

Kawanda Solar Dryer



Why to choose this solution?

Preservation of agricultural produce is one of the central problems faced by small-scale farmers in Tanzania. Most frequently, horticultural crops in the markets spoil; some also remain unharvested, left in the fields due to inadequate market. Poor infrastructure also increases time to get crops to markets and often results in crops being damaged. At the end of the growing season, the supply of produce diminishes until the next harvest. Solar dryers allow small-scale farmers to transform their harvests into storable, tradable goods, which they can sell off-season at higher prices.

Savings per day or production:

Avoids loss and wastage of crops, particularly of vegetables and fruits. The Kawanda solar dryer can reduce wastage of a harvest surplus, allow storage for food shortages, and in some cases facilitate export to high-value markets.

Cost in money and in own time to construct:

Investment costs of solar dryers vary highly depending on the size of the solar dryer. Construction costs for a solar dryer of 4-12 trays range from 1.3 to 4 million Tanzanian Shillings, equivalent to US\$ 565 to 1,740. The payback period for such dryers ranges from 2 to 4 years depending on the rate of utilization. Roughly two to five days are needed to construct a Kawanda solar dryer of 12 trays, using wooden materials.

Lifetime:

Usable for 8-10 years, unless 'Visqueene' polyethylene plastic is punctured with sharp edges or damaged by sun after some time.

Maintenance needed:

Replacement of "Visqueene" polyethylene plastic whenever it is damaged.

Resources needed in use:

Raw materials such as fresh vegetables, fresh fruits, etc can be dried. Materials should be well cleaned and chopped before being dried. Otherwise, it just requires full sunlight and good air circulation.

Problems and limits:

Cloudy or rainy days may slow the process somewhat due to reduced input of sunlight, unless the system is integrated with a conventional energy-based system. Many people are still unfamiliar with solar-dried products, which makes market promotion important.

Where and how can you get it or make it?

In Tanzania, TaTEDO and other stakeholders have trained more than 50 local carpenters to construct and to maintain the solar dryer as well as to use the dryer and dried products.

Skills needed to produce, install, maintenance, use:

Short training needed on how to construct and maintain the solar dryer. Users of solar dryers need a short introduction on how to use it.

How to use it:

https://www.youtube.com/watch?v=Un-1X4vu_YY

How to maintain it:

Keep shelves and enclosure clean, monitor for termites, repair torn film or broken glass.

Climate effect (if any):

The energy input needed in a solar dryer is less than what is needed for freezing or canning. Solar drying prevents food from decaying and spoiling, which would have resulted in methane release to the atmosphere.

Where it is used and how many users are there?

Used by more than 1,000 farmers and entrepreneurs in Kilimanjaro, Arusha, Dar es Salaam, Tanga, Iringa and Morogoro regions of Tanzania.

Why is it successful?

Support services provided to entrepreneurs, including capacity-building through training and awareness, have contributed to the success. Presence of the Tanzanian Food Processors Association (TAFOPA) that has the objective to promote the development of women's entrepreneurship in the food -processing sub- sector through the improvement of existing micro- enterprises managed by women, and to encourage new ventures with a potential to grow into small and medium enterprises.

If you can make it, a short description, typical problems, materials needed:

Materials used for construction include timber/ wood, "Visqueene" polyethylene plastic, mesh- covered drying trays to hold the produce, iron sheet for construction of chimney.

How to make it (if possible):

Short training is needed on how to make it.

How is it delivered and by whom?

Main actors of the solar dryer initiative include suppliers of agricultural produce, agro-processors, sales agents, development partners, and end users. Awareness-raising, product demonstrations, and market promotion of agro-processed foods through exhibitions, radio, newsletters, and other media have been used to popularize and to create demand for solar-dried products.

Successful financial model

In most cases, grants and loans have been used to cover initial investment costs. Operational and maintenance costs are covered from income generated through sales of the solar-dried products.

What policies and strategies helped the success?

Tanzania Horticultural Development Strategy 2012-2021, Agricultural Sector Development Strategy (ASDS),

the Agricultural Sector Development Programme (ASDP).

More info:

A manual on how to use solar dryer is available at TaTEDO office, and can be accessed through request to TaTEDO.

Sources:

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