

"RiceCycle BeesCup: Eco – Friendly coffee cup infused with seed from Rice Husk (Oryza sativa) with Beeswax coating"

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Abstract: Sustainable alternatives are urgently needed because plastic pollution is a global disaster that has persisted for several decades and is only getting worse every year (2018, June). A study is presently being undertaken to evaluate the viability and environmental impact of employing eco-friendly coffee cups that are infused with seeds at the bottom and manufactured from rice husks and beeswax to address this issue. To assess the full potential of these cups as a sustainable replacement for conventional plastic, the study includes an extensive examination of literature as well as experimental trials. In comparison to conventional cups, it evaluates their strength, durability, and thermal conductivity as well as their environmental effect and practicality. The research highlights the significance of mitigating.

Key Words: sustainable alternatives, plastic pollution, eco-friendly coffee cups, rice husk, beeswax, environmental impact

1. INTRODUCTION

Plastics are a common and non-biodegradable material that are used extensively in single-use products, which presents a serious environmental risk. A percentage of the expanding plastic waste crisis, especially in Asia, is being recycled, leaving an enormous strain on landfills. Plastic waste's long-term ecological effects are a global concern that need for creative solutions to lessen its effects. The milling process of rice husks, a staple grain in Asia, produces a significant number of byproducts that can be utilized to make sustainable concrete, paper, and biodegradable plastic by extracting lignin. Rice husks contain an organic substance called lignin that can be utilized to create biodegradable plastics. These plastics can be used as environmentally friendly alternatives to a variety of products, including single-use items like coffee mugs.

The ecology is severely impacted by the growth of plastic garbage, particularly in nations like China, Indonesia, the Philippines, Vietnam, and Sri Lanka. Big plastic objects break up into tiny "secondary microplastic particles," which increase their ability to absorb and concentrate persistent organic pollutants (POPs), such as dangerous compounds like polychlorinated biphenyls (PCBs) and dichlorodiphenyltrichloroethane (DDT).



The issue is made worse by improper waste management, as landfills release methane, a strong greenhouse gas that is connected to climate change. This study investigates the feasibility of using rice husks coated with beeswax to create an environmentally friendly coffee cup that can replace conventional plastic cups in a sustainable manner. For biodegradable materials to effectively reduce plastic pollution and lessen its negative effects on the environment, proper disposal and recycling procedures are crucial.

2. METHODOLOGY

Organized plastic waste, especially when it is not necessary, is a global problem now (Smith, 2018). Inadequate recycling campaigns, most of which can only be seen in Asia (Jambeck et al., 2015), are responsible for the severe decline in landfill capacity in Asia. The rice husk extract, being lignin-rich, can be used as the plastic component (Huang et al., 2020). Plastic cups for coffee and others made up of plastic raise the ecological threats associated with plastic waste (Geyer et al., 2017). Taking care of all biodegradable products and their storage procedures has become a very critical factor in managing plastic pollution, with the earth being its victim (Euronews, 2019).

2.1 Subsection

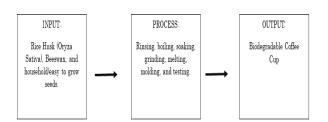


Figure 1. Conceptual Framework

Figure 1 shows the input, process, and output of making Eco-Friendly Coffee Cup made from Rice Husk with Beeswax coating; Infused with seed at the base of the cup.

The flow of process is arranged accordingly: gathering of materials, rinsing of rice hulls, boiling of rice hulls, soaking of rice hulls, the soaked rice hulls will be put into the oven until crispy, grinding of the crispy rice hulls, melting of beeswax, combining both ingredients, pouring it into a mold of a cup, and wait until dry.

3. RESULTS AND DISCUSSION

Figure below shows the amount of each trial from ratio 1 to 4. On the last column/column 4 (results) describes the produced product and mentioned the mistakes made in the trial.

Input	Rice Husk	Beeswax	Results
Ratio 1:	80 grams	40 grams	Ratio caused the rice
			husk to take in all the
			beeswax, and this
			mixture ultimately lac
			flexibility and structur
			robustness. Additional
			it is the excessive
			quantity of rice husk
			that impedes the bond
			of the other componen
			(by sealing beeswax) a
			well.
Ratio 2:	40 grams	80 grams	This ratio turned out
			well-suited for cup tria
			beeswax in that case
			adheres well to the hu
			itself which is a
			resourceful base and
			strong structure provi
			at the same time.
Ratio 3:	50 grams	50 grams	A balanced ratio yield
			a saturated result who
			the components merel
			offset each other, failin
			to form a cohesive
			mixture suitable for
			shaping.
Ratio 4:	80 grams	80 grams	



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4. CONCLUSIONS

In conclusion, this centers on creating eco-friendly coffee cups utilizing rice husks coated with beeswax, pointing to combat the plastic squander emergency. Through thorough experimentation and examination, it is obvious that the perfect proportion of beeswax to rice husk is basic for container strength and usefulness. With the information uncovering that a better extent of beeswax guarantees glass quality, whereas a break even with or higher extent of rice husk compromises basic judgment, the investigate gives profitable experiences for the generation of feasible choices to conventional plastic cups. This underscores the importance of carefully adjusting these proportions to make eco-friendly arrangements that viably relieve plastic contamination and advance mindful utilization and generation hones.

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We started with an expedition of discovery and innovation to which I have given myself and I am grateful to have found myself beside such smart and passionate people.

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