Street, Princeton, NJ 08543; phone 1-800-526-3563) also provides an excellent booklet on body condition scoring. It has pictures and descriptions of animals that can be used for body condition scoring. These descriptions are listed below.

Body Condition Score

1.5 "The cow, with a body condition score of 1.5, is ideal for demonstrating the key indicators, but little else. Each vertebra is sharp and distinct

along the backbone. The short ribs are also visible as individual bones. The ligaments connecting the sharp and well-defined hook and pin bones to the backbone are easily seen. Her thurl is extremely dished in and the area on either side of the tailhead is sunken and hollow. There are folds of skin in the depression between the tail bone and pin bone."

- 2.0** "The cow is too thin. She may be in good health, but her reproduction and milk production may suffer from a lack of body condition. Her backbones are easily seen, but they do not stand out as individual vertebra. The short ribs are also distinct and the scalloping at the edges is very apparent. The thurl is very hollow, with prominent hook and pin bones. The ligaments holding these bones to the back are very sharp and distinct. The spot where the thigh bone meets the pelvis is obvious, but unlike the BCS 1.5 cow, there is a little flesh here. The area on either side of the tailhead is hollow with folds of skin in the depression formed by the pelvis and tail."
- 3.0** "This cow is in ideal condition for most stages of lactation. The vertebra are rounded, but the backbone can still be seen. There is between a half-inch and an inch of tissue covering the short ribs. The edges of the ribs are rounded and not as sharp as the BCS 2.0 and 2.5 cows. Hook and pin bones are easily seen, but are round instead of angular. The ligaments connecting them to the backbone form clear boundaries between the forward and rear pelvic areas, but the fat covering makes them appear smooth and round. The thurl is dished, but not to the same extent as in the thinner cows. The area on either side of the tailhead is hollow, but the folds of skin are not as distinct."
- 4.0** "Although many producers want their cows to be heavy at calving, research here and in England shows that fat cows lose more condition, eat less and have more post-calving problems than cows that freshen at half a condition score lower. A BCS 4 cow looks fleshy. Her back appears almost solid, like a table top. The short ribs still form a shelf, but they cannot be seen as individual bones and only felt with deep palpation. The hook and pin bones are rounded and have obvious fat padding. The area on either side of the tailhead is not hollow and there are no skin folds."
- 5.0** "An obese cow is at high risk for metabolic problems, lameness, and will most likely remain open for months at a time. Her backbone and short ribs cannot be seen and only felt with difficulty. The shelf formed by the short ribs is well-rounded. Her thurl is filled in. The hook bone looks like a ball and the pin bone is buried in flesh. Fat deposits at the tailhead give her a dimpled appearance."

Body condition score 1.0 indicates a very thin cow – a cow that is skin and bones. Generally, you will not see cows scored with a body condition score of 1.0 if you're using increments of 0.1 or 0.25. A body condition of 2.0 is also too thin. She may be a cow milking well, but her reproduction may suffer from her lack of body condition. Also, her milk production may later be sacrificed or she may have a health problem which has caused her to have a body condition score of 2.0. If you have a cow that is between 1.0 and 2.0, you would determine the amount of difference between the two. If she is halfway between the two, her body condition score would be 1.5. Ideally, no cow in the herd should be less than 2.0.

A body condition score of 3.0 indicates the ideal condition for cows in mid-lactation. These cows have already passed the stage of negative energy balance, have been gaining weight for several weeks and have begun to accumulate flesh covering the hooks, pins and vertebrae. If a cow is halfway between 2 and 3, then her body condition score is 2.5. Less than 10 percent of the herd should score 2.5 or below. A body condition score of 4.0 indicates a cow that is heavy at calving or is getting ready to go dry. Generally, cows should not score above 4.0 because they are fat and the fat can interfere with reproduction as well as depressing their appetite. A body condition score of 4.0 indicates cows are very fleshy, and some might consider them fat.

If a cow scores above 4.0, she is too fat. If she scores 5.0, she is a very obese cow – at high risk for many metabolic problems, decreased fertility and is more prone to go off feed at the time of calving. Essentially, a cow with a 5.0 body condition score is round and covered with fat.

How Often Should Body Condition Score Be Evaluated?

Body condition scores can be recorded at various times throughout lactation, depending on the amount of information needed. One system used by the Dairy Records Management System (DRMS) records body condition score at calving, at first breeding, just past mid-lactation or about 90 to 100 days before going dry and at dry-off. These condition scores provide an indication of the feeding status of the herd as well as any health problems they might have. Other times may be more appropriate in your herd.

How to Record Body Condition Score

Data for body condition scores may be recorded manually on cow cards or entered into a computer, which allows for quick summaries if needed. Data from the records at the dairy records processing center may also be accessed by your on-farm computer or through copies of Dairy Herd Improvement (DHI) records.

Heifer Body Condition Scoring

Heifer body condition scoring can also be a useful tool for monitoring the energy status of heifers. Heifers that are too fat deposit fat in the udder, which might later inhibit formation of milk secreting cells. If heifers get too fat, they may accumulate fat in their reproductive tract, which will decrease fertility and increase the likelihood of dystocia. Older heifers that get too fat are more prone to have the same metabolic problems as lactating cows at the time of calving. Heifers that are too thin will have decreased fertility and other health problems compared to heifers that are thrifty and growing well. Elanco Animal Health publishes a booklet, *Body Condition Scoring for Replacement Heifers*, which shows heifers in various condition scores.

Generally, heifers will have slightly lower body condition scores than cows. For heifers less than six months old, their body condition score should range from 2.0 to 3.0. Usually heifers should not exceed 3.5 in body condition score. It is recommended that older heifers freshen at a 3.5 body condition score. A body condition score of 2.5 to 3.0 is desirable for heifers from six months old up to breeding age. At breeding, and shortly thereafter, their body condition scores may gradually increase from 3.0 to 3.5. Use caution in adding extra flesh to heifers in late gestation since the extra feed may contribute to large calves and thus calving problems.

Summary

Body condition scoring can be a useful management tool for dairy producers to manage the nutrition of their herd. In turn, this improvement in nutritional status should improve milk production of the cow as well as reproductive performance and health of the animals. Thin cows in a negative energy balance are unable to perform at maximum capacity in the herd. Cows that are too fat are more prone to metabolic problems and more easily go off feed. Using body condition scores can allow the dairy producer to more accurately achieve adjustments in the nutritional status of the herd.

Printed by University of Arkansas Cooperative Extension Service Printing Services.

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