

Managing Sheep Body Condition Score Throughout the Year



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Assigning sheep a body condition score (BCS) aids in estimating external fat stores which can be used to identify nutritional and health status. Reproductive efficiency is largely determined by an animal's nutrition. During periods of nutritional stress (winter, late gestation, early lactation) ewes need greater levels of condition for additional energy to support metabolic functions. Rams must also be monitored since low BCS can result in decreased reproductive success and longevity. However, both over- and under-condition can cause health and reproductive challenges.

In general, sheep should be kept in a BCS 2.5 to 3.0 for optimal performance. Monitoring and optimizing flock body condition throughout the year plays an integral role in productivity and thus profitability.

How to Body Condition Score

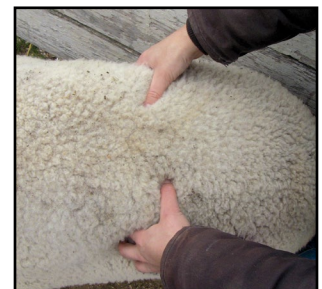
On other livestock, BCS can be assigned via visual appraisal, but wool cover makes this more challenging in sheep. Body condition scoring is performed by palpating the vertebrae and loin muscle between the last rib and hip bones (Figure 1). The score is indicative of the degree of fat cover over the longissimus muscle (loin) and spinous (top) and transverse (horizontal) processes of the vertebrae. This subjective evaluation is on a scale from 1 to 5, 1 being extremely emaciated and unthrifty and 5 being obese with fat deposits predominately in the brisket and tailhead. The first step

in determining BCS is to find the spine behind the last rib and in front of the hip bone. Next, follow the loin muscle down the sheep's side to locate the transverse process and assess fat deposition and muscle fullness. Feeling the transverse process is easier in thinner sheep. Loin muscle and fat cover will fill the palm of your hand and pressure required to feel the transverse process will increase with greater condition. A half score can be assigned if the handler feels that an animal's condition falls between two BCS's (e.g., 2.5). However, assigning an exact score is less important than giving a relative score and being consistent in assigning scores. Determining the difference between a 3 and 3.5 is less significant than recognizing the relative difference between a 2 and 3.5.

Figure 1. Steps to body condition score.



Step 1. Locate back bone between the last rib and hip bone.



Step 2. Locate tips of transverse process (below loin muscle) and feel for fat cover and muscle fullness.

Body condition scoring can be performed any time animals are being handled (e.g., in a chute, jug, etc.), but the sheep must be standing for accurate scoring. When assessing BCS, at least 10 to 20% of the flock (1 out of every 5 or 10) should be given a BCS to accurately assess the average flock status. Each individual animal can be assigned a BCS for increased accuracy. Whether using individual or flock average BCS, it is important to record BCS's (RFID or other record keeping systems) to ensure that nutritional management decisions are effective between BCS assessments. If there is a group of sheep in significantly lower BCS than the flock average (BCS 1 or 2), they should be recorded, separated and provided additional feed and health screenings. Conversely, if sheep are consistently over-conditioned (BCS 4.5 or 5), you can re-evaluate the diet to better meet flock nutritional requirements and be more cost effective. If sheep are shorn or have minimal wool regrowth (< 0.5 inches) visual indicators can help estimate BCS. Figure 2 provides an explanation of each BCS and shows visual indicators of respective BCS's. Manual palpation is still recommended for accuracy.

Your hand can be used as a reference for how the fat cover should feel along the backbone (Figure 3). With one hand flat and fingers together, rub your fingers over the top of your opposite fingertips. This is what a BCS 1 spine feels like when you run your hand down an animal's back. The spine will feel sharp, and each vertebra is very pronounced. The backbone of a BCS 2 feels like the top of your knuckles when your hand is closed in a fist. Each vertebra can still be felt, but there is more fat and muscle present. A BCS 3 will feel like the top of the knuckles when your hand is with a slight curve in your fingers. Again, vertebrae are felt, but fat and muscle begin to fill in on each side of the spine. A BCS 4 feels like the flat, back of your hand. The spine is not as prominent as the loin muscle and fat fills in. Finally, a BCS 5 feels like the meaty, bottom part of your palm. Sheep that have a BCS 5 have fat deposits peaking above the spine leaving a dip over the spine. As you rub your hand across the animal's spine, you will feel the muscles on each side with a valley in between; no vertebrae should be felt.

In general, sheep should remain in a body condition score 2.5 to 3.0 throughout the year, but different physiological stages require varying levels of nutrient requirements and body condition.

Key times to Monitor Body Condition Score

Production cycles and time of year vary across sheep operations, but the nutritional demands for sheep during those times remain the same. Increasing BCS is more challenging than reducing condition. Typically, it requires 10-12% body weight gain to increase one BCS. For example, a 150-pound ewe would require 15-18 pounds of gain to increase one BCS. However, this dependent on numerous factors including nutrition, frame size, and stage of production, and is a general rule of thumb versus an exact science. Therefore, management decisions need to be proactive by assessing BCS and adjusting management strategies before the next stage in the cycle to achieve target flock body condition and optimize performance. Condition not only indicates nutritional status of the animal but may also suggest health complications, such as gastrointestinal worms. Recommended BCS for mature ewes and rams during various stages of the production cycle (Table 1).

Table 1. Recommended body condition scores¹ (BCS) for mature ewes and rams at various stages of production.

Stage of production	Mature ewe with a single	Mature ewe with multiple lambs	Ram
Breeding	3.0 - 4.0	3.0 - 4.0	3.0
Mid-Gestation	2.5 - 4.0	3.0 - 4.0	2.0 - 2.5
Lambing	3.0 - 3.5	3.5 - 4.0	2.0 - 2.5
Weaning	2.0	2.0	2.0 - 2.5

¹Body condition scores range from 1-5:
 1-Thin, skeletal features prominent
 2-Thin, no fat cover but skeletal features not protruding
 3-Fat over fore rib, backbone, and tail head, visible hipbones
 4-Fat deposits in brisket and tailhead, hipbone not visible
 5-Excess fat detectable from brisket to tailhead

Breeding

Managing BCS of rams optimizes semen quality and ultimately breeding performance. Rams should go into the breeding season at a BCS 3. Both over- and underconditioned rams may fail to physically perform and have lower sperm quality (Kenyon et al., 2014). It takes 6 to 8 weeks for rams to produce viable semen, so increasing their plane of nutrition 6 to 8 weeks before turning them out with ewes is critical for breeding success. This would be the ideal time to BCS and conduct a breeding soundness exam. During other times of the year, rams should be maintained with a BCS between 2 and 2.5.

In ewes, BCS influences the onset of estrus, ovulation rates, and embryonic loss (Kenyon et al., 2014). Flushing two to three weeks before and throughout breeding is a common practice among sheep producers, but ewes with lower BCS (e.g., 2 or lower) show a stronger response to flushing than ewes with high BCS (e.g., 4 or higher). However, there is still a nutrition influence on ovulation and conception rates when increasing dietary energy regardless of BCS. An ovulation response to increased energy consumption will be seen in lighter weight ewes before weight gain is observed. Optimally, ewes should have a BCS of at least 3 prior to exposing rams.

Mid-Gestation

Mid-gestation is important for placental development and preparing ewes for the most nutrient demanding periods (late gestation and early lactation). During this time, body condition should increase from 3 to 3.5 or 4. Body condition score of ewes should be assessed 60 days prior to lambing. Increasing BCS during gestation can be challenging given the nutrient partitioning to fetal growth and the restricted ruminal capacity as lambs grow. Supplementing with a high-quality alfalfa throughout pregnancy and possibly supplementing with at 0.5-1.0 lb. of corn in late gestation and early lactation can help ensure ewes maintain condition while adequately caring for her lamb(s). If shearing occurs prior to lambing, this may be an ideal time to BCS ewes. At shearing, plan accordingly to have an extra person assigned to BCS and adjust facilities as needed to allow sheep to be scored and/or sorted.

Lambing

An ideal condition is dependent on the nutritional demands of the ewe (number of lambs), with a suggested target BCS of 3.0-3.5 for ewes carrying singles and 3.5-4.0 for ewes carrying twins or more (Thompson & Meyer, 1994). Similarly, for ewes carrying triplets, performance is greater when BCS is greater than 3 (Everett-Hincks et al., 2013; Kenyon et al., 2014). In general, optimally conditioned ewes in late gestation (and at lambing), give birth to larger lambs (Everett-Hincks and Dodds, 2008; Oldham et al., 2011) that are more likely to survive the first 48 hours of life. Extremes of too fat or too thin can cause birthing problems (Jacobson et al., 2020), which negatively affect lamb survival. Thus, it is critical that ewes during late gestation have a BCS of at least 3.0 to 3.5 going into lambing to positively impact lamb survival.

Weaning

After lambing, ewes will be faced with the greatest nutrient demand of the production cycle – lactation. During lactation, energy will be the most limiting nutrient making it hard for ewes to maintain condition. Therefore, a goal of this period is not going to be maintaining condition, but moderating condition loss. It is suggested that ewes should not dip below a condition score of 2 by the time of weaning (Thompson & Meyer, 1994). Preferentially, conditioning should be greater to increase production efficiency. At weaning, triplet raising ewes with a BCS greater than 3 wean more total lambs than ewes with a BCS of less than 3 (Mathias-Davis et al., 2011). Greater ewe BCS has indicated increased growth and weaning weights of their lambs (Kenyon et al., 2014). However, this should be taken with a grain of salt, regardless of BCS it is important to maintain intake of high-quality, energy dense feeds during this time. Without proper ewe feeding, increased growth and weaning weights of lambs as a result of BCS may be negligible (Kenyon et al., 2014). After weaning, keep feed resources in mind as BCS will need to increase going into the next breeding season. Supplementation on pasture may be required for ewes to regain lost condition, especially during years of drought and low forage production.

Conclusion

Managing body condition can optimize productivity of the flock and ultimately increase economic return. Body condition scoring can help assess the nutrition and health status of a flock throughout the year which can positively influence pregnancy rates and lamb survival through weaning. Whenever working ewes, assess BCS and make proactive management decisions based on upcoming production seasons. Although physical palpation is preferred, visual evaluation of body condition be made beyond the key times discussed. Finding the balance between management and economic value is unique for every operation, but BCS is an advantageous tool for evaluating nutritional and health status of the flock. Having BCS records allows for better-informed management decisions.

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Figure 2. Description and visual indicators of body condition scores 1 through 5.

BCS 1 (Emaciated):

Spine and hip bones protrude. No fat cover and loin eye muscle does not feel full. It is easy to press fingers under transverse process.



BCS 2 (Thin):

Spine and hip bones do not protrude. No fat cover is evident. Loin muscle feels full. Fingers can be pressed under transverse process.



BCS 3 (Average):

Round and smooth over spine and hips. Some fat cover is evident. Loin muscle feels full. Hard pressure to feel the transverse process.



BCS 4 (Fat):

Skeletal features felt with pressure. Fat cover is present from brisket to tailhead. Loin muscle has firm fat cover. Transverse process is not felt.



BCS 5 (Obese):

Spine cannot be felt. Excessive fat deposits in brisket, loin, and tailhead. Loin muscle has firm, thick fat cover. Transverse process is not felt.



Figure 3. Estimating Body Condition Score using your hand as a reference.



BCS 1 feels like the top of your fingertips. The spine will feel sharp, and each vertebra is very pronounced.



BCS 2 feels like the top of your knuckles when your hand is closed in a fist. Each vertebra can still be felt, but there is more fat and muscle present.



BCS 3 feels like the top of the knuckles when your hand is with a slight curve in your fingers. vertebrae are felt, but fat and muscle begin to fill in on each side of the spine.



BCS 4 feels like the flat, back of your hand. The spine is not as prominent as the loin muscle and fat fills in.



BCS 5 feels like the meaty, bottom part of your palm. Sheep that have a BCS 5 have fat deposits peaking above the spine leaving a dip over the spine.