

Research Paper

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## Performance of different composts and biofertilizer on yield and quality of green gram (*Vigna radiata* L.)

■ KH. NAVEEN<sup>1</sup> AND K.D. MEVADA

### AUTHORS' INFO

#### Associated Co-authors' :

<sup>1</sup>Department of Agronomy, B.A.  
College of Agriculture, Anand  
Agricultural University, ANAND  
(GUJARAT) INDIA

#### Author for correspondence :

**K.D. MEVADA**

Polytechnic in Agriculture, Anand  
Agricultural University, VASO  
(GUJARAT) INDIA  
Email : amt\_kd@yahoo.com

**ABSTRACT :** A field experiment was conducted at College Agronomy Farm, B. A. College of Agriculture, Anand Agricultural University, Anand, Gujarat, to study the performance of different composts and bio-fertilizers on growth, yield attributes and yield of green gram (*Vigna radiata* L.) under middle Gujarat conditions during *Kharif* season of the year 2010 on loamy sand soil. The results revealed that application of 100 per cent RDN from vermicompost (T<sub>3</sub>) treatment significantly influenced the growth and yield attributes viz., plant height, number of branches plant<sup>-1</sup>, number of pods plant<sup>-1</sup>, test weight, seed and stover yield as well as protein content (%) over control. Application of 50 per cent RDN from vermicompost along with bio-fertilizers significantly increased root nodules over control.

**Key Words :** Green gram, Vermicompost, Composts, *Rhizobium*

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For sustainable agriculture emphasis should be given for using more organic manure and curtail use of chemical fertilizers. Under dwindling supply of traditional organic manures like FYM, composts and bio-fertilizers can have appreciable contribution to substitute FYM and can be an excellent option for chemical fertilizers too, particularly in the crops like pulses whose nutrient requirement is low. Among the pulses green gram (*Vigna radiata* L.) is one of the most important and extensively cultivated pulse crops, whose nutrient requirement is very low. In India, green gram is cultivated in about 3.44 million ha with production and productivity of 1.20 million tones and 351 kg ha<sup>-1</sup>, respectively (Anonymous, 2011). In Gujarat, it is an important pulse crop grown throughout the state in an area of about 1.70 lakh ha with 5.97 lakh tones of production and 361 kg ha<sup>-1</sup> productivity (Anonymous, 2010).

Composting of agricultural waste materials in conjunction with bio-fertilizers play an important role in improving the organic matter content of the soil and thereby improving soil productivity and yield along with partial replacement of mineral fertilizers (Sutaria *et al.*, 2010).

Green gram being a leguminous crop, meets its nitrogen requirements through symbiotic nitrogen fixation. Nodule formation can fix about 35 kg ha<sup>-1</sup> atmospheric nitrogen through *Rhizobium* bacteria (Yadav, 1992). Similarly, phosphorus solubilizing bacteria (PSB) plays an important role in

supplementing phosphorus to the plants. Since no study has been carried out for determining the performance of composts prepared by different methods and their effects along with biofertilizer like *Rhizobium* and PSB on *Kharif* green gram; this experiment was taken up.

### RESEARCH PROCEDURE

A field experiment was conducted during *Kharif* season of the year 2010 at College Agronomy Farm, B. A. College of Agriculture, AAU, Anand, Gujarat. NADEP compost and Indore compost were prepared by using raw material of maize straw and cattle dung in the ratio of 75:25 whereas vermicompost was prepared by using the same raw material in the ratio of 25:75. The nutrient status of soil and different composts were determined. The soil of experimental area was sandy loam in texture, low in available nitrogen, medium in available phosphorus, high in potash and low in O.C content in soil with pH 7.8. The highest per cent of N (0.97%), P<sub>2</sub>O<sub>5</sub> (0.93%) and O.C (3.17%) were recorded in the vermicompost, whereas K<sub>2</sub>O content of vermicompost and FYM found the same (0.53%). The experiment laid out in Randomized Block Design with ten treatments and four replications was comprising of absolute Control (T<sub>1</sub>), 100 per cent RDF (20-40-00 N-P-K kg ha<sup>-1</sup>) (T<sub>2</sub>), 100 per cent RDN from compost prepared by NADEP technique (T<sub>3</sub>), 100 per cent RDN from composts prepared by INDORE