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ORIGINAL ARTICLE

Gold from Garbage, Production of Vermicompost from Organic Waste (Kitchen Waste, Flower Waste and Green Waste) in Aligarh District, Uttar Pradesh

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ABSTRACT

Gold from garbage' utilizing the organic garbage in production of vermicompost. Garbage dumping has become a very major problem for the environment which is affecting the human health. If this garbage is not treated properly it causes diseases. Using the commonly thrown kitchen waste, flower waste, green waste in production of vermicompost. The vermicomposting technique is not only economically cheap method of waste management it also enhances soil fertility making it nutrient rich,increases porosity acts as soil conditioner and also lesson the effect of soil borne pathogens and pests thus saving the crop and also increasing yield. Vermicomposting which is biological technique converting organic wastes into nutrient rich soil ammentment. Optimum range of temperature, moisture content, pH and other parameters were kept in consideration.

INTRODUCTION

The rapid increase in population in leaps and bounds is raising the graph of waste production very fastly. This increase in waste has become a major threat for mankind and is major cause for environmental pollution and global warming. As per the reports nearly 38 billion metric tonnes of organic waste is being generated all over the world. India is a very densely populated country and generates about 1 lakh metric tonnes organic waste. The blessing is that the waste generated mainly 70% is organic waste which can easily be decomposed, managed if proper techniques are used. India can grow economically if this generated organic waste is turned into vermicompost which will not only manage the waste but also improve quality and yield of agricultural products.

Vermicompost is a Latin word means 'worm' Aristotle named this earthworms as intestines of soil and after 2300 years his words came into existence and 'vermicomposting' word came into picture which showed how earthworms can enrich the soil by eco-friendly cost effective method and manage the waste since this method is not very difficult, very cheap method no very special technical training required. So it can be easily learnt and utilised and learnt by uneducated farmers and common persons. Production of a vermicompost from organic waste in the future of farming and economic growth of India. It is best economical, eco friendly method which not only enhance crop yield, soil purity nutrient value of soil. It is an accelerated process that involves biodegradation and stabilizations of waste which is due to interaction between earthworms and micro-organisms.

Main agents for biochemical decomposition of organic matter are micro-organism but earthworms play a critical role in vermicomposting process. The complex interaction between organic matter, earthworms and microorganism and soil invertebrates result in bio oxidation, fragmentation and stabilization of organic matter.

Vermicompost nourishes the soil so it is called soil conditioner. It also act as biological conquering many soil become diseases caused by pathogens and pests.

SCOPE OF RESEARCH

This paper focuses on the biodegradable wastes which are kitchen and flower wastes which can be converted into vermicompost. The temperature of Aligarh and weather conditions also play important role. The earthworms species used for vermicomposting was Eisenia foetida.

AIM AND OBJECTIVES

Objective of research work was in favour of ecosystem to manage organic waste and make it usable product. The aim was to explore new and effective wastes of converting organic wastes into valuable vermicompost and replace the use of harmful fertilizers with cheap and valuable vermicompost. Vermicompost not only maintains soil fertility and enhance growth and yield of plants. The other aim was to calculate amount of vermicompost required and observe vermicompost effect when applied and if any harmful effect it observed by using vermicompost at high quality. Aim behind the research is to educate our farmers and common people about importance of managing the organic waste from kitchen, gardens and fields into useful vermicompost through easy, eco friendly ways and promote practice of converting gold from garbage and also show the importantance of economic earning if this method is practised at large scale.

MATERIAL & METHODOLOGY

SUBSTRATES TAKEN:

1. Flower waste from temples & gardens etc.
2. kitchen waste from homes
3. Hotel refuse
4. Crop residue from fields
5. Weeds biomass
6. Leaf & grass litter

METHODOLOGY IN DIFFERENT PHASES:

Phase 1: Process of collecting wastes from different places, sources and sorting & shredding of waste was done mechanically.

Phase 2: For 5-20 days the shredded & sorted waste were kept in different bins all green waste & flower waste in separate bins & all kitchens waste in separate bin .

Phase 3: Mechanically rotating of waste was done and the moisture was maintained & temperature was also maintained. More water might destroy the waste and less water could stop the decomposition process as microbes need a proper moisture & temperature to do the decomposition.

Phase 4: Micro organisms partially digest the organic waste & make it suitable for earthworm consumption then cattle dung was added to each bin. This dung was used after drying.

Phase 5: Earthworms were added in mixture in bins and kept for next 20-25 days. Earthworms will now start eating up the decomposed organic waste and start vermicompasting.

Phase 6: Collection of earthworms after vermicompost formation was done completed material was sieved to separate fully compostd material.

Phase 7: Vermi compost prepared was stored properly carefully in proper place to maintain the moisture in it and allow the beneficial microorganisms to grow further in it

Phase 8: storing & packing of vermicompost should be done carefully maintaining moisture of about 40%. It should be stored in dark phase, as to avoid moisture & nutrient content loss if properly stored it can be stored for about a year.

Organic waste material should be known-

Nutrient value of vermicompost depends on the organic substate used for vermi composting. If the organic waste materials are heterogeneous they will show wide range of nutrients available but if it homogeneous it will show only certain nutrients.

*pH level of vermi compost is also important see intensity of acidity and alkanity.

*nutrient value of vermicompost was checked in lab.

Common nutrients present in vermicompost are-

pH 6.52-7.5

Organic carbon 9.5 to 18.1 %

Nitrogen 0.52-1.40%
Phosphorus 0.12-0.30%
Potassium 0.14-0.59%
Calcium and magnesium 23-45% meq/100gm

Precautions taken during the process-

1. Adequate moisture (nearly 60-70%) should be maintained.
2. Holes in bins were done in order to provide proper aeration.
3. Holes in bins cover allows light to enter the bins and this light is avoided by the earthworms as they show negative photolaxis behaviour and get themselves buried deep into the organic material of bin and it also helps the conversion of organic waste deep inside to get converted into vermi compast.
4. Precautions was taken about size ammount texture of the substrate used of material is too dense or packed lightly it reduces air flow and worms need oxygen to breathe & live. Porosity in the bins was maintained.
5. The organic material should be able to absorb water as worms breathe through their skins. If the organic matter dress out skins will dry out & worm well die.
6. Selection of suitable earthworms which live below in soil is not very suitable. Usually African earthworms (Eudrillus engenial) & Red worms Eisenia foetida are used for vermicomposting. Though Eudrillus engenial is better than red worm as it shows high production in short period of time & shows good reproduction but red worms were easily available in locality so they were used in research.

Low protein and nitrogen level should be maintained as high level of protein and nitrogen level of organce waste can result in rapid digradation and the healing is associated with it causes falal conditions.

- Organic substrate used should be properly sorted & shredded.
- Regular rotating of organic waste time to time.
- Cattle dung should be dried in open sunlight before being used to vermi compost products.
- Though daily watering of organic compost is not required but to maintain 60-70% moisture but if necessary arise and it is seen that organic waste is drying up .
- Small amount of wast should be sprinkled, pouring of water should be avoided.
- Periodical harvesting is done and stored propuly & carefully.
- Worms should be harvested carefully.
- Worms can be harvested hand sorting or hand picking.
- When light falls earthworms get themselves buried deep into bin and the compast & worms can be easily separated reused again.
- Animal orgin substance like meat, egg shells bones are not good for vermi composing they should be avoided.
- Earthworms should be protected from rats, termites birds etc .as they might eat them

Advantages of Vermi compost-

1. It is nutrient rich which is required by plant for proper growth.
2. Encourage overall growth & yeld of crop.
3. Improves quality of leaves, fruits flowers and other parameters of plant.
4. Improves soil fertility, soil tenliere.
5. Improves aeratun & water holding capacity of soil.

Disadvantage of vermi composting & Vermicompost-

1. Process takes nearly 2 month of time.
2. Unlike organic waste animal cowding is not easily available is large quantity and it makes proces bit unfavourable.
3. Regular airatum, moisture maintains is required.little bit of negligence might disturb the whole process.

4. Though compast warms do not have disease caused by micro organism but red mitis, certain animals like rats, termites birds might harm the worms predaton by red mitis is worst and due to enovosi metal condition a disease called sour crop is caused.

CONCLUSIONS

Vermicompasting process is a boon for farmers and also best way to stop garbage dumping & waste management. Vermicompast which is human rich condition solids, enhances growth & crop yield enhance fruits & vegetable quality, helps in economics growth of country. Eco-friendly, cost effective and non-technicality of its making makes it valuable. Nutrient richness in vermi compost and organic way of growing crops by using vermicompast, effect health of people & society. High nitrogen value, high level of potassium, sulphur, magnesium, plant growth hormones various, enzymes, vitamins, minerals etc improve overall growth of plants.

So many advantages overcome menuti vermicompast. As it is the best easy cost cheap way of not any saving our earth tum environmental pollution but also nourishing our soil fertility and yeild of & quality of crop. It is dual beneficial process.we can easily conclude that we are expecting gold tum garbage

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