



TAAT Soil health technologies

The TAAT Soil Health Toolkit is a curated collection of practical, field-validated technologies designed to support governments, the private sector and development organizations in restoring, improving and monitoring soil health at scale. The toolkit assembles context-specific soil health practices that strengthen core soil functions: water retention, nutrient cycling, carbon...

21 TECHNOLOGIES | CREATED ON JAN 12, 2026 BY MARY KAMAA MÜSYOKI | LAST UPDATED JAN 21, 2026



TECHNOLOGIES IN THIS TOOLKIT

- **Agrocares Scanner:** Soil, Feed and Leaves Nutrient Scanner
- **Pre-plant blended fertilizers and nitrogen topdressing for maize**
- **Relay intercropping of sweet potato with legumes**
- **Value Addition to Poultry Manure**
- **Banana Peels as Feed and Organic Resource**
- **Urea deep placement:** Nitrogen management for Efficient Rice...
- **Precision Fertilizer Micro-Dosing for Millet and Sorghum Yield...**
- **Contour Bunding Technique (CBT):** Contour Bunds for Water...
- **Processing and Application of Composted Manures**
- **Maize-legume rotation and intercropping**
- **Conservation agriculture:** Minimal Tillage and Surface Mulching of Soils
- **NoduMax:** Inoculant for Soybeans
- **Zai Pits:** Water Harvesting and Soil Improvement
- **Demi-lune method:** Rainwater harvesting method
- **SIS Framework:** Roadmap for building a soil information system
- **Soil Information Workflow:** 8 steps to develop a Soil Information System...
- **BSFF:** Organic fertilizer for soil improvement
- **Biochar:** Biomass Charcoal for Soil improvement
- **Soybean inoculant:** Rhizobium inoculant range, various strains
- **ABC Grower:** Biomineralization of weeds for soil improvement
- **NextGen Advisory:** Digital Advisory tool for Farmers



<https://taat.africa/cph>

Agrocares Scanner: Soil, Feed and Leaves Nutrient Scanner

Scan Nutrients. Get Answers. Act Fast.

The Nutrient Scanner gives government teams a quick and portable way to assess soil and crop nutrition in the field. It scans samples with NIR light, connects to a smartphone, and sends data to the cloud for instant nutrient analysis and recommendations. It supports data-driven extension without needing a lab.



Commodities

Maize, Wheat, Cassava, Soybean, Canola, Sorghum/Millet, + 3 more

Sustainable Development Goals



Categories

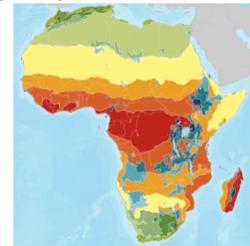
Production, Pre-production, Equipment, Analysis and Diagnostic tool

Tested/adopted in



Where it can be used

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



Target groups

Breeders, Development institutions, Farmers, Governments, Seed companies, Sellers, + 4 more

This technology is **pre-validated**.

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

Inclusion assessment **4**

Climate impact **7**

Problem

- **Limited Extension Capacity**
Agents can't diagnose nutrient issues on-site.
- **Fertilizer Inefficiency**
Blanket application leads to waste and low yields.
- **Labs Out of Reach**
Testing services are slow, costly, and hard to scale.
- **No Field-Level Data**
Policies lack current soil fertility insights.

Solution

- **Field-Ready Tool for Agents:** Extension staff can test and advise farmers instantly.
- **Smarter Fertilizer Use:** Reduce waste with precise nutrient recommendations.
- **Rural Reach Made Easy:** Works offline for scanning; syncs later.
- **Improves Soil Data Systems:** Generates real-time info to support planning and policy.

Key points to design your project

Modernize soil and crop advisory with on-site diagnostics.

- **Equip extension agents** with handheld scanners and apps.
- **Train staff and embed testing** into regular field visits.
- **Use scan data** to guide fertilizer policy, subsidies, and restoration programs.
- **Engage communities and local leaders** to increase adoption.
- **Monitor results** to adjust strategy and maximize impact.

11068 USD
Cost per year

20000 USD
Revenue per year

8932 USD
Net income per year

81 %
ROI per year



Patent granted, Copyright, Trademark



Agrocares Scanner

<https://taat.africa/jki>

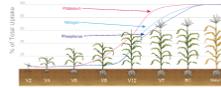
Last updated on 19 December 2025, printed on 19 December 2025

Enquiries e-catalogs@taat.africa

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

Inclusion 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

Grain yield increase

30 %

N uptake increase

57 %

P uptake increase



Trademark

Technology from

ProPAS

Commodities

Maize

Sustainable Development Goals



Categories

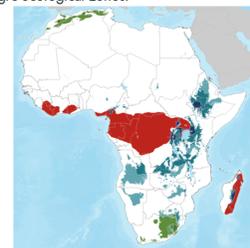
Production, Inputs, Fertilizer

Tested/adopted in



Where it can be used

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



Target groups

Farmers



Pre-plant blended fertilizers and nitrogen topdressing for maize

<https://taat.africa/qxa>

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

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Relay intercropping of sweet potato with legumes



Harvest More, Worry Less with Sweet Potato-Legume Relay Intercropping

Relay intercropping of sweet potato with legumes is a farming method where two crops, sweet potato and legumes like beans or cowpeas, are grown together in the same field. Farmers can plant sweet potato first, then plant legumes later.

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

- Reduced land productivity due to monoculture practices.
- Nitrogen deficiency in soil leading to lower crop yields.
- Vulnerability to crop failure and food insecurity due to pest attacks and droughts.

Solution

- Improved land productivity through efficient utilization of available resources.
- Enhanced soil nitrogen levels through symbiotic nitrogen fixation by legumes.
- Increased resilience to pest attacks and droughts through diversified cropping systems.

Key points to design your project

This technology boosts crop productivity, ensures food security, and fosters economic sustainability. To integrate this technology:

- Educate farmers about the benefits of intercropping sweet potato and legumes.
- Select suitable varieties based on local conditions.
- Obtain quality planting materials.
- Purchase mineral fertilizer and legume inoculants



Open source / open access



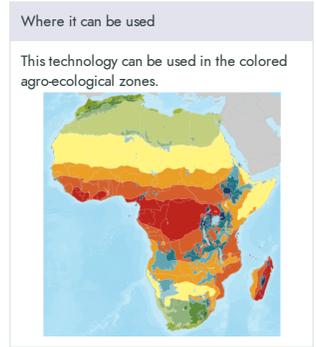
International Potato Center (CIP)
Kwirikiza Norman

Technology from
ProPAS

Commodities
Sweet Potato

Sustainable Development Goals

Categories
Production, Practices,
Pest control (excluding weeds),
Yield improvement



Target groups



Relay intercropping of sweet potato with legumes

<https://taat.africa/dbi>

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Value Addition to Poultry Manure

Transforming waste into wealth



Manure accumulated on the poultry house floor (left) and finished compost ready for use as an organic fertilizer (right)

Value Addition to Poultry Manure transforms chicken manure into nutrient-rich organic fertilizer. Composting detoxifies the manure, enhancing soil fertility and reducing reliance on chemical fertilizers.



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**

Technology from

ProPAS

Commodities

Poultry

Sustainable Development Goals



Categories

Pre-production, Practices,
Animal waste management

Best used with

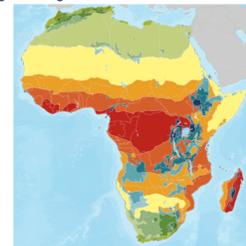
Biosecurity for Disease Prevention, Low-Cost Cage and Free-Range Containment
See all 2 technologies online

Tested/adopted in



Where it can be used

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



Target groups

Problem

- **Pathogens and Unpleasant Odors:** Fresh chicken manure can contain harmful pathogens and emit an off-putting odor.
- **Underutilization:** Chicken manure is often unused due to these issues.
- **Environmental Impact:** Large-scale poultry farms generate significant manure, leading to unpleasant odors, groundwater pollution, and methane emissions.

Solution

- **Pathogen-Free Organic Fertilizer Production:** Converts chicken manure into safe, nutrient-rich organic fertilizer through composting, ensuring plant health and human safety.
- **Sustainable Environmental Impact Mitigation:** Transforms raw chicken manure into valuable organic fertilizer, reducing odors, preventing groundwater contamination, and mitigating methane emissions.
- **Cost-Efficient Waste Management:** Repurposes chicken manure into valuable organic fertilizer, reducing waste management costs and enhancing overall farm profitability.

Key points to design your project

Poultry farming boosts women's financial independence and leadership roles. This technology transforms waste into valuable organic fertilizer, reducing odors, groundwater contamination, and methane emissions. It also reduces reliance on chemical fertilizers, supporting climate goals. This project contributes to achieving SDGs 1 (poverty reduction), 2 (food security), 5 (gender equality), and 13 (climate action).

Key points for project step up:

- **Assess & Select:** Identify farmers interested in value addition with suitable farm size and resources.
- **Train & Build Capacity:** Train extension agents and farmers on composting and value-added products.
- **Implement & Support:** Organize workshops, establish demonstration plots, and provide technical support and financing access.
- **Market Access & Sustainability:** Connect farmers with buyers and evaluate project impact.

30,000 USD

organic fertiliser production plant of 15 ton per hour

3,000 USD

15 m3 anaerobic digester able to process 300 kg of poultry manure per day



Open source / open access



Value Addition to Poultry Manure

<https://taat.africa/hoj>

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Banana Peels as Feed and Organic Resource

From Waste to Resource

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



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



International Institute of Tropical Agriculture (IITA)
John Derera

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

Inclusion assessment 👍 3

Climate impact 👍 7

Problem

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

Solution

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

Technology from
ProPAS

Commodities
Bananas & plantains

Sustainable Development Goals

Categories
Pre-production, Equipment, Agrifood processing

Tested/adopted in

Where it can be used

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

Target groups
Breeders

Key points to design your project

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

16,000 USD
👤 IP

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



Urea deep placement: Nitrogen management for Efficient Rice Fertilization



Africa Rice Center
Sali Atanga Ndindeng

Boost rice yields and save on fertilizer costs through efficient nitrogen management

Deep Urea Placement involves drilling urea granules into rice fields, optimizing nutrient uptake, soil fertility, and productivity. Placed 7 to 14 centimeters deep, it ensures consistent nitrogen supply, particularly suitable for lowland rice farming with clay soils.

This technology is **TAAT1 validated**.

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

Inclusion assessment 4

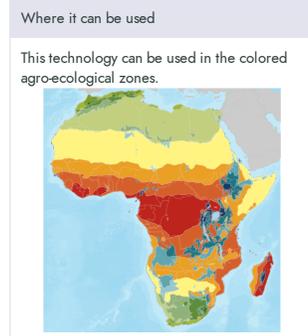
Climate impact 7

Technology from
ProPAS

Commodities
Rice

Sustainable Development Goals

Categories
Production, Practices, Fertilizer management



Target groups
Farmers

- ### Problem
- Inefficient Nitrogen Utilization.
 - Environmental Pollution due to traditional urea application.
 - Low Grain Productivity due to high nitrogen losses from current urea practices.
 - High production costs without proportional yield increases.
 - Limited irrigation in optimizing traditional urea application under varying rainfall.
 - Climate disturbances causing by greenhouse gas emissions from conventional urea application.

- ### Solution
- Large granules release nitrogen slowly, optimizing absorption by rice crops, reducing waste, preserving the environment and preventing contamination.
 - Direct nitrogen delivery enhances soil fertility, promoting healthier rice crops and higher yields.
 - Subsoil placement contributes to increased drought resilience in farming systems.
 - Single-season application reduces labor and overall production costs.
 - Suited for diverse agroecologies, benefiting both subsistence and commercial rice farmers.

Key points to design your project

1. Evaluate the required product quantity and cost, considering USD 0.4-0.8 per kilogram and a recommended rate of 0.25 tons per hectare.
2. Consider the technology's supply location, factoring in delivery costs and potential import duties.
3. Trainers can provide support during installation; budget for training and post-training assistance.
4. Develop communication materials for technology promotion.
5. Enhance the improved maize variety with companion planting, foliar micronutrient addition, engineered irrigation, motorized weeders, and RiceAdvice digital support.
6. Collaborate with agricultural institutes and agro-dealers for nationwide implementation.

0.25 ton	100—200 USD	10 USD	IP
Recommended rate per Ha	Equivalence cost for the recommended rate per Ha	plunger-type applicator	Open source / open access



Urea deep placement
<https://taat.africa/azj>

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Precision Fertilizer Micro-Dosing for Millet and Sorghum Yield Enhancement



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

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.

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.

Technology from
ProPAS

Commodities
Sorghum/Millet

Sustainable Development Goals

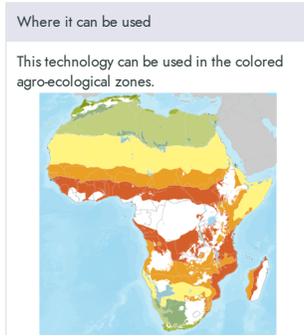
2 ZERO HUNGER

12 RESPONSIBLE CONSUMPTION AND PRODUCTION

13 CLIMATE ACTION

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](#)



IP
Open source / open access



Precision Fertilizer Micro-Dosing for Millet and Sorghum Yield Enhancement

<https://taat.africa/cui>

Enquiries e.catalogs@taat.africa

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Contour Bunding Technique (CBT): Contour Bunds for Water Harvesting

CBT: Nurturing Crops, Conserving Soil, and Cultivating Resilience

The "Contour Bunding Technique (CBT)" is a farming strategy used in Africa's dry areas. It uses small walls built along field curves to collect water, reduce runoff, and prevent soil erosion. This enhances the soil's water retention, making it a practical solution for water scarcity in dryland farming.



Semi-circular bunds reinforced with stones



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

Technology from

ProPAS

Commodities

Sorghum/Millet

Sustainable Development Goals



Categories

Pre-production, Practices, Water management

Best used with

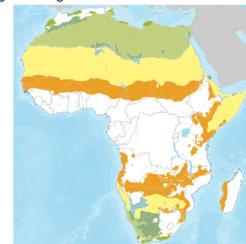
Millet and Sorghum Varieties for Better Nutrition and Stress Resistance, Precision Fertilizer Micro-Dosing for Millet and Sorghum Yield Enhancement, Dual-purpos...
See all 3 technologies online

Tested/adopted in



Where it can be used

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



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

- **Water Scarcity:** Dryland farming often faces water shortages, making crop growth challenging.
- **Soil Erosion:** In dry areas, soil erosion and gully formation degrade soil health and productivity.

Solution

- **Water Management:** CBT uses walls to capture and store rainwater, increasing crop yields.
- **Soil Conservation:** CBT slows water movement, reduces soil erosion, and improves soil fertility.

Key points to design your project

The Contour Bunding Technique (CBT) promotes inclusivity and mitigates climate change impacts, contributing to several Sustainable Development Goals (SDGs). It's a valuable tool for sustainable agriculture and climate resilience projects.

To integrate CBT into a project:

1. **Raise Awareness:** Educate the community about CBT's benefits.
2. **Train Stakeholders:** Train agents and farmers on cost-effective bund construction techniques.
3. **Consult Farmers:** Discuss with farmers to understand water movement and determine optimal bund placement.
4. **Provide Resources:** Ensure access to necessary resources for building and reinforcing bunds.
5. **Monitor and Evaluate:** Track the effects of CBT on crop yields and soil health for continuous improvement.
6. **Engage Community:** Involve the community to ensure project sustainability and foster ownership.

40 %

Runoff reduction

20 %

Sediment loss decrease



Open source / open access



Contour Bunding Technique (CBT)

<https://taat.africa/jyu>

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Enquiries e.catalogs@taat.africa

Processing and Application of Composted Manures

Turning Waste into Wealth for Greener Fields

Composted goat and sheep manure is readily compressed into organic fertilizer pellets. These fertilizer pellets are convenient for application, transportation, and storage. After composting, production involves crushing, screening, granulating, drying and further screening for pellet uniformity.



International Livestock Research Institute (ILRI)
Adeniyi Adediran

This technology is **TAAT1 validated**.

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

Inclusion assessment **4**

Climate impact **6** **1**

Problem

- Goat and sheep manure may contain human pathogens and weed seeds, posing hazards to crops and the environment.
- Nutrients in goat and sheep urine are often wasted, and improper manure handling can lead to environmental pollution.

Solution

- Composting rapidly deactivates human pathogens and weed seeds in manure, making it safe for use as compost on vegetable crops.
- Commercial technologies permit to produce organic fertilizers from goat and sheep manure, increasing its economic value and reducing waste.

Key points to design your project

The Processing and Application of Composted Manures technology offers a solution for reducing poultry feed costs. To integrate this technology into your project, follow these steps:

- Invest in compost turning and pellet making machinery.
- Analyze feed ingredient composition and identify any constraints.
- Evaluate ingredient cost and availability.
- Engage a team of trainers for installation support and develop communication materials to highlight benefits.
- Collaborate with breeders and local stakeholders.

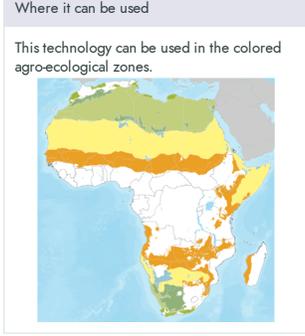
IP
Open source / open access

Technology from
ProPAS

Commodities
Small livestock

Sustainable Development Goals

Categories
Production, Pre-production, Practices, Input processing



Target groups
Farmers



Conservation agriculture: Minimal Tillage and Surface Mulching of Soils



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



Conservation Agriculture for Sustainable Farming

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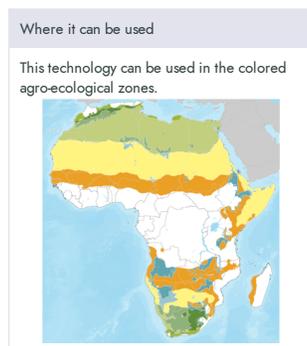
Technology from
ProPAS

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



Conservation agriculture

<https://taat.africa/bok>

Last updated on 28 November 2025, printed on 28 November 2025

Enquiries e_catalogs@taat.africa

NoduMax: Inoculant for Soybeans

Advanced Soybean Inoculation Solution for Sustainable Agriculture

This technology is a solid inoculant, which contains the industry-standard strain USDA 110 and includes a gum Arabic adhesive and user instructions. It is packed in 100 g packets sufficient for 10 to 15 kg soybean seed.



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
- Poor Root Nodulation and Low Biological Nitrogen Fixation (BNF) in Soybeans
 - Lack of Quality Inoculant in the Market
 - Limited Access to Affordable Inoculants in African Countries
 - Complex Application Procedures
 - Lack of Protein Sufficiency and Soil Fertility in Soybean Production
 - Clumping in Alternative Inoculation Methods

- ### Solution
- Promotes biological nitrogen fixation, reducing the need for expensive nitrogen fertilizers.
 - Ensures the presence of symbiotic rhizobium bacteria, optimizing root nodulation for improved nutrient absorption.
 - Enhances BNF, thereby boosting soil fertility and reducing reliance on synthetic fertilizers.
 - Promotes natural nutrient cycling in the soil, contributing to sustainable agricultural practices.

- ### Key points to design your project
- Implementation steps for the technology include assessing product quantities, considering delivery costs, and engaging trainers for installation support.
 - Communication support, such as flyers, videos, and radio broadcasts, should be developed to promote the technology.
 - For improved maize variety optimization, companion planting with resistant soybean varieties and proper nutrient fertilization is recommended.
 - Collaboration with agricultural development institutes and agro-dealers facilitates successful technology implementation.

150,000 USD
To build the NoduMax factory
120,000 USD
To equip the NoduMax factory
💡 IP
Unknown

Technology from
ProPAS

Commodities
Soybean

Sustainable Development Goals

Categories
Inputs, Inoculant



Target groups
Farmers



NoduMax
<https://taat.africa/vod>
Last updated on 31 October 2025, printed on 31 October 2025

Enquiries e-catalogs@taat.africa

Zaï Pits: Water Harvesting and Soil Improvement



Zaï pits are a traditional Sahelian technique for restoring degraded land by capturing rainwater and nutrients. Farmers dig small basins (20–40 cm wide, 10–20 cm deep) during the dry season, creating 12,000–25,000 pits per hectare to enhance water retention. Organic matter and 5–6 g of NPK or DAP per pit improve soil fertility, supporting millet and sorghum growth. This method boosts water infiltration, soil structure, and crop resilience in arid areas. Zaï pits can be combined with other dryland techniques like stone bunds and tied ridges for greater land restoration and productivity.



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

Commodities

Sorghum/Millet

Sustainable Development Goals



Categories

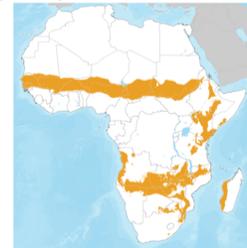
Pre-production, Practices, Water management

Tested/adopted in



Where it can be used

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



Target groups

Farmers

This technology is **TAAT1 validated**.

Scaling readiness: idea maturity unknown; level of use unknown

Inclusion assessment 4

Climate impact 7

Problem

- **Low rainfall and frequent droughts** in the Sahel reduce crop yields and threaten food security.
- **Soil degradation and crust formation** limit water infiltration and plant growth.
- **Nutrient-poor soils** hinder crop productivity, making farming unsustainable.
- **Runoff and erosion** lead to further soil loss and reduce available moisture for crops.

Solution

- **Increases crop resilience** by improving moisture availability during dry periods.
- **Boosts yields** by 60–90% for millet and sorghum compared to flat cultivation.
- **Restores degraded lands**, making marginal soils productive again.
- **Optimizes local resources** by incorporating organic and mineral fertilizers.
- **Is cost-effective and easy to adopt**, requiring only manual labor.

Key points to design your project

The **Zaï Pit Implementation** provides a structured approach for scaling up **Zaï pits** as a **land restoration and climate-resilient farming solution**. It integrates **financial, institutional, capacity-building, and technical aspects** to ensure sustainability and impact.

Key Steps:

1. **Define Objectives** – Align Zaï pit adoption with **national priorities** like food security and climate resilience.
2. **Financial Plan** – Secure funding through **government programs, NGOs, and climate funds**.
3. **Capacity Building** – Train **farmers and extension officers** on best practices.
4. **Needs Assessment** – Adapt **Zaï designs** based on local soil, rainfall, and cropping systems.
5. **Data & Governance** – Monitor **yields, soil health, and water retention** to guide policies.
6. **Impact Evaluation** – Track adoption and adjust strategies for **long-term sustainability**

60 - 90 %

Yield Improvement



Open source / open access



Zaï Pits

<https://taat.africa/cud>

Last updated on 28 November 2025, printed on 28 November 2025

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Demi-lune method: Rainwater harvesting method

Catch the Rain, Grow with the Grain!



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

The Demi-lune (Half-moon) technology is a simple rainwater harvesting method for dry regions. Farmers dig semi-circular pits (2–3 meters wide, 15–30 cm deep) to trap rainwater and enrich the soil with compost. This boosts crop growth, restores degraded land, reduces erosion, and improves soil fertility, making drylands productive again.

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

Inclusion assessment 4

Climate impact 7

- ### Problem
- Scarce and erratic rainfall limits crop growth and productivity.
 - Severe soil degradation and erosion reduce land fertility.
 - Low crop yields threaten food security and economic stability.
 - Lack of irrigation infrastructure leaves farmers reliant on unpredictable rainfall.
 - Nutrient-poor soils hinder healthy plant development.

- ### Solution
- Captures rainwater to boost water availability during dry spells.
 - Prevents soil erosion and restores soil fertility.
 - Increases crop yields and farming resilience.
 - Low-cost, accessible alternative to irrigation.
 - Enhances soil nutrients with organic matter.
 - Restores vegetation and supports biodiversity.
 - Strengthens food security and farmer livelihoods.
 - Promotes sustainable, eco-friendly farming.

Commodities
Sorghum/Millet, Maize, Cowpea,
Common bean

Sustainable Development Goals

Categories
Production, Practices, Water management,
Soil fertility

Best used with
Water Harvesting and Soil Improvement,
Contour Bunds for Water Harvesting
See all 2 technologies online

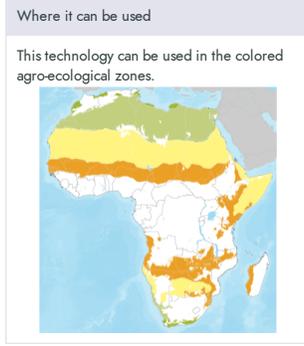
Key points to design your project

The **Half-Moon Implementation Framework** offers a structured approach to scale the use of half-moon pits for land restoration and climate-resilient agriculture. It focuses on integrating financial, technical, and capacity-building strategies to ensure sustainable, community-driven interventions in dryland areas.

Key Steps:

1. **Define Objectives:** Align with national priorities such as land restoration and climate adaptation.
2. **Develop Financial Plan:** Mobilize resources and promote farmer-driven scaling.
3. **Assess Capacity:** Provide necessary training for efficient implementation.
4. **Conduct Needs Assessment:** Tailor solutions to local conditions.
5. **Implement Monitoring:** Track progress on yields, soil health, and water retention.
6. **Evaluate and Refine:** Regularly assess impacts and adjust based on feedback.

This framework helps promote sustainable, scalable solutions to improve soil fertility, food security, and climate resilience in vulnerable regions.



IP
Open source / open access



Demi-lune method
<https://taat.africa/bsa>
Last updated on 5 February 2026, printed on 5 February 2026

Enquiries e-catalogs@taat.africa

SIS Framework: Roadmap for building a soil information system

Empower the soil data community with best practice tools and lessons learned for a sustainable SIS!



CABI and ISRIC- World Soil Information

Thaïsa Van Der Woude

The SIS Framework by CABI and ISRIC offers practical, phased guidelines for developing soil information systems, addressing financial, institutional, and technological aspects with tools and resources.

This technology is **validated**.
 9·8
 Scaling readiness: idea maturity 9/9; level of use 8/9

Inclusion assessment 3

Climate impact 7

- ### Problem
- SISs often fail after project funding ends due to the absence of sustainable transition plans.
 - Limited technical capacities hinder the development of data-driven products and system maintenance, leaving user needs unmet.
 - Poor understanding of target users and use cases leads to unclear objectives and weak SIS planning.
 - Inconsistent data formats and poor governance complicate data analysis and sharing.

- ### Solution
- Co-develop financial sustainability plans to ensure long-term viability.
 - Build technical capacity and identify roles for SIS design, development, and maintenance.
 - Conduct needs assessments for users, beneficiaries, and data producers.
 - Track the impact of the SIS and adapt to evolving user needs.

Commodities
All Crops

Sustainable Development Goals

Categories
Production, Policies

Best used with
8 steps to develop a Soil Information System (SIS)
See all 1 technologies online



Where it can be used

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

Target groups
Development institutions, Governments,

Key points to design your project

The SIS Framework, provides a structured approach to designing and developing sustainable Soil Information Systems (SIS). It ensures long-term viability by integrating financial, institutional, capacity, and technological aspects.

Key steps include:

- Defining clear objectives aligned with national priorities.
- Developing a financial sustainability plan beyond project funding.
- Building technical capacity for SIS maintenance and growth.
- Conducting user needs assessments for practical impact.
- Implementing FAIR data governance for accessibility and reliability.
- Monitoring impact to ensure continuous improvement.

100,000—200,000 USD

SIS roadmap development workshops, depending on needs.

IP

Open source / open access



Soil Information Workflow: 8 steps to develop a Soil Information System (SIS)



ISRIC - World Soil Information
Thaïsa van der Woude

Soil Information Workflow turns data into insights, helping professionals make smarter, sustainable decisions.

ISRIC-World Soil Information provides a structured approach to collect, organize, and serve soil data, helping users establish efficient soil information systems. It supports better soil management and informed decision-making through a series of eight essential steps, from needs assessment to data serving.

This technology is **validated**.

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

Inclusion assessment 4

Climate impact 6

Commodities

Sustainable Development Goals

Categories

Policies

Problem

- **Soil Degradation Crisis:** 65% of Africa's productive land is degraded due to desertification, affecting 45% of the continent.
- **Africa's soils are deteriorating:** Due to factors like organic matter loss, declining fertility, nutrient imbalance, pollution, soil biodiversity loss, increasing acidity, and erosion.
- **Key drivers:** include overgrazing, deforestation, and unsustainable farming practices, leading to soil degradation that threatens biodiversity, ecosystems, and productivity.

Solution

- **Building a Soil Information System (SIS):** Develop an integrated system to store, analyse, manage, and disseminate soil data to improve soil health and monitor deterioration.
- **SIS Profile Development:** Create a SIS profile that aligns with use cases and includes a viable business model for long-term sustainability.
- **Step-by-Step Design Process:** Follow a structured workflow for designing and building the system to ensure effective implementation and functionality.

Tested/adopted in

■ Tested & adopted
■ Adopted
■ Tested
■ Testing ongoing

Where it can be used

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

Target groups

Development institutions, Governments, Researcher center, Soil scientists

Key points to design your project

This technology provides a comprehensive approach to building or enhancing a Soil Information System (SIS), enabling effective soil data collection, analysis, and dissemination. To develop or improve a SIS in your country, you will need:

- Define the vision and objectives of the SIS.
- Collaborate with ISRIC and CABI to create a SIS roadmap.
- Collect, store, and organize soil data efficiently.

By adopting this approach, you can address soil challenges, enhance agricultural practices, and promote sustainable land management.

IP
 Open source / open access



BSFF: Organic fertilizer for soil improvement

Low cost fertilizer for healthy and profitable agriculture for African farmers.

Frass is a nutrient-rich compost produced from black soldier fly larvae (BSFL) treatment of biodegradable waste. Commercially, it consists of BSFL faeces, substrate residues, exoskeletons, and a microbial population aiding fermentation.



International Institute of Tropical Agriculture (IITA)
Dr Rousseau DJOUAKA

This technology is **validated**.

8·7

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

Inclusion assessment **4**

Climate impact **7**

Problem

- Africa faces a lack of organic waste management solutions, leading to severe environmental threats.
- Soil fertility in smallholder farms is declining due to nutrient imbalances, where more nutrients are extracted than replenished, worsening food security.

Solution

- BSFF technology converts organic waste into nutrient-rich compost, reducing environmental contamination and improving soil fertility.
- It promotes sustainable agricultural practices by enhancing soil health.

Key points to design your project

To integrate the BSFF technology into your project:

- **Educate Farmers:** Raise awareness among farmers about the benefits of using BSFF fertilizer for improving crop yields and soil health.
- **Promote Accessibility:** Ensure equitable access to BSFF products and financial support for local suppliers and smallholder farmers.
- **Calculate Fertilizer Needs:** Determine the required quantities of BSFF fertilizer, considering a recommended application rate of 10 tons per hectare for poor soils.



National phase application

Commodities

Vegetable crop

Sustainable Development Goals



Categories

Production, Inputs, Fertilizer

Best used with

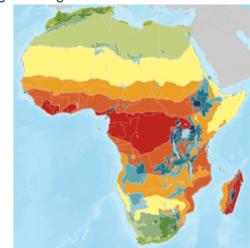
Black Soldier Fly Larvae (BSFL) proteins for low cost feeds
See all 1 technologies online

Tested/adopted in



Where it can be used

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



Target groups

Farmers



BSFF

<https://taat.africa/wma>

Last updated on 28 November 2025, printed on 28 November 2025

Enquiries e-catalogs@taat.africa

Biochar: Biomass Charcoal for Soil improvement

Biochar, a powerfully circular way to fight climate change



Sasakawa Africa Association
Moshood Sulaiman

Biochar technology is a form of charcoal. It is made through a process called pyrolysis which involves burning of biomass in an oven with little or no oxygen. What you get out of it is solid material which then is added into soil.

✓ This technology is **validated**.

8·7



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

Inclusion assessment **3**

Climate impact **7**

Problem

- **Over 40% of Africa's soils are degraded**, leading to low productivity and high vulnerability to climate shocks.
- **Farmers burn crop residues for quick field clearing**, but this practice emits greenhouse gases and destroys soil health.
- **Low fertiliser efficiency and high input costs** result in poor returns and widespread food insecurity.
- **Agricultural practices are not aligned with climate goals**, limiting national progress on sustainability and mitigation targets.

Solution

- Boosts staple crop yields by 15–35% while restoring degraded soils.
- Reduces dependence on costly fertilisers and enhances food security.
- Helps meet climate goals by sequestering carbon and reducing emissions.
- Strengthens resilience to droughts and supports sustainable land use.

Commodities

All Crops

Sustainable Development Goals



Categories

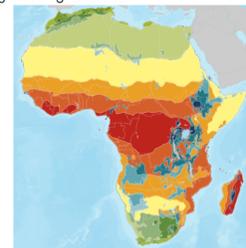
Production, Pre-production, Inputs, Fertilizer

Tested/adopted in



Where it can be used

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



Target groups

Farmers

Key points to design your project

The biochar technology can significantly enhance the livelihoods of smallholder farmers, especially women, by boosting farm productivity, and supporting climate resilience.

To integrate this technology:

- Integrate biochar into national regenerative farming and climate-resilience strategies.
- Use carbon-credit schemes to attract private investment and incentivize adoption.
- Support farmer training hubs to promote production and connect with carbon markets.
- Facilitate access to pyrolysis equipment—available locally in Nigeria—for national rollout.

5—10 Tones

Recommended Biochar quantity for 1 hectare



Open source / open access



Biochar

<https://taat.africa/vwm>

Last updated on 22 December 2025, printed on 22 December 2025

Enquiries e-catalogs@taat.africa

Soybean inoculant: *Rhizobium* inoculant range, various strains

N-fixing bacteria to reduce chemical fertilizer use

Stimulant is a specialized range of inoculants designed for various legume crops. It capitalizes on a unique symbiotic relationship between the legume plants and a beneficial bacterium known as Rhizobia. This natural partnership results in the addition of significant nitrogen levels to the soil, ranging from 40 to 150 kg per hectare.



UPL
Florent Clair

Commodities

Soybean, Groundnut, Cowpea,
Common bean

Sustainable Development Goals



Categories

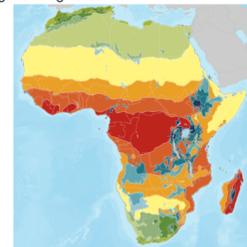
Production, Inputs, Inoculant

Tested/adopted in



Where it can be used

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



Target groups

Farmers

✓ This technology is **validated**.

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

Inclusion assessment **5**

Climate impact **7**

Problem

- Nitrogen limitation hampers plant growth, particularly affecting legume crops.
- Soil degradation arises from excessive reliance on chemical fertilizers.
- These factors culminate in economic hardships and food insecurity among farmers.

Solution

- UPL Powder Carrier Technology shields bacteria from harsh environmental conditions like high temperatures and pH fluctuations.
- It holds the CERES organic certification, meeting stringent organic standards.
- Tailored packaging suits the needs of smallholder farmers, enhancing accessibility.
- The powder formulation extends shelf life to 9 months, reducing wastage and improving efficiency.

Key points to design your project

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

- Estimate the quantity of products needed based on a cost range of USD 15-25 per hectare.
- Consider the accessibility of the technology in South Africa and calculate delivery costs, including potential import clearance and duties.
- Arrange training and support from a team of trainers during installation, factoring in the associated costs.
- Develop communication materials such as flyers, videos, and radio broadcasts to raise awareness about the technology.
- Enhance the effectiveness of the improved maize variety by companion planting with soybean varieties resistant to pests and diseases, and focus on nutrient fertilization.
- Collaborate with agricultural development institutes and agro-dealers to facilitate technology implementation in your country.



Open source / open access



Soybean inoculant

<https://taat.africa/pad>

Last updated on 9 January 2026, printed on 9 January 2026

Enquiries e-catalogs@taat.africa

ABC Grower: Biomineralization of weeds for soil improvement

Solar-Powered, Cost-Effective, and Ecologically Smart BioFertilizer for Thriving Crops and Sustainable Agriculture

ABC Grower is a biotechnology that extracts nutrients from weeds using positive microorganisms (EM). These nutrients are formulated to enhance crop growth, tailored for tropical soils. Powered by solar energy, it reduces fertilizer production time from 60 to 14 days, lowers costs by 10 to 20 times, and adds economic value to weeds for farmers.



Société de développement de l'agriculture durable (SDAD SARL)
Bienvenu Chabi ADJE

Commodities

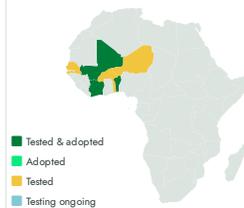
Sustainable Development Goals



Categories

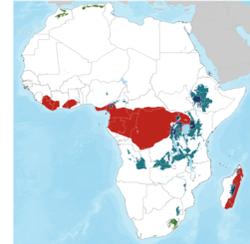
Production, Inputs, Fertilizer

Tested/adopted in



Where it can be used

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



Target groups

Farmers, Sellers

This technology is **validated**.

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

Inclusion assessment **4**

Climate impact **7**

Problem

- Climate change accelerates land degradation, threatening agricultural productivity and food security.
- Farmers using chemical inputs face poverty and environmental risks from heavy metal accumulation.
- Low adoption of compost in organic farming is due to lengthy production time, high water and labor requirements, and logistical challenges, including high costs and quantity demands.

Solution

- Cost Reduction: Significantly lower fertilization costs alleviate financial burdens for farmers.
- Improved Efficiency: Precise biofertilizer formulation enhances agronomic efficiency, surpassing conventional methods.
- Solar Energy: Solar energy reduces organic fertilizer production time from 60 to 14 days, simplifying production.
- Economic Valorization: Weeds in fields gain economic value, benefiting farmers economically.

Key points to design your project

To integrate this technology into your project:

1. Raise awareness among farmers about its benefits.
2. Ensure equitable access and financial support for local suppliers and smallholder farmers.
3. Calculate required quantities based on an initial cost of USD 8 per unit.
4. Consider delivery costs, import clearance, and duties if applicable.
5. Provide training and support for project installation.
6. Develop communication materials.
7. Collaborate with agricultural development institutes for implementation.

1,500 USD

Production Kit purchase

40 %

Benefit for the kit purchase

15 Years

Lifespan



Patent granted



ABC Grower

<https://taat.africa/nbb>

Last updated on 11 February 2026, printed on 11 February 2026

Enquiries e-catalogs@taat.africa

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

Inclusion 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.

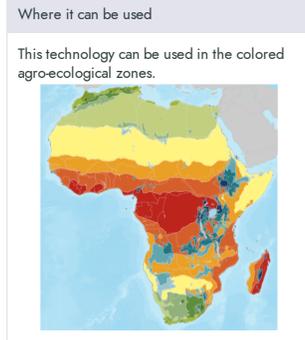
IP
Unknown

Technology from
CASH from EIA

Commodities
Wheat, Teff, Maize

Sustainable Development Goals

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



Target groups



NextGen Advisory

<https://taat.africa/zdh>

Last updated on 27 October 2025, printed on 27 October 2025

Enquiries e.catalogs@taat.africa



TAAT Soil health technologies

🔗 <https://taat.africa/cph>

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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