

Abstract

On-farm study was carried out for two seasons on sandy clay soil of southwest Kenya in 2004. The objective was to determine effect of different application rates of mucuna green manure on its decomposition pattern, available soil N and distribution in rooting zone of maize, in the season when the biomass is incorporated into the soil. The treatments were mucuna applied at rates of 0, 30, 60, 120, 240 and 480 kg N haG and inorganic fertilizer-urea at 30, 60 and 120 kg N haG included for comparison. The approaches employed in evaluating the treatments were: Field incubation using micro-lysimeter technique and, direct field sampling method. Randomized complete block design with three replications was used. Results showed that mucuna decomposition pattern remained same irrespective of application rate. Soil available N (SAN) increased over time after application of either source of N. The SAN level reached a significantly higher peak at 2 weeks after application (WAA). Direct field sampling showed that at 2 WAA most of the N accumulated at 50–100 cm depth, regardless of the N source. Significant differences in SAN level attributed to application of the various rates of mucuna and fertilizer were notable at 2 WAA, but had disappeared by 4 WAA. At the 2 WAA, mucuna and fertilizer applied at 60 and 120 kg N haG, respectively showed comparable SAN level and had non-significant effect on it at 0–15 and 15–30 cm depths. It required 240 kg N haG equivalent of mucuna, or 120 kg N haG of inorganic fertilizer to substantially increase SAN level over the control.