

Physiological Effects of Seed Treatment with Bioinoculants on Growth and Yield of Chickpea (*Cicer arietinum* L.)

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A field experiment was conducted during *rabi* 2014-15 growing season to assess the effect of seed treatment with bioinoculants on the growth and yield performance of chickpea variety JG 11 at Agricultural college farm, Bapatla. Eleven treatments were laid down in a completely randomized block design with three replications. Treatments include seed treatment with VAM, PSB, *M. ciceri* and *T. viridae* @ 100, 6, 6 and 10 g kg⁻¹ seed respectively and in combination *i.e.*, VAM + PSB, VAM + *M. ciceri*, VAM + *T. viridae*, PSB + *M. ciceri*, PSB + *T. viridae* and *M. ciceri* + *T. viridae*. The results of the present study revealed that seed treatment with PSB @ 6 g + *M. ciceri* @ 6 g kg⁻¹ seed found superior in increasing the root length, plant height, number of branches and number of effective branches by 6.1 cm, 10.2 cm, 2.7 plant⁻¹ and 2.5 plant⁻¹ respectively. There was also a marked increase in leaf number (38.1%), leaf area (1.3 folds) and total dry matter (58.11%). Ultimately the pod number, pod weight, seed yield, shelling % and harvest index were increased by 47.76, 55.04, 34.12, 11.98 and 30.77 % respectively over control. Results of this study indicate that combined application of PSB + *M. ciceri* have synergistic effect and showed significantly positive influence, favored better root growth and assimilation with higher nodulation which in consequence resulted into better growth and development of sink size and ultimately higher seed yield. Moreover seed treatment with bioinoculants produced higher biological and grain yield compared to uninoculated plants indicating the importance of effective inoculants in relation to growth and yield of chickpea.

Key words: *Mesorhizobium ciceri*, *Trichoderma viridae*, PSB, (Phosphorus soluble Bacteria)
VAM