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Effects of Different Amounts of Litter Earthworm Compost on the Growth of Rose

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Abstract: ***Catharanthusroseus, commonly known as pink periwinkle or rose periwinkle is a species of flowering plant from the family Apocyanacea. It is grown as an ornamental and medicinal plant. This plant is a source of the drungsVinicistina and Viniblastine that are commonly used to treat cancer. A field experiment was conducted with periwinkle (Catharanthusroseus L.) to study the influence of different treatments of vermicompost with inorganic fertilizers on the growth and yield of periwinkle. Application of different organic sources and inorganic fertilizers had significantly increased the plant growth, no.of leaves and no. of flowers of periwinkle over control.***

Keywords: Vermicompost, earthworm, Periwinkle, *Eudriluseuginae*

1. Introduction

Vermicomposting is a biological process where earthworms naturally convert the organic waste matter into a nutrient rich vermicompost. Vermicomposting of organic waste material turns into a safer and more stable product vermicompost that is suitable for application to soil (Lazcano *et al*., 2008) [1]. This biotechnology process also reduces the transportation costs because of the significant reduction in the water content of the raw organic matter. Composted materials are therefore gaining acceptance as organic fertilizers in sustainable agriculture to study the effects of vermicomposton soil properties and plant growth. Recently, vermicomposting has been recognized as one of the most appropriate methods to stabilize organic waste. In terms of a system for waste management, vermicomposting is sustainable, economically viable, and without detrimental effects to human health or to the environment. Earthworms are among the most important detritivores in terrestrial ecosystems in terms of biomass and activity (Edwards *et al*., 2002) [2].

It has been reported by various workers that vermicompost production from leaf of different plant such as saw dust, paddy straw and wheat straw (Indrajeet and Singh, 2010) [3]. Ashoka tree (*Polyalthialongifolia* leaf litter) [5]. Sugarcane leaf (Alagesan and Dheeba, 2010) [4].Teak tree leaves litter (*Tectonagrandis*) Jayanthi*et al*., 2010) [5] and Tendu leaf litter (Mushan and Rao,2012) [6]., etc. is a feasible technique. The study of Ritu *et al*., (2017)[7] recommends that Eucalyptus leaf wastes is suitable mix for making vermicompost rich in nutrients and microorganisms that can be used as suitable organic soil amendment. Sangeetha *et al*., 2012[8] studied the response of *Catharanthusroseus* to various organic and inorganic fertilizers.

2. Materials and methods

The leaf litter was used as a substrate was collected at random from the College campus of P.G. College, D.B.F. Dayanand college of arts and science, Solapur and decomposed in the pit by adding decomposing culture that is obtained from ZARS, Solapur.

After 30 days, the C: N ratio of decomposed leaf litter waste was tested and once it was found to be less than 20, the decomposed waste is brought to vermicomposting unit of the college and vermicomposted the waste by raised bed method using the earthworm species, *Eudriluseugeniae*.The temperature and moisture are maintained throughout the experimentation by sprinkling water as required.

This experiment was carried out as randomized completely block design with 4 treatments.
T0- control i.e. soil,
T1-100% vermicompost,
T2- 50% vermicompost + soil,
T3-soil + vermicompost + urea
T4- soil + urea

During growth period, irrigation rate humidity and temperature were similar. Average temperature of day and night were 29 °C and 17 °C, respectively during growth period

3. Results

Table 1.1: Effect of vermicompost on the growth,height of the plant(cm), no. of leaves and no. of flowers of Periwinkle.

Treatments	Height of the plant in cm	No. of leaves	No. of flowers
T0	21 ±0.2	18±0.1	3±0.1
T1	24±0.9	20± 0.2	4±0.1
T2	26±0.6	24±0.2	5±0.2
T3	27± 0.9	30 ±0.4	6±0.2
T4	22±0.2	20±0.1	2± 0.1

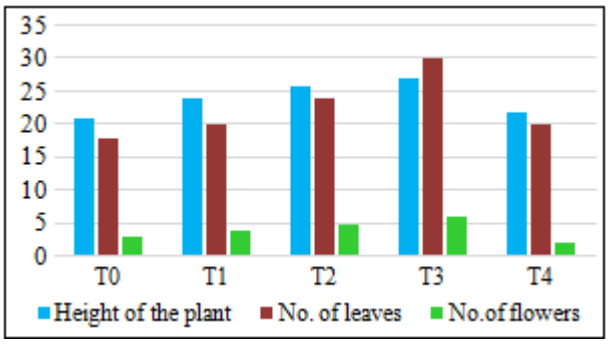

Figure 1.1: Effect of vermicompost on the growth, height of the plant (cm), no. of leaves and no. of flowers of Periwinkle

4. Discussion

Analysis shows that effect of organic fertilizer was significant in height of periwinkle. Maximum height 27cm obtained in the treatment T3 and number of leaves, number of flowers are more than other treatments. Vermicompost treated soil showed increased plant growth, number of leaves, flowers and fruits compared to control soil. Significant yield was also recorded on vermicompost soil by (Sundararasu and Neelanarayanan, 2012) [9]. Vermicompost also can be utilized for the crop production (Sundararasu, 2019) [10].

5. Conclusion

Vermicomposting is a biotechnological process of earthworms the natural farmers friend. They play an important essential role in the breakdown of organic matter, improve physico-chemical properties and maintain the soil fertility. The earthworms recycle the organic leaf litter waste and enhanced the plant growth.

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