

A study was conducted on farmers' fields in Kikuyu Division, Kenya, to determine whether inoculating bean seeds with *Rhizobium phaseoli* could match the N supplied by 200 kg of diammonium phosphate (DAP) for pure stands of the common dry bean (*Phaseolus vulgaris*). The study was conducted over three seasons using bean cultivars preferred by farmers. Low and erratic rainfall during one of the short rain seasons led to low bean seed yields while diseases associated with too much rain may have reduced yields during the long rain season. Seed yield data indicated no significant differences between DAP and inoculation plus phosphorus and in one season these two treatments gave significantly higher yields compared to the control and inoculation without phosphorus. There was evidence that some bean cultivars may be able to perform better than others in soils with low soil P levels. Although nodulation results indicate that there were indigenous *R. phaseoli* in all farmers' fields, inoculation, DAP, and inoculation plus P generally increased nodulation and, in one season the latter two treatments significantly increased nodulation compared to the control. In one relatively dry season, DAP significantly reduced nodulation. Where rainfall was adequate and P applied, seed yields under farmers' management were more than double the national average yield of 500 kg/ha.