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Reduction of Poverty through Improved Animal Nutrition via Low Input Agricultural Production of *Panicum maximum*

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Abstract

Intensive grass production is yet to attract attention of farmers in the sub-saharan Africa. Hence, animals are poorly nourished via nutrient deficient forage since many tropical soils are low in nutrient content. The problem is further compounded through non-availability of chemical fertilisers coupled with poor logistics. Therefore, there is an urgent need for alternatives if animals will not be undernourished.

In a split-split-plot design experiment with three replicates under field conditions, the yield and nutrient content of *Panicum maximum* (var. Ntchisi) was evaluated. The main plot factor was arbuscular mycorrhizal (AM) fungi inoculation with two levels; inoculated and non-inoculated. The sub-plot factor was organomineral fertiliser (OM) application with four levels; grade A, grade B, mixtures of grades A and B and no fertilizer application. The sub-sub-plot factor was cutting frequencies (4, 6 and 8 weeks). Harvested forage was evaluated for yield, rumen degradability and nutrient composition. Data were analysed with ANOVA and the means separated using Duncan's multiple range test. Dry matter yields among fertiliser treated forages were similar but significantly higher compared to the control (no fertiliser application). Maximum dry matter yield, 11.04 t/ha was obtained under the application of the mixtures of organomineral fertilisers grades A and B. Grass inoculated with AM was 15.8% higher in yield compared to non-inoculated. There was no effect of time of cutting on the dry matter yield of all treatments, but the yield increased with increasing cutting frequency. Application of OM and AM fungi enhanced the crude protein (CP) of the forage but have no significant effect on rumen dry matter degradation characteristics. The highest CP, 13.13% was obtained when grass was inoculated with AM and had the mixtures of fertilisers applied. Cutting frequency significantly affected the dry matter and CP release. With increasing cutting frequency, the degradation features of the forage increased. Quantitative and qualitative production of nutrient enriched grass for ruminants through the combinations of the assayed agronomic practices is possible.

Keywords: Rumen: grass: fertiliser: degradability: crude protein: yield