

Abstract:

The responses of *Calotropis procera* and *Cassia senna* to soil pH, Ca, Mg, K, Na, Mn, Fe, NH₄-N and P were investigated in three sites in central Sudan, namely: Omdurman, Wadelmajzobe (Wad Medani) and Kosti. The investigation was carried out by chemical analysis of soil and plant samples collected randomly from 25 sampling points at each site. The data of the soil chemical analysis were analysed using the principal component analysis (PCA). The PCA reflected somewhat low range of variation in the distribution of the soil nutrients within each of the three investigated sites. Chemical analysis of *C. procera* and *C. senna* plants, collected from the three investigated sites, showed that they have different levels of nutrients uptake. Although *C. senna* tends to have low mineral requirements compared with *C. procera*, it was completely absent from Kosti site. This may be due to the acidity and high Mn levels at this site