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Industrial & Manufacturing Engineering



FINAL YEAR PROJECT

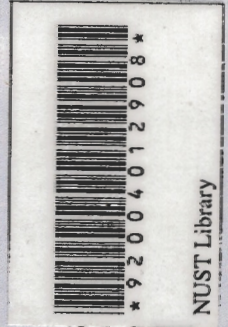
TOPIC: DESIGN OF A MARULA NUT CRACKING MACHINE

2008 / 2009 ACADEMIC YEAR

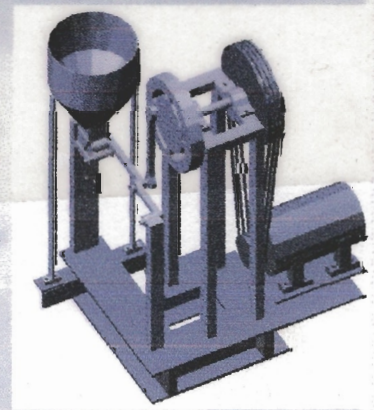
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Industrial and Manufacturing Engineering

ABSTRACT

Cracking a Marula nut is one of the most labor-intensive tasks performed by women in rural areas of Southern Africa. The nuts are hard to crack and sometimes people hit themselves instead of the nut. In order to have Marula commercialization for sustainable and equitable livelihoods, there is need of a better mechanical way of cracking the marula nut. The Marula-Nut cracking machine project is concerned that improved technology could result in an important value-adding step being removed from households to more centralised facilities, in which a single machine can serve the whole community.

This project covers the characteristics information of a marula nut, possible concepts applicable to crack the nuts, which are; jaw crusher, two-roll crusher, single roll crusher and hammer crusher, or a combination of these concepts. Through concept screening and selection, a jaw crusher was chosen for the embodiment and detailed design. Finally drawings for the individual components and a full-scale drawing of the Machine was presented.

The Machine can either be powered by an electric motor or hand powered. The manufacturing cost of the Manual Marula-Nut Cracking Machine is \$839.00, and of an electrically powered machine is \$1160.00. When considered on a cost-of-ownership basis, an electric motor powered Marula-Nut Cracking Machine (payback period of 7 days), can be more cost-effective than a comparable Manual Marula-Nut Cracking Machine with a payback period of 24days.