

THE EFFECT OF NITROGEN LEVEL ON NODULATION AND
SYMBIOTIC NITROGEN FIXATION IN COWPEA
(*Vigna unguiculata* (L) WALP)

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The effect of four concentrations of KNO_3 (0;0.5;1.0 and 2.0 mM) on nodulation and nitrogen fixation in cowpea (*Vigna unguiculata* (L) Walp) CV. MI-35 inoculated with Rhizobium strains (CIAT 301 and SLM 602) were investigated in a Leonard jar experiment under growth cabinet conditions (25/22°C day/night temperature, 14 hour photo period and photosynthetic photon flux density of 500 $\mu\text{E}/\text{sq.m/s}$).

The nodule fresh weight increased with increasing nitrogen level from 0 to 1.0mM in treatments inoculated with Rhizobium strains SLM 602 and CIAT 301, no significant increase was noted beyond 1.0 mM level. However plant dryweight continued to increase with increasing nitrogen concentrations (0 to 2.0 mM).

Nodule activity (nitrogen fixation measured as μ moles ethylene/g nodule fresh weight/hour) reached a highest (29.96) at 1.0 mM KNO_3 with CIAT 301 and decreased (20.20) at 2.0 mM KNO_3 . In plants inoculated with SLM 602 the activity remained more or less same at 1.0 and 2.0 mM KNO_3 levels (14.96 and 15.55 respectively). The activity was lowest at 0.5 mM KNO_3 in treatments SLM 602 (5.08) and CIAT 301 (6.52). At 0 mM KNO_3 the activity in treatments SLM 602 (7.42) and CIAT 301 (15.39) was less than the activity at 2.0 mM KNO_3 .

Nitrogen level appeared to affect nodulation, dry weight and nodule activity in cowpea plants. By the proper combination of inoculation and nitrogen fertilizer, significant benefits could be obtained.

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