



EFFECT OF VARIOUS ORGANIC MANURE ON GROWTH OF *CAPSICUM ANNUUM*

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Article History: Received: 01.06.2023 Revised: 22.06.2023 Accepted: 10.07.2023

Abstract

The quality of the soil has declined as inorganic fertilizers have been used more frequently in agriculture. Growing as a potential final application for preserving soil productivity is vermicompost as a soil conditioner. The study investigates the effects of cowdung, vermicompost, and various organic manures on the growth and yield characteristics of the *Capsicum annuum* plant.

Vermicompost and farmyard manure applications showed noticeably higher growth and yield characteristics than other treatments, as was discovered after analysis. Vermicompost application has shown promising results in the cultivation of chillies, and it is better for achieving higher growth and yields of *Capsicum annuum*. Additionally, cow dung and leaf manure have shown good growth and high yields of chilli crops.

Key words: Occupational Stress, Travel and Tourism Trainers, Government Schools, Delhi.

1 Introduction

One of the broadest ranges of environmentally friendly agricultural techniques is organic agriculture. Inorganic fertilizer application to agriculture is now standard procedure, and the use of compost made from different types of green waste in agriculture is slowly making a comeback. It is a valuable source of plant nutrients and contains varying levels of N, P, and K. Due to their high cost and sporadic unavailability on the market, inorganic fertilizers are frequently not applied to crop fields at the most effective times by farmers. However, compared to artificial fertilizers, organic manure is more widely accessible to farmers and costs less. Organic agriculture is most frequently described as a technique for preserving the soil's natural fertility,

the biological diversity of the species, and the ecological balance of the environment. One of the most cost-effective and alluring ways to address issues like trash disposal and the need to raise the organic matter content of soil is by applying vermicompost made from biodegradable waste. Prior to the experiment in the current investigation, soil analysis was conducted to assess the soil's nutrient availability and to establish how much organic or chemical fertilizer would be needed to meet the soil's nutrient needs. A significant crop, *Capsicum annuum* are utilized as both spices and green vegetables. It contains a lot of vitamin A, C, and E. The alkaloid capsaicin is responsible for the pungency of *Capsicum annuum*. This is highly medicinal, especially for anti-inflammatory and quick

pain relief. States like Andhra Pradesh, Karnataka, Maharashtra, West Bengal, Rajasthan, etc. are important chilli farming states in India. There is a higher danger of health risks with the careless use of fertilizers and chemicals. Since most people eat vegetables raw or only slightly cooked, they should be free of any chemical fertilizer leftovers. In addition, ongoing usage of chemical fertilizers has caused the decreased soil health.

Because of all these factors, Integrated Nutrient Management (INM) is currently given a lot of attention. Both organic manures and inorganic fertilizers work effectively when applied to chilli crops. Major nutrients and minerals are provided by organic manures, which also enhance a number of soil characteristics and soil health that support crop productivity. The majority of small-scale farmers still rely on inexpensive, basic resources like land and labor. Usage of synthetic fertilizers and new crop varieties. According to reports, the use of fertilizer is to blame for more than Crop yields increased by 50%. It is commonly acknowledged that organic farming, which is based on nature, is environmentally benign, and ensures resource conservation for the future, might function as a comprehensive strategy for attaining sustainable agriculture. These chillies could be valuable specialty crops for small- and medium-sized farmers.

2 Materials and Methods

During the Kharif season of 2021–22, field tests were undertaken in the Division of Vegetable Crops, Research and Instruction Farm of Horticulture, Purena, Raipur, Chhattisgarh. The experimental field is situated at latitudes 120 58' north, 780 45' east, and an altitude of 890 meters above mean sea level, respectively. The studies were carried out in the just started organic farming study using a Randomized Block

Design that was reproduced twice. Along with no manure control, there were nine treatments using various organic manures. The different organic manure treatments tried were: T1- Control @ (no manure), T2- Vermicompost @ 2.5 t ha⁻¹, T3 : Cow dung @ 10 t ha⁻¹, T4- Leaf manure @ 5 t ha⁻¹ + cow dung 10 t ha⁻¹, T5- Leaf manure @ 5 t ha⁻¹, T6-Neemcake @ 1 t ha⁻¹, T7- Vermicompost @ 2.5 t ha⁻¹+FYM @ 12.5 t ha⁻¹, T8-Poultry manure @ 1.5 t ha⁻¹, T9-Night soil @ 5 t ha⁻¹. The pH of the soil in the test field was 7, and it had a clayey loam texture. The biometric measurements, including plant height, leaf count, branch count, fruit count, fruit weight (g), and moist red fruit yield, were noted.

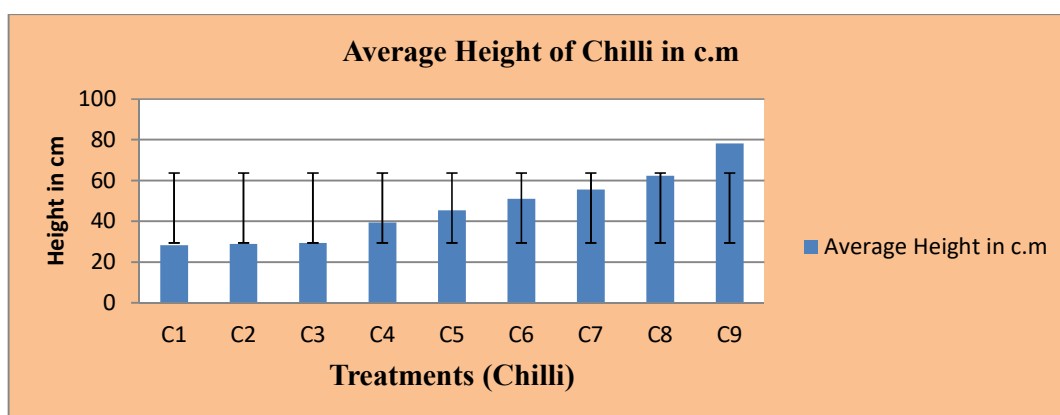
3 Results and Discussion

3.1 Growth Parameters

The findings shown in table 1 made it abundantly evident that the vermicompost and other organic manures, when used in varied combinations, significantly influenced the growth characteristics of the *Capsicum annuum* plant when organic fertilizers were present in varying quantities. Additionally, the outcomes showed that in comparison to the untreated control (plant height 46.27 cm, number of leaves 45.31, primary branches 4.78) the treatment of combination of vermicompost at 2.5 t ha⁻¹ and FYM at 12.5 t ha⁻¹ shows the maximum plant height (42.23 cm), higher number of leaves (84.22), and number of primary branches/plant (12.75). The yield and micronutrient content of plants are both influenced by organic fertilizers, which support crop productivity. With all of these treatments, the plant's height, leaf count, and number of major branches all rose dramatically.

Table 1 Height of the *Capsicum annum* Plant at Flowering Stage

SN	Treatments(Chilli)	Average Height in c.m
1	C1	28.23
2	C2	28.94
3	C3	29.45
4	C4	39.47
5	C5	45.36
6	C6	50.89
7	C7	55.54
8	C8	62.35
9	C9	78.23

**Graph 1 Height of the *Capsicum annum* at Flowering Stage**

3.2 Yield Parameters

The yield parameters, including fruit production per plant, green fruit weight, and dry fruit weight (g), all considerably improved with each treatment. In the treatments using a combination application of vermicompost and FYM, there were more fruits per plant (16.57), more green fruits (32.86 g), and more dry fruits (16.12 g) overall. When compared to the control, this therapy had the greatest levels of these metrics. The improved root development, increased water and nutrient intake, increased plant growth, increased photosynthesis, and improved food accumulation may be the causes of the rise in yield metrics. It was also suggested that a significant increase in the number of fruits and their fresh, dry weight may have accelerated the mobility of photosynthetic from source to sink, which was influenced by the growth hormones released from vermicompost. This would increase the

availability of nutrients, particularly protein synthesis.

4 Conclusion

Vermicompost, neem cake, leaf manure, and combinations of these nutrients can significantly and positively impact the productivity and quality characteristics by maximizing the benefits from all sources in an integrated way, the optimal supply of various plant nutrients maintains the ideal crop productivity. The conclusion reached from the current analysis is unequivocal: organics are useful substitutes as a source of macro- and micronutrients and have the ability to increase production, hence avoiding expensive chemical fertilizers.

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