

Abstract

The current pace of rangeland degradation imparted by appalling land use and management systems is greatly limiting the potential of the soil resource to support pasture production in semi - arid rangelands of Uganda. Our objectives were to determine the effects of land cover change and production systems on pasture biomass yield and to identify the critical soil factors affecting pasture production in Nakasongola. The area was stratified into three production systems and three land cover types from which six pasture and soil samples were collected following a Modified - Whittaker sampling method. Pasture biomass was significantly high ($p < 0.0001$) under herbaceous cover (2019 kg/ha) compared to woody (1302 kg /ha) and bare which had no pasture biomass. The settled production system had a significantly ($p = 0.013$) high pasture biomass (1266 kg/ha) compared to non settled (1102 kg/ha) and semi settled systems (953 kg/ha). Biomass yield was more associated with high levels of organic matter ($r = 0.91$), calcium ($r = 0.91$), magnesium (0.83), nitrogen ($r = 0.77$) and base saturation ($r = 0.88$). It can be concluded that maintaining native vegetation cover of the rangelands and increasing levels of limiting nutrients are the major strategies for increasing pasture production in semi - arid rangelands of Nakasongola