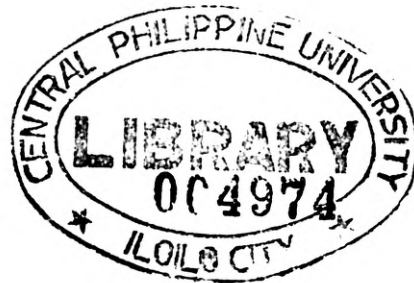


**DESIGN AND EVALUATION OF  
A COCOON DRYER**

by

Alexis T. Belonio, Aries Roda D. Romallosa, Melvin B. Boquiren,  
and Thomas L. Atido

APPROPRIATE TECHNOLOGY CENTER  
Department of Agricultural Engineering  
College of Agriculture  
Central Philippine University  
Iloilo City



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Central Philippine University  
Iloilo City

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## ABSTRACT

The CPU Appropriate Technology Center, in collaboration with Iloilo State College of Fisheries (ISCOF) - Dingle Campus (formerly DATeC) Sericulture Project, Dingle, Iloilo, has designed and evaluated a small-scale dryer for cocoon from January to May 2002.

The dryer basically consists of: (a) a drying bin with perforated floor where cocoons are laid for drying; (b) a plenum chamber where static air pressure is formed for uniform distribution of heated air, (c) a blower that aids in the movement of heat from the gas burner to the plenum chamber, (d) an air inlet and an outlet which serves as the entrance and the exit for humid air, (e) an electric motor that drives the blower; and (f) an LPG burner that supplies heat to the dryer.

The operation of the dryer is simple that it can even be operated by a single person i.e., during the loading and unloading of cocoons. It can dry 10 kg of freshly harvested cocoons per load with minimal mixing of the cocoons. Test results showed that for 9 runs at 10 kg each, the dryer was able to produce dried cocoons at an average of 4.9 kg, which is almost half of the initial weight of cocoons. The dryer was able to dry cocoon samples with moisture

content from 57 to 58 percent wb to a final moisture of 23.21 to 25.00 percent wb. Drying time takes an average of 1.5 hours at an initial air temperature of 110°C to a final air temperature of 60°C.

Performance evaluation of the dryer revealed that the machine has an average drying capacity of 6.67 kg of dried cocoon per hr. The amount of moisture removed is 3.37 kg/hr while the rate of drying is 11.11 percent (w.b.) per hour. The average amount of LPG fuel consumed during the operation is 2.73 kg/hr. And the computed drying system efficiency of the system is 2.32 percent.

Investment cost for the cocoon dryer is P20,000.00 with an estimated life span of 7 years. The computed fixed and variable costs were P97.714 and P183.63 per day, respectively. Cost of drying a kilo of cocoon is P 14.067 per kg.

At the prevailing cost of buying fresh cocoon at Dingle, Iloilo of P1 50.00 per kilo, and selling dried cocoon at P250.00 per kilo at the Katilingban sang Manoghabol sa Iloilo , the use the dryer was found to be uneconomical. It was found to be advantageous only when it is used as an integrated part of the system in maintaining the quality of cocoons.