ENSURE Project (AfDB)

The Enabling Environments for Sustainable Regional Agriculture Extension (ENSURE) is a 3-year project, soon to be launched, and financed through an AfDB ADF grant of USD 13.14 million. The project is implemented by the East African Community (EAC) and covers Burundi, DRC, Kenya, Rwanda, South Sudan, Tanzania, and Uganda. Its overall...

44 TECHNOLOGIES | CREATED ON APR 23, 2025 BY TAAT PROFILING TEAM | LAST UPDATED DEC 2, 2025

TECHNOLOGIES IN THIS TOOLKIT

- **AKILIMO**: Digital Decision Support Tool
- **Mechanized Defeathering and Egg Sorting**
- **Low-Cost Cage and Free-Range Containment**
- **Warrantage Inventory and Credit System**
- **Proactive Management of Striga Infestation**
- **Precision Fertilizer Micro-Dosing for Millet and Sorghum Yield**...
- **Nuru**: In-field Pest and Disease Diagnosis
- **Maize-legume rotation and intercropping**
- **IR maize**: Imazapyr resistant maize for Striga management
- **Golden maize varieties (High provitamin A)**
- **Poultry Vaccination against Newcastle Diseases**
- **Semi-Automatic Incubator for artificial hatching**
- **Low-dose pest control**: Seed dressing of Seed with Fungicide an...
- **IPM**: Integrated Management of Insects, Diseases and Weeds in...
- **PICS**: Hermetic Bags for Safe Storage of grain
- **Conservation agriculture**: Minimal Tillage and Surface Mulching of Soils
- **RiceAdvice digital support**
- **Rice Threshing and Polishing Machines**: Axial flow thresher and...
- **NERICA**: High yield rice varieties for Africa
- **GEM system**: Parboiling equipment for rice
- **Special Chicken Breed**: Dual-Purpose Chicken for Small-Scale...
- **Small Ruminant Containment in Protective Sheds**
- **Short-Term Fattening and Supplemental Feeding**
- **Equipment for feed production**: Cassava Peels for Animal Feed...
- **CBC**: Cassava Business Connector
- **Cassava varieties with high dry matter and starch content**
- **Seed Inoculation with Rhizobia**
- **Pre-Cooked Beans for Consumer Convenience**
- **Low-Cost Staking for Climbing Beans**
- **Bean Flour and Flour Products**: Bean processing process
- **Advanced Weed Management**: Mechanical and Chemical Weed...
- **Value-added Processing of Bananas and Plantain**
- **Golden cassava varieties (Vitamin A fortified)**
- **High quality cassava flour and industrial starches**
- **Hide Curing and Secondary Leatherworks**
- **Ethical Meat Processing**: Humane Slaughtering and Meat Inspection
- **Thermostable vaccine against PPR disease**
- **Best practices in pasture management**: Pasture Improvement
- **Specialty blended fertilizers for root and tuber crops**
- **Six Steps to Cassava Weed Management**
- **SAH cassava**: Semi Autotrophic Hydroponics for Cassava...
- **Mobile Cassava Processing Plant**
- **Mechanized Cassava Planting and Harvesting**
- **Banana Peels as Feed and Organic Resource**

https://taat.africa/crh

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

Inclusion 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.

CGIAR Sustainable Farming Program
Thompson Ogunsanmi

Technology from

CASH from EiA

Commodities

Cassava, Maize, Rice

Sustainable Development Goals

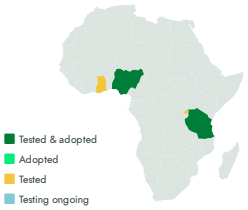
Categories

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

Best used with

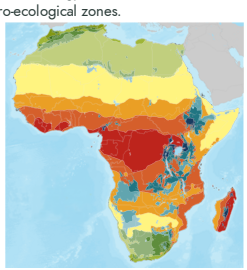
Six Steps to Cassava Weed Management
See all 1 technologies online

Tested/adopted in



Where it can be used

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



Target groups

Mechanized Defeathering and Egg Sorting

Efficiency Unleashed: Poultry Processing, Simplified

Benchtop defeathering machine

Defeathering involves the use of machines with rotating metal discs and rubber fingers, efficiently removing feathers in 30 seconds. Egg sorting machines use weight-sensitive belts, ensuring precise grading based on quality parameters like weight, color, shape, and cracks.

International Livestock Research Institute (ILRI)
Adeniyi Adediran

This technology is TAAT1 validated.

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

Inclusion assessment 4

Climate impact 4

Problem

- Time-consuming and inaccurate manual defeathering and egg sorting processes
- Delayed chicken processing reduces productivity, feed efficiency, and leads to rushed sales at lower prices, affecting profitability.
- Manual methods struggle to meet grade requirements for different poultry types and egg grades, impacting market acceptance.
- Manual egg sorting increases breakage risk, causing losses and affecting the overall quality of graded eggs.

Solution

- Mechanized machines remove feathers in 30 seconds, enhancing productivity.
- Quick defeathering maintains product quality, avoiding rushed sales.
- Automated sorting reduces costs, attracting premium prices for eggs.
- Machines efficiently handle various poultry types, reducing manual challenges.

Key points to design your project

Introducing mechanized defeathering and egg sorting technology transforms poultry farming by offering a practical and efficient approach to processing poultry products. To integrate this technology,

- Ensure a solid business plan aligning with market demand and prices and match production volumes with machine capacities
- Having technically competent personnel and understanding environmental regulations and waste management procedures is crucial for successful implementation.
- Training and post-training support from a dedicated team of trainers are essential, along with developing communication materials to promote the technology.

5500—7000 USD
Egg sorting machine

IP
Copyright

Technology from

ProPAS

Commodities

Poultry

Sustainable Development Goals

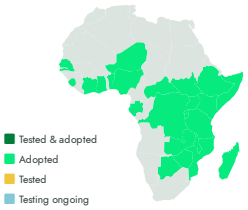
Categories

Post-production, Equipment, Land preparation

Best used with

Processing chicken meat for cold storage
See all 1 technologies online

Tested/adopted in



Where it can be used

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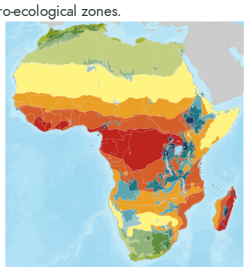


Target groups

Low-Cost Cage and Free-Range Containment

Safeguarding Chickens and reducing Costs

A moveable poultry house for free-range production with sheltered forage area

The technology is a movable chicken house that lets chickens roam freely during the day and return to safety at night. It's affordable, easy to move, and made from basic materials. Proper maintenance and predator protection are essential for its effectiveness, making it a practical solution for chicken farming.

This technology is TAAT1 validated.

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

Inclusion assessment 4

Climate impact 5

Problem

- Many small farmers can't afford expensive chicken houses.
- Chickens are sometimes kept in crowded and uncomfortable spaces.
- Predators and bad weather can harm chickens.
- Farmers want to meet the demand for free-range and organic chickens.
- Pests and diseases build up in one spot if chickens stay in the same place for too long.

Solution

- Affordable movable houses for chickens.
- Gives chickens space to roam and find their own food.
- Keeps chickens safe from predators and bad weather.
- Good for the environment and the farm.
- Easy to clean and take care of.

Key points to design your project

- Affordable poultry housing solutions empower smallholder farmers for commercial production and aid poverty alleviation.
- Boosts food security with organically raised poultry.
- Supports economic growth through job creation.
- Promotes sustainable farming practices by reducing environmental impact and advocating for organic production.

Steps to incorporate the technology:

- Secure access to suitable land for free-range poultry production.
- Conduct market assessment to evaluate demand and profitability.
- Allocate resources for comprehensive training and support.
- Collaborate with agricultural institutions.
- Explore integration with complementary technologies like Biosecurity for Disease Prevention.

2.0—2.5 Kg
Weight of mature meat chickens in 6 weeks

20 m²
floor space for 100 birds.

IP
Open source / open access

International Livestock Research Institute (ILRI)
Adeniyi Adediran

Technology from

ProPAS

Commodities

Poultry

Sustainable Development Goals

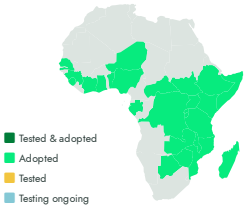
Categories

Production, Equipment, Production System

Best used with

Biosecurity for Disease Prevention
See all 1 technologies online

Tested/adopted in



Where it can be used

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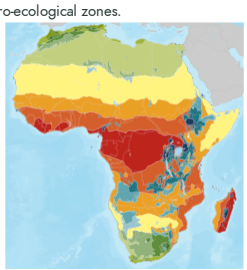


Warrantage Inventory and Credit System

Grain in the Bank: Future Assurance

Farmers deliver grain to warehouse, and an officer registers the quantity and quality

The warrantage inventory and credit system is a practical solution for small-scale farmers. It operates through a warehouse receipt mechanism, allowing farmers to store non-perishable crops (such as millet) in secure warehouses. In return, they receive inventory credit—loans against the stored grain.

International Crops Research Institute for the Semi-Arid Tropics (ICRISAT)
Dougbedji Fatondji

This technology is TAAT1 validated.

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

Inclusion assessment 4

Climate impact 1

Problem

- **Limited Access to Credit and Limited Market Access:** Smallholder farmers struggle to access credit and secure storage facilities, affecting their ability to get fair prices for their crops.
- **Price Volatility and Seasonal Cash Flow:** Fluctuating market prices and seasonal income variations make it challenging for farmers to manage expenses and plan for the future.

Solution

- **Credit Access:** Warrantage lets farmers use stored crops as collateral, providing credit and overcoming collateral barriers.
- **Price Stability & Market Access:** Warrantage allows storing crops during surplus for sale during favorable prices, reducing volatility impact and ensuring better market access.

Key points to design your project

The warrantage system offers a solution for Sub-Saharan African smallholder farmers lacking access to bank loans. Implementing it involves steps like:

- **Identify a group of interested farmers**.
- **Train them** on the system and crop storage.
- **Secure a warehouse** for crop storage.
- **Store the harvested crops** and record their details.
- **Obtain a loan** using the stored crops as collateral.
- **Invest the loan** in farming or other needs.
- **Sell the crops** when prices are favorable.
- **Repay the loan** with the sales proceeds. Share any remaining profit.

1—2 USD
90-kg hermetic bags

IP
Open source / open access

Technology from

ProPAS

Commodities

Sorghum/Millet

Sustainable Development Goals

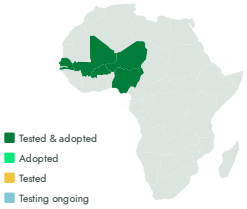
Categories

Post-production, Marketing, Practices, Post-harvest management

Best used with

Millet and Sorghum Varieties for Better Nutrition and Stress Resistance, Precision Fertilizer Micro-Dosing for Millet and Sorghum Yield Enhancement
See all 2 technologies online

Tested/adopted in



Where it can be used

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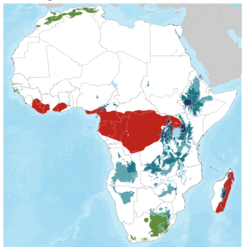


Proactive Management of Striga Infestation

Striga defended for farmers' empowerment

Sorghum severely infested by Striga

The technology for managing Striga infestation aims to tackle challenges like Striga weed and declining soil fertility. It involves simple farming methods like using less fertilizer, recycling organic matter, rotating crops, and planting Striga-tolerant varieties.

International Crops Research Institute for the Semi-Arid Tropics (ICRISAT)
Dougbedji Fatondji

This technology is TAAT1 validated.

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

Inclusion assessment 4

Climate impact 6

Problem

- Striga attaches to the roots of maize, millet, sorghum, and rice, extracting nutrients and water delayed crop growth.
- Its causes a significant reduction in crop yield.
- The presence of Striga in fields can contribute to soil impoverishment.

Solution

- This technology proposes various agronomic practices such as fertilizer micro-dosing, organic matter recycling, crop rotation, intercropping, the use of Striga-tolerant varieties, seed dressing, pre-emergence herbicides, and hand weeding.
- It has led to an increase in sorghum and pearl millet yields by up to 60% within four years.

Key points to design your project

To integrate the technology:

- One needs to estimate fertilizer quantities,
- Consider delivery costs, provide training,
- Develop communication support, and
- Consider collaboration with agricultural institutes for optimal implementation.

IP

Open source / open access

Technology from

ProPAS

Commodities

Sorghum/Millet

Sustainable Development Goals

Categories

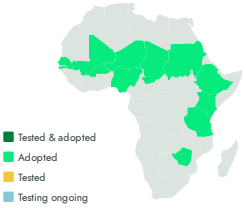
Production, Practices, Weed management

Best used with

Precision Fertilizer Micro-Dosing for Millet and Sorghum Yield Enhancement

See all 1 technologies online

Tested/adopted in



Where it can be used

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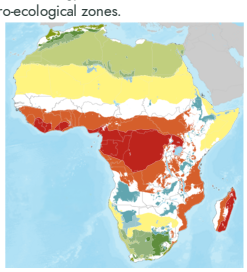


Target groups

Precision Fertilizer Micro-Dosing for Millet and Sorghum Yield Enhancement

Smarter Fertilizer, Stronger Crops: Maximize Growth with Minimal Input

The Fertilizer Micro-Dosing for Enhanced Yield and Efficiency Technology is a practice that involves applying small amounts of fertilizer in shallow holes at the base of each plant. This precise method is low-risk, affordable, and efficient.

International Crops Research Institute for the Semi-Arid Tropics (ICRISAT)
Dougbedji Fatondji

This technology is TAAT1 validated.

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

Inclusion assessment 4

Climate impact 7

Problem

- Nutrient deficiencies in millet and sorghum
- Inefficient and risky fertilizer application methods
- Insufficient nutrient replenishment and gradual soil fertility decline
- Crop failure risk due to drought discouraging fertilizer investment

Solution

- Addressing nutrient deficiencies in millet and sorghum
- Providing a low-risk and precise fertilizer application method
- Fostering rapid crop growth

Key points to design your project

Micro-Dosing addresses nutrient deficiencies in millet and sorghum with precise, low-risk fertilizer application, promoting rapid growth, reducing environmental impact, and benefiting women. It aligns with climate-smart practices, enhances agricultural efficiency, and reduces poverty.

To integrate Micro-Dosing:

- Identify suitable fertilizers: Millet (50 kg/ha, 16,666 plants), Sorghum (100 kg/ha, 26,666 plants). Use NPK (15-15-15) or DAP fertilizers.
- Plan logistics: Include delivery costs, import clearance, and distribution to project sites.
- Raise farmer awareness through training and communication tools (flyers, videos, radio).
- Combine with stress-resistant crop varieties and Striga management for better results.
- Partner with agricultural institutes and fertilizer distributors for implementation.

This technology is applicable in Chad, Ethiopia, Kenya, Sudan, Tanzania, Burkina Faso, Mali, Niger, Nigeria, Senegal, and Zimbabwe.

IP

Open source / open access

Technology from

ProPAS

Commodities

Sorghum/Millet

Sustainable Development Goals

Categories

Production, Practices,

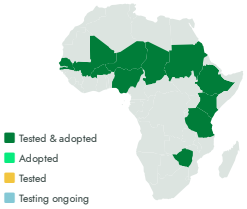
Fertilizer management

Best used with

Millet and Sorghum Varieties for Better Nutrition and Stress Resistance, Dual-purpose Millet Varieties for Crop and Livestock Integration, Proactive Management of Strig...

See all 3 technologies online

Tested/adopted in



Where it can be used

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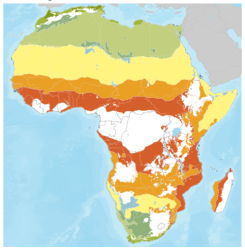


Nuru: In-field Pest and Disease Diagnosis

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

Inclusion 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

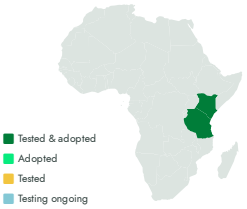
Maize, Cassava, Other root/tuber

Sustainable Development Goals

Categories

Production, Digital applications,
Advisory and information service

Tested/adopted in



Where it can be used

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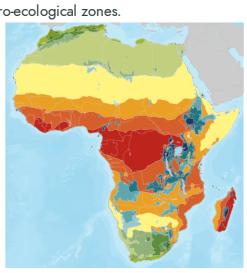


Target groups

Farmers

Maize-legume rotation and intercropping

Maize-legume: Savings in Soil, Growth in Profit

This practice utilizes legumes' biological nitrogen fixation to boost maize productivity. It enhances soil fertility, reduces weed infestation, and mitigates soil erosion. Certain legumes also combat parasitic weeds in maize, while tall maize crops regulate soil temperature and improve water efficiency.

African Agricultural Technology Foundation (AATF)
Jonga Munyaradzi

This technology is TAAT1 validated.

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

Inclusion assessment 4

Climate impact 7

Problem

- Subsistence farming faces soil nutrient deficiencies, such as nitrogen, hampering crop growth and yields.
- Commercial farmers grapple with high costs associated with nitrogen-based fertilizers, impacting profitability.
- Weed infestation competes with crops for resources, reducing overall yields.
- Pest and disease outbreaks can cause significant damage to crops, affecting both quality and quantity, leading to financial losses.
- Crop failures due to factors like drought or pest attacks can result in food scarcity, impacting household nutrition and well-being.

Solution

- Utilizes biological nitrogen fixation in legumes to enrich soil and promote healthier plant growth.
- Reduces dependency on expensive synthetic fertilizers through maize-legume rotation and intercropping.
- Effectively manages weed growth, minimizing infestation and enhancing overall crop productivity.
- Reduces harmful Striga weed infestations in maize crops through intercropping with specific legumes.
- Cultivating two complementary crops on the same land ensures a more reliable food supply and enhances food security for subsistence farmers.

Key points to design your project

This technology improves crop productivity, ensures food security, and promotes economic sustainability by optimizing nitrogen management, reducing reliance on synthetic fertilizers, and fostering healthier plant growth.

It also contributes to ecosystem preservation by effectively managing weeds and combating Striga weed infestations, all while promoting sustainable agricultural practices.

To integrate this technology, educate farmers, provide guidance on cultivation methods and seed selection, allocate funds for training and support, develop communication materials, and establish partnerships.

For enhanced optimization, consider associating with other complementary agricultural practices.

30—70 kilograms
of nitrogen carried over from soybean to maize crops

IP
Unknown

Technology from

ProPAS

Commodities

Maize

Sustainable Development Goals

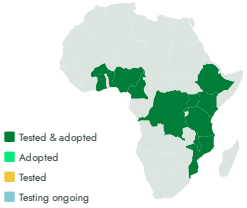
Categories

Production, Practices, Soil fertility

Best used with

Drought Tolerant Maize Varieties and Water Efficient Maize Varieties, Fall Armyworm Integrated Pest Management, Pre-plant blended fertilizers and nitrogen topdressin...
See all 3 technologies online

Tested/adopted in



Where it can be used

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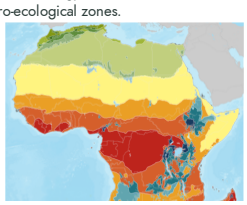


IR maize: Imazapyr resistant maize for Striga management

Boost maize yields while eliminating the issue of Striga infestation

The genetically modified IR maize lines coated with herbicide through seed dressing, proves effective in controlling Striga with lower herbicide quantities, targeting the pest during critical crop establishment stages.

African Agricultural Technology Foundation (AATF)
Jonga Munyaradzi

This technology is TAAT1 validated.

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

Inclusion assessment 4

Climate impact 7

Problem

- Striga weed infestations in maize crops lead to significant yield losses.
- They reduce grain yields and crop productivity by competing with maize for nutrients and water.
- This prompts herbicide reliance and the need for effective Striga control methods.

Solution

- The IR maize, coated with herbicide through seed dressing, there is increased effectiveness in Striga control, with a reduced need for herbicide.
- Its improving grain yields and minimizing Striga dispersal on farmlands.
- It is also recommended to combine this technology with appropriate soil and fertilizer management for optimal outcomes.

Key points to design your project

To integrate this technology, the following steps are recommended:

- Develop effective pesticides for seed treatment, raise awareness among farmers about the benefits of IR maize, and ensure access to seed treatment.
- Estimate the quantities of IR maize seed and pesticides, accounting for delivery and import costs, provide training, and develop communication materials.
- Associate it with other agricultural practices and collaborate with agricultural development institutes and seed multiplication companies for implementation.

IP

Open source / open access

Technology from

ProPAS

Commodities

Maize

Sustainable Development Goals

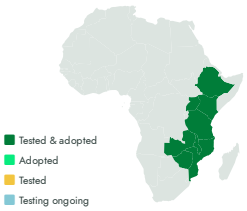
2 ZERO HUNGER

8 DECENT WORK AND ECONOMIC GROWTH

Categories

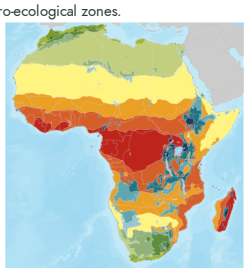
Production, Improved varieties, Weed resistance, Yield improvement

Tested/adopted in



Where it can be used

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



Target groups

Farmers

Golden maize varieties (High provitamin A)

Nutrition-boosting, income-enhancing maize.

These maize varieties have distinctive orange kernels, a result of high beta-carotene content. They are developed through advanced breeding techniques, combining naturally provitamin A enriched lines from Central and South America with elite land races and hybrid lines with improved agronomic traits.

African Agricultural Technology Foundation (AATF)
Jonga Munyaradzi

This technology is TAAT1 validated.

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

Inclusion assessment 4

Climate impact 4

Problem

- Significant population, including children and adults, faces preventable blindness and weakened immune systems due to insufficient vitamin A levels.
- Increased susceptibility to diseases such as measles, diarrhea, and respiratory infections.
- Common maize varieties lack vital vitamins and minerals, contributing to widespread malnutrition.
- 50% of children aged 0.5 to 5 years are at risk of vitamin A deficiency, leading to severe health complications and diminished quality of life

Solution

- Provitamin A enriched maize varieties provide a stable source of essential nutrients, combating deficiencies.
- Preservation of beta-carotene ensures a consistent supply of vitamin A.
- Genomic modification maintains nutrient content without compromising yield.
- Cost-effective approach for regions heavily reliant on maize.
- Tailored to meet nutritional needs, providing a significant portion of daily vitamin A requirement.
- Accessible and adaptable for diverse farming systems.

Key points to design your project

This transformative technology enhances gender inclusion, providing resilience to climate challenges and aligning with Sustainable Development Goals (SDGs) by addressing hunger and promoting well-being, especially for women and children. To integrate the technology into your project:

1. Estimate seed quantity based on a cost of 0.8 to 1.2 USD per kg and a requirement of 25 kg per ha.
2. Account for delivery costs, import clearance, and duties if applicable.
3. Include training and post-training support costs.
4. Develop communication materials for technology promotion.
5. Optimize by associating the technology with legumes, using manure, and implementing mulching.
6. Collaborate with agricultural development institutes and seed multiplication companies for effective implementation in your country.

IP

Open source / open access

Technology from

ProPAS

Commodities

Maize

Sustainable Development Goals

Categories

Production, Improved varieties,

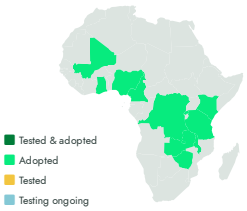
Yield improvement, Quality improvement

Best used with

Drought Tolerant Maize Varieties and Water Efficient Maize Varieties, Pre-plant blended fertilizers and nitrogen topdressing for maize, Maize-legume rotation and...

See all 4 technologies online

Tested/adopted in



Where it can be used

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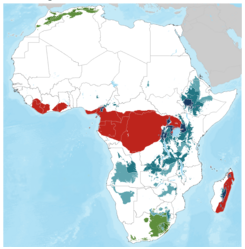


Poultry Vaccination against Newcastle Diseases

Low-cost vaccination for poultry

The "Universal Vaccination against Newcastle Diseases" is a method for widespread vaccination in poultry. It includes thermostable vaccines, efficient logistics, easy application, and vaccinator training.

ND I-2 vaccine is available in small vials

ILRI
INTERNATIONAL LIVESTOCK RESEARCH INSTITUTE

International Livestock Research Institute (ILRI)
Tunde Amole

This technology is TAAT1 validated.

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

Inclusion assessment 3

Climate impact 6

Problem

- **High Mortality & Uptake**: Newcastle disease causes high mortality in poultry, with limited vaccine uptake.
- **Accessibility & Knowledge**: Vaccine access and disease knowledge are challenges.
- **Vaccination Issues**: Inconsistent application and poor systems hinder effective vaccination.

Solution

- **Thermostable & Broad Protection:** Withstands temperature variations and defends against diverse NDV strains.
- **Strong Immune Response & Ease of Use:** Triggers robust immunity with simple administration.
- **Safety & Long-lasting Protection:** Proven safe and effective, offering enduring protection.

Key points to design your project

The technology boosts women's empowerment, cuts carbon emissions, and aids SDGs 1, 2, and 5 by enhancing poultry health and income, and minimizing cold chain needs.

Adopting the "Universal Vaccination against Newcastle Diseases" technology involves:

1. **Stakeholder Engagement**: Engage all relevant parties.
2. **Awareness Raising**: Educate decision makers on family poultry benefits.
3. **Vaccine Selection**: Opt for a suitable vaccine like ND I-2.
4. **Training and Extension**: Plan and organize essential training covering vaccine characteristics, campaign organization, and progress monitoring.
5. **Cost-Recovery System**: Cover production, distribution, and administration costs, possibly through consumer payments or government subsidies. Focus on cost minimization if the vaccine is free.
6. **Vaccination Implementation**: Vaccinate all chickens simultaneously.
7. **Monitoring and Evaluation**: Track program progress and impact.

These activities should be systematically planned and executed.

2.5 USD	**250** USD	IP
per round of vaccination for 20 chickens	local vaccination campaign at the village level	Open source / open access

Technology from

ProPAS

Commodities

Poultry

Sustainable Development Goals

8 DECENT WORK AND ECONOMIC GROWTH

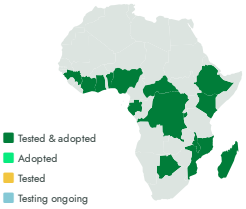
Categories

Production, Inputs, Animal healthcare

Best used with

Biosecurity for Disease Prevention
See all 1 technologies online

Tested/adopted in



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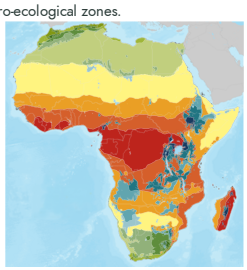


Target groups

Farmers

Semi-Automatic Incubator for artificial hatching

Hatching Success, One Chick at a Time

This technology reproduces the natural incubation process on a larger scale. They are designed to accommodate 50 to 150 eggs at a time. They can be heated using kerosene or a battery-powered light bulb, offering an alternative to mains electricity.

International Livestock Research Institute (ILRI)
Adeniyi Adedirian

This technology is TAAT1 validated.

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

Inclusion assessment 4

Climate impact 7

Problem

- Limitation of natural incubation in producing chicks, with a capacity of only 10-12 chicks per hatch.
- Difficulty in responding quickly to the market demand for chicks.
- Risk of the spread of parasites and diseases in the natural incubation process.

Solution

- This technology has the ability to hatch day-old chicks in just 21 days, increasing the capacity to produce a large number of chicks in a short time in response to market demand.
- High success rate of 85-90% in artificial incubation, increasing production efficiency.
- Reduced risk of the spread of parasites and diseases in the artificial incubation process.

Key points to design your project

The Artificial Hatching in Semi-Automatic Incubators technology transforms poultry farming by accelerating chick production and ensuring a reliable supply. To integrate it in your project:

- Conduct awareness campaigns, assist in selecting incubators, and develop marketing strategies.
- Evaluate quantity, consider delivery costs, and collaborate with institutes for implementation.
- Training and communication support are vital, and association with other poultry farming practices enhances sustainability.

150 USD	200 USD	500 USD	IP
64-egg manual solar unit	fully automated 96 egg unit	Hatchery start up requirement	Open source / open access

Technology from

ProPAS

Commodities

Poultry

Sustainable Development Goals

Categories

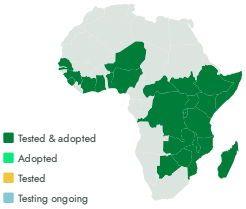
Pre-production, Equipment

Best used with

Genetically Improved Poultry Breeds for Optimized Meat and Egg Production, Dual-Purpose Chicken for Small-Scale Producers

See all 2 technologies online

Tested/adopted in



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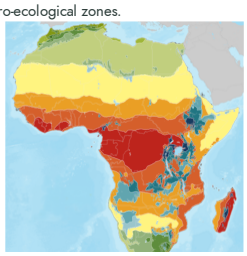


Low-dose pest control: Seed dressing of Seed with Fungicide and Insecticide

Pest control for optimum yields

Fungal wilting of seedling (left) and damage to bean sprout by stem maggots (right)

The "Seed Dressing with Fungicide and Insecticide" technology applies chemical agents to common bean seeds to combat fungal diseases and pests, boosting yields. This cost-effective and environmentally friendly method enhances crop protection making it widely applicable in agriculture.

This technology is TAAT1 validated.

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

Inclusion assessment 4

Climate impact 7

Problem

- Common beans affected by fungal diseases (anthracnose, root rots) and insect pests (stem maggots), causing significant yield losses.
- Risk to profitability of improved crop varieties and farmers' investments in fertilizers.
- Diseases and pests harbored by seeds endanger the integrity of planting material stocks, jeopardizing future crops.
- Soil-borne diseases and insect pests pose severe risks, potentially leading to sparse plant density and crop failure, exacerbating food insecurity and economic instability.

Solution

- Dressing common bean seeds with chemical control agents presents an economical and eco-friendly method to prevent losses and boost production.
- This seed treatment approach leads to superior seedling emergence, reinforcing crop resilience throughout the growing season.
- Seed dressing ensures highly effective crop protection by uniformly applying control agents.
- Seed dressing offers a simple and adaptable solution that doesn't necessitate specialized equipment, making it easily implementable at farms and factories.

Key points to design your project

Identify and develop effective pesticides for seed treatment.

Estimate the quantity of pesticide needed.

Account for delivery costs to project sites and import clearance and duties if relevant, as the technology is available in various African countries.

Enhance the technology by associating it with other practices and technologies.

Collaborate with agricultural development institutes and seed multiplication companies to implement the technology effectively in your country.

50 USD	**500** USD	**2,000** USD	IP
Equipment for manual application	Equipment for mechanized application for a small unit	Equipment for mechanized application for a large unit	Open source / open access

Alliance

The Alliance of Bioversity International and the International Center for Tropical Agriculture (CIAT)

Justin Mabeya Machini

Technology from

ProPAS

Commodities

Common bean

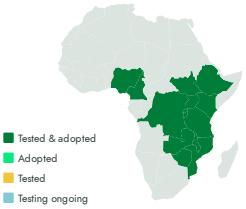
Sustainable Development Goals

Categories

Production, Practices,

Pest control (excluding weeds)

Tested/adopted in



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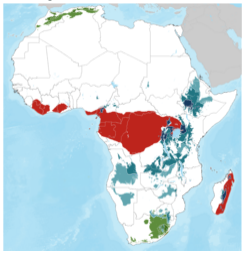


IPM: Integrated Management of Insects, Diseases and Weeds in Wheat

Balanced Protection for Sustainable Harvests

IPM in wheat combines biological and cultural techniques, releasing beneficial organisms through gradual or immediate methods to control pests and reduce chemical reliance. Key practices like crop rotation, adjusted planting times, increased crop density, and mass trapping target aphids, weeds, whiteflies, and thrips effectively.

ICARDA
Zewdie Bishaw

Technology from

ProPAS

Commodities

Wheat

Sustainable Development Goals

This technology is TAAT1 validated.

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

Inclusion assessment 5

Climate impact 6

Problem

- **Emergence of Pesticide-Resistant Pests:** Frequent pesticide use leads to resistant pest biotypes, risking crop damage and reducing yields.
- **Distorted Natural Pest Control:** Excessive pesticide application disrupts natural pest predators, leading to uncontrolled pest populations.
- **Environmental Risks with Chemicals:** Overuse of pesticides can harm soil, water, and ecosystems, posing environmental risks.

Solution

- **Preventing Pesticide Resistance:** IPM employs diverse biological and agronomic methods to reduce reliance on chemical agents, preventing the emergence of pesticide-resistant pests.
- **Restoring Natural Pest Control:** IPM balances populations of beneficial and harmful organisms using biological, mechanical/physical, and cultural techniques, restoring natural pest control mechanisms.
- **Sustainable Crop Protection:** IPM minimizes the use of chemical pesticides, promoting sustainable crop protection and safeguarding food safety and environmental health.

Key points to design your project

Integrated Pest Management (IPM) improves crop productivity and food security while minimizing health risks associated with pesticides. To effectively implement IPM, it is essential:

- To identify pests and beneficial organisms, understand the benefits and costs, access control agents, estimate their required quantities, and provide necessary training.
- To develope communication materials and collaborate with agricultural development institutes for successful integration of IPM into agricultural practices.

17—33 %	<10 %	35 USD per hectare	IP
Reduction in beetle damage	Rust infestation reduction	Profit generated by IPM	Open source / open access

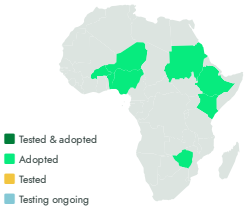
Categories

Production, Practices,
Pest control (excluding weeds),
Weed management

Best used with

Yellow Rust and Stem Rust Resistant wheat, Hessian Fly Resistant Wheat Varieties, Heat and Drought Tolerant Wheat Varieties
See all 3 technologies online

Tested/adopted in



Where it can be used

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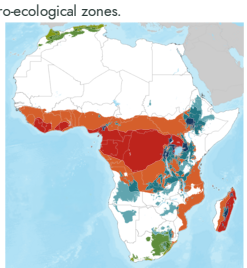


PICS: Hermetic Bags for Safe Storage of grain

Low cost storage technologies for grain

Hermetic bags are like super-sealed containers that stop air and moisture from reaching the grains inside. This way, farmers can store their grains for up to two years without them getting bad. This is good for farmers because it means they always have enough food and can sell their grains for better prices.

PICS

Purdue Improved Crop Storage

PICS GLOBAL

Laurie Kitch

This technology is TAAT1 validated.

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

Inclusion assessment 4

Climate impact 5

Problem

- **Post-harvest losses**: Farmers in Sub-Saharan Africa lose over 25% of beans due to inadequate storage methods.
- **Pest infestations**: Weevils, moths, and mites damage stored beans, forcing farmers to sell at low prices immediately after harvest to minimize losses.
- **Fungal contamination**: Traditional storage can lead to fungal growth, such as aflatoxin, contaminating beans and reducing their quality.
- **Food security issues**: Ineffective storage hinders farmers' ability to keep enough beans for consumption between harvests, threatening food security and livelihoods.

Solution

- **Airtight sealing**: The multi-layer design blocks air and moisture, preventing pest infestations without chemicals.
- **Moisture control**: Hermetic bags maintain stable moisture levels, inhibiting fungal growth like aflatoxin.
- **Long-term preservation**: They preserve beans for up to two years, maintaining quality and cooking time.
- **High durability**: Made from strong, reusable materials, hermetic bags ensure reliable grain storage.

Key points to design your project

To integrate PICS bags into your project:

- **Cost Analysis**: Bags cost $1 to $1.5 each (50kg or 100kg capacity). Estimate the number needed.
- **Supply Chain**: Identify suppliers, including delivery costs and any import duties.
- **Training**: Budget for training sessions and ongoing support.
- **Communication**: Create promotional materials (flyers, videos, etc.).
- **Grain Preparation**: Ensure grains are properly dried before storage, using moisture measurement devices if necessary.

These steps will help enhance food security and reduce post-harvest losses.

Cost: $$$ **2—3 USD**
Bag cost for users

ROI: $$$ **90 %**
Reduction of loss

50 or 100 Kg
Bag capacity

2 year
Life span

IP
Trademark

Technology from

ProPAS

Commodities

Common bean, Rice, Wheat, Maize, Sorghum/Millet, Soybean

Sustainable Development Goals

Categories

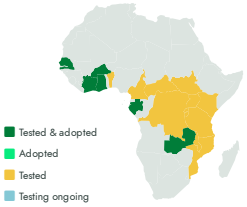
Prevention & storage, Equipment, Post-harvest handling

Best used with

Mechanized Threshing Operations

See all 1 technologies online

Tested/adopted in



Where it can be used

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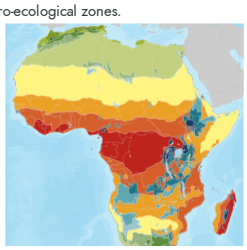


Conservation agriculture: Minimal Tillage and Surface Mulching of Soils

Conservation Agriculture for Sustainable Farming

Later ripening and better grain filling of wheat due to water conservation in no-till system (middle)

Conservation agriculture (CA) includes minimal soil disturbance, surface residue retention, and crop rotation, proven effective in dryland wheat farming. It improves soil quality, water use efficiency, and yield stability, while reducing costs and energy. Additionally, CA enhances soil biodiversity, mitigates emissions, and sequesters carbon, benefiting both farmers and the environment.

This technology is TAAT1 validated.

8·7

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

Inclusion assessment 4

Climate impact 7

Problem

- Excessive tillage and limited organic matter degrade soil quality.
- Droughts, intense rains, and overuse limit water availability.
- Dryland farming yields are low and vulnerable to water scarcity.
- Agriculture contributes to emissions and affects carbon storage.
- Traditional tillage leads to weed competition and yield reduction.

Solution

- Minimal soil disturbance, surface residue retention, and crop rotation.
- Enhanced soil quality, water efficiency, and yield stability.
- Mitigates drought and heat stress on crops.
- Saves water and reduces herbicide usage.
- Manages soil nutrients and pests effectively.
- Suitable for various soil types and water conditions.
- Increases resilience to environmental stresses.

Key points to design your project

The Minimal Tillage and Surface Mulching of Soils technology boosts crop productivity and ensures food security by maintaining consistent yields while conserving water and soil health. This method reduces agriculture's environmental impact, aiding in poverty alleviation and promoting sustainable livelihoods for farmers. To integrate this technology, it is essential to raise awareness of its benefits, ensure equipment accessibility, implement incentives for agroecosystem services, establish connections with food industries for market access, allocate resources for training and ongoing support, collaborate with agricultural institutions, and explore integration with complementary technologies.

15 - 22 %	18 - 21 %	20 %	923 USD/ha	IP
Increase in yield	water use efficiency	increase in income	Increase in profit from wheat production	Open source / open access

ICARDA
Zewdie Bishaw

Technology from

ProPAS

Commodities

Wheat

Sustainable Development Goals

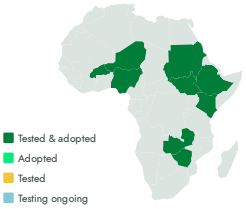
Categories

Production, Practices,
Pest control (excluding weeds),
Water management

Best used with

Yellow Rust and Stem Rust Resistant wheat, Hessian Fly Resistant Wheat Varieties
See all 2 technologies online

Tested/adopted in



Where it can be used

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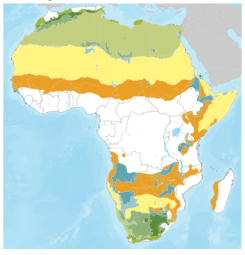


RiceAdvice digital support

Your Digital Guide to Better Harvests

RiceAdvice helps rice farmers optimize their crops! This app takes 10 minutes to answer questions about your farm, then recommends the best fertilizer types, amounts, and timing. It even helps set yield goals and fight weeds efficiently.

Africa Rice Center
Kazuki Saito

This technology is TAAT1 validated.

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

Inclusion assessment 4

Climate impact 2

Problem

- **Inefficient Fertilizer Use:** Wrong amounts and types hurt yields and waste money.
- **Weeds Steal Profits:** Without effective control, weeds can significantly reduce harvest.
- **Guessing Game Yields:** Unclear targets and calendars lead to inefficient farming.
- **Climate Woes:** Adapting to droughts and floods is a constant struggle.
- **Offline Knowledge Gap:** Limited internet access cuts farmers off from vital resources.

Solution

- **Fertilizer Fix:** Get the right amount and type for bigger yields and less waste.
- **Weed Warrior:** Fight weeds with "RiceAdvice-WeedManager" for a cleaner harvest.
- **Yield & Calendar Coach:** Set smart goals and plan your season based on your farm's needs.
- **Climate Champion:** Adapt and thrive despite weather challenges.
- **Offline Access:** Use it even with limited internet (occasional connection needed).

Key points to design your project

RiceAdvice app offers free, field-specific advice for rice farmers.

To integrate in a project:

- Download it and train extension agents to help farmers access the app's features. This includes guidance on nutrients, weeds, yield targets, and climate risks.
- Monitor results and consider collaborating with agricultural groups to promote wider adoption.

While the app is free, consider costs for devices, data, and extension agent support.

0.6—1.8 ton per hectare
Average grain yield

IP
Open source / open access

Technology from

ProPAS

Commodities

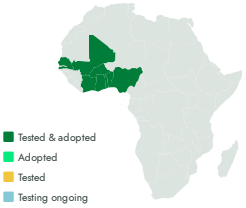
Rice

Sustainable Development Goals

Categories

Production, Digital applications, Advisory and information service

Tested/adopted in



Where it can be used

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

Target groups

Farmers

Rice Threshing and Polishing Machines: Axial flow thresher and improved quality polishing

Efficient rice threshing and polishing for premium quality grains, boosting income and market access in african communities.

Axial flow threshers utilize a rotating drum to separate rice grain from the surrounding husk, while abrasive polishers remove outer bran layers. Key parts are made of stainless steel for durability and hygiene. These equipment can be powered by diesel/petrol generators or solar installations for easy use in rural areas.

Africa Rice Center
Sali Atanga Ndindeng

This technology is TAAT1 validated.

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

Inclusion assessment 4

Climate impact 7

Problem

- High grain losses due to manual threshing methods.
- Inefficiencies in the traditional polishing process, particularly manual rubbing.
- Time-consuming and labour-intensive artisanal practices.
- Difficulty in processing large volumes of rice in communities.

Solution

- The motorized axial flow threshers reduces grain breakage and loss compared to traditional manual methods.
- The mechanized equipment drastically reduces the time and labour required for threshing and polishing.
- The mobile units are designed to be highly mobile and can be easily transported to even remote rural areas.

Key points to design your project

The adoption of Axial flow thresher and improved quality polishing offers a solution to enhance agricultural efficiency and reduce labor-intensive tasks. Key steps to integrate this technology include:

- Inform rice farmers, cooperatives and millers about the benefits of motorized threshers and polishers for increasing value addition and market access, and reducing post-harvest costs and losses.
- Identify suitable setup and size of mobile rice processing equipment
- Establish reliable supply of rice by drawing up contracts and delivery schedules for farmers.
- Provide loans to community-based and commercial processors for acquiring mobile units.

15000—20000 USD
Advanced polishers and whiteners

3000 USD
Small bench-top polishers

IP
Patent granted

Technology from

ProPAS

Commodities

Rice

Sustainable Development Goals

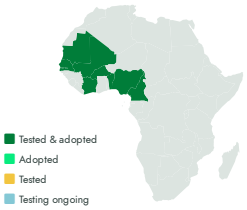
2 ZERO HUNGER

8 DECENT WORK AND ECONOMIC GROWTH

Categories

Post-production, Equipment, Post-harvest handling

Tested/adopted in



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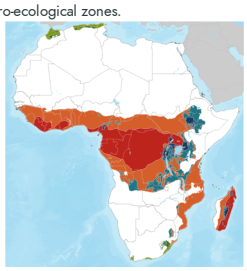


Target groups

Farmers

NERICA: High yield rice varieties for Africa

NERICA: Higher Yields, Resilience, and Profitability for African Farmers.

NERICA varieties are tailored for African conditions, offering high yields (2 to 6 tons per hectare), resistance to weeds and drought, and adaptability to poor soils. They show moderate resistance to diseases and pests, reducing the need for chemical interventions and promoting sustainable agriculture in Africa.

This technology is TAAT1 validated.

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

Inclusion assessment 4

Climate impact 4

Problem

- Traditional rice varieties often yield less, impacting food security and farmers' income.
- Conventional varieties are more susceptible to pests and diseases, leading to yield losses.
- Many varieties struggle in nutrient-poor soils and under erratic rainfall.
- Insufficient local production leads to heavy reliance on imported rice, affecting economic stability.

Solution

- NERICA varieties yield more, ensuring food security and higher income.
- They resist pests and diseases, reducing chemical use.
- Thrives in poor soils and limited water, suitable for diverse environments.
- Boosts local production, enhancing economic stability.
- Accessible to small-scale growers, improving practices and income.

Key points to design your project

To integrate NERICA technology into your project, consider the following steps:

- Develop NERICA varieties tailored to local growing conditions.
- Conduct awareness campaigns to highlight the benefits of planting improved rice varieties.
- Ensure equitable access and financial support for local suppliers and farmers.
- Estimate seed quantity needed, including technology costs and delivery expenses.
- Engage a team of trainers for installation support and develop communication materials.
- Consider optimizing NERICA with other agricultural practices like nitrogen management and weed control.
- Collaborate with agricultural institutes and seed companies for implementation.

1.7—0.7 ton per ha
with and without fertilizer

IP
Open source / open access

Africa Rice Center
Sali Atanga Ndindeng

Technology from

ProPAS

Commodities

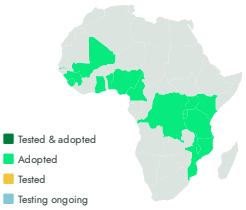
Rice

Sustainable Development Goals

Categories

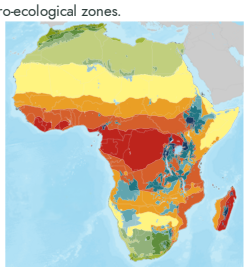
Production, Improved varieties, Yield improvement, Drought tolerance

Tested/adopted in



Where it can be used

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



Target groups

Farmers, Seed companies

GEM system: Parboiling equipment for rice

Reduce milling losses, enhance nutritional and organoleptic quality

The technology improves rice parboiling with a new design, replacing traditional methods prone to emissions. Tailored for small to medium-scale processors, it enhances efficiency and product quality, reducing steaming time and improving grain quality significantly.

Africa Rice Center
Sali Atanga Ndindeng

This technology is TAAT1 validated.

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

Inclusion assessment 4

Climate impact 4

Problem

Traditional, Old-Fashioned Parboiling Methods are:

- Inefficiency and high labor requirements
- Excessive losses during dehulling
- Degradation of nutritional value
- Inferior sensory qualities

Solution

- Reduces steaming time to 20-25 minutes, minimizing emissions exposure.
- Improves grain translucency, reduces chalkiness, and boosts nutritional value.
- Provides low glycemic index, increased fiber, and higher vitamin B availability.
- Allows longer storage as rice flour, aiding food security.
- Made from simple, locally available materials.

Key points to design your project

To integrate it into your project, follow these steps:

- Raise awareness among processors and consumers about GEM parboiling systems.
- Assist in selecting the right system size and configuration.
- Ensure a steady supply of high-quality rice.
- Develop marketing strategies for rice flour and derived products.

0.64 USD
firewood per 100kg of rice

IP
Open source / open access

Technology from

ProPAS

Commodities

Rice

Sustainable Development Goals

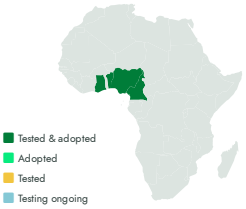
Categories

Post-production, Equipment, Agrifood processing

Best used with

Advanced rice varieties for Africa, High yield rice varieties for Africa, RiceAdvice digital support
See all 3 technologies online

Tested/adopted in



Where it can be used

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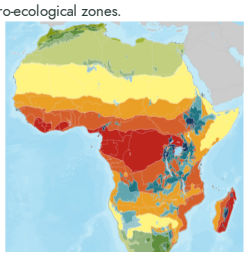


Special Chicken Breed: Dual-Purpose Chicken for Small-Scale Producers

High-Performance Breeding Chicken Breed

The "Dual-Purpose Chicken for Small-Scale Producers" technology focuses on developing and distributing chicken breeds suitable for both high egg production and meat yield. These specialized chickens possess traits like low cost, disease resistance, and efficient feed utilization.

ILRI
INTERNATIONAL LIVESTOCK RESEARCH INSTITUTE

International Livestock Research Institute (ILRI)
Tunde Amole

This technology is TAAT1 validated.

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

Inclusion assessment 4

Climate impact 4

Problem

- Low Egg and Meat Productivity in Indigenous Chickens
- High Mortality Rate in Indigenous Chickens
- Limited Performance and Adaptability of Indigenous Breeds
- Challenges in Rearing and Distribution for Small-Scale Farmers
- Need for Adaptation and Regional Adjustments

Solution

- Introduction of dual-purpose chicken breeds addressing low productivity and high mortality.
- Establishment of parent stock farms and hatcheries for consistent supply.
- Distribution through brooder units for proper chick care.
- Enhanced performance in free-range systems with adaptability to local conditions.
- Technical support and empowerment for operators.

Key points to design your project

- Enhances poultry productivity for rural poverty alleviation and food security
- Empowers women, creates jobs, and supports economic growth in rural areas
- Improves poultry industry through innovative breeding and distribution
- Fosters sustainable agriculture and conserves biodiversity
- Requires building infrastructure, acquiring equipment, and estimating costs for integration
- Collaboration with agricultural institutes and consideration of complementary technologies recommended

1.5—2.0 kg	**120—180 eggs**	**IP**
Weight of chickens in 3 months	Production by chickens per year	Open source / open access

Technology from

ProPAS

Commodities

Poultry

Sustainable Development Goals

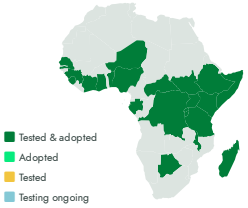
Categories

Production, Improved varieties, Yield improvement

Best used with

Semi-Automatic Incubator for artificial hatching
See all 1 technologies online

Tested/adopted in



Where it can be used

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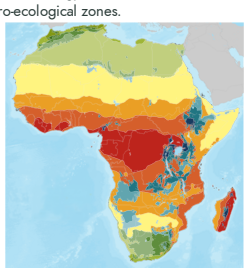


Target groups

Small Ruminant Containment in Protective Sheds

Secure Shelters, Thriving Flocks

Upper-end protective containment of goats and sheep

Small Ruminant Containment in Protective Sheds is a cost-effective technology providing essential shelter for goats and sheep. Constructed from local materials, these sheds protect livestock from predators, weather, and diseases, while ensuring ventilation, drainage, and feeding facilities. They contribute to animal health, productivity, waste management, and biosecurity, offering an affordable and adaptable solution for small-scale farmers.

ILRI
INTERNATIONAL LIVESTOCK RESEARCH INSTITUTE

International Livestock Research Institute (ILRI)
Adeniyi Adediran

This technology is TAAT1 validated.

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

Inclusion assessment 4

Climate impact 7

Problem

- **Security**: Risk of predator attacks and theft.
- **Basic Needs**: Difficulty in finding food and shelter.
- **Health**: Risk of disease transmission.
- **Cost**: High expense of building shelters.

Solution

- **Safety & Health**: Protects livestock from predators and diseases.
- **Environment**: Shields from weather and manages waste.
- **Biosecurity**: Reduces disease transmission.
- **Affordability**: Cost-effective and adaptable for small-scale farmers.

Key points to design your project

Small Ruminant Containment in Protective Sheds is a technology that positively impacts gender equality, climate, and contributes to SDGs. It provides an affordable livestock management method, mitigates climate change effects, and contributes to SDGs 1, 2, 13, and 15.

For project managers aiming to promote this technology among breeders, the approach includes:

- **Awareness Campaigns**: Educate breeders about the technology's benefits.
- **Training Programs**: Train breeders on shed construction and maintenance.
- **Demonstration Sites**: Show the technology in action.
- **Compatible Technologies**: Promote integration with other livestock management practices.
- **Key Partners**: Collaborate with local artisans and agricultural organizations.

This approach ensures successful technology adoption, leading to improved livestock management and productivity.

12,000 USD
Benefit in a year

IP
Open source / open access

Technology from

ProPAS

Commodities

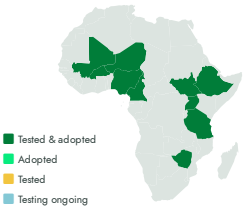
Small livestock

Sustainable Development Goals

Categories

Production, Equipment, Production System

Tested/adopted in



Where it can be used

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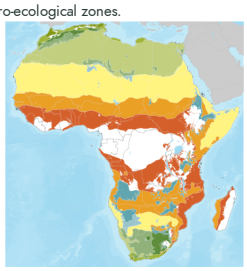


Target groups

Breeders

Short-Term Fattening and Supplemental Feeding

Fast Feed, Fast Fatten, Fast Fortune: The Future of Livestock Farming!

Goat fattening with excess feed and limited movement

The technology is a strategic feeding method used in feedlots to quickly fatten livestock, particularly goats and sheep, for slaughter. It aims for optimal fat deposits and three fattening cycles per year, timed with festive seasons for peak demand and prices. This ensures quick turnover, aligns with market dynamics, and makes the practice profitable and responsive to market needs.

International Livestock Research Institute (ILRI)
Adeniyi Adediran

This technology is TAAT1 validated.

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

Inclusion assessment 4

Climate impact 7

Problem

- Limited space for extensive livestock farming.
- High risks associated with livestock ventures.
- Long timeframes for returns in traditional farming.
- Challenges in implementing movement restrictions for intensive feeding.

Solution

- Feedlot Farming: Maximizes space usage.
- Profitable Turnover: Minimizes risks.
- Quick Returns: Ensures fast results.
- Effective Restrictions: Manages animal movement.

Key points to design your project

This technology aids in achieving SDG 2 (Zero Hunger) by boosting meat production and can support SDG 5 (Gender Equality).

For successful integration into a project, key steps include:

- Engaging stakeholders to tailor the technology to regional needs.
- Training breeders on the technology and its benefits.
- Developing necessary infrastructure like feedlots and feed storage.
- Managing supply chain for steady animal and feed supply.
- Monitoring and evaluating the project's progress and impact.

These steps should align with regional context and government livestock farming policies.

70 USD
cost to finish a young animal in four months

IP
Open source / open access

Technology from

ProPAS

Commodities

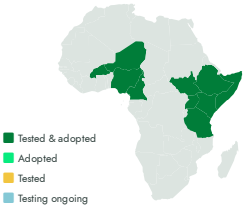
Small livestock

Sustainable Development Goals

Categories

Production, Practices, Animal feed management

Tested/adopted in



Where it can be used

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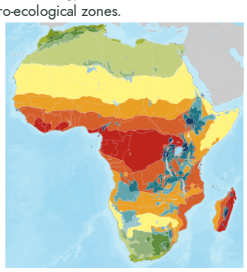


Target groups

Breeders

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.

ILRI
INTERNATIONAL LIVESTOCK RESEARCH INSTITUTE

International Livestock Research Institute (ILRI)
Tunde Amole

This technology is TAAT1 validated.

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

Inclusion 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.

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

Technology from

ProPAS

Commodities

Cassava

Sustainable Development Goals

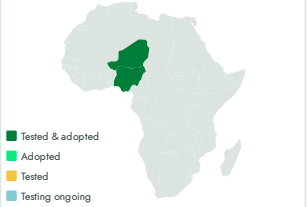
Categories

Post-production, Equipment, Animal feed production

Best used with

Pneumatic Cassava Dryers
See all 1 technologies online

Tested/adopted in



Where it can be used

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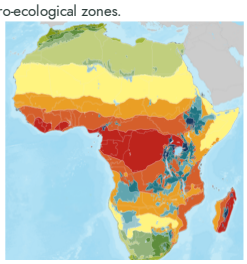


CBC: Cassava Business Connector

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.It enables real-time tracking, communication.

International Institute of Tropical Agriculture (IITA)
Adebayo Abass

This technology is **not yet validated**.

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

Inclusion 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

Technology from

ProPAS

Commodities

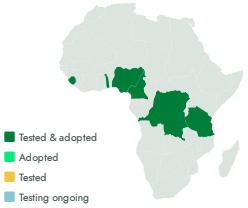
Cassava

Sustainable Development Goals

Categories

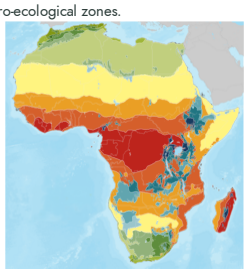
Marketing, Digital applications, Market linkage

Tested/adopted in



Where it can be used

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



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

Inclusion 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.

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

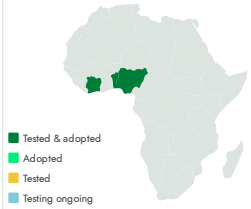
Categories

Production, Improved varieties, Yield improvement, Quality improvement

Best used with

Digital Decision Support Tool
See all 1 technologies online

Tested/adopted in



Where it can be used

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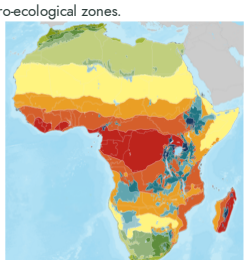


Seed Inoculation with Rhizobia

Boosting Crops, Nourishing Communities

The "two-step" procedure of seed inoculation that results in effective coverage with elite rhizobial (Source: the N2Africa Project)

Seed inoculation with elite rhizobium strains boosts legume yields by addressing nitrogen limitations through Biological Nitrogen Fixation (BNF). This cost-effective practice enhances crop production on small-scale farms in Africa, reducing reliance on expensive fertilizers, promoting environmental sustainability, and ensuring food, nutrition, and income security for farmers.

International Institute of Tropical Agriculture (IITA)
David Ojo

This technology is TAAT1 validated.

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

Inclusion assessment 4

Climate impact 7

Problem

- **Nitrogen Deficiency**: Soils often lack sufficient nitrogen for plant growth.
- **Incompatible Rhizobia**: Newly introduced legume species may not be compatible with local rhizobia, leading to low yields.
- **Soil Health**: Maintaining soil fertility and health is a constant challenge.
- **Plant Diseases**: Farmers constantly battle against diseases that can devastate crops.
- **Sustainability**: Balancing economic viability with environmental sustainability is a major concern.

Solution

- **Biological Nitrogen Fixation**: Rhizobia address nitrogen deficiency.
- **Specific Strain Introduction**: Inoculation ensures the presence of the needed rhizobia.
- **Rhizobia Population Boost**: Inoculation guarantees optimal nodulation and nitrogen fixation.
- **Sustainable Farming**: Rhizobia promote sustainable agriculture.
- **Stress-Tolerant Strains Introduction**: Inoculation mitigates effects of stress on nitrogen-fixing symbiosis.

Key points to design your project

Rhizobia inoculant technology is a win-win for Africa:

It boosts food security (SDG 2), increases legume yields mean more food and income for farmers, especially women (SDG 5). Climate-smart agriculture (SDG 13), less reliance on chemical fertilizers reduces emissions.

To integrate this tech in your project, consider:

- Partnering with experts for training and quality control.
- Selecting suitable legumes and effective, adaptable rhizobia strains.
- Ensuring cost-effectiveness and proper distribution with storage and quality checks.
- Educating farmers and monitoring project success.

IP

Unknown

Technology from

ProPAS

Commodities

Soybean, Common bean

Sustainable Development Goals

Categories

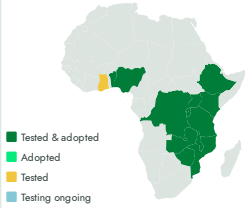
Production, Inputs, Inoculant

Best used with

Climbing Bean with High Yield and N Fixation, Biofortified Beans for Improved Nutrition, Specialty Fertilizer Blends for Common Bean

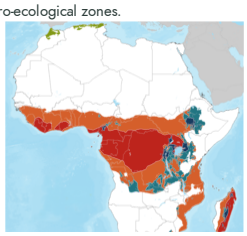
See all 3 technologies online

Tested/adopted in



Where it can be used

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



Pre-Cooked Beans for Consumer Convenience

Advanced approach for quick, convenient, and delicious bean

Pre-cooked whole beans are available in dried, canned, and frozen forms, offering quick preparation times of 10 to 30 minutes. The process involves sorting, washing, blanching, soaking, sterilizing, and cooking the beans before packaging. They can be marketed locally and for export.

Alliance

The Alliance of Bioversity International and the International Center for Tropical Agriculture (CIAT)

Justin Mabeya Machini

This technology is TAAT1 validated.

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

Inclusion assessment 4

Climate impact 6

Problem

- Lengthy cooking time, high energy, and water needs discourage dried common beans consumption.
- Poorer households avoid dried beans due to time, fuel, and water constraints.
- Traditional bean prep methods hinder access to nutritious diets.
- Limited market opportunities and profits for farmers and processors in the bean value chain.

Solution

- Drastically reduces bean cooking time
- Cuts cooking costs by 90%, saving energy
- Boosts demand for farmers, improving market access
- Strengthens the bean value chain in Sub-Saharan Africa
- Convenient for homemakers and caterers
- Reduces wood and fuel usage, mitigating carbon emissions

Key points to design your project

This technology can be integrated into nutrition projects as an alternative protein source and presents opportunities for food processors and supermarkets.

To integrate the technology, activities include raising awareness, formulating product standards, ensuring reliable bean supply, installing efficient equipment, and providing training.

Collaboration with food processor companies is recommended for implementation.

1,500 USD	20,000 USD	IP
Per mall electric cooker system for making pre-cooked beans with a capacity of 100 liter	Per large hot water boiler powered with petrol or natural gas with a capacity of 0.5 ton per hour	Unknown

Technology from

ProPAS

Commodities

Common bean

Sustainable Development Goals

Categories

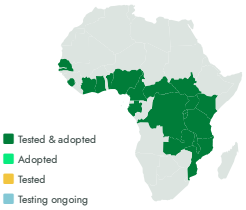
Post-production, Practices, Agri-food processing

Best used with

Biofortified Beans for Improved Nutrition

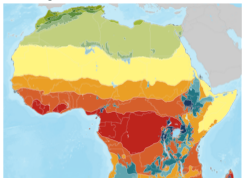
See all 1 technologies online

Tested/adopted in



Where it can be used

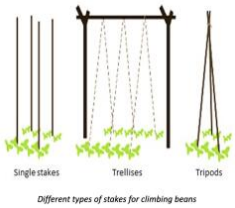
This technology can be used in the colored agro-ecological zones.



Low-Cost Staking for Climbing Beans

Empowering Beans, Sustaining Growth!

The Low-Cost Staking practice provides affordable solutions for supporting climbing bean cultivation, aiming to reduce reliance on wooden stakes and mitigate deforestation caused by their overharvesting.



Different types of stakes for climbing beans

Alliance

The Alliance of Bioversity International and the International Center for Tropical Agriculture (CIAT)

Justin Mabeya Machini

This technology is TAAT1 validated.

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

Inclusion assessment 4

Climate impact 7

Problem

- Farmers face expense issues with plant support, leading to yield losses.
- Shortage of wooden stakes affects plant density and yield.
- Overharvesting of stakes harms forests and afforestation efforts.
- Knowledge of optimal density and stake length varies with method.

Solution

- Offers farmer-acceptable, lower-cost staking innovations.
- Utilizes tripod arrangements and string trellises to reduce wooden stakes.
- Recommends the use of agroforestry species and tall grasses for stakes.
- Improved yield and climbing bean production.

Key points to design your project

- The technology reduces bean cultivation costs, aiding poverty alleviation among small-scale farmers.
- It boosts food security with improved yields and creates job opportunities in rural areas.
- By promoting eco-friendly practices, it reduces reliance on deforestation for stakes and supports sustainability.
- Steps to integrate the technology include raising awareness, disseminating information, ensuring access to loans, and collaborating with agricultural institutions.
- Consider integrating complementary technologies for enhanced efficiency.

300 %
Increase in yields compared to bush beans

20,000—50,000 stakes per hectare
Staking density for highest yields

2 meters
Height of stakes for highest yields

~200,000 plants
Plant population per hectare

IP
Open source / open access

Technology from

ProPAS

Commodities

Common bean

Sustainable Development Goals

Categories

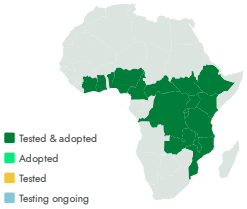
Production, Practices, Yield improvement, Production system

Best used with

Climbing Bean with High Yield and N Fixation

See all 1 technologies online

Tested/adopted in



Where it can be used

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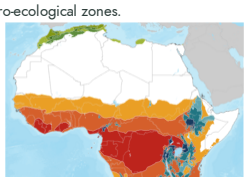


Bean Flour and Flour Products: Bean processing process

Bean Flour Made Easy

The "Bean flour and flour-based products" technology processes common beans into flour, enhancing their nutrition and shelf life. It offers economic opportunities for farmers and businesses, with scalable equipment suitable for various production scales in both rural and urban settings.

Alliance

The Alliance of Bioversity International and the International Center for Tropical Agriculture (CIAT)

Munthali Justice

This technology is TAAT1 validated.

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

Inclusion assessment 4

Climate impact 5 2

Problem

- Whole beans require significant time and energy for preparation, reducing appeal to urban consumers.
- Traditional bean preparation methods remain unattractive despite pre-cooked options due to time and energy constraints.
- Common beans contain substances that hinder protein, starch, and mineral absorption in the gut, affecting nutrition and digestibility.
- Processing newly harvested and tough-to-cook beans presents challenges in both palatability and preparation efficiency.

Solution

- Technology produces popular bean products in Sub-Saharan Africa.
- Begins with high-quality flour, reducing cooking time and costs.
- Processing boosts vitamin and nutrient availability.
- Methods like soaking and pressure cooking enhance bean digestibility.
- Bean flour prolongs product freshness.
- Provides lucrative markets for farmers and entrepreneurs.
- Opens new markets, reduces transportation costs, and enables new products.

Key points to design your project

To integrate this technology into your project:

- Conduct awareness campaigns on the benefits of bean flour technology.
- Collaborate with local farmers and agri-food companies for a steady bean supply.
- Establish processing plants with efficient equipment.
- Provide training programs for operators and workers on safety and quality use.
- Ensure regulatory compliance with food safety standards and licensing requirements.

Consider engaging a team of trainers for installation support, including costs for training and post-training assistance. Develop communication materials like flyers, videos, and radio broadcasts.

Additionally, consider incorporating "Biofortified beans for improved nutrition" into your project to address key challenges and contribute to a healthier, more resilient future.

4 USD	**1,500** USD	**2,000** USD	IP
Bean flour per kg	Soaking tanks of 500 liter	Mills with a capacity of 300 kg hour-1	Open source / open access

Technology from

ProPAS

Commodities

Common bean

Sustainable Development Goals

Categories

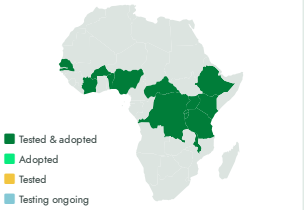
Post-production, Practices, Agri-food processing

Best used with

Biofortified Beans for Improved Nutrition

See all 1 technologies online

Tested/adopted in



Where it can be used

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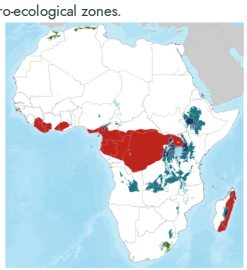


Advanced Weed Management: Mechanical and Chemical Weed Management

Mechanized weeders: A mini-tiller with vertical tines (left), a cutter with horizontal rotating blade (center), and a multi-purpose backpack weeder (right)

Weed Management for Optimal Yield

The Mechanical and Chemical Weed Management technology combines mechanical and chemical methods to control weeds in agricultural fields effectively. It aims to maximize crop yields by removing weeds throughout the growing season, improving crop health, and boosting agricultural productivity.

This technology is TAAT1 validated.

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

Inclusion assessment 4

Climate impact 7

Problem

- Common beans suffer significant yield losses due to weed encroachment.
- Weeds compete with beans for resources, hindering root and shoot development.
- Weed infestation can lead to pest and disease issues for common beans.
- Shading by tall weeds increases the risk of bean stem lodging.
- Manual weed removal is labor-intensive and costly, impacting bean farming productivity.

Solution

- Increased productivity and higher yields
- Reduced labor and costs compared to manual weed removal
- Enhanced crop health by eliminating weeds that harbor pests and diseases
- Adaptability to various common bean growing areas
- Improved profitability and economic sustainability for farmers

Key points to design your project

The technology enhances agricultural productivity, promotes food security, and creates employment while streamlining weed management and preserving land quality. To integrate it into your project:

- Raise awareness and provide capacity development.
- Facilitate access to financial support.
- Estimate costs for fertilizers and mechanical weeders.
- Consider delivery costs and import clearance.
- Provide training and post-training support.
- Develop communication materials.
- Integrate with other management practices.
- Collaborate with relevant institutions and suppliers.

27 USD	**46** USD/ha	**743** USD	IP
Pre-emergent herbicide and labor/Ha	Equipment and labor	Net profit per Ha from implementing the technology in Ethiopia	Open source / open access

Alliance

The Alliance of Bioversity International and the International Center for Tropical Agriculture (CIAT)

Justin Mabeya Machini

Technology from

ProPAS

Commodities

Common bean

Sustainable Development Goals

+ 1 more

Categories

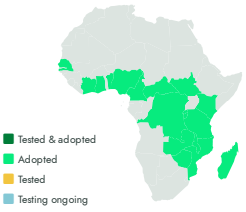
Production, Equipment, Weed control

Best used with

Integrated Management of Insects, Diseases and Weeds in common bean

See all 1 technologies online

Tested/adopted in



Where it can be used

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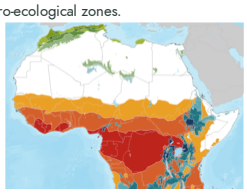


Value-added Processing of Bananas and Plantain

Banana and Plantain Processing for a Healthier Diet

This technology involves the processing of bananas (ripe or unripe) into valuable products like flour, purees, and chips. Unripe fruits are dried and ground into flour (good for baking!), while ripe ones are pulped for drinks and snacks. The technology works for small or large-scale production.

Banana flour has a growing demand as a wheat substitute

International Institute of Tropical Agriculture (IITA)
Patchimaporn Udomkun

This technology is TAAT1 validated.

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

Inclusion assessment 4

Climate impact 7

Problem

- **Postharvest Losses**: Bananas and plantains are perishable crops, prone to rapid deterioration after harvest, resulting in significant losses.
- **Unattractive Appearance**: Traditional flour processing can yield a brownish color, which may not be appealing to consumers.

Solution

- **Extended Shelf Life:** Processing like flour production and pulping creates longer-lasting banana and plantain products, reducing waste.
- **Enhanced Flour Quality:** Blanching and special soaking techniques improve flour color and functionality for baking and food production.

Key points to design your project

The Value-added Processing of Bananas and Plantain technology offers numerous benefits, including job creation and waste reduction, aligning with Sustainable Development Goals such as zero hunger and decent work.

To ensure its adoption by farmers, key activities include:

- Awareness campaigns
- Technology demonstrations
- Access to inputs and markets
- Financial support
- Monitoring and evaluation
- Capacity building

Prioritizing gender-inclusive training and sustainable practices in government projects can amplify its positive impact.

10000—60000 USD
Equipment for the automatic production of fried banana chips (100-500 kg/hour)

1,500 USD
Commercial presses for producing banana pulp (0,5 ton/hour)

IP
Open source / open access

Technology from

ProPAS

Commodities

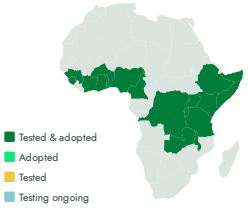
Bananas & plantains

Sustainable Development Goals

Categories

Post-production, Equipment, Post-harvest handling, Agrifood processing

Tested/adopted in



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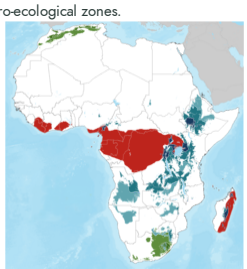


Target groups

Processors

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

Inclusion 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

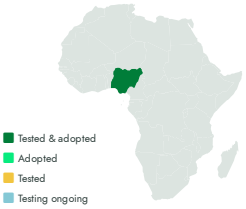
Cassava

Sustainable Development Goals

Categories

Production, Improved varieties, Yield improvement, Quality improvement

Tested/adopted in



Where it can be used

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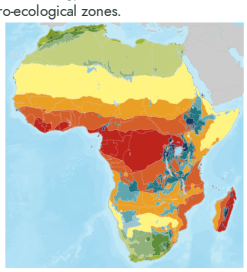


Target groups

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

Inclusion 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.

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

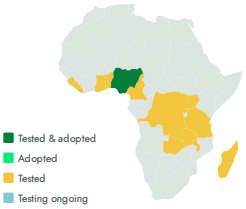
Sustainable Development Goals

2 ZERO HUNGER
3 GOOD HEALTH AND WELL-BEING
8 DECENT WORK AND ECONOMIC GROWTH

Categories

Post-production, Equipment, Agrifood processing

Tested/adopted in



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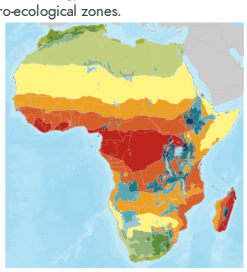


Target groups

Processors

Hide Curing and Secondary Leatherworks

Turning hides into leather to enrich communities

The "Hide Curing and Secondary Leatherworks" technology underscores the importance of properly treating animal hides to maximize their value. Hides can be processed into various high-value products such as shoes, handbags, and clothing.

This technology is TAAT1 validated.

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

Inclusion assessment 3

Climate impact 5

Problem

- Without proper treatment, hides, which are highly valuable, may be discarded or used as food along with the carcass.
- Communities with access to hides may lack the means to process them, missing out on potential economic benefits.
- Without effective curing and tanning methods, hides may not be preserved optimally, resulting in lower-quality products.

Solution

- This technology promotes the treatment of hides through cleaning, drying, and specialized methods, ensuring they are not wasted and can be utilized in the production of valuable items such as bags and shoes.
- It aims to educate individuals on the necessary skills for working with hides, providing them with the appropriate tools and materials to effectively process hides.
- Additionally, it assists local communities in establishing small businesses for hide processing, enabling them to create products and generate profits.

Key points to design your project

Hide curing and secondary leatherworks technology maximizes the value of livestock production by creating valuable leather products. To integrate this technology effectively:

- Understand the process: Learn hide curing and leatherworks techniques to ensure hides are properly treated.
- Invest in skills and materials: Provide training and access to tools for artisans to work with hides effectively.
- Establish local businesses: Help communities set up small businesses focused on hide processing to generate profit.

IP

Open source / open access

International Livestock Research Institute (ILRI)
Adeniyi Adediran

Technology from

ProPAS

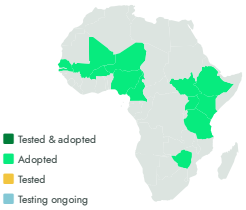
Commodities

Sustainable Development Goals

Categories

Post-production, Practices

Tested/adopted in



Where it can be used

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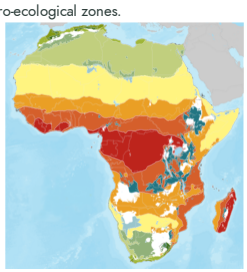


Target groups

Breeders

Ethical Meat Processing: Humane Slaughtering and Meat Inspection

Enhance meat quality while prioritizing animal welfare.

The technology focuses on humane slaughtering practices in the meat processing industry. It ensures that animals are killed swiftly and without suffering, adhering to ethical standards.

Bleeding of a humanely stunned small ruminant (FAO)

ILRI
INTERNATIONAL LIVESTOCK RESEARCH INSTITUTE

International Livestock Research Institute (ILRI)
Adeniyi Adediran

This technology is TAAT1 validated.

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

Inclusion assessment 4

Climate impact 5

Problem

- Animals often face mistreatment during transportation and slaughter,
- Stress and suffering experienced by animals can lead to biochemical changes, affecting the flavor and shelf life of the meat.
- Many slaughterhouses fail to comply with humane slaughtering regulations,

Solution

- It advocates for the use of suitable methods and equipment for transporting animals.
- Animals are provided with overnight rest in appropriately sized holding pens.
- Emphasis is placed on bleeding the animal within one minute of unconsciousness, ensuring a swift and humane process.
- All stages of the slaughtering and carcass dressing process are subject to certified meat inspection.

Key points to design your project

To integrate humane slaughtering and meat inspection technology into your project, follow these steps:

- Conduct awareness campaigns on the benefits of humane slaughtering and improved meat inspection.
- Develop investment and regulatory frameworks with public and private entities.
- Provide training for slaughterhouse operators and meat inspectors.
- Facilitate access to low-interest credit for modernizing facilities.

25—35 %
Dressed meat value added

IP
Open source / open access

Technology from

ProPAS

Commodities

Livestock

Sustainable Development Goals

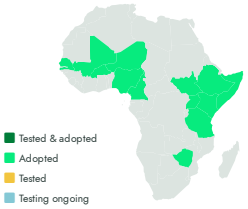
2 ZERO HUNGER

12 RESPONSIBLE CONSUMPTION AND PRODUCTION

Categories

Post-production, Practices, Agri-food processing

Tested/adopted in



Where it can be used

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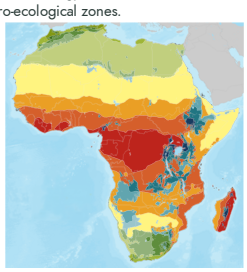


Target groups

Breeders

Thermostable vaccine against PPR disease

Reliable, Effective, and Accessible Disease Control for Small Ruminants.

The vaccine, available in two forms, effectively protects small ruminants against PPR. The ILRI thermotolerant PPR vaccine, produced through the Thermovac process, and Xerovac are both stable at ambient temperatures, even enduring spikes of 38°C for 9 days and 40°C for 7 days.

International Livestock Research Institute (ILRI)
Tunde Amole

This technology is TAAT1 validated.

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

Inclusion assessment 5

Climate impact 5

Problem

- High mortality rates among small ruminants due to PPR.
- Limited vaccine storage options hindering widespread use.
- Economic losses estimated at USD 2.1 billion yearly.
- Previous constraints in maintaining vaccine stability.
- Restricted coverage of vaccination campaigns.

Solution

- No need for cold storage, easing access and logistics.
- Effective for up to two weeks without refrigeration.
- Demonstrated efficacy in multiple countries against PPR.
- Reduces storage costs, making it more affordable.
- Vaccinates more animals in less time, enhancing disease control.

Key points to design your project

The technology reduces economic losses and poverty among small ruminant farmers by preventing PPR outbreaks and improving food security. It also enhances animal health, reduces disease spread, and promotes economic growth. To integrate this technology into your project:

1. Ensure availability and affordability of thermostable vaccines.
2. Educate producers on PPR vaccination benefits and encourage their investment.
3. Ensure compliance with vaccination instructions.
4. Train and certify animal health professionals.

Calculate required product quantity based on a cost of 0.3-0.5 USD per animal. Consider additional expenses like delivery, import clearance, and duties if sourced from specific countries. Budget for training and support during project implementation and consider collaborating with agricultural institutes.

IP

Open source / open access

Technology from

ProPAS

Commodities

Small livestock

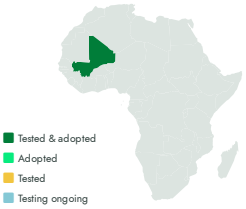
Sustainable Development Goals

+ 1 more

Categories

Production, Inputs, Pesticide

Tested/adopted in



Where it can be used

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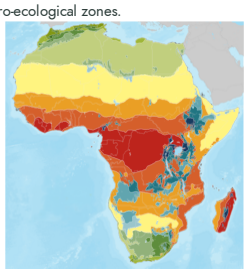
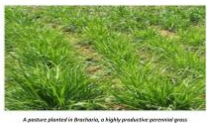


Target groups

Breeders

Best practices in pasture management: Pasture Improvement



A pasture planted in Brachiaria, a highly productive perennial grass

Revitalize Your Pastures, Sustain Your Livestock

This technology aims to enhance productivity in managed pastures through intensive management practices like fertilization, seeding, and irrigation. It includes controlling weeds, partially disturbing the land, and introducing high-yield grasses and legumes, along with other methods such as planting grazing species in croplands and establishing shrub hedgerows.

ILRI
INTERNATIONAL LIVESTOCK RESEARCH INSTITUTE

International Livestock Research Institute (ILRI)
Tunde Amole

This technology is TAAT1 validated.

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

Inclusion assessment 4

Climate impact 7

Problem

- Limited Access to Affordable Feed
- Inefficient Pasture Establishment
- Climate and Region-specific Challenges
- Weed Invasion and Reduced Productivity
- High Costs of Pasture Establishment
- Limited Knowledge Sharing and Accessibility

Solution

- Provides cost-effective methods for establishing pastures.
- Reduces reliance on expensive purchased feed.
- Equips producers with valuable pasture management skills.
- Advises on suitable species and management practices.
- Tailors advice to the region's climate and conditions.
- Offers strategies for weed management and productivity.

Key points to design your project

- Steps to incorporate the technology into a project include identifying project needs, conducting training sessions, selecting suitable pasture species and practices, ensuring access to quality seeds and inputs, implementing management practices, and collaborating with stakeholders.
- Budget estimation involves allocating costs across land preparation, weed control, fertilizer, and seed, considering an average cost of USD 400 to 600 per hectare spread over several years.
- Adequate training and post-training support are essential, along with the development of communication materials to promote the technology.
- Collaboration with private seed companies, cooperatives, seed growers, and farmers is crucial for successful technology implementation.

IP

Open source / open access

Technology from

ProPAS

Commodities

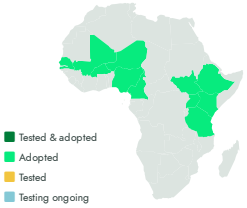
Small livestock

Sustainable Development Goals

Categories

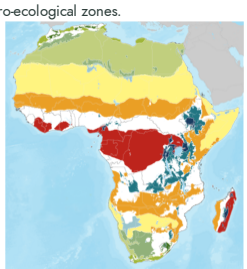
Pre-production, Practices,
Animal feed management

Tested/adopted in



Where it can be used

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



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

Inclusion 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

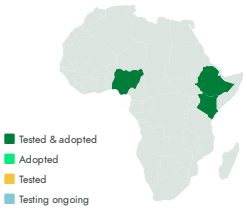
Sustainable Development Goals

8 DECENT WORK AND ECONOMIC GROWTH

Categories

Production, Inputs, Fertilizer

Tested/adopted in



Where it can be used

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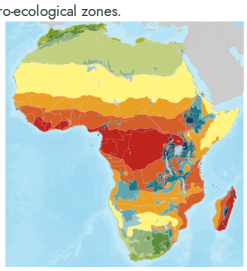


Target groups

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

Inclusion 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).

20-30 USD/ha	**28-46** USD/ha	IP
Cost for herbicide application	Cost for weed removal labor	Open source / open access

Technology from

ProPAS

Commodities

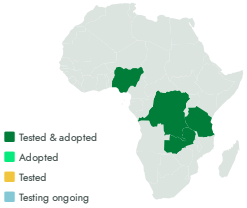
Cassava

Sustainable Development Goals

Categories

Production, Practices, Weed management

Tested/adopted in



Where it can be used

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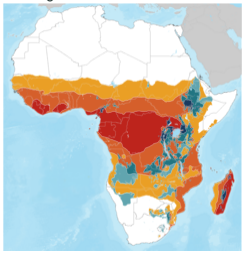


Target groups

Farmers

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

Inclusion 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.

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

Technology from

ProPAS

Commodities

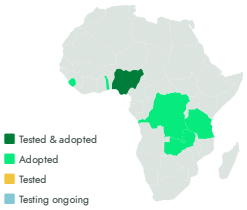
Cassava

Sustainable Development Goals

Categories

Pre-production, Practices, Seed system

Tested/adopted in



Where it can be used

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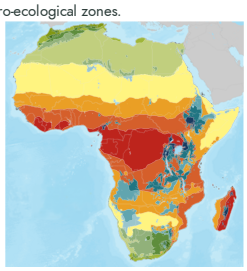


Target groups

Farmers

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.

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

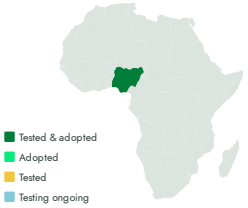
Cassava

Sustainable Development Goals

Categories

Post-production, Equipment, Agrifood processing

Tested/adopted in



Where it can be used

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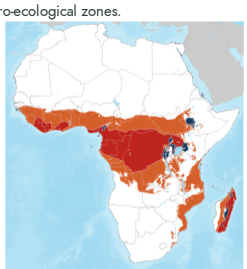


Target groups

Processors

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

Inclusion 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.

13 USD/ha	**25** USD/ha	IP
Cost of mechanized planting	Cost of mechanized harvesting	Open source / open access

Technology from

ProPAS

Commodities

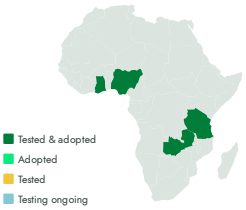
Cassava

Sustainable Development Goals

Categories

Production, Equipment, Land preparation

Tested/adopted in



Where it can be used

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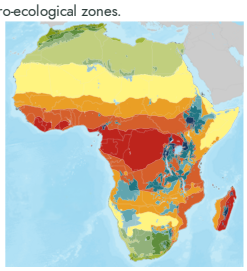


Target groups

Farmers

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 processes 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.

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
Larger multi-channel 2.0 kWatt machines

IP
Open source / open access

Technology from

ProPAS

Commodities

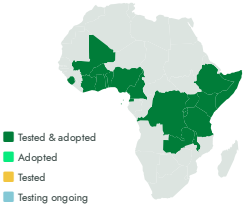
Bananas & plantains

Sustainable Development Goals

Categories

Pre-production, Equipment, Agrifood processing

Tested/adopted in



Where it can be used

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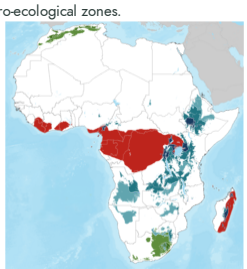

Target groups

Breeders

AFRICAN DEVELOPMENT BANK GROUP
GROUPE DE LA BANQUE AFRICAINE DE DÉVELOPPEMENT

Technologies for African Agricultural Transformation

ENSURE Project (AfDB)

https://taat.africa/crh

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).

AFRICAN DEVELOPMENT BANK GROUP
GROUPE DE LA BANQUE AFRICAINE DE DÉVELOPPEMENT

Technologies for African Agricultural Transformation

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