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ANALYSIS

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SIGNIFICANCE OF VEGETABLE WASTE WITH VERMICOMPOST AND ITS RESPONSE ON GROWTH OF LADY'S FINGER

(*Abelmoschus esculentus L.)*

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ABSTRACT

Vegetable crops generate a large amount of crop residues after harvesting of economic part. These potentially nutritious residues are soft, succulent and easily decomposable and instead of disposing or damping, it can be used as source of organic residues for utilizing the embedded nutrients through production. In the present study, diverse vegetable wastes were recycled for vermicomposting and their effects were evaluated in tank experiments in organic lady's finger production. The main aim of this investigation was focused on the assessment of the potency of selected earthworm species *Eisenia foetida* with respect to their biodegradation of vegetable waste (Combination of solanaccae, leguminaccae, cruciferae, cucurbitaccae families) into organic manure known as vermicompost and the effect of vermicompost on the growth parameters namely plant height, leaf length, number of leaves, vegetable length and total yield of fruits. During the present study vermicomposting alone and chemical fertilizer alone treatment the growth attributes were drastically decreased when compared that of the treatment of vermicompost with 4 families. Hence based on the various studies performed it was concluded that the vermicompost obtained from the degradation of combination of solanaccae ,leguminaccae, cruciferae, cucurbitaccae families by *Eisenia foetida* is an effective organic manure which would facilitate increased uptake of the nutrients by the plants (*Abelmoschus esculentus L.)* resulting in higher growth and field.

KEY WORDS

Vegetable waste, Vermicompost, *Eisenia foetida*, Lady's finger

INTRODUCTION

In the present day, major environments like air, water, soil are getting polluted due to the various natural and anthropogenic activities like dumping of municipal solid waste without proper treatment, discharging waste water into the water bodies. The goal of conventional composting is to create a rich soil amendment using a specific combination of organic matter. Vermicomposting uses earthworms to achieve the same goal. Like regular compost, vermicompost also benefits to the environment because it may reduce the need for chemical fertilizers and decrease the amount of waste entering landfills. The chemical secretions in the earthworms digestive tract help break down soil and organic matter, so the castings contain more nutrients that are immediately available to plants. Vermicompost is similar to conventional compost and can be applied in the same way to gardens, lawns and potted plants. Karthikeyan et al.,(2007) reported that vermicomposting is a promising technique that has shown its potential in certain challenging areas like waste recycling and management of solid wastes. A large volume of organic matter generated from agriculture activities, industrial establishments, animal shelters and household activities are dumped to putrefy without proper utilization. Vermicomposting is considered superior to other types of compost because of its quality*(Punde and Ganorkar 2012).* They also collected vegetable waste from market and with different combination they obtain a result for vermicomposting. Alok bharatwaj(2010) use kitchen waste for vermicomposting and Sibi and Manpreet kaur together take effort on management of vegetable waste by vermi-composting technology.

Vermicomposting technology is globally becoming a popular solid waste management technique *(Abbasi et al.,(2009).* Vermicomposting is the bioconversion of organic waste into a bio-fertilizer due to earthworms activity(*Shweta 2011).* The earthworms feed on the organic waste and the earthworms gut acts as a bioreactor whereby the vermicasts are produced. By the time the organic waste is excreted by the earthworms as vermicasts, it will be rich in Nitrogen(N), Phosphorous(P) and Potassium(K) as well as trace elements depending on the feedstock type used(*Gurav and Pathade,2011).* The vermicomposting process is a mesophilic process and operating conditions such as temperatures, pH, electrical conductivity and moisture content levels must be optimized. Normally, the vermicomposting process takes place in vermi-reactors which include plastic, earthed pots and wood worm bins*(Manyuchi* et al.,

*2013).*Vermicomposting is an important aspects as it converts waste to wealth by using cheap eco-friendly option with activity of earthworm(*Alok bharadwaj 2010).*

Vermicompost in recent years has gained importance because of its higher value such as Nitrogen, Phosphorous, Potassium etc. Most vermicomposting experiments have used epigeic earthworm species because they possess higher composting potential. The introduction of foreign species has been justified by a few scientists though it is extremely unnecessary and undesirable to tamper with local biodiversity. Therefore, vermicomposting of vegetable waste was carried out amended with cattle manure and blended with saw dust. And keeping in view about the use of local species of earthworm, the present study was carried out using two exotic species *(Eisenia fetida, Eudrilus eugeniae)* and one local species(*Perionyx excavatus*) *(Khwairakpam Meena and Kalamdhad Ajay 2011).*

OBJECTIVE OF PRESENT STUDY

1.Impact recycling of vegetable wastes. It need to produce vermicompost in low cost.

2. The objective of this work was to evaluate the impact of vermicompost of Vegetable waste on lady's finger plant height, leaf length, number of leaves, fruit length and total yield of fruits.

3. The study was formulated with the aim of exploiting the potential lying in earthworm species to convert the vegetable waste into high quality organic manure and the influence of vermicompost on the growth of plants.

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MATERIALS AND METHODS

Selection of plant: Lady's finger(*Abelmoschous esculentus L.)*

CLASSIFICATION

Kingdom	: Plantae
Division	: Magnoliophyta
classs	: Magnoliopsida
Order	: Malvales
Family	: Malvaceae
Genus	: Abelmoschous
Species	: Abelmoschous esculentus

Field investigation were carried out Vannakkudi, Govindapuram(P.o), Thanjavur(D.t). During December 2014 to February 2015, to study the effect of vegetable waste with vermicomposting(organic manure) and inorganic fertilizer (chemical) on the growth and yield of transplanted Lady's finger the materials used and method adopted for the investigation are discuss in this chapter.

SOIL CHARACTER

The soil of study area was loamy and contain low amount of organic matters PH of the soil was 6.8- 7.8 and its slightly acidic in nature. The soil was rich in organic matter and moderately acidic. The climatic of the season is moderated and winter.

SEASON

The season of my study area was winter from December 2014 to February 2015.

VARIETY AND CHARACTER

Character of SM 164 green lady'finger is fleshy, large plant. It provide good yield, flowers are yellow in color that gives rise to the familiar Lady's finger vegetables.

Experimental set up 1

The tank experiment on vermicomposting was conducted during october to December of2014 at the village of vannakkudi, Govindapuram(po), Thiruvidaimaruthur(tk), Thanjavur(Dt)India. The area is characterized by rainfall, high relative humidity ,moderate temperature (maximum of 24–37°C), prolonged winter with high residual soil moisture. Apart from kitchen and market wastes ,vegetable residues from four different crop families and their combinations as well as cow dung were recycled for vermicompost production. Under the Solanaceae family ,tomato (*Lycopersicom esculentum Mill*.), potato (*Solanum tuberosum L*.) and brinjal (*Solanum melongena L*.) crop residues were collected after harvesting of the crops. For leguminous residues, garden pea *(Pisum sativumvar.hortense Asch. and Graebn*.), French bean (*Phaseolus*vulgaris L.) and dolichos bean (Dolichos *Lablab purpureus L*.)wastes were chosen. In theCruciferae family, unused part of cabbage (*Brassica oleracea var. capitata L*.), cauliflower(*Brassicaoleracea var. botrytis L*.)and knolkhol(*Brassica oleracea var.gongylodesL.)* were taken and for Cucurbitaceae family, leaves and vines of bottle gourd [*Lagenariasiceraria (Mol.)Standl*.], pumpkin (*CucurbitamoschataDuch ex Poir*.) and wax gourd [*Benincasahispida (Thunb*.) *Cogn*.]were collected and recycled for vermicomposting production.

Treatment details:

There were 3 treatments laid out in complete randomized design with three replications. The treatments were T1 was wastes from(Solanaceae, Leguminacae, Cruciferae and Cucurbitaceae family), T2 was vermicomposting alone, T7 was chemical fertilizer alone.

Vermicomposting

To prepare vermicompost for the treatments(T1)the collected vegetable wastes were finely chopped to 5 cm pieces and were allowed to pre-decompose aerobically for 20 days in cemented tank and mixing with cow dung at 1:1 ratio on weight basis. Then, 300 of adult [*Eisenia foetida*] were introduced individually into 2 kg of pre-decomposed bio wastes for the treatment T1,— again 20kg of cow dung used for the treatment (T2). Turning was given at 30 days interval for five times and intermittent sprinkle of water was done to keep the substrate moist enough (˜60 % moisture level) without stagnation of water at the bottom. After around 80 days, the feed materials were converted to odorless loose granular structure. The total earthworm biomass and vermicompost recovery from each treatment were recorded during harvesting of vermicompost. This method was adopted by *(Ranjit chatterjee et al.,2014).*

BIOMETRIC OBSERVATION

For recording biometric observation 6 plants were chosen by random sampling this plant were use for recording all biometric observation at different stage of the plant growth.

GROWTH ATTRIBUTES

Plant Height (cm)

The plant height was measured from ground level to the tip of most leaf these was observed at every 30 days interval. The mean height was worked out expressed in cm scaling.

Length of Vegetables (cm)

The length of vegetables was measured from the tip of the Lady's finger to edge of the Lady's finger. The measurement only for cm scaling.

The total number of leaves

The total number of leaves was counted in every 30 days interval.

The total yield of vegetables (gm):

The total yield of vegetables in plant were measured for digital weight parameter.

TABLE: 1

SIGNIFICANCE OF VEGETABLE WASTE WITH VERMICOMPOSTING AND CHEMICAL FERTILIZER ON THE PLANT HEIGHT IN LADY'S FINGER *(Abelmoschous esculentus L.)*

DAYS	TREATMENT(CM) IN PLANT HEIGHT		
	COMBINATION OF ALL FAMILIES(T1)	VERMICOMPOSTING ALONE(T2)	CHEMICAL FERTILIZER ALONE(T3)
30	5.71±0.97	4.48±1.0	4.89±0.75
%COFT	+14.36	-9.15	-
%COVT	+21.54	-	+8.38
60	10.98±1.68	7.9±1.36	8.1±1.71
%COFT	+26.22	-2.53	-
%COVT	+28.05	-	+2.46
90	24.18±1.37	20.75±1.69	21.05±1.05
%COFT	+12.94	-1.44	-
%COVT	+14.18	-	+1.42

MEAN ±STANDARD DEVIATION(mean of six individuals observation)

%COFT- PERCENTAGE CHANGE OVER CHEMICAL FERTILIZER TREATMENT

%COVT- PERCENTAGE CHANGE OVER VERMICOMPOST TREATMENT

TABLE: 2

SIGNIFICANCE OF VEGETABLE WASTE WITH VERMICOMPOSTING AND CHEMICAL FERTILIZER ON THE LEAF LENGTH IN LADY'S FINGER *(Abelmoschous esculentus L.)*

DAYS	TREATMENT(CM) IN LEAF LERNGTH		
	COMBINATION OF ALL FAMILIES(T1)	VERMICOMPOSTING ALONE(T2)	CHEMICAL FERTILIZER ALONE(T3)
30	3.46±0.79	2.56±0.73	2.81±0.61
%COFT	+18.78	-9.76	-
%COVT	+26.01	-	+8.89
60	4±0.90	3.0±0.97	3.38±0.78
%COFT	+1.55	-12.66	-
%COVT	+27.54	-	+11.24
90	4.05±0.95	3.55±0.87	3.56±0.94
%COFT	+12.34	+0.28	-
%COVT	+12.09	-	-0.28

MEAN±STANDARD DEVIATION(Mean of six individuals observation)

%COFT-PERCENTAGE OF CHANGE OVER CHEMICAL FERTILIZER TREATMENT

%COVT-PERCENTAGE OF CHANGE OVER VERMICOMPOST TREATMENT

TABLE: 3

SIGNIFICANCE OF VEGETABLE WASTE WITH VERMICOMPOSTING AND CHEMICAL FERTILIZER ON THE NUMBER OF LEAVES IN LADY'S FINGER *(Abelmoschous esculentus L.)*

DAYS	TREATMENT(CM) IN NUMBER OF LEAVES		
	COMBINATION OF ALL FAMILIES(T1)	VERMICOMPOSTING ALONE(T2)	CHEMICAL FERTILIZER ALONE(T3)
30	4.38±0.74	1.83±0.89	2.34±0.7
%COFT	+46.53	-27.87	-
%COVT	+58.22	-	+11.64
60	7.5±0.95	3.5±1.6	5.34±2.8
%COFT	+2.88	-52.57	-
%COVT	+53.33	-	+34.46
90	14.3±3.8	7±2.4	8.0±3.8
%COFT	+28.57	-14.29	-
%COVT	+30	-	+12.5

MEAN±STANDARD DEVIATION(Mean of six individuals observation)

%COFT-PERCENTAGE OF CHANGE OVER CHEMICAL FERTILIZER TREATMENT

%COVT-PERCENTAGE OF CHANGE OVER VERMICOMPOST TREATMENT

TABLE:4

SIGNIFICANCE OF VEGETABLE WASTE WITH VERMICOMPOSTING AND CHEMICAL FERTILIZER ON THE VEGETABLE LENGTH IN LADY'S FINGER *(Abelmoschus esculentus L.)*

DAYS	TREATMENT(CM) IN VEGETABLE LENGTH		
	COMBINATION OF ALL FAMILIES(T1)	VERMICOMPOSTING ALONE(T2)	CHEMICAL FERTILIZER ALONE(T3)
90	5.34±0.55	2.5±0.56	2.55±0.74
%COFT	+52.24	-2	-
%COVT	+53.18	-	+1.96

MEAN±STANDARD DEVIATION(Mean of six individuals observation)

%COFT- PERCENTAGE CHANGE OVER CHEMICAL FERTILIZER TREATMENT

%COVT- PERCENTAGE CHANGE OVER VERMICOMPOST TREATMENT

TABLE:5

SIGNIFICANCE OF VEGETABLE WASTE WITH VERMICOMPOSTING AND CHEMICAL FERTILIZER ON THE TOTAL YIELD OF FRUITS IN LADY'S FINGER ***(****Abelmoschus esculentus L.)*

DAYS	TREATMENT(CM) IN TOTAL YIELD OF FRUITS		
	COMBINATION OF ALL FAMILIES(T1)	VERMICOMPOSTING ALONE(T2)	CHEMICAL FERTILIZER ALONE(T3)
90	44.91±0.47	3.91±0.53	4.67±0.74
%COFT	+89.60	-19.43	-
%COVT	+91.29	-	+16.27

MEAN ±STANDARD DEVIATION(Mean of six individuals observation)

%COFT- PERCENTAGE CHANGE OVER CHEMICAL FERTILIZER TREATMENT

%COVT- PERCENTAGE CHANGE OVER VERMICOMPOST TREATMENT

RESULT

The preparation of vegetable waste with vermicomposting on cement tank experiments conducted at vannakkudi, Govindapuram(po), Thiruvidaimaruthur(Tk), Thanjavur(Dt) during winter season of December 2014 to February 2015. . The experiments treated with vegetable waste with vermicompost and chemical fertilizer. Treatment-1 Solanacae family contains tomato (*Lycopersicon esculentum Mill*.), potato (*Solanum tuberosum L*.), and brinjal (*Solanum melongena L*.), Leguminacae family contains garden pea (*Pisumsativumvar. hortense Asch*. and *Graebn*.), French bean (*Phaselusvulgaris L*.) and dolichos bean (*Lablab purpureus L*.). Cruciferae family contains cabbage (*Brassica oleracea var. capitata L*.), cauliflower (*Brassica oleracea var. botrytis L*.) and knolkhol (*Brassica oleracea var. gongylodes L*.) Cucurbitaccae family contains bottle gourd (*Lagenaria siceraria (Mol) Standl*.), pumpkin (*Cucurbita moschata Duch ex Poir*.) and wax gourd (*Benincasa hispida (Thunb.) Cogn*.) were collected. T-1 Combination of all families , Treatment-2 vermicomposting alone, Treatment-3 chemical fertilizer alone.

GROWTH ATTRIBUTES

Plant height on 30th day

In combination of all families (T-1) treatment the plant height showed 5.71±0.97 cm. In vermicomposting alone (T-2) treatment the plant height showed 4.48±1.0 cm. In chemical fertilizer alone (T-3) treatment the plant height showed 4.89±0.75cm. (Table 1)

During the vermicomposting alone and chemical fertilizer alone treatment the plant height drastically decreased when compared that the (T-1)combination of all families.(⁒ COFT +14.36 and ⁒COVT +21.54)(Table 1)

When compared with vermicomposting and chemical fertilizer alone treatment the plant height drastically decreased vermicomposting alone treatment (⁒ COFT -9.15).

Plant height in 60th day

In combination of all families (T-1) treatment the plant height showed 10.98±1.68 cm. In vermicomposting alone (T-2) treatment the plant height showed 7.9±1.36 cm. In chemical fertilizer alone (T-3) treatment the plant height showed 8.1±1.71 cm. (Table 1)

During the vermicomposting alone and chemical fertilizer alone treatment the plant height drastically decreased when compared that the (T-1) combines families.(%COFT+26.22 and%COVT +28.05) (Table 1)

When compared with vermicomposting and chemical fertilizer alone treatment the plant height drastically decreased vermicomposting alone treatment (% COFT -2.53).

Plant height in 90th day

In combination of all families (T-1) treatment the plant height showed 24.18±1.37 cm. In vermicomposting alone (T-2) treatment the plant height showed 20.75±1.69cm. In chemical fertilizer alone (T-3) treatment the plant height showed 21.05±1.05 cm. (Table 1)

During the vermicomposting alone and chemical fertilizer alone treatment the plant height drastically decreased when compared that the (T-1) combines families.(%COFT +12.94 and%COVT +14.18) (Table 1)

When compared with vermicomposting and chemical fertilizer alone treatment the plant height drastically decreased vermicomposting alone treatment (% COFT-1.44).

Leaf length in 30th day

In combination of all families (T-1) treatment the leaf length showed 3.46±0.79cm. In vermicomposting alone (T-2) treatment the leaf length showed 2.56±0.73 cm. In chemical fertilizer alone (T-3) treatment the leaf length showed 2.81±0.61cm. (Table 2)

During the vermicomposting alone and chemical fertilizer alone treatment the leaf length drastically decreased when compared that the (T-1) combines families.(%COFT+18.78 and% COVT +26.01) (Table 2)

When compared with vermicomposting and chemical fertilizer alone treatment the leaf length drastically decreased vermicomposting alone treatment (% COFT -9.76).

Leaf length in 60th day

In combination of all families (T-1) treatment the leaf length showed 4±0.90 cm. In vermicomposting alone (T-2) treatment the leaf length showed 3.0±0.97 cm. In chemical fertilizer alone (T-3) treatment the leaf length showed 3.38±0.78 cm. (Table 2)

During the vermicomposting alone and chemical fertilizer alone treatment the leaf length drastically decreased when compared that the (T-1) combines families.(%COFT +1.55 and %COVT +27.54) (Table 2)

When compared with vermicomposting and chemical fertilizer alone treatment alone the leaf length drastically decreased vermicomposting alone treatment (% COFT -12.66).

Leaf length in 90th day

In combination of all families (T-1) treatment the leaf length showed 4.05±0.95 cm. In vermicomposting alone (T-2) treatment the leaf length showed 3.55±0.87 cm. In chemical fertilizer alone (T-3) treatment the leaf length showed 3.56±0.94 cm. (Table 2)

During the vermicomposting alone and chemical fertilizer alone treatment the leaf length drastically decreased when compared that the (T-1) combines families.(%COFT +12.34 and %COVT +12.09 (Table 2)

When compared with vermicomposting and chemical fertilizer alone treatment the leaf length drastically decreased chemical fertilizer treatment (% COVT-0.28).

Number of leaves in 30th day

In combination of all families (T-1) treatment the number of leaves showed 4.38±0.74 cm. In vermicomposting alone (T-2) treatment the number of leaves showed 1.83±0.89 cm. In chemical fertilizer alone (T-3) treatment the number of leaves showed 2.34±0.7 cm. (Table 3)

During the vermicomposting alone and chemical fertilizer alone treatment the number of leaves drastically decreased when compared that the (T-1) combines families.(%COFT +46.53 and %COVT+ 58.22) (Table 3)

When compared with vermicomposting and chemical fertilizer alone treatment the number of leaves drastically decreased vermicomposting alone treatment (% COFT -27.87).

Number of leaves in 60th day

In combination of all families (T-1) treatment the number of leaves showed 7.5±0.95cm. In vermicomposting alone (T-2) treatment the number of leaves showed 3.5±1.6 cm. In chemical fertilizer alone (T-3) treatment the number of leaves showed 5.34±2.8cm. (Table 3)

During the vermicomposting alone and chemical fertilizer alone treatment the number of leaves drastically decreased when compared that the (T-1) combines families.(%COFT +2.88 and %COVT +53.33) (Table 3)

When compared with vermicomposting and chemical fertilizer alone treatment the number of leaves drastically decreased vermicomposting alone treatment (% COFT -52.57).

Number of leaves in 90th day

In combination of all families (T-1) treatment the number of leaves showed 14.3±3.8 cm. In vermicomposting alone (T-2) treatment the number of leaves showed 7±2.4 cm. In chemical fertilizer alone (T-3) treatment the number of leaves showed 8.0±3.8 cm. (Table 3).

During the vermicomposting alone and chemical fertilizer alone treatment the number of leaves drastically decreased when compared that the (T-1) combines families.(%COFT +28.57 and %COVT +30) (Table 3).

When compared with vermicomposting and chemical fertilizer alone treatment the number of leaves drastically decreased vermicomposting alone treatment (% COFT – 14.29).

Vegetable length on 90th day

In combination of all families (T-1) treatment the vegetable length showed 5.34±0.55cm. In vermicomposting alone (T-2) treatment the vegetable length showed 2.5±0.56 cm. In chemical fertilizer alone (T-3) treatment the vegetable length showed 2.55±0.74 cm. (Table 4)

During the vermicomposting alone and chemical fertilizer alone treatment the vegetable length drastically decreased when compared that the (T-1) combination of all families.(%COFT +52.24 and %COVT +53.18)(Table 4)

When compared with vermicomposting and chemical fertilizer alone treatment the fruit length drastically decreased vermicomposting alone treatment (%COFT -2).

Total yield of fruits on 90th day

In combination of all families (T-1) treatment the total yield of fruits showed 44.91±0.47 kg. In vermicomposting alone (T-2) treatment the total yield of fruits showed 3.91±0.53 kg. In chemical fertilizer alone (T-3) treatment the total yield of fruits showed 4.67± 0.74 kg. (Table 5).

During the vermicomposting alone and chemical fertilizer alone treatment the total yield of fruits showed drastically decreased when compared that the (T-1) combination of all families.(%COFT +89.60 and %COVT +91.29) (Table 5).

When compared with vermicomposting and chemical fertilizer alone treatment the fruit yield drastically decreased vermicomposting alone treatment (%COFT -19.43).

DISCUSSION

The earthworm *Eisenia foetida* was analyzed to find the degrading potential of vegetable wastes. The effect of vermicompost on growth parameters of selected vegetable plant namely Lady's finger*(Abelmoschous esculentus L.)* was studied. During the present study the growth attributes plant height, leaf length, number of leaves, vegetable length and total yield of fruits, were increased during the vegetable waste with vermicompost treatment compared than vermicompost alone and chemical fertilizer alone treatment. The increased result in the growth attributes was due to increased in nitrogen content is due to the fact that earthworm enhanced the nitrogen cycle which attributed to increased levels of nitrogen in vermicompost*(Blessy john and Lakshmi prabha, 2013).* Tripathi and Bhardwaj(2004) reported that increase in nitrogen content was found in the final product in the form of mucus, nitrogenous excretory substances, growth stimulating hormones and enzymes from earthworms.

Puneeta Dandotiya and Agrawal (2014) reported that analysis of vermicompost revealed maximum nitrogen(N), Potassium(K) and Phosphorus (P) content when treated with vegetable waste with vermicompost. Thus it is concluded that vegetable waste can be converted into high quality vermicompost is an environment friendly manner. Seetha devi (2012) reported that fruit waste amended with cow dung and soil into vermicompost using both *Eisenia fetida and Eudrillus eugenia*. The fruit waste with vermicompost promote the growth of the plant which would be due to the microbial degradation process.

Blessy John and Lakshmi prabha, (2013) reported that vermicompost contains macro and micro plant nutrients in an available from that plants can easily assimilate for their growth and development. This quality manure also contains some of the secretions of worms and it associated microbes, which acts as growth promoters along with other nutrients ,because of all these vital substances, vermicompost has multifarious effect that influence the growth of *Capsicum annum.* Gajalakshmi and Abbasi (2003) reported that the impact of vermicompost on the growth and flowering of *Crossandra undulaefolia* on several vegetable showed maximum growth of yield. There was found to be an increase in the shoot length, root length and the number of leaves on the plant treated with vermicompost.

Finally, the vegetable waste accumulation causing and spreading disease namely, Malaria, Cholera and Fever. Human were affected by Malaria, Cholera and Fever that disease by the accumulation of vegetable waste. So, we take vegetable waste and recycled degraded and converting into organic fertilizer with the help of earthworm. It would be helpful for humans and also vegetable waste with vermicomposting gave benefits for increased level of yield in agriculture.

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