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# Seasonal variation of ewe body condition in extensive production systems of northeastern Portugal

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**Abstract.** During four years, 2 flocks of autochthonous Churra Galega Bragançana (CB) and Churra da Terra Quente (CTQ) breeds with  $87 \pm 29$  and  $93 \pm 13$  ewes were studied. These flocks are managed in the traditional extensive systems followed in the Northeast of Portugal. The body condition score (BCS) was recorded monthly using the method proposed by Russel *et al.* (1969). The results for both flocks show that BCS in 9 to 12 months are below note 3 in more than 73% of the ewes. The better BCS was observed at the spring (55 and 43% of ewes with BCS of 3 or 4 for CB and CTQ, respectively). The results show that the traditional production system allows significant seasonal body condition variation and low body condition of ewes during a great part of the year.

**Keywords.** Extensive system – Body condition score – Suckling ewes – Portugal.

## **Variation saisonnière de l'état corporel des brebis dans les systèmes de production extensive du nord-est du Portugal**

**Résumé.** Pendant quatre ans, deux troupeaux des races locales Churra Galega Bragançana (CB) et Churra da Terra Quente (CTQ) avec  $87 \pm 29$  et  $93 \pm 13$  brebis ont été étudiés. Ces troupeaux ont été élevés à travers des systèmes traditionnels dans le nord-est du Portugal. L'état corporel (EC) a été mensuellement évalué selon la méthode de Russel *et al.* (1969). Les résultats pour les deux troupeaux montrent que l'EC de 9 à 12 mois sont au-dessous de la note 3 pour plus de 73% des brebis. On a observé que l'EC a été plus élevé à la fin du printemps (55 et 43% des brebis ayant un EC de 3 ou 4 pour les races CB et CTQ, respectivement). Les résultats prouvent que le système de production traditionnel impose une variation saisonnière importante des réserves corporelles des brebis et que l'EC est très bas chez un pourcentage très élevé de brebis pendant l'année.

**Mots-clés.** Système extensif – État corporel – Brebis allaitante – Portugal.

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## **I – Introduction**

In Northeast of Portugal the traditional sheep production systems, for the most part, are extensive. Such systems are characterised by exploitation of natural resources, what imply a seasonal shortage of food resources and often the basic requirements of ewes are not properly met. Depending on the severity and length of the shortage, the ewes might use their reserves what allows significant body tissue variation with consequent losses in live weight and body condition (Teixeira *et al.*, 1989). The body condition score (BCS) is the most common way to monitor this body tissue variation. The objective of this study was to examine seasonal changes in BCS in autochthonous ewes subjected to traditional extensive production systems.

## **II – Material and methods**

During four years 2 flocks of autochthonous Churra Galega Bragançana (CB) and Churra da Terra Quente (CTQ) breeds with  $87 \pm 29$  and  $93 \pm 13$  ewes were studied. The live weight was  $44.5 \pm 7.6$  and  $42.8 \pm 7.5$  kg for CB and CTQ, respectively. These flocks follow the traditional extensive system for lamb production in Northeast of Portugal. Ewes raised in this system meet

their nutritional needs mainly through the consumption of the available natural vegetation in marginal lands grazing herbage and shrubs. The lambing season occurred mainly between September and December. Ewes nursed their lambs during 2 to 3 months. The BCS was monthly recorded using the approach described by Russel *et al.* (1969). All data were analyzed using a factorial Anova with breed and season as factors.

### III – Results and discussion

The percentage of ewes in the different BCS throughout the year for both flocks was studied. For CB and CTQ flocks, independently of the ewe physiological status, more than 73% of the ewes show a BCS below the note 3 in 9 of the 12 months which is the note indicated as the optimum for sheep management (Donney *et al.*, 1982). These findings illustrate that in the systems where CB and CTQ breeds are managed animals experienced continuous severe changes of body reserves which may implies in reproduction performances as observed by Forcada and Abecia (2006). The Fig. 1 shows the BCS oscillations and the percentage of ewes with different BCS along the seasons for CB and CTQ flocks. For both flocks a high BCS was found in spring (30 and 34 % of the CB and CTQ ewes with BCS of 3 or 4) and low BCS in summer (76 and 85% of ewes with BCS of 1 or 2 for CB and CTQ, respectively) and winter (86 to 90% of ewes with BCS of 1 or 2 for CB and CTQ, respectively). The Anova showed that BSC for CB was higher ( $P < 0.01$ ) than for CTQ and that BCS was higher ( $P < 0.05$ ) during spring and lower ( $P < 0.05$ ) during winter. Interaction was also significant ( $P < 0.01$ ) as showed on Fig. 1. This oscillation of BCS reflects essentially the seasonal vegetation availability on these rangeland based systems.

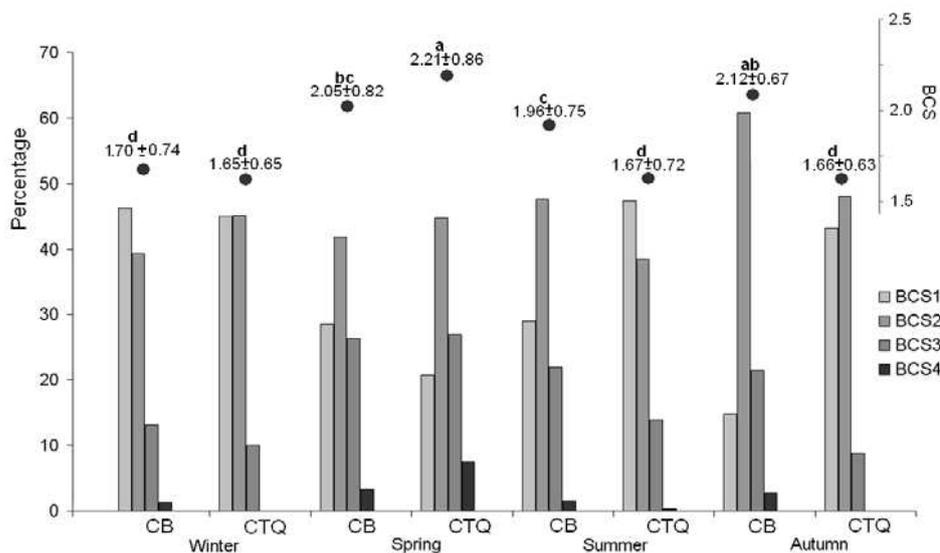


Fig. 1. Percentage of ewes with different BCS and note of BCS for CB and CTQ flocks during the seasons. For BCS mean ( $\pm$ standard deviation) values with different letters are different ( $P < 0.05$ ).

## IV – Conclusions

The results obtained show that the CB and CTQ ewes managed in extensive traditional systems are in low BCS (note 1 or 2) during most of the year. In the spring, body reserves of the ewes increase, but more than 60% of ewes are still in low BCS.

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