

Vermicomposting Technology As Fertilizer For Improvement Of Crops/Plants

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Abstract At global, use of chemical fertilizers reduce land productivity and crops/plants which become dependent on periodic inputs of the chemical fertilizers. Land need to be prevented from degradations. Green manures are effective alternatives in chemical fertilizers in the management and preservation of soil fertility and productivity, adding organic matter and nutrients to the soil. Soil fertility could be improved and maintained initially through use of organic inputs like well decomposed organic manure as well as Vermicompost. The best alternative of the present day's environmental degradation is to make proper use of the available unutilized organic biodegradable wastes in order to convert them into compost within a short period. Vermicompost could be used as an excellent soil amendment for main fields. The waste is often left unattended at the disposal sites, creating a health hazard. The slogan international worth recollection is "Don't waste, waste as waste is precious". Improper solid waste disposal contribute to local episodes of diseases, regional water resources pollution and global green-house gases. The process of vermicomposting requires the individual to collect the kitchen and garden etc waste in a container rather than disposing it. So, the vermin-culture is an environmentally beneficial technique and it requires little investment of time and some inexpensive materials.

Keywords: Kitchen Waste, Indoor Environment, Chemical fertilizer, Eco-Friendly worms.

I. INTRODUCTION

The sustainable and eco-friendly development of human resources in a country is not possible without the preservation of clean environment. Many opportunities will be lost if urgent resource management and regeneration plan are not put into action. An improper handling or neglect of waste effects the environment and health of living beings whereas its appropriate management ensures conservation of environment and better health of living beings. The disposal of garbage from kitchen and garden is becoming an attention drawing problem in urban areas.

We find heaps of garbage in many street corners and on road sides creating insanitary conditions. This results in an unhealthy environment. India produces around 3000 million tones of organic waste annually. This huge volume of waste(s) comes from agriculture, urban and industrial sources and also from domestic activities. So there is an urgent need to develop proper waste management technique for recycling of organic waste created from kitchen, farms and water bodies. It is estimated that in cities a human being creates about 0.4kg waste per day. Thus by year 2000, when there will create city refuse of about 44 (0.4 kg X300m.X 365 days) million per year. A clean and green city is bound to be free of environment degradation. One of

major aims of making a city environmentally safe is to rid of its garbage and particularly implement the concept of 'zero garbage' at least by road side. And therefore an eco-friendly way of disposing garbage must be given a thought to clean and beautify or cities.

The environment is very broad in itself, consisting of natural resources like air, water, soil etc. we are the only living beings to have such an environment which made life possible. Therefore, it becomes our prime duty to conserve our beautiful environment.

II. MATERIAL & METHODS

EXPERIMENT NO-1

EFFECTS OF VERMICOMPOST ON GROWTH AND COMPOSITION OF WHEAT

DRY MATTER YEILD (Table 1.1)

With increase in levels of Vermicompost increase in dry matter if yield of tops of 50 days and grains of 120 days old wheat plants was observed. As compared to control, all the treatment tested for Vermicompost showed highly significant ($P=0.01$) increase in dry matter yield of tops of 50 days and grains of 120 days old plants.

Table : 1.1 EFFECTS OF VERMICOMPOST ON DRY MATTER YIELD WHEAT PLANTS

Plants		Control	Treatments						LSD at	
Days	Part		g Vermicompost/kg soil						P=0.05	P=0.01
			12.5	25	50	75	100	150		
		1	2	3	4	5	6	7		
G dry matter yield plant										
50	Tops	0.071	0.078	0.083	0.091	0.097	0.103	0.170	0.006	0.009
120	Grains	2.05	3.01	3.44	3.59	3.65	3.65	3.69	0.42	0.57

150g Vermicompost showed maximum dry matter yield of tops of 10 days and grains of 120 days old wheat plants.

CHLOROPHYLL (Table 1.2)

Vermicompost showed increase in chlorophyll content us leaves of both 10 days about plants.

As compared to control, all the level tested of Vermicompost showed highly significant (P=0.01) increase in chlorophyll content of leaves of 50 days old plants.

Maximum chlorophyll content was observed with 150 g Vermicompost per kg soil in leaves 50 days old wheat plants.

Table : 1.2 EFFECTS OF VERMICOMPOST ON CHLOROPHYLL OF WHEAT PLANTS

Plants		Control	Treatments						LSD at	
Days	Part		g Vermicompost/kg soil						P=0.05	P=0.01
		1	2	3	4	5	6	7		
g chlorophyll/100g FM										
50	Leaves	101	118	128	136	136	142	148	5	7

As compared to control, all the levels tested of Vermicompost showed highly significant (P=0.01) increase in activities of tops of 50 days old plants.

Maximum activities in tops of 50 days old wheat plants were observed with 150g Vermicompost per kg soil.

Vermicompost in tops of 50 and fruits of 120 days old tomato plants.

As compared to control, all the treatment tested for Vermicompoist showed highly significant (P=0.01) increase in dry matter yield of tops of 50 days and fruits of 120 days old tomato plants.

EXPERIMENT NO-2

EFFECTS OF VERMICOMPOST ON GROWTH AND COMPOSITION OF TOMATO (LYCOPERSIUM ESCULANTUM, MILL VAR) PLANTS

DRY MATTER YIELD (Table 2.1) Dry Matter yeild of tomato plants increased with the increase in level of

A highly significant (P=0.01) increase in dry matter yield of tops of 50 and fruits of 120 days old plants was observed at each level of 120 days old plants over its preceding level of Vermicompost.

150 g Vermicompost showed maximum dry matter yield of tops of 50 days and fruits of 120 days old tomato plants.

Table : 2.1 EFFECTS OF VERMICOMPOST ON MATTER YIELD OF TOMATO (LYCOPERSIUM ESCULANTUM, MILL VAR) PLANTS

Plants		Control	Treatments						LSD at	
Days	Part		g Vermicompost/kg soil						P=0.05	P=0.01
			50	100	50	50	100	150		
		1	2	3	4	5	6	7		
G dry matter yield/plant										
50	Tops	10.09	10.19	10.51	11.19	11.78	12.25	12.28	0.004	0.006
120	Fruits	1.25	1.63	1.72	1.90	2.00	2.07	2.12	0.03	0.05

CHLOROPHYLL (Table 2.2)

With the increase in levels of Vermicompost showed increase in chlorophyll content of leaves of both 50 days old tomato plants.

As compared to control, all the level tested of Vermicompost showed highly significant (P=0.01) increase in chlorophyll content of leaves of 50 days old plants.

Maximum chlorophyll content was observed in leaves of 50 days old plants at 150 g Vermicompost per kg soil level.

Table : 2.2 EFFECTS OF VERMICOMPOST ON CHLOROPHYLL OF TOMATO PLANTS (LYCOPERSIUM ESCULANTUM, MILL VAR) PLANTS

Plants		Control	Treatments						LSD at	
Dys	Part		g Vermicompost/kg soil						P=0.05	P=0.01
			50	100	150	50	100	150		
		1	2	3	4	5	6	7		
		g chlorophyll/100g FM								
50	Leaves	109	111	116	121	122	123	128	2	3

III. CONCLUSION

Vermiculture is the best way of disposing waste coming from kitchen or kitchen garden. Through this process no chemicals; no any reaction needed to convert these wastes into manure. It is a proper method of handling of waste which appropriate management of these wastes and ensures conservation of environment and better health of living beings. Vermiculture production has now become a major component of agri-business models across the country. Vermicompost is richer in nutrients than the compost from a regular backyard composter. It is also performs better as a planting medium than a commercial potting mix with added nutrients. Worm castings, which are product from vermicomposting, also hold moisture better than plain soil and contain worm mucus which allows for the prevention of nutrients being washed away at first watering.

The most important points which emerged from the studies presented in the world are listed as under :-

1. Tops at 50 days grains of 120 days old wheat plant, and tops of 50 and fruits of 120 days old tomato plants were taken for estimation of growth and composition of plants.
2. Dry matter yield of tops and grains of wheat and tops and fruits of tomato was found to be maximum at 150g Vermicompost/kg soil.
3. Chlorophyll content was found to be maximum at 150 g Vermicompost/kg soil in leaves of 50 days old tomato plants.

4.

Overall 150g Vermicompost/kg soil level was found to best for yield of chlorophyll content of both wheat and tomato plants.

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