Solar bubble drier: Inflatable solar dryer for crop drying

Low-cost hygienic drying technology for high-quality products

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The ISD (Solar Bubble Dryer) is a mobile system that uses solar energy to dry freshly harvested cassava roots in a protected environment. It operates by converting sunlight into heat through a solar-collecting tunnel, speeding up the drying process. A photovoltaic system powers a blower to circulate air, inflate the tunnel, and remove moisture. The system also allows mixing of the product...

This technology is pre-validated.

9·9 Scaling readiness: idea maturity: 9/9; level of use: 9/9

Cost: $$$ **1,800 USD**
Initial investment

ROI: $$$ **7 - 180 %**
Benefit for Cassava

90 - 145 kg of cassava per 3-5 day cycle
Drying Capacity

10 years
Lifespan

10,957 - 29,604 USD
Operating Costs

IP
No formal IP rights

Problem

- Fresh cassava roots deteriorate quickly after harvest, leading to substantial post-harvest losses.
- Traditional open-air drying methods expose cassava to weather, insects, dust, and animals, reducing product quality.
- High moisture content makes transporting fresh cassava costly, highlighting the need for drying near harvest sites.
- Delayed processing degrades the purity and functionality of cassava starch.

Solution

- Faster drying in a protected environment improves cassava quality.
- Mobile design allows drying near harvest sites, reducing transport costs and post-harvest losses.
- Solar-powered, self-sustained, and does not rely on fuel or electricity.
- Protects cassava from rain, dust, insects, and pests, ensuring cleaner, higher-quality output.
- Reduces post-harvest losses, typically between 28% and 42%, through efficient drying.

Key points to design your business plan

The Solar Bubble Dryer (ISD) is a mobile, solar-powered drying system designed to protect cassava during drying, ensuring high-quality results while reducing post-harvest losses by up to 42%. With an initial investment of around USD1,800, the ISD requires minimal operating costs, as it relies entirely on solar energy. Training on setup and operations helps farmers achieve optimal drying results.

The ISD enables on-site drying close to harvest locations, saving on transport costs and maintaining product quality. Farmers can expand their drying operations by adding more units as their business grows, opening access to distant markets demanding quality produce.

Gender assessment 4

Climate impact 6 1

Commodities

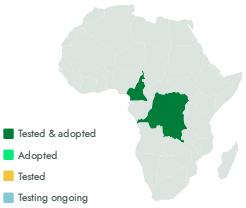
Maize, Rice, Cassava, Legume

Sustainable Development Goals

Categories

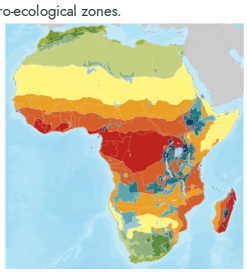
Prevention & storage, Equipment, Post-harvest handling, Agrifood processing

Tested/adopted in



Where it can be used

This technology can be used in the colored agro-ecological zones.



Target groups

Farmers, Sellers