

ABSTRACT

The present work is an outline of the approach toward the design of a compact peanut digger machine.

The technological process in a peanut digger consists of root cutting, plant lifting, soil sifting and arrangement of the plant vegetation on the field, with the nuts exposed to sunlight.

The machine is a two-row unit for row-crop work on the bunch-type peanut plants and on small farms (less than 4 hectares).

The process of harvesting is initiated by scoop shares, divided between rows and so arranged as to lift two rows of plants simultaneously in one pass with a tractor, the source of motive power. The harvested mass moves over the share surface, on to lift rods, where the soil sifts through the apertures between the rods. Thereafter, the processed mass falls on the ground, forming loose windrows behind the digger.

A prototype, constructed from material obtained locally, has been designed for integral mounting on the three-point hitch (Category One) of compact agricultural tractors (less than 15 Kw capacity). The operating depth is controlled by gauge wheels which are independently mounted, with the rolling coulters, on the main frame of the machine.

CHAPTER 1

RESEARCH AND DEVELOPMENT IN PEANUT CULTIVATION

The technique of Experimental Stress Analysis, which utilizes strain measurement as the practical tool, has been employed to quantify soil forces on the digging tool and to determine the draft requirements at a given travel speed. This knowledge leads to the optimization of the present design, for future commercial production of peanut diggers.

In the Caribbean today, agricultural productivity, as measured by output per man, is in decline. The causal factors are three-

- a. the labour intensive nature of the operations
- b. high labour cost and low productivity
- c. severe crop losses and low production due to inefficient planting and harvest systems.

Further, mechanisation has not been associated with the development of local machinery. The imported machinery are merely larger models, at best, of the larger units from the developed countries. They rarely reflect adequate consideration of local conditions and holding size.