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

Gender assessment 4

Climate impact 6 1

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 project

The Solar Bubble Dryer (ISD) is a sustainable, mobile technology that uses solar energy to dry crops efficiently, reducing post-harvest losses and enhancing food quality. It supports food security and climate goals by minimizing waste and avoiding fuel-based drying methods.

To implement ISD technology, consider:

- **Cost**: Initial investment is around USD1,800 per unit.
- **Supply Chain**: Identify suppliers and account for transportation and import costs.
- **Training**: Provide hands-on training on usage and maintenance.
- **Communication**: Use materials like brochures and videos to raise awareness.

This approach can enhance project outcomes and benefit farmers by promoting eco-friendly, efficient drying methods.

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

Commodities

Maize, Rice, Cassava, Legume

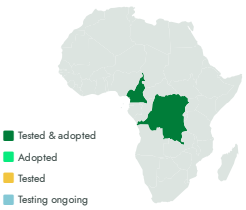
Sustainable Development Goals

2 ZERO HUNGER
5 GENDER EQUALITY
7 AFFORDABLE AND CLEAN ENERGY
12 RESPONSIBLE CONSUMPTION AND PRODUCTION
13 CLIMATE ACTION

Categories

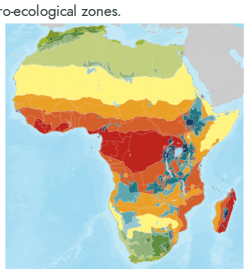
Prevention & storage, Equipment, Post-harvest handling, Agrifood processing

Tested/adopted in



Where it can be used

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



Target groups

Farmers, Sellers