Cassava Technologies Toolkit

This toolkit is a collection of technologies designed to optimize cassava cultivation across Africa. These technologies have been meticulously selected to address the challenges encountered in cassava production, processing and commercialization, ensuring a more resilient and profitable cassava sector. By integrating these technologies into your projects or business plans, you can...

19 TECHNOLOGIES | CREATED ON JUN 10, 2024 BY TAAT PROFILING TEAM | LAST UPDATED MAY 28, 2025

TECHNOLOGIES IN THIS TOOLKIT

- **AKILIMO**: Digital Decision Support Tool
- **Cassava seed-bulking farms**
- **CBC**: Cassava Business Connector
- **Cassava varieties with high dry matter and starch content**
- **Hello Tractor**: Contract mechanization apps
- **Mobile Cassava Processing Plant**
- **Waxing of fresh cassava roots to extend the shelf-life and increas...**
- **Mechanized Cassava Planting and Harvesting**
- **Pneumatic Cassava Dryers**
- **Disease Diagnosis**: Nuru for in-field Pest
- **Specialty blended fertilizers for root and tuber crops**
- **Disease resistant cassava varieties**
- **Golden cassava varieties (Vitamin A fortified)**
- **High quality cassava flour and industrial starches**
- **Equipment for feed production**: Cassava Peels for Animal Feed...
- **Herbicides Calculator**
- **Six Steps to Cassava Weed Management**
- **Trace**: FairFood Traceability Solutions
- **SAH cassava**: Semi Autotrophic Hydroponics for Cassava...

https://taat.africa/vki

AKILIMO: Digital Decision Support Tool

We know cassava

AKILIMO is a digital application that provides personalized cassava farming advice using advanced algorithms. It offers guidance on planting, fertilizing, and harvesting based on user inputs, aiming to maximize yield and profit. It's accessible through various platforms, catering to all literacy levels.

This technology is pre-validated.

8·7 Scaling readiness: idea maturity 8/9; level of use 7/9

Gender assessment 5

Climate impact 7

Problem

- **Lack of Guidance**: Farmers lack personalized advice for optimal crop management and input usage.
- **Poor Strategies & Productivity**: Limited guidance leads to suboptimal farming strategies and lower productivity.
- **Inefficiency & Unsustainability**: Without proper advice, resource usage is inefficient and farming practices may be unsustainable.

Solution

- **Personalized Advice**: AKILIMO offers tailored, data-driven crop management recommendations.
- **Analytics & Optimization**: It uses advanced analytics for resource optimization, improving yields and reducing costs.
- **Sustainable Practices**: AKILIMO promotes environmentally friendly and responsible farming.

Key points to design your project

AKILIMO offers tailored advice for cassava farming, addressing key challenges like nutrient management, weed control, yield goals, climate risks, and resource access. It optimizes production, boosts profits, and minimizes waste.

Integrating AKILIMO:

- **Partnership:** Partner with EiA for advanced analytics and agronomic expertise, and with Extension Agents for effective farmer outreach and optimal use of AKILIMO.
- **Awareness & Training:** Host events and training to educate farmers and agents on AKILIMO's benefits and usage.
- **On-field Support:** Employ agents to assist farmers with AKILIMO navigation and advice application.
- **Accessible Interfaces:** Provide AKILIMO via printable guides, apps, IVR, and chatbots.
- **Demo Plots:** Showcase AKILIMO's effectiveness in demo plots to build trust.
- **Feedback Mechanism:** Establish feedback channels to enhance AKILIMO based on user input.
- **Expansion:** Scale AKILIMO to new regions and crops for broader impact.

Continuous efforts and farmer-centric focus are essential to making AKILIMO a valuable farming tool.

ROI: $$$ **2567 %**

EXCELLENCE IN AGRONOMY
Adapt Intensify Grow

Excellence in Agronomy
Barbra Sehlule Muzata

Technology from

CASH from EiA

Commodities

Cassava, Maize, Rice

Sustainable Development Goals

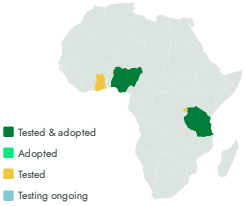
Categories

Production, Digital applications, Advisory and information service, Crop management

Best used with

- Six Steps to Cassava Weed Management ›

Tested/adopted in



Where it can be used

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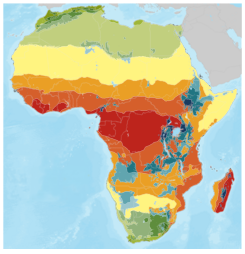


Target groups

Cassava seed-bulking farms

Quality cassava cuttings close to the fields

The practice of seed-bulking farms for cassava provides quality planting material directly to smallholder farmers, situated near their fields. This facilitates access to improved varieties and reduces the cost of transporting cuttings, leading to increased profitability.

This technology is TAAT1 validated.

8·7 Scaling readiness: idea maturity 8/9; level of use 7/9

Gender assessment 4

Climate impact 7

Problem

- The distribution of cassava stem cuttings is problematic as they rapidly lose their sprouting vigor when stored.
- Their bulk and weight drive up transport costs, limiting the supply of improved cassava planting material.
- Smallholder farmers often rely on seed companies with limited geographical coverage, restricting their access to improved cassava varieties.

Solution

- Seed-bulking farms provide high-quality, disease-free cassava stem cuttings, improving access to superior cassava varieties.
- Reduced transport times and decentralized production enhance planting material survival.
- This approach supports community-based businesses, boosting incomes for farmers and processors.

Key points to design your project

This technology promotes transformative impacts.

Integrating it in project involves:

- Identifying suitable cassava varieties.
- Training farmers on seed-bulking.
- Optimizing production and distribution.
- Providing access to loans.

20 ha of cutting harvested

per ha planted every 16 months

IP

Open source / open access

International Institute of Tropical Agriculture (IITA)
Abass Adebayo

Technology from

ProPAS

Commodities

Cassava

Sustainable Development Goals

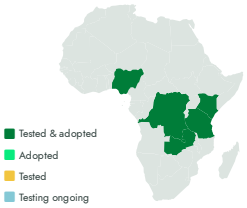
Categories

Production, Practices, Seed system

Best used with

- Disease resistant cassava varieties ›
- Golden cassava varieties (Vitamin A fortified) ›
- Cassava varieties with high dry matter and starch content ›

Tested/adopted in



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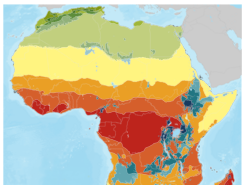


CBC: Cassava Business Connector

Revolutionize the cassava value chain with CBC, ensuring seamless communication and robust market linkages for enhanced income opportunities.

The Cassava Business Connector (CBC) is a digital platform that links cassava producers, processors, and end-users to streamline communication and coordination within the cassava value chain. Accessible at http://taat-cbc.org, it enables real-time tracking, communication.

This technology is TAAT1 validated.

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

Gender assessment 4

Climate impact 7

Problem

- Communication gap between actors in the cassava value chain, leading to weak market linkage.
- Lack of awareness among producers about potential buyers and vice versa.
- Inefficient integration of value chain actors, hindering communication and coordination.
- Lack of visibility among value chain actors, including producers, input suppliers, processors, and end-users.

Solution

- CBC helps the coordination of material flow from fields to end-users,
- Allows decentralized monitoring of production,
- Real-time information exchange between the users, and offers secure accounts to each user, protected by login and password, for information safety.

Key points to design your project

To integrate the CBC into your project, consider the following steps:

- Raise awareness among cassava stakeholders about the benefits and availability of the Cassava Business Connector.
- Establish training programs for stakeholders to ensure effective utilization of the CBC platform.
- Foster collective action programs to encourage collaboration among producers, processors, and end-users.
- Facilitate access to financial support and markets for cassava stakeholders through the CBC platform.

IP

Open source / open access

International Institute of Tropical Agriculture (IITA)
Adebayo Abass

Technology from

ProPAS

Commodities

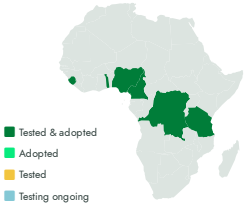
Cassava

Sustainable Development Goals

Categories

Market, Digital applications, Market linkage

Tested/adopted in



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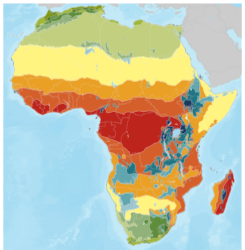


Target groups

Farmers, Sellers

Cassava varieties with high dry matter and starch content

Enhancing cassava yields and quality for greater food security in Africa.

This technology involves improved varieties of cassava with enhanced dry matter content. Through conventional breeding and other methods, these cassava varieties have been developed. These high-quality roots are well-suited to the needs of farmers and various industrial processes.

International Institute of Tropical Agriculture (IITA)
Elizabeth Parkes

This technology is TAAT1 validated.

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

Gender assessment 4

Climate impact 5

Problem

- **Low Dry Matter and Starch Content**: Traditional cassava varieties often have low dry matter and starch content, reducing their economic value and utility in food and industrial applications.
- **Limited Variety Options**: Farmers have limited access to high-quality cassava varieties, which restricts their ability to improve crop yields and quality.

Solution

- **Higher Dry Matter & Starch:** Enhances root quality for fresh and industrial use.
- **Increased Yields:** Boosts cassava yield and economic returns.
- **Adaptability:** Resistant to pests, diseases, and harsh conditions.
- **Food Security:** Produces nutritious, high-yield crops.

Key points to design your project

The cassava varieties with high dry matter and starch content technology significantly contribute to sustainable development. To integrate this technology into your project,

- Focus on identifying or developing suitable cassava varieties,
- Estimate the quantity of cassava roots needed, including delivery costs.
- Consider a team of trainers for support and develop communication materials.

Cost: $$$ ROI: $$$

35 ton/ha	40 - 45 %	80 - 95 %	IP
potential yield	dry mater content	starch content	Plant variety protection

Technology from

ProPAS

Commodities

Cassava

Sustainable Development Goals

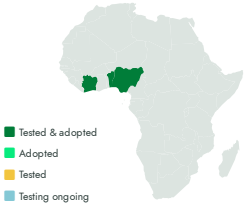
Categories

Production, Improved varieties, Yield improvement, Quality improvement

Best used with

- Digital Decision Support Tool ›

Tested/adopted in



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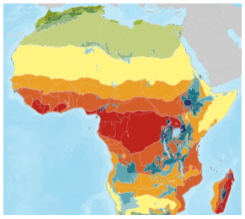
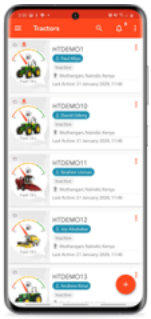


Hello Tractor: Contract mechanization apps

Enhance crop productivity, reduce labour costs, and increase incomes with Hello Tractor - the digital platform revolutionizing agricultural mechanization in Sub-Saharan Africa.



Hello Tractor is a digital platform facilitating the sharing of agricultural power equipment, connecting owners and smallholder farmers. It incorporates monitoring devices to gather vital data about tractors, harvesters, and other equipment, allowing for efficient management and optimization.

Hello Tractor
Rispa Miliza

Technology from

ProPAS

Commodities

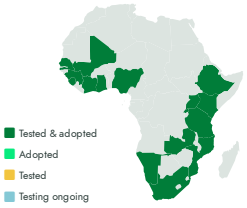
Maize, Rice, Wheat, Sorghum/Millet, Cowpea, Groundnut, + 5 more

Sustainable Development Goals

Categories

Production, Market, Digital applications, Supply chain management, Crop management

Tested/adopted in



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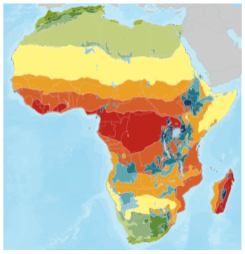


Target groups

This technology is TAAT1 validated.

7·8 Scaling readiness: idea maturity 7/9; level of use 8/9

Gender assessment 4

Climate impact 7

Problem

- Limited access to modern agricultural technologies for small-scale producers.
- High costs and risks associated with operating tractors and power equipment on farms.
- Inadequate information and communication channels for farmers to access mechanization services.
- Inefficient management of agricultural equipment, leading to underutilization and suboptimal performance.
- Limited scalability of mechanization services in smallholder farming communities.

Solution

- Access to modern agricultural technologies for small-scale producers
- Cost-effective and risk-minimized operation of agricultural equipment
- Improved information and communication channels for farmers
- Efficient management of agricultural equipment
- Scalability of mechanization services in smallholder farming communities

Key points to design your project

- Hello Tractor revolutionizes agriculture by making mechanized farming affordable and efficient, thereby reducing poverty and combating hunger.
- It also promotes gender equality and stimulates rural economic growth by creating job opportunities.
- Through its digital platform, Hello Tractor innovates agriculture and enhances infrastructure efficiency.
- To integrate the technology, purchase smart devices, upload data, and monitor operations closely.
- Collaborate with relevant organizations and invest in training and communication materials for successful implementation.

Cost: $$$ **75 - 210 USD**

Cost of getting the technology

60—70 USD

Cost of renting a four-wheel tractor for 4 hours

IP

Copyright

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

Gender assessment 4

Climate impact 4 1

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.

Cost: $$$ **40000—48500** **USD**
Cost of a mobile processing factory

ROI: $$$ **156 %**
Gari production

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

Technology from

ProPAS

Commodities

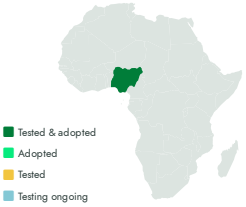
Cassava

Sustainable Development Goals

Categories

Transformation, Equipment, Agrifood processing

Tested/adopted in



Where it can be used

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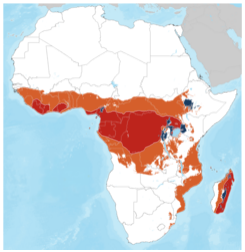


Target groups

Processors

Waxing of fresh cassava roots to extend the shelf-life and increase marketability

Extend shelf-life of fresh cassava

The waxing technology for cassava roots starts from careful cultivation to produce commercially acceptable roots. Before harvest, leaves are pruned to prevent damage. After harvest, roots are sorted, washed, weighed, disinfected, and dried at a pack-house. Finally, a food-grade wax is applied to extend their shelf-life.

International Institute of Tropical Agriculture (IITA)
Adebayo Abass

This technology is TAAT1 validated.

7·7 Scaling readiness: idea maturity 7/9; level of use 7/9

Gender assessment 4

Climate impact 7

Problem

- **Deterioration**: Cassava roots deteriorate rapidly post-harvest.
- **Marketability**: Their size, shape, and harvest damage affect marketability.
- **Food Security**: Short shelf-life limits availability, affecting food security.

Solution

- **Preservation**: Waxing extends freshness and protects cassava roots.
- **Shelf-life**: It significantly extends the roots' shelf-life.
- **Food Security**: The technology enhances food security by ensuring longer availability of cassava roots.

Key points to design your project

The waxing technology for cassava roots boosts climate resilience and aligns with SDGs 2, 8, and 13 by extending shelf-life, enhancing marketability, and promoting a climate-resilient crop.

For its adoption, the following steps are essential:

1. **Training and Cultivation**: Conduct educational programs on the waxing technology and guide farmers on producing commercially viable cassava roots.
2. **Harvesting and Post-Harvest Handling**: Train farmers on pruning and harvesting to avoid damage, and instruct on post-harvest procedures including transporting, sorting, washing, weighing, and disinfecting the roots.
3. **Waxing and Pack-house Operations**: Demonstrate the process of drying and waxing the roots, and assist in setting up a pack-house if necessary.
4. **Market Linkages and Evaluation**: Establish market linkages for selling waxed cassava roots, and monitor the technology's adoption and evaluate its impact.

126 USD/ton
total cost for waxing

32 %
Marginal rate compared to unwaxed roots

3,000—5,000 USD
Estimated investment cost for an "all-inclusive" packhouse or processing centre, including water supply

IP
Open source / open access

Technology from

ProPAS

Commodities

Cassava

Sustainable Development Goals

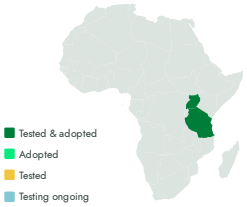
2 ZERO HUNGER

8 DECENT WORK AND ECONOMIC GROWTH

Categories

Prevention & storage, Practices, Post-harvest management

Tested/adopted in



Where it can be used

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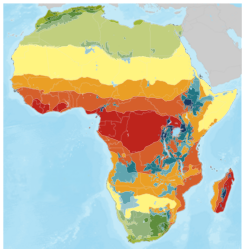


Target groups

Farmers

Mechanized Cassava Planting and Harvesting

Empowering Cassava Farmers: More Yield, Less Labor, Better Quality

Mechanized cassava planting and harvesting technology is a specialized equipment of two-row planters and harvesters, typically operated by tractors. This technology improves the efficiency of cassava farming by reducing labor requirements.

International Institute of Tropical Agriculture (IITA)
Adebayo Abass

This technology is TAAT1 validated.

8·7 Scaling readiness: idea maturity 8/9; level of use 7/9

Gender assessment 4

Climate impact 7

Problem

- Low cassava yields (10 t/ha) compared to global competitiveness (minimum expected yield of 25 t/ha).
- Labour-intensive and time-consuming planting and harvesting operations.
- Lack of mechanization and use of modern agricultural technologies in cassava production.

Solution

- Increase productivity and efficiency in cassava farming. The yield from mechanically managed farm could increase by 38% over the yield in the manually managed farm.
- Reduce production costs associated with manual labor.
- Improve competitiveness of the cassava sub-sector by enhancing productivity and reducing costs through mechanized operations.

Key points to design your project

The Mechanized Cassava Planting and Harvesting technology offers an efficient solution for planting and harvesting cassava. To integrate this technology, into your project,

- Promote it through demonstration sessions, provide training to operators, and ensure access to suitable farmland.
- Components of mechanized cassava production include land preparation, planting, herbicide application, fertilization, weeding, harvesting, and transportation.
- Evaluate the size and number of units needed, considering lower costs compared to manual operations.

Cost: $$$ **367 USD**
Mechanical cassava production

50 %
Reduced of manual cost operation

13 USD/ha
Cost of mechanized planting

25 USD/ha
Cost of mechanized harvesting

IP
Open source / open access

Technology from

ProPAS

Commodities

Cassava

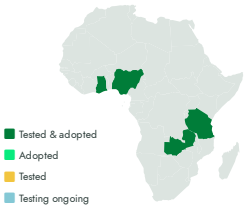
Sustainable Development Goals

2 ZERO HUNGER · 5 GENDER EQUALITY · 13 CLIMATE ACTION

Categories

Production, Equipment, Land preparation

Tested/adopted in



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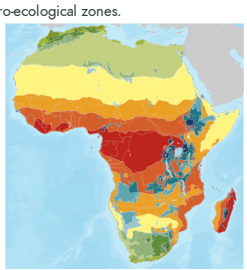


Target groups

Farmers

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

Gender 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.

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.

IP

Open source / open access

Technology from

ProPAS

Commodities

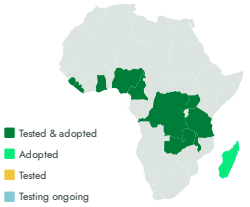
Cassava

Sustainable Development Goals

Categories

Transformation, Equipment, Agrifood processing

Tested/adopted in



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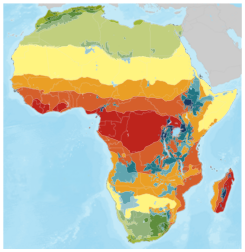


Target groups

Processors

Disease Diagnosis: Nuru for in-field Pest

Crop Care in Your Pocket: Nuru App, Your Farming Companion

PlantVillage Nuru is an innovative smartphone app that uses artificial intelligence for offline diagnosis of crop damage by diseases and pests. It offers instant diagnoses and guidance on disease and pest control, empowering farmers to enhance agricultural productivity and food security.

Penn State University
David Hughes

This technology is TAAT1 validated.

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

Gender assessment 4

Climate impact 7

Problem

- Farmers often struggle to identify crop damage caused by diseases and pests, which can lead to reduced crop yields and economic losses.
- Many farmers lack access to expert advice and information on how to manage and control crop diseases and pests effectively.
- Language barriers can make it challenging for farmers to access relevant information and guidance on crop protection.

Solution

- PlantVillage Nuru offers instant offline diagnosis of crop damage symptoms caused by diseases and pests using artificial intelligence and machine learning.
- The app connects users to a network of nearby users and provides information on how to control the identified diseases and pests, offering expert advice and solutions.
- The app is available in multiple languages, making it accessible to a wider range of users and overcoming language barriers.
- The app employs machine learning and object recognition, allowing it to continuously improve and enhance its accuracy in diagnosing crop issues.

Key points to design your project

PlantVillage Nuru is a smartphone app using AI for offline crop damage diagnosis. It provides instant diagnoses and pest management guidance, aiding farmers in improving productivity and food security. To integrate it into a project:

- Raise awareness and provide training to farmers and extension officers.
- Build local capacity for technology use.
- Promote the app through various channels.
- Collaborate with relevant stakeholders.
- Use the app freely.
- It synergizes with SeedTracker for seed registration and certification, expanding its impact beyond Nigeria and Tanzania.

IP

Open source / open access

Technology from

ProPAS

Commodities

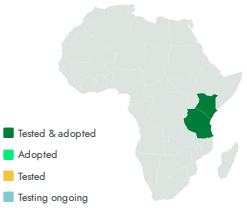
Maize, Cassava, Other root/tuber

Sustainable Development Goals

Categories

Production, Digital applications,
Advisory and information service

Tested/adopted in



Where it can be used

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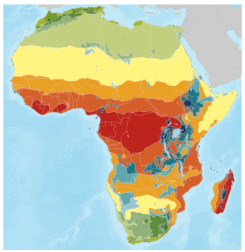


Target groups

Farmers

Specialty blended fertilizers for root and tuber crops

Special fertilizer for root and tuber crops

Specialty Blended Fertilizers for Root and Tuber Crops" are custom fertilizers that provide essential nutrients to address soil deficiencies in Sub-Saharan Africa. They are designed for sweet potato and cassava farming, promoting efficient nutrient use, root growth, and overall crop health.

International Institute of Tropical Agriculture (IITA)
Paul Woomer

This technology is TAAT1 validated.

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

Gender assessment 3

Climate impact 7

Problem

- **Soil Issues**: Many soils in Sub-Saharan Africa lack essential nutrients and suffer from low fertility, limiting the production of crops like sweet potato and cassava.
- **Insufficient Crop Resilience**: Crops like sweet potato and cassava are vulnerable to drought, pests, diseases, and stress, impacting their quality and yield.

Solution

- **Balanced Nutrient Supply and Crop-Specific Formulas**: These fertilizers provide essential nutrients to address soil deficiencies in Sub-Saharan Africa and are tailored to meet the specific needs of crops like sweet potato and cassava.
- **Enhanced Crop Health and Yield**: The right nutrient formula enhances crop productivity, quality, and resilience, helping them resist drought, pests, diseases, and stress.

Key points to design your project

This fertilizer technology aids several Sustainable Development Goals (SDGs) and aligns with key government project priorities like food security and climate action. It can potentially empower women in farming and has a positive climate impact.

To implement this technology:

- Identify potential partners among fertilizer manufacturers,
- Launch an awareness campaign, and organize training programs,
- Collaborate with the manufacturer for product development and distribution,
- Set up demonstration plots, establish a feedback mechanism,
- Regularly monitor and evaluate the impact.

16 to 26 ton per hectare
sweetpotato yield increase

IP
Open source / open access

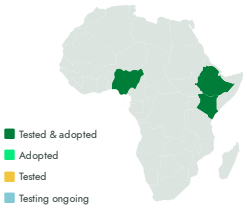
Technology from
ProPAS

Commodities
Sweet Potato, Cassava

Sustainable Development Goals

Categories
Production, Inputs, Fertilizer

Tested/adopted in



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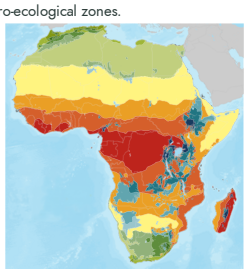


Target groups
Farmers

Disease resistant cassava varieties

Disease-Resistant Cassava Cuttings for Higher Yields

"Disease Resistant Cassava Varieties" are specially bred to withstand common viral diseases like cassava mosaic and cassava brown streak in sub-Saharan Africa. Those varieties help farmers protect their crops, increase yields, and improve food security. Ongoing breeding programs aim to find more varieties for sustainable cassava production.

International Institute of Tropical Agriculture (IITA)
Edward Kanju

This technology is TAAT1 validated.

7·7 Scaling readiness: idea maturity 7/9; level of use 7/9

Gender assessment 4

Climate impact 7

Problem

- Viral diseases damage cassava leaves, reducing photosynthesis and causing significant yield losses.
- Current disease control methods for cassava are ineffective against viral pathogens.
- Farmers in African countries experience yield losses ranging from 20% to 95%, valued at approximately US$1,200 – 2,300 million.

Solution

- Disease-resistant cassava varieties significantly reduce infection rates and yield losses.
- Genes from wild types are transferred into improved cassava varieties through conventional crossing techniques, offering a cost-effective approach.
- Many resistant cassava varieties also exhibit comprehensive resistance to other major cassava pathogens, benefiting integrated crop health management by farmers.

Key points to design your project

- Disease-resistant cassava varieties technology empowers women, enhances food security, and mitigates climate change impacts.
- Integration involves raising awareness, acquiring adapted cassava lines, and building stakeholder capacity.
- Costs include delivery, training, and planting materials, estimated at USD 30 to 35 per hectare.
- Collaboration with agricultural institutes and seed companies is key for effective implementation.
- Availability spans various countries, requiring consideration of import clearance and duties.

Cost: $$$ **30—35 USD**

1 ha of planting materials of elite cassava varieties

15—20 %

Incidences of cassava mosaic disease with resistant varieties

Technology from

ProPAS

Commodities

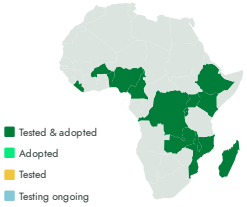
Cassava

Sustainable Development Goals

Categories

Production, Improved varieties, Disease resistance

Tested/adopted in



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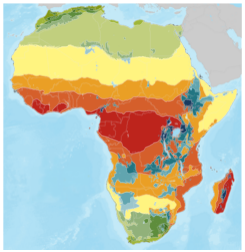


Target groups

Farmers, Seed companies

Golden cassava varieties (Vitamin A fortified)

Yellow-fleshed cassava rich in vitamin A

Yellow-fleshed cassava is a vitamin A-enriched variety. The variety is the result of the cross-breeding of natural lines containing high levels of provitamin A and hybrid lines with higher yield potential disease resistance and drought tolerance.

International Institute of Tropical Agriculture (IITA)
Elizabeth Parkes

This technology is TAAT1 validated.

7·6 Scaling readiness: idea maturity 7/9; level of use 6/9

Gender assessment 4

Climate impact 5

Problem

- Lack of essential nutrients in conventional cassava varieties, notably vitamin A deficiency affecting 50% of children.
- Insufficient vitamin A leading to preventable blindness and weakened immune systems in children.
- Limited nutritional value and agronomic challenges, such as disease susceptibility and low yield potential.

Solution

- Golden cassava varieties are enriched with provitamin A, addressing vitamin A deficiency and hidden hunger.
- Through breeding, golden cassava exhibits enhanced traits like disease resistance and drought tolerance.
- These varieties contain 2 to 3 times more provitamin A, meeting nutritional needs in cassava-dependent communities.
- Golden cassava suits various agro-ecosystems, enhancing its reach.

Key points to design your project

To integrate it into your project:

1. Establish quality parameters with stakeholders.
2. Engage seed companies for high-quality seeds.
3. Stimulate demand among consumers.
4. Provide financial assistance to farmers.

Consider seed quantity, delivery costs, training, communication support, and collaboration with local agricultural institutes and companies for successful implementation.

IP

Open source / open access

Technology from

ProPAS

Commodities

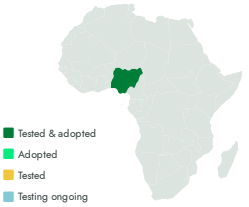
Cassava

Sustainable Development Goals

Categories

Production, Improved varieties, Yield improvement, Quality improvement

Tested/adopted in



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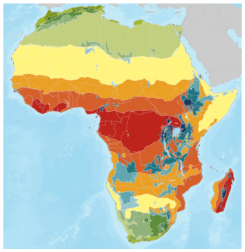


Target groups

Farmers, Seed companies

High quality cassava flour and industrial starches

Extend Freshness, Expand Opportunities with Cassava Flour!

High-Quality Cassava Flour (HQCF) is a non-fermented cassava product with an odorless, white/off-white appearance. It addresses the challenge of perishable fresh cassava roots, offering longer shelf life and reduced transport costs. HQCF, produced through specific steps, holds potential for various food.

International Institute of Tropical Agriculture (IITA)
Abass Adebayo

This technology is TAAT1 validated.

8·7 Scaling readiness: idea maturity 8/9; level of use 7/9

Gender assessment 4

Climate impact 4 1

Problem

The HQCF technology adressed several problem such as:

- Rapid perishability and molding of fresh cassava roots due to high water content.
- Toxic cyanide compounds in cassava roots, which need to be eliminated for safety.
- Traditional cassava flour production methods that do not provide significant market opportunities for smallholder cassava farmers.

Solution

- Detoxification of cassava roots through the HQCF production process, eliminating bitter taste and toxicity without fermentation.
- Utilization of HQCF for a wide range of food and industrial applications, serving as substitutes for imported wheat.
- Building capacity in remote rural communities for HQCF to enhance the competitiveness and value addition in the cassava value chain.

Key points to design your project

High-Quality Cassava Flour (HQCF) is a non-fermented solution addressing perishability in cassava roots, providing extended shelf life. It supports gender equality, reduces carbon footprint, and aligns with SDGs for poverty reduction and economic growth. Integration considerations involve estimating root quantity, logistics planning, training support, and developing communication materials.

Cost: $$$ **60 USD**

Processing of 1MT of fresh cassava

25 %

Reduction of wheat flour in bakeries

1 ton HQCF from 5.5 tons fresh cassava roots

Cassava root to HQCF conversion ratio

IP

Open source / open access

Technology from

ProPAS

Commodities

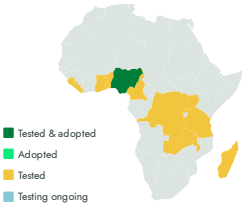
Cassava

Sustainable Development Goals

Categories

Transformation, Equipment, Agrifood processing

Tested/adopted in



Where it can be used

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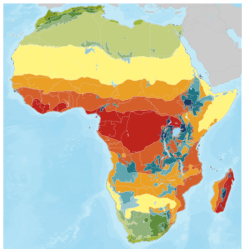


Target groups

Processors

Equipment for feed production: Cassava Peels for Animal Feed Production

Affordable animal feed for breeders

This technology streamlines the conversion of cassava peels into animal feed, reducing labor costs and drying times while extending shelf life. It tackles environmental issues caused by excess cassava peels and provides a sustainable solution by utilizing them as valuable animal feed and fiber sources.

This technology is TAAT1 validated.

7·7 Scaling readiness: idea maturity 7/9; level of use 7/9

Gender assessment 4

Climate impact 7

Problem

- Cassava processing generates large peel quantities, leading to environmental issues through dumping and burning.
- Despite their potential as animal feed, peels remain underused due to drying constraints, aflatoxin risk, and poor storability.
- African communities face shortages of nutritious animal feeds, impacting livestock and fish rearing.

Solution

- Converts cassava peels into animal feed efficiently, reducing costs and extending shelf life.
- Ensures animal and consumer health by preventing harmful substances in the final product.
- Promotes rural job opportunities and business growth.
- Offers cost-effective and nutritious alternatives to traditional feed sources like maize and wheat.

Key points to design your project

The use of cassava peels for animal feed production empowers women in rural areas by providing income opportunities and reduces climate impact by minimizing waste and greenhouse gas emissions. This aligns with Sustainable Development Goals (SDGs) related to sustainable agriculture, gender equality, responsible consumption and production, and climate action.

To incorporate cassava peel animal feed production into a project, consider activities like raising awareness, identifying suitable equipment, developing operating protocols, and inventorying cassava peel sources. Training and support from a dedicated team are essential, along with communication materials for technology promotion. Accompanying solutions include mechanized drying of cassava using flash or pneumatic dryers.

3,400 USD

The base equipment required for small-scale processing of cassava peels into animal feeds

1,000 USD	600 USD	850 USD	400 USD	IP
Cost of a motorized grater	Cost of a press with hydraulic jack	Cost of a motorized pulverize	Cost of a mechanical sieve	Open source / open access

International Institute of Tropical Agriculture (IITA),International Livestock Research Institute (ILRI)
Tunde Amole

Technology from

ProPAS

Commodities

Cassava

Sustainable Development Goals

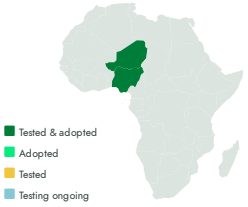
Categories

Transformation, Equipment, Animal feed production

Best used with

- Pneumatic Cassava Dryers ›

Tested/adopted in



Where it can be used

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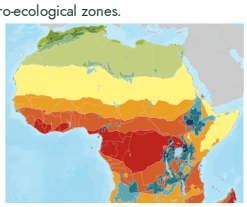
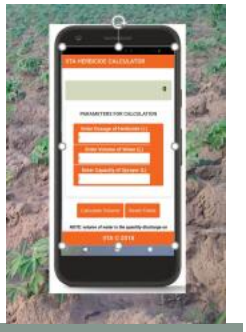


Herbicides Calculator

Reduce pesticide and herbicide losses with IITA's herbicide calculator

The IITA Herbicide Calculator is a digital tool that helps farmers figure out the right amount for backpack sprayers. This tool was developed using Java language, the Ionic framework, and Android Studio, ensuring its robustness and usability.



International Institute of Tropical Agriculture (IITA)
Godwin Atser

This technology is TAAT1 validated.

7·7 Scaling readiness: idea maturity 7/9; level of use 7/9

Gender assessment 4

Climate impact 6

Problem

- The widespread misuse of pesticides (including herbicides) due to poor calibration of spray tanks.
- Loss of inputs (pesticides or herbicides) during applications.
- Residue of chemical products in crops due to overdosing of pesticides or herbicides.

Solution

- The"IITA Herbicides Calculator" technology ensures the precise application of pesticides, mitigating issues related to over or under-dosing.
- Its promotes the effectiveness of herbicides, facilitating their optimal application.

Key points to design your project

To integrate this technology,

- Establish training programs and connect producers to financial support and markets.
- Estimate costs for the subscription to the IITA Herbicide calculator, android phones, data, training, and communication support.
- Collaborate with agricultural development institutes and seed multiplication companies.

30,000 USD

Cover training, android phones, data

IP

Open source / open access

Technology from

ProPAS

Commodities

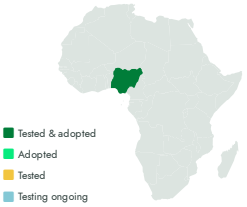
Maize, Rice, Sorghum/Millet, Cowpea, Soybean, Cassava, + 1 more

Sustainable Development Goals

Categories

Production, Digital applications, Pest control

Tested/adopted in



Where it can be used

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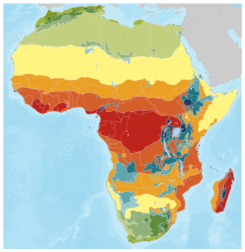


Target groups

Farmers

Six Steps to Cassava Weed Management

Weed-free Fields, Bountiful Yields!

The "Six Steps Cassava Weed Management" technology is a holistic solution to weed problems in Sub-Saharan Africa's cassava fields. It provides a decision-making framework for farmers to effectively control weeds, leading to higher cassava yields. This adaptable method caters to diverse farming conditions, enhancing cassava productivity and regional food security.

International Institute of Tropical Agriculture (IITA)
Friday Ekeleme

This technology is TAAT1 validated.

9·7 Scaling readiness: idea maturity 9/9; level of use 7/9

Gender assessment 4

Climate impact 7

Problem

- **Weed Encroachment**: Cassava fields in Sub-Saharan Africa are frequently overrun by weeds due to inadequate and untimely control measures.
- **Slow Canopy Development**: The growth pattern of cassava makes it vulnerable to weed encroachment in the early weeks of cultivation.
- **Nutrient and Water Competition**: Abundant weeds consume significant nutrients and water, drastically reducing cassava yield.

Solution

- **Improved Yield**: It enables farmers to significantly increase cassava yields by managing weeds effectively.
- **Comprehensive Approach**: It provides a holistic strategy for weed control, including site selection, weed identification, and herbicide application.
- **Resource-Friendly**: The technology is accessible to small-scale farmers, requiring only simple and cost-effective equipment and herbicides.

Key points to design your project

The "Six Steps Cassava Weed Management" technology boosts cassava yields, eases women's workload, and aligns with SDGs 2, 5, and 13.

To integrate it into your project:

- Educate farmers about its benefits.
- Distribute the decision support tool and recommendations.
- Ensure access to small loans.
- Plan for various farming activities.
- Use simple, cost-effective equipment.

It works well with other cassava cultivation practices and digital tools like Akilimo and the IITA Herbicide calculator.

Key partners include the International Institute of Tropical Agriculture (IITA).

30–50 %
Root yield increased

20-30 USD/ha
Cost for herbicide application

28-46 USD/ha
Cost for weed removal labor

IP
Open source / open access

Technology from

ProPAS

Commodities

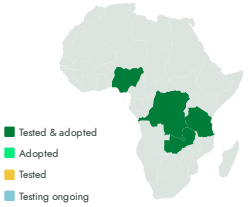
Cassava

Sustainable Development Goals

Categories

Production, Practices, Weed management

Tested/adopted in



Where it can be used

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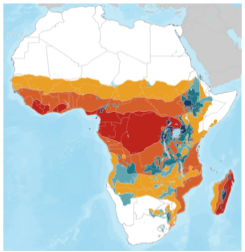


Target groups

Farmers

Trace: FairFood Traceability Solutions

Easy-to-use solution for food traceability

Trace technology is an advanced tracking solution for agricultural and food-related companies, offering transparency and sustainability. It enhances consumer trust by providing clear and verifiable data about a product's journey and ethical production practices.

This technology is pre-validated.

9·7 Scaling readiness: idea maturity 9/9; level of use 7/9

Gender assessment 3

Climate impact 6

Problem

- Agri-food companies struggle with risk mitigation in their operations.
- Transparent traceability of agri-food products is challenging to ensure.
- The food industry lacks sufficient tools for storing and managing essential data.

Solution

- Traceability solutions enable showcasing the precise origin of products.
- Transparent sharing of evidence supporting brand values with the public.
- FairFood's traceability solutions contribute to increased income for farmers.
- Foster transparency and trust, helping create fairer compensation mechanisms within the agri-food supply chain.

Key points to design your project

"FairFood Traceability Solutions" offers a digital platform to enhance transparency and trust in the agri-food supply chain. To integrate this technology into your project,

- Accessing the platform and installing the necessary software, considering associated costs.
- Configure the platform with relevant supply chain information and provide training and ongoing support to personnel.
- Utilize the platform to track product movement and share transparent information.

11,070 USD Initial investment	**110 USD** Social Return on Investment per farmer per YEAR
22.14 USD subscription/user/year	**3,320 USD** Operating Investment /YEAR
IP Open source / open access	

FAIRFOOD

Fairfood
Marten van Gils

Commodities

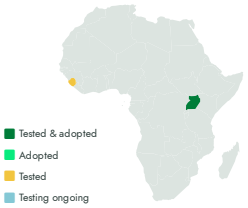
Common bean, Cassava, Cowpea, Leguminous, Maize, Sorghum/Millet, + 9 more

Sustainable Development Goals

Categories

Production, Prevention & storage, Transformation, Market, Pre-production, Digital applications, + -3 more

Tested/adopted in



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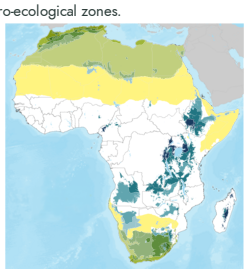


Target groups

Breeders, Farmers, Processors, Fish Farmers, Sellers

SAH cassava: Semi Autotrophic Hydroponics for Cassava Multiplication

A rapid quality seed delivery technology for cassava

SAH for Cassava Multiplication is an innovative technology using controlled environments for cost-effective and adaptable cassava propagation. It fosters robust root growth, reduces diseases, and yields high-quality plantlets, expediting access to new cassava varieties and boosting overall productivity in farming.

International Institute of Tropical Agriculture (IITA)
Mercy Elohor Diebiru-Ojo

This technology is TAAT1 validated.

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

Gender assessment 4

Climate impact 7

Problem

- Traditional methods are time-consuming.
- Conventional propagation prone to pests and diseases.
- Seed and tissue culture methods have low multiplication ratios.
- Stem cuttings may be more susceptible to pests and diseases when planted in open fields.

Solution

- SAH enables rapid access to new cassava varieties.
- Creates a controlled environment for healthy root growth.
- SAH significantly improves ratios compared to seed and tissue culture.
- Planting materials from SAH are more resilient and less susceptible to pests and diseases in open fields.

Key points to design your project

To integrate the technology, estimate plantlet quantities, consider delivery costs, and account for training and communication support.

Additionally, optimize by combining the technology with disease-resistant and golden cassava varieties.

Collaboration with agricultural institutes and seed multiplication companies is recommended for implementation in your country.

Cost: $$$ **10,000 USD**
Setup up for a 40 sq. meter facility

ROI: $$$ **80 %**
over one year

0.05 USD	**0.05 - 1 USD**	**116 %**	**IP**
operating cost per plant	Production cost	ROI over 3 year	Unknown

Technology from

ProPAS

Commodities

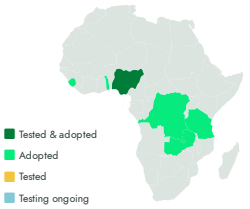
Cassava

Sustainable Development Goals

Categories

Production, Practices, Seed system

Tested/adopted in



Where it can be used

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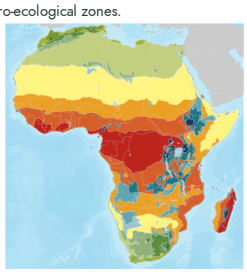

Target groups

Farmers

Cassava Technologies Toolkit

https://taat.africa/vki

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).

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