



Tropentag, October 11-13, 2006, Bonn

“Prosperity and Poverty in a Globalised World—
Challenges for Agricultural Research”

Development of a Double Action - Self Fed Cassava Peeling Machine

OLAWALE JOHN OLUKUNLE

Federal University of Technology, Department of Agricultural Engineering, Nigeria

Abstract

The federal government in Nigeria opened up the market and challenges of cassava production, processing and export in 2004, since then there has been the need to improve the concept and methods of production/processing of cassava. One of the major challenges of cassava processing is peeling. Engineers at the Federal University of Technology, Akure, Nigeria, initiated a major research effort to address this challenge, the effort resulted in the design of two models of a hand fed cassava peeling machine. Feedbacks from users and the public resulted in the development of a self-fed cassava peeling machine. Three models of the latter have been developed and reported. In this study an appraisal of the prospects and limitations of the previous designs is presented. The result of the appraisal was used as the basis for the design of yet an improved version of the self fed cassava peeling machine. The machine consists of a 7Hp Honda engine, two lines of abrasive brush, two lines of auger arranged in parallel, transmission system, frame and tuber monitor. Further improvement was done on the existing models of the self-fed cassava-peeling machine. Major area of improvement include, increase in the length of the peeling brush from 30 cm to 60 cm and automatic adjuster for a range of cassava tuber sizes. A double action self-fed cassava peeling machine was developed and tested under various crop, machine and operational conditions. The effect of brush type, speed and orientation on efficiency of the peeling process was determined. Tubers were presented as cuttings of 20 to 25 cm long and at three different ranges of diameters as < 8 cm, 8–10 cm and > 10 cm. Results show that auger speed of 250 to 1000 rpm resulted in peeling efficiencies of between 82 to 92% at various peripheral speeds of the peeling brush. Adoption of this peeler is expected to (i) promote timely processing of fresh tubers (ii) reduce labour input and (iii) increase production and hence the income of local processors.

Keywords: Cassava Peeling Machine , double Action, Self-Fed