

VERMICOMPOSTING TECHNOLOGIES - CASE STUDY IN WALAJABAD, TAMIL NADU

“All the fertile areas of this planet have at least once passed through the bodies of earthworms” Charles Darwin

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Abstract:

The practice of Vermiculture is at least a century old but it is now being received worldwide with the ecological objectives such as waste management, soil detoxification, regeneration and sustainable agriculture (Chauhan and Joshi, 2010). The growth of industries and the increasing human population has led to an increase accumulation of waste materials (Syeda Azeem Unnisa and Bhupathi Rav, 2013). According to Sinha et al. (2011) Vermicomposting is “Economically Viable” (affordable by all nation), “Environmentally sustainable” Technology friendly to the environment-flora, fauna, soil, air and water, with no adverse effect on them and socially acceptable” (beneficial to the society with no adverse effect on human health. Birdwell (2003) analysed the influence of seasons on the biomass of *Eudrilus eugeniae* and vermicompost production at the Regional station, Biijapur, Karnataka during 1995-98. The results of the study showed that rainy seasons was more congenial for earthworm multiplication and vermicompost production than either winter or summer. Regular addition of organic matter or the use of cover crops can increase soil aggregate stability, soil tilth and diversity of soil microbial life. Hence the “Case study in Walajabad, Tamil Nadu: On Vermicomposting Technologies” to taken to analyze, to give knowledge on vermicompost and to encourage to use natural fertilizer.

I. INTRODUCTION

The term “vermicompost” originated from a Latin word “vermes” meaning “worms” and the process of composting of organic material using earthworms is known as vermicomposting. Earthworm that influences soil microbial community, physical and chemical properties are popularly known as the “farmer’s friend” or “nature’s ploughman” (Dominguez and Edwards, 2004). The use of earthworms as waste treatment techniques is gaining popularity and it’s commonly termed as vermicompost. It has the ability to breakdown the large soil particles and leaf litter and thereby increase the availability of organic matter for microbial degradation (Suthar, 2008). Thus vermicomposting is an eco-biotechnological process that transforms energy rich and complex organic substance into stabilized humus like product ‘vermicompost’ with the aid of earthworms (Singh and Sharma, 2002). Under natural conditions, there exists in the soil a wide range microflora, many species at widely varying population with crippling, both the range in soil fertility principles (Benton Jones, 2012). A common philosophy among sustainable agriculture practitioner is that “healthy” soil is a key components of sustainability; that is, a healthy soil will produce healthy crop plants that have optimum vigor and less susceptible to pests. While many crops have that attack even the healthiest of plants, proper soil, water and nutrient management can helps in preventing

some pest problems brought on by crop stress or nutrient imbalance. In sustainable system, the soil is viewed as fragile and living medium that must be protected and nurtured to ensure its long term productivity and stability (Vinod kumar jain, 2009).

Objectives

The main objectives of the study is

1. To know the details regarding vermicomposting.
2. To find out the reason of doing Vermicompost.
3. To understand their problems and the measure taken for vermicompost..
4. To know the purpose of vermicompost and to analyse their strategy.

II. METHODOLOGY

➤ Conduct of the Interview

Statement of the problem:

The main problem of the present study is to find out the general details of vermicompost, reasons, problems and the measures, purpose of vermicompost at Walajabad, Tamil Nadu.

Research Design

For the present study, semi structure interview was used to determine the main problem.

Nature of Interview

For the recent study, interview method was adopted.

Tools used for the study

The main tools used for the present study was interview schedule method.

Main study

The main study was conducted with the union members of Assistant Engineers and Oversees of Walajabad, Tamil Nadu by using the prepared interview schedule. The assistant engineers were contacted personally and the purpose of the study was explained to them. A good rapport was established and information was gathered. The doubts were clarified and technical terms were explained on the spot.

III. RESULTS AND DISCUSSION

A “Vermicomposting Technologies - Case Study In Walajabad - Tamil Nadu” aimed for Vermicompost techniques for agricultural purpose. Based on the purpose of this project, a rural area was invested and selected. The research was undertaken in Walajabad, Tamil Nadu. Walajabad is a panchayat town in Kanchipuram district in the Indian state of Tamil Nadu. It is the main town in Walajabad taluk. At the 2011 Census of India, the taluk covered an area of 339.03 square kilometers (130.90 sq mi) with a population of 125,868. Walajabad taluk contains 80 villages including Kavanthandalam, Thammanur & Nathanallur.

Climatic Condition: Generally experiences hot and humid climatic conditions throughout the year.

Temperature Suitable for Vermicomposting: Temperature, climate, soil type of an area suits for vermicompost production and this vermicompost not only plays important role in making soil healthy, it

helps to break the wet waste with help of earthworms, which is collected by MSW daily in many tons collected in all rural area in Walajabad, Tamil Nadu.

Findings of Case Study on vermicomposting technologies use in agriculture in Walajabad, Tamil Nadu.

I.Details regarding vermicomposting in Walajabad, Tamil Nadu

Name and company details

Name : Mr.Phlayam (Over sees), MR. Hari Baskar (Assistan Engineer)
 Company name : Union Of Walajabad
 Address : Walajabad Taulk
 Contact number : 9965434575

When you have started vermicomposting?

The respondent said that they started the vermicomposting large scale industry once they got the approval from central government. This vermicomposting scheme has started on 2016-2017 which is coming under in M.G.N REGS (Mahatma Gandhi National Rural Employment Guarantee Act) project for rural development.

What is the primary reason for doing vermicomposting?

The primary reason for doing vermicomposting is to provide a healthy fertilizer (natural). As far as organic farming, application of quality inputs appropriate time would contribute to increase in yield of crop. Vermicompost is on such input adopted by organic farmers. Commercially, this is not available in all fertilizer shop. This made the selected respondents to think to develop a model community vermicompost unit where farmers can get good quality vermicompost.

Secondly, making of vermicompost can be done by using local available raw materials. These raw materials include cattle dung, leaf compost and wet waste from hotels and residential by encouraging all the farmers to adopt this natural black gold as fertilizer to keep the plant and environment healthy

For what purpose would you vermicompost?

The selected subjects' main purpose was to irradiate and to avoid using chemical fertiliser which is hazardous to environment and human health. As we all know chemical fertilizer which ushered the "Green revolution" in the 1970-90's came as mixed blessing for mankind. It boosted food productivity, but at the cost of environment and society it dramatically increased the 'quantity' and also 'soil fertility' over years. It killed the beneficial soil organisms which help in renewing natural fertility. It also impaired the power of 'biological resistance' making them more susceptible to pests and diseases

Over the year it is worked as 'slow poison' for the soil with a serious 'withdrawal symptoms'. The excessive use of 'nitrogen fertilizer' (urea) has also led to increase in level of 'inorganic nitrogen' content in ground water and in the human food with grave consequences for the human health, chemically grown foods have adversely affected human health. Because of the less awareness, farmers are adapting chemical fertilizer. To give education for the food safety and farm security is became very essential. So, the respondent started this vermicomposting by using **Municipal solid waste (MSW)** which is being generated huge amount every day the organic fraction of MSW (about 70-80%) containing plenty of Nitrogen(N), Potash(k), Phosphorous(P) is a good source of macro and micro nutrients for soil. And another important purpose is we are making waste into valuable healthy fertilizer with the help of earthworms.

Did you face any over-population of worms in your bins? If yes how did you overcome it?

The subject response was yes, they said that once they had faced problem like over-population of worms in bins for seven days because of their careless where their care and

maintenance was improper. From that time they started to do regular care and maintenance daily, monthly for healthy population of worms in a bin. To balance the overpopulation they had created a hole from one bin to another for earthworms to travel from one to other.

Problems and measures taken for vermicomposting in Walajabad, Tamil Nadu:

Vermicomposting manufacturing unit is attacked by a number of pests, what are the measures taken to control them?

Pests are always attracted towards vermicomposting manufacturing unit, to avoid this good compost material are used, avoid using meat, bones etc., this make sure the construction is strong and well covered with green shelter around the vermicomposting bin.

Do you face any odour/smell from vermicomposting? If yes what measures you take to eliminate the odour?

The subject did not face any problem in odour/smell from vermicomposting. They also gave a simple suggestion for bad smell/ odour which is a simple process, the bed need to be mixed properly so that oxygen flow will increase. When oxygen is increased inside the pit, there will be no trace of bad odour. They also said to avoid coffee, sugar in small buckets or bin.

Reason for odour in vermicomposting?

The selected subject said that when the care and maintenance is less and improper it can bring odour in vermicomposting. If there is no enough oxygen supply there will be a odour problem. Another important factor to consider is proper drainage supply. If the drainage line is not given properly to eliminate the urine (vermicompost tea) there is a high chance of odour in vermicomposting.

How to control the humidity of vermicompost in winter to prevent the mould?

Green structure is installed to control the humidity of vermicompost in winter and to prevent mould. In case there is mould in bin just break it carefully with hands without harming the earthworms. During in winter less amount of water is enough.

Are there any chances of getting of acidity in vermicompost and how to balance the acidity?

Yes, there is a chance of getting of acidity in vermicompost because of an adding acidity foods like orange, lemon, egg shell which is done in small bin. But there is no chance of getting of acidity in big scale vermicompost bin. To balance the acidity it is advisable not to use the more acid foods to feed the earthworms

IV. SUMMARY AND CONCLUSION

In India about 200,000 farmers practice Vermicomposting and network of 10,000 farmers produce, 50,000 metric tons of vermicompost every month. Farmers in Australia, West Coast, Cuba, are also starting to use vermicompost in greater quantities (Manish Kumar Singh and Priyanka Singh). Vermicomposting initiative in Walajabad is encouraging villagers to collect agricultural and animal waste properly in defined spaces and recycle it for creating organic manure. Such proper disposal of waste is creating a clean and hygienic living environment. Additionally, it is encouraging farmers to adopt organic agricultural practices and decrease their dependence on expensive and harmful chemical fertilizers. In this manner, the initiative is introducing villagers to ideas of environmental conservation and encouraging the society to develop streamlined waste management and sanitation practices for bettering their quality of lives and decreasing health hazards. The main thing of doing this vermicompost is to encourage and promote the society to implement the organic garden or farm by using the wet waste from kitchen. Most important advantages of doing this, it will withstand the ground water and gives stamina to soil.

V. REFERENCE:

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