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Response of green manure legumes to rhizobia inoculation and started-N fertilizer application

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ABSTRACT

A study was conducted in Kenya on a farmer's field at Katumani and at the University of Nairobi's Field Station farm in 2003 short rains and 2004 long rains to assess the need for rhizobia inoculation of green manure legume (GML) species. The GMLs tested were mucuna (*Mucuna pruriens* (L.) DC), lablab (*Lablab purpureus* (L.) Sweet cv. Rongai), crotolaria (*Crotolaria ochroleuca* G. Don), canavalia (*Canavalia ensiformis* (L.) DC) and limabean (*Phaseolus lunatus* L.). The treatments comprised GMLs inoculated with appropriate rhizobia, GMLs supplied with starter-N (urea at 30 kg N ha^{-1}) and GMLs grown without rhizobia and starter-N. Inoculation increased nodule numbers $plant^{-1}$ in mucuna, crotolaria and lablab, but there was no effect in limabean and canavalia. Starter-N application reduced GML nodule numbers in long rains at Kabete, but increased for mucuna, crotolaria and lablab in short rains at Katumani. Generally, inoculation improved NDM $plant^{-1}$ and individual NDM for mucuna, crotolaria and lablab. N-addition did not depress NDM $plant^{-1}$ and individual NDM. Inoculation and N-addition had no effect on dry shoot biomass. Increase in nodulation observed with inoculation did not translate into improved shoot biomass. Hence, inoculation and starter N-application for GMLs may only be necessary to conserve and augment soil-N.

Key words: Green manure legumes, nodule dry matter, nodule number, shoot biomass