ABSTRACT

Twenty-six Rhizobium isolates were tested for effectiveness in nitrogen fixation with groundnut variety Virginia Florigiant. All strains proved infective but exhibited wide variations in effectiveness. Some local isolates were among the most effective strains.

Streptomycin and kanamycin-resistant mutants of chosen, effective strains were similar to parent strains in symbiotic effectiveness, but differed in competitive ability and in some cultural and physiological characteristics. Leonard jar studies indicated that while initial inoculum ratios and level of combined nitrogen in the substrate can influence strain competition, some strains compete independently of these factors.

In soil, both inoculum rate and soil pH affected recovery of introduced strains over a certain environmental range. Combined nitrogen appeared to depress strain recovery, even at low concentrations. Rhizobium persistence was affected by inoculum rate and moisture stress, dependent on soil type.

Field trials indicated response to inoculation in the wet season and at a high plant population density. It appears that local strains perform better in the field than do imported strains.