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The dynamics of seasonal body conditions of Zebu Gobra cows, related to pastoral practices in Northern Senegal

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Take home message In the Sahel, the body condition of the Zebu Gobra is mainly influenced by the seasons, but is also modulated by a set of other management, grazing or feeding practices adopted by the livestock keepers.

Introduction Rearing cattle in Senegal mainly relies on extensively managed natural pasturelands which impose seasonal feed shortages caused by fluctuating biomass availability and quality. *Pular* livestock keepers are specialised in livestock husbandry, whose practices are adapted to seasonal availability of natural forages. The *Pular* calendar comprises 5 seasons: *Ndugu* (July to September), *Kawlé* (October-November), *Dabundé* (December-February), *Ceedu* (March-May), *Ceetel* (May-June), which respectively correspond to: green abundant herbaceous forages, dry abundant herbaceous, dry herbaceous, dry scarce herbaceous, very scarce herbaceous and ligneous forages. In the local traditional transhumant (TRA) system, cows lose a lot of weight during the harshest periods. The first objective of this work was to get new insights into the progression of the body condition of cows over several consecutive seasons. The second objective was to evaluate the effects of incorporating alternative management and feeding practices on their liveweight (LW) and body condition score (BCS).

Material & methods Regular monitoring of Zebu Gobra cows ($n = \text{approx. } 10$ cows per system) was carried out in two contrasted systems (*i.e.*, TRA and intensified; INT) – each implying different management and feeding practices. The TRA is based on extensive grazing of natural grasses and ligneous forages, controlled access to drinking water and negligible feed supplementation (< 1 kg of cotton oilcake during the worst BCS periods of the cows). In contrast, the INT herders rent fields after harvests and buy some bran and cereals (rice and wheat) during *Ceedu* and *Ceetel*. A field visit every 2 months was carried out during 15 months (*i.e.*, from mid-July 2016 to late-October 2017). Measurements of individual LW and BCS were undertaken after hand milking early morning in cows equally distributed in 2 exploitations per system. The LW was estimated from replicated thoracic perimeter measures each visit (Dodo *et al.*, 2001). The BCS was estimated by visual assessment adapted from the scale proposed by Edmonson *et al.* (1989). R software was used for data processing.

Results & discussion. High intra-system variability between the cows monitored was observed for both parameters regardless of the herd or the system (Figure 1). Therefore, no statistical differences were detected throughout the whole experiment or within periods. The exception was a higher BCS of TRA cows ($P < 0.005$) in October (*Kawlé*). However, as expected an overall tendency of decreasing cows' LW and BCS was observed during *Ceedu* and *Ceetel*, with an odd situation in August 2017 due to an interruption of early rains in June, leading to a break in the normal vegetation cycle and consequently a lack of forages (Figure 1). Globally, and contrarily to our initial hypothesis, a visual superiority of LW was observed in TRA cows. We speculate that rather than the feeding system *per se*, this was likely due to other factors such as particularities linked to the handling or management of the livestock. However, it must be taken into account that the dry seasons of 2016 and 2017 were not representative of harsh drought, thus we could speculate that in a more severe scenario, different results could be found.

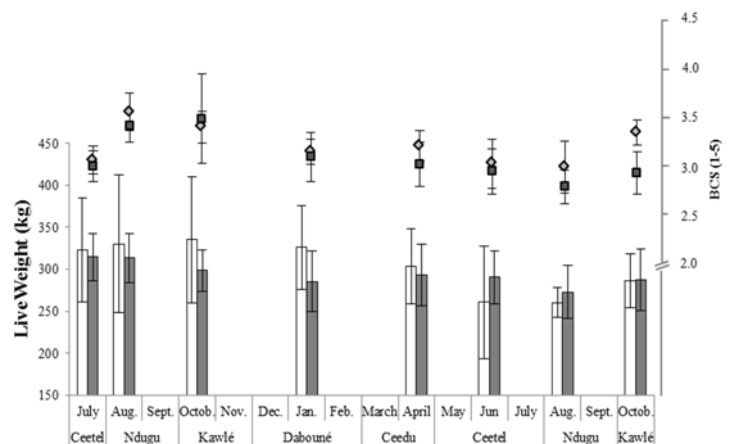


Figure 1 Seasonal dynamics of LW (bars) and BCS (dots) as affected by practices (TRA: white bars and diamond dots; INT: grey bars and square dots).

Conclusion The body condition of cows extensively reared under the conditions of the Northern Senegal is affected by typical factors such as seasons, and transitions through physiological status and their inherent energy balances. In addition, our results also suggest that livestock keeper skills and management of basal natural pastures and additional feed resources are key factors affecting the condition of the animals (verified by high variability between individuals).

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