Abstract

This study was conducted out to evaluate the soil fertility in under the cashew tree canopy and nutritional contents of cashew trees on the Makonde Plateau in southeast Tanzania. Seven villages were included, all of which were geographically close to one another yet had the same agro-ecology. The cashew plant samples were taken above the same longitudinal segment as the soil samples, which were taken in under canopies of cashew trees. Nitrogen, Phosphorus, Potassium, Magnesium, Calcium, and micro nutrients (Iron, Zinc, Sodium, and Copper) were all examined in the samples. However, soils were analysed for Organic Carbon, Organic Matter, and pH with soil samples taken at two different depths of 0–30 cm and 30–50 cm, these tests were conducted during the wet and dry seasons. The results confirmed that Calcium, Magnesium, Sodium, and Iron varied significantly with soil depth, as well as with soil depth, seasons, and their interactions, for Organic Carbon and Organic Matter. During the wet season, Nitrogen, Phosphorus, and Zinc concentrations in cashew trees were all statistically higher. Nitrogen and Phosphorus were significantly strong and positively ($r = 0.95$) correlated in cashew plants with respect to all other nutrients, suggesting synergistic effects. These results imply that macro nutrients including Nitrogen, Phosphorus, Potassium, Magnesium, and Calcium, and micronutrients such as Iron, Zinc, Sodium and Copper limit cashew production in the research area. It is necessary to determine site-specific recommendations and dosages for these nutrients.