

# Effects of organic manures and chemical fertilizers on the yield of brinjal (*Solanum melongina.L*) cv. Orathur local

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## Abstract

A field experiment was conducted at Department of Horticulture, Faculty of Agriculture, Annamalai University during 2016 evaluate the effect of organic manures and chemical fertilizers on the yield of brinjal. There were thirteen treatments consisting of organic, inorganic and combined sources of nutrients, the combined application of Vermicompost 5 t ha<sup>-1</sup> + 75% RDF+ CBF 400 g ha<sup>-1</sup> + Panchagavya 3% treatment showed the best performances. The maximum plant height number of branches, highest number fruits plant<sup>-1</sup>, fruit weight and fruit yield per plant were recorded combined application of manures and fertilizers. The highest yield (21.23 t ha<sup>-1</sup>) was also obtained from the combined application of organic and inorganic sources of nutrients. Application of vermicompost 5 t ha<sup>-1</sup>+75% .RDF+CBF 400 g ha<sup>-1</sup> gave better performance compared to only chemical fertilizers..

## INTRODUCTION

Brinjal (*Solanum melongena L.*) cv. Orathur local belongs to the family Solanaceae. It has originated from Indo- Burma region (Vavliov, 1926). Brinjal is distributed to all over the world which is worldwide known as aubergin and is one of the most popular and principal vegetable crops. It is otherwise called as poor man's crop grown in India and other parts of the world. India ranks second in the world production. Among the various technologies for boosting the productivity, nutrient management assumes greater significance in realizing the yield potential. The importance of organic manure has well recognized in the cultivation of vegetable crops long back. Farmers are using farmyard manure and compost on a wider scale for the cultivation of vegetables

Vermicompost is considered as an effective means of disposing of solid wastes and improving crop production through better soil fertility. Concentrated organic manures that are rich in plant nutrients could replace the inorganic fertilizers on equivalent nutrient basis. Neem Cake another organic source it is a byproduct obtained from neem seed kernels which have been crushed to extract the oil

Being totally botanical product it contains 100% natural NPK content and other essential micro nutrients. Consortium bio-fertilizer (CBF) is a fertilizer composed of microorganisms which are able to fix atmospheric nitrogen and they also enhance the availability of nutrients to plants and offer an eco-friendly, economically viable and socially acceptable means of reducing external input of chemical fertilizers. CBF inoculation is known to increase yield of crops by 5 to 20 per cent with a saving of nitrogen up to 40 per cent of recommended dose

This may be a concern for fertility maintenance but is obviously a barrier for higher plant nutrient uptake. To overcome this problem application of organic manures in combination with inorganic fertilizers and bio fertilizer called integrated nutrient management, can play an important role in brinjal cultivation. Integrated nutrient management has assumed greater significance in vegetable production. This practice sustains the productivity of soil under highly intensive cropping systems.

## MATERIALS AND METHODS

The present study entitled “Studies on organic manures and inorganic fertilizers on the field of nutrient management Brinjal (*Solanum melongena* .L) cv. Orathur local” was carried out in the vegetable unit, Department of Horticulture, Faculty of Agriculture, Annamalai University during the year 2015 . The experiment was laid out in Randomized Block Design with 3 replications and 13 treatments. The 40 days brinjal seedlings were transplanting was done at a spacing of 45 cm between rows and 60 cm between plants respectively During the crop growth. Required package of practices were given as per the recommendation to each experimental plots. Intercultural operations were followed timely. The nutrients were applied as per the treatment schedule. The observations were taken from five randomly selected plants, from each treatment. were recorded and analyzed statistically by the method suggested by Panse and Sukhatme (1995).

## Results and Discussion

It was observed that the application of organic and inorganic fertilizers alone and with combination had a great influence on the vegetative growth of the crop. The maximum plant height of 118.23 cm the highest number of branches plant<sup>-1</sup> (37.68) was recorded from the treatment T<sub>8</sub> containing vermicompost 5 t ha<sup>-1</sup> +75% RDF+CBF 400 g ha<sup>-1</sup> (Table 1). Whereas, the lowest plant height and branches were found with T<sub>1</sub>. Only organic manures could not increase the vegetative growth of plants and the reason may be that they released nutrients at a slower rate. On the other hand, the only application of inorganic fertilizer was also less effective than the combined application. These results were in conformity with the findings of Adil Reshman *et al.* (2015) found that the vegetative growth and yield brinjal was highest with the combined application of manures and fertilizers. The combined use of vermicompost 5 t ha<sup>-1</sup> + 75% RDF + panchagavya-3% also resulted in a higher nutrient

uptake (Jose *et al.*, 1988). Effect of organic and inorganic farming on flowering and fruiting from the data it appeared that flowering and fruiting of brinjal were positively influenced by sources of nutrients applied. The maximum number of flowers (94.2) plant<sup>-1</sup> was produced by T<sub>8</sub> treatment (Table 1). The maximum number of flowers (79.14) plant<sup>-1</sup> and maximum number of fruits (69.83) plant<sup>-1</sup> was also noted with T<sub>8</sub>. In both the cases the lowest value was obtained from the treatment T<sub>1</sub>. and the maximum fruit weight (166.83 g) was recorded with the combined application treatment T<sub>8</sub> (Table 1).

The results were, application of only organic manures maintained the good soil health, they were slow to release adequate nutrients timely. From the other side, inorganic fertilizers application could affect the soil health, which in turn may affect flowering and fruiting. So the combined application of manures and fertilizers may supply the nutrients timely and also maintain the suitable condition for flowering, fruiting and their growth. The finding is supported by Som, *et. al.* (1992), who found the highest fruit yield of T<sub>8</sub>. Nileema (2011) and Kondapa (2009) also reported that the combined use of organic manures and inorganic and CBF resulted in higher yields of tomato, eggplant and chilli than either inorganic fertilizer or organic sources used alone and lower level.

Different types of organic and inorganic fertilizers had great effect on the yield of brinjal. The result revealed that the maximum fruit yield (21.23 tha<sup>-1</sup>) was recorded from plant grown with the T<sub>8</sub> (combined application of treatment and the lowest was obtained from T<sub>1</sub> followed by T<sub>7</sub> the lowest was obtained from T<sub>1</sub>. This result is in agreement with the observation of Subba Rao and Ravi Sankar. 1998.

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