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Effect of carbohydrate additives on fermentation characteristics, chemical composition and *in vitro* digestibility of Napier grass (*Pennisetum purpureum*) silage**J J Baloyi, Rambau and F Fushai**
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The objective of the study was to determine the effect of carbohydrate additives on the fermentation characteristics, chemical composition and *in vitro* digestibility of Napier grass silage. Napier grass planted at the School of Agriculture Experimental Farm, University of Venda in 5×4 meters plots was irrigated for a period of 12 weeks. After 12 weeks, the Napier freshly cut grass was ensiled with no additive, molasses, maize meal and brown sugar at 10% fresh weight in a completely randomized design replicated 6 times for 90 days in 1 liter glass jars. After 90 days, silages were determined for fermentation quality and nutritive composition using standard protocols. The *in vitro* DM and CP degradability of rumen un-degradable residue collected after 12, 24 and 48 hours incubation was determined by sequential digestion in pepsin (abomasal) and pancreatin (small intestine) solutions. Collected data were subjected to analysis of variance using general linear model procedures of Minitab Statistical package version 17. Molasses treatment had higher ($P<0.05$) residual water soluble carbohydrates, ash and DM content and lower ($P<0.05$) ammonium nitrogen and neutral detergent fiber content of silage. In addition, maize meal silage had higher ($P<0.05$) fat content and lower ($P<0.01$) acid detergent fiber. Improved ($P<0.01$) CP disappearance due to additives caused subsequent reduction ($P<0.01$) on *in vitro* CP digestibility after 12 hour incubation. Our results suggest that additives were effective in improving the quality of Napier grass silage leading to improved ruminal degradability, hence, decreased *in vitro* digestibility.

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