



HEALTHY LAND AND HEALTHY LIFESTYLE

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ABSTRACT

This article is based on the studies conducted by the students of age 13 for a National level project on Preparation of Value added Nutrient rich soil from Organic part of bio wastes with the support of Vermicompost. Students from a school situated in rural area Identified that Heathy land are the key factor for sustainable future. VERMICOMPOSTING is an effective Nutrient recycling process that involves EARTHWORMS as natural bioreactors for biomedical organic matter decomposition. This Project is an attempt by the students to Prepare Healthy Nutrient rich soil to sustain the land fertility for a healthy environment.

KEY WORDS: BIOFERTILIZER, MANURE, VERMICOMPOST, BIOMEDICAL WASTE, INCINERATOR, COMPOST, BIOREACTORS

INTRODUCTION:

Wastes can be generated from various sources. The Prime Objective of waste management is to reduce the amount of unusable materials and to Protect healthy environment and well-being of the community. The Poor Waste Management Leads to Climate change, Pollution on air, soil and directly it may affect many species and its environment. Biomedical waste is one among the waste generated from biological and medical sources. Safe disposal of BIOMEDICAL WASTES IS very difficult.

There is a risk of air, soil and water pollution due to waste or defective incineration emissions and ash. There is a possibility of Drugs which have been DISPOSED OF BEING REPACKED AND sold off to the public.

To overcome this problem, the suggested solution by our students is vermicompost. It improves the soil texture and water holding capacity of soil. This review highlights the beneficial role of vermicompost and its effectiveness in supporting sustainable of healthy land ecosystem and plant growth.

HYPOTHESIS: Conversion of organic Biomedical wastes into value added nutrient rich soil using the Green approach of Vermicompost.

OBJECTIVES: To minimize the production of Biomedical waste. To treat the Biomedical waste (drugs, cotton) by safe and environment friendly methods. To treat Biodegradable part of biomedical waste collected from the surrounding using vermicompost manure with student friendly approach. To give awareness to the student community about the soil pollution and to suggest that the healthy soils are the key to food security.

SUPPLEMENTARY DATA

Biodegradation is the property of a materials that can be completely converted into water, carbon dioxide and Biomass through the action of microbes such as fungi and bacteria.

BIOMEDICAL WASTES:

Any waste that is produced during the diagnosis, treatment, immunization of humans or animals in related to research activities or in testing of biologicals.

These wastes are normally not infectious, but require proper disposal. These wastes are collected from various sources are segregated and converted them into fertile soil.

VERMICOMPOSTING:

Vermicomposting is a process in which the earthworms convert the organic waste into a Nutrient rich material capable of supplying necessary nutrients which helps to sustain plant growth. The worm castings are pure worm waste and are fine nutrient rich soil amendment. Earthworms play a vital role in maintaining soil fertility.

The worm castings are a finely divided granular material and is noted for its porosity, aeration drainage, and moisture holding capacity and serves as rich organic manure. Vermicompost is the Compost produced by the actions of earthworms in association with all other organisms in the Compost unit.

PARAMETERS

Based on the information collected, two samples were prepared, observed and analysed in detail.

1.COMBINATION OF BIOMEDICAL WASTE WITH VERMICOMPOST

2.BIOMEDICAL WASTES SOIL WITHOUT VERMICOMPOST

MATERIALS REQUIRED

- EARTHWORMS
- COWDUNG
- SAND/SOIL
- WATER, SOAKED SEEDS
- CURD, JAGGERY
- A LARGE BIN OR FLOWER POT
- BIODEGRADABLE WASTES COLLECTED FROM FIELDS AND KITCHEN
- DRYSTRAW, DRY LEAVES

SAMPLE PREPARATION

PROCEDURE

SAMPLE 1: BIOMEDICAL WASTE SOIL WITH VERMICOMPOST & MANURE:

Compost is prepared based on the availability of raw materials in the bin. Collect the organic litter and place it under sun shade for about 8-12 days. Chop it to the required size and sprinkle the cow dung slurry over the chopped wastes for quick decomposition. Take a flower pot/bin and add gravel to a certain height followed by coarse sand to facilitate the drainage of excess water. Add a layer (2-3 inch,) of loamy soil/sand at the bottom of the pot. Now prepare the fine bedding by adding partially Decomposed Biodegradable waste, cow dung slurry and Compost. Spread evenly over the sand layer. Sprinkle the curd and Jaggery water. Now release the collected earthworm's species from bio recovery park over the mixture. As worms require moisture, water management is most important for the survival of the earthworms. Cover the pot/bin and maintain proper moisture and temperature. Observe the results

SAMPLE 2: BIOMEDICAL WASTE SOIL WITHOUT VERMICOMPOST:

Take a flower pot/bin and add gravel to a certain height followed by coarse sand to facilitate the drainage of excess water. Add a layer (2-3 inch,) of loamy soil/sand at the bottom of the pot. Collect the biomedical wastes and crush /chop it in to pieces. Spread evenly biomedical wastes rich soil over the flower pot and sprinkle the water intermittently to maintain proper moisture and temperature. Soaked seeds of fenugreek or pea plants is allowed to sown in the soil and observe the results.

RESULTS:

Based on the observations, the results are discussed as follows .

OBSERVATION:

During the Conversion of Biomedical waste in sample 1, we observed that

The soil is found to be rich in humus as it contains vermicompost. The Biodegradable wastes which is added during the preparation of vermicompost is found to be degraded completely. Biomedical waste is found to be crushed in the bin/pot. The nutrient rich manure in sample 1 soil seems to be good in holding water and enhance the fertility of the soil. It is also observed that earthworms in sample 1 enhance the beneficial microbes which is essential in Digesting organic materials. Soaked seeds of fenugreek/peas started to grow in the bin/flower pot along the support of Vermicompost manure.



OBSERVATIONS IN SAMPLE 2,

It is found that the soil in sample 2 (without VERMICOMPOST) seems to be crumbled and dry even after regular supply of water. The water holding capacity is found to be minimum when compared to the sample 1 soil with vermicompost. Sample without Vermicompost lacks humus rich soil. There is no evidence for plant growth in sample without Vermicompost as it contains toxic biomedical wastes.



DISCUSSION

During the level of testing, we found that

- The sample of soil with vermicompost is more efficient than the sample of soil without Vermi Compost.
- The fenugreek Seeds started to grow well into a plant within short span of time period.
- Thus it is evident that the Biomedical waste rich soil with Vermicompost enhances the plant growth as it provides nutritive bio fertilizer.
- As an extended version of our project to connect human life and nature, to carry forward the project to the next level, we planned to convert cultivable Barren land into fertile farmland. To identify the major cause for the barren land, our students did the survey on the rural areas near to school, they found that the major threat to the land fertility is the invasive species *Prosopis juliflora* as it produces less oxygen and more carbon dioxide.
- It absorbs ground water drastically and also unable to provide shelter for the plants. As a part of project, students imparted awareness to the residents on the soil pollution and the impact of major threat to the land ecosystem, and to uproot the weed *Prosopis juliflora* and farm the land with vermicompost manure.

CONCLUSION:

Inference based on the observations of the growth of plant on both the samples, proves that the sample with vermicompost can be used to grow Plant as

- it Provides more biologically active and nutritive bio fertilizers in soils. As earthworms transforms different organic waste materials into useful substances by grinding, churning and Digesting these substances in association with microbes.
- Earthworms also enhances the beneficial microbes and suppress the risk of infections while converting the harmful hospital wastes.
- Vermicompost restores soil nutrients and enhance fertility of the soil
- It also Possess the good water holding capacity.

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