



## IITA Transformation Technologies

Various technologies that enhance value addition, processing efficiency, and resource use in the cassava, banana, and other value chains have been developed. They include induced ripening solutions, feed production equipment, mobile and pneumatic processing units, and solar-powered postharvest drying systems.

6 TECHNOLOGIES | CREATED ON OCT 14, 2025 BY TAAT PROFILING TEAM | LAST UPDATED DEC 10, 2025



### TECHNOLOGIES IN THIS TOOLKIT

- **Banana Peels as Feed and Organic Resource**
- **Induced Ripening of Banana for**
- **Increased Marketability and...**
- **Equipment for feed production:**  
Cassava Peels for Animal Feed...
- **Mobile Cassava Processing Plant**
- **Pneumatic Cassava Dryers**
- **Solar Bubble Dryer:** Inflatable Solar Dryer for crop drying



<https://taat.africa/een>

# Banana Peels as Feed and Organic Resource

From Waste to Resource

Banana and plantain peels offer a sustainable solution to waste disposal, serving as valuable resources for animal feed, soil input, and cooking ingredients. Proper processing detoxifies the peels, making them suitable for consumption by animals and contributing to waste reduction in regions where plantains and cooking bananas are common.



An industrial green banana peeler able to process 600 units per hour



**International Institute of Tropical Agriculture (IITA)**  
John Derera

✓ This technology is **TAAT1 validated**.
7-8
Scaling readiness: idea maturity 7/9; level of use 8/9

Inclusion assessment 👍 3

Climate impact 👍 7

## Problem

- Waste accumulation due to the disposal of banana and plantain peels.
- Concerns regarding the chemical composition and nutrient ratios of the peels, especially when used as animal feed.
- Difficulty in removing peels from green bananas and plantains, leading to inefficiencies in processing.
- Restrictions on using raw peels in poultry feed due to the presence of anti-nutritional compounds like tannins and oxalate.
- Challenges in effectively utilizing peels, such as feed refusal due to high tannin content and the need for proper processing techniques to detoxify peels.

## Solution

- Banana and plantain peels are valuable components in livestock and poultry diets.
- Dried peels contain essential nutrients like potassium, phosphorus, iron, calcium, magnesium, and sodium.
- Utilizing peels reduces waste accumulation and promotes sustainable resource management.
- Treated and composted peels serve as beneficial organic inputs for soil improvement.
- Green peels provide an energy source in animal diets due to their carbohydrate content.
- Fresh peels with high moisture content help animals stay hydrated.
- In smaller quantities, peels find use in cooking, water purification, and manufacturing beauty and health products.

Technology from  
**ProPAS**

Commodities  
Bananas & plantains

Sustainable Development Goals

Categories  
Pre-production, Equipment, Agrifood processing

Tested/adopted in

Where it can be used

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

Target groups  
Breeders

## Key points to design your project

- Technology utilizes banana and plantain peels for animal feed and compost.
- Enhances food security and promotes sustainable resource management.
- Improves soil health, aids carbon sequestration, and supports climate resilience.
- Steps to incorporate technology include understanding nutrient composition, sourcing machinery, and marketing products.
- Costs vary for machinery, with single belt peelers at USD 3500 and larger multi-channel machines at USD16,000.
- Consider delivery expenses and collaborate with agricultural institutions for widespread adoption.

**16,000 USD**
👤 IP

Larger multi-channel 2.0 kWatt machines Open source / open access



# Induced Ripening of Banana for Increased Marketability and Storage

Ripening Solutions for Quality and Efficiency

The Induced Ripening of Banana for Increased Marketability and Storage technology is a method designed to enhance the ripening process of bananas, specifically dessert bananas, to ensure they are market-ready and have an extended shelf life. In this process, bananas are artificially ripened using various chemical agents, most notably ethylene gas.



Industrial ripening chamber with refrigeration and gas control (Credit: Nilkamal)



**International Institute of Tropical Agriculture (IITA)**  
Patchimaporn Udomkun

Technology from

ProPAS

Commodities

Bananas & plantains

Sustainable Development Goals



Categories

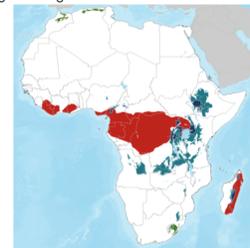
Post-production, Practices,  
Post-harvest management

Tested/adopted in



Where it can be used

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



Target groups

Farmers, Sellers



This technology is **TAAT1 validated**.

8•8



Scaling readiness: idea maturity 8/9; level of use 8/9

Inclusion assessment



Climate impact



## Problem

- Bananas, especially plantains, suffer significant post-harvest losses due to transportation damage and spoilage.
- Traditional ripening methods, such as wrapping banana bunches with green leaves, are time-consuming and result in non-uniform ripening.
- Consumers prefer ready-to-eat bananas, and fruit sellers need a consistent supply of ripe fruit to meet this demand.

## Solution

- Artificial ripening with ethylene gas ensures that bananas are ready for the market, reducing the risk of post-harvest losses.
- The technology allows for the acceleration or slowing down of the ripening process based on market demand, optimizing the supply chain.
- The technology meets consumer demand for ready-to-eat bananas, benefiting both fruit growers and sellers.

## Key points to design your project

The technology of induced ripening offers cost-effective solutions for enhancing the marketability and storage of bananas, empowering farmers and aiding in poverty alleviation. Steps to integrate this technology include:

- Conducting market assessments, developing a business plan,
- Allocating resources for training and support,
- Collaborating with agricultural institutions.

**17,000 USD**

Industrial semi-automated ripening chambers of 5 tones of banana



Trademark



Induced Ripening of Banana for Increased Marketability and Storage

<https://taat.africa/qwk>

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# Mobile Cassava Processing Plant

Transforming Cassava, Mobile Processing for Sustainable Agriculture

The MCPP is a mobile unit equipped with machinery for processing cassava into products like high-quality cassava cake, wet fufu, and gari. It features a flatbed workspace formed by opening the back sides and tailgate, with standard operating procedures for specific products.



**International Institute of Tropical Agriculture (IITA)**  
Adebayo Abass

This technology is **TAAT1 validated**.
 
**6\*6**

 Scaling readiness: idea maturity 6/9; level of use 6/9

Inclusion assessment **4**

Climate impact **5**

### Problem

- Limited market access for cassava farmers in rural areas due to inaccessible rural roads
- High risk of postharvest losses and transportation costs due to cassava's perishability and bulkiness
- Lack of necessary infrastructure (electricity, water, etc.) and labor in rural areas to attract investments in processing factories
- Inconsistent and inadequate supply of cassava roots for processors

### Solution

- The MCPP is most useful for processing factory owners to process cassava at farm-gate into non-perishable semi-processed products that are 20-50% of the weight of fresh roots.
- The less bulky semi-processed products are transported from the farms at lower transportation cost to city-based factories for final drying and packaging at a competitive price and higher profitability.

### Key points to design your project

The Mobile Cassava Processing Plant (MCPP) offers an innovative solution for cassava processing. To integrate the MCPP into your project, follow these steps:

- Promote the technology through community demonstrations to raise awareness.
- Assess project requirements to determine MCPP size and configuration.
- Consider logistical factors like delivery costs and import duties.
- Engage trainers for comprehensive equipment operation and maintenance training.
- Develop communication materials to educate stakeholders on MCPP benefits.

<b>52900 USD</b>	<b>49386 USD</b>	<b>155 %</b>	<b>IP</b>
Startup Capital (gari production)	Startup capital (high-quality cassava cake)	ROI (high-quality cassava cake)	Open source / open access

Technology from  
**ProPAS**

Commodities  
Cassava

Sustainable Development Goals

Categories  
Post-production, Equipment, Agrifood processing

Tested/adopted in

■ Tested & adopted  
■ Adopted  
■ Tested  
■ Testing ongoing

Where it can be used

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

Target groups  
Processors



## Mobile Cassava Processing Plant

https://taat.africa/nmc

Last updated on 7 November 2025, printed on 7 November 2025

Enquiries [e-catalogs@taat.africa](mailto:e-catalogs@taat.africa)

# Pneumatic Cassava Dryers

Low-cost mechanized drying of cassava using Flash Dryers

This technology promote the flash dryers which has the shortest residence time of drying, the most economical and widely used drying system for solids that have been dewatered or inherently have low moisture content. Thus, it's suitability for the production of starch, high-quality cassava flour (HQCF) and powdered fufu.



**International Institute of Tropical Agriculture (IITA)**  
Adebayo Abass

✓ This technology is **TAAT1 validated**.

8•8



Scaling readiness: idea maturity 8/9; level of use 8/9

Inclusion assessment **4**

Climate impact **5**

## Problem

- The challenge of efficient and cost-effective of dryers.
- Heat-sensitive materials
- High residence times of dryers.

## Solution

- The Flash dryers have proven to be the most economical.
- They enable the production of starch, high-quality cassava flour (HQCF), and powdered fufu efficiently.
- This technology successfully addresses the challenges by providing a system that ensures a shorter residence time for drying and high drying rates.

Technology from

ProPAS

Commodities

Cassava

Sustainable Development Goals



Categories

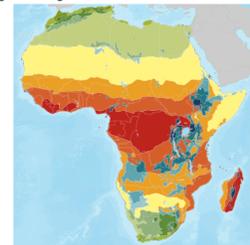
Post-production, Equipment, Agrifood processing

Tested/adopted in



Where it can be used

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



Target groups

Processors

## Key points to design your project

Mechanized drying of cassava using flash fryers offers an efficient solution for processing cassava, improving productivity. To integrate this technology into your project:

- Promote the mechanized drying technology through community-level demonstration sessions.
- Engage trainers for comprehensive training and support.
- Collaborate with agricultural institutes and food industry stakeholders for implementation.



Open source / open access



Pneumatic Cassava Dryers

<https://taat.africa/xtr>

Last updated on 7 November 2025, printed on 7 November 2025

Enquiries [e-catalogs@taat.africa](mailto:e-catalogs@taat.africa)

# Solar Bubble Dryer: Inflatable Solar Dryer for crop drying

Low-cost hygienic drying technology for high-quality products



**GrainPro, IIRRI & Hohenheim University**  
Rose Ndung'u

The SBD (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.

**Commodities**

Maize, Rice, Cassava, Common bean, Cowpea, Soybean, + 1 more

This technology is **pre-validated**. Scaling readiness: idea maturity 9/9; level of use 9/9

Inclusion assessment 4 Climate impact 6 1

**Sustainable Development Goals**

### 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.

**Categories**

Postharvest, Equipment, Post-harvest handling, Agrifood processing

**Tested/adopted in**

Legend: Tested & adopted (dark green), Adopted (medium green), Tested (light green), Testing ongoing (blue)

## 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.

**Where it can be used**

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

**Target groups**

Farmers, Sellers

<b>500 kg of cassava</b> per 3 day cycle	<b>3 years</b> Lifespan	<b>10,957 - 29,604 USD</b> Operating Costs	<b>IP</b> No formal IP rights
Drying Capacity from 57% to 12%			





# IITA Transformation Technologies

<https://taat.africa/en>

## ABOUT US

### TAAT

TAAT, Technologies for African Agricultural Transformation, is an African Development Bank initiative to boost agricultural productivity by rapidly rolling out proven technologies to more than 40 million smallholder farmers.

TAAT aims to double crop, livestock, and fish productivity by 2025 by engaging both public and private sectors to expand access to productivity-increasing technologies across the continent. TAAT advises African government who receive funding from international financial institutions such as the African Development Bank to help them integrate the best agricultural technologies in their development projects. TAAT also offers technical assistance for the integration of these technologies, when needed.

### TAAT Technologies

TAAT definition of agricultural technologies is very broad: they include improved varieties, inputs, equipment, agricultural infrastructure, practices and agricultural policies. In short, any solution to an agricultural constraint. TAAT technologies have been developed by a wide variety of organizations: the CGIAR, other international research institutions, national research organizations, or the private sector.

### TAAT Clearinghouse

Within TAAT, the Clearinghouse has the remit to select, profile and validate agricultural technologies, and showcase them in online

catalogs to support the advisory role that the Clearinghouse offers to governments and the private sector. The Clearinghouse strives to be an 'honest broker' of technologies through its selection, profiling, validation and advice.

### TAAT e-catalogs

The e-catalogs are designed to be used by decision-makers within governments, private sector companies or development organizations. They facilitate the search for appropriate solutions that are adapted to local conditions and requirements, and provide all necessary information, presented in jargon-free and easy to analyze technology profiles. Once a decision-maker has selected a technology of interest, the e-catalogs facilitate their direct contact with those who can help them implement the technology, whether they are a research group or a private company.

### TAAT Technology Toolkits

Technology toolkits are hand-picked selections of technologies from the TAAT e-catalogs. We offer some curated toolkits for specific cases, and registered users can create their own toolkits, showcasing their selection of technologies. Toolkits can be used online and shared as links, as mini e-catalogs, they can also be downloaded, saved, shared or printed as collections of technology pitches in PDF format (pitches are one-page summaries of technology profiles, available for all technologies on the e-catalogs).

## CONTACT

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