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Popular Article

Body Condition Score: A Tool for Health Assessment in Goat

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Abstract

Body condition score is an important tool used to assess the health and well-being of any animal, and dairy goats are no exception. It is an index of the animal's muscle and fatness, and can be used to assess the current and past feeding programs, as well as the condition of the animals during usual management. It allows producers to assess the nutritional condition of their goats and identify potential health problems before they become too serious. BCS is a numerical score from 1 to 5, with 1 being severely emaciated and 5 being obese.

Introduction

The body condition score (BCS) is an estimation of an animal's muscle and fat development, providing a more accurate measure than body weight alone. It is a subjective assessment of the body fat and muscle composition of a goat, based on visual observation of the animal. It does not require any specialized equipment or testing, and can be performed quickly and easily by anyone familiar with the technique (Reshma *et al.*, 2022). It is a subjective way used to evaluate the nutritional status of a flock, and can help goat owners increase their flock's production efficiency (Özder *et al.*, 1995; Sejian *et al.*, 2010 and Carlson, 2017). Body condition scoring of goats is important before breeding,



during mid-gestation, early lactation, weaning, and sale. Poor body condition may lead to lower conception rates, reduced milk production, and smaller offspring. This can lead to lower production and profits. Animals in an appropriate body condition have enough energy/fat reserves to reach their full genetic potential without excess fat which can impair performance (Kinne, 2012). Goats that are very fat at kidding will result in more health problems. Goats that are very thin in early lactation will not have the energy reserves required to attain high milk production. Thin goats at breeding will also be harder to get pregnant (Koyuncu and Altınçekiç, 2013).

How to perform

The Body Condition Score is determined on a scale of 1.0 to 5.0 with increments of 0.5. A score of 2.0 to 3.5 is considered healthy for sheep and goats. It is important that goats are neither too fat nor too thin (Houghton *et al.*, 1990; Pennington, 2010). An animal with a BCS lower than 2.0 may be facing a health or management problem while a score of 4.5 and higher are rarely seen in a normal management situation. Assigning a BCS requires one to physically feel the animal. With practice, it is possible to accurately evaluate a goat's BCS in about 10-15 seconds. To determine the BCS, the handler uses his/her hands to feel for the fullness of muscle and fat cover in the loin, sternum and rib cage regions.

Regions for evaluation of body condition in goats

1. Lumbar region: The lumbar region is formed by lumbar vertebrae which is located immediately behind the last rib and before the hip bones and covered by loin muscle. Amount of fat and muscle present over and around the vertebrae is used as a criterion for determination of BCS. Lumbar vertebrae have two protrusions, the vertical protrusion called the dorsal *spinous process* and the two horizontal protrusions called the *transverse process*. One should run their hand over this area and try to grasp these processes with your fingertips and hand. The degree of sharpness or roundness of the lumbar vertebrae is assessed and used to assign BCS.

2. Rib cage: The area formed by thirteen pairs of ribs and intercostals muscles. The fat cover on the ribs and intercostal (between ribs) spaces is used for identification of BCS. Touch this area and determine if one can feel each of the ribs.

3. Sternum: The sternum is the third part to assess. In goats it is an important area to assess. The fat cover over the sternum (breast bone) can be pinched and is used for BCS determination in goats.



Scoring of Goat

BCS-1

The goat looks emaciated (very thin) and weak. The spinous process and transverse processes of lumbar region are prominent and sharp and clearly visible. The fingers pass easily under the ends of transverse process which can be easily felt. The backbone is highly visible, hollow flank and clearly visible ribs. The ribs are not covered with fat and intercostals spaces can be felt easily by fingers. Sternal fat easily grasped between thumb and fingers and moved from side to side.

BCS-2

slightly better than BCS-1 but the goat looks thin. The spinous processes of lumbar vertebrae feel prominent but smooth and individual process can be felt. The transverse processes are smooth and rounded and with a little pressure one can pass the fingers under the ends. Backbone is visible with a continuous ridge and ribs can be seen and felt. Only a small amount of fat cover present over inert costal spaces of ribs. Sternal fat wider and thicker than BCS 1, but can still be grasped and lifted.

BCS- 3

the goat looks moderate or normal. In lumbar region the spinous processes are detached only as small elevations, the processes are rounded and smooth and individual process can be felt only by giving pressure. The transverse processes are smooth and well covered. Firm pressure is required to feel over the ends of transverse processes. Backbone is not prominent. Ribs are covered with even layer of fat. Vertebrae are cover by thick tissue layer. Sternal fat is wide and thick. It can be grasped, but has very little movement.

BCS- 4

The goat appears fatty. The spinous processes of lumbar vertebrae can be detected by pressure as a hard line between the fat covered back. The ends of the transverse processes of lumbar vertebrae cannot be felt. The backbone and ribs cannot be seen. Sternal fat difficult to grip and cannot be moved from side to side.

BCS- 5

The goat gives very fatty appearance. The spinous processes cannot be detected even after firm pressure and there is a depression between the layers of fat in the position where the spinopus processes would normally be felt. The transverse processes cannot be detected. There may be heavy



deposition of fat around rump and tail areas. Backbone is buried in fat. Ribs are covered with excessive fat and not visible. Sternal fat extends and covers sternum, and cannot be grasped.

Ideal ranges of BCS for various physiological states:

- i. In healthy physiological stage the BCS ranges between 2.5 to 3.5 but if it ranges 1.0 or 1.5 to 2.0 it has management of health problem.
- ii. In breeding buck, ideal BCS is ranges between 3.0-3.5. The bucks having BCS score less than 2 to 2.5 will not have sufficient stamina and vigor to breed. They should have 3.0 score before start the breeding season. The bucks with BCS > 4 lack sexual desire.
- iii. At the time of mating does should have a score of 3 for optimum result with a range of 2 to 3 being acceptable (Koyuncu and Altınçekiç, 2013).
- iv. In Pregnant doe, ideal BCS ranges between 3.0-3.5. BCS more than 3.5 leads to pregnancy toxemia/ ketosis, retention of placenta, fatty liver, abnormal displacement and dystokia. BCS <2.0 to 2.5 leads to poor kid survivability and milk production.
- v. During kidding ideal BCS ranges between 3.0-3.5 to ensure the adequate production of colostrum and reservoir to support high milk production especially in early lactation.
- vi. In lactating doe BCS should be 2.5-3.0. it should not come below 2.0 to 2.5. Quick drop of BCS during lactation leads to anoestrus, anovulatory oestrous, shorter oestrous, repeat breeding and infertility. During flushing there is no need of flushing if BCS is 3.5 or more. The goats will response to flushing treatment if BCS is 2.0 or less.

Conclusion

Goat Body Condition Score (BCS) is a method used to measure the amount of body fat and nutritional status of goats. Through a comprehensive score, it accurately reflects the body condition of dairy goats, which is an important indicator for evaluating herd productivity. It is simple to use and can help producers make management decisions about feeding to ensure reproductive performance and reduce costs. Moreover, it is also useful in goat marketing.



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