

DESIGN, CONSTRUCTION AND PERFORMANCE TEST OF DIRECT HEATING TYPE COPRA DRIER

First Place, Socio-economic and Related Studies Section,
Student Category

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The direct heating type of copra drier with a drying capacity of 500 nuts was constructed and tested in Banago, Caluya, Antique from April 25 to June 3, 1983, to determine the performance of the drier using coconut shells as fuel. Two sets of tests were conducted. In the first test, fifty split nuts were arranged in the drying chamber with the meat facing upward. In the second test, the same number of split nuts were arranged in the drying chamber with the meat facing sideward. The result of drying fifty split coconut nuts is expected to be the same as drying five hundred split coconut nuts.

The temperature in the drying chamber ranged from 84 to 99°C for the first and 84°C for the second test. The ideal temperature range from 84 to 90°C. The charging of the coconut shells into the heating

chamber was done at same time intervals. Only three coconut shells were used to burn at a time. These were arranged in three different locations. The charging of fuel continued until about 20 hours of drying and the copra were all dried as manifested by the absence of a faint water line in the coconut meat, and a dull snap of the meat when broken.

The temperature variations were 0.034 and 0.045 for the first and second tests, respectively. The coconut piece near the door of the heating chamber had the lowest temperature reading because often they were subjected to air from the outside when the door was opened to charge fuel.

Results of the tests showed that temperature was directly proportional to moisture content reduction. The two samples located near-

est the door which were most often subjected to lower temperature, were the ones that had a slower rate of moisture content reduction.

Based on the results of the study, the researcher recommends that proper care should be taken when drying the coconut by using the direct heating type copra drier during the rainy season. A windbreak should be put up near the door of the drier to minimize the movement of air entering the heating chamber. The researcher recom-

mends the arrangement of coconut halves in the drying chamber with the meat facing sideward because it has faster moisture content reduction per hour. Finally, the researcher also recommends that the coconut being dried be turned over at least once during the drying process. The ones placed on top should be placed at the bottom to ensure proper distribution of temperature. This could be conveniently done after shelling.