



Soil health

This toolkit is a set of methods, practices, or products used to maintain or enhance the quality and fertility of soils. They include techniques such as crop management, the use of organic fertilizers, crop rotation, and other sustainable agricultural practices aimed at preserving soil health and maximizing crop yields.

18 TECHNOLOGIES | CREATED ON APR 30, 2024 BY TAAT PROFILING TEAM | LAST UPDATED APR 30, 2024



TECHNOLOGIES IN THIS TOOLKIT

- ABC Grower: Biomineralization of weeds for soil improvement
 Turbocrop: Field crop plant
- establishment biostimulant
- Specialty Fertilizers and Local Blending for Banana and Plantain
- Specialty Fertilizer Blends for Common Bean
- Specialty blended fertilizers for root and tuber crops
- Seed Inoculation with Rhizobia
- Relay intercropping of sweet

potato with legumes

- Processing and Application of Composted Manures
- Pre-plant blended fertilizers and nitrogen topdressing for maize
- NoduMax: Inoculant for Soybeans
- Cut and Bury: Motorized weeders for rice production
- **Conservation agriculture**: Minimal Tillage and Surface Mulching of Soils
- Maize-legume rotation and intercropping

- **Soybean inoculant**: Rhyzobium inoculant range, various strains
- Foliar micronutrient addition for healthier rice
- Precision Fertilizer Micro-Dosing for Millet and Sorghum Yield...
- Urea deep placement: Nitrogen management for Efficient Rice...
- Value Addition to Poultry Manure





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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.



ABCGROWER

SOCIETE DE DEVELOPPEMENT DE L'AGRICULTURE DURABLE (SDAD SARL) Bienvenu Chabi ADJE





https://taat.africa/tvh

UPL

Turbocrop: Field crop plant establishment biostimulant TURBOCRO Specialized biostimulant for root development and vegetative UPL Ltd. growth on field crops Florent Clair Turbocrop is a specialized biostimulant product designed to enhance the development of roots and promote vegetative growth in crops. It is specifically Commodities formulated to improve plants' ability to withstand and cope with abiotic stress Wheat, Maize, Groundnut, Common bean, factors, such as extreme temperatures, drought, or nutrient deficiencies. Other commodity Sustainable Development Goals This technology is validated. 9.9 Cost: \$\$\$) 10 - 20 USD Fertilizer cost 460 Kg/ha 170 USD/ha Úір Benefit on maize in South Africa Yield increase Patent granted Categories Problem Solution Production, Inputs, Fertilizer • Imbalances in soil nutrients hinder optimal plant • Stimulates root hair formation for enhanced Tested/adopted in growth and productivity. nutrient absorption. • Factors constrain the potential size and structure • Promotes stem elongation and leaf growth, of plants, impacting overall yield. particularly during tillering. • Restrictions in root development impede nutrient • Provides a balanced blend of essential nutrients uptake, affecting plant health and productivity. for optimal crop growth. Tested & adopted • Inefficiencies in nutrient absorption and utilization · Improves nutrient utilization efficiency for better Ad opted Tested by plants result in suboptimal growth. plant performance. Testing ongoin • Various factors contribute to limitations in crop • Offers a holistic approach to plant growth, Where it can be used yields, affecting agricultural productivity and food addressing root development, stem elongation, security. leaf formation, and nutrient optimization. This technology can be used in the colored agro-ecological zones Key points to design your business plan For Manufacturers: Turbocrop technology supports higher yields and sustainable farming. Production requires a license from the provider and reliable raw material sourcing. Key clients include distributors, development projects, governments, and NGOs. Success depends on strong wholesale distribution partnerships.

For Users:

Turbocrop offers a safer, eco-friendly alternative to traditional farming. It is priced at USD10–20 per hectare and available from South Africa, so factor in delivery and import costs. Collaborating with development institutes and agri-service providers can improve access and impact.







Turbocrop https://taat.africa/tvh Last updated on 14 April 2025, printed on 15 May 2025



Target groups

Farmers

Enquiries e-catalogs@taat.africa



Specialty Fertilizers and Local Blending for Banana and Plantain https://taat.africa/drh Last updated on 22 May 2024, printed on 15 May 2025 Enquiries <u>e-catalogs@taat.africa</u>

Specialty Fertilizer Blends for Common Bean

Boost your Bean Production Yield

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Specialty Fertilizer Blends for Common Bean are custom fertilizers with essential nutrients like nitrogen, phosphorus, potassium, and sulfur. They address soil deficiencies in Sub-Saharan Africa and cater to the needs of common bean farming. This promotes efficient nutrient use, enhancing growth and overall crop health



Example of a fertilizer blend



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

This technology is TAAT1 validated .	Scaling readiness: idea maturity unknown;	level of Technology from
		ProPAS
C C) IP	Commodities
Unknown		Common bean
 Soil Issues: Many soils in Sub-Saharan Africa lack essential nutrients and suffer from low fertility, limiting the production of crops like common beans. Insufficient Crop Resilience: Crops like common beans are vulnerable to drought, pests, diseases, and stress, impacting their quality and yield. Specialty Fertilizer Blends for Common Bean are designed to address these issues. 	 Solution Balanced Nutrient Provision: Specialty fertilizers offer essential nutrients like nitrogy phosphorus, potassium, and sulfur, addressi soil deficiencies in Sub-Saharan Africa. Crop Health and Yield Enhancement: The right nutrient mix boosts common bean productivity and resilience, helping them readrought, pests, diseases, and stress. Specific Crop Needs and Nutritional Vata By blending various fertilizers, specific form for common beans are created, enhancing 	en, ing Categories Production, Inputs, Fertilizer sist Tested/adopted in
and nutritional value. Ley points to design your business plan tanufacturer: Set up a unit, recruit personnel, obtain licenses, conduct market research, develop roduction and pricing strategies, secure raw materials, establish transportation networks, collaborate with esearch institutions, and factor in costs. eseller: Establish a distribution network, train staff, develop a sales strategy, partner with agricultural		vith
associations, offer additional services, secure storage s extension services, and consider costs. User Farmers: Learn about the benefits, assess soil fe partner with extension services. Additional Considerations: Comply with governmen	space, establish a delivery system, collaborate wi stillity, develop a cropping plan, factor in costs, a t regulations and be mindful of the environmental	th and I
impact.		
		Farmers
Gender assessment	Climate impact	
Specialty Fertilizer Blends for Com https://taat.africa/giq Last updated on 22 May 2024, printed on 15 May	mon Bean E	nquiries <u>ecatalogs@taat.africa</u>



Specialty blended fertilizers for root and tuber crops

Special fertilizer for root and tuber crops

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

This technology is <u>TAAT1 validated</u>.

16 to 26 ton per hectare

sweetpotato yield increase

Solution

6.9

- Problem
- Soil Issues: Many soils in Sub-Saharan Africa lack essential nutrients and suffer from low fertility, limiting the production of crops like sweet potato and cassava.
- Insufficient Crop Resilience: Crops like sweet potato and cassava are vulnerable to drought, pests, diseases, and stress, impacting their quality and yield.
- Balanced Nutrient Supply and Crop-Specific Formulas: These fertilizers provide essential nutrients to address soil deficiencies in Sub-Saharan Africa and are tailored to meet the specific needs of crops like sweet potato and cassava.

Open source / open access

• Enhanced Crop Health and Yield: The right nutrient formula enhances crop productivity, quality, and resilience, helping them resist drought, pests, diseases, and stress.

Key points to design your business plan

Manufacturer: Set up a unit, hire staff, get licenses, conduct market research, develop a production plan, formulate pricing, secure raw materials, establish transportation and storage, collaborate with research institutions, partner with extension services and NGOs, factor in costs, and research subsidies.

Reseller: Establish a distribution network, train staff, develop a sales strategy, partner with agricultural associations, offer additional services, secure storage, establish delivery system, partner with local retailers, collaborate with extension services, and consider costs.

User Farmers: Learn about specialty fertilizers, assess soil fertility, develop a cropping plan, factor in costs, and partner with extension services, retailers, cooperatives.

Additional Considerations: Research government regulations, be mindful of environmental impact.

Gender assessment

Clim







International Institute of Tropical Agriculture (IITA) Paul Woomer

_	Technology from
	ProPAS
	Commodities
	Sweet Potato, Cassava
	Sustainable Development Goals
	8 весан тики на гознане алинти
	Categories
	Production, Inputs, Fertilizer
	Tested/adopted in
	Tested & adopted
	Adopted
	Testing ongoing
	Where it can be used
	This technology can be used in the colored agro-ecological zones.





Specialty blended fertilizers for root and tuber crops https://taat.africa/ytz Last updated on 22 May 2024, printed on 15 May 2025 Enquiries <u>e-catalogs@taat.africa</u>

Target groups Farmers



Seed Inoculation with Rhizobia

Boosting Crops, Nourishing Communities

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





International Institute of Tropical Agriculture (IITA) David Ojo

This technology is <u>TAAT1 validated</u> .	Scaling readiness: idea maturity: 7/9; level of use: 7/9	Technology from <u>ProPAS</u>
Cost: \$\$\$ 15,000 USD Total cost of manufacturing one ton of dry inoculant QIP		Commodities Soybean, Common bean Sustainable Development Goals
 Problem Nitrogen Deficiency: Soils often lack sufficient nitrogen for plant growth. Incompatible Rhizobia: Newly introduced legume species may not be compatible with local rhizobia, leading to low yields. Soil Health: Maintaining soil fertility and health is a constant challenge. Plant Diseases: Farmers constantly battle against diseases that can devastate crops. Sustainability: Balancing economic viability with environmental sustainability is a major concern. 	 Solution Biological Nitrogen Fixation: Rhizobia address nitrogen deficiency. Specific Strain Introduction: Inoculation ensures the presence of the needed rhizobia. Rhizobia Population Boost: Inoculation guarantees optimal nodulation and nitrogen fixation. Sustainable Farming: Rhizobia promote sustainable agriculture. Stress-Tolerant Strains Introduction: Inoculation mitigates effects of stress on nitrogen-fixing symbiosis. 	2 HORE 2 HORE 2 ADDRESS 2 ADDR
Key points to design your business plan Manufacturer: Focus on R&D for effective, regional strains, high-quality production with strict quality control, and complying with regulations. Research target markets, price competitively, and design user- friendly packaging with local language instructions. Build a reliable distribution network, potentially using cold chain management for hot climates. Reseller: Partner with reputable manufacturers and extension agencies. Develop a sales & marketing strategy focused on farmer education. Train staff on product knowledge, storage/handling, and communication. Maintain proper inventory levels and consider credit options for farmers (especially women). Ensure cool and dry storage facilities. Farmer: Assess your legume crop and soil fertility to see if inoculants are beneficial. Do a cost-benefit analysis considering yield increase and long-term soil health. Purchase inoculants from reputable resellers who guarantee quality and proper storage. All Parties: Emphasize the environmental benefits (reduced fertilizer reliance) and use local language communication materials to educate farmers about this technology and its application.		Tested/adopted in Tested/adopted in Tested & adopted Adopted Testing orgoing Where it can be used in the colored agroecological zones.



https://taat.africa/gcg Last updated on 2 October 2024, printed on 15 May 2025







Pre-plant blended fertilizers and nitrogen topdressing for maize https://taat.africa/fmd Last updated on 22 May 2024, printed on 15 May 2025

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.

7.7





International Institute of Tropical Agriculture (IITA) David Ojo





NoduMax https://taat.africa/jqr Last updated on 15 July 2024, printed on 15 May 2025 Enquiries e-catalogs@taat.africa



Cut and Bury: Motorized weeders for rice production Africa Rice Effortless Weed Control for Bountiful Harvests Africa Rice Center The Motorized Weeders for rice production (cut and bury) technology eliminate Kalimuthu Senthilkumar weeds in rice crops. The rotating blades of the weeders ensure effective weeding while minimizing damage to rice crops and soil. These machines can be used Technology from from the germination of rice plants until the canopy closes. ProPAS This technology is **TAAT1 validated**. \checkmark 8∙8 8/9; level of use: 8/9 Commodities Rice (Cost: \$\$\$) 550—750 USD ROI: **\$\$**\$ 80 % Sustainable Development Goals Cut & bury with a 2-stroke petrol engine Labour-saving for weeding. Open source / open access Categories Problem Solution Production, Equipment, Land preparation, • Introduction of motorized weeders for efficient • Labor-intensive manual clearing of paddy fields Weed control · Inefficient weed control methods leading to clearing of paddy fields reduced rice yields · Adoption of mechanized weed control methods Tested/adopted in • Limited access to affordable and effective to increase rice yields mechanized weeders for smallholder rice farmers • Provision of affordable and effective mechanized weeders for smallholder rice farmers Tested & adopted Key points to design your business plan Ad opted Tested Testing ongoing The Motorized Weeders for rice production (cut and bury) technology appeals to manufacturers, resellers, and users (farmers). Where it can be used For Manufacturers: This technology can be used in the colored agro-ecological zones • Identify raw material suppliers and efficient transportation methods. • Evaluate costs and target customers like resellers, cooperatives, and development projects. For Resellers: • Source equipment from reputable manufacturers and ensure proper transportation and storage. • Determine costs and highlight benefits to attract farmers, development projects, and cooperatives. For Users: Target groups • Utilize motorized weeders to enhance farming efficiency. • Partner with sellers. Farmers Gender assessment Climate impact Cut and Bury Enquiries e-catalogs@taat.africa https://taat.africa/rec

Last updated on 31 May 2024, printed on 15 May 2025







Foliar micronutrient addition for healthier rice Africa Rice Targeted nutrients for stronger crops and richer grain Africa Rice Center Foliar micronutrient addition involves spraying liquid fertilizers onto rice leaves Sali Atanga Ndindeng and stems. This ensures quick nutrient absorption, improving yields and grain quality with smaller quantities than soil application. Farmers apply the solution at Technology from key growth stages. This method boosts crop resilience and productivity, ProPAS especially in nutrient-deficient soils. Commodities 8.8 This technology is **TAAT1 validated** Rice (Cost: \$\$\$) **41.1** USD (ROI: \$\$\$)7-30 % Sustainable Development Goals Yield increased Fertilizers 30-45 USD Οιρ 40 USD Knapsack sprayers with a tank of 20 Protective kits per person Open source / open access liter **1** Problem Solution Categories Micronutrient Deficiencies and Low Yields: Targeted Micronutrient Application and Rice crops often lack essential micronutrients like Efficient Uptake: Spraying essential Production, Inputs, Fertilizer zinc, copper, and boron, leading to low yields micronutrients like zinc, copper, and boron Tested/adopted in and poor grain nutrition. directly onto leaves addresses deficiencies, • Soil Nutrient Depletion: Soils in Sub-Saharan enhances nutrient availability, and maximizes Africa are increasingly depleted of vital nutrients, absorption efficiency. • Increased Yields and Grain Quality: Improved impacting crop health. Inefficient Nutrient Uptake and Crop nutrient uptake results in higher rice yields and Vulnerability: Traditional soil-based fertilizers better nutritional quality. Tested & ador Ad opted result in inefficient nutrient absorption, making Soil Health Improvement and Crop Tested Testina ona oina crops more susceptible to diseases and Resilience: Supplementing with foliar environmental stresses micronutrients counteracts soil nutrient depletion Where it can be used and strengthens crops against diseases and This technology can be used in the colored environmental stress. agro-ecological zones Key points to design your business plan This technology addresses the challenge of low micronutrient content in rice, improving both grain yield and nutritional value. • The cost structure includes various elements such as the price per kilogram of microelements in fertilizers, protective kits, knapsack sprayers, and renting tractor-mountable sprayers. • Training is crucial for successful implementation, and collaboration with agro dealers is essential. Target groups • The potential profit can be estimated based on positive outcomes observed in Brazil and Malaysia. Farmers Gender assessment 4 Climate impact **7** Foliar micronutrient addition for healthier rice Enquiries e-catalogs@taat.africa https://taat.africa/iwu

Last updated on 2 October 2024, printed on 15 May 2025



Enhancement

https://taat.africa/nxc

Last updated on 27 March 2025, printed on 15 May 2025





Value Addition to Poultry Manure

Transforming waste into wealth

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.

- V This technology is **TAAT1 validated**. 7.7 ProPAS Cost: \$\$3 5,000-10,000 USD Poultry drying and pelleting equipment 30,000 USD 3,000 USD organic fertiliser production plant of 15 m3 anaerobic digester able to Open source / open access 15 ton per hour process 300 kg of poultry manure per day Problem Solution Categories • Pathogens and Unpleasant Odors: Fresh Pathogen-Free Organic Fertilizer Production: chicken manure can contain harmful pathogens Converts chicken manure into safe, nutrient-rich and emit an off-putting odor. organic fertilizer through composting, ensuring
- 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.
- 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 business plan

For Farmers and Local Businesses:

Transform poultry manure into eco-friendly fertilizer for healthier soil and higher crop yields.

Steps to integrate this technology in your business:

- Source manure reliably.
- Set up composting facilities.
- Obtain necessary equipment.
- Train staff and adapt to local conditions.
- Research market and develop marketing strategy.
- Collaborate with local agricultural services.







Value Addition to Poultry Manure https://taat.africa/yzj Last updated on 22 May 2024, printed on 15 May 2025



LIVESTOCK RESEARCH International Livestock

Research Institute (ILRI) Adeniyi Adediran



Production, Pre-production, Practices, Animal waste management

Best used with

- <u>Biosecurity for Disease</u> Prevention >
- Low-Cost Cage and Free-Range Containment >

Tested/adopted in



Where it can be used

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







Soil health

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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