

Samva Nyengo Solar Tent Fish Dryer: Construction and Operation

Reduces fish loss while increasing product quality and shelf-life

TRADITIONAL OPEN RACK DRYING METHOD



In Malawi, a high volume of harvested fish is sun-dried (50%), 40% is preserved by means of smoking, roasting, frying or par-boiling, and 10% consumed fresh or frozen (FAO, 2011).



Once caught fresh fish does not last long, and refrigeration is limited. Processing efficiently is critical to reduce fish loss (up to 30% in peak harvest time).



Open racks sun drying is one of the oldest fish processing methods. This practice does not isolate the fish from rain (moisture) or other contaminants and wet season losses are high.

ADVANTAGES OF THE SAMVA NYENGO SOLAR TENT FISH DRYER



The improved tented solar dryers are made up of a UV treated polythene sheet worn over a wooden frame and a foundation of bricks, sand, and cement costs MK 1.7 million to build.



The advantages of the solar dryer is that the fish dry quicker, do not rot, are isolated from rain, dust, bacteria, and insects exposure. This results in a product that has higher quality, longer storage, and higher market value.



Other advantages of the solar tent dryers are 20% less contamination, 4 times more fish processed in same space, and 3 times longer shelf life.

OPERATION AND MAINTENANCE REQUIREMENTS *

To operate the dryer (for Usipa, Ndunduma, and Sawasawa): Clean the fish and line them up on a single layer to be processed on the drying racks, turn the fish around at the end of each day. The drying time can take 2-4 days. Control for temperature and humidity by allowing air through the vents. About 12 kg/m² can be dried at once.

Maintenance of racks: Make sure to keep the drying racks cleaned after each processing.

Maintenance of floors: Frequently wash the floors to maintain sanitation. Create a way for the water to drain out quickly.

Maintain Plastic covering: The polythene cover will likely need to be replaced every year. The cost of the replacement needs to be weighed against the yearly benefits. The replacement should be done by trained individuals. Time to replace is can take a couple of hours.

STEP BY STEP CONSTRUCTION OF THE SAMVA NYENGO SOLAR TENT FISH DRYER

A – BUILDING OF THE BASE (see the technical guide for details)



To build a solar tent dryer, organize all the necessary materials: starting with the planks.



Determine an area for sand and quarry stone and where the cement will be mixed.



Lay the base or foundation (12 m x 5 m) using bricks, sand, and cement.



Fill the base/ foundation with soil or broken bricks.



Make the floor with concrete (mixing cement, sand, and quarry stone).



Make the width gabled panel / framework.

B – BUILDING OF THE WALLS AND THE VENTS, AND COVERING THE FRAMEWORK



Make sure the panels have exactly the same size and dimensions.



Make vents of using 2"x 6" planks.



Erect the panels on the finished base/foundation.



Join the panels using the vents,



making sure they are equidistant from each other.



Finish the wooden framework as it stands on the foundation.



Fill in the gaps between the framework and the base/foundation with bricks.



Cover the framework with chicken wire.



Fasten the polythene sheeting with ripped planks of 0.5" x 2" using 1" wire nails. Cover vents with gauze.



Cover the framework with the polythene sheeting leaving the basal vents open.

C - BUILDING OF A DOOR WITH A FLY SCREENING UNIT



Insert a door made from 2" x 4" planks and covered with chicken wire and polythene.



Adjust the door to the main frame.



Finish by constructing a fly screening unit at the entrance/door.



D - BUILDING THE STANDING DRYING RACKS



In the interior, build drying racks using 2"x 2" planks, chicken wire, and plastic gauze.



Completed solar tent fish drying unit.

Assistance on building a Samva Nyengo Solar tent fish dryer and training can be sought by: the Fisheries Research unit (FRU), Address: PO Box 27 Monkey-Bay Mangochi Malawi. Telephone: (+265) 1 587 249, Email: fisheriesdept@sdpn.org.mw, the Malawi College of Fisheries, and from the District Extension Officers

