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DEVELOPMENT AND EVALUATION OF A SCREW-PRESS
CACAO POD BREAKER

THESIS

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DEVELOPMENT AND EVALUATION OF A SCREW - PRESS
CACAO POD BREAKER

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ABSTRACT

UMALI, EDLYN ANCHOREZ. Don Severino Agricultural College, Indang, Cavite. "Development and Evaluation of a Screw-Press Cacao Pod Breaker". Adviser: Engr. Leyma Cero.

The study "Development and Evaluation of a Screw-Press Cacao Pod Breaker", was conducted at the Crop Processing Laboratory of the School of Engineering, Don Severino Agricultural College, Indang, Cavite from December 1996 to March 1997. Specifically, it aimed to: develop and construct a screw-press cacao pod breaker that will minimize labor requirement and shorten time of breaking, evaluate the performance of the machine and determine its cost and return.

The machine was composed of the following parts: the screw-press mechanism, the frame and stand which support the plate and the tray which served as the holder of the cacao pods.

Results showed that the capacity of the designed machine was not significant compared to the traditional method which makes use of knife to break the pod. The designed machine had a mean capacity and breaking efficiency of 172.89 pods per hour and 62.5 percent, respectively. In addition, the traditional method had a relative advantage of 80.88 percent over the designed machine.

The cost of the constructed screw-press cacao pod breaker amounted to P 5,000.00 with a payback period of 3.65

years and the break even point and break even use was 25,666.67 pods per year and 148.46 hours per year, respectively.

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DEVELOPMENT AND EVALUATION OF A SCREW - PRESS CACAO POD BREAKER

EDLYN A. UMALI

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INTRODUCTION

Cacao is a pod bearing tree, especially known as Theobroma cacao L. belonging to the family Sternculiace.

Cacao is used as chocolate, beverage and flavor for candies, pastries and ice creams, and in the manufacture of cosmetics and pharmacueticals (PCARRD, 1979).

It thrives best at sea level and up to an elevation of 1000 meters above sea level provided the temperature does not drop below 21°C. Cacao is seldom more than 25 ft tall, and it is naturally grown in the shade of taller trees. It is important for its beans, or seeds which occur 30 to 50 in a pod. The seeds are surrounded by a mucilaginous pulp, and the pulp is covered by a fairly hard outer shell. The pod, technically a berry, is football shaped and weighs about