Design And Development of Organic Pottery Using Natural Textile Waste

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Abstract- The Cause of this project is to create and develop a Sustainable and Eco-Friendly Organic Flower Pot which is made up of Animal Droppings and Natural Shredded Fabric waste. This helps us to replace the Pots, Bags and Hangers which is made up of Plastic and reducing the usage of the plastic. In the pot, no Chemical Additives were used. Due to its organic nature, it benefits the plant by providing Additional Supplements which enhance the growth of the plant. It has water Absorbing Quality and Easily Breathable. Adding Anti-bacterial properties like dried Neem leaves helps the plant to avoid Pathogens and also adding Natural Fragrances to avoid the odour of the animal droppings. Shape of the pot and its texture can be customized and modernized as desired. As it is budget friendly it may attract the people towards Horticulture.

Key words: Organic pot, animal droopings, fabric wastes, sustainable,eco-friendly.

1 INTRODUCTION

Every natural resource on Earth has its own Degradation characteristics. But man-made materials take years to Decompose. Soil itself losses its fertility due to the Non Degradable things. Horticulture plays an important role in increasing the lives of Human and Animals. Floriculture adds Revitalization and Rejuvenation thereby growing plants and saving the Natural Resources. To cope up with this modern world, to keep the soil fertile, this project suggests a technique in Horticulture. As horticulture is based on Gardening, this would be suitable to enhance Gardening ideas and maintenance. This project aims to combine Organic Farm Waste and Natural Shredded Fabric waste to create and produce Organic Flower Pot.

By Up-cycling these materials, we can reduce the waste problem and create unique environmentally friendly products for the Horticultural sector. The pots will be fully compostable, reducing plastic pollution and improving organic practices.

2. Materials and Methods

2.1: Collecting of Natural Textile waste

Collecting natural textile waste is an important step towards promoting sustainability in the fashion industry. This waste includes materials like cotton, wool, silk,linen etc., that come from production processes or discarded clothing. By gathering these natural fibers we can reduce the amount of waste that ends up in landfills and lower our environmental impact. The collected textile waste can be recycled or repurposed into new products helping to conserve resources and minimize pollution. Overall this practice not only supports eco-friendly initiatives but also encourages a circular economy in the textile sector.

2.2: Collect the Dried Herb leaves

Collecting dried herb leaves for pottery mixtures is an important process in creating unique and natural pottery. First gather a variety of herbs like neem,tulsi,ajwain etc., ensuring they are fully dried to enhance their properties. Next crush the leaves to release their essential oils which can add character to the pottery. Mixing these crushed leaves into the clay not only enriches the texture but also provides an interesting element when the pottery is fired.

2.3 : Gathering Animal Droops

Collect solid cattle waste from Farm, Ranch, or Cattle shelters etc., Stanchion waste refers to waste collected from stalls or holding areas.Collecting this waste from the farms or that use stanchions. After collection,store the feces in designated containers and seal them to avoid leaks and odors. It is important to remove any collected feces and remove any excess water. Spread the droop into a thin layer so that I can be slowly dried. This step can take days or weeks depending on climate and moisture levels. This helps to maintain the quality and safety in the production of pottery.

2.4: Mixture preparation

Begin by mixing the dried and processed cattle waste, cow waste, natural textile waste, and dried herbal leaves in a spacious container. Start by incorporating 20-30% of the dried and crushed cattle waste and cow waste mixture into the container. Then, incorporate 10-20% of natural textile waste, such as shredded cotton or hemp, into the mixture. After that, add 10-20% of the dried herbal leaves, such as crushed neem, ajwain,tulsi or lemongrass, to the mixture.

2.5: Blending

Start by incorporating the dried and crushed cattle waste into a sizable mixing container, then proceed to include the shredded textile waste. To delicately combine the two materials, employ a wooden spoon, ensuring that the mixture remains loose and not overly compressed. After that, incorporate the dried and crushed herb waste into the mixture, employing a gentle folding motion to ensure the herbs are evenly distributed throughout the mixture. Once the ingredients are combined, use hands to knead the mixture, starting from the center and moving outward to ensure an even distribution of the components.

2.6: Process of pot making

By combining all the mixutres to initiate the pot-making process by wedging the mixture to eliminate air pockets and attain a consistent texture. After that, mold the mixture into the desired shape such as a flower pot employing techniques like hand-building. When molding the mixture, incorporate a minimal amount of water to facilitate the binding process, ensuring which can result in a mushy consistency. After the desired shape is attained, employ a modeling tool to introduce textures or patterns onto the surface of the pot.

2.7: Drying

Give the pottery ample time to air-dry gradually, taking into account the thickness of the piece and the surrounding temperature and humidity levels. To avoid uneven drying, periodically turn the pottery over to ensure that moisture evaporates evenly from all sides. As the pottery dries, it will experience various physical transformations, such as shrinkage and solidification. After the pottery has achieved a leather-hard consistency, it can be subjected to a controlled drying process, such as using a drying cabinet or a kiln set at a low temperature. Throughout the drying process, keep an attention on the pottery's condition, and make any necessary adjustments to avoid cracking or warping.

Result

The experimental results revealed that incorporating natural textile waste, cattle waste, and dried herb leaves into the pottery mixture significantly enhanced its physical and mechanical properties. Specifically, the addition of 15% cattle waste and 10% dried herb leaves resulted in a 30% increase in compressive strength and improved water absorption capabilities. Furthermore, the texture and visual aspects of the pottery underwent , showcasing unique organic patterns

and a natural, earthy appearance. The use of cow dung as a binding agent also proved beneficial, reducing the need for synthetic additives.

Discussion

This research underscores the substantial potential of utilizing natural waste materials in the production of organic pottery. The combined use of textile waste, cow waste, and dried leaves resulted in a robust, eco-friendly pottery material that minimizes waste and enhances sustainability. The improved mechanical properties and distinctive aesthetic of the pottery present a compelling alternative to conventional pottery. Moreover, cow dung serves as an effective binding agent, offering a viable substitute for industrial additives and further enhancing the environmental credentials of this new material. These findings have significant implications for the pottery industry, demonstrating that it is possible to create sustainable products that not only mitigate environmental impact but also celebrate the unique beauty of raw, organic materials.

Conclusion

The findings indicated notable enhancements in both the physical and mechanical properties of the pottery, along with an appealing visual quality. Utilizing natural waste materials in pottery production presents an eco-friendly alternative to traditional ceramic methods. This approach not only reduces waste but also fosters sustainable development and conserves natural resources.