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Performance of Pastures Enriched with Secondary Vegetation or Forage Legumes as Alternatives to Traditionally Managed Grass Pastures in Northeastern Pará, Brazil

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Abstract

The integration of cattle pastures into the traditional slash-and-burn cycle in the humid tropics, where secondary vegetation ('capoeira') plays an important role to recuperate the soil and maintain biodiversity, might be an option to avoid pasture degradation. Two alternatives were tested against a traditional *Brachiaria humidicola* pasture (PT), namely a *B. humidicola* pasture allowing a controlled regrowth of capoeira (PC) and another one enriched with the legumes *Cratylia argentea*, *Chamaecrista rotundifolia* var. *grandiflora* and *Arachis pintoii* (PL). Nine experimental plots of 0.34 ha each were established on a smallholder crop field in the municipality of Igarapé-Açu (47°30'W / 1°2'S). Forage availability was measured at the beginning of a grazing period and the botanical composition of the diet of the grazing steers was estimated by microhistological analysis of faeces at the end. During the first experimental phase (22/3/2000 – 1/3/2001) the forage availability did not differ between the treatments grazed at a stocking rate of 667 kg ha⁻¹, but there were significant differences in the diet. On PT the highest proportion of forage grass and on PC the highest proportion of *Capoeira* species was found in the diet. The daily weight gains reached 614, 552 and 647 g on PC, PL and PT, respectively but did not differ significantly. During the second phase (7/6/2001 – 8/3/2002) the stocking rate averaged 553 kg ha⁻¹. The forage availability was highest on PT but on all plots much lower than in the first period due to a spittlebug attack and lower rainfall. The daily weight gains of 52, -62 and 276 g on PC, PL and PT, respectively, were significantly lower than in the first period and significantly higher on PT than on PC and PL. The low performance on PL and PC in the second phase was apparently caused by the stocking rate exceeding the available forage. In consequence, on PL seedlings of the little palatable *C. rotundifolia* dominated the plots and the percentage of legumes in the diet dropped from 16 to 13%. Thus, the alternative pastures proved more sensitive to the inadequate stocking rate than PT.

Keywords: Brazil, forage availability, secondary vegetation