Degradation of Flower Wastes: A Review

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Abstract— Enter a Temple, Church, Mosque or Gurudwara in India the first thing you will probably notice is the abundance of flowers at the place of worship. There are flower sellers at the entrance, flowers are offered by devotees in temples and are left unused and therefore become waste. According to many religious beliefs, flowers that are offered during prayers are sacrosanct and cannot be dumped into the garbage once they wilted. These flowers wastes can be utilized to produce organic compost and thus help to save environments from pollution caused by the improper disposal of flowers wastes.

Key words: Flower Waste, Degradation, Microbial Consortium, Vermicomposting

I. INTRODUCTION

India is country of festivals and many occasion are celebrated round of the year that eventually leads to generation of flower waste. Flower comes as waste from various sources like Hotels, Marriages, Garden, Temple, Churches, Dargah and various other culture and religious ceremonies. Discharging of flower waste is major issue in religious places like Ujjain, Varanasi, Patna etc.

Because of our religious believes, many of us avoid throwing flowers and other items that are use d for prayers in the garbage and instead of that they put them in the plastic bags and throw them directly in the water bodies or open land. These flower wastes decay aerobically and anaerobically producing foul smell, toxic gases and solid liquid wastes causing severe health problem to the people around [2]. Every year, approximately 80,00,000 tons of waste flowers are dumped into Indian rivers.

Increased population naturally increased the demand for agro products. Crop production is generally increased by using fertilizers. Use of chemical fertilizers causes its biomanifications in the food chain. Constant use of chemical fertilizers decreased the soil fertility. They may also result hazards occasionally [5].

II. DEGRADATION OF FLOWER WASTES

Flower wastes degradation is mostly done by vermicomposting or by microbial consortium.

Ankanksha et al. (2013) [1] conducted an experiments to recycling flower waste by Vermitechnology using Eisenia Fetida and its impacts on seed germination and plants growth parameter was studied by comparing with kitchen waste and farmyard waste. The experiments were set up in a randomized complete block design with three replicates and in each of three feed stocks mature cow dung was added with the ratio of 1:7 to provide an instant source of food to the earthworms. Earthworms were added at the rate of 1.5 kg/m2 through the developed cracks after 15 days of partial decomposition of waste to prevents worms from the thermophilic reaction occurring during the composting process. It was found that the temple waste vermicompost stimulates seed germination and seedling growth of chickpea was better at low concentrations compared to kitchen waste and farmyard vermicompost.

Arvind Kumar Nag et al. (2015) [2] varied out an experiments for the vermicomposting of flower wastes using Eisenia fetida and Eudrilus eugeniae with different proportion of cattle dung as given below:

1) Bin A, it contained 100% floral waste: 0% cattle dung (5 kg floral waste)
2) Bin B, it contained 75% floral waste: 25% cattle dung (3.75 kg floral waste +1.25 kg cattle dung)
3) Bin C, it contained 50% floral waste: 50% cattle dung (2.5 kg floral waste + 2.5 kg cattle dung)

The resulting vermicompost was analysed for the physicochemical parameters such as ph, moisture contents, total N, total P, total K, organic C and C/N ratio. It was found that the organic waste worship material mixed with cattle dung in 1:1 ratio was an excellent raw material for vermicomposting using Eisenia fetida and Eudrilus eugeniae species of earthworms.

Gaurav M. V. Et al. (2011) [4] evaluated an experiments for vermicomposting of the effluents from biogas digester (biomethanation) run on Ganesh temple waste (Sangli, Maharastra) was admixed with temple wastes solids and cattle dung using Eudrilus eugenia earthworm species.it was found that 25Oc temperature, ph 8.0, 1-2 mm particle size and 80% moisture contents were optimum parameters of vermicomposting. Physicochemical analysis of temple waste based vermicompost was as below:

Parameter	
Ph	7.2
% carbon	28
% Nitrogen	1.58
% Phosphorus	0.33
% Potassium	0.28

Table 1: physicochemical parameter of TW based vermicompost

It was found that more than 25% growth enhancement was observed in Vermicompoost set as compared to control set.

Jadhav et al. (2013) [5] have reportedly developed a microbial consortium for the degradation of flower waste. They collected soil samples from the near area of temples and microbial consortium was prepared from them. Collected flower waste was dried and mixed with the medium and streaking was done with selected soil samples for isolation.it was found that microbial consortium helped in reducing the time required for degradation of large amount of flower waste and the degraded material has high values of N, P, K contents so it can be used as biofertilizer.

M. Kannahi et al. (2014) [6] have collected flower waste degraded soil and compost was prepared using coconut coir and flower waste degraded soil.the seedling of Vagna radiata were transplanted in four pots with different combination as below:

T1- Compost + microbial consortium (E. Coli, Bacillus subtilis, Streptococcus pyogenes, Pseudomonas fluorescence))
T2- compost
T3- Microbial Consortium
T4 - control

Morphological parameters, chlorophyll, carbohydrate and protein contents were analysed at different time intervals (15th, 30th, 45th, 60th day). It was found that maximum number of leaves, maximum shoot length, maximum root length, maximum yield number were observed in plants treated with microbial consortium + compost(T1), than T2, T3 and control in all intervals.

Shobha Shouche et al. (2011) [8] carried out experiments for vermicomposting for different proportions of mixture of cattle dung and floral wastes and ph, moisture contents, temperature was analysed during process periods which showed periodic changes in the beginning and became constant at the end of process.

III. Conclusion

From the exhaustive review of degradation of flowers wastes using vermicomposting and microbial consortium following conclusion are drawn: -

- It was observed that the addition of cow dung increased the rate of decomposition because of high minerals and nutrient content which is favourable for microbial growth and activities.
- The degraded material has high values of N, P, K contents so it can be used as a nitrogen potash biofertilizer.
- Vermicomposting using artificial aeration is a good technique to minimize the problem of flower waste managements at short interval.
- Microbial consortium was degraded flowers wastes efficiently compared to individual isolated microbes.

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References

[1] Akankskha Singh, Akansha jain, Harikesh B. Singh, "Solid waste management of temple floral offering by vermicomposting using Eisenia fetida", waste management 33, pp:1113-1118, 2013
[2] Arvind Kumar Nag, Bihari Singh, Kamal Kishor Singh, "A pilot scale Solid Waste management programme through vermicomposting of organic waste worship materials from some religious places of Patna Bihar", Indian journal of applied research, Vol.5,2015.
[3] Dr. D. Sailaja, P. Srilakshmi, H.Priynka, D. Lavanya Bharathi, Ayesha Begum, "prepration of vermicompost from temple waste flower", international journal of science Innovatives and Discoveries, Vol.3(3),367-375,2013.
[4] Gaurav M. V. And Pathade G. R., "Production of Vermicompost from temple waste (Nirmalya): A case study", Universal Journal of Environmental Research and Technology, Vol.1:182-192,2011.
[5] Jadhv A. R. And Chitanand M. P., "Flower waste degradation using Microbial consortium", IOSR journal of agriculture science and veterinary Science, Vol.3, pp:1-4, 2015
[6] M. Kannahi and S. Babynisha, "Microbial consortium: A new approach in effective degradation of flower waste", international journal of universal pharmacy and bio sciencevol.3(2), 2014
[7] Pallavi S. Chakole and D. B. Jasutkar, "Comparative study of Nirmalya solid Waste treatments by Vermicompsting and artificial aeration composting", Current World Environment, vol.9(2), 412-420(2014).
[8] Shobha Shouche, Anil Pandey and Praveesh Bhati, "Study about the changes in physical parameters during vermicomposting of flower waste", Journal of Environmental Research and Development, Vol.6(1), 2011.

