



Tropentag, September 17-19, 2014, Prague, Czech Republic

“Bridging the gap between increasing knowledge and decreasing resources”

Using a Hybrid Solar Drier for Fish Processing

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Abstract

More than 74 % of the population in Cambodia is dependent on agriculture and fishing. Basic nutrition of local people consists of rice and fish, and people receive more than 80 % of animal protein from fish and other aquatic animals. Preservation of foods by drying is one of the most advanced methods of fish processing in this country.

The aim of this work is to evaluate drying as an alternative method of fish preservation in Phnom Penh, Cambodia with respect to acceptability of the resulting fish products to Cambodian, consumers.

Drying experiments were done with five fish species chopped into pieces of approximate dimensions $5 \times 2 \text{ cm}^2$ in a hybrid solar dryer. The drying unit uses solar energy during the day and energy from burning wood during the night; the wood consumption was 17 kg per night. Following factors were monitored during the drying process: weight of the tested fish product, temperature and relative humidity, drying air velocity and air flow, solar radiation. Water content of the samples was determined gravimetrically.

Drying processes always started in the evening of one day and finished the next day, each running for 20 hours. The average time needed for achieving a moisture content (wb) of 18–21 % - needed for product stability - was 7, 9, 9, 8 and 7 hours for swamp eel (*Monopterus albus*), Nile tilapia (*Oreochromis niloticus*), walking catfish (*Clarias batrachus*), channa (*Channa lucius*) and climbing perch (*Anabas testudineus*), respectively. All of the fish species were found to provide an acceptable final product. It was also found that tilapia was the most positively evaluated species of the fish tested.

Keywords: Aquaculture, fisheries, food processing