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Recycling of Organic Waste to make Compost by improved Technique

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ABSTRACT

Solid waste management is one of the major issues all over the world. Tons of waste is generated every day. The generation of waste is directly proportional to the growth of the population. As we see the growth of population is increasing day by day and the waste generation ratio also goes on increasing. If we see the general composition of solid waste then we can notice that about one-third part is organic waste. Organic waste is that waste which can decompose and gives us the useful by-product such as compost and many more. Composting is one of the recycling methods, which is very useful for the growth of plants and the betterment of soil. So this paper discusses the fabrication of grinder which makes the fine chopper of organic waste.

Keywords: Kitchen waste, compost, grinder

Introduction

India is in second rank of world for population. As time goes population will increases and as population increases waste also increases. Waste cannot be destroyed but it can be control. To decrease some amount of waste we use 3R method i.e. reuse, recycle and refuse. As the municipal solid waste generation ration (MSW) is increasing with the growth of population. MSW contains all type of waste contains both domestic and commercial. On an average, a household produces about 1.7 kg of solid waste per day out of which one-third part is the organic waste. The biggest source of organic waste generation is household kitchen. So at a household level if we can use this kitchen waste to make compost then it will be very helpful for the reduction of organic waste. Although there are various govt. bodies are engaged in managing the waste but still they are unable to manage entire waste which is generated. If we can promote the composting at household level then it will definitely a big change. Composting is one of the easiest ways to divert the materials from going to the landfills.

This paper discusses the fabrication of grinder which converts the organic waste into the small particles. As we know, to make any type of compost the first step is to convert the larger particles into the smaller ones. Particle size is one of the major factors that affect the process of composting. So, the grinder we make is one of the most simplest and economical. Main aim of the project is to decrease the time of composting and implementation of new technique for composting process.

Literature Review

Kitchen waste (organic) like the rest of the fruits and the rest of the vegetables is not used anymore are usually ignored and thrown away. In fact, they have the benefit to be used as liquid fertilizer. In this paper explain how to prepare liquid fertilizer from kitchen waste and increases empowerment of rural women **[1]**.

In this paper new technique was developed for the composting. The Developed technique produced three times nitrogen content of the compost produced by other methods (1% to 2%) and this is economically beneficial to farmers **[2].**

All the composting mixtures showed a suitable development of the com-posting process, with a significant thermophilic phase, completed in a shorter period of time. The proposed alternative should be scaled-up in developing areas to reduce and diversify the urban waste streams, producing high quality and balanced organic fertilizers, with a significant economic value in nutrients that could be internalized in the final compost price **[3].**

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Through barrel composting system reduces the weight and volume of waste and produces inoffensive and useful organic fertilizer which is enriched with nutrient. The temperature, pH and moisture contents of matured compost were within the optimal level indicating good quality of organic fertilizer. The content of OC, N, P and K was within the standard level whereas the s content slightly exceeded the standard. The C: N ratio ranged from 10.07 to 12 indicating that the organic fertilizer is sound in quality **[4].**

The principle of recycling domestic refuse is a successful principle, which helps eliminate about 30% of domestic refuse instead of put It in the landfill, and becomes a burden on the environment. Natural manure is one of the good alternatives for chemical fertilizers Available in the markets; it is no less useful than the commercial Materials **[5].**

A techno guide for organic fertilizer Production was developed; it has been given to interested clients and serves as A guide during training courses. The rate of organic fertilizer application for the different test crops used in the Field trials was established and formed Part of the technology component in Organic-based vegetable production **[6].**

Procedure

a) Grinder: Grinder is used for the cutting the kitchen waste. The grinder cut waste of size up to 1cm.

Component:-
DC Motor: - DC motor of 24 V used for rotating the blades for cutting the contents.

b) Compost:-

1. Firstly, we separated our edible kitchen waste (banana peel, cauliflower leaves, fruits peels, etc.) in a container.
2. Then we collected dry organic matter i.e., dried leaves in a small containers.
3. We took a large earthen pot and drill 6-7 holes around the pot at different levels to let air inside.
4. Then we lined the bottom with a layer of soil.
5. Then we added dried leaves above the soil as the second layer.
6. Now, we grinded the kitchen waste and added in the pot as a third layer. In 4th layer we added the moisture of cow dung and soil.
7. In as the 5th layer we again added grinded kitchen
8. Waste.
9. Then in 6th layer we added cow dung and soil mixture.
10. Now, after completing 6 layers we added water in the pot.
11. In final step we added some straw.
12. Then covered the pot with plastic sheet to help retain moisture and heat.
13. After 1 month, pile started forming compost which is dark brown, crumbly and smelling of earth.

Conclusion

As population increases, waste also increases. This issue nobody can destroy but it can manage. This project told about how we can manage this waste at household level by introducing a new technique and make useful compost. This project also decreases the soil pollution due to dumping of waste on land. But compost increases soil properties. Improve health and workability of soils, resulting in less fuel consumption to till the soil.

References

1. Saefihim et al., 2011.Liquid Fertilizer as a Solution to Problem of Kitchen Waste (Organic) and the Empowerment of Rural Women. Hanjagi International Conference on Chemical, Ecology and Environmental Sciences (ICCEES'2011).
2. Okareh, O. T., Oyewole, S. A., & Taiwo, L. B. (2014). Conversion of food wastes to organic fertilizer: A strategy for promoting food security and institutional waste management in Nigeria. Journal of Research in Environmental Science and Toxicology, 3(4), 68-73.DOI: http:/dx.doi.org/10.14303/jrest.2012.031.
3. Jara-Samaniego, J., Pérez-Murcia, M. D., Bustamante, M. A., Paredes, C., Pérez-Espinosa,

A., Gavilanes-Terán, I., & Moral, R. (2017). Development of organic fertilizers from food market waste and urban gardening by composting in Ecuador. PloS one, 12(7), e0181621.

4. Mahmud, M. R., Islam, M. S., Meghla, N. T., Kabir, M. H., & Uddin, M. J. (2019). Kitchen Waste Disposal and Management Practices in Urban Region of Bangladesh through Barrel Composting System.
5. Ahmed, R. R., & Abdulla, A. I. (2018). Recycling of Food Waste to Produce the Plant Fertilizer. International Journal of Engineering & Technology, 7(4.37), 173-178.
6. Dela Cruz, N. E., Aganon, C. P., Patricio, M. G., Romero, E. S., Lindain, S. A., & Galindez, J. L. (2006, October). Production of organic fertilizer from solid waste and its utilization in intensive organic-based vegetable production and for sustaining soil health and productivity. In International Workshop on Sustained Management of the Soil-Rhizosphere System for Efficient Crop Production and Fertilizer Use (Vol. 16, p. 20).