

The contribution of appropriate inoculum strains to more efficient nitrogen fixation by legumes has been difficult to assess due to the laborious nature of the assays involved in assessing establishment of inoculum strains in the field. The use of marker genes, in particular the GUS system, changes this, making it possible to assess occupancy by the inoculum strain in large numbers of nodules on whole root systems. The GUS [B-glucuronidase] system was used to evaluate the competitive ability of two rhizobial strains, *Rhizobium leguminosarum* bv. *phaseoli* strain Kim5 and *R. tropici* strain CIAT899 in two soil types from Kenya. The results confirm that Kim5 is a highly competitive strain, forming 86% of the nodules in a near-neutral pH soil. Although the competitiveness of CIAT899 is enhanced in an acid (pH 4.5) soil it still only formed 35% of the nodules. There were no differences between inoculum strains in their efficiency of nitrogen fixation in either soil type, and virtually no N₂-fixation occurred in the acid soil due to the lack of tolerance of the *Phaseolus* genotype to soil acidity.