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UTILIZATION AND ENHANCING THE DEGRADATION OF FLOWER WASTE GENERATED FROM TEMPLES

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ABSTRACT

This study details the gathering, handling, use, and management of discarded flowers that are generated by temples. This document offers an overview of clean India as concept to turn Temple discarded flowers into something else into biogas, dye extraction, incense sticks, compost, and so forth. The performing with flower waste combined with cow dung Earthworm Eisenia foetida is used in the vermicomposting process. species. The study's findings are incredibly positive. It was determined that using leftover Temple floral debris as a source of good way to receive important goods that is also environmentally friendly.

Keywords: Floral Waste, Vermicomposting, Temples, Eisenia Foetida.

I. INTRODUCTION

A significant threat facing the planet is environmental degradation. The main contributors to environmental degradation in a nation include excessive population expansion, overfishing, and the use of environmental resources, the creation of several local enterprises and multinational corporations that harmed the environment and natural resources. Air Deforestation, ozone depletion, air pollution, and water pollution layer, global warming, sanitation issues, and disease outbreaks are the issues that pose a threat to human life. Other than them, It is impossible to rule out the issue of garbage disposal. The waste generated from practically all of the activities we engage in and it eventually lowers the standard of human health. accelerates the environment's decline in a concerning way proportion**.**

Waste management procedures should prioritise recycling, and as far as feasible, land dumping should be avoided (Battacharayya et al., 1996). Solid waste recycling and reuse contribute to a reduction in the issue of waste disposal. Let's not overlook the reality that waste products contain incredible potential that is just waiting to be realised as we strive to enhance resource efficiency to satisfy our expanding requirements. There are other waste disposal techniques utilised today, including biomethanation, sanitary landfilling, and others, however vermicomposting is the most practical from an economic standpoint. Instead of ending up in landfills, where it contributes to a variety of environmental issues that are expensive to address, organic waste in the waste stream can be utilised as a resource. Vermicompost may be created from any biodegradable portion of municipal garbage, including food industry, agro - industrial, vegetable market, and kitchen waste. The garbage generated by religious rituals in locations such as homes, community centers, temples, mosques, gurudwaras, etc. is also included in this communal waste, but it is still overlooked and needs to be given proper attention.

This garbage is not separated at the point of creation. Because of our religious convictions, many of us avoid disposing of flowers and other materials used in prayers in the trash. Instead, we place them in plastic bags and throw them straight into bodies of water. With no appropriate method of disposal, some of it is even tossed close to sacred trees. Such trash disposal causes issues including land contamination, bad odour, and water pollution, in addition to not looking nice. Because it is excellent for the soil and encourages sustainable agriculture, we may use sustainable approaches to alleviate this problem, such as vermicomposting and employing microorganisms to improve degradation. However, the biological procedure known as vermicomposting offers a chance to effectively break down and transform the organic portion of solid wastes into organic fertilisers that may be used in agriculture. The demand for the creation of organic manure from trash is also driven by the harmful effects of chemical fertilisers on the environment. On the one hand, these wastes are transformed into agriculturally beneficial organic fertilisers, which in turn have the potential to reduce reliance on nonrenewable chemical fertilisers and pesticides. On the other hand, it controls waste,

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which is a major pollutant and a result of increasing population, urbanisation, and intensive agriculture (Kaushik and Garg 2003). This technology's broad use can be seen as having two interests. Composting and vermicomposting are biological processes that may be used to turn floral waste into nutrients. To produce incense sticks, flowers are properly cleaned, dried in the sun, pulverised, and combined with natural resins. Three hours of burning coconut meat in the open can yield coconut shell ash, which can be used to partially replace cement.

Mahua flowers may be used to make sugar syrup, and marigold flower extract can be utilised as an ingredient in the food industry. The primary goal of the current study is to provide effective technologies, such vermicomposting, for the environmentally sound management of garbage from temples. The current study's goal is to determine if floral waste from temples may be bioconverted to vermicompost utilising the biological process of vermicomposting and using microorganisms to accelerate degradation. Microbe-based vermicomposting is one of the environmentally pleasant and environmentally sustainable methods for waste management since it solves the issue of disposing of organic waste and reduces odours.

II. REVIEW OF LITERATURE

A. Jadhav et al (2013)

According to reports, a microbial consortium has been developed for the efficient breakdown of floral waste produced by temples. They obtained bacterium cultures from little samples they had taken from the vicinity of the temples. The recovered flower debris was dried, combined with another medium solution, then streaked with a chosen soil sample for isolation. The trash was shown to be digested by microbial consortium, and the bio manure consortium was discovered to have high quality without harming the environment.

B. Gaurav and Pathade (2011)

They combined animal manure, garbage from temples, and biogas digester effluent, which was then left to disintegrate for 30 days at 30 degrees Celsius. In comparison to control sets that did not get any treatment from the manufactured vermicompost, satisfactory growth parameters were attained in terms of height, flowering duration, and number of flowers produced with fertilisers utilised with five flowering plants.

C. Shouche et al (2011)

Managed flower waste using a variety of processes, including composting and vermicomposting. Variables like temperature, PH, and moisture content, which showed some periodic variations in the beginning, were found stable in the end. They prepared vermicompost by using varying proportions of combination of cattle dung and floral debris.

D. Sinha, 1996

There are a few vermi composting factories built up in several Indian cities and towns, most notably one in Bangalore with a capacity of roughly 100 MT/day. Vermiculture farms are also being established in a number of other Indian cities, including Chennai, Mumbai, Indore, and Jaipur.

E. Annual Budget 1998

The Government of India provided exemption from taxation in 1998 for all institutions, groups, and people engaged in commercial vermiculture in India. The science of vermicomposting is well-known on a global scale. In small towns, vermi-composting is typically preferred over microbial composting since it is simpler to use and requires less automation.

F. Basker et al., 1993

Two to three times more potassium may be readily accessible in earthworm castings than in the nearby soil. In comparison to bulk soil samples, earthworm castings have a greater ammonium content and water-holding capacity, making them locations with a high denitrification potential.

G. Reinecke et al., 1992; Ghosh et al., 1999

Vermicomposting may prove to be an effective approach for improved phosphorus nutrition from various organic wastes, as evidenced by the magnitude of the transformation of phosphorus forms being significantly larger in the case of earthworm-inoculated organic wastes.

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H. Thakur,2006

It would not like to use just any earthworm from the garden. A particular kind of worm that is accustomed to live in decaying organic waste rather than the soil is needed for vermicomposting. Eisenia foetida, sometimes referred to as the red worm, dung worm, or red wiggler, and Lumbricus rubellus are two examples of this species.

I. Vermi Co 2001

2003's Tara Crescent Earthworms do these tasks by acting as "nature's ploughman." They create healthy humus, which is nature's gift and the most priceless substance for meeting the nutrient requirements of crops. Simply said, earthworms have the ability to turn trash into "gold" through a kind of biological alchemy.

J. Hemant samadhiya (2017)

Eudrilus Eugeniae is a fairly acceptable blend of one part temple trash and one part manure (1:1).

K. Singh P et al (2017)

Shown the possibility for recovering lucrative materials from temple flower waste. Ultrasonic method was used in the study to extract natural dye.

L. Sailaja et al (2013)

Due to their quick colouring, effective ability to bond to both natural and synthetic fibres, and variety of colour combinations**.**

III. PLAN OF WORK

3.1. Temple selection.

3.2. Regular temple visits.

3.3 Data on the amount of floral waste produced and the disposal techniques employed will be gathered through a questionnaire.

3.4. Waste classification

3.5. After separating flowers from the trash, the flower with the highest concentration will be chosen for examination.

3.6. Shredded, air-dried, and precomposted floral waste will be utilised.

3.7. Earthen pots with a hole at the bottom for aeration will be used. By combining the processed waste with cow manure in various ratios—55:45, 65:35, 75:25, 85:15, and 95:5—verm beds will be created.

3.8. The equal ratio of control (floral waste + cowdung) experimental media will also be created.

3.9. Three copies of each experiment will be run. Pots will remain unattended for 75 days, with routine checks being made at 25,50 and 75 days.

3.10. There will be one daily watering.

3.11. Vermicompost will be collected, sieved, air dried, and examined.

3.12. The examination will determine the vermicompost's quality and compare it to other organic wastes.

The steps in the current investigation are as follows:

- **Selecting Temples**

The chosen temples are well-known.

- **Temple visitation**

We'll pay the chosen temples a regular visit to gather both primary and secondary data.

- **Data collection**

Questions will be asked about visitors, the amount of trash collected in a month and during the holiday season, and the manner of disposal employed by various temples.

- **Waste collection**

The chosen temples' floral waste will be collected.

- **Defining waste characteristics**

Flower, cotton, matchsticks, incense sticks, kumkum, food items, coconut, and other goods are among the rubbish that is being thrown out of the temples. This trash will be divided into biodegradable and nonbiodegradable categories**.**

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- **Biodegradable garbage (flowers) should be separated:**

Flowers will be removed from the biodegradable garbage, and then the various flowers will be further sorted.

- **Pre-composting as part of sample processing**

For 72 hours, the chosen flower debris will be air dried while spread out over a polythene sheet. Before beginning the composting and vermicomposting processes, the air-dried samples will first undergo a three-week pre-composting period. Pre-composting is the practise of pre-processing and pre-treating waste that is still in its raw state. Due to its thermophilic nature, pre-composting helps reduce bulk and pathogens before vermicomposting (Nair, Sekiozoic, & Anda, 2006). As part of the precomposting process, bacteria will actively break down the waste components in an aerobic environment**.**

- **Laboratory Design**

For vermicomposting and composting, measured amounts of the substrate (floral waste), combined with cow dung (which will operate as an inoculant), will be used in each pot in the following ratios: 55:45, 65:35, 75:25, 85:15, and 95:5. To improve the quality of the food resource that attracts the earthworms and to hasten waste breakdown, cow dung will be utilised as an inoculant in the vermicomposting process (Suthar and Singh, 2008). Each of the aforementioned ratios will be maintained in triplicate, and a control (without worms) will also be kept in the same ratio. To stop and protect the earthworms from predators like centipedes, moles, and shrews, the tops of all the pots will be covered with a jute cloth and a wire mesh. Each pot will have a few tiny holes punched into the bottom for drainage and airflow. It will take 75 days to complete the vermicomposting and composting process. Sprinkle a suitable amount of water at regular intervals to maintain the temperature and moisture content.

IV. CONCLUSION

Organic material undergoes not only decomposition processes during composting but also re-synthesis and polymerization events, which produce compounds that resemble humic acids. The overall change of compost organic matter between the non-humic and humic-like fractions is referred to as evolution. The events that take place during the composting process, which characterise the changes in stability and maturity as well as the evolution of organic matter, are closely connected and among the indices used to assess these changes. With more composting time, all three of the examined composting methods effectively reduced the feedstock's oxygen consumption.

The tray T4 treated with Microbes for Composting was the sample with the highest efficiency when all the results were compared since the organic carbon value was lower than in the other samples and plants grew more effectively when we gave them ambient nutrients. When compared to the other four samples, Sample T4's inclusion of microbes for composting had a higher concentration of nutrients. In order to draw the conclusion that the compost produced by microbes for composting was superior to that produced by industrial microorganisms, bio-microbes, molasses, and natural. The project was anticipated to produce a more effective and affordable solution for composting solid waste and to benefit those working in the waste management and plant industries promotion of growth.

The Em may be used on a bigger scale. Em has the capacity to produce a lot on her own. The tray without any inoculum demonstrated good results in terms of composting rate, however other trays with additional inoculum benefited from early thermophilic phase development.

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