Genetic and symbiotic characterization of root nodule symbionts of Bambara groundnuts (*vigna subterranea* l. verdc) and soybeans (*glycine max* l. merr) from selected sites in lake Victoria basin, western Kenya.

Low soil nitrogen (N) is the most limiting soil factor for sustainable high crop yields in smallholder farming systems in East Africa. Inorganic fertilizers are rarely used due to high costs and inaccessibility. Judicious application of alternative soil management practices, such as harnessing biological nitrogen fixation (BNF) is necessary. This study genetically characterized 106 root nodule bacteria which freely nodulate soybeans (*Glycine max* L. MERR) and bambara groundnut (*Vigna subterranea* L. Verdc) in four soil types of Lake Victoria basin, Western Kenya. Isolate influence on nodulation and crop productivity was examined under field and glasshouse conditions. There was marked heterogeneity in 16S rRNA, *atpD*, *recA*, *nodC* and *nifH* gene analysis of isolates identified as *Rhizobium* sp., *Agrobacterium* sp., *Burkholderia* sp. and *Bradyrhizobium* sp. at above 97% sequence identity. Soil pH and available phosphorus had a significant effect on isolate distribution. The two legumes have greater symbiotic preference to *Bradyrhizobium*-type isolates under inoculation. Lateral transfer of *Sym* plasmids presumably conferred nodulation and N-fixation ability to one *Agrobacterium*sp. The findings provide new opportunities for selection of effective symbionts of soybeans and bambara groundnuts for improved soil fertility, commercialized agriculture and reduced food insecurity in the region.