



# AATF technologies

6 TECHNOLOGIES | CREATED ON JUN 30, 2025 BY TAAT PROFILING TEAM | LAST UPDATED JUL 24, 2025



## TECHNOLOGIES IN THIS TOOLKIT

- **Golden maize varieties (High provitamin A)**
- **Maize-legume rotation and intercropping**
- **DTMA & WEMA:** Drought Tolerant
- **Maize Varieties and Water Efficient...**
- **DroughtTEGO:** Drought tolerant and high yield maize varieties
- **IR maize:** Imazapyr resistant maize for Striga management
- **Pre-emergence herbicides for maize crops**



<https://taat.africa/rsv>



# 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.

Technology from

ProPAS

Commodities

Maize

Sustainable Development Goals



Categories

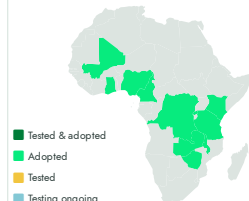
Production, Improved varieties,

Yield improvement, Quality improvement

Best used with

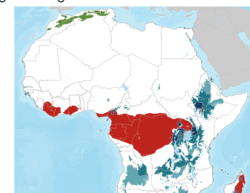
Drought Tolerant Maize Varieties and Water Efficient Maize Varieties, Pre-plant blended fertilizers and nitrogen topdressing for maize, Maize-legume rotation and...  
See all 3 technologies online

Tested/adopted in



Where it can be used

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



## 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



Open source / open access



Golden maize varieties (High provitamin A)

<https://taat.africa/cxq>

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



# 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.



Labour productivity...soil fertility



**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.

Technology from

ProPAS

Commodities

Maize

Sustainable Development Goals



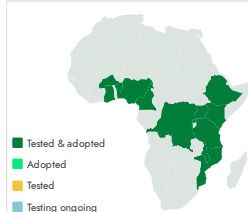
Categories

Production, Practices, Soil fertility

Best used with

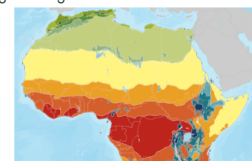
Drought Tolerant Maize Varieties and Water Efficient Maize Varieties, Pre-plant blended fertilizers and nitrogen topdressing for maize  
See all 2 technologies online

Tested/adopted in



Where it can be used

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



ROI: \$\$\$ **0.5—1 tons**

maize grain yields increase in yield/ha

**30—70 kilograms**

of nitrogen carried over from soybean to maize crops



Unknown



Maize-legume rotation and intercropping

<https://taat.africa/smj>

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



# 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.



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**

Seed selling cost

ROI: \$\$\$

**240 USD**

Income per Ha

**0.6 ton/Ha**

Yield increase

**20—30 %**

Larger grain harvest than common type



Unknown



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Technology from

ProPAS

Commodities

Maize

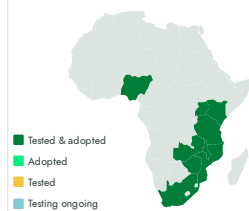
Sustainable Development Goals



Categories

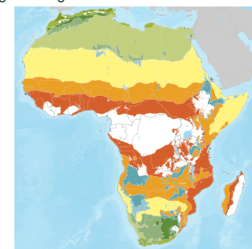
Production, Improved varieties, Disease resistance, Yield improvement

Tested/adopted in



Where it can be used

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



Target groups

Farmers



**DTMA & WEMA**

<https://taat.africa/nla>

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



# 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.



**African Agricultural Technology Foundation (AATF)**

Jonga Munyaradzi

✓ This technology is **TAAT1 validated**.

9·7



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

Inclusion assessment



Climate impact



## 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



Trademark

Technology from

ProPAS

Commodities

Maize

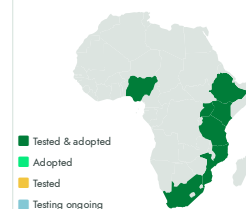
Sustainable Development Goals



Categories

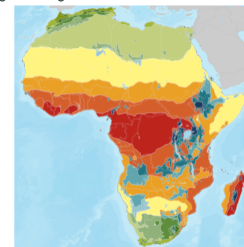
Production, Improved varieties,  
Yield improvement, Drought tolerance

Tested/adopted in



Where it can be used

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



Target groups



**DroughtTEGO**

<https://taat.africa/ihf>

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



# 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.



✓ 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



Open source / open access



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Jonga Munyaradzi

Technology from

ProPAS

Commodities

Maize

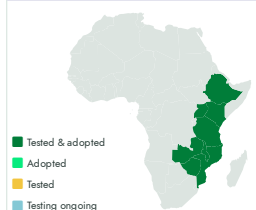
Sustainable Development Goals



Categories

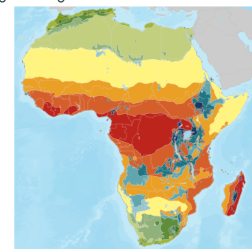
Production, Improved varieties, Weed resistance, Yield improvement

Tested/adopted in



Where it can be used

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



Target groups

Farmers



IR maize

<https://e-catalogs.taatafrica.org/gov/technologies/ir-maize-imazapyr-resistant-maize-for-striga-management>

Last updated on 16 April 2025, printed on 16 April 2025

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



# 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.



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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.

Technology from

ProPAS

Commodities

Maize

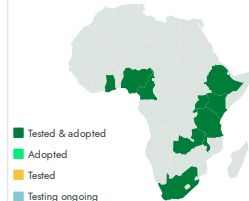
Sustainable Development Goals



Categories

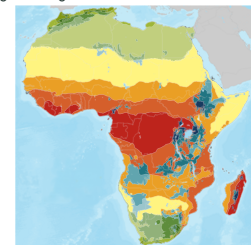
Production, Inputs, Fertilizer

Tested/adopted in



Where it can be used

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



Target groups

Farmers

Cost: \$\$\$ **27 USD**

Application of pre-emergence herbicide/Ha

**0.7 - 1.6 Ton per hectare**

Grain yield increase

ROI: \$\$\$ **61—80 %**

Reduction in weeds

**349 USD**

Gross margin per hectare



Open source / open access



Pre-emergence herbicides for maize crops

<https://taat.africa/qla>

Last updated on 16 April 2025, printed on 15 May 2025

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





# AATF technologies

🔗 <https://taat.africa/rsv>

## ABOUT US

### TAAT

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

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

### TAAT Technologies

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

### TAAT Clearinghouse

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

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

### TAAT e-catalogs

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

### TAAT Technology Toolkits

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

## CONTACT

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