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Effect of rhizobia inoculation, farmyard manure and nitrogen fertilizer on growth, nodulation and yield of selected food grain legumes

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Abstract: Field experiments were conducted to investigate the response of grain legumes to rhizobia inoculation, farm yard manure and inorganic fertilizer nitrogen. Four grain legumes: common bean (*Phaseolus vulgaris* L.var GLP 2), lima bean (*Phaseolus lunatus* L.), green gram (*Vigna radiate* L.) and lablab (*Lablab purpureus* L.) were used. The experimental design was a randomized complete block design in a split plot arrangement replicated thrice. Number of nodules and nodule dry weight per plant, seed yield and yield components were determined. Nitrogen fertilizer application significantly reduced nodulation in most of the legume species. In contrast, rhizobia inoculation increased number of nodules and nodule dry matter in most species but this was not translated into increase in plant growth or grain yield. Manure application did not have a significant effect on nodulation in all the legumes tested. Fertilizer application significantly increased dry matter in both seasons and total grain yield during short rains. Manure application resulted in improved nodulation and grain yield only in the short rains. Rhizobia inoculation improved nodulation only. The study indicated that the effect of rhizobia inoculation, farmyard manure and nitrogen fertilizer on grain legumes is variable depending on species, parameter being measured and other environmental factors.

Keywords: dry matter yield, grain legumes, grain yield, nitrogen source, nodulation.