

Tepary bean (TB), a drought adapted bean variety has recently assumed prominence among resource poor farmers in semi-arid SE-Kenya. However, its productivity is still low because of inadequate inputs. Greenhouse experiments were initially carried out to determine the number of rhizobia specific to TB in the soils of SE-Kenya, nodulation and nitrogen fixation of the same. The most probable number (MPN) of Rhizobia cells capable of nodulating TB were  $1.0 \times 10^2$  cells per gram of soil in SE-Kenya. Subsequent field experiments were conducted at Kiboko KARI sub-station over two rainy seasons, i.e. long rains (LR) 1999 (March-June) and short rains (SR) 1999/2000 (October-January). The main objective was to screen various Rhizobia strains effectivity in nitrogen fixation with TB. The field trials showed that from the five Rhizobium strains tested only R3254 significantly increased pod dry weight, seed dry weight and seed yield/ha. Top dressed fertilizer N had no significant impact on growth and seed formation of tepary bean. Total nitrogen (N) concentration in the plant tissues was significantly enhanced in the course of the vegetative growth in R3254 treatment. This is an indication that Rhizobium strain R3254 can be used in the improvement of TB production for the resource poor farmers of semi-arid SE-Kenya.