



Performance of *Nellore* beef steers in intensively managed pastures and silvopastoral systems in Southeast of Brazil

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The adoption of intensive management allows achieving high productivity with financial and environmental advantages. This study evaluated the effects of intensification and integration in animal production systems on the average daily weight gain (ADG) of beef cattle. The experiment was carried out from September 2019 to September 2020 at Embrapa Southeast Livestock, São Carlos, SP. The systems included 30 *Nellore* steers with approximately 375 ± 30 kg and aged between 22 ± 23 months, randomly distributed into five treatments, with two replicates, were: 1) intensively managed and irrigated *Megathyrus maximus* cv. Tanzânia pasture with a high stocking rate, overseeded in the "dry" season with *Avena byzantina* and *Lolium multiflorum* (IHS); 2) intensively managed rainfed *M. maximus* cv. Tanzânia pasture with a high stocking rate (RHS); 3) intensively managed rainfed pasture with a mix of *Urochloa decumbens* cv. Basilisk and *Urochloa brizantha* cv. Marandu pasture with a moderate stocking rate (RMS); 4) intensively managed silvopastoral system with *U. decumbens* cv. Basilisk pasture and Brazilian native trees, with a moderate stocking rate (LFS); and 5) extensively managed degraded pasture with a mix of *U. brizantha* cv. Marandu and *U. decumbens* cv. Basilisk with a low stocking rate (DP). All pastures were grazed and submitted to stocking rate adjustments using the "put and take" technique. Grazing was continuous in DP and rotational in IHS, RHS, RMS, and LFS with grazing cycles of 36 days. All pastures, except DP, received liming and corrective fertilization with P, K, S, and micronutrients. Pastures in IHS and RHS were fertilized, respectively, with 600 and 400 kg N ha⁻¹ year⁻¹. Pastures in RMS and LFS received 200 kg N ha⁻¹ year⁻¹. Animals were weighed at the beginning of the experimental period, after 16 hours of fasting, and additionally, at regular intervals of approximately 28 days during the experiment. The ADG (kg d⁻¹) was calculated according to the total number of days of the experimental period and four seasons of the year. Data were submitted to analysis of variance and comparison of means by the Fisher test at 5%, using the PROC MIXED of SAS. The annual ADG was higher in the IHS system (0.78), intermediary in RMS and RHS (0.67 and 0.62, respectively) and the lower in LFS and DP (0.27 and 0.26, respectively). In spring, higher ADG was observed in RHS, IHS and RMS systems (0.78, 0.75 and 0.67, respectively); in RHS and IHS (0.94 and 0.79, respectively), in summer; in RMS and IHS (with 0.70 and 0.66, respectively) in autumn; and in IHS (0.94) in winter. Lower ADG was observed in DP and LFS (0.53 and 0.45, respectively) in spring; in DP and LFS (0.57, each) in summer; in LFS and DP (-0.01 and -0.06, respectively) in autumn; and in LFS and DP (with 0.09 and 0.00, respectively) in winter. It was concluded that, the more intensified systems allowed better animal performance in relation to the DP system. The competition for natural resources in more complex systems, such as LFS, increases during the dry period and negatively influences the predicted benefits of the system.

Keywords: animal performance, grazing systems, sustainability.