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Changes in Forage Biomass and Cattle Live Weight under Three Different Cattle Stocking Densities in Subtropical Mountain Wooded Pastures in Tarija, Bolivia

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Abstract

In the subtropical mountain forests in south-eastern Bolivia, cattle are of economical importance for local people. The production system is based on a high annual utilisation of the grasslands and forests close to the villages in the Salinas valley at high stocking densities during the rainy season. In this study forage yield and utilisation and changes in animal live weight were assessed in 2006 and 2007 under three stocking densities (0.8, 1.3, 2.2 animal units ha⁻¹ (AU=300 kg live weight) using paddocks of 3 ha each (about 25 % of grassland, 75 % forest). Biomass yield was measured before and after the grazing period (85 days, March-May) and cattle live weight was measured weekly. By source of forage, the herbaceous plants from the grassland accounted for 72.3 %, herbaceous plants from the forests to 15.1 % and the woody plants to 12.5 % of total forage production. As expected, the difference between forage biomass (grassland, herbaceous and woody vegetation) measured before and after grazing was generally largest ($p < 0.05$) with high stocking density. In this group, even the grassland biomass initially available in the second year was lower as a carry-over effect, but not in the other groups. During the first 3 weeks of the grazing period in 2006 and 2007, live weight increased in all groups, but especially ($p < 0.05$) at low compared to high stocking density. Until the end of the experiment live weight gains decreased or live weight was even lost approaching the end, being more severe in 2007 than 2006. The live weight loss was lowest at low stocking density during the last 3 weeks (+3.5 kg head in 2006, -8 kg head in 2007), and more critical in the other stocking densities suggesting feed scarcity and quality. The low performance in terms of live weight gain can be attributed to the generally low quality of forage in the grassland at the end of the rainy season even though at low stocking density forage was found to be available in sufficient amounts. The general trend of a lower forage yield in 2007 may also have resulted from less favourable climatic conditions compared to 2006.

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