

ABSTRACT

Mechanisation Of Peanut Production On Small Farms

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This work outlines the design, fabrication and field testing of a harvester, thresher and sheller for peanut farms 2 ha or less.

The harvester is a mounted two-row digger designed to lift, invert and discharge the plants, leaving them in windrows. Previous designs malfunctioned due to lack of sustained penetration and clogging by the soil and plant matter. In the present design, the height, weight and structure of the frame were modified to solve these problems. A helicoid moldboard profile was also used to effect inversion.

Sustained penetration, complete inversion and free discharge were obtained on peanut varieties with erect stems for travel speeds between 1.2ms^{-1} and 1.6ms^{-1} . Field loss was under 1% at a depth of cut of 120 mm. Field capacity was approximately 0.3 ha/hr.

The thresher is an engine-driven axial-flow unit designed for continuous operation. High threshing effectiveness and reduced damage is afforded by more passes of the crop through the working slit and lower cylinder speeds. The lightweight cleaning mechanism consists of a vibrating screen and a blower.

97% threshing efficiency and shelling damage under 3% were obtained with crops under 16% moisture w.b. Crops of higher moisture wrapped the

cylinder. Working capacity varied between 125 kg/hr and 200 kg/hr for cylinder speeds between 200 and 600 rpm. Cleaning action was good.

The sheller is powered by an electric motor. At a beater speed of 224 rpm, the shelling rate was 143 kg/hr. Damage was under 2% and cleaning action was good.

Adoption of these machines to replace manual labour can reduce drudgery, encourage greater production and increase income on small peanut farms in the Caribbean.

• The Caribbean Agricultural Research and Development Institute (CARDI) and the Peanut Collaborative Research Support Program (CRSP) for the Grant of this study and for administering this project.

• The Orange Grove Estate Company for their interest and support.

• The staff of CARDI, Jamaica.

• Technicians G. Lezama and D. Pabanih of the UWI Engineering Workshop.

• The farmers in Trinidad and Tobago and Jamaica for providing permits for field testing.

• Ms. S. Hypolite for her help in teaching and editing the draft, and Mr. B. Wilson for excellent typing of the manuscript.