

Cattle production from native pastures in the semi-humid grasslands of Uganda

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Keywords: Ankole cattle, body condition score, herbage yield, *in situ* digestibility, predictive model

Introduction The cattle population of Uganda, estimated at 6 million, consists of more than 95% indigenous stock, raised on the semi-arid and semi-humid grasslands that make up 48% of the total land area and which supply over 85% of the marketed milk and meat. Native grassland pastures, which vary seasonal in quantity and quality due to rainfall and temperature variations, are the sole feed resource for cattle (Mbuza *et al.*, 1992). This study examined the effects of seasonal herbage mass (HM), dietary crude protein (CP_d), detergent lignin (ADL_d) and digestibility (DiG) on body condition scores of milking cows grazed only on natural grassland pastures.

Materials and methods Ten milking cows of the Ankole breed, of similar body size early in their second or third lactation were selected into a cohort to record daily milk yield and body condition scores at two week intervals over a twelve-month period. Body condition scores were determined on the nine point scale (Nicholson & Butterworth, 1986). Herbage mass was estimated from two transects on protected paddocks using 1 m² quadrats placed randomly on 10 m sampling segments. Grazing cows were carefully observed to record plant and dietary preference every 10 minutes during peak grazing. Herbage eaten was plucked to obtain representative dietary samples, which were analysed for crude protein and acid detergent lignin. Some of the samples were used for *in situ* dry matter disappearance in two fistulated steers of the same breed. Results were analysed by multiple regression, with body condition score as dependent variable, using the STATISTICA programme.

Results and discussion Seasonal variations in herbage, milk yield and body condition of cows are shown in Figure 1. Cows gained condition as milk yield also increased with each herbage growth wave and lost condition

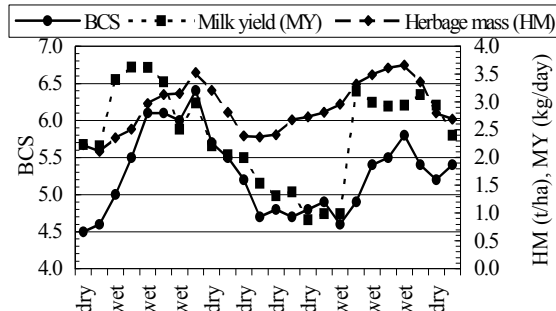


Figure 1 Seasonal HM, BCS and MY

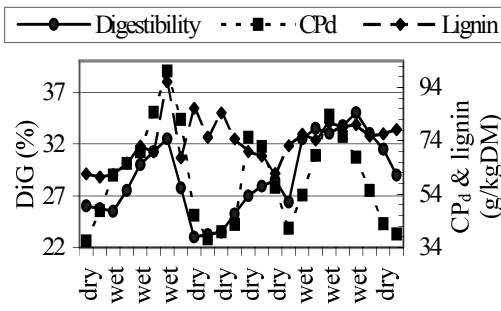


Figure 2 CP_d lignin and digestibility

with declining milk yield as herbage mass waned. Figure 2 shows that dietary crude protein was below the critical 60-80 g/kg DM required for optimal ruminal digestion and feed intake (Minson, 1981), except at the peaks herbage growth. Lignin was less affected by season. Digestibility increased with crude protein, but was little affected by lignin. Ankole cows selected higher quality diets to maintained body condition in spite of the seasonal variation in herbage quantity and quality. Regression analysis showed that HM was the most reliable predictor ($p = 0.00087$) of BCS according to the model: $BCS = 3.12 + 0.75HM$, which explained 40% of the variation ($R^2 = 0.4$). High herbage mass allows maximum dietary selection and digestibility, enabling cattle to easily meet the daily feed intake requirement.

Conclusions Body condition of Ankole cattle remained fairly stable across seasons due to increased selection of better quality from seasonally varying herbage, leading to higher digestibility. Body condition scores were most reliably predictable from herbage mass.

References

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