B-17 The effect of organic matter on the nodulation of cowpea (*Vigna unguiculata* L.) when treated with *Rhizobium* strain (NC 92)

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Legume-*Rhizobium* symbiosis is inhibited by soil mineral nitrogen(N). Application of carbonaceous materials having a wider C:N ratio could reduce the available soil N during early stages of crop establishment, making conditions favourable for nodulation and nitrogen fixation.

Therefore an experiment was conducted to study the effect of carbonaceous materials having different C:N ratios on the growth, nodulation and yield of cowpea inoculated with *Rhizobium* strain NC 92. This experiment was carried out on the Eastern University Agriculture farm between Dec 1994 and Feb 1995. It was laid out in a Randomised Complete Block Design with 3 replicates and had 7 treatments:

Control (No nitrogen fertilizer and no inoculation); nitrogen fertilizer at a rate of 100kg/ha + inoculation; no nitrogen fertilizer + inoculation; straw at 20 tons/ha + inoculation; 40 tons/ha + inoculation; 60 tons/ha + inoculation; and Farm Yard Manure (FYM) 20 tons/ha + inoculation. Inoculum was applied to planting holes at the time of planting and the crop was managed according to the recommended practices.

The results indicated that FYM application enhanced cowpea biomass and leaf area at early stages of growth, whereas straw treatment enhanced the nodulation and yield of cowpea at later stages. Nitrogen application reduced nitrogen fixation.

It is concluded that nitrogen fixation and yield of cowpea could be increased by the application of straw along with *Rhizobium* inoculum in the sandy regosols of the Eastern region of Sri Lanka.