

DESIGN AND EVALUATION OF A SOLAR FISH DRYER

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A Project Report
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A B S T R A C T

The design and the evaluation of a solar fish dryer were carried out at the Department of Agricultural Engineering, College of Agriculture, Central Philippine University, Iloilo City from November 1998 to April 1999. The dryer was designed to suit the drying need of fish farmers and small fish processors.

The solar fish dryer, basically, is made of local materials such as angle bars, metal sheet, plastic sheet, and wire mesh screen. It consists of a triangular frame which encloses set of drying trays, a heat collector which absorbs solar radiation, a plastic cover to trap solar heat, and an air inlet and outlet for rapid drying of fish. A 300-W nichrome wire heater is also provided for the dryer for a continues drying operation even until evening or even during rainy periods.

The dryer has a 3.085 m² tray area and it can accommodate 12.34 to 26.07 kg of fresh fish. Fish can be dried in the dryer within two days of solar drying, or it can be dried for only one day of solar drying plus one night drying with the use of an electric heater. The moisture reduction rate and the percentage moisture reduction per hour using nichrome wire heater vary among the species of fish used.

Cost and return analysis showed that the dryer can be paid back within a year. Benefit-cost ratio and return on investment are higher when the dryer is operated with the combination of solar drying and mechanical drying using electric heater.