

M'SReD : Durian Rind Shredder For Efficient Biowaste Composting

PATENT NO : PI 2021006005

TECHNOLOGY

Durian (*Durio zibethinus*) is one of the popular local fruits in Malaysia, also known as *Raja Buah*. The major portion of fresh durian fruit consists of its peel (50–60%) and its seed (15–20%), suggesting that it contains a large portion of biowaste (up to 80% of its total mass). Dumping durian rind into garbage causes environmental pollution. Durian rind is a natural source of cellulose and has a potential value to become a compost that can be processed into other high-value products such as biodegradable packaging. However, The complex structure of the durian rind which consists of cellulose, hemicellulose, and lignin makes it recalcitrant to be further processed.

A multi-blade durian rind shredder machine (M'SReD) is a new invention that utilized a shredding and tearing mechanism developed to shred durian peels or any other fruits into smaller sizes for further diversification processes to reduce environmental waste.



CURRENT ISSUE



Approximately 70 – 85% of the fruit is discarded as waste and would be an **environmental problem** if not disposed of in a proper manner.



Durian rind waste accounts for a **large area for disposal** and there are limited landfill spaces for decomposition.



The complex structure of the durian rind which consists of **cellulose, hemicellulose, and lignin** makes it **recalcitrant** to be further processed as compost and bio-mass.

MARKET POTENTIAL

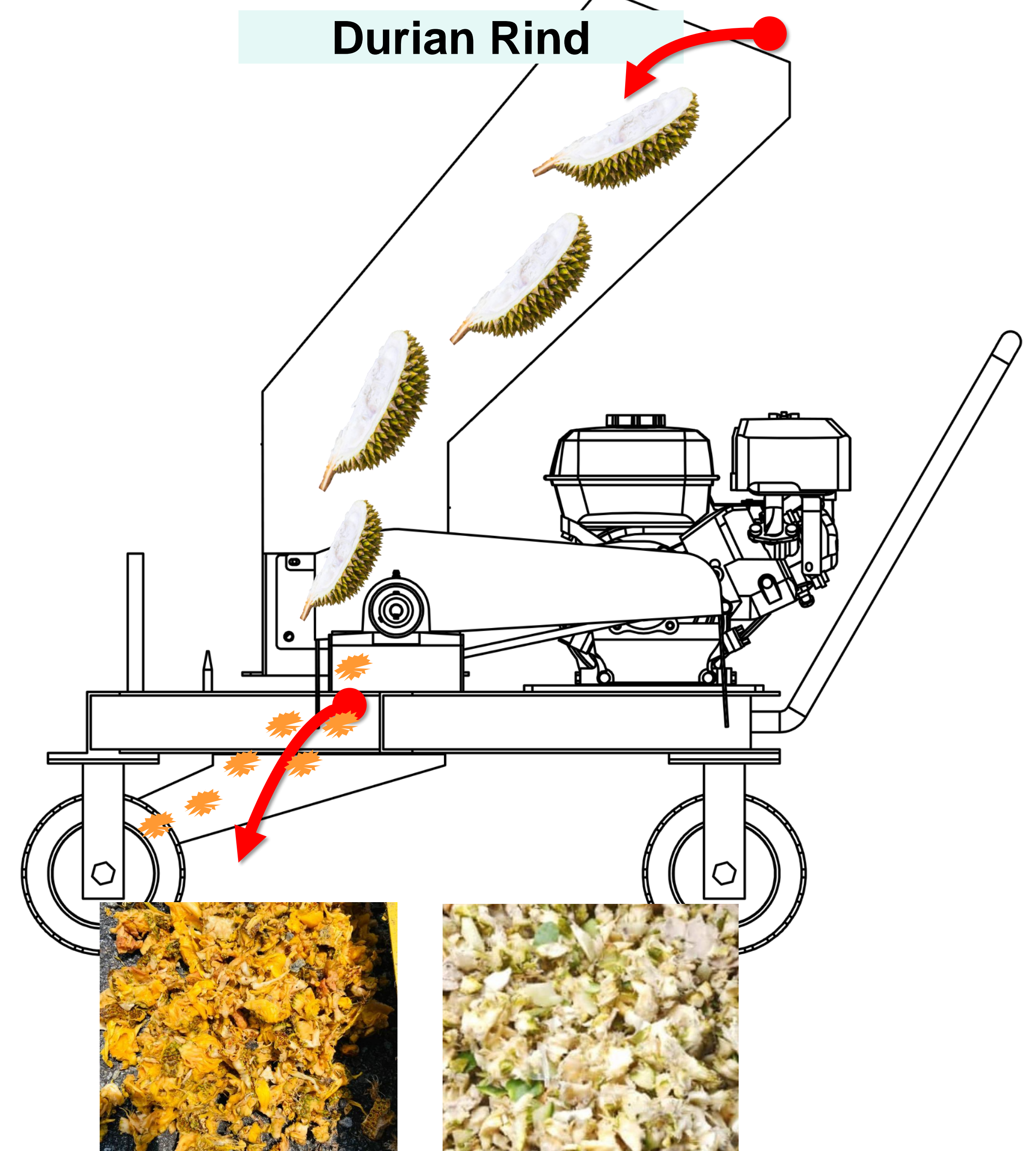
Agricultural industry (Durian and fruits)

Research Centre

Food Processing

Renewable Energy

PROCESS FLOW



INVENTIVENESS & NOVELTY

This invention provides a fast and efficient shredding process of durian rind in comparison with the current manual method used. This machine is also portable and does not require a large space to use.

USEFULNESS & APPLICATION

The smaller size durian waste produced from **M'SReD** can make the compost easier to be processed at the next stage.

IMPACT OF THE PRODUCT

- Continuous separation process
- Dry separation process
- Efficient shedding process (98%)
- Fast separation process
- Does not require skilled manpower to operate.

TRL : 7 - Technology system prototype demonstration in an operational environment

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