

Effect of Organic Manure on Growth and Flowering of Rose

ARTICLE ID: 0357

Ritwik Giri*, Koushik Deka, Ritesh Kumar

CSB-CTRTI, Ranchi, Jharkhand, India

www.agrirootsmagazine.in

ISSN: 2583-9071

Roses (*Rosa* spp.) are among the most important ornamental plants cultivated worldwide for their aesthetic, commercial, and industrial value. Nutrient management plays a crucial role in determining plant growth, flowering performance, and overall plant health. The present study was conducted to evaluate the effect of organic manure on the growth and flowering of rose plants under field conditions.

The experiment consisted of three treatments: control (no manure), farmyard manure (FYM), and vermicompost, arranged in a Randomized Block Design (RBD) with three replications. Organic manures were applied at recommended doses and thoroughly incorporated into the soil before planting. Growth parameters such as plant height, number of branches, and leaf area, along with flowering parameters including number of flowers, flower diameter, and bloom duration, were recorded.



The results revealed that organic manure significantly enhanced both vegetative growth and flowering performance compared to the control. Vermicompost showed the highest improvement, followed by FYM. The study concludes that organic manure, particularly vermicompost, is highly effective for sustainable rose cultivation.

1. Introduction

Roses (*Rosa* spp.) are widely regarded as the “queen of flowers” due to their beauty, fragrance, and economic importance in the floriculture industry. They are extensively used for cut flowers, garden decoration, and perfume extraction. The productivity and quality of rose plants largely depend on soil fertility and nutrient management practices.

Conventional agriculture relies heavily on chemical fertilizers to enhance plant growth; however, excessive use of these inputs leads to soil degradation, nutrient imbalance, and environmental pollution. In contrast, organic manures such as farmyard manure (FYM) and vermicompost provide a sustainable alternative by improving soil structure, increasing

microbial activity, and supplying nutrients in a balanced manner.

Vermicompost, produced through the activity of earthworms, is rich in essential nutrients, enzymes, and plant growth regulators. It enhances soil aeration, water-holding capacity, and nutrient availability, thereby promoting better plant growth and flowering. Farmyard manure also improves soil fertility, though its nutrient release is slower compared to vermicompost.

Despite the known benefits of organic manures, comparative studies on their effects on rose growth and flowering under field conditions are limited. Therefore, the present study was undertaken to evaluate the performance of different organic manures and to identify the most suitable option for sustainable rose cultivation.

2. Materials and Methods

2.1 Experimental Site and Soil

The experiment was conducted in an open field under natural environmental conditions. The soil was prepared by deep ploughing up to 30 cm depth, followed by removal of weeds, stones, and debris. It was brought to a fine tilth and analyzed for basic properties. The soil was loamy in texture with good drainage capacity, suitable for rose cultivation.

2.2 Treatment Details and Experimental Design

The experiment consisted of three treatments:

- **T₁**: Control (no manure)
- **T₂**: FYM @ 10 kg/plant
- **T₃**: Vermicompost @ 5 kg/plant

The treatments were arranged in a Randomized Block Design (RBD) with three replications.

2.3 Application of Organic Manure

Well-decomposed FYM and vermicompost were air-dried and thoroughly mixed with the topsoil (0–15 cm depth) before planting. The soil was left for one week after incorporation to stabilize and activate microbial processes. Light irrigation was applied to maintain adequate moisture.

2.4 Planting and Crop Management

Healthy and uniform rose saplings were transplanted with proper spacing. Standard agronomic practices such as irrigation, weeding, and soil loosening were followed.

Pest management included regular monitoring, removal of infected plant parts, and application of neem oil spray (2–3%). Adequate spacing and aeration were maintained to reduce humidity and pest incidence.

2.5 Observations Recorded

Growth parameters:

- Plant height (cm)
- Number of branches per plant
- Leaf area (cm²)

Flowering parameters:

- Number of flowers per plant
- Flower diameter (cm), Bloom duration (days)





Fig:- Experiment Field (From Rose Cutting to Fully grown rose, including all treatment)

3. Results

Table 1. Growth Parameters

Treatment	Plant Height (cm)	Branches/Plant	Leaf Area (cm ²)
Control	45	8	25
FYM	58	12	32
Vermicompost	65	15	38

Table 2. Flowering Parameters

Treatment	Flowers/Plant	Flower Diameter (cm)	Bloom Duration (days)
Control	10	5.5	4
FYM	14	6.8	6
Vermicompost	18	7.5	8

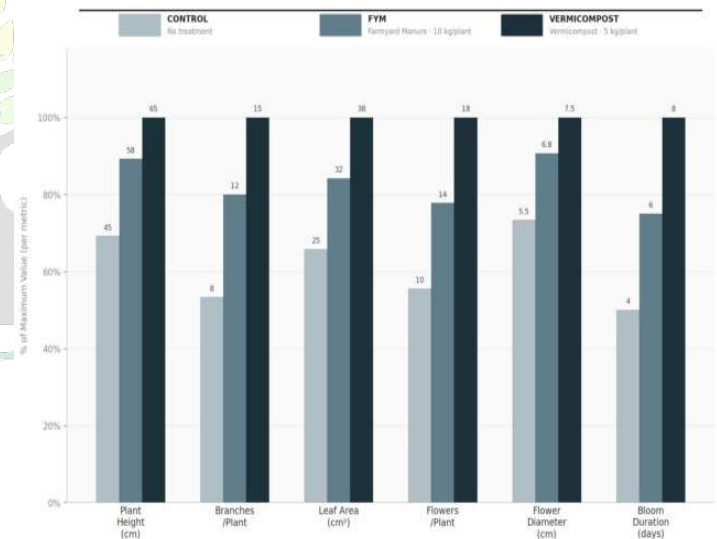
4. Discussion

The results clearly indicate that organic manure significantly enhances both vegetative growth and flowering in rose plants. Vermicompost showed superior performance due to its higher nutrient content and the presence of plant growth regulators. It

improved plant height, branching, and leaf area by promoting efficient nutrient uptake and enhancing soil microbial activity.

The increased number of flowers and larger flower diameter in vermicompost-treated plants indicate improved reproductive efficiency. The extended bloom duration reflects better plant vigor and sustained nutrient supply. FYM also improved growth and flowering; however, its effect was comparatively lower due to slower nutrient release.

The findings suggest that organic manure improves soil structure, enhances water retention, and supports beneficial microorganisms, contributing to long-term soil fertility and sustainability.



5. Conclusion

The study concludes that organic manure significantly improves the growth and flowering of rose plants. Among the treatments, vermicompost was found to be the most effective, followed by farmyard manure. Therefore, the application of organic manure, particularly vermicompost, is recommended for sustainable and profitable rose cultivation.

References

1. Brady, N.C., & Weil, R.R. (2016). *The Nature and Properties of Soils*.
2. FAO (2021). *Organic Agriculture Guidelines*.
3. ICAR (2020). *Organic Manure Management Practices*.
4. Edwards, C.A. (2017). *Vermiculture Technology*.
5. Singh, A.K. et al. (2019). Organic manure effects in floriculture.
6. Kumar, P. et al. (2021). Growth response of roses.
7. Ghosh, S. et al. (2020). Soil fertility studies.

