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NODULATION AND SYMBIOTIC NITROGEN FIXATION OF COWPEA (*Vigna unguiculata* (L) WALP)

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Variation in the pattern of nodulation and nitrogen fixation with the age of the plant and the effect of growth phase (culture age) of the invasive Rhizobium on nitrogen fixation were investigated under growth cabinet conditions (25/22°C day/night temperature, 14 hour photo period and photosynthetic photon flux density of 500μE/sq.m/s).

Nodulation in cowpea (*Vigna unguiculata* (L) Walp) CV.MI-35, inoculated with rhizobium strain CIAT 301 began 10 days after planting and nodule fresh weight subsequently increased rapidly reaching a plateau from 20 to 30 days of growth. A second flush of nodule growth was observed from 30 to 50 days of the growth period. In contrast to nodule growth, nodule activity (nitrogen fixation measured as μ moles ethylene/g nodule fresh weight/hour) reached a maximum between 20 and 30 days of growth, but then declined rapidly to less than one-half of the maximum values.

Rhizobial growth was estimated by measuring culture turbidity with a Klett-Summerson photoelectric colorimeter. One day old seedlings were inoculated with 0.2 ml of Rhizobial culture of 0 to 480 hours in age every 24 hours. Rhizobium strains SLM 602 and CIAT 301 produced the highest nodule activity when inoculum was prepared from stationary phase cultures (168 to 240 and 216 to 264 hours of culture respectively) compared to lag, exponential or late stationary phase stages.

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