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Impact of inorganic, organic and bio-fertilizers on growth and yield of guava (*Psidium guajava* L.)

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Abstract
Guava is an important fruit crop with regards to its nutritional and commercial value. Production and productivity are the prime concern of the researchers and farmers throughout the world. Looking to the cumulative toxic effects of inorganic fertilizers and chemicals used in maximizing the production and productivity, Integrated Nutrient Management is an effective measure. Keeping these facts in view, an experiment was conducted at the Research Farm of KVK Majhgawan, distt. Satna, MP. with an objective of studying the effect of inorganic, organic and bio-fertilizers on growth and yield of guava, to find out the best treatment combination of inorganic, organic and bio-fertilizers for increasing the growth and yield of guava. The experiment was laid out in Randomized Block Design with 13 treatments replicated thrice. It was concluded from the experiment that treatment T5 (100% recommended dose of NPK + 50kg FYM + 150g Azotobacter + 100g PSB) gave the best results as far as growth, flowering, fruiting, yield and Quality.

Keywords: Inorganic, organic, bio-fertilizers, guava *Psidium guajava* Linn.

Introduction
Guava (*Psidium guajava* Linn.) is one of the most important subtropical fruit crops. It belongs to family Myrtaccae. Guava is a native of tropical America perhaps from Mexico and Peru. It is widely distributed all over the equatorial regions of the tropical and sub tropical climate (Menzel and Poxtoni, 1985) [5]. The area under guava is about 219.7 million hectare producing 2571.5 million tonnes of fruit and productivity 11.70 metric tonnes/ha. Uttar Pradesh is the leading state in guava production followed by Maharashtra and Bihar, Uttar Pradesh is a largest state in India and the largest total cultivation area is 39_9 million hectare, production 486.7 million tonnes and productivity 12.20 metric tonnes /ha. The popular varieties of guava grown in India are Sardar, Allahabad Safeda, Lalit, Pant Prabhat, Dhareedar, Arka Mridula, Khaja (Bengal Safeda), Chittidar, Harija etc. Hybrid varieties like Arka Amulya, Safed Jam and Kohir Safeda were also developed for cultivation (NI113 Datebase 2010). Guava is considered to be one of the exquisite, nutritionally valuable and remunerative crops, bears heavy crop every year and gives good economic returns. This has prompted several farmers to take up guava orcharding on a commercial scale. In recent years, guava is gaining popularity in the international trade due to its nutritional value and processed products. Guava is a rich source of Vitamins and minerals. Nutritive value of guava per 100 gms. Vitamin A,250 I.U. and Vitamin B Thiamine,0.7 mg. Niacin 1.2 mg. Vitamin 0,302 mg. Calcium,30 mg. Phosphorus,29 mg. Carbohydrates, 17.1 gin. Protein, 1.0 Calories, 70. The ripe fruit is usually eaten as dessert. It can also be utilized in many ways for making jellies, jam, paste, juice, baby foods, syrup, wine and other processed products. (Morton, 1987) [7]. FYM is the most commonly used organic manure in India. Maintains soil fertility, improves water holding capacity, buffering capacity and cation exchange capacity of the soil. It also increases the availability of the plant nutrients. Improves the texture and structure of the soil and improves biological properties of the soil. Decomposed mixture of dung and urine of farm animals along with litter and left over material from roughages or fodder fed to the cattle. FYM contains 0.5% N, 0.2% P2O5 and 0.5% K2O. About 30% N, 60-70% P205 and 70% K20 are available to the first crop. Vermicompost is an organic, manure (bio-fertilizer) produced as the yermicompost by earth worm feeding on biological waste material; plant residues.

This compost is an odorless, clean, organic material containing adequate quantities of N, P, K and several micronutrient essential for plant growth. Vermicompost is a preferred nutrient source for organic farming. It is eco-friendly, non-toxic, consumes low energy input for composting and is a recycled biological product. Bio-fertilizer is defined as preparation containing live or latent cells of efficient strains of N-fixing, PO43 solubilising or cellulolytic micro-organisms used for application of seed, soil of composting areas with the objective of increasing the number of such micro organism and accelerate certain microbial process to augment the extent of the availability of nutrient in a form which can be assimilated by trees. They supplement chemical fertilizer for meeting the nutrients demand of the crops. They can add 20 - 40 kg.N/ha/year (e.g. Rhizobium sp. 40 - 50 kg 1\1/ha/year: *Azaspirilium, Azolobacter*: 20 - 40 kg N/ha/year; Azolla. 40-50 kg N/ha, BGA: 20 - 30 kg N/ha) under optimum soil condition and thereby increases 15-25% of the total crop yield. They can at best minimize the use of chemical fertilizer not exceeding 40 - 50 kg N/ha under ideal agronomical and pest free conditions. Application of bio-fertilizers results in increased minerals and water uptake, root development, vegetative growth and N- fixations. They literate growth promoting substances and vitamins and help maintain the soil fertility.

Materials and Methods

This chapter contains the details of methodology and materials used during the experimentation. The investigation entitled "Studies on the Effect of organic, inorganic and bio-fertilizers on flowering, fruit growth, yield and quality of guava (*Psidium guajava* L.)" was carried out during the year 2014-15. The details of location, climate, soil and material used and techniques adopted in the present experiment are described in this chapter under the following heads:

Experimental site

The present investigation was carried out during the year 2014-15 at the Research Farm of KVK Majhgawan, distt. Satna, MP.

Geographical situation

Chitrakoot is situated in the North-east part of Madhya Pradesh at latitude 24°' 31 N', longitude 81° 15 E' and altitude of 306 meters above the mean sea level.

Climatic and weather conditions

Climate of Chitrakoot region is semi-arid and sub-tropical having hot and dry summer followed by rainy season and cold winter. In general the highest and lowest temperature reaches above 47 ºC and below 20 ºC, respectively. The average rainfall varies from 3.5 mm to 79.96 mm. The rainfall is observed mainly from July to September and sometimes winter showers are also received. In poly house condition the temperature should be maintained at 27 ± 5 ºC and relative humidity 75 to 90% should be maintained throughout the investigation.

Number of flowers per cluster

Number of flowers per cluster were counted and analyzed.

Number of fruits per cluster

Number of fruits per cluster were counted and analyzed.

Fruit set percentage

Fruit set percentage were calculated by following formula-

$$\text{Fruit set (\%)} = \frac{\text{Number of flowers in a cluster}}{\text{Number of fruit in a clsuter}} \text{ x } 100$$

Polar diameter of guava fruits (cm)

The polar diameter fruits were measured with the help of vemier calipers and the average value was analyzed.

Radial diameter of guava fruits (cm)

The radial diameter fruits were measured with the help of veniercalipers and the average value was analyzed.

Fruit weight (g)- Weight of three fruits was taken on the physical balance and average value was expressed in grain.

Days to maturity

Guava fruits develop best flavor and aroma only when they ripen on tree. Most of the commercial varieties, the stage of fruit ripeness is indicated by the color development which is usually yellow. Fully yellow but firm fruits are harvested. Days to maturity were estimated of different treatments and average value analyzed.

Fruit yield (kg/tree)

All the fruits were harvested from the tree and the total weight was taken. Fruit yield was expressed in (kytree).

Table 1: Treatment combination

Treatments	Combinations
T0	100% recommended dose of NPK
T1	100% Recommended dose of NPK +10kg Vermicompost
T2	100% Recommended dose of NPK + 50kg FYM
T3	100%Recommended dose of NPK+ 10kg Vermicompost + 150g Azotobacter + 100g PSB
T5	100% Recommended dose of NPK + 50kg FYM + 150g Azotobacter + 100g PSB
T5	75% Recommended dose of NPK + 10kg Vermicompost
T6	75% Recommended dose of NPK + 10kg Vermicompost + 150g Azotobacter + 100g PSB
T7	75% Recommended dose of NPK +50 kg FYM
T8	75% Recommended dose of NPK + 50 kg FYM + 150g Azotobacter + 100g PSB
T9	50% Recommended dose of NPK + 10kg Vermicompost
T10	50% Recommended dose of NPK + 50kg FYM
T11	50% Recommended dose of NPK + 10kg Vermicompost + 150g Azotobacter + 100g PSB
T12	50% Recommended dose of NPK + 50 kg FYM + 150kg Azotobacter + 100g PSB

Result and Discussion

Number of flowers per cluster: The data on number of flowers per cluster influenced by different treatments are presented in table 1 It is vivid from the table that there was non- significant effect of various treatments on number of flower per clusters. However, the maximum number (5.22) of

flowers per cluster was recorded in T5 (100% Recommended dose of NPK + 50kg FYM + 150g Azotobacter+100g PSB) followed by 5.11 in T3, T5 and T6. The minimum number (4.66) of flower per cluster was recorded in to. Since number of flowers in a cluster is hereditary phenomenon and there was non- significant influence of treatments on this parameters.

Number of fruits per cluster

The data on number of fruits per cluster as influenced by different treatments are presented in table 2. From the table it is evident that there was significant difference among various treatments for number of fruits per cluster in guava. The significantly maximum number (3.00) of fruits per cluster was obtained in T5 (100% Recommended dose of NPK + 50kg FYM + 150g Azotobacter+100g PSB) followed by 2.88 in T3 (100% Recommended dose of NPK + 10kg Vermicompost + 150g Azotobacter+100g PSB), 2.66 in T6 (75% Recommended dose of NPK + 10kg Vermicompost + 150g Azotobacter + 100g PSB) and T8 (75% Recommended dose of NPK +50 kg FYM+ 150g Azotobacter+100g PSB) and 2.44 in T12 (50% Recommended dose of NPK + 50 kg FYM + 150kg Azotobacter + 100g PSB). T3 and T5 were statistically at par similarly 13, T6, T8 and 112 were also found statistically on par.

The maximum number of fruits per cluster in T5 may be due to the fact that there was more supplement of nutrients to the plants. Azotobacter and PSB synergistically would have added more nitrogen and solubilized more phosphorus to plants, respectively. Similarly in T3 also and therefore, there was statistically on par results for number of fruits per cluster. Similar findings were also reported by Ram and Rajput (2000) [11], Meena *et al.* (2005) [4], Ram *et al.* (2007) [10] and Kirad *et al.* (2010) [2].

Fruit set (%)

The data on Fruit set (%) influenced by different treatments are presented in table 3 From the table it is evident that there was significant difference among various treatments for fruit set percentage in guava. The significantly maximum fruit (57.52) set percentage was obtained in T5 (100% Recommended dose of NPK + 50kg FYM + 150g Azotobacter+100g PSB) followed by 56.49 in T3 (100% Recommended dose of NPK + 10kg Vermicompost + 150g Azotobacter+100g PSB), 52.76 in T8 (75% Recommended dose of NPK +50 kg FYM+ 150g Azotobacter+100g PSB), 52.02 in 16 (75% Recommended dose of NPK + 10kg Vermicompost + 150g Azotobacter + 100g PSB) and 49.14 in 112 (50% Recommended dose of NPK + 50 kg FYM + 150kg Azotobacter + 100g PSB). T3 and T5 were statistically at par similarly T3, T8, T6 and T12 were also statistically on par.

The maximum fruit set percentage in T5 may be due to the fact that there was more supplement of nutrients to the plants. Azotobacter and PSB synergistically would have added more nitrogen and solubilizer more phosphorus to plants, respectively. Similary in T3 also and therefore, there was statistically on par results for fruit set percentage. Similar findings were also reported by Uma *et al.* (2002) [12], Pankaj and Raj (2008) and Mitra *et al.* (2010) [6].

Polar diameter (cm)

The data on polar diameter of guava fruits as influenced by different treatments are presented in table 4 At 30 days after fruit set maximum polar diameter (3.64 cm) was found in 14 (100% recommended dose of NPK + 50kg FYM + 150g Azotobacter + 100g PSB) followed by T3 (3,42 cm), Tg (3.33 cm), T6 (3.29 cm), T12 (3.21 cm), T1 1(3.11 cm) 12 (3.08 cm), T1 (3.03 cm), T7 (2.98 cm), T5 (2.96 cm), T9 (2.84 cm), and minimum polar diameter (2.80 cm) was found in To (100% recommended dose of NPK).

At 60 days after fruit set maximum polar diameter (4.15 cm) was found in T5 (100% recommended dose of NPK + 50kg FYM + 150g Azotobacter + 100g PSB) followed by T3 (4.12 cm), T8 (4.07 cm), T6 (4.05 cm), T12 (3.98 cm), T11(3.92 cm) T2 (3.89 cm), T1 (3.85 cm), T7 (3.82 cm), T5 (3.76 cm), Tio (3.69 cm), T9 (3.63 cm), and minimum polar diameter (3.53 cm) was recorded with To (100% recommended dose of NPK).

At 90 days after fruit set maximum polar diameter (5.37 cm) was found in T5 (100% recommended dose of NPK + 50kg FYM + 150g Azotobacter + 100g PSB) followed by T3 (5.26 cm), T8 (5.19 cm), T6 (5.14 cm), 112 (5.11 cm), Ti 1(5.07 cm) T2 (5.05 cm), T1 (5.03 cm), T7 (4.99 cm), T5 (4.94 cm), T10 (4.92 cm), T9 (4.89 cm), and minimum polar diameter (4.86 cm) was recorded with To (100% recommended dose of NPK).

At 120 days after fruit set maximum polar diameter (6.77 cm) was found in T5 (100% recommended dose of NPK + 50kg FYM + 150g Azotobacter + 100g PSB) followed by T3 (6.67 cm), T8 (6.54 cm), T6 (6.47 cm), T12 (6.33 cm), T11(6.27 cm) T2 (6.22 cm), Ti (6.16 cm), T7 (6.11 cm), T5 (6.03 cm), T10 (6.01 cm), T9 (5.98 cm), and minimum polar diameter (5.94 cm) was recorded with To (100% recommended dose of NPK). The maximum values were pertaining to T5 due to supply of higher amount of nutrients to the plants. These findings are in conformity with the results reported by Ram and Rajput (2000) [11] and Maity *et al.* (2006) [13].

Radial Diameter (cm)

The data on Radial diameter of guava fruits as influenced by different treatments are presented in table 5. At 30 days after fruit set maximum radial diameter (3.57 cm) was found in T5 (100% recommended dose of NPK + 50kg FYM + 150g Azotobacter + 100g PSB) followed by (3.42 cm) in T3 (100% recommended dose of NPK + 10kg Vermicompost + 150g Azotobacter+100g PSB) and minimum radial diameter (2.86 cm) was found in To (100% recommended dose of NPK).

At 60 days after fruit set maximum radial diameter (4.16 cm) was found in T5 (100% recommended dose of NPK + 50kg FYM + 150g Azotobacter + 100g PSB) followed by (4.10 cm) in T3 (100% recommended dose of NPK+ 10kg Vermicompost + 150g Azotobacter+100g PSB) and minimum radial diameter (3.56 cm) was recorded with To (100% recommended dose of NPK).

At 90 days after fruit set maximum radial diameter (5.37 cm) was found in 14 (100% recommended dose of NPK + 50kg FYM + 150g Azotobacter + 100g PSB) followed by (5.34 cm) in T3 (100% recommended dose of NPK+ 10kg Vermicompost + 150g Azotobacter+100g PSB) and minimum radial diameter (5.04 cm) was recorded with To (100% recommended dose of NPK).

At 120 days after fruit set maximum radial diameter (6.65 cm) was found in T5 (100% recommended dose of NPK + 50kg FYM + 150g Azotobacter +100g PSB) followed by (6.53 cm) in T3 (100% recommended dose of NPK+ 10kg Vermicompost + 150g Azotobacter+100g PSB) and minimum radial diameter (5.98 cm) was recorded with To (100% recommended dose of NPK). Treatment T5 had maximum effect on radial diameter of guava fruits. This may be due to supply of more plant nutrients to the plants at the same time

bio- fertilizers had positive effect on nutrient uptake ultimately resulting into higher radial diameter. Similar these findings are in conformity with the results reported by Ram and Rajput (2000) [11] and Maity *et al.* (2006) [13].

Fruit weight (g)

The data on fruit weight of guava fruits as influenced by different treatment are presented in table 6. At 30 days after fruit set maximum fruit weight (25.20) was found in T5 (100% recommended dose of NPK + 50kg FYM + 150g Azotobacter + 100g PSB) followed by (24.62g) in T3 (100% recommended dose of NPK+ 10kg Vermicompost+ 150g Azotobacter+100g PSB) and minimum fruit weight (14.17g) was found in To (100% recommended dose of NPK). At 60 days after fruit set maximum fruit weight (43.34g) was found in T5 (100% recommended dose of NPK + 50kg FYM + 150g Azotobacter + 100g PSB) followed by (42.18g) in T3 (100% recommended dose of NPK+ 10kg Vermicompost+ 150g Azotobacter+100g PSB) and minimum fruit weight (32.06g) was recorded with To (100% recommended dose of NPK).

At 90 days after fruit set maximum fruit weight (86.02g) was found in T5 (100% recommended dose of NPK + 50kg FYM + 150g Azotobacter + 100g PSB) followed by (85.34g) in T3 (100% recommended dose of NPK+ 10kg Vermicompost + 150g Azotobacter+100g PSB) and minimum fruit weight (75.87g) was found in To (100% recommended dose of NPK). At 120 days after fruit set maximum fruit weight (145.40g) was found in T5 (100% recommended dose of NPK + 50kg FYM + 150g Azotobacter + 100g PSB) followed by (144.74g) in T3 (100% recommended dose of NPK+ 10kg Vermicompost+150g Azotobacter+100g PSB) and minimum fruit weight (116.22g) was recorded with To (100% recommended dose of NPK). Application of 50 kg / tree FYM + 150 g Azotobacter + 100 g VAM + 500 g N: 250 g P205: 500g K20/ tree / year through fertilizer showed maximum yield (98.72 kg / plant) of litchi and also have a significant improvement in terms of TSS, ascorbic acid, TSS, fruit weight and fruits size. The maximum fruit weight pertaining to T5 may be due to supply of more nutrients to the plants. At the same time addition of biofertilisers certainly would have helped in more absorption of plant nutrients. A similar finding was reported by Dutta *et al.* (2010) [1].

Days to maturity

The data on the days taken fruit maturity from the flowering time or fruit set as influenced by different treatments are presented in table 7 and graphically shown in figure. It is evident from the table that there was significant differences among the treatment T5 (100% recommended dose of NPK + 50kg FYM + 150g Azotobacter + 100g PSB) took significantly less number of days to maturity (132.44 days) followed by (133.11 days) in T3(100% recommended dose of NPK+ 10kg Vermicompost + 150g Azotobacter + l00g PSB) and the maximum number of days to maturity (146.33 days) was found in To (100% recommended dose of NPK).

Fruit yield (kg / tree)

The data on fruit yield (kg/tree) as influenced by different treatments are presented in table 8. From the table 8 it is evident that there was significant difference among various treatments for fruits yield (kg/tree) in guava. The significantly maximum (94.63) of fruits yield (kg/tree) was obtained in T5 (100% Recommended dose of NPK + 50kg FYM + 150g Azotobacter+100g PSB) followed by (92.75) in 13 (100% Recommended dose of NPK + 10kg Vermicompost + 150g Azotobacter+100g PSB), (88.98) in T8 (75% Recommended dose of NPK +50 kg FYM+ 150g Azotobacter+100g PSB), (87.98) inT6 (75% Recommended dose of NPK + 10kg Vermicompost + 150g Azotobacter + 100g PSB) and (85.41) in T12 (50% Recommended dose of NPK+ 50 kg FYM + 150kg Azotobacter + 100g PSB). T3 and 1'4 were statistically at par similarly T3, T6, 18 and T12 were also statistically on par. The maximum fruits yield (kg/tree) in T5 may be due to the fact that there was more supplement of nutrients to the plants. Azotobacter and PSB substantially would have added more nitrogen and solubilized more phosphorus to plants, respectively. Similary in T3 also and therefore, there was statistically on par results for fruit yield. Similar findings were also reported by Ram and Rajput (2000) [11], Uma *et al.* (2002) [12], Meena *et al.* (2005) [4] and *Malty et al.* (2006) [13].

Table 2: Effect of different treatments on number of flowers per cluster of guava fruits

Treatments	Number of Flowers per cluster
T1 - 100% recommended dose of NPK	4.66
T2 - 100% Recommended dose of NPK + 10kg Vermicompost	4.88
T3 - 100% Recommended dose of NPK + 50kg FYM	4.88
T4 - 100% Recommended dose of NPK + 10kg Vermicompost + 150g Azotobacter + 100g PSB	5.11
T5 - 100% Recommended dose of NPK + 50kg FYM + 150g Azotobacter + 100g PSB	5.22
T6 - 75% Recommended dose of NPK + 10kg Vermicompost	5.11
T7 - 75% Recommended dose of NPK + 10kg Vermicompost + 150g Azotobacter + 100g PSB	5.11
T8 - 75% Recommended dose of NPK +50 kg FYM	4.99
T9 - 75% Recommended dose of NPK + 50 kg FYM + 150g Azotobacter + 100g PSB	5.10
T10 - 50% Recommended dose of NPK + 10kg Vermicompost	5.10
T11 - 50% Recommended dose of NPK + 50kg FYM	4.88
T12 - 50% Recommended dose of NPK + 10kg Vermicompost + 150g Azotobacter + 100g PSB	4.77
T13 - 50% Recommended dose of NPK + 50 kg FYM + 150kg Azotobacter + 100g PSB	4.99
F-test	NS
S.Ed (±)	0.4619
C.D. at 5%	0.9533

Table 3: Effect of different treatments on number of fruits per cluster of guava fruits

Treatments	Number of Fruits per cluster
T1 - 100% recommended dose of NPK	1.66
T2 - 100% Recommended dose of NPK + 10kg Vermicompost	2.10
T3 - 100% Recommended dose of NPK + 50kg FYM	2.22

T4 - 100% Recommended dose of NPK + 10kg Vermicompost + 150g Azotobacter + 100g PSB	2.88
T5 - 100% Recommended dose of NPK + 50kg FYM + 150g Azotobacter + 100g PSB	3.00
T6 - 75% Recommended dose of NPK + 10kg Vermicompost	2.00
T7 - 75% Recommended dose of NPK + 10kg Vermicompost + 150g Azotobacter + 100g PSB	2.66
T8 - 75% Recommended dose of NPK +50 kg FYM	2,10
T9 - 75% Recommended dose of NPK + 50 kg FYM + 150g Azotobacter + 100g PSB	2.66
T10 - 50% Recommended dose of NPK + 10kg Vermicompost	1.88
T11 - 50% Recommended dose of NPK + 50kg FYM	1.88
T12 - 50% Recommended dose of NPK + 10kg Vermicompost + 150g Azotobacter + 100g PSB	2.22
T13 - 50% Recommended dose of NPK + 50 kg FYM + 150kg Azotobacter + 100g PSB	2.44
F-test	S
S.Ed (±)	0.2085
C.D. at 5%	0.4305

Table 4: Effect of different treatments on fruit set (%) of guava fruits

Treatments	Fruit set %
T1 - 100% recommended dose of NPK	35.71
T2 - 100% Recommended dose of NPK + 10kg Vermicompost	42.94
T3 - 100% Recommended dose of NPK + 50kg FYM	45.37
T4 - 100% Recommended dose of NPK + 10kg Vermicompost + 150g Azotobacter + 100g PSB	56.49
T5 - 100% Recommended dose of NPK + 50kg FYM + 150g Azotobacter + 100g PSB	57.52
T6 - 75% Recommended dose of NPK + 10kg Vermicompost	39.17
T7 - 75% Recommended dose of NPK + 10kg Vermicompost + 150g Azotobacter + 100g PSB	52.02
T8 - 75% Recommended dose of NPK +50 kg FYM	41.85
T9 - 75% Recommended dose of NPK + 50 kg FYM + 150g Azotobacter + 100g PSB	52.76
T10 - 50% Recommended dose of NPK + 10kg Vermicompost	37.06
T11 - 50% Recommended dose of NPK + 50kg FYM	38.54
T12 - 50% Recommended dose of NPK + 10kg Vermicompost + 150g Azotobacter + 100g PSB	46.50
T13 - 50% Recommended dose of NPK + 50 kg FYM + 150kg Azotobacter + 100g PSB	49.14
F-test	S
S.Ed (±)	2.21
C.D. at 5%	2.50

Table 5: Effect of different treatments on Polar diameter (cm) Guava fruits at 30, 60, 90 and 120 days after fruit set

Treatments	Polar Diameter (cm) 30 DAFS	60 DAFS	90 DAFS	120 DAFS
T1 - 100% recommended dose of NPK	2.80	3.53	4.86	5.94
T2 - 100% Recommended dose of NPK + 10kg Vermicompost	3.03	3.85	5.03	6.16
T3 - 100% Recommended dose of NPK + 50kg FYM	3.08	3.89	5.05	6.22
T4 - 100% Recommended dose of NPK + 10kg Vermicompost + 150g Azotobacter + 100g PSB	3.42	4.12	5.26	6.67
T5 - 100% Recommended dose of NPK + 50kg FYM + 150g Azotobacter + 100g PSB	3.64	4.15	5.37	6.77
T6 - 75% Recommended dose of NPK + 10kg Vermicompost	2.96	3.76	4.94	6.03
T7 - 75% Recommended dose of NPK + 10kg Vermicompost + 150g Azotobacter + 100g PSB	3.29	4.05	5.14	6.47
T8 - 75% Recommended dose of NPK +50	2.98	3.82	4.99	6.11
kTg9 F- Y7M5% Recommended dose of NPK + 50 kg FYM + 150g Azotobacter + 100g PSB	3.33	4.07	5.19	6.54
T10 - 50% Recommended dose of NPK + 10kg Vermicompost	2.84	3.63	4.89	5.98
T_{11} - 50% Recommended dose of NPK + 50kg FYM	2.90	3.69	4.92	6.01
T_{12} - 50% Recommended dose of NPK + 10kg Vermicompost + 150g Azotobacter + 100g PSB	3.11	3.92	5,07	6.27
T_{13} - 50% Recommended dose of NPK + 50 kg FYM + 150kg Azotobacter + 100g PSB	3.21	3.98	5.11	6.33
F-test	S	S	S	S
S.Ed (±)	0.053	0.0708	0,0314	0.0486
C.D. at 5%	0.1103	0.1462	0.0648	0.1004

Table 6: Effect of different treatments on fruit weigh t(g) of Guava fruits at 30, 60, 90 and 120 days after fruit set

Treatments	Fruit weight (g)			
	30 DAFS	60 DAFS	90 DAFS	120 DAFS
T1 - 100% recommended dose of NPK	14.71	32.06	75.87	116.22
T2 - 100% Recommended dose of NPK + 10kg Vermicompost	18.20	37.01	82.09	130.62
T3 - 100% Recommended dose of NPK + 50kg FYM	18.63	38.42	83.29	131.27

T4 - 100% Recommended dose of NPK + 10kg Vermicompost + 150g Azotobacter + 100g PSB	24.62	42.18	85.34	144.74
T5 - 100% Recommended dose of NPK + 50kg FYM + 150g Azotobacter + 100g PSB	25.20	43.34	86.02	145.4
T6 - 75% Recommended dose of NPK + 10kg Vermicompost	17.12	34.88	80.50	126.71
T7 - 75% Recommended dose of NPK + 10kg Vermicompost + 150g Azotobacter + 100g PSB	20.72	41.06	84.53	137.91
T8 - 75% Recommended dose of NPK +50 kg FYM	17.83	35.94	81.29	127.81
T9 - 75% Recommended dose of NPK + 50 kg FYM + 150g Azotobacter + 100g PSB	22.87	41.50	84.83	139.89
T10 - 50% Recommended dose of NPK + 10kg Vermicompost	15.0	33.52	78.43	119.12
T11 - 50% Recommended dose of NPK + 50kg FYM	16.26	34.14	79.38	122.56
T12 - 50% Recommended dose of NPK + 10kg Vermicompost + 150g Azotobacter + 100g PSB	19.24	38.75	83.85	134.50
T13 - 50% Recommended dose of NPK + 50 kg FYM + 150kg Azotobacter + 100g PSB	19.69	40.82	80.79	135.60
F-test	S	S	S	S
S.Ed (±)	0.7960	1.2239	1.4153	1.1324
C.D. at 5%	1.6430	2.5262	2.9213	2.3373

Table 7: Effect of different treatments on days to maturity of guava fruits

Treatments	Days to maturity
T1 - 100% recommended dose of NPK	146.33
T2 - 100% Recommended dose of NPK + 10kg Vermicompost	139.33
T3 - 100% Recommended dose of NPK + 50kg FYM	138.11
T4 - 100% Recommended dose of NPK + 10kg Vermicompost + 150g Azotobacter + 100g PSB	133.11
T5 - 100% Recommended dose of NPK + 50kg FYM + 150g Azotobacter + 100g PSB	132.44
T6 - 75% Recommended dose of NPK + 10kg Vermicompost	142.10
T7 - 75% Recommended dose of NPK + 10kg Vermicompost + 150g Azotobacter + 100g PSB	134.88
T8 - 75% Recommended dose of NPK +50 kg FYM	140.10
T9 - 75% Recommended dose of NPK + 50 kg FYM + 150g Azotobacter + 100g PSB	134.21
T10 - 50% Recommended dose of NPK + 10kg Vermicompost	144.22
T11 - 50% Recommended dose of NPK + 50kg FYM	143.44
T12 - 50% Recommended dose of NPK + 10kg Vermicompost + 150g Azotobacter + 100g PSB	136.97
T13 - 50% Recommended dose of NPK + 50 kg FYM + 150kg Azotobacter + 100g PSB	136.09
F-test	S
S.Ed (±)	0.4529
C.D. at 5%	0.9348

Table 8: Effect of different treatments on fruit yield per plant (kg) of guava

Treatments	Fruit yield/plant (kg)
T1 - 100% recommended dose of NPK	67.12
T2 - 100% Recommended dose of NPK + 10kg Vermicompost	80.52
T3 - 100% Recommended dose of NPK + 50kg FYM	80.71
T4 - 100% Recommended dose of NPK + 10kg Vermicompost + 150g Azotobacter + 100g PSB	92.75
T5 - 100% Recommended dose of NPK + 50kg FYM + 150g Azotobacter + 100g PSB	94.63
T6 - 75% Recommended dose of NPK + 10kg Vermicompost	77.78
T7 - 75% Recommended dose of NPK + 10kg Vermicompost + 150g Azotobacter + 100g PSB	87.98
T8 - 75% Recommended dose of NPK +50 kg FYM	79.76
T9 - 75% Recommended dose of NPK + 50 kg FYM + 150g Azotobacter + 100g PSB	88.98
T10 - 50% Recommended dose of NPK + 10kg Vermicompost	76.76
T11 - 50% Recommended dose of NPK + 50kg	76.20
FT1Y 2 M- 50% Recommended dose of NPK + 10kg Vermicompost + 150g Azotobacter + 100g PSB	82.07
T13 - 50% Recommended dose of NPK + 50 kg FYM + 150kg Azotobacter + 100g PSB	85.41
F-test	S
S.Ed (±)	1.7013
C.D. at 5%	3.5116

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