

## THE IMPORTANCE OF BODY CONDITION SCORING IN SHEEP AND GOATS – A COST TO BENEFIT PERSPECTIVE

Raluca-Aniela GHEORGHE-IRIMIA<sup>1</sup>, Dana TĂPĂLOAGĂ<sup>1</sup>, Cosmin ŞONEA<sup>1#</sup>,  
Paul-Rodian TĂPĂLOAGĂ<sup>1</sup>, Lavinia UDREA<sup>2</sup>

<sup>1</sup> University of Agronomic Sciences and Veterinary Medicine of Bucharest, 59 Marasti Blvd, District 1, Bucharest, Romania

<sup>2</sup> Valahia University of Targoviste, 13, Sinaia Alley, Targoviste, Romania

### REVIEW

---

#### Abstract

BCS is a useful tool for assessing the nutritional status of animals, but it can also require significant time and resources to implement. The article analyzes the potential benefits of BCS, such as improved animal health and production, as well as the costs associated with BCS, such as labor and training expenses. Additionally, the article considers the potential financial return on investment from implementing BCS in terms of reduced feed costs and increased market value of animals. Overall, the article highlights the importance of weighing the costs and benefits of BCS in sheep and goats in order to make informed management decisions.

---

**Keywords:** body condition scoring, sheep, goats

#Corresponding author: cosmin\_sn@yahoo.com

#### INTRODUCTION

Body condition scoring (BCS) has a long history in the management of livestock, with records dating back to the early 20th century. The development of BCS was driven by the need to better manage animal nutrition, as undernutrition and overfeeding can both lead to negative impacts on animal health and productivity. In the early years, BCS was based on subjective evaluations of an animal's overall appearance and behavior, with little standardization across different regions and farms (Vatankah et al., 2012).

Over time, BCS has evolved to become a more standardized and objective tool for assessing the nutritional status of animals. In the 1950s and 1960s, researchers began developing more specific scoring systems that focused on individual areas of the animal's body, such as the ribs and tailhead. By the 1980s, standardized scoring systems had been developed for a variety of livestock species, including sheep and goats (Cannas & Boe, 2003; Vatankah et al., 2012).

Today, BCS is widely used in sheep and goat farming as a way to assess animal nutrition and make informed management decisions. BCS involves a visual and tactile evaluation of specific areas of the animal's body, with scores assigned based on the amount of fat present and the overall appearance of the animal. The most

common scoring system used in sheep and goats is the 5-point scale, which ranges from 1 (emaciated) to 5 (obese), with a score of 3 considered ideal (Kenyon et al., 2014).

While BCS can be a valuable tool for managing animal nutrition, it also comes with costs. Implementing BCS requires time and resources, including training for evaluators and regular assessments of animals. Additionally, there may be costs associated with implementing changes in feeding practices based on BCS assessments (Cannas & Boe, 2003; Vatankah et al., 2012).

Despite these costs, the benefits of BCS can be significant. By monitoring animal nutrition and making adjustments as needed, farmers can improve animal health and productivity, reduce feed costs, and increase the market value of their animals. BCS can also be an important tool for identifying and addressing health issues related to over- or under-nutrition, such as metabolic disorders or poor reproductive performance (Kenyon et al., 2014).

Overall, the cost-benefit relationship of implementing BCS in sheep and goats is an important consideration for farmers. This article will explore the cost-benefit relationship of BCS in sheep and goats in more detail, including an analysis of the potential benefits, and financial return on investment from implementing BCS.

## **BENEFITS OF BCS ASSESSMENT IN SHEEP AND GOATS**

### *Nutrition*

The nutritional requirements of sheep and goats vary depending on their stage of production, age, and physiological status. For instance, pregnant and lactating ewes and does require more energy and protein to support fetal growth and milk production. In contrast, growing lambs and kids have higher energy and protein requirements for growth and development (Kenyon et al., 2014, Tăpăloagă et al., 2017, Tăpăloagă et al., 2018).

Sheep and goats should be fed a balanced diet that meets their nutritional needs. High-quality forage, such as legumes, should make up the bulk of their diet. Forage should be analyzed for nutrient content and supplemented with additional feed or concentrates if necessary. Overfeeding should be avoided, as it can lead to obesity and metabolic disorders. Restricting feed intake may also be necessary to prevent over nutrition and obesity in some animals.

Monitoring BCS is an effective way to assess the nutritional status of sheep and goats. BCS should be checked regularly, preferably monthly, to detect changes in body fat content. If BCS falls below the desired range, nutritional management should be adjusted accordingly to increase feed intake or provide additional supplements. Conversely, if BCS is too high, feed intake should be restricted, and exercise encouraged.

### *Reproduction*

In lamb production systems, the number and weight of weaned lambs have a substantial effect on profitability. The energy balance of a ewe is a significant determinant of the quantity and weight of weaning lambs. Thus, it is likely that ewes with a lower BCS will have a poorer reproductive performance than those with a higher BCS. From a reproductive standpoint, the endpoint for farmers is frequently the number of weaned lambs per ewe presented for breeding (Kenyon et al., 2014).

Additionally, there is sufficient data to suggest that BCS can affect a ewe's sensitivity to seasonal cues. Scottish Blackface ewes with a lower BCS began the breeding season later (Gunn & Doney, 1975), whereas Masham ewes

with a higher BCS were more likely to exhibit oestrus late in the breeding season (Newton et al., 1980). These studies suggest that sheep with greater BCS have longer breeding seasons.

However, the effects of BCS on the duration of the breeding season are minimal, and it is unclear that BCS modification could be used to dramatically alter the time of the breeding season (Kenyon et al., 2014).

On the other hand, the static and dynamic effects of nutrition on ovulation rate in sheep are well known, such that ewes with larger live weight and/or those offered higher levels of feed prior to breeding are more likely to be multiple-bearing (Smith, 1991; Scaramuzzi et al., 2006).

Although some studies have found no effect of BCS on embryo mortality, the majority of other studies indicate that embryo mortality does vary with BCS. For instance, Scottish Blackface ewes with a BCS of 1.5 had higher embryo mortality in the early stages of pregnancy than ewes with a BCS of 3.0, and yet this BCS had no effect after day 26 of pregnancy (Gunn et al., 1972).

Manchega (Molina et al., 1994), Barbarine (Atti et al., 2001), and Merino (Kleemann & Walker, 2005) breeds have been shown to have a positive relationship between BCS and pregnancy rate in trials conducted under commercial feeding settings.

Nonetheless, there was a positive association between the quantity of embryos per ewe and BCS in Beulah and Welsh Mountain ewes, but not in Cheviots (Gunn et al. 1998).

### *Market value*

Along with the reproductive benefits, several others can be named. For example, BCS can improve the quality of meat produced by sheep and goats, thus increasing their market value. Research studies have shown that animals with a higher BCS have better meat quality traits such as marbling, tenderness, and juiciness compared to those with lower BCS (Díaz-López et al., 2017).

This makes animals with a higher BCS more valuable to the consumer, resulting in higher prices for the producer (McGregor, 2017).

Another way BCS can help increase the market value of sheep and goats is by using it as a tool to manage feed and nutrition programs. By monitoring the BCS of the animals, producers can adjust the feed and nutrition program to maintain or improve the BCS of the

animals. This can help to prevent overfeeding or underfeeding, which can lead to health problems, reduced productivity, and lower market value (McGregor, 2017).

#### *Cost-efficiency and implementation*

One reason why BCS is cost-effective is that it can help farmers avoid overfeeding and underfeeding, which can both be costly in terms of feed expenses and potential health issues (McGregor, 2017).

Proper nutrition management through BCS can help reduce feed costs and improve profitability in sheep farming. Farmers who implement BCS are able to reduce feed costs by up to 5% and improve lambing percentages by up to 12%. Similarly, BCS assessments can help prevent metabolic disorders in sheep, such as pregnancy toxemia and ketosis, which can be costly to treat (Kenyon et al., 2014).

Another reason why BCS is cost-effective is that it can be easily implemented on sheep and goat farms, with minimal equipment or resources required. BCS assessments can be conducted using only a visual assessment and palpation of specific body areas, such as the ribs and tailhead. Studies found that with proper training, farmers can conduct BCS assessments themselves and make informed decisions about animal nutrition (Kenyon et al., 2014).

In addition to being cost-effective, BCS is also easy to implement because it does not require specialized equipment or expertise.

#### *Health issues early detection*

One reason why BCS is effective for early detection of health issues is that changes in body condition score can be an indicator of underlying health problems. According to Akter et al. (2020), changes in BCS can be used to detect health issues such as parasitism, mastitis, and respiratory disease in sheep. The study found that BCS assessments can help identify these health issues before clinical signs become apparent, allowing for early treatment and prevention of more serious complications.

Another reason why BCS is effective for early detection of health issues is that it can be used to monitor changes in nutritional status over time. In this direction, regular BCS assessments can help farmers identify nutritional deficiencies or excesses before they cause health issues. The study found that BCS can be particularly useful in identifying pregnancy toxemia, a metabolic disorder that

can occur in pregnant sheep with poor nutrition (Kenyon et al., 2014).

BCS can also be used to monitor the effectiveness of treatments and management practices. For example, if BCS scores are improved after deworming, this can indicate that the treatment was effective.

#### **BCS RETURN TO INVESTMENT IN SHEEP AND GOATS FARM OPERATIONS**

Performing body condition scoring (BCS) in sheep and goats can have a significant return on investment for producers. By identifying animals that are either under or over conditioned, producers can adjust their management practices that can ultimately lead to improved animal health and productivity (Kenyon et al., 2014).

One way in which BCS can lead to a return on investment is through more targeted feeding strategies. For example, animals that are identified as being under conditioned can be provided with additional feed or supplements to help bring them up to a healthy body condition score. On the other hand, over conditioned animals can have their feed intake reduced to prevent health issues such as metabolic disorders. By tailoring feeding strategies to individual animals, producers can optimize feed efficiency and reduce overall feed costs (Kenyon et al., 2014).

BCS can also lead to a reduction in veterinary costs. By identifying animals that are under conditioned early on, producers can take steps to prevent health issues such as poor immune function, which can lead to increased veterinary costs. Similarly, identifying over conditioned animals can help prevent metabolic disorders such as ketosis, which can also result in costly veterinary bills (Kenyon et al., 2014).

In addition to improved animal health, BCS can also lead to improved productivity. Animals that are in a healthy body condition score are more likely to have higher reproductive success rates, leading to more lambs or kids per breeding season. Similarly, animals that are in good condition are less likely to experience health issues that could influence productivity, such as mastitis or other infections (McGregor, 2017).

While there are costs associated with performing BCS, such as the time and labor required, the return on investment can be significant. By identifying animals that are either under or over conditioned, producers can adjust their management practices that can lead

to improved animal health and productivity, reduced veterinary costs, and optimized feed efficiency. Ultimately, the use of BCS in sheep and goat production can lead to a more profitable and sustainable operation (McGregor, 2017).

### CONCLUSIONS

Body condition scoring (BCS) is an essential tool for sheep and goat farmers. It allows for the early identification of animals that require attention and provides valuable information for management decisions. This review article has highlighted the importance of BCS in terms of its cost to benefit ratio, demonstrating that the benefits of implementing a BCS program outweigh the costs.

BCS can improve reproductive efficiency, reduce disease and mortality rates, and increase profitability. The implementation of a BCS program requires minimal resources and can be easily integrated into routine management practices. However, there is a need for education and training of producers to ensure accurate scoring and interpretation of results.

In conclusion, the incorporation of BCS into sheep and goat production systems is a cost-effective way to improve overall herd health and productivity.

### REFERENCES

- A. Cannas & F. Boe (2003) Prediction of the relationship between body weight and body condition score in sheep, *Italian Journal of Animal Science*, 2:sup1, 527-529, DOI: 10.4081/ijas.2003.11676065
- Akter, S., Rahman, M. M., Sayeed, M. A., Islam, M. N., Hossain, D., Hoque, M. A., & Koop, G. (2020). Prevalence, aetiology and risk factors of subclinical mastitis in goats in Bangladesh. *Small Ruminant Research*, 184, 106046.
- Díaz-López, Gustavo, Salazar-Cuytun, Rosario, García-Herrera, Ricardo, Piñeiro-Vázquez, Angel, Casanova-Lugo, Fernando, & Chay-Canul, Alfonso J.. (2017). Relationship between body weight and body condition score with energy content in the carcass of Pelibuey ewes. *Austral journal of veterinary sciences*, 49(2), 77-81. <https://dx.doi.org/10.4067/S0719-81322017000200077>
- McGregor, B. (2017). Relationships between live weight, body condition, dimensional and ultrasound scanning measurements and carcass attributes in adult Angora goats. *Small Ruminant Research*, 147, 8-17. <https://doi.org/10.1016/j.smallrumres.2016.11.014>
- PR Kenyon, SK Maloney & D Blache (2014) Review of sheep body condition score in relation to production characteristics, *New Zealand Journal of Agricultural Research*, 57:1, 38-64, DOI: 10.1080/00288233.2013.857698
- Tăpăloagă, D., Tăpăloagă, P.R. (2017). Study regarding animal organic farming in Romania - current status and trends, *Scientific Papers. Series D. Animal Science*, LX.
- Tăpăloagă, D., Tăpăloagă, P.R. (2018). From conventional to organic agriculture - romanian past and future perspectives. *Scientific Papers. Series D. Animal Science*, 61(1), 239-244.
- Vatankhah, M., Talebi, M., & Zamani, F. (2012). Relationship between ewe body condition score (BCS) at mating and reproductive and productive traits in Lori-Bakhtiari sheep. *Small Ruminant Research*, 106(2-3), 105-109. <https://doi.org/10.1016/j.smallrumres.2012.02.004>