

BRIEF COMMUNICATION: Evaluation of farmer and technician ability to identify low BCS sheep by visual assessment and palpation

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Abstract

This study compared the accuracy of farmers and technicians at identifying ewes of inadequate body condition score (BCS; <3) using a visual method as ewes moved down a drafting race compared to physical palpation of the lumbar spine. At each of 0, 3- and 6-months wool growth, eight participants assessed a mob of 100 ewes of known BCS to identify those of inadequate BCS. At 0-months wool growth participants were highly accurate with both methods at determining that ewes who were BCS ≤ 2.0 . At 3- and 6-months wool growth they were less accurate using either method, there were no differences between the two methods.

Keywords: Body condition score, sheep, ewe, assessment, production

Introduction

The body condition score (BCS) of ewes impacts on a range of production parameters. In New Zealand it is recommended that ewes are a minimum BCS of 3.0-3.5 out of 5 at key times of year to allow for optimal production (Kenyon et al 2014). Therefore, sheep farmers are advised to conduct BCS on all ewes once to twice a year at least and separate out those ewes in sub-optimal BCS (BCS <3.0), so they can be managed separately to gain BCS (Flay et al. 2022). This essentially requires farmers to decide whether each ewe in the flock is of adequate, or inadequate, BCS. The recommended sheep BCS scoring system involves palpation of the lumbar spine (Jefferies 1961). Anecdotally it is likely that many farmers instead identify ewes of inadequate BCS using a visual method as they move down a drafting race, especially when ewes are not in full wool. Visual assessment is largely discouraged by veterinarians, researchers and rural professionals but its accuracy has not been evaluated.

The aim of this study was to compare the accuracy of farmers and technicians at identifying ewes of inadequate BCS by visual assessment compared to physical palpation, for ewes with 0-, 3- and 6-months wool.

Materials and methods

Ewes were sourced from a single flock of approximately 1200 mixed age Romney ewes and were individually identified with electronic tags. At 0-, 3- and 6-months wool growth BCS assessment of the ewes was undertaken by an experienced technician and a temporary study mob of 100 ewes was created. Distribution of BCS profiles within the study mob were similar to what would be expected within a commercial flock (Ridler et al. 2022) but with a slightly higher percentage of ewes in BCS <2.5 (18-21%). The BCS of each ewe was recorded to 0.5 of a score and ewes who were BCS 2.5 received an additional score to indicate whether they were closer to BCS 2.0 (BCS 2.5 (low)) or closer to BCS 3.0 (BCS 2.5 (high)). Ewes were either not

pregnant, or were in the first trimester of pregnancy, at each of the assessment times.

At each assessment time each of eight participants assessed the study mob of ewes. A total of 10 human participants were included in the study: seven sheep farmers and three technicians. Participants had a range of experience with sheep farming, sheep husbandry, and undertaking BCS. They were not given any BCS training for the study and were instructed to approach the BCS assessment as they would normally do on the farm or as part of their technician role. Five participants were involved at all three assessment times, four were involved at two and one was involved once. Participants assessed ewes both visually and by physical palpation at each time point to determine whether they were of adequate (BCS ≥ 3) or inadequate (BCS <3) condition. For visual assessment the ewes moved along a standard commercial sheep farm drafting race and were drafted out by the participant if deemed to be of inadequate BCS. The mob of ewes was then recombined and put into a standard commercial sheep pen where participants assessed whether they were of adequate or inadequate BCS via palpation of the lumbar spine. An EID reader was used to record which ewes were deemed to be of adequate or inadequate BCS using each method for each participant, and data was downloaded into MS Excel files for analysis.

Data were analysed by retrospectively categorising the 100 ewes at each assessment period into four categories (BCS ≤ 2.0 , 2.5 (low), 2.5 (high) or ≥ 3.0) based on the formal technician-determined BCS. Analysis was then done to compare the percentage of ewes in each of these categories that participants determined were of inadequate BCS (<3.0) or adequate BCS (≥ 3.0) by either the visual assessment or physical palpation method, at each of the three wool lengths. Animal use was approved by the Massey University Animal Ethics Committee, protocol number 23/06. Inclusion of human participants was deemed low risk by the Massey University Human Ethics Committee.

Results and discussion

At 0-months wool growth participants were consistently highly accurate at identifying that ewes who were BCS ≤ 2 were of inadequate BCS, and that ewes who were BCS ≥ 3 were of adequate BCS using either the visual assessment or the physical palpation method (Figure 1). However, results were more varied for ewes that were BCS 2.5 (low) or BCS 2.5 (high) (Figure 1).

At both 3- and 6-months wool growth there were no differences ($p > 0.05$) in the percentage of ewes that were

BCS ≤ 2 , 2.5 (low) or 2.5 (high) that participants assessed as being of inadequate BCS between the visual assessment method or the physical palpation method (Figure 1).

For both the visual assessment and the physical palpation methods, at 6-months wool growth participants identified significantly fewer BCS 2.5 (low) ewes as being of inadequate BCS, compared with ewes with 0- or 3-months wool growth ($p < 0.05$; Figure 1).

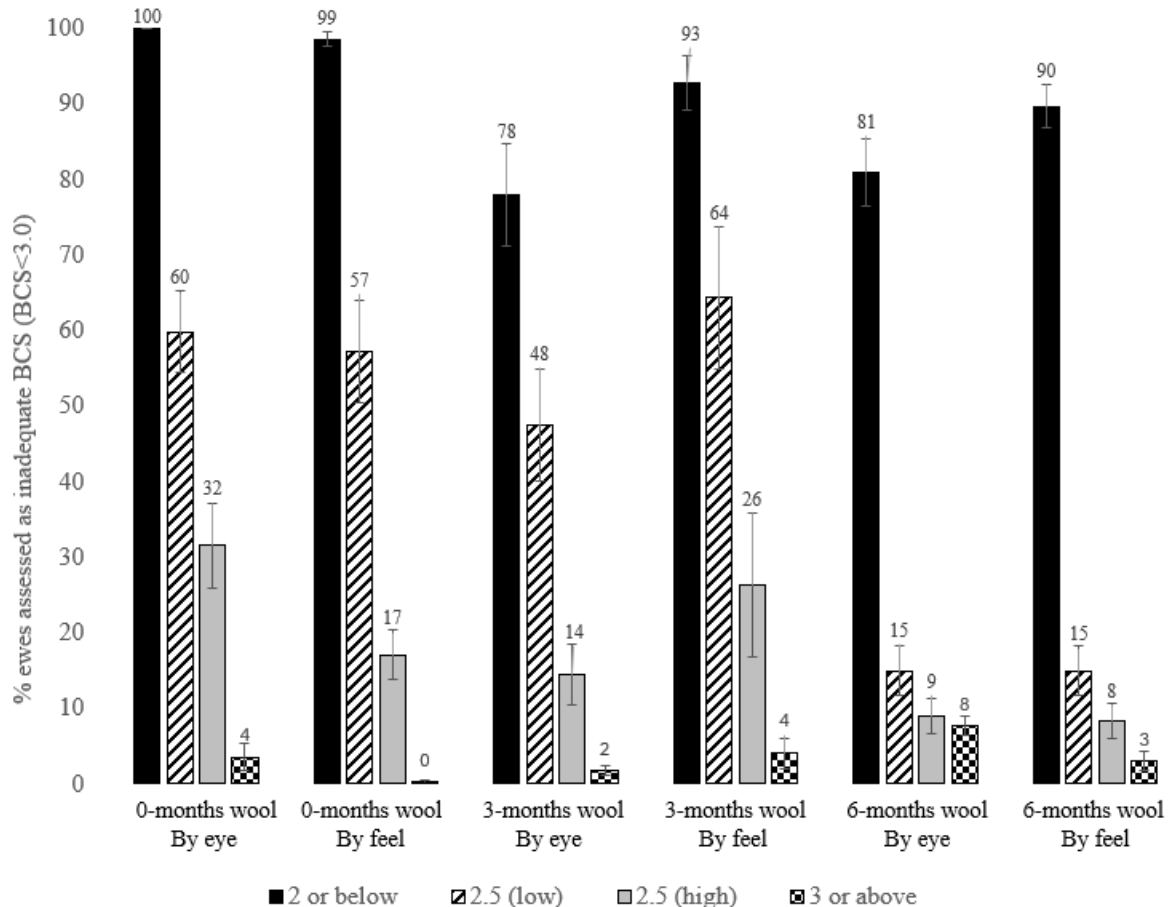


Figure 1: Mean ($\pm$ 95% CI) percentage of ewes in each of four BCS categories (BCS ≤ 2.0 , BCS 2.5 (low), BCS 2.5 (high) or BCS ≥ 3.0) that eight technician participants identified as being of inadequate BCS (BCS < 3.0). Ewes were assessed at 0- 3- and 6-months wool growth by visual assessment as they moved down a drafting race (eye), or by physical palpation of the lumbar spine (feel).

Body condition scoring ewes is a simple and important management tool that can be used to optimise the performance of a flock (Kenyon et al. 2014). To get the best value from it all ewes in the flock should be assessed and those in poor BCS should be separated out and preferentially treated (or culled). A 2012 survey of 962 New Zealand sheep farmers identified that only 43% had used condition scoring as a management tool at least once in the previous three years (Corner-Thomas et al. 2015), and it was unknown what BCS methods they used or whether they assessed BCS of the whole flock or just a sample of ewes. This low uptake indicates a reluctance by farmers to use BCS and it is possible that the time taken and the physicality of doing it

via the palpation method are off-putting for farmers. It is probable that some farmers prefer to use a visual assessment as ewes move along a drafting race because it is faster and easier than the palpation method. This study demonstrates that when ewes had no fleece (i.e., with 0-months wool growth) the visual method was very accurate in identifying that ewes in BCS ≤ 2 were of inadequate BCS, and moderately accurate in identifying that those at BCS 2.5 were of inadequate BCS. This result was consistent for participants regardless of their level of experience with sheep and BCS. Therefore, farmers can use the visual method to identify ewes of inadequate BCS when they have recently been shorn.

When the sheep had 3- or 6-months wool growth participants were less accurate in their identification of inadequate ewe BCS, regardless of whether the visual assessment or physical palpation method was used. Due to the relatively small number of participants at each assessment time it was not possible to evaluate whether this was due to differences in participant experience. Studies have reported variation in the repeatability of BCS assessments both within and between assessors. Repeatability has been found to improve with increasing experience. Consistency improved with a short period of recalibration (Kenyon et al. 2014). Therefore, BCS training and regular recalibration are likely important for farmers assessing ewes with wool cover regardless of which method they use.

The finding that fewer BCS 2.5 (low) ewes were identified as being of inadequate BCS when they had 6-months wool growth indicates that with increased wool length farmers and technicians may overestimate BCS. Therefore, when sheep have longer wool it is recommended that the palpation method is used, and more time and care is taken to ensure accurate results.

The results from this study also indicate that some participants did not consider ewes that were BCS 2.5 were of inadequate BCS, when in fact at that level of BCS they are below optimal (Kenyon et al. 2014). Body condition score is a relatively subjective assessment and there is likely to be variation between individuals in what they consider to be an inadequate BCS for ewes.

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