

SOIL FERTILITY STATUS AND NODULATION OF SELECTED LEGUMES IN FARMERS' FIELDS IN SOUTH-EASTERN KENYA

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Abstract (C2100)

A field study was conducted to determine the soil fertility status and root nodulation of selected legumes in farmers' fields in upper and lower midlands agro-ecological zones (AEZ) of south-eastern Kenya. Soils collected from 26 farmers' fields were analyzed for soil pH, organic C, N, P, K, Ca, Mg, Mn, Cu, Fe and Zn. Hyacinth bean, common bean (*Phaseolus vulgaris*), cowpea (*Vigna unguiculata*), lima bean (*Phaseolus lunatus*), pigeon pea (*Cajanus cajan*), and green gram (*Vigna radiata*) were planted in polythene bags containing sterilized river sand and inoculated with soils from each AEZ and commercial rhizobial inoculants from the University of Nairobi's Soil Microbiology Laboratory. Seedlings were nourished using Broughton and Dilworth N-free solution (Broughton and Dilworth 1971). Soil analysis results showed that soils from farmers' fields were deficient of N, P, Ca, Mg, Cu, Fe and Zn while K and Mn were adequate. Soil pH ranged from 4.30 to 6.76 with 16 of the fields having pH below 6. Twenty five sites were deficient in organic C. Nodulation of the selected legumes varied significantly across AEZs while plants inoculated with commercial inoculants had higher nodule numbers and nodule dry weights. However, inoculation with soils from collected from farms in AEZ LM5 and LM3 soils increased tissue N in bean and cowpea plants significantly compared to the commercial inoculants and the other soils. Soils in south eastern Kenya are low in fertility and have variable capacity to support root nodulation of legumes.

Key words: nutrient, legume, nodulation, rhizobia, inoculation