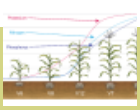





# Maize technologies Toolkit

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

17 TECHNOLOGIES | CREATED ON JUN 10, 2024 BY TAAT PROFILING TEAM | LAST UPDATED AUG 21, 2025



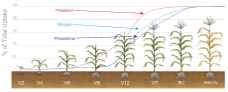



## TECHNOLOGIES IN THIS TOOLKIT

- **Pre-plant blended fertilizers and nitrogen topdressing for maize**
- **GrainMate**: Grain Moisture Meter
- **Turbocrop**: Field crop plant establishment biostimulant
- **KABAMANOJ F1**: High yield and drought tolerant orange maize…
- **Trace**: FairFood Traceability Solutions
- **Multifunctional biopesticide**: Ecopticide Agri
- **AKILIMO**: Digital Decision Support Tool
- **NextGen Advisory**: Digital Advisory tool for Farmers
- **Hello Tractor**: Contract mechanization apps
- **Aflasafe®**: Aflatoxin management
- **Maize-legume rotation and intercropping**
- **DTMA & WEMA**: Drought Tolerant Maize Varieties and Water Efficie…
- **IR maize**: Imazapyr resistant maize for Striga management
- **Golden maize varieties (High provitamin A)**
- **Pre-emergence herbicides for maize crops**
- **DroughtTEGO**: Drought tolerant and high yield maize varieties
- **PAC 740**: Orange maize hybrid

https://taat.africa/zgs

# Pre-plant blended fertilizers and nitrogen topdressing for maize



## Unlock Maize Potential with Balanced Fertilizer Bliss!

Pre-plant blended fertilizers for maize is a technology involved to carefully mixed solid granular fertilizers, including urea, calcium ammonium nitrate, and potassium chloride, to meet maize crop nutrient needs.

**International Institute of Tropical Agriculture (IITA)**
Jonga Munyaradzi

This technology is TAAT1 validated.

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

Gender assessment 4

Climate impact 5

## Problem

- Traditional fertilizer application methods often lead to uneven nutrient distribution,
- Improper dosages and application schedules of mineral fertilizers are common,
- Inefficient nutrient application practices can lead to environmental losses, including nutrient runoff and leaching.

## Solution

- Implementing pre-plant blended fertilizers and nitrogen topdressing for precise and efficient nutrient delivery,
- Providing specific nutrient blends to address inadequate nutrient supply for healthier and more productive maize crops.
- Promoting responsible fertilizer use through carefully formulated blends and split applications, minimizing wastage

## Key points to design your project

The technology of pre-plant blended fertilizers and nitrogen topdressing for maize offers several benefits. Key steps to integrate this technology include:

- Identifying appropriate formulations, developing mixing protocols, brokering market entries,
- Conducting farmer demonstrations, providing financial support,
- Estimating required quantities, budgeting costs, allocating funds for training and support, developing communication materials, and forming partnerships with relevant stakeholders.

| 0.3—0.5 ton/ha | 30 % | 57 % | IP |
|---|---|---|---|
| Grain yield increase | N uptake increase | P uptake increase | Trademark |

Technology from

ProPAS

Commodities

Maize

Sustainable Development Goals

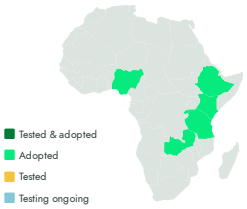
2 ZERO HUNGER

12 RESPONSIBLE CONSUMPTION AND PRODUCTION

Categories

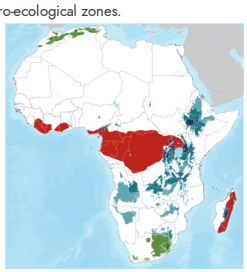
Production, Inputs, Fertilizer

Tested/adopted in




Where it can be used

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



Target groups

Farmers

# GrainMate: Grain Moisture Meter

Control the moisture content of grains and reduce post-harvest losses.

The Grain Moisture Meter helps African farmers prevent mold and post-harvest losses. Ministries of Agriculture, extension services, and food safety agencies use it to ensure quality control, improve storage, and enforce market standards. It supports fair trade, enhances food security, and boosts market value at both farmer and national levels.

**Sesi Technologies Limited**
Isaac Sesi

This technology is pre-validated.

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

Gender assessment 4

Climate impact 4

## Problem

- **Grain Losses:** FAO reports 10–20% of grain is lost in Sub-Saharan Africa due to poor post-harvest handling.
- **Unreliable Methods:** Farmers use biting or tossing grains, which are inaccurate.
- **Lack of Moisture Meters:** Many farmers can't afford or find reliable grain moisture meters.
- **Mold Risk:** Grains above 13.5% moisture quickly develop mold.
- **Poultry Impact:** High-moisture grains reduce egg production and increase bird disease and deaths.

## Solution

- **Eliminates Guesswork:** The meter replaces unreliable methods, enabling informed storage decisions.
- **Improves Accessibility:** Affordable and easy to use, priced at $60, it's accessible to many farmers.
- **Reduces Grain Losses:** It helps farmers measure moisture accurately, preventing post-harvest losses and ensuring food security.
- **Supports National Planning:** Reliable data aids governments in monitoring grain quality, predicting risks, and shaping food security policies.

## Key points to design your project

The GrainMate Moisture Meter addresses challenges in traditional grain moisture measurement. To integrate this technology into your project, you mainly need to:

- Assess the quantity of GrainMate Moisture Meters needed,
- Account for delivery costs to your project site,
- Provide training.

Cost: $$$ **45—60 USD**
Price for resellers and users

ROI: $$$ **90 %**
Post-harvest losses reduced

### Commodities

Maize, Sorghum/Millet, Soybean, Wheat, Groundnut

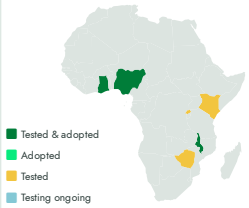
### Sustainable Development Goals

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

### Categories

Prevention & storage, Equipment, Post-harvest handling

### Tested/adopted in




### Where it can be used

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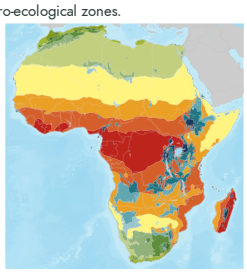


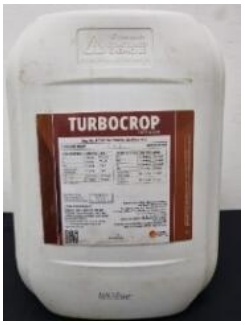
### Target groups

Farmers, Processors, Warehouse Operators, Advisory and Extension Services

# Turbocrop: Field crop plant establishment biostimulant

Specialized biostimulant for root development and vegetative growth on field crops

Turbocrop is a specialized biostimulant product designed to enhance the development of roots and promote vegetative growth in crops. It is specifically formulated to improve plants' ability to withstand and cope with abiotic stress factors, such as extreme temperatures, drought, or nutrient deficiencies.




**UPL**
Florent Clair

This technology is validated.

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

Inclusion assessment 4

Climate impact 6 1

## Problem

- Imbalances in soil nutrients hinder optimal plant growth and productivity.
- Factors constrain the potential size and structure of plants, impacting overall yield.
- Restrictions in root development impede nutrient uptake, affecting plant health and productivity.
- Inefficiencies in nutrient absorption and utilization by plants result in suboptimal growth.
- Various factors contribute to limitations in crop yields, affecting agricultural productivity and food security.

## Solution

- Stimulates root hair formation for enhanced nutrient absorption.
- Promotes stem elongation and leaf growth, particularly during tillering.
- Provides a balanced blend of essential nutrients for optimal crop growth.
- Improves nutrient utilization efficiency for better plant performance.
- Offers a holistic approach to plant growth, addressing root development, stem elongation, leaf formation, and nutrient optimization.

## Key points to design your project

Turbocrop technology improves food security, nutrition, and climate resilience by boosting yields, enhancing nutrient absorption, and supporting sustainable, biodiverse farming.

**Integration steps:**

- Align with project needs
- Estimate required quantity and costs (including training/support)
- Select reliable suppliers
- Plan for integration, staff training, and performance monitoring
- Promote the technology through communication efforts
- Collaborate with development institutes and agri-service partners for success

Cost: $$$ **10 - 20 USD**
Fertilizer cost

| **460 Kg/ha** | **170 USD/ha** | **IP** |
|---|---|---|
| Yield increase | Benefit on maize in South Africa | Patent granted |

### Commodities

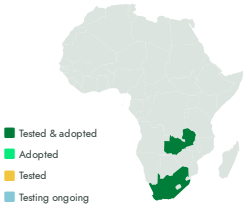
Wheat, Maize, Groundnut, Common bean, Other commodity

### Sustainable Development Goals


### Categories

Production, Inputs, Fertilizer

### Tested/adopted in




### Where it can be used

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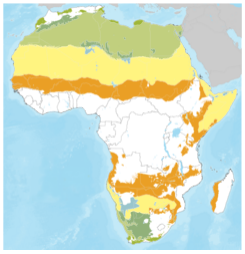


### Target groups

Farmers

# KABAMANOJ F1: High yield and drought tolerant orange maize hybrid

## Unleashing the Power of High-Yielding Orange Maize Across Africa!

KABAMANOJ F1 is a high-yielding, drought-tolerant maize variety with a short cycle (70-105 days), making it resilient to challenging climates. It produces up to 10 tons per hectare and is rich in protein, suitable for both food and poultry farming. Registered with ECOWAS, it is well-adapted to African climates and supports food security and agricultural sustainability.

**UPL**
Florent Clair

This technology is validated.

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

Gender assessment 4

Climate impact 4

## Problem

- Increased frequency and severity of droughts impacting maize growth.
- Inadequate agricultural practices leading to suboptimal productivity.
- Limited access to high-yielding maize varieties.
- Extended growth cycles delaying harvest and affecting overall efficiency.
- Vulnerability to pests such as stem borers and diseases like maize streak virus.

## Solution

- Short maturation period (80-100 days) addresses long maturity challenge.
- High yields (up to 10 tonnes/ha); substantial cob weight (160 g) and optimal cob length (26 cm) combat poor yield.
- Excellent resistance to drought and diseases mitigates climate-related challenges.
- Protein-rich content enhances nutritional value; specifically adapted to African climate for climate change resilience.

## Key points to design your project

- Technology addresses drought and disease challenges, enhancing food security and agricultural productivity
- Disease resistance ensures healthier crops, improving nutrition
- Adapts to climate change, aiding in its mitigation and ecosystem preservation
- Collaboration is crucial for development and dissemination, fostering sustainable development
- Integration steps include estimating seed quantity, considering delivery costs, allocating resources for training, developing communication materials, enhancing optimization with complementary practices, and collaborating with agricultural development institutes and seed multiplication companies

| | | |
|---|---|---|
| Cost: $$$ **110 USD/ha** Seed cost | | **40 %** Yield increased |
| **170 USD/ha** Operation cost | **560 USD/ha** Benefit | **IP** Unknown |

**Commodities**

Maize

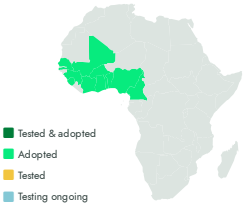
**Sustainable Development Goals**

2 ZERO HUNGER · 5 GENDER EQUALITY · 13 CLIMATE ACTION

**Categories**

Production, Improved varieties, Yield improvement, Drought tolerance

**Tested/adopted in**




**Where it can be used**

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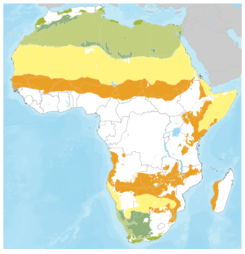


**Target groups**

Farmers, Seed companies

# Trace: FairFood Traceability Solutions

Easy-to-use solution for food traceability

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

This technology is pre-validated.

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

Gender assessment 3

Climate impact 6

## Problem

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

## Solution

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

## Key points to design your project

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

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

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

FAIRFOOD

**Fairfood**
Marten van Gils

### Commodities

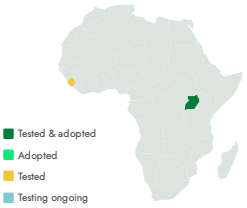
Common bean, Cassava, Cowpea, Leguminous, Maize, Sorghum/Millet, + 9 more

### Sustainable Development Goals


### Categories

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

### Tested/adopted in




### Where it can be used

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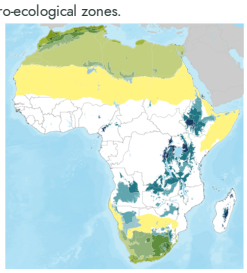


### Target groups

Breeders, Farmers, Processors, Fish Farmers, Sellers

# Multifunctional biopesticide: Ecopticide Agri

Ecopticide Agri, your 3-in-1 bio product against insect, fungi and nematode

Ecoticide Agri is a multi-functional solution acting as an insecticide, fungicide, nematicide, and bactericide, offering comprehensive protection against various pests and pathogens. Its formulation prevents resistance development among pests and reduces the risk of infestations when used preventively.

This technology is pre-validated.

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

Gender assessment 5

Climate impact 7

## Problem

- Traditional pest management products cause harvest losses, reducing agricultural productivity.
- Conventional pest control harms the environment, causing soil depletion, heightened drought vulnerability, and biodiversity loss.
- Pests develop resistance to existing products, posing ongoing challenges for farmers.
- Chemical pesticides have limited effectiveness against new pest species like the fall armyworm, leaving crops inadequately protected.

## Solution

- It acts as a pesticide, fungicide, and nematicide, addressing pest and disease challenges.
- It is fully biodegradable, reducing concerns about soil depletion and biodiversity loss.
- The concentrated formula boosts crop output by tackling low production yields associated with traditional pest management.
- It contains no harsh solvents, ensuring environmental safety and minimal ecosystem impact.

## Key points to design your project

- Educate farmers on the benefits of Ecopticide in managing pests and diseases while improving crop yields and quality.
- Ensure fair access and financial support for local suppliers and smallholder farmers.
- Confirm compliance with national pesticide regulations and secure necessary authorizations.
- Estimate the required quantity and costs, including delivery and import fees.
- Include training and post-training support costs in the project budget.
- Develop communication materials to promote the technology.
- Collaborate with agricultural institutes, fertilizer suppliers, and service companies for implementation support.

Cost: $$$ **20 - 35 USD**

Cost of 1L of the product

ROI: $$$ **200 %**

Benefit

**300 000 USD**

Initial investment for manufacturer

**30 000 USD**

Operating Investment

**Arknergie Innovation**
Dr. Kofi Abokitse

### Commodities

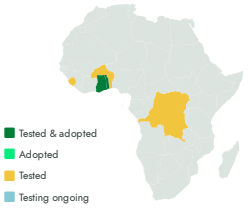
Maize, Fruits, Vegetable crop, Other root/tuber

### Sustainable Development Goals


### Categories

Production, Inputs, Pesticide

### Tested/adopted in




### Where it can be used

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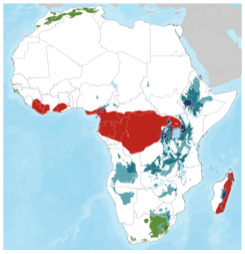


### Target groups

Farmers

# AKILIMO: Digital Decision Support Tool

We know cassava

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

This technology is pre-validated.

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

Gender assessment 5

Climate impact 7

## Problem

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

## Solution

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

## Key points to design your project

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

Integrating AKILIMO:

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

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

ROI: $$$ **2567 %**

EXCELLENCE IN AGRONOMY
Adapt Intensify Grow

**Excellence in Agronomy**
Barbra Sehlule Muzata

Technology from

CASH from EiA

Commodities

Cassava, Maize, Rice

Sustainable Development Goals

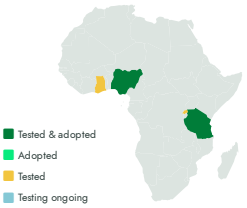

Categories

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

Best used with

- Six Steps to Cassava Weed Management ›

Tested/adopted in




Where it can be used

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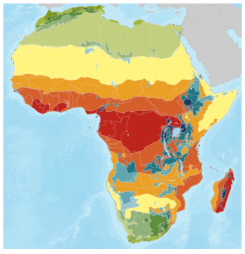


Target groups

# NextGen Advisory: Digital Advisory tool for Farmers

## Empowering Farmers with Digital Guidance

The NextGen advisory system utilizes precise location, context, and climate data to offer tailored agricultural advisories. Using machine learning algorithms, the system analyzes diverse data points to provide accurate recommendations for fertilizer use and other farming practices.

This technology is **pre-validated**.

8·7

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

Gender assessment

Climate impact

## Problem

- Traditional low fertilizer application rates, which are prevalent in many agricultural regions.
- This practice leads to underutilization of resources and limits crop growth, thereby affecting overall agricultural productivity.

## Solution

- The tool provide site-specific organic and inorganic fertilizer recommendations for key crops such as maize, teff, and wheat.
- It integrates hyper-localized data and tailored approaches to address soil fertility management plus (ISFM+) framework.
- This comprehensive tool aims to increase agricultural productivity and sustainability by providing precise, actionable advisories directly to farmers.

## Key points to design your project

The NextGenAgroadvisory tool aims to revolutionize wheat, maize and teff farming, boosting production, increasing profits, and minimizing wastage.

To integrate NextGenAgroadvisory Into Your Project:

- Access the app from Google Play or the web for advice on various devices.
- Farmers get advisories through videos, interactive voice responses, and digital formats for accessibility.
- Promote the tool's benefits and ease of access among farmers.
- Promote investments in fertilizer and weed management technologies.
- Create flyers, videos, and radio broadcasts to encourage adoption.

**24—36 %**

Wheat yield increased

IP

Unknown

EXCELLENCE IN AGRONOMY

Adapt Intensify Grow

**Excellence in Agronomy**

Lulseged Tamene

Technology from

CASH from EiA

Commodities

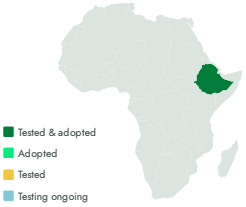
Wheat, Teff, Maize

Sustainable Development Goals

Categories

Production, Digital applications, Advisory and information service, Yield improvement

Tested/adopted in




Where it can be used

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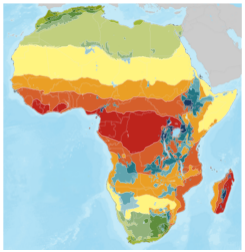
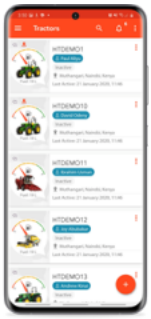


Target groups

Development institutions, Farmers,

# Hello Tractor: Contract mechanization apps

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



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

This technology is TAAT1 validated.

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

Gender assessment 4

Climate impact 7

## Problem

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

## Solution

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

## Key points to design your project

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

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

Cost of getting the technology

**60—70 USD**

Cost of renting a four-wheel tractor for 4 hours

**IP**

Copyright

**Hello Tractor**
Rispa Miliza

Technology from

ProPAS

Commodities

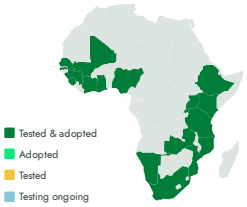
Maize, Rice, Wheat, Sorghum/Millet, Cowpea, Groundnut, + 5 more

Sustainable Development Goals


Categories

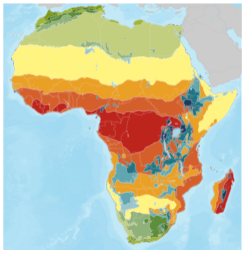
Production, Market, Digital applications, Supply chain management, Crop management

Tested/adopted in




Where it can be used

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



Target groups

# Aflasafe®: Aflatoxin management

## Aflatoxin-safe fields and crops for safer food in Africa

Aflasafe® is a biocontrol technology for aflatoxins management that uses harmless types of the fungus Aspergilus flavus which do not and cannot produce the toxins. The atoxigenic fungi are coated onto ordinary sorghum grain for transferring these innovative biocontrol agents to farmers' fields.

**International Institute of Tropical Agriculture (IITA)**
Ortega-Beltran, Alejandro

This technology is TAAT1 validated.

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

Gender assessment 4

Climate impact 5

## Problem

- Widespread aflatoxin contamination in staple crops, animal feeds, and processed foods across Africa.
- Consumption of contaminated food leads to severe health issues such as liver cancer, weakened immunity, and organ damage.
- Aflatoxin contamination renders food unfit for consumption and trade, resulting in significant economic losses.

## Solution

- Prevents aflatoxin production using harmless strains of Aspergillus flavus.
- Affordable solution to reduce aflatoxin levels in food safely.
- Tailored to African conditions, utilizing native atoxigenic fungal strains.
- Selected through rigorous field testing.
- Halts aflatoxin contamination during transportation, storage, and processing.

## Key points to design your project

To use this technology in your project, plan these activities:

- Calculate the product quantity based on the cost (12 to 20 USD per Ha) and the requirement (10 kg per ha).
- Factor in the delivery, import, and duty costs from the supplier to the site.
- Budget for training and support from a team of trainers during installation.
- Develop communication materials (flyers, videos, radio, etc.) for the technology.
- Follow post-harvest practices (drying and storage) for the improved maize variety.
- Work with agricultural institutes and agro-dealers in your country.

Cost: $$$ **12 - 20 USD** per Ha

ROI: $$$ **16 %** Increase in income

**10 kg/ha** Recommended dosage application

**4 kg/acre** Recommended dosage application

**IP** Trademark

Technology from

ProPAS

Commodities

Maize, Sorghum/Millet, Groundnut, Chili peppers, Sesame, Sunflower

Sustainable Development Goals

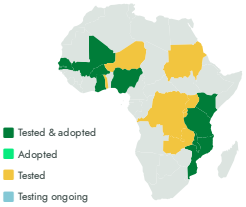

Categories

Production, Prevention & storage, Inputs, Pesticide

Best used with

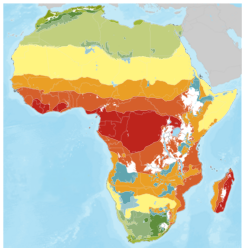
- Drought Tolerant Maize Varieties and Water Efficient Maize Varieties ›

Tested/adopted in




Where it can be used

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



# 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.

ROI: $$$ **0.5—1 tons**

maize grain yields increase in yield/ha

**30—70 kilograms**

of nitrogen carried over from soybean to maize crops

**IP**

Unknown

Technology from

ProPAS

Commodities

Maize

Sustainable Development Goals


Categories

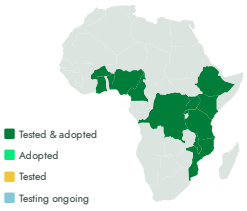
Production, Practices, Soil fertility

Best used with

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

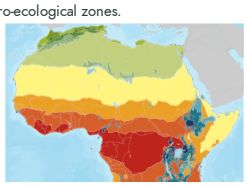
See all 2 technologies online

Tested/adopted in




Where it can be used

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



# DTMA & WEMA: Drought Tolerant Maize Varieties and Water Efficient Maize Varieties

Enhance farm's resilience with DTMA and WEMA maize varieties, ensuring consistent yields even in unpredictable weather.

These seed technologies, developed conventionally and biotechnologically, enhance maize resilience to soil dryness and water scarcity, outperforming traditional varieties across various water stress levels in both dry and intermittently wet climates.

**African Agricultural Technology Foundation (AATF)**
Jonga Munyaradzi

This technology is TAAT1 validated.

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

Inclusion assessment 5

Climate impact 7

## Problem

- **Dependence on Rainfall:** Over 90% of African maize farming is rainfed, leaving crops vulnerable to unpredictable weather patterns.
- **Yield Instability:** Conventional varieties are highly sensitive to water availability, leading to inconsistent yields.
- **Crop Failure Risk:** Insufficient rainfall can result in complete crop loss, jeopardizing livelihoods.

## Solution

- **Enhanced Resilience:** DTMA and WEMA outperform conventional varieties under various water stress levels.
- **Increased Productivity:** Adoption of these varieties leads to substantial increases in maize grain production.
- **Improved Crop Resilience:** Crops become more robust, with heightened resistance to dry spells and low rainfall.

## Key points to design your project

- Estimate seed quantity needed (0.8 to 1.2 USD per kg, 25 kg/ha).
- Factor in delivery costs, import duties (available in Kenya, Malawi, etc.).
- Arrange training and post-training support.
- Develop communication materials (flyers, videos, radio).
- Optimize with complementary techniques (e.g., IR maize, fertilizer blending).
- Collaborate with agricultural institutes and seed companies for implementation.

| | |
|---|---|
| Cost: $$$ **0.8—1.2 USD/kg** | ROI: $$$ **240 USD** |
| Seed selling cost | Income per Ha |
| **0.6 ton/Ha** | **20—30 %** | **IP** |
| Yield increase | Larger grain harvest than common type | Unknown |

Technology from

ProPAS

Commodities

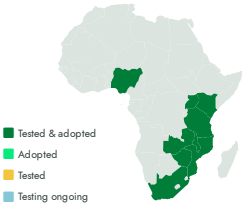
Maize

Sustainable Development Goals


Categories

Production, Improved varieties, Disease resistance, Yield improvement

Tested/adopted in




Where it can be used

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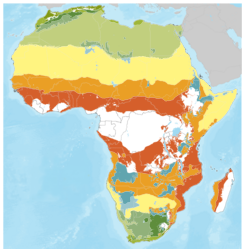


Target groups

Farmers

# 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

Gender 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.

Cost: $$$ **1.5—2.5 USD**

per kg

**IP**

Open source / open access

Technology from

ProPAS

Commodities

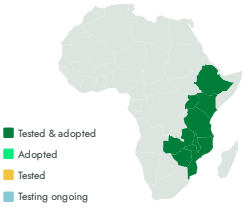
Maize

Sustainable Development Goals


Categories

Production, Improved varieties, Weed resistance, Yield improvement

Tested/adopted in




Where it can be used

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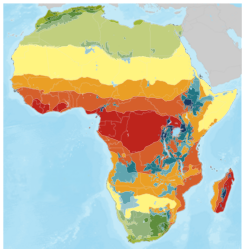


Target groups

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.

Cost: $$$ **0.8—1.2 USD** per kg

**10—20 %** Revenue increased

IP Open source / open access

Technology from

ProPAS

Commodities

Maize

Sustainable Development Goals

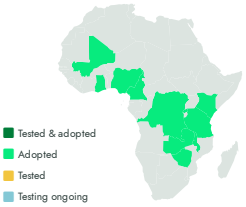

Categories

Production, Improved varieties, Yield improvement, Quality improvement

Best used with

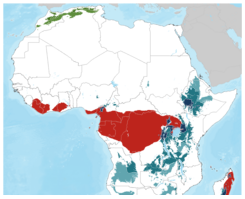
Drought Tolerant Maize Varieties and Water Efficient Maize Varieties, Pre-plant blended fertilizers and nitrogen topdressing for maize, Maize-legume rotation and...
See all 3 technologies online

Tested/adopted in




Where it can be used

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



# Pre-emergence herbicides for maize crops

## Unlocking Maize's Full Potential

"Pre-emergence herbicides for maize crops" is an innovative technology in Sub-Saharan Africa that prevents weed seedling root development, enhancing maize crop growth and increasing grain yields cost-effectively.

**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

Gender assessment 4

Climate impact 5 1

## Problem

- High weed encroachment in Sub-Saharan Africa reduces grain yields and agricultural returns.
- Manual or mechanical weed removal is labor-intensive and costly.
- Other weed control methods may spread weed seeds, leading to long-term issues.
- Multiple herbicide applications are often needed throughout the growing season.
- Herbicide formulation and timing vary based on regional factors.

## Solution

- Pre-emergence herbicides control weeds early, boosting maize yields.
- They improve fertilizer efficiency and crop resilience to drought.
- Prevent weed seed dispersal, reducing future encroachment and herbicide use.
- Combined with post-emergence herbicides, they optimize weed control.
- Adaptable to various climates with customizable formulations.

## Key points to design your project

To integrate this technology into your project, follow these steps:

- Facilitate the marketing of pre-emergence herbicides by agro-input dealers in regions where prevalent weed species pose challenges.
- Conduct awareness campaigns among farmers to highlight the benefits of chemical control methods for food production and risk mitigation.
- Provide financial support to local suppliers and smallholder farmers to encourage investments in pre-emergence herbicides.
- Ensure compliance with national pesticide regulations and obtain necessary authorizations from relevant authorities.
- Estimate the required quantity of technology, considering delivery costs and potential import fees across multiple countries.
- Budget for herbicides and labor costs, with rates specified for different blends and active ingredients.
- Allocate funds for training and post-training support to ensure effective utilization of the technology.
- Develop communication materials to promote technology adoption.
- Collaborate with agricultural development institutes, fertilizer suppliers, and agricultural service companies to implement the technology nationally.

Cost: $$$ **27 USD**
Application of pre-emergence herbicide/Ha

ROI: $$$ **61—80 %**
Reduction in weeds

**0.7 - 1.6 Ton per hectare**
Grain yield increase

**349 USD**
Gross margin per hectare

**IP**
Open source / open access

Technology from

ProPAS

Commodities

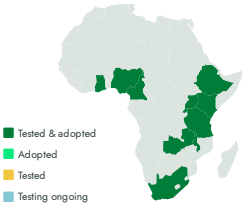
Maize

Sustainable Development Goals


Categories

Production, Inputs, Fertilizer

Tested/adopted in




Where it can be used

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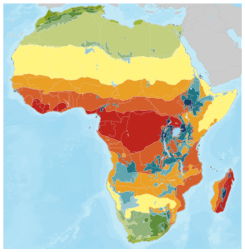


Target groups

Farmers

# DroughtTEGO: Drought tolerant and high yield maize varieties

Boost yields, and income with advanced maize.


DroughtTEGO is a improved maize hybrid developed as part of the Water Efficient Maize for Africa (WEMA) project. It was created to address the impact of drought, which is exacerbated by climate change. It aims to mitigate the effects of dry spells and low rainfall, which often limit maize production in dryland areas.

This technology is TAAT1 validated.

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

Inclusion assessment 3

Climate impact 3

## Problem

- Low yield associated with drought resilience in maize cultivation
- Rainfall patterns and water scarcity in agricultural landscapes
- Vulnerability of smallholder farmers to climate change impacts on crop production

## Solution

- TEGO, improved maize varieties with enhanced drought tolerance
- Breeding of maize hybrids with high yield (20-35% yield increased) potential under drought stress conditions
- Empowerment of smallholder farmers through access to improved maize varieties and knowledge resources

## Key points to design your project

DroughtTEGO technology is a transformative solution with significant impacts on gender equality, climate resilience, and Sustainable Development Goals (SDGs). To integrate DroughtTEGO technology into your project,

- Identify suitable varieties,
- Conduct awareness campaigns,
- Ensure access to seeds and financial support,
- Estimate seed requirements, allocating resources for training, developing communication materials,

Cost: $$$ **0.8—1.2 USD/kg**
Seed selling cost

ROI: $$$ **20—35 %**
Yield increased

IP
Trademark

**African Agricultural Technology Foundation (AATF)**
Jonga Munyaradzi

Technology from

ProPAS

Commodities

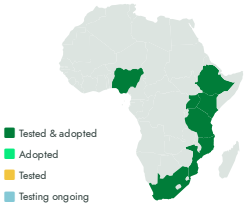
Maize

Sustainable Development Goals


Categories

Production, Improved varieties, Yield improvement, Drought tolerance

Tested/adopted in




Where it can be used

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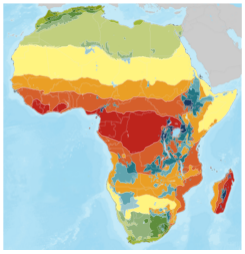


Target groups

# PAC 740: Orange maize hybrid

High yielding orange maize hybrid, medium maturity with high field tolerance to drought


Orange Maize PAC 740 is a high-yielding, protein-rich variety that produces up to 11 tons per hectare and matures in 115 days. It is drought-tolerant and resistant to maize leaf blight, making it ideal for food and poultry farming in challenging environments across India, Thailand, and several African countries.

**Advanta Seeds**
Ibrahim Shiundu

This technology is pre-validated.

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

Gender assessment 4

Climate impact 6

## Problem

- Farmers struggle with low yields, affecting productivity and food security.
- Water scarcity in water-stressed regions limits crop growth and agricultural viability.
- Farmers seek versatile maize varieties for both grain production and livestock fodder.
- Targets diseases like blight, which can harm crop health and yield.
- Aims to boost profitability by offering seeds with double yield potential compared to traditional varieties.

## Solution

- It resists foliar diseases like blight, ensuring healthier crops and minimizing yield loss.
- Thrives in limited water conditions, mitigating the impact of moisture stress.
- Designed for increased productivity compared to standard varieties.
- Serves as both grain producer and livestock fodder.
- Offers twice the yield potential of standard varieties, ensuring higher returns on investment.

## Key points to design your project

This technology improves crop yields, food security, and farmer income while aiding poverty reduction. Its drought-tolerant maize variety enhances climate resilience, and its disease resistance and soil health promotion support sustainable land management and biodiversity. Its dual-purpose nature promotes resource efficiency. To integrate it into a project:

- Estimate seed quantity needed based on cost and seed requirement.
- Consider delivery costs and import clearance from Kenya.
- Allocate resources for training and post-training support.
- Develop communication materials.
- Optimize the maize variety with legume intercropping and manure application.
- Collaborate with agricultural institutes and seed companies for implementation.

Cost: $$$ **127 USD/ha**
Average cost of seeds for a farmer

**30 %**
Estimated ROI

**540 USD/ha**
Total input costs

**2000 USD/ha**
Estimated average gross income

**IP**
Open source / open access

### Commodities

Maize

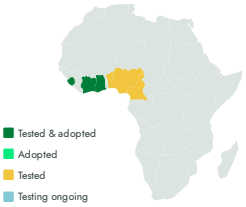
### Sustainable Development Goals

2 ZERO HUNGER
3 GOOD HEALTH AND WELL-BEING
13 CLIMATE ACTION

### Categories

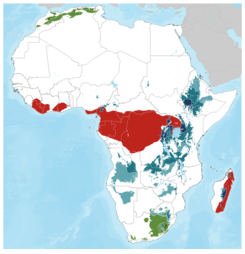
Production, Improved varieties, Yield improvement, Quality improvement

### Tested/adopted in




### Where it can be used

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



### Target groups

Farmers, Seed companies

# Maize technologies Toolkit

https://taat.africa/zgs

## ABOUT US

### TAAT

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

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

### TAAT Technologies

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

### TAAT Clearinghouse

Within TAAT, the Clearinghouse has the remit to select, profile and validate agricultural technologies, and showcase them in online catalogs to support the advisory role that the Clearinghouse offers to governments and the private sector. The Clearinghouse strives to be an 'honest broker' of technologies through its selection, profiling, validation and advice.

### TAAT e-catalogs

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

### TAAT Technology Toolkits

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