
FACULTY OF ENGINEERING
DEPARTMENT OF AGRICULTURAL MECHANISATION AND IRRIGATION
ENGINEERING
FINAL YEAR PROJECT REPORT
DEVELOPMENT OF FINGER MILLET THRESHING AND CLEANING MACHINE.

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A final year project report submitted to the Department of Agricultural Mechanization and Irrigation Engineering in partial fulfillment of the requirement for the Award of the Bachelor's Degree in Agricultural Mechanization and irrigation Engineering of Busitema University

DECLARATION

DECLARATION

We a group of 2 members declare to the best of our knowledge that the piece of this project proposal was as a result of our research and effort and it has never been presented or submitted to any institution or university for an academic award.

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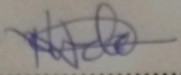
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APPROVAL

APPROVAL
This project has been submitted for examination with approval from the following supervisors:

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ABSTRACT

This proposal is organized in three chapters, that is, chapter one contains the introduction, chapter two presents the literature review and chapter three presents the methodology that was used to achieve all the specific objectives.

The introduction presents what the project is all about and clearly shows the intent of the researcher. It contains sub-sections such as, background of the study, statement of the problem, general objective and specific objectives of the study, research questions, justification, scope of the study and structure of the proposal.

The literature review presents concepts that are vital for the design of the machine, such as the engineering properties of finger millet, and the recommended values for the crop and machines variables, that can ensure efficient threshing and winnowing of finger millet.

In chapter three, the methodology presents clear procedures of achieving each specific objective. It describes the conceptual framework that guides the design of machine components. It shows how machine components are designed and constructed. It also describes how characteristics of machine performance were established, as well as how a cost-benefit analysis of the prototype carried out.

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1 CHAPTER ONE

1.1 BACKGROUND

Finger millet (*Eleusine coracana* (L.) Gaertn.) Is an annual plant widely grown as cereal crop in arid and semiarid areas of Asia and Africa; It is a highly adaptable crop and even grown in higher elevations up to 2400 m above mean sea level in the Himalayas. Finger millet is originally native to the Ethiopian highlands and it was introduced to India approximately 4000 years ago. It is the most important minor millet in the tropics and grown in more than 25 countries in Africa (Eastern and Southern) and Asia (from Near East to Far East) and accounts for 12 % of the global millet area.(M. Singh & Kumar, 2016). It is a hardy crop that can be grown in very diverse environments and has an excellent food value. It is a potential nutritious crop for the increasing world population, particularly in arid and semiarid regions where it is usually ranked third in cereal production, after sorghum and pearl millet.(Bisht & Mukai, 2002).

The global annual planting area of finger millet is estimated to be around 4 – 4.5 million ha, with a total production of 5 million tons of grains, of which India produces about 2.2 million tones and Africa about 2 million tones. The rest comes from other countries in South Asia. (M. Singh & Kumar, 2016)

Nigeria and Burkina Faso are the two largest producers in Africa with an average of 13.85 thousand tons/yr(Ramashia et al., 2019) other nations include the sub humid regions of Ethiopia, Kenya, Malawi, Tanzania, Uganda, Zaire, Zambia and Zimbabwe.

In Uganda, among the cereal crops grown, finger millet ranks third to maize and sorghum in terms of total national production with an average yield of 1.6 metric tons per ha. The crop is grown throughout Uganda but mainly in the Eastern, Northern and Western regions by small-scale farmers and purely at subsistence level. Up to 65% of the country's finger millet is in the greater districts of Kabale, Hoima, Bushenyi, Masindi, Mbarara in western region; Iganga, Kamuli, Kumi, Soroti, Mbale, Tororo in eastern region; and Gulu, Kitgum, Lira, Apach and Arua in the northern region.(Adikini et al., 2021)

Threshing of finger millet is done in several ways which include beating with long sticks, mechanical threshers, stone roller, trampling using bare foot or animals. And cleaning of finger millet involves use of moving wind and mechanical fans.

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