MINISTRY OF AGRICULTURE AND FARMERS WELFARE

NATIONAL BANK FOR AGRICULTURE AND RURAL DEVELOPMENT

NABARD

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AGRISURE GREENATHON

TEAM NAME : **BIO-STALK INNOVATIVES**

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TITLE : **MOISTURE-ABSORBENT SECONDARY PACKAGING FROM RAGI AND COTTON STALKS**

PROBLEM STATEMENT:

Agricultural waste poses a significant environmental challenge, while farmers miss out on potential income streams from proper waste management. Turning Agri-Waste into something profitable and useful for farmers has its own set of unique challenges and benefits. The Challenge is to develop innovative and cost-effective solutions for managing and transforming agri-waste into profitable business opportunities for farmers and rural communities.

MOISTURE-ABSORBENT SECONDARY PACKAGING FROM RAGI AND COTTON STALKS

- The project involves creating a biodegradable moisture-absorbent secondary packaging material using ragi (finger millet) and cotton stalks.
- This eco-friendly solution aims to reduce plastic use and enhance sustainability by utilizing agricultural waste to produce effective packaging material that can decompose naturally, minimizing environmental impact.

BIODEGRADABLE PACKAGE

RAGI STALKS

COTTON STALKS

NORMAL VS BIODEGRADABLE PACKAGING

- ✓ On average, cotton and ragi stalks are wasted up to 1-2.5 tons per hectare. After harvest ,these are only burnt which increases the pollution .
- ✓ This innovation tends to use this huge wastage material and reduce pollution by transforming these stalks into secondary packaging material for fruits and vegetables with moisture absorbent properties along with water proof property.
- ✓ This will provide long shelf life for fruits as well as waste reduction.
- ✓ This innovative approach will be a profitable method for farmers which does not include much complicated steps and user friendly.

Unique Selling Point (USP)

- ✓ The USP for the packaging material is , it have moisture absorbent properties which is a crucial property provided by cotton stalks which can keep the fruits and vegetables safer by absorbing the surrounding moisture.
- ✓ Hence , keeping the fruits and vegetables fresh and with extended shelf life.

NOTABLE CHARACTERISTICS

- ✓ **Biodegradable**: The material is environmentally friendly and decomposes naturally, **reducing waste and pollution**.
- ✓ **Moisture Absorbent**: The packaging material effectively **absorbs moisture**, protecting the contents from damage and quality degradation.
- ✓ **Renewable Resources**: It is made from ragi and cotton stalks, which are renewable agricultural by-products.
- ✓ **Lightweight**: The packaging material is **lightweight**, which can lower transportation costs and reduce the carbon footprint.
- ✓ **Versatile**: It can be used for various packaging needs, providing **flexibility** in applications.
- ✓ **Safe and Non-Toxic**: The material is safe for use in food packaging and other sensitive applications, as it is non-toxic and free from harmful chemicals.

PROCESS FLOW


Raw Material Collection and Preparation


Cleaning of stalks and shredding


Pulping (Fiber Extraction)


Blending

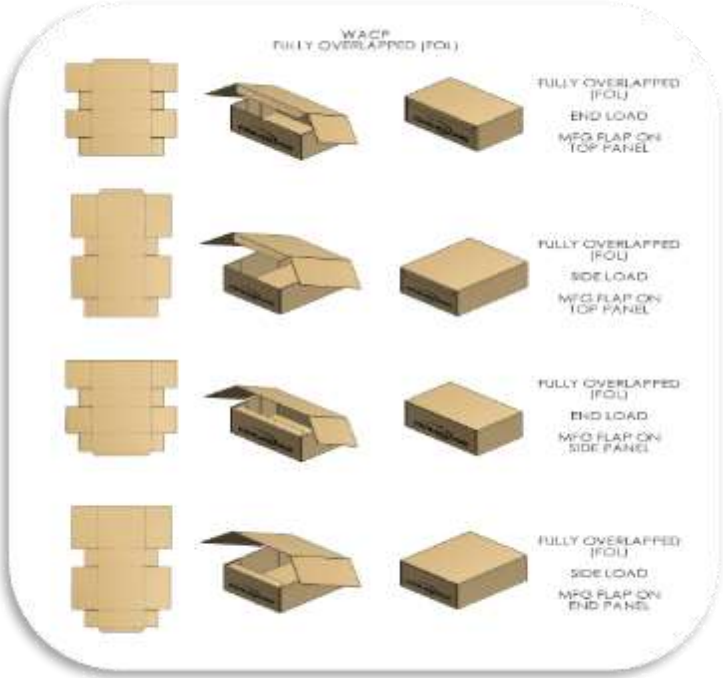

Moulding into sheets or shapes

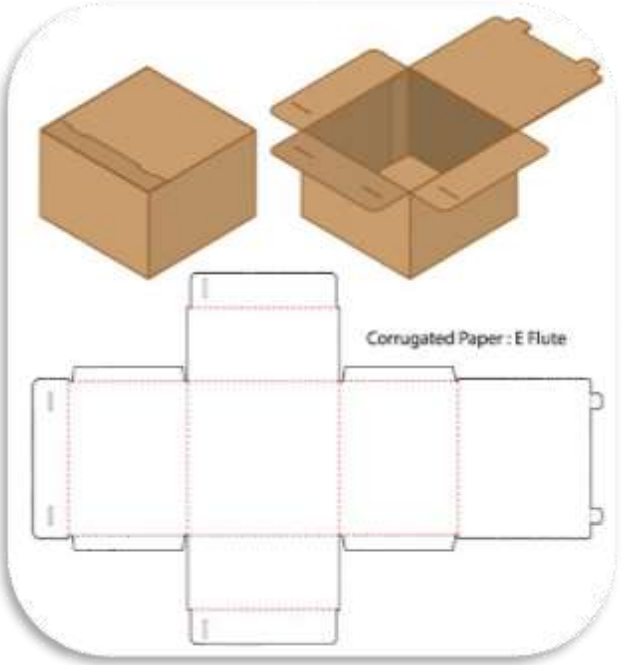

Biodegradability Testing and Certification


Quality Control and Performance Testing


Biodegradable packaging material

Architecture diagram of the proposed solution:





TECHNOLOGIES TO BE USED IN THE SOLUTION

- Air drying Technology
- Compression moulding

CONCLUSION:

Moisture-absorbent secondary packaging made from Ragi and cotton stalks offers a dual benefit. It provides an additional income stream for farmers by adding value to otherwise discarded agricultural by-products, enhancing their profitability. Simultaneously, it contributes to waste reduction by repurposing these materials into sustainable packaging solutions, thus promoting environmental responsibility and reducing overall waste.

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