

# Effect Of Fertilizers In Growth And Yield Attributes Of Green Gram Crop

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**Abstract:** *The experiment was conducted during the summer season 2017-2018 at the research farm of the soil science, Lovely Professional University, Phagwara, Punjab, laid out in the randomized block design, consist of four treatments and three replications, it was observed that growth and yield parameters of green gram in treatment T4: 50% RDF+ 50% Bio-fertilizer.*

**Key words:** *growth and yield attributes, green gram, fertilizers.*

## 1. INTRODUCTION

Green gram (*Vigna radiata* L. Wilczek) also known as mung bean is a self-pollinated leguminous crop which is grown during the kharif (July – October) as well as summer (March – June) seasons in arid and semi-arid regions of India. Green gram crop is the conventional farming system of tropical and temperate regions. Green gram is also have source of amino acids. Green gram has small root systems but its root nodulation helps a portion of N nutrition. The green gram (*Vigna radiata*), alternatively known as moong bean (ChitraMani & Kumar, P. (2020); Sharma, M., & Kumar, P. (2020); Chand, J., & Kumar, P. (2020); Naik, M., & Kumar, P. (2020); Kumar, P., & Naik, M. (2020); Kumar, P., & Dwivedi, P. (2020); Devi, P., & Kumar, P. (2020); Kumari, P., & Kumar, P. (2020); Kaur, S., & Kumar, P. (2020); Devi, P., & Kumar, P. (2020); Sharma, K., & Kumar, P. (2020); Kumar, S. B. P. (2020); Devi, P., & Kumar, P. (2020); Chand, J., & Kumar, P. (2020). Green gram are a good source of p In India, it is the third important pulse crop after chickpea and pigeon pea, mung bean is cultivated in the state of Rajasthan, Madhya Pradesh, Punjab, Haryana, U.P, Maharashtra, Karnataka, Andhra Pradesh and Tamil Nadu. It is an excellent source of high quality protein. It plays a very important role in human diet as a source of high protein because of their high protein content (20-30%) with the high quality of lysine (460 mg/g N) and tryptophan (60 mg/g N). Potein for vegetarians. It contains also remarkable quantity of ascorbic acid and riboflavin (0.21 mg/100 g). (Azadi et al. 2013). The yield of pulse crops is low due to lack of awareness in adoption of improved technology (Kumar, 2013, Kumar, 2014 a and Kumar, 2014 b).

Rhizobium is a genus of Bacteria Kingdom and most common known species of Rhizobium biofertilizer is Rhizobium Leguminisarum. Rhizobia are soil bacteria that have the ability to do just that - convert nitrogen into ammonia. Biofertilizers may be classified as based on inoculants fixing atmospheric nitrogen or by stimulating the plant growth through synthesis of growth promoting substances for example ; Blue green algae or cyanobacteria mychorrhizae etc. A fertilizer is any material which is a natural or synthetic origin, that is applied to soils or the plant tissues to supply one or more plant nutrients which is essential to the growth of plants. Fertilizers are classified into different ways like straight fertilizers, mixed fertilizers and compound fertilizers. Biofertilizers can be added 20-200 kg N hectare

liberate growth promoting substances and increase the crop yield by 10-50 % and they are cheaper and pollution free based on renewable energy sources and also improve soil tilth (Kumar, P. (2019); Kumar, D., Rameshwar, S. D., & Kumar, P. (2019); Dey, S. R., & Kumar, P. (2019); Kumar et al. (2019); Dey, S. R., & Kumar, P. (2019); Kumar, P., & Pathak, S. (2018); Kumar, P., & Dwivedi, P. (2018); Kumar, P., & Pathak, S. (2018); Kumar et al.,2018; Kumar, P., & Hemantaranjan, A. (2017); Dwivedi, P., & Prasann, K. (2016). Kumar, P. (2014); Kumar, P. (2013); Kumar et al. (2013); Prasann, K. (2012); Kumar et al. (2011); Kumar et al. (2014).

## 2. MATERIALS AND METHODS

The experiment was conducted during the summer season 2017-2018 at the research farm of soil science, Lovely Professional University, Phagwara, Punjab, situated geographically at 31°15'48.0"N 78°41'45.0"E and 254 meter above sea level during summer season 2017 – 2018. It falls under central plain zone of agro climate zone of Punjab.

The treatment consisted of four combination: T1: (control), T2: RDF (Recommended Dose of Fertilizer (NPK; 80 – 100: 50 – 60: 30 – 40 kg/ha), T3: Bio-fertilizer, T4: 50% RDF+ 50% Bio-fertilizer. The trial was laid out in a randomized block design (RBD) with three replications, plot size was 2×2 m. variety SML 668 was sown on 31 March 2017 and the source of nitrogen, phosphorous, potassium were Urea, SSP, MOP respectively fertilizers. Basal dose of fertilizer was applied in the respective plots according to treatment allocation. The seeds were treated with Rhizobium. The crop was harvested on July 4, 2017. During the course of the experiment, green gram plant data were taken at 30, 45 and 60 days after sowing (DAS).

## 3. RESULTS AND DISCUSSIONS

### Plant height

Data on the mean height as affected by various treatments at 15 DAS, 45 DAS and 60 DAS are presented in table 1

Treatments	15 DAS	45 DAS	60 DAS
T1	4.17	15.9	22.30
T2	4.68	17.50	25.66
T3	5.07	18.18	25.50
T4	7.53	24.16	27.93
'F' test	7.53	24.16	27.93
SE(m)+_	0.35	1.01	1.02
CD at 5%	1.09	3.18	3.10

Table 1 Reveals that, plant height was observed maximum (27.93 cm at 60 DAS) in treatment T5, while it was minimum (4.17 cm at 60 DAS) in treatment T1).

### Number of pods

Table. 2. Effect of different treatments on plant pods

Treatments	Mean number of pods
T1	10.17
T2	26.33

<b>T3</b>	<b>25.87</b>
<b>T4</b>	<b>28.65</b>
<b>'F' test</b>	<b>Sig.</b>
<b>SE(m)+<sub>±</sub></b>	<b>0.60</b>
<b>CD at 5%</b>	<b>1.89</b>

Table. 2. Reveals that, plant pods was observed maximum in treatment T4, while it was minimum in treatment T1

### Number of branches

Table. 3. Effect of different treatments on plant branches.

<b>Treatments</b>	<b>Mean plant branches, cm</b>
<b>T1</b>	<b>2.8</b>
<b>T2</b>	<b>4.00</b>
<b>T3</b>	<b>3.78</b>
<b>T4</b>	<b>5.34</b>
<b>'F' test</b>	<b>Sig.</b>
<b>SE(m)+<sub>±</sub></b>	<b>0.24</b>
<b>CD at 5%</b>	<b>0.75</b>

Table.3. reveals that, plant branches was observed maximum in treatment T4, while it was minimum in treatment T1.

### Harvest index

Table. 4. Effect of different treatments on harvest index

<b>Treatments</b>	<b>Mean of harvest index</b>
<b>T1</b>	<b>0.22</b>
<b>T2</b>	<b>0.25</b>
<b>T3</b>	<b>0.24</b>
<b>T4</b>	<b>0.26</b>
<b>'F' test</b>	<b>Sig.</b>
<b>SE(m)+<sub>±</sub></b>	<b>0.003</b>
<b>CD at 5%</b>	<b>0.008</b>

Table. 4. Reveals that, harvest index was observed maximum in treatment T4, while it was minimum in treatment T1.

### Conclusions

After application of these four treatments T1: (control), T2: RDF (Recommended Dose of Fertilizer (NPK; 80 – 100: 50 – 60: 30 – 40 kg/ha), T3: Bio-fertilizer, T4: 50% RDF+ 50% Bio-fertilizer. It will be concluded that the treatment T4: 50% RDF+ 50% Bio-fertilizer to be the best, in increasing the plant height plant<sup>-1</sup> at 60 DAS, number of pods plant<sup>-1</sup>, number of branches plant<sup>-1</sup> and harvest index plant<sup>-1</sup> 0.41%. That means the treatment of (T4: 50% RDF + 50% Bio-fertilizer) are good for growth and yield attributes of green gram.

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