



DESIGN AND FABRICATION OF AN ENGINE-DRIVEN COFFEE HULLER

DEPARTMENT OF AGRICULTURAL MECHANISATION AND IRRIGATION ENGINEERING

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**A final project submitted to the department of Agricultural
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ABSTRACT

For the quality and value of coffee beans to be preserved, the coffee business depends on effective post-harvest processing. Conventional(Traditional) hulling techniques can result in inconsistent bean quality and are frequently labor-intensive and time-consuming(G Bizimungu, Ahouansou, and Semassou 2024b). In order to improve processing efficiency, decrease manual labor, and streamline the coffee processing workflow, this project focuses on designing and building an engine-powered coffee hulling machine. The suggested machine, which will specifically be made for small scale coffee farmers, will combine an engine-driven hulling unit with a cleaning system. The coffee hulls will be effectively detached from the beans by a mechanical hulling beater in the design, and the husk/parchment and other broken bean materials will be separated from the beans by mean of a blower and sieve. Choosing materials that are long-lasting and resistant to corrosion, maintaining food safety, and maximizing mechanical efficiency are important design factors. The hulling and cleaning parts of the machine are consistently powered by an engine. The research methodologies that will be employed are data collection, the design of a coffee huller machine using Solid Works software, engineering textbooks, work preparation, manufacturing fabrication, process, and work testing. Durable, corrosion-resistant materials, such as mild steel with a food-safe coating for the pulping the beaters, concave surface, sieve, and certain parts that come into direct contact with the beans, will be used during fabrication. Early testing will show that the equipment can effectively process coffee beans without sacrificing bean quality, providing small-scale producers seeking to increase productivity with a workable option. The expansion and sustainability of the coffee production business will be supported by this engine-powered coffee hulling equipment, which promises to lower labor demands, increase processing speed, and improve the overall quality of processed coffee beans.

DECLARATION

We **GOOWA MUZAHAMU, JAMONY FRANCIS**, declare that this final year project report was prepared out of our own endless efforts and it has never been presented to any institution of higher learning for any award.

GOOWA MUZAHAMU BU/UP/2021/0249

Signature

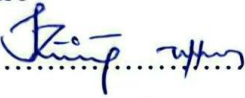
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We thank the university Technician Mr. Eriau Daniel and the group for their endless effort granted towards the fabrication of the machine and the hospitality they offered to us during the machine fabrication. We pray that the almighty God bless the works of their hands.

APPROVAL

This final year project report has been prepared and compiled by **GOOWA MUZAHAMU and JAMONY FRANCIS**. It is therefore submitted to be approved by,

Supervisor

Prof. T. B. WATMON

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ABBREVIATIONS

RPM – Revolution per minute.

DPCT - Dry processing coffee processing technology

WPCT - Wet processing coffee processing technology

e.g. – For example,

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