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### Effect of vermicompost and phosphorus on performance of greengram [*Vigna radiata* (L.) wilczek] grown under loamy sand soil

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Results of the field experiment entitled “Effect of vermicompost and phosphorus on performance of greengram [*Vigna radiata* (L.) Wilczek] grown under loamy sand soil” the treatment comprising four levels of vermicompost (0, 1, 2, and 3 t ha<sup>-1</sup>) and four level of phosphorus (0, 10, 20, and 30 kg ha<sup>-1</sup>) making 16 treatment combinations were laid out in factorial randomized block design with three replication. Green gram also known as mung bean is a self pollinated leguminous crop which is grown during *kharif* as well as summer seasons in arid and semi-arid regions of India. It is tolerant to drought and can be grown successfully on drained loamy to sandy loam soil in areas of erratic rainfall. The centre of origin of mung bean is India occupies 3.4 million hectare areas and contributes 1.4 million tons in pulse production in the country. Result shows that application of vermicompost at the rate of 2 t ha<sup>-1</sup> significantly increased the total, effective, fresh and dry weight of root nodules per plant leaf area index leghaemoglobin content in root nodules at pre-flowering stag, number of branches per plant, plant height number of pod per plant, number of seed per pod, test weight, seed and straw yield, N, P, K and S uptake by seed and straw and an available N, P, K and S content in soil at harvest and net returns over preceding levels of vermicompost. However N, P, K and S uptake by seed and straw and organic carbon content in soil at harvest increase significantly with an increase in each level of applied vermicompost upto 20 t ha<sup>-1</sup> vermicompost. Result further indicates that total, effective, fresh and dry weight of root nodules per plant leaf area index leghaemoglobin content in root nodules at pre-flowering stag, number of branches per plant, plant height number of pod per plant, number of seed per pod, test weight, seed and straw yield, P content in seed and straw, N, P, K and S uptake by seed and straw and an available P content in soil net returns increase significantly with increasing levels of application phosphorus up to 30 kg ha<sup>-1</sup> over lower levels. However plant height chlorophyll content in levels N, K and S concentration in seed and straw and available N<K and S (kg ha<sup>-1</sup>) in soil increase significantly up to 20 kg ha<sup>-1</sup>.

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### Development and evaluation of roto drill cum herbicide applicator

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Tractor drawn roto drill cum herbicide applicator was developed during 2012-13, at College of Agricultural Engineering, Bapatla, India. It was developed for adaption of minimum till technology and timeliness of operations by reducing the number of passes during tillage, sowing and herbicide application operations. The roto drill cum herbicide applicator was a combination of rotovator, seed hopper (Trough feed type) and rocker sprayer pump. It performs tillage, sowing and herbicide application simultaneously in single pass of tractor. It was found that the total time required for performing the three operations (tillage, sowing and herbicide application) with developed roto drill cum herbicide applicator was 3.68 h ha<sup>-1</sup> which was 26% less when compared with the time required for performing the three operations individually. Also the seed rate was observed to be 25.33 kg ha<sup>-1</sup> for paddy and 19.02 kg ha<sup>-1</sup> for maize. The application rate and spray angle of herbicide applicator was 321.35 l ha<sup>-1</sup> and 36.52° respectively. The total cost of operation for roto drill cum herbicide applicator was found to be Rs 641 hr<sup>-1</sup>. While the individual costs of operation for tillage, sowing and herbicide application were Rs 571, 540 and 95 hr<sup>-1</sup> respectively. It was revealed that the cost of operation for roto drill cum herbicide applicator was 46.72% less when compared with costs of individual operations.

### Biography

L R V Prasad has completed B Tech Agricultural Engineering from College of Agricultural Engineering, Bapatla. During his final semester of B Tech, he has done research work on development and evaluation of roto drill cum herbicide applicator.

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