



Tropentag, October 7-9, 2008, Hohenheim

“Competition for Resources in a Changing World:
New Drive for Rural Development”

Performance of Sheep Grazing *Brachiaria decumbens*, *Panicum maximum* and *Pennisetum purpureum* in *Leucaena leucocephala* Alley Plots

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Abstract

A major problem facing livestock farmers worldwide is how to economically maximise animal production with limited land availability. The situation is even worsened by desertification, leaching and population explosion in the humid tropics. The potential to increase ruminant production on these land areas can be realised if innovations in managing rangeland are adopted. Tropical pastures have long been recognised as capable of producing large quantities of forage dry matter; however, individual animal performance is normally less per animal than for similar animals grazing temperate zone forages. It was against this background that an experiment was designed to study performance of sheep grazing *Brachiaria decumbens*, *Panicum maximum* and *Pennisetum purpureum* in *Leucaena leucocephala* alley plots. Twelve paddocks of approximately 0.03 ha containing *leucocephala* alley planted in rows 4 m apart and interplanted with 4 rows of either *B. decumbens*, *P. maximum* or *P. purpureum* were each grazed by 3 sheep. The three grass combinations within the alley plots were replicated four times. The animals were grazed continuously for 28 days in the sub plots. Sheep grazing the *Leucaena / Panicum* plot had a higher ($p < 0.01$) growth rate (35.3 g d^{-1}) than those animals grazing both the *Leucaena / Bracharia* (20.6 g d^{-1}) and *Leucaena / Pennisetum* (15.5 g d^{-1}) plots respectively. There was no difference between sheep grazing the *Leucaena / Bracharia* and *Leucaena / Pennisetum* plots. The total dry matter intake of sheep on the *Leucaena / Panicum* plot was higher ($p < 0.05$) ($1.48 \text{ kg DM d}^{-1}$) than that of sheep on *Leucaena / Pennisetum* ($0.69 \text{ kg DM d}^{-1}$) but not different from the *Leucaena / Bracharia* ($1.08 \text{ kg DM d}^{-1}$) plots. The total biomass from the *Leucaena / Panicum* (12.8 t ha^{-1}), *Leucaena / Pennisetum* (12.3 t ha^{-1}) and *Leucaena / Bracharia* (11 t ha^{-1}) plots were not significantly different ($p < 0.05$). These results demonstrate that grazing West African dwarf sheep in a *Leucaena leucocephala / Panicum maximum* plot improved their growth rate during dry periods when feed supplies are limited. It also underscores the poor performance of animals grazing *Pennisetum purpureum* in *Leucaena leucocephala* alley plot.

Keywords: *Brachiaria*, grazing, *Leucaena*, *Panicum*, *Pennisetum*, sheep