Tropentag, September 17-19, 2018, Ghent

"Global food security and food safety:
The role of universities"

Nutritional Analysis of Selected Range Grass Ecotypes at Different Phenological Stages in Southeastern Kenya

Patricia Ndung'u[1], Oliver Wasonga[1], William Mnene[2], Oscar Koech[1]

[1] *University of Nairobi, Land Resource Management and Agricultural Technologies, Kenya*
[2] *Kenya Agriculture and Livestock Research Organisation, Kenya*

Abstract

While drylands are less suitable for arable agriculture due to climatic constraints, they support a majority of the world's livestock population. In Kenya, livestock production is the main economic activity for the pastoral and agro-pastoral communities living in the drylands. However, livestock production in the drylands of Kenya faces a myriad of challenges, key among them pasture scarcity that causes both loss of land productivity and animals especially during extended dry seasons and droughts. Production and conservation of forage and feed resources is therefore a priority in the vast drylands. Our study determined the nutritional value of grass ecotypes of *Cenchrus ciliaris*, *Panicum maximum* and *Digitaria macroblephara* that were ranked as preferred forage grass species by the pastoral and agro-pastoral communities in southern Kenya. The grass ecotypes were harvested at the onset of flowering, at full flowering and at seed maturity for analysis of % crude protein (CP), % acid detergent fiber, % neutral detergent fiber, % ether extract, *Insacco* dry matter digestibility (ISDMD), and % lignin. The results show significant intraspecific differences in the ecotypes for all the nutritional parameters tested at the various growth stages. The ecotypes of *C. ciliaris* recorded a higher CP content than the ecotypes of the other grass species at the onset of flowering while those of *D. macroblephara* recorded higher digestibility. The Olptepesi ecotype of *D. macroblephara* had a significantly higher CP and ISDMD at full flowering. The Imbirikani ecotype of *P. maximum* recorded a significantly higher CP at seed maturity while the Oldonyonyoike ecotype of *D. macroblephara* recorded a significantly higher ISDMD. These differences in CP levels at different stages of growth provide insight as to the optimal timings of harvesting or grazing of these grass ecotypes. Further research looking into their resource use efficiency and tolerance to grazing should however be done to identify high performing pasture varieties that are well adapted to the drylands.

Keywords: Grass ecotypes, indigenous grasses, livestock, nutrition, southern Kenya

Contact Address: Patricia Ndung'u, University of Nairobi, Land Resource Management and Agricultural Technologies, Nairobi, Kenya, e-mail: ndunguluiza@gmail.com