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Performance of cattle in monocrop and silvopastoral system in the Southern Agreste of Pernambuco

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Pasture degradation has harmed pasture animal production in Brazil. Agroforestry systems stand out as a promising strategy for recovering degraded areas, due to the greater potential for carbon sequestration and incorporation of nutrients (N) into the soil with the use of legumes. The objective was to evaluate the performance of cattle in different cropping systems in the Southern Agreste of Pernambuco. The experiment was conducted at the experimental farm of the Federal Rural University of Pernambuco (UFRPE), at Garanhuns-PE, in the dry (February and March/2021) and rainy (June and July/2021) periods. The treatments (cropping systems) were distributed in a randomized block design and consisted of: (i) signalgrass under monocrop and (ii) signalgrass + *M. caesalpiniifolia* in silvopastoral system (SPS), with three replications. The experimental animals were Holstein x Zebu crossbreed calves with average body weight (186 ± 26 kg), managed in continuous stocking with variable stocking rate. During the experimental period, the animals were subjected to a forage supply close to 3 kg DM green kg BW^{-1}. The response variables were stocking rate (SR), average daily gain (ADG) and gain per area (GA). Animal performance was evaluated using ADG, estimated by the difference in weight at the beginning and end of each evaluation cycle (28 days); the stocking rate (SR) was calculated based on the metabolic weight (body $weight^{0.75}$) of the test animals and using the "put-and-take" methodology. The SR adjustment was carried out every 28 days, depending on the relationship between forage mass and animal body weight (SOLLENBERGER et al., 2005). The GA was estimated by multiplying the GMD by the stocking rate and the 28-day interval. There was only effect of period of the year ($P<0.05$) and greater gains in average daily weight (ADG) were observed (0.63 vs. 0.10 ± 0.07 kg $animal^{-1}$ d^{-1}), gain per area (GA) (24.46 vs. 3.75 ± 3.14 kg ha^{-1} 28 d^{-1}) and SR (1.36 vs. 1.25 ± 0.05 AU ha^{-1}) in the rainy and dry periods, respectively. The lack of effect of the cultivation system on animal performance may be due to the consumption of *Mimosa caesalpiniifolia* being very low, which does not interfere much with the quality of the animal's diet. The best results in animal performance in the rainy season are probably associated with better pasture characteristics in the period of greater water availability, such as a higher leaf: stem ratio, a greater proportion of leaves and a greater mass of dry green forage. Furthermore, the highest average SR value in the rainy season corresponded to 51% higher than the national average of 0.9 AU ha^{-1} in Brazil (ABIEC, 2022). According to Dubeux Jr. et al. (1997), it is common for grazing animals to lose weight when they are not subjected to some type of supplementation during the dry season. Animal performance varied seasonally throughout the rainy and dry period of the year.
Keywords: Animal production, legume, signal grass, SPS, stocking rate.

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