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Organic Waste Management In Cotton Market Yavatmal

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Abstract: Proper waste management is crucial to environmental health. This study examines the municipal solid waste management and disposal methods in the Yavatmal district of Maharashtra India. It investigates the characteristics and composition of the waste, as well as the environmental issues associated with its management. Structured questionnaires were used to collect primary data from a random sample of the population in the areas with the highest accumulation of solid waste, particularly at government-designated waste disposal sites and open areas along major streets in the city. The project studied the environmental and health problems arising from the unsustainable management of waste. The results indicate that both designated and non-designated waste dump sites on major streets and in various open areas are left unattended for extended periods, leading to rubbish heaps that encroach on roadways, obstruct access for users, generate severe pollution issues, and create significant nuisances when disturbed by winds. Additionally, these heaps distort the aesthetic appeal of the city. The findings also reveal that the composition of urban waste is heterogeneous, containing both perishable and non-biodegradable materials, including e-waste, plastics, synthetic materials, hospital waste, and hair salon waste, among others. The study focused on the characteristics of organic and inorganic waste, conducting experiments to convert this waste into usable by-products. Ultimately, the analysis highlights the importance of implementing the 4R (Reduce, Reuse, Recycle, and Recover) and engaging all stakeholders in developing an integrated waste management system within residential areas.

Index terms : Organic waste, waste management, municipal solid waste, environmental sustainability, Maharashtra

1.Introduction :-

Now a days urbanization is increasing rapidly and so the population resulting into various pollution. With increasing urbanisation and population the kitchen waste management has become a big problem. Excessive waste generation leads to numerous challenges in the everyday lives of all living beings and has a significant impact on our environment India produces around 3000 crore tones of organic waste annually. Kitchen waste comprises of vegetable peels, fruit peels, uneaten food items, grains, etc. kitchen waste are organic in nature and produces foul smells, disease causing bacteria's and it attracts the insects, flies and mosquitoes which can spread various diseases. Tourism and hotel industries also produces a huge amount of organic waste Hotel industry, in recent years, has been a major reason behind the tremendous growth in Indian GDP. Hotels significantly utilize resources and play a substantial role in waste generation, outperforming other sectors in this regard.

Kitchen waste refers to the leftover food and other organic materials generated during food preparation and consumption. It includes scraps like vegetable peels, uneaten meals, and expired groceries. Managing this waste is crucial for reducing landfill impact, promoting composting, and enhancing sustainability. By delving into effective waste reduction practices, we can ultimately minimize environmental harm and promote healthier ecosystems. Solid waste consists of discarded materials that are not liquid or gas, including household garbage, industrial waste, and construction debris. Proper management is essential to reduce environmental pollution, promote recycling, and conserve resources. Understanding solid waste types and disposal methods can help us delve into more sustainable practices, ultimately leading to a cleaner and healthier planet. The open dumping of waste not only poses serious health risks for waste handlers but also contributes to environmental degradation. Contaminated water sources, air pollution, and the proliferation of pests are just a few of the repercussions of inadequate waste management practices.

Additionally, the economic burden on local municipalities increases due to the high costs associated with clean-up efforts and potential health-related expenses. Despite the involvement of the informal sector, which plays a critical role in collecting and recycling materials, there is no structured system to effectively integrate them into the formal waste management framework. This lack of recognition limits the potential for enhancing recycling rates and reduces the overall efficiency of waste management strategies. Innovative solutions are required to address the multifaceted issues of waste management in the region. Implementing source segregation, improving data collection on waste generation, and enhancing community awareness about the importance of waste management can lead to more sustainable practices. Moreover, investing in infrastructure for composting and biomethanation could help to process organic waste more effectively, reducing the amount of waste sent to landfills. In conclusion, addressing the significant challenges in solid waste management in geographic regions such as Yavatmal and Gujarat necessitates a comprehensive approach involving government, community, and informal sector collaboration. A focus on sustainable practices, improved data management, and public awareness is essential to create a healthier and more sustainable environment.

The waste management process can be broken down into six key functional elements, which include:

- Waste generation
- Storage
- Collection
- Transportation
- Segregation and processing
- Disposal

1.1 Aim

Organic wastes : The aim of waste management is to reduce the dangerous effects of such waste on the environment and human health. A big part of waste management deals with municipal solid waste, An overview on Generation, Implications and available management options in Cotton market area.

1.2 Objectives

1. To safeguard the environment through efficient and sustainable waste management practices.
2. To encourage recycling to conserve energy, protect natural resources, minimize pollution, lower waste disposal costs, preserve valuable raw materials, and reduce the volume of waste sent to landfills.
3. To encourage waste segregation at the source and achieve fully automated waste management.

1.3 Study of scope

1. Waste management in Cotton market area will be fully automated.
2. The system ensures proper waste disposal without negatively impacting the environment or causing health hazards.
3. Waste management will become more efficient for residential complexes in Cotton market area through the use of this innovative technique.
4. The disposal strategy will minimize landfill waste, conserve energy, and reduce costs.

1.4 Need for Study

Cotton market area is grappling with enormous piles of waste, trash, and garbage. Rapid urbanization and population growth have made waste a significant source of environmental pollution. The city faces serious environmental degradation and public health risks due to uncollected waste on streets and public spaces, clogged drainage systems from indiscriminate dumping, and the contamination of water sources near uncontrolled dumping sites. Therefore, there is an urgent need for an effective waste management system in Yavatmal.

Current Situation of MSW in Cotton market area

Cotton market area generates approximately 24 tonnes of solid waste per day, amounting to 36 to 40 metric tonnes annually. On average, each individual contributes around 200 grams of solid waste per day.

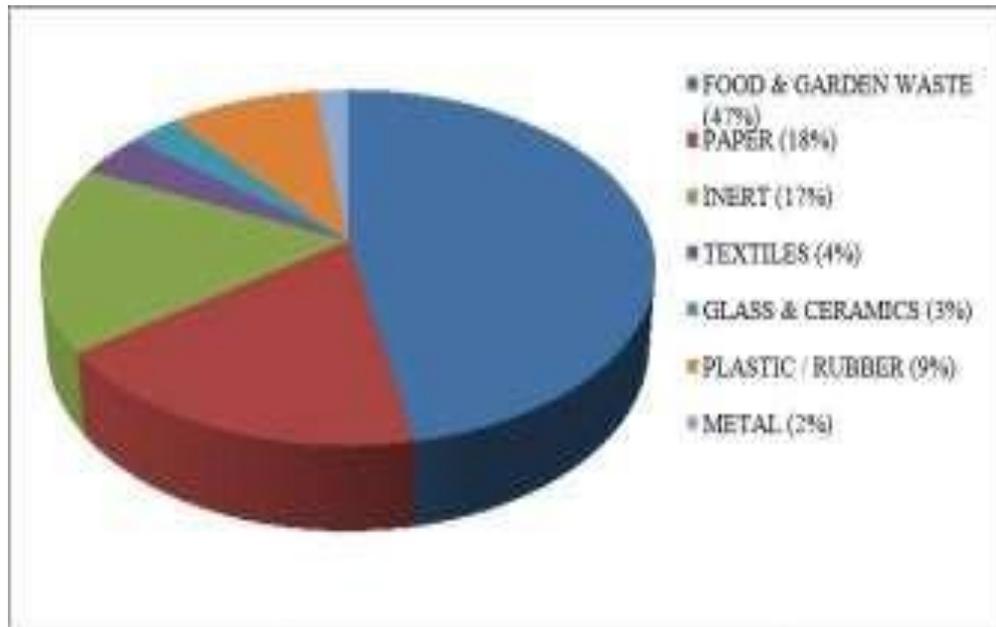


Fig-1:Current analysis of MSW in Cotton market area .

2 Methodology :-

1. Solid waste from various sectors of society was collected, mixed, and a 1 kg sample was prepared using the quartering method. The waste was then characterized, and the percentage of each component was calculated. Secondary data on waste generation, collection systems, and disposal methods were obtained from the Cotton market area Corporation.
2. Composting: This is the biological process where fresh organic waste are allowed to be decomposed into humus like substances. In this process aerobic microorganism fasten the decomposition of waste under aerobic condition (presence of oxygen). the end product of the composting method converts the waste into composting.



Open Dumping:-This is done in low lying areas and outer side of cities and town. It is less cost effective and it is most commonly used method in India. This is not an efficient method of disposal of waste and has the following disadvantages:

1. It causes great environmental damages.
2. Contaminate ground water
3. Support population of flies, mosquitoes, etc. causes health problem.

4. Causing air pollution due to toxic fumes and gases releases during decomposition of waste.



Recovery and recycling :-

It is essential to take this step, as there are instances when valuable products are discarded by people. that can be collected in this process and also recycle and change into various useful products, glass, glass bottles, plastic, rubber, tin, tar, etc. are some recyclable products which humans use to throw in the garbage, these products can be easily recycled and reused.

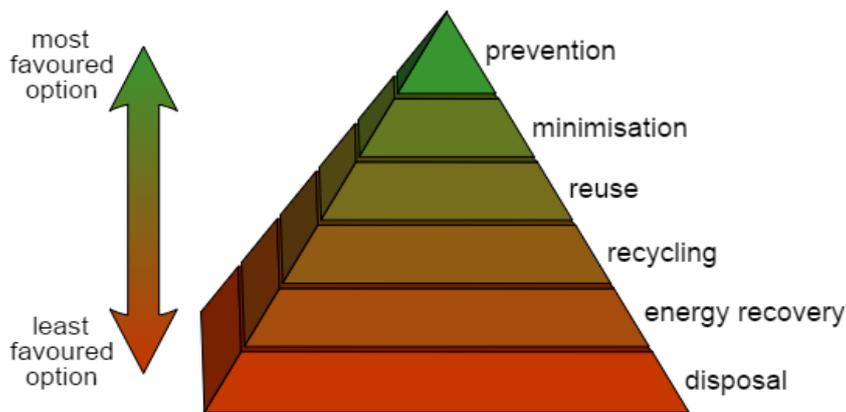
3 Data Collection :-

Data was collected through a structured questionnaire administered to the selected households. This included information on the number of occupants, age distribution, and the types and quantities of waste generated. In addition, field observations were made at waste dumping sites to assess waste composition and disposal practices.

4. Food waste management Hierarchy :-

The waste hierarchy is a structured approach that prioritizes waste management strategies based on their environmental impact. Its primary goal is to minimize waste generation from the very beginning, addressing the issue at its source. The highest priority in the waste hierarchy is crucial because it minimizes environmental impacts compared to the lower-ranking options. The primary goal is to foster a more sustainable environment. Figure 2 below provides an illustration of the food waste hierarchy. The food waste hierarchy presents five different approaches for managing food waste, specifically.

1. Prevention is the most favourable option in the food waste hierarchy, which its domain function is to prevent the possible amount of food waste generated in a particular source point. To effectively prevent unnecessary food waste, it's essential to address the entire food supply chain. This involves not generating excess food during both production and consumption stages.
2. Re-use is the second option in the food waste hierarchy, whereby its primary aim is to retain the amount of food that is thought to be discarded and give a second chance to be used. It consists of redistributing surplus food to assist those struggling with food insecurity and poverty, utilizing networks and food banks to ensure aid reaches those in need.
3. Recycle is another option of food waste hierarchy that involves diversion of discarded food into non-human consumption alternatives such as turning food waste into animal feed or composts.
4. Recovery is an alternative approach within the food waste management hierarchy that focuses on processing unavoidable food waste and converting it into energy. It can be undertaken through health problem. Causing air pollution due to toxic fumes and gases releases during decomposition of waste.anaerobic digestion. The effectiveness of this option typically relies on the technology available for waste treatment.
5. Disposal is the less favourable and final option available in the food waste management hierarchy, which involves the disposal of unavoidable food waste into



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5. Conclusion :-

The present studies have given the different the different methods to deal with the organic waste, kitchen waste. Landfilling of the waste leads to the erosion of the soil, open dumping causes air pollution and water pollution when it meets to the ground water source. Composting and vermicomposting is one of the best method as it reduces the volume of waste and produce the humus like substance which is used as biofertilizes and soil conditioner. The vermicomposting activity significantly modifies the physical and chemical properties of kitchen waste material that can be an important tool for organic farming. The present studies suggest a comparative study of various strategies have been implemented to manage kitchen waste effectively. Here different degradation techniques are highlighted where the parameters are controlled effectively in order to have a useful by product.

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