TEGO 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.

International Institute of Tropical Agriculture (IITA)
Jonga Munyaradzi

This technology is TAAT1 validated.

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

ROI: $$$ **20—35 %**

Yield increased

IP

Trademark

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 business plan

This technology is relevant to manufacturers (seed multipliers), resellers, and users.

- To efficiently multiply DroughtTEGO seeds, seed companies need to acquire Foundation or Registered Seed and obtain certificates to propagate
- DroughtTEGO varieties, complying with licensing requirements.
  Resellers must identify reliable sources for bulk procurement of DroughtTEGO seeds, optimize transportation logistics, and secure suitable storage facilities.
- DroughtTEGO maize varieties offer a transformative solution for farmers. Key partners include sellers of DroughtTEGO maize varieties to promote widespread adoption.

Gender assessment 3

Climate impact 3

Technology from

ProPAS

Commodities

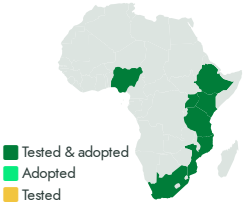
Maize

Sustainable Development Goals

Categories

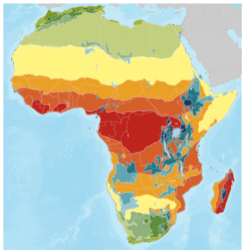
Production, Improved varieties, Yield improvement, Drought tolerance

Tested/adopted in



Where it can be used

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



Target groups

Farmers, Seed companies

Precision Rice Irrigation and Surface Leveling

Level Up Rice Yields with Precision Irrigation and Resource Conservation

These technologies involve creating flat surfaces in rice fields and using pumps to evenly distribute water. This helps farmers save water, energy, and nutrients, improving rice growth and increasing yields.

Africa Rice Center
Sali Atanga Ndindeng

This technology is TAAT1 validated.

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

Cost: $$$ **4 700—5 500 USD**

Add-on equipment

30—80 USD	1 000 USD	800 USD	IP
Hand-operated pumps	Solar-powered pump	High-pressure pumps	Unknown

Problem

- The variation in ground level significantly impacts rice yield, with a notable decrease.
- Leveling the land requires substantial effort from farmers.
- The irrigation methods employed by farmers can be costly and, at times, stress the plants.

Solution

- Engineered irrigation surfaces ensures a uniform distribution of water across the crop, optimizing growing conditions.
- Laser-guided systems and mechanized tools reduce the manual effort required, making the process more accessible for farmers.
- Water lifting technologies provide efficient water delivery also contributes to healthier plant growth, alleviating stress on the crops.

Key points to design your business plan

Engineered irrigation surfaces and water lifting technology are beneficial for fleet managers and farmers to reduce rice yield losses.

- Fleet managers should identify reliable sources for equipment, consider transportation methods, and explore storage facilities.
- Costs vary based on size, and potential customers include farmers, development projects, and cooperatives.
- For farmers, choosing the right equipment size is crucial, with costs ranging from 4,700 to 5,500 USD for small-scale soil leveling systems and 30 to 1,000 USD for water lifting tools.

Gender assessment 4

Climate impact 7

Technology from

ProPAS

Commodities

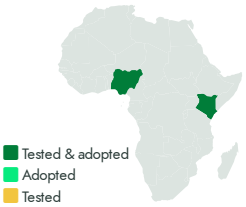
Rice

Sustainable Development Goals

Categories

Production, Practices, Water management

Tested/adopted in



Where it can be used

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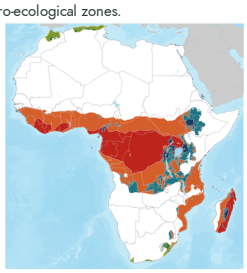


Target groups

Farmers

Foliar micronutrient addition for healthier rice

Enhancing Yield and Nutrition with Micronutrient Sprays

The technology "Foliar Micronutrient Addition for Healthier Rice" is developed to address micronutrient deficiencies in rice crops. The application of micronutrients onto the rice canopy aims to enhance the harvest yield and nutritional quality of the grain without requiring extensive investment or infrastructure.

Africa Rice Center
Sali Atanga Ndindeng

This technology is TAAT1 validated.

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

Cost: $$$ **41.1 USD**
Fertilizers

ROI: $$$ **7—30 %**
Yield increased

40 USD
Protective kits per person

30—45 USD
Knapsack sprayers with a tank of 20 liter

IP
Open source / open access

Problem

- Crucial deficient of soil in rice-growing areas in crucial micronutrients like magnesium, calcium, copper, zinc, manganese, and boron.
- Low rice yield and micronutrient content
- Crucial deficient of soil in rice-growing areas in crucial micronutrients like magnesium, calcium, copper, zinc, manganese, and boron.
- Low rice yield and micronutrient content

Solution

- The technology supplements essential elements directly to plant leaves,
- Enhances both grain yield and nutritional value. It can be used in various soil conditions.
- The nutrients are quickly absorbed through the leaves, providing immediate benefits to the plant.

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.
- The potential profit can be estimated based on positive outcomes observed in Brazil and Malaysia.

Gender assessment 3

Climate impact 6

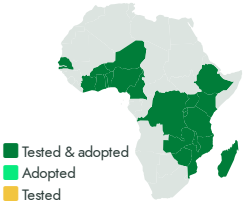
Technology from
ProPAS

Commodities
Rice

Sustainable Development Goals

Categories
Production, Practices, Yield improvement

Tested/adopted in



Where it can be used

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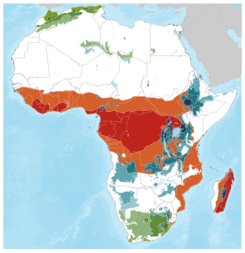


Target groups
Farmers

Empowering Sustainable Hide Curing and Leatherworks Hide Curing and Secondary Leatherworks

Turning hides into leather to enrich communities

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

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

1,000 USD
Investment cost

ROI: $$$ **100 %**

IP
Open source / open access

Problem

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

Solution

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

Key points to design your business plan

Integrating hide curing and secondary leatherworks technology maximizes the value of livestock production. To effectively integrate this technology:

- Learn techniques like cleaning, drying, and tanning to ensure hides are utilized efficiently.
- A modest investment of 1,000 USD establishes a local leatherworks business.
- Training is crucial for proper implementation.

By following these steps, communities can enhance the value of their livestock production, fostering economic opportunities and sustainability.

Gender assessment 3

Climate impact 5

Technology from

ProPAS

Commodities

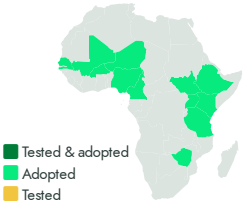
Other animal

Sustainable Development Goals

Categories

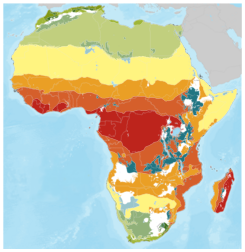
Transformation, Practices

Tested/adopted in



Where it can be used

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



Target groups

Breeders

Ethical Meat Processing Humane Slaughtering and Meat Inspection

Enhance meat quality while prioritizing animal welfare.

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

Bleeding of a humanely stunned small ruminant (FAO)

International Livestock Research Institute (ILRI)
Adeniyi Adediran

This technology is TAAT1 validated.

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

Cost: $$$ **2,000—2,500**
USD
Goat and sheep slaughter slab

ROI: $$$ **30 %**
Per animal

25—35 %
Dressed meat value added

IP
Open source / open access

Problem

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

Solution

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

Key points to design your business plan

Utilizing humane slaughtering and meat inspection technology is vital for ensuring food security and sustainability. To establish such facilities,

- A rigorous business plan, proper processing facilities,
- Access to quality animals, and skilled labor are essential.
- Collaborations with slaughterhouse operators, government agencies, and producer associations are crucial for successful implementation and widespread adoption of this technology.

Gender assessment 4

Climate impact 5

Technology from

ProPAS

Commodities

Livestock

Sustainable Development Goals

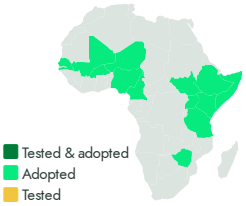
2 ZERO HUNGER

12 RESPONSIBLE CONSUMPTION AND PRODUCTION

Categories

Transformation, Practices, Agri-food processing

Tested/adopted in



Where it can be used

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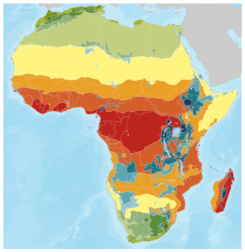


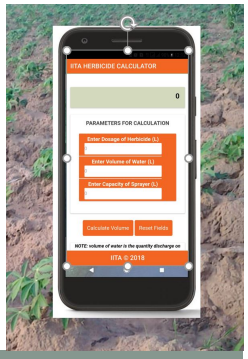
Target groups

Breeders

Herbicides Calculator

Reduce pesticide and herbicide losses with IITA's herbicide calculator

The IITA Herbicide Calculator is a digital tool that helps farmers figure out the right amount for backpack sprayers. This tool was developed using Java language, the Ionic framework, and Android Studio, ensuring its robustness and usability.



International Institute of Tropical Agriculture (IITA)
Godwin Atser

This technology is TAAT1 validated.

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

30,000 USD

Cover training, android phones, data

IP

Open source / open access

Problem

- The widespread misuse of pesticides (including herbicides) due to poor calibration of spray tanks.
- Loss of inputs (pesticides or herbicides) during applications.
- Residue of chemical products in crops due to overdosing of pesticides or herbicides.

Solution

- The"IITA Herbicides Calculator" technology ensures the precise application of pesticides, mitigating issues related to over or under-dosing.
- Its promotes the effectiveness of herbicides, facilitating their optimal application.

Key points to design your business plan

To use this technology,

- Consider the cost of the tool, including training, android phone, and data expenses.
- Estimate profit.

Gender assessment 4

Climate impact 6

Technology from

ProPAS

Commodities

Maize, Rice, Sorghum/Millet, Cowpea, Soybean, Cassava, + 1 more

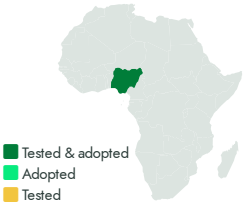
Sustainable Development Goals

3 GOOD HEALTH AND WELL-BEING
8 DECENT WORK AND ECONOMIC GROWTH
9 INDUSTRY, INNOVATION AND INFRASTRUCTURE

Categories

Production, Digital applications, Pest control

Tested/adopted in



Where it can be used

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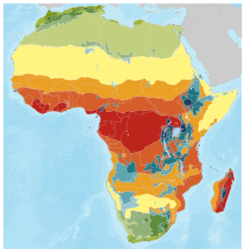
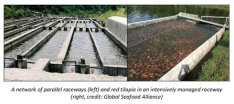


Target groups

Farmers

In-Pond Raceway Systems for Fish Farming



A network of parallel raceways (left) and red tilapia in an intensively managed raceway (right, credit: Global Seafood Alliance)

Revolutionize your fish farming with IPRS for maximum yields and sustainability.

The In-Pond Raceway System (IPRS) is an advanced aquaculture technology that maintains optimal water quality through continuous water flow and waste management, allowing for high-density fish farming.

This technology is TAAT1 validated.

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

Cost: $$$ **4 000 USD**

IPRS of 5 m long, 1.2 m wide, and 1.2 m deep

ROI: $$$ **30 %**

Profit margin increased

0.5882 kg of fish
for 1kg of feed

1.57 USD
8-month total variable costs per kg

0.31 USD
8-month total fixed costs per kg

IP
Patent granted

Problem

- Traditional pond farming limits fish productivity per area, reducing profits.
- Inadequate waste removal causes pollution and harms fish health.
- Traditional methods demand extensive land and labour, raising costs.
- Inadequate water circulation and oxygen levels lead to inefficient feed conversion.

Solution

- The In-Pond Raceway System (IPRS) enables stocking densities of up to 150 kg per cubic meter.
- IPRS recreates the fish's natural environment, promoting faster growth and keeping them free from diseases and stress.
- Production of higher-quality fish in less water and often exceeding traditional pond production by 200 to 300%.

Key points to design your business plan

The In-Pond Raceway System (IPRS) technology offers solutions for managing pests and diseases, improving fish yield and quality, and promoting sustainable aquaculture.

To integrate it in your business,

- Suppliers of IPRS equipment are crucial partners, considering its availability in Kenya and Nigeria.
- Integrating complementary technologies can further optimize its benefits, potentially increasing profit margins by up to 30% while conserving water.

Gender assessment 4

Climate impact 7

WorldFish
Bernadette Fregene

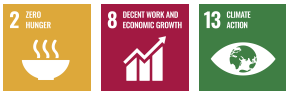
Technology from

ProPAS

Commodities

Fish

Sustainable Development Goals



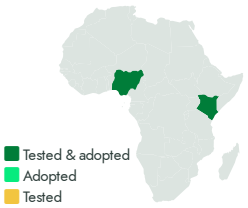
Categories

Production, Practices, Production system

Best used with

- All Male Tilapia Fingerlings with Greater Yield and Uniformity ›
- Fast Growing and Hybrid African Catfish ›

Tested/adopted in



Where it can be used

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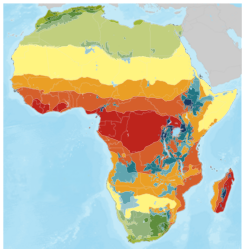
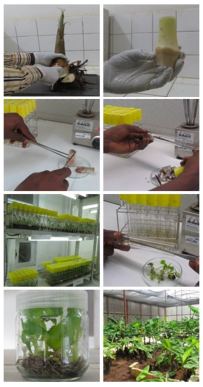


In-Vitro Banana Tissue Culture Propagation

A rapid quality plantlets delivery technology for banana

In-Vitro Tissue Culture Propagation involves a series of steps including initiation, multiplication, shooting and rooting, and hardening, all performed in controlled, sterile laboratory conditions to produce disease-free banana and plantain plantlets.



Steps of in-vitro tissue culture micro propagation: a) Removal of sheaths, b) Separated corm, c) Desinfection and segmentation of corm, d) Transferal to sterile tubes with growth media tubes, e) Culturing in climatized chamber, f and g) Transferal of propagules for proliferation of shoots by subculturing in jar, and h) Nursing of plantlets in screenhouse (Credit: B. Dhed'a)

International Institute of Tropical Agriculture (IITA)
Amah Delphine

This technology is TAAT1 validated.

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

Cost: $$$ **1,3 USD**
Per plantlets

ROI: $$$ **40 %**
Profit

3000 Tissue Culture plantlets
A nursery business can produce 3,000 TC plantlets per cycle

IP
No formal IP rights

Problem

- Traditional crops were more susceptible to extreme weather conditions, leading to significant crop damage and reduced yields.
- Traditional propagation methods were more susceptible to diseases, resulting in widespread outbreaks
- Natural disasters and disease outbreaks often led to slow recovery in agricultural systems

Solution

- In vitro micro-propagation eliminates all pests and diseases except for viruses.
- TC plants have the benefits of uniformity and fast propagation of large numbers of plantlets.
- These advantages enable marketing and more rapid recovery from broad-scale damage such as disease outbreak and extreme weather.

Key points to design your business plan

Utilizing in-vitro tissue culture propagation enhances banana and plantain production by providing disease-free planting materials. To integrate this technology, consider steps such as:

- Business planning, obtaining financing for equipment, staff training, and farmer awareness campaigns.
- Source materials from countries with expertise in tissue culture propagation.
- Associate with other technologies like Improved Varieties of Plantain for Tropical Lowlands and Improved Varieties of Banana for the African Highlands, as well as Propagation of Disease-Cleaned Suckers, can maximize benefits.

Gender assessment 4

Climate impact 7

Technology from

ProPAS

Commodities

Banana/Plantain

Sustainable Development Goals

2 ZERO HUNGER

12 RESPONSIBLE CONSUMPTION AND PRODUCTION

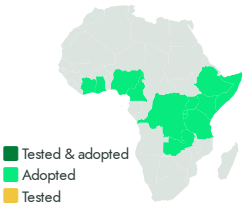
Categories

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

Best used with

- Improved Varieties of Plantain for Tropical Lowlands ›
- Improved Varieties of Banana for the African Highlands ›
- Propagation of Banana and Plantain Disease-Cleaned Suckers ›

Tested/adopted in



Where it can be used

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

MoneyMaker Solar pumps Mechanized irrigation pumps

Low-cost and fast irrigation technologies for smallholder farmers.

The MoneyMaker Solar pump, weighing 2kg and complemented by a 60W solar panel, operates as a compact submersible pressure pump. This solar-powered solution offers a lightweight and efficient option for small-scale irrigation, reducing reliance on manual methods and traditional power sources.

This technology is pre-validated.

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

IP

Trademark

Problem

- Small-scale farmers in sub-Saharan Africa face challenges due to water scarcity.
- Labor-intensive irrigation methods such as bucket systems are inefficient and labor-intensive.
- Limited financial resources hinder smallholder farmers' adoption of modern irrigation technologies.

Solution

- MoneyMaker offer efficient and affordable solutions to address water scarcity.
- Replaces manual and labor-intensive irrigation techniques with more efficient and sustainable options.
- Provides affordable irrigation options like the Starter Pump, facilitating the transition from traditional methods to more productive practices for smallholder farmers.

Key points to design your business plan

The MoneyMaker Solar pump offers technology appeals to manufacturers, resellers, and farmers.

Manufacturers

- Identify reliable suppliers of raw materials.
- Establish efficient transportation methods.

Resellers

- Source pumps from reputable manufacturers.
- Develop efficient transportation channels.

Users

- Partner with experienced sellers or managers.
- Understand the cost of acquiring and operating pumps.

Gender assessment 4

Climate impact 7

KickStart International Inc.
Alan Spybey

Commodities

horticultural crops, Vegetable crop

Sustainable Development Goals

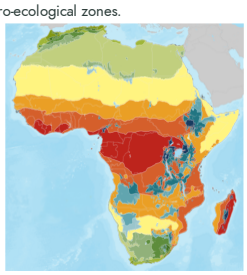
Categories

Production, Equipment, Land preparation

Tested/adopted in

Where it can be used

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



Target groups

Farmers, Manufactures

MoneyMaker Low-cost irrigation pumps

Low-cost irrigation technologies for increasing incomes for smallholder farmers.

MoneyMaker offers a range of irrigation pumps suitable for small plots in sub-Saharan Africa, including the MoneyMaker Hip, Starter, and Max, with varying flow rates and capacities. These non-motorized pumps are compact and designed to support small-scale farmers in transitioning from rain-fed farming.

KickStart International Inc.
Alan Spybey

This technology is pre-validated.

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

Cost: $$$ **50—90 USD**
Pumps cost

200—500 %
Farmer increases their farm produce

IP
Open source / open access

Problem

- Water scarcity affecting crop irrigation in small farms
- Challenges with manual and labor-intensive irrigation methods
- Financial barriers hindering adoption of modern irrigation technologies

Solution

- MoneyMaker irrigation pumps mitigate water scarcity by providing reliable water sources.
- They replace manual and labor-intensive methods, offering efficiency.
- Cost-effective solutions like the Starter Pump enable transition to sustainable practices.

Key points to design your business plan

The low-cost irrigation pumps technology appeals to manufacturers, resellers, and farmers.

Manufacturers

- Identify reliable suppliers of raw materials.
- Establish efficient transportation methods.

Resellers

- Source pumps from reputable manufacturers.
- Develop efficient transportation channels.

Users

- Partner with experienced sellers or managers.
- Understand the cost of acquiring and operating pumps.

Gender assessment 3

Climate impact 7

Commodities

horticultural crops, Vegetable crop

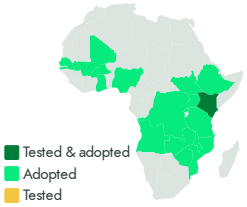
Sustainable Development Goals

2 ZERO HUNGER
8 DECENT WORK AND ECONOMIC GROWTH
13 CLIMATE ACTION

Categories

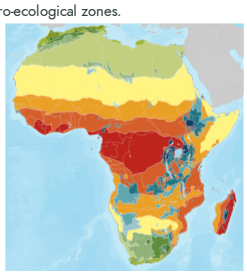
Production, Equipment, Land preparation

Tested/adopted in



Where it can be used

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



Target groups

Farmers, Manufactures

Mechanized Cassava Planting and Harvesting

Empowering Cassava Farmers: More Yield, Less Labor, Better Quality

Mechanized cassava planting and harvesting technology is a specialized equipment of two-row planters and harvesters, typically operated by tractors. This technology improves the efficiency of cassava farming by reducing labor requirements.

This technology is TAAT1 validated.

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

Cost: $$$ **367 USD**
Mechanical cassava production

50 %
Reduced of manual cost operation

13 USD/ha
Cost of mechanized planting

25 USD/ha
Cost of mechanized harvesting

IP
Open source / open access

Problem

- Low cassava yields (10 t/ha) compared to global competitiveness (minimum expected yield of 25 t/ha).
- Labour-intensive and time-consuming planting and harvesting operations.
- Lack of mechanization and use of modern agricultural technologies in cassava production.

Solution

- Increase productivity and efficiency in cassava farming. The yield from mechanically managed farm could increase by 38% over the yield in the manually managed farm.
- Reduce production costs associated with manual labor.
- Improve competitiveness of the cassava sub-sector by enhancing productivity and reducing costs through mechanized operations.

Key points to design your business plan

The Mechanized Cassava Planting and Harvesting technology presents opportunities for fleet managers and users (farmers).

To integrate it in your business,

- Source equipment from countries like Ethiopia, Kenya, Nigeria, Tanzania, Zambia, and Zimbabwe.
- Identify efficient transportation methods and suitable storage facilities.
- Determine costs based on technology size, including transport, import duties, and taxes.
- Consider cost structures, including self-contained planting and harvesting machines.

Gender assessment 4

Climate impact 7

International Institute of Tropical Agriculture (IITA)
Adebayo Abass

Technology from

ProPAS

Commodities

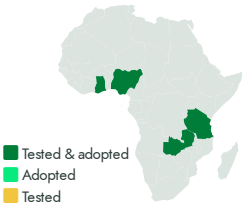
Cassava

Sustainable Development Goals

Categories

Production, Equipment, Land preparation

Tested/adopted in



Where it can be used

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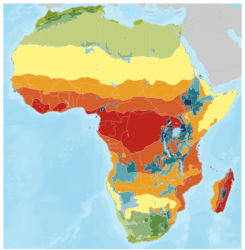


Target groups

Farmers

Motorized Planter and Fertilizer Applicator (Sénékéla) Mechanized Tillers, Planters and Fertilizer Applicators

Sénékéla planter and micro-dose fertilizer applicator

Make farming easier with planting and fertilizing machines

The motorized planter and fertilizer micro-dose applicator, known as "Sénékéla", provides precise and fast placement of seeds and mineral inputs on prepared soils or ridges. This technology is designed to reduce the workload for millet and sorghum producers.

This technology is TAAT1 validated.

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

1000 USD

Unit of Sénékéla

IP

Open source / open access

Problem

- Preparing the land, planting seeds and adding fertilizer by hand are too hard for farmers.
- It's take a lot of time to do and farmers spend much of money on animals or services to help

Solution

- Mechanizing farm activities to reduce the physical strain on farmers and lower the costs associated with maintaining animals or hiring services.
- It enables timely and efficient field operations, leading to increased crop productivity and higher profits.

Key points to design your business plan

The Mechanized Tillers, Planters, and Fertilizer Applicators technology presents opportunities for manufacturers, resellers, and users (farmers) to enhance agricultural efficiency.

For Manufacturers:

- Identify suppliers of raw materials.
- Ensure efficient transportation and storage.
- Evaluate costs and target customers such as resellers, cooperatives, and agricultural associations.

For Resellers:

- Source equipment from reputable manufacturers.
- Arrange efficient transportation and storage.
- Consider costs and target customers like farmers, development projects, and cooperatives.

For Users:

- Utilize mechanized equipment to improve farming.
- Partner with sellers or equipment managers.
- Consider equipment costs and benefits.

Gender assessment 4

Climate impact 5

ICRISAT
INTERNATIONAL CROPS RESEARCH INSTITUTE FOR THE SEMI-ARID TROPICS

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

Technology from

ProPAS

Commodities

Sorghum/Millet

Sustainable Development Goals

2 ZERO HUNGER

8 DECENT WORK AND ECONOMIC GROWTH

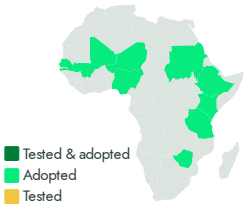
Categories

Production, Equipment, Land preparation

Best used with

- Fertilizer Micro-Dosing to Enhance Yield and Use Efficiency ›

Tested/adopted in



Where it can be used

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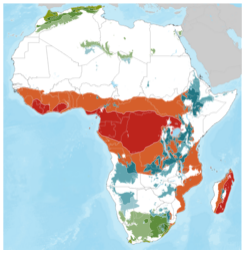


Cut and Bury Motorized weeders for rice production

Effortless Weed Control for Bountiful Harvests

The Motorized Weeders for rice production (cut and bury) technology eliminate 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 from the germination of rice plants until the canopy closes.

Africa Rice Center
Kalimuthu Senthilkumar

This technology is TAAT1 validated.

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

Cost: $$$ **550—750 USD**
Cut & bury with a 2-stroke petrol engine

ROI: $$$ **80 %**
Labour-saving for weeding.

IP
Open source / open access

Problem

- Labor-intensive manual clearing of paddy fields
- Inefficient weed control methods leading to reduced rice yields
- Limited access to affordable and effective mechanized weeders for smallholder rice farmers

Solution

- Introduction of motorized weeders for efficient clearing of paddy fields
- Adoption of mechanized weed control methods to increase rice yields
- Provision of affordable and effective mechanized weeders for smallholder rice farmers

Key points to design your business plan

The Motorized Weeders for rice production (cut and bury) technology appeals to manufacturers, resellers, and users (farmers).

For Manufacturers:

- 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:

- Utilize motorized weeders to enhance farming efficiency.
- Partner with sellers.

Gender assessment 4

Climate impact 7

Technology from

ProPAS

Commodities

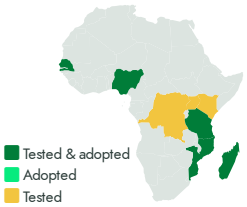
Rice

Sustainable Development Goals

Categories

Production, Equipment, Land preparation, Weed control

Tested/adopted in



Where it can be used

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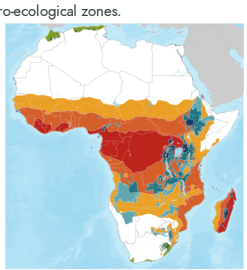
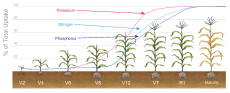


Target groups

Farmers

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

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

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 business plan

Utilizing pre-plant blended fertilizers and nitrogen topdressing for maize offers a significant opportunity to improve crop productivity and sustainability. Key considerations for implementing this technology include:

- Identifying appropriate fertilizer formulations tailored to specific soil and crop needs,
- Considering delivery expenses to project sites across several countries, and forming partnerships with agricultural stakeholders to optimize outcomes.
- Additionally, integrating complementary technologies such as drought-tolerant maize varieties, herbicides for weed control, and specialized maize varieties can further enhance the benefits of this approach.

Gender assessment 4

Climate impact 5

Technology from

ProPAS

Commodities

Maize

Sustainable Development Goals

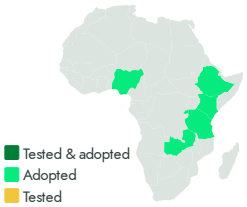
2 ZERO HUNGER

12 RESPONSIBLE CONSUMPTION AND PRODUCTION

Categories

Production, Inputs, Fertilizer

Tested/adopted in



Where it can be used

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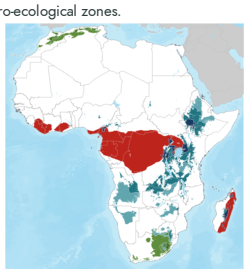


Target groups

Farmers

Proactive Management of Striga Infestation

Striga defended for farmers' empowerment

Sorghum severely infested by Striga

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

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

This technology is TAAT1 validated.

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

ROI: $$$ **60 %**

Yield increase within four year

IP

Open source / open access

Problem

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

Solution

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

Gender assessment 4

Climate impact 6

Technology from

ProPAS

Commodities

Sorghum/Millet

Sustainable Development Goals

1 NO POVERTY · 2 ZERO HUNGER · 12 RESPONSIBLE CONSUMPTION AND PRODUCTION

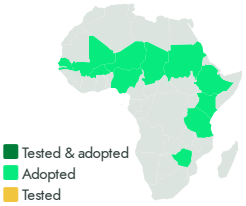
Categories

Production, Practices, Weed management

Best used with

- Fertilizer Micro-Dosing to Enhance Yield and Use Efficiency ›

Tested/adopted in



Where it can be used

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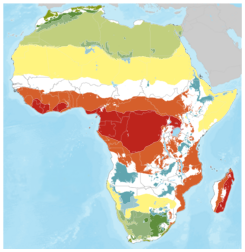


Propagation of Banana and Plantain Disease-Cleaned Suckers

Propagate Success with Clean Suckers

Macro-propagation involves two techniques: field-based (decapitation) and detached corm (beds). It ensures disease-free seedlings, promoting uniform growth and stress resistance. Clean knives and hardened sprouts are vital for success.

Complete decapitation with excised meristem (top) and sprouting suckers (bottom)

International Institute of Tropical Agriculture (IITA)
Amah Delphine

This technology is TAAT1 validated.

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

Cost: $$$ **1500 USD per 8000 plantlets**

Nusery four months maintenance

ROI: $$$ **725—1050 USD**

Net profit per cycle

340 USD

2,500 plantlets shade house

2,300 USD

Cost of chamber of 8,000 plantlets

IP

Open source / open access

Problem

- Natural regeneration often results in contaminated banana and plantain planting materials, harming productivity and lifespan.
- Traditional methods result in non-uniform growth, affecting the overall efficiency of banana and plantain cultivation.
- Conventional methods may lead to stress-prone plantlets, negatively impacting their adaptation and performance in the field.

Solution

- Macro-propagation ensures the production of banana and plantain seedlings free from pests and diseases, promoting healthier and more resilient crops.
- Macro-propagation contributes to increased productivity and prolonged lifespan of banana and plantain plants .
- This technique reduces financial barriers by offering a low-cost method of obtaining disease-free seedlings
- Macro-propagation ensures more uniform growth of banana and plantain seedlings.

Key points to design your business plan

The Propagation of Disease-Cleaned Suckers technology enhances banana and plantain production by providing disease-free planting materials, reducing losses from pests and diseases.

- Costs for propagation equipment and infrastructure are relatively low, with decapitation costing about 0.30 USD per 100 plantlets every four months and chamber construction around 2,300 USD.
- A study in South-Kivu DR Congo demonstrates the profitability of macro-propagation, yielding a net profit between 725 and 1,050 USD per cycle.

Gender assessment 4

Climate impact 7

Technology from

ProPAS

Commodities

Banana/Plantain

Sustainable Development Goals

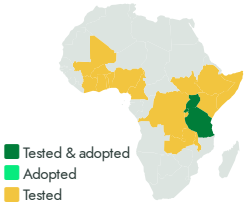
Categories

Production, Practices, Seed system

Best used with

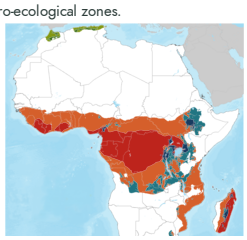
- Improved Varieties of Plantain for Tropical Lowlands ›
- Improved Varieties of Banana for the African Highlands ›

Tested/adopted in



Where it can be used

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



Raised beds for sweet potato production and weed management

Raise tuber yields with raised beds

The raised bed technology elevates sweet potatoes for better growth. By creating designated areas with loose soil, it prevents soil compaction and weed growth, ensuring optimal nutrient absorption. This method is beneficial in areas with poor soil quality, promoting healthier crops and easier maintenance for farmers.

International Potato Center (CIP)
Kwikiriza Norman

This technology is TAAT1 validated.

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

Cost: $$$ **584 USD**
Installation of raised beds per acre

7 %
Fresh tuber weight increased

IP
Open source / open access

Problem

- Uncontrolled weeds compete with sweet potatoes, reducing yields and stunting growth.
- Traditional methods can lead to poor root development and tuber growth.
- These diseases can devastate sweet potato crops, leading to lower yields and economic losses.
- Manual weeding diverts resources from other crucial activities.

Solution

- Elevates sweet potato plants, creating ideal conditions for tuber development. Prevents soil compaction and waterlogging, ensuring healthy growth.
- It provides an environment hostile to soil-borne diseases, fostering healthier crops and minimizing disease-related losses.
- It maximizes tuber yields by maintaining optimal soil conditions, reducing dependency on external inputs and manual labour.

Key points to design your business plan

Utilizing raised beds for sweet potato production promotes sustainable farming with increased crop yield. To implement this technology effectively:

- Assess farm suitability based on soil type and climate, and select appropriate sweet potato varieties.
- Obtain necessary tools and materials like hand hoes, harrows, or mechanical plows, mineral fertilizer, compost, and optional chemical control agents.
- Consider the cost structure, which includes installation expenses like mechanized plowing, soil disinfection, fertilizer input, and irrigation, along with additional costs for covering soil beds with plastic sheets or mulching with plant litter.

Gender assessment 4

Climate impact 7

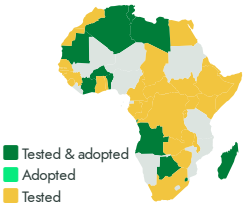
Technology from
ProPAS

Commodities
Sweet Potato

Sustainable Development Goals

Categories
Production, Practices, Weed management

Tested/adopted in



Where it can be used

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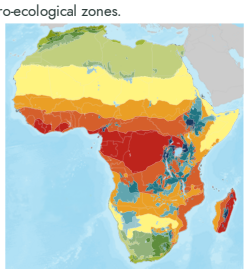


Target groups
Farmers

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.

International Potato Center (CIP)
Kwikiriza Norman

This technology is TAAT1 validated.

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

IP
Open source / open access

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 business plan

Relay intercropping of sweet potato with legumes offers a sustainable farming method, boosting crop yield, environmental resilience, and economic viability. To implement this technology effectively:

- Evaluate farm compatibility for mixed cultivation based on soil type and climate.
- Select appropriate sweet potato and legume varieties.
- Source high-quality seeds for both crops.
- Foster collaborations with agricultural organizations, fertilizer suppliers, and service providers for support and distribution.

Gender assessment 4

Climate impact 7

Technology from

ProPAS

Commodities

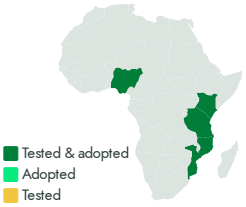
Sweet Potato

Sustainable Development Goals

Categories

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

Tested/adopted in



Where it can be used

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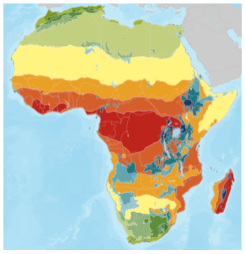


Target groups

GIFT "Genetically Improved Farmed Tilapia" All Male Tilapia Fingerlings with Greater Yield and Uniformity

Greater yield and uniformity in tilapia farming

The technology involves predominantly growing male tilapia. This can be achieved through various methods such as manual selection, hormone treatment, or natural techniques. Specifically bred tilapia (GIFT) is recommended for commercial farming.

This technology is TAAT1 validated.

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

Cost: $$ **100 USD**

Stocking rate of 1,000 fish per cubic meter of water

ROI: $$ **30 %**

Harvest volume increased

0.1 USD

Cost of one month mono-sex fingerlings in Kenya

300 - 900 g

Weight of male fingerlings stocked in cages in 5 to 8 months of culture

IP

Patent granted

Problem

- Mixed-sex tilapia culturing often leads to lower yields and non-uniform harvests.
- Manual sex selection at the beginning of the production cycle is time-consuming.
- Hormonal alteration of fry involves the application of α-Methyltestosterone, which may pose concerns regarding its use in feed and its impact on fish health and the environment.

Solution

- Utilizing improved lines of tilapia breeds can enhance the effectiveness of manual selection, hormonal treatment, YY male technology, and GIFT.
- Crossbreeding strategies can produce 100% male offspring, improving mono-sex tilapia production efficiency.
- Careful management of brood stock selection in hatcheries, focusing on younger brooders free from wounds and parasites, ensures high-quality and abundant fish seed production.

Key points to design your business plan

This technology benefits manufacturers, resellers, and users:

- Manufacturers can boost profitability and efficiency with up to 98% all-male tilapia stocks. Strategic collaborations with research institutions and genetic breeding programs can refine production traits.
- Resellers provide access to high-quality, genetically improved mono-sex tilapia broodstock. Collaborative opportunities exist with equipment suppliers and distributors to expand market reach.
- Users, particularly fish farmers, benefit from reliable growth rates, disease resistance, enhancing productivity and profitability. Comprehensive training programs and collaborations with support services ensure successful tilapia farming practices.

Gender assessment 4

Climate impact 7

WorldFish
Bernadette Fregene

Technology from

ProPAS

Commodities

Fish

Sustainable Development Goals

2 ZERO HUNGER

8 DECENT WORK AND ECONOMIC GROWTH

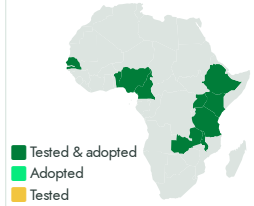
Categories

Production, Practices, Yield improvement

Best used with

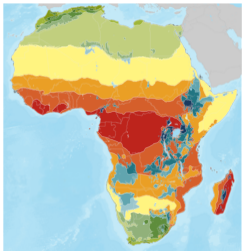
- Hapa Nets for Fingerling ›

Tested/adopted in



Where it can be used

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



Target groups

Breeders

Semi-Automatic Incubator for artificial hatching

Hatching Success, One Chick at a Time

Digital semi-automatic egg incubator

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

This technology is TAAT1 validated.

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

Cost: $$$ **100—200 USD** Incubators

ROI: $$$ **20 %** per cycle

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

Problem

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

Solution

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

Key points to design your business plan

This technology benefits both resellers and end-users (farmers). For resellers, to success in this market involves:

- Establishing robust distribution networks, offering training programs, ensuring a
- Consistent supply, and providing effective after-sales support. Target customers
- Include rural communities, small-scale poultry farmers, and local agro-veterinary shops.

For users:

- Evaluating quantity, considering delivery, import clearance, and duties, and collaborating with agro dealers are key steps.
- Associating this technology with other poultry farming approaches can offer a comprehensive and sustainable approach.

Gender assessment 4

Climate impact 7

International Livestock Research Institute (ILRI)
Adeniyi Adedirian

Technology from

ProPAS

Commodities

Poultry

Sustainable Development Goals

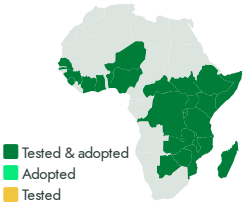
Categories

Production, Equipment

Best used with

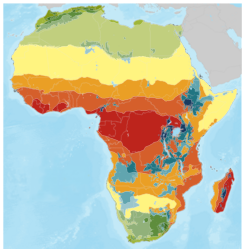
- Flock Improvement of Meat and Layer Breeds ›
- Dual-Purpose Chicken for Small-Scale Producers ›

Tested/adopted in



Where it can be used

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



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

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

Africa Rice Center
Sali Atanga Ndindeng

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

This technology is TAAT1 validated.

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

Cost: $$$ **4500 USD**
Local thresher

20 %
Losses reduced

15000—20000 USD
Advanced polishers and whiteners

3000 USD
Small bench-top polishers

IP
Patent granted

Problem

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

Solution

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

Key points to design your business plan

The Axial flow thresher and improved quality polishing technology appeals to manufacturers, resellers, and users (farmers).

- Identify raw material suppliers and efficient transportation methods.
- Source equipment from reputable manufacturers and ensure proper transportation and storage.
- Determine costs and highlight benefits to attract farmers, development projects, and cooperatives.

Gender assessment 3 1

Climate impact 5

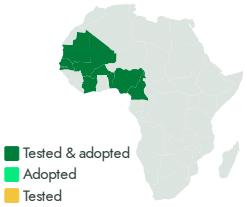
Technology from
ProPAS

Commodities
Rice

Sustainable Development Goals

Categories
Harvest, Equipment, Post-harvest handling

Tested/adopted in



Where it can be used

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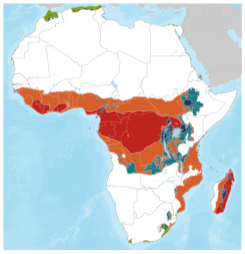


Target groups
Farmers

Biological control of the pod borer Maruca vitrata with exotic parasitoids

Low-cost natural pest control

The "Biological control of Maruca vitrata pod borer with parasitoids" technology uses specific parasitic wasps to naturally reduce the population of this destructive pest. Parasitoid wasps, sourced from labs in Taiwan, are reared in controlled settings and released onto cowpea fields or wild plants. The goal is to establish a self-sustaining population of parasitoids to control pod borer infestations. This approach, coupled with resistant cowpea varieties and eco-friendly products, minimizes the need for chemical pesticides and protects cowpe...

This technology is TAAT1 validated.

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

5,000 USD

To install an initial pilot colony of parasitoids

6,000 USD

Running costs

IP

Open source / open access

Problem

- **Damage from Maruca vitrata:** The pod borer Maruca vitrata causes substantial damage to cowpea crops, resulting in yield losses of up to 80%.
- **Reliance on Chemical Pesticides:** Farmers traditionally depend on chemical pesticides to combat Maruca vitrata and other pests like aphids and thrips in cowpea fields.
- **Environmental Impact:** Excessive use of chemical pesticides can lead to environmental consequences such as soil degradation and harm to beneficial insects.

Solution

- **Biological Control:** Parasitic wasps from Taiwan reduce Maruca vitrata population by over 85% in Benin and Burkina Faso.
- **Collaboration:** National agencies release parasitic wasps onto cowpea fields, reducing reliance on chemical pesticides.
- **Integrated Pest Management:** Parasitic wasps, resistant cowpea varieties, and biopesticides minimize environmental impact.
- **Awareness:** Educating farmers about biological control benefits and preserving host plants is crucial.

Key points to design your business plan

Manufacturers benefit from the rising demand for sustainable pest management, leveraging parasitic wasps to diminish pod borer populations. They serve a diverse clientele, including research institutions, government bodies, and seed companies.

Resellers offer eco-friendly pest solutions to cowpea farmers, cooperatives, and extension services. They rely on partnerships to distribute and promote adoption, needing access to products, training, and ongoing support, with costs covering procurement, training, and compliance.

Users reap the benefits of biocontrol agents, witnessing enhanced cowpea yields and reduced pesticide reliance. They gain from partnerships for adoption and support, with significant yield increase potential, lowering production costs.

Gender assessment 4

Climate impact 4

International Institute of Tropical Agriculture (IITA)
Manuele Tamo

Technology from

ProPAS

Commodities

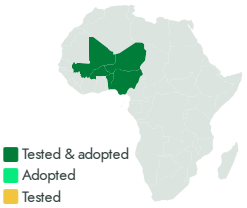
Cowpea

Sustainable Development Goals

Categories

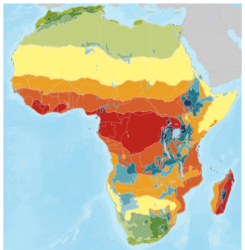
Practices, Pest control (excluding weeds)

Tested/adopted in



Where it can be used

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



Biosecurity for Disease Prevention

Safeguarding Poultry Health

The "Biosecurity for Disease Prevention" technology involves practices and strategies in poultry farming to prevent disease spread. It focuses on three main elements: isolation, traffic control, and sanitation, along with training for farmers and workers. This technology emphasizes early disease detection and diligent surveillance to minimize impact. Biosecurity is crucial throughout the poultry...

Key elements of biosecurity on a poultry farm

This technology is TAAT1 validated.

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

ROI: $$$ **50 %**

Veterinary costs reduced

0.036—0.076 USD

Materials per birds

Problem

- High risk of disease introduction and transmission due to large, concentrated bird populations.
- Diseases can cause mass culling and significant economic losses.
- Effective strategies are needed to prevent disease transmission.
- Certain diseases, like Salmonella and Avian Influenza, also threaten human health.

Solution

Biosecurity for Disease Prevention offers a comprehensive solution:

- It includes preventative measures like isolation, traffic control, and sanitation.
- Emphasizes diligent surveillance for early disease detection to reduce impact and spread.
- Promotes training for poultry farmers and workers to highlight the importance of biosecurity for health and profitability.
- Applies biosecurity measures at all stages of the poultry value chain, from breeding to processing.
- Protects against various poultry pathogens, addressing threats to both poultry and human health.

Key points to design your business plan

For Manufacturers:

The biosecurity program prevents disease outbreaks in poultry farms, improving flock health and productivity while reducing long-term costs. Target customers include poultry equipment and veterinary product manufacturers, and both commercial and smallholder producers. Manufacturers should collaborate with veterinarians, agricultural extension services, and research institutes to stay updated and promote biosecurity practices.

For Users:

Biosecurity measures help poultry farmers reduce disease risk, treatment, and culling costs, leading to healthier flocks, increased egg production, and better profitability. Key partners include veterinarians, biosecurity product suppliers, and agricultural extension services. The cost is low (2-5% of total operations) with a cost/benefit ratio of 1:49.

Gender assessment 4

Climate impact 7

International Livestock Research Institute (ILRI)
Adeniyi Adediran

Technology from

ProPAS

Commodities

Poultry

Sustainable Development Goals

3 GOOD HEALTH AND WELL-BEING
5 GENDER EQUALITY
8 DECENT WORK AND ECONOMIC GROWTH
12 RESPONSIBLE CONSUMPTION AND PRODUCTION

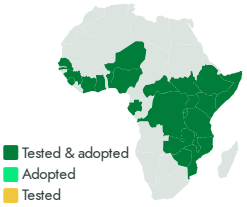
Categories

Production, Practices,
Pest control (excluding weeds)

Best used with

- Poultry Vaccination against Newcastle Diseases ›
- Value Addition to Poultry Manure ›

Tested/adopted in



Where it can be used

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

Cassava seed-bulking farms

Quality cassava cuttings close to the fields

The practice of seed-bulking farms for cassava provides quality planting material directly to smallholder farmers, situated near their fields. This facilitates access to improved varieties and reduces the cost of transporting cuttings, leading to increased profitability.

This technology is TAAT1 validated.

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

20 ha of cassava farm

from cutting yield per ha each 16 months

IP

Open source / open access

Problem

- The distribution of cassava stem cuttings is problematic as they rapidly lose their sprouting vigor when stored.
- Their bulk and weight drive up transport costs, limiting the supply of improved cassava planting material.
- Smallholder farmers often rely on seed companies with limited geographical coverage, restricting their access to improved cassava varieties.

Solution

- Seed-bulking farms provide high-quality, disease-free cassava stem cuttings, improving access to superior cassava varieties.
- Reduced transport times and decentralized production enhance planting material survival.
- This approach supports community-based businesses, boosting incomes for farmers and processors.

Key points to design your business plan

The Cassava seed bulking farms technology may be of interest to planting material Multiplier, and users (cassava farmers, aggregators).

Key activities for efficient multiplication include:

- Identifying suitable cassava varieties, providing training on seed-bulking practices, and optimizing production and distribution.
- Compliance with national regulations and obtaining a license are necessary steps.
- Profitability estimation involves considering initial investment, operational expenses, and revenue from selling planting materials.
- Associating with disease-resistant and vitamin-fortified cassava varieties is recommended for optimization.

Gender assessment 4

Climate impact 7

International Institute of Tropical Agriculture (IITA)
Abass Adebayo

Technology from

ProPAS

Commodities

Cassava

Sustainable Development Goals

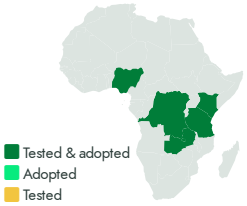
Categories

Production, Practices, Seed system

Best used with

- Disease resistant cassava varieties ›
- Golden cassava varieties (Vitamin A fortified) ›
- High Starch & Dry Matter Cassava Varieties ›

Tested/adopted in



Where it can be used

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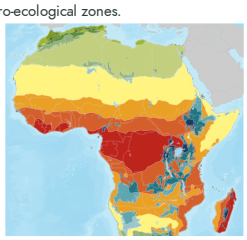


Biological Control of Sorghum/Millet Insect Pests with Natural Enemies

Protect crops using natural pest allies for sustainable pest control in Africa

Biological control uses indigenous predators and parasitoids to combat pests like the Millet Head Miner and Fall Armyworm. Released into fields, these natural enemies prevent pest outbreaks and crop damage. This eco-friendly method enhances ecosystems and food security, reducing the need for chemical pesticides.

Natural enemies of millet head miner (top, Credit: Nils Linek) and fall armyworm (bottom, Credit: ICIPE)

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

This technology is TAAT1 validated.

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

Cost: $$$ **5,000 USD**

establishment of parasitoïd colonies for 10,000 farmers

6,000 USD	**3—4 USD**	**IP**
per year for operation	per "ready-to-use" bag	Open source / open access

Problem

- **Pest Infestations & Food Security**: Pests cause significant crop losses, threatening food security in Sub-Saharan Africa.
- **Chemical Pesticides & Ecosystem Health**: Overuse of pesticides leads to environmental harm and health risks.
- **Lack of Accessibility**: Many farmers lack access to effective pest management solutions, increasing vulnerability to infestations.

Solution

- **Wasp Predation**: Parasitoid wasp *Habrobracon hebetor* targets pests' caterpillars.
- **Infestation Prevention**: Biological control techniques reduce infestations and ensure food supply.
- **Armyworm Control**: Parasitoid wasp *Telenomus remus* prevents Fall Armyworm outbreaks.

Key points to design your business plan

For Farmers: Biological control is most effective when implemented collectively by a community of farmers. It's about working together for sustainable and effective pest management.

Steps for Implementation:

1. **Education**: Learn about biological control and its benefits.
2. **Identify Pests**: Determine the pests in your farm.
3. **Choose Natural Enemies**: Select appropriate natural enemies for the pests.
4. **Source Natural Enemies**: Obtain natural enemies from a reliable source.
5. **Release Natural Enemies**: Release them into your farm at the right time and place.
6. **Monitor**: Regularly check the pest population and the effectiveness of the control.
7. **Maintain**: Sustain the habitat to support the natural enemies.

Remember, patience and commitment to sustainable farming are key for successful biological control.

Gender assessment 4

Climate impact 7

Technology from

ProPAS

Commodities

Sorghum/Millet

Sustainable Development Goals

2 ZERO HUNGER

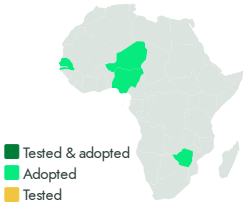
12 RESPONSIBLE CONSUMPTION AND PRODUCTION

Categories

Production, Practices,

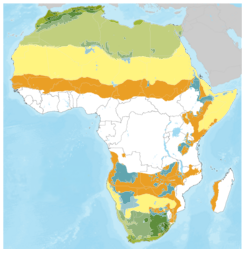
Pest control (excluding weeds)

Tested/adopted in



Where it can be used

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



Target groups

Farmers

Community-based multiplication of sweet potato vines and cuttings

Boost Your Yield and Cut Costs with Community-Sourced Sweet Potato Vines.

International Potato Center (CIP)
Norman KWIKIRIZA

Community-based multiplication of sweet potato vines is a scalable agricultural technology that enhances the quality and availability of planting materials in rural communities. It addresses challenges such as cost reduction, pest management, and timely distribution, while utilizing local resources. This adaptable method supports smallholder farmers, making it a valuable tool for rural communities.

This technology is TAAT1 validated.

5·5 Scaling readiness: idea maturity: 5/9; level of use: 5/9

Cost: $$$

10,000 USD

Capital investments for a screen house, irrigation system, fertilizers and disease control agents to set up a sweet potato multiplication site Per 0.4 ha

IP

Open source / open access

Problem

1. Limited access to quality materials.
2. High prices and distribution issues.
3. Lack of effective measures.
4. Limited access for smallholder farmers.
5. High susceptibility in crops.

Solution

1. Organize large-scale multiplication of sweet potato vines.
2. Establish reliable supply chains and improve rainy season distribution.
3. Enhance quality, reduce prices, and achieve economies of scale.
4. Maintain hybrid and resistant varieties effectively.
5. Guard against pests and diseases using local resources.

Gender assessment 4

Climate impact 7

Technology from

ProPAS

Commodities

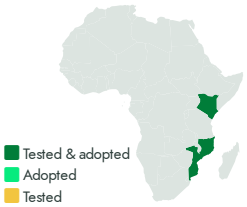
Sweet Potato

Sustainable Development Goals

Categories

Production, Practices, Seed system

Tested/adopted in



Where it can be used

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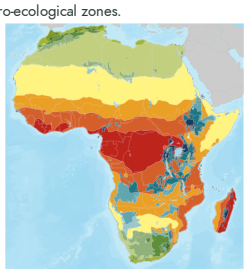


Target groups

Farmers

Contour Bunding Technique (CBT) Contour Bunds for Water Harvesting

CBT: Nurturing Crops, Conserving Soil, and Cultivating Resilience

Semi-circular bunds reinforced with stones

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.

This technology is TAAT1 validated.

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

Cost: $$$ **9 USD**

Drawing contour line per ha

40 %	**20 %**	**IP**
Runoff reduction	Sediment loss dicrease	Open source / open access

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 business plan

For farmers interested in the Contour Bunding Technique (CBT), here are the condensed steps:

1. **Learn**: Understand CBT's benefits for crop production and soil health.
2. **Train**: Attend sessions on bund construction techniques and land surveying.
3. **Plan**: Analyze your farm's landscape for optimal bund placement.
4. **Prepare**: Gather necessary resources for building and reinforcing bunds.
5. **Implement**: Construct bunds to create micro-catchments for water management.
6. **Evaluate**: Monitor your farm's progress and adjust as needed for continuous improvement.

Gender assessment 4

Climate impact 7

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

Technology from

ProPAS

Commodities

Sorghum/Millet

Sustainable Development Goals

2 ZERO HUNGER

13 CLIMATE ACTION

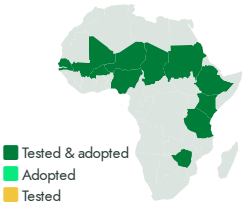
Categories

Production, Practices, Water management

Best used with

- Millet and Sorghum Varieties for Better Nutrition and Stress Resistance ›
- Fertilizer Micro-Dosing to Enhance Yield and Use Efficiency ›
- Dual-purpose Millet Varieties for Crop and Livestock Integration ›

Tested/adopted in



Where it can be used

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

Affordable Fish Feed Production Formulation and Pelleting of Low-Cost Feeds

Feed formulation before (left) and after dry extrusion (right)

Empowering Aquaculture with Affordable Feeds

The technology "Formulation and Pelleting of Low-Cost Feeds" aims to reduce the cost of fish feeds in Sub-Saharan Africa, where fish farms spend about 60-70% of their budget on imported feed. It promotes the use of local resources to produce quality, cost-effective and balanced fish feeds. This innovation could enhance the profitability and sustainability of fish farming businesses.

This technology is TAAT1 validated.

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

Cost: $$$ **1,200 USD**

Production of 1 ton

85,000 USD

Equipment of production

Problem

- Fish farming in Sub-Saharan Africa is costly due to expensive feeds.
- A large part of the cost is for imported feed ingredients.
- Simple, unprocessed grains used in feeds lead to poor nutrient transfer and pollution.
- High costs and inefficiencies limit the profitability of fish farming.

Solution

- The technology makes affordable fish feeds using local products.
- Pelleted feeds improve nutrient transfer and reduce pollution.
- Pellets are easier to store and transport, reducing costs.
- The technology allows feed customization for different fish species.

Key points to design your business plan

For Manufacturers: The technology enables the production of affordable fish feeds, reducing reliance on imported ingredients. The main costs involve raw ingredients, equipment, and marketing.

For Resellers: Resellers distribute the manufactured feeds to a wide customer base. Their main costs involve purchasing feeds, storage, transportation, and marketing.

For Users (Fish Farmers): Users gain access to affordable, nutritionally balanced fish feeds, improving profitability. Their main costs involve purchasing feeds and operational costs associated with fish farming.

Gender assessment 4

Climate impact 7

WorldFish
Bernadette Fregene

Technology from

ProPAS

Commodities

Fish

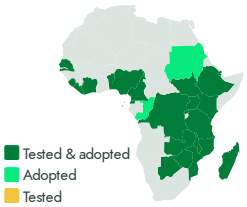
Sustainable Development Goals

2 ZERO HUNGER

Categories

Production, Inputs, Fertilizer

Tested/adopted in



Where it can be used

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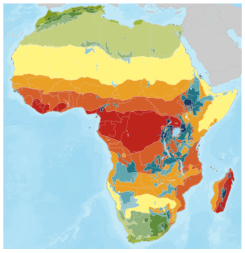


Target groups

Breeders

Furrow Irrigated Raised Bed Wheat Production

Smart Irrigation, Bountiful Harvests

This technique involves creating raised beds with furrows for planting crops, which ensures even irrigation and optimal soil moisture while reducing soil erosion and preventing waterlogging. It is effective with specific irrigated wheat varieties. In Ethiopia, suitable varieties include Amibera, Ga'ambo, Kakaba, Fentale-2, Shorima, Dandaa, and Ogolcho. In Nigeria, the varieties are Attila,...

ICARDA
Science for resilient livelihoods in dry areas

International Center for Agricultural Research in the Dry Areas (ICARDA)
Zewdie Bishaw

This technology is TAAT1 validated.

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

Cost: $$$ **300 USD**
labor and input per ha

360 USD	**100—250 USD**	**IP**
sheet plastic per ha	water from planting to harvest	Open source / open access

Problem

- **Flooding wastes water:** Raises production costs.
- **Scattered fertilizer:** Costs more, harms environment.
- **Uncontrolled moisture:** Lowers yields, hurts productivity.
- **Limited freshwater:** Weakens drought resistance, hurts yields.

Solution

- **Saves water:** Targets furrows for optimal soil moisture.
- **Protects crops:** Raised beds prevent waterlogging and improve drainage.
- **Reduces waste:** Precise fertilizer application minimizes cost and environmental harm.
- **Boosts harvests:** Rainwater harvesting and controlled irrigation maximize water use for resilient crops.

Key points to design your business plan

For Farmers

Furrow-Irrigated Raised Bed Wheat Production involves creating raised beds and furrows in your field (slope < 3%).

Key considerations:

- Land suitability: Sandy, loamy, and clay soils are ideal.
- Labor: Use hand tools or rent a tractor-drawn bed shaper.
- Crop selection: Choose wheat suited for furrow irrigation and your climate.
- Planting: Research best planting times for your region.
- Inputs: Secure seeds, fertilizers, and pest control in advance.
- Irrigation: Implement a system to direct water to furrows (ditches or pipes).
- Training: Look for programs to learn best practices.
- Marketing: Plan how you will sell your wheat crop at harvest.

Gender assessment 4

Climate impact 7

Technology from

ProPAS

Commodities

Wheat

Sustainable Development Goals

2 ZERO HUNGER · 6 CLEAN WATER AND SANITATION · 13 CLIMATE ACTION · 5 GENDER EQUALITY

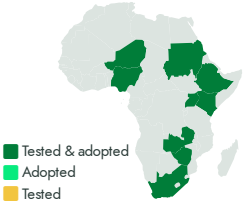
Categories

Production, Practices, Water management

Best used with

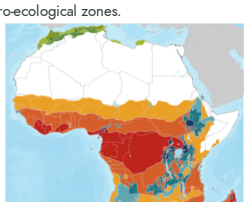
- Expanded Production of Irrigated Wheat ›
- Minimal Tillage and Surface Mulching of Soils ›

Tested/adopted in



Where it can be used

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



Aquaculture and vegetables Integration System Integrated Aquaculture and Agriculture Systems

A floating aquaponic system

Aquaculture and Crops system for better yield

"Integrated Aquaculture and Agriculture Systems" is a method where fish and plants are co-cultivated. Fish waste serves as plant fertilizer, while plants purify the water for fish. This system optimizes resource use and enhances productivity in both aquaculture and agriculture.

This technology is TAAT1 validated.

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

2,000 USD
annual maintenance cost for 0.5 ha

50-100 USD	2,466 USD	250,000 USD	IP
one square metter of hydroponic plastic beds	average net income per acre	for 0.5 ha of fully equipped aquaponic system	Open source / open access

Problem

- Depleted soil: Reduced crop yields due to nutrient loss.
- Limited land: Difficulty expanding agriculture due to scarce arable land.
- Water competition: Farmers and fishers compete for water resources.
- Food insecurity: Difficulty accessing affordable protein.
- High feed costs: Traditional fish farming methods are expensive.

Solution

- Waste to Wealth: Fish waste nourishes crops, reducing fertilizer costs.
- Double Duty: Fish and crops share land, maximizing output.
- Water Sharing: Same water sustains both fish and crops.
- Protein on the Plate: Fish farming provides affordable protein.
- Feed Savings: Crop leftovers become fish food, lowering costs.

Key points to design your business plan

To integrate Aquaponics in Farm:

- Master aquaponics, research fish & plants for your region.
- Choose a sunny location with water access, design your system.
- Get essential components, source fish & seeds.
- Monitor water quality, manage nutrients, feed fish strategically.
- Research local preferences, identify buyers, plan transport & storage.
- Comply with any permits for aquaponics in your area.

Gender assessment 4

Climate impact 6

WorldFish
Bernadette Fregene

Technology from

ProPAS

Commodities

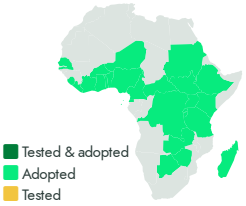
Vegetable crop, Fish

Sustainable Development Goals

Categories

Production, Practices, Yield improvement

Tested/adopted in



Where it can be used

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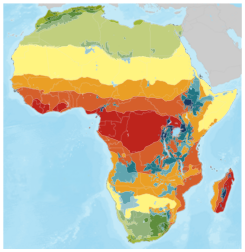


Target groups

Farmers

Short-Term Fattening and Supplemental Feeding

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

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

Goat fattening with excess feed and limited movement

International Livestock Research Institute (ILRI)
Adeniyi Adediran

This technology is TAAT1 validated.

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

80 USD
cost of a young animal

50 %

70 USD
cost to finish a young animal in four months

IP
Open source / open access

Problem

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

Solution

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

Key points to design your business plan

Implementing the "Short-Term Fattening and Supplemental Feeding" technology involves:

- Selecting healthy, large-frame animals.
- Considering castration for males.
- Choosing fast-growing, fattening-adaptable breeds.
- Selecting animals at least 20 kg and under four years old.
- Starting with a grass/hay diet, reducing over two weeks.
- Sorting animals by weight/gender and rearing in groups.
- Promptly culling non-adjusting animals.
- Regularly cleaning shelters.

The cost can vary, but fattening a young ram may cost about US $150, including animal cost (around US $80) and fattening process cost (about US $70). Costs include animal purchase, feed, supplies, and operational costs. A feasibility study is recommended before implementation.

Gender assessment 4

Climate impact 7

Technology from

ProPAS

Commodities

Small livestock

Sustainable Development Goals

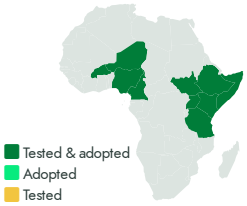
2 ZERO HUNGER

8 DECENT WORK AND ECONOMIC GROWTH

Categories

Production, Practices,
Animal feed management

Tested/adopted in



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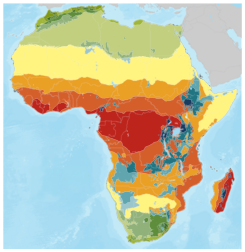


Target groups

Breeders

"Six Steps" cassava weed management

Weed-free Fields, Bountiful Yields!

The "Six Steps Cassava Weed Management" technology is a holistic solution to weed problems in Sub-Saharan Africa's cassava fields. It provides a decision-making framework for farmers to effectively control weeds, leading to higher cassava yields. This adaptable method caters to diverse farming conditions, enhancing cassava productivity and regional food security.

This technology is TAAT1 validated.

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

30–50 %
Root yield increased

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

Problem

- **Weed Encroachment**: Cassava fields in Sub-Saharan Africa are frequently overrun by weeds due to inadequate and untimely control measures.
- **Slow Canopy Development**: The growth pattern of cassava makes it vulnerable to weed encroachment in the early weeks of cultivation.
- **Nutrient and Water Competition**: Abundant weeds consume significant nutrients and water, drastically reducing cassava yield.

Solution

- **Improved Yield**: It enables farmers to significantly increase cassava yields by managing weeds effectively.
- **Comprehensive Approach**: It provides a holistic strategy for weed control, including site selection, weed identification, and herbicide application.
- **Resource-Friendly**: The technology is accessible to small-scale farmers, requiring only simple and cost-effective equipment and herbicides.

Key points to design your business plan

For Farmers

The "Six Steps" toolkit, a free online resource, offers farmers, particularly cassava growers, guidance on weed management and planting.

However, it involves substantial costs, with weed removal and herbicide application costing US $28-46 and US $20-30 per hectare respectively.

Training on the toolkit and collaboration with local services and IITA can provide additional support.

Gender assessment 4

Climate impact 7

International Institute of Tropical Agriculture (IITA)
Friday Ekeleme

Technology from

ProPAS

Commodities

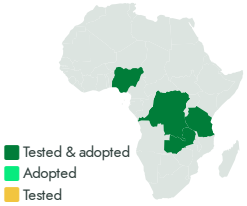
Cassava

Sustainable Development Goals

Categories

Production, Practices, Weed management

Tested/adopted in



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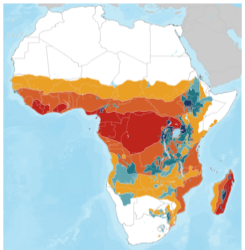


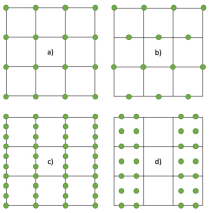
Target groups

Farmers

Spacing and Stand Management in Banana and Plantain

Optimized Spacing, Maximum Yield

This technology optimizes banana and plantain plant spacing to boost yield, considering factors like plant variety, climate, and soil fertility. It uses various planting systems and may require herbicide use and stem base "earthing-up" in windy areas.



Planting layouts: a) square, b) triangular, c) single row, and d) paired row

International Institute of Tropical Agriculture (IITA)
Godfrey Taulya

This technology is TAAT1 validated.

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

100 t/ha/year
Dwarf Cavendish planted at 2500 to 4400 plants per ha

IP
Open source / open access

Problem

- High plant densities cause uneven growth, delayed maturity, and increased labor.
- Low densities lead to weed competition and yield variability.
- Unmanaged stands accumulate pests and diseases.
- Insufficient wind protection damages plants.

Solution

- Proper spacing promotes uniform growth, reduces labor, and optimizes yield.
- Adequate spacing minimizes resource competition and maximizes sunlight exposure.
- Square block planting provides wind protection.
- Spacing aids in weed management and pest/disease control.

Key points to design your business plan

Here are practical steps a farmer can take to incorporate the Spacing and Stand Management technology in Banana and Plantain farming:

- **Training**: Learn about Spacing and Stand Management technology.
- **Assessment**: Evaluate your farm's soil, drainage, and sunlight exposure.
- **Variety Selection**: Choose a banana or plantain variety suitable for your farm and market.
- **Land Preparation**: Clear land, dig planting holes, and fortify with organic materials.
- **Planting**: Plant suckers in prepared holes. Spacing depends on the variety.
- **Maintenance**: Monitor plants, manage weeds, apply fertilizers as needed.
- **Harvesting**: Harvest mature bananas and plantains carefully.

Consult local agricultural services or the technology provider for support.

Gender assessment 3

Climate impact 7

Technology from

ProPAS

Commodities

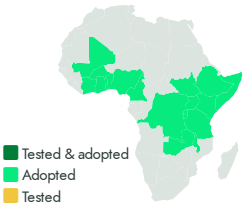
Banana/Plantain

Sustainable Development Goals

Categories

Production, Practices, Yield improvement

Tested/adopted in



Where it can be used

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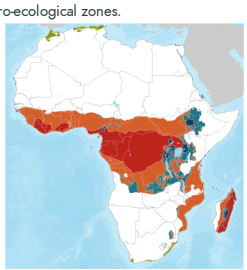


Target groups

Farmers

Tank Systems for Fish Culturing

Aquaculture Innovation: Growing the Future, Nurturing the Waters

A concrete tank for raising catfish

A tank system for fish culturing is a land-based, intensive aquaculture enclosure. Made from materials like concrete or plastic, it requires a complete feed diet and can operate on various water and air supply systems. It's designed for high-density rearing of species like catfish and tilapia, with regular sorting needed. Success hinges on excellent water quality and year-round availability.

This technology is TAAT1 validated.

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

Cost: $$$ **120 USD**

Premade suspended tanks with a volume of 2000 liter

500 kg

harvest every 9months for a stocking rate of 50 fish per square meter

330 USD

Gross margin after deducting operating costs

Problem

- **Resource and Environmental Challenges**: Limited land and water resources, difficulty in maintaining optimal water conditions, and significant environmental footprint of traditional methods.
- **Production and Efficiency Issues**: Limited capacity for high-density rearing, high death rates due to cannibalism, and inefficient feed use leading to slow growth.
- **Market Accessibility**: Increased costs and reduced freshness due to distance from markets.

Solution

- **Resource and Control Efficiency**: Less land and water usage with optimal environmental control.
- **Intensive Rearing and Survival**: High-density fish production with minimized cannibalism.
- **Market Proximity and Feed Optimization**: Close to markets with maximized food conversion.
- **Environmental, Biosecurity, and Energy Solutions**: Reduced footprint, disease risk, and energy use.

Key points to design your business plan

Manufacturers: Manufacturing aquaculture tanks enhances fish farming efficiency. Key steps include sourcing raw materials, efficient transportation, and storage. Customers include distributors, development projects, government agencies, and NGOs. Catering to all tank types broadens your customer base.

Resellers: Reselling aquaculture tanks offers opportunities in the aquaculture industry. Key considerations include sourcing quality tanks, efficient transportation, and storage. Costs vary based on tank type and technology. Customers range from small-scale farmers to large projects and cooperatives.

Fish Growers: Using various aquaculture tanks boosts productivity and sustainability. Key partners include reliable tank manufacturers and logistics partners. Costs vary based on tank type and size but can be offset by efficiency gains. Training in tank system management is crucial.

Gender assessment 4

Climate impact 7

WorldFish
Bernadette Fregene

Technology from

ProPAS

Commodities

Fish

Sustainable Development Goals

2 ZERO HUNGER

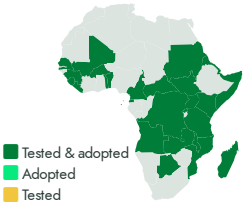
Categories

Production, Equipment, Aquaculture Systems

Best used with

- All Male Tilapia Fingerlings with Greater Yield and Uniformity ›
- Fast Growing and Hybrid African Catfish ›

Tested/adopted in



Where it can be used

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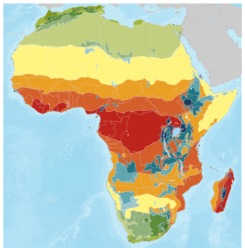


Tent-style greenhouse for multiplication of sweet potato vines and cuttings

Greenhouse Solutions for Thriving Sweet Potato Farms

The tent-style greenhouse, built with local materials and screen nets, provides an optimal, pest-free environment for sweet potato vines. It maintains soil moisture and ensures the production of high-quality, disease-free planting material. This cost-effective and easy-to-assemble technology is a practical tool for farmers to increase sweet potato yield.

International Potato Center (CIP)
Paul Demo

This technology is TAAT1 validated.

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

Cost: $$$ **7.66 USD**
total investment per square meter

ROI: $$$ **56 %**
over 3 year

4-9 USD
sales of vines per square meter

IP
Open source / open access

Problem

- **Planting Material**: Shortage and degradation over time.
- **Pests/Diseases**: Susceptibility impacting crop health and yield.
- **Infrastructure/Cost**: High costs and local material availability issues.

Solution

- **Efficient Production**: Multiplication of healthy vines and cuttings.
- **Pest/Disease Control**: Screen nets for a pest-free environment.
- **Cost-Effective**: Built with cheaper, locally available materials.

Key points to design your business plan

For farmers, integrating a tent-style greenhouse can boost crop yield and quality, offering a pest-free environment and high-quality planting material. It's cost-effective and promotes sustainable farming.

Key steps for implementation:

1. **Learn and Estimate Costs**: Understand the greenhouse's benefits, operation, and calculate all associated costs.
2. **Site Selection and Preparation**: Choose a suitable spot on your farm and prepare it for the greenhouse.
3. **Greenhouse Construction and Plant Arrangement**: Build the greenhouse, install nets, cover the frame, and arrange the vines and cuttings inside.
4. **Maintenance and Evaluation**: Control the greenhouse environment and regularly evaluate its effectiveness.

Remember, the timeline depends on your specific situation and needs.

Gender assessment 4

Climate impact 6

Technology from

ProPAS

Commodities

Sweet Potato

Sustainable Development Goals

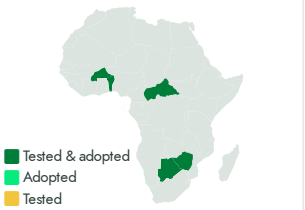
Categories

Production, Equipment, Seed system

Best used with

- Orange-Fleshed Sweet Potato (High provitamin A) ›

Tested/adopted in



Where it can be used

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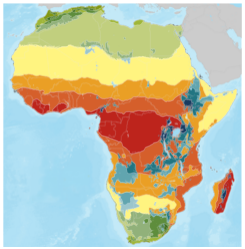

Poultry Vaccination against Newcastle Diseases

Low-cost vaccination for poultry

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

ND I-2 vaccine is available in small vials

ILRI
INTERNATIONAL LIVESTOCK RESEARCH INSTITUTE

International Livestock Research Institute (ILRI)
Adeniyi Adediran

This technology is TAAT1 validated.

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

0.02 USD

A dose of the ND I-2 vaccine, is inexpensive to administer

2.5 USD
per round of vaccination for 20 chickens

250 USD
local vaccination campaign at the village level

IP
Open source / open access

Problem

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

Solution

- **Thermostable and Broad Protection**: The ND I-2 vaccine is developed from a temperature-tolerant strain of the virus, enabling it to withstand varying temperatures and offer protection against a wide range of Newcastle Disease Virus strains.
- **Strong Immune Response and Ease of Use**: The vaccine triggers a robust immune response in poultry and is user-friendly with straightforward administration and storage procedures.
- **Safety and Long-lasting Protection**: The vaccine is widely accepted due to its proven effectiveness and safety. It offers enduring protection, reducing the need for frequent re-vaccination.

Key points to design your business plan

For breeders

For a breeder to use the ND I-2 vaccine:

1. **Connect**: Engage with local veterinary services and farmers.
2. **Learn**: Understand the vaccine and its administration.
3. **Acquire**: Purchase the vaccine from a reliable source.
4. **Administer**: Vaccinate all chickens at once.
5. **Monitor**: Keep an eye on the flock's health.
6. **Train**: Attend relevant training sessions.

Gender assessment 3

Climate impact 6

Technology from

ProPAS

Commodities

Poultry

Sustainable Development Goals

8 DECENT WORK AND ECONOMIC GROWTH

Categories

Production, Inputs, Animal healthcare

Best used with

- Biosecurity for Disease Prevention ›

Tested/adopted in

Where it can be used

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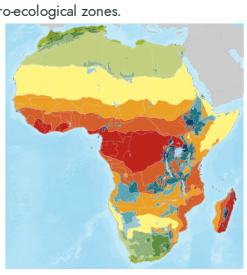


Target groups

Farmers

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.

ILRI
INTERNATIONAL LIVESTOCK RESEARCH INSTITUTE

International Livestock Research Institute (ILRI)
Adeniyi Adediran

This technology is TAAT1 validated.

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

Cost: $$$ **5,000—10,000 USD**

drying and pelleting equipment

30,000 USD	**3,000 USD**	**IP**
organic fertiliser production plant of 15 ton per hour	15 m3 anaerobic digester able to process 300 kg of poultry manure per day	Open source / open access

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 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.

Gender assessment 4

Climate impact 7

Technology from

ProPAS

Commodities

Poultry

Sustainable Development Goals

2 ZERO HUNGER

12 RESPONSIBLE CONSUMPTION AND PRODUCTION

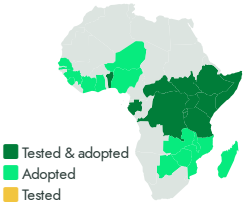
Categories

Production, Pre-production, Practices, Animal waste management

Best used with

- Biosecurity for Disease Prevention ›
- Low-Cost Cage and Free-Range Containment ›

Tested/adopted in



Where it can be used

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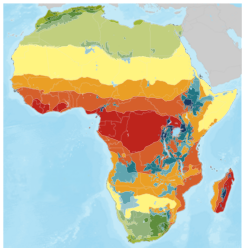


Urea deep placement Nitrogen management for Efficient Rice Fertilization

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.

Africa Rice Center
Sali Atanga Ndindeng

This technology is TAAT1 validated.

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

Cost: $$$ **0.4—0.8 USD** per Kg

ROI: $$$ **30 %** increase in yield

0.25 ton Recommended rate per Ha

100—200 USD Equivalence cost for the recommendated rate per Ha

10 USD plunger-type applicator

IP Open source / open access

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 business plan

This technology is beneficial for three main groups: manufacturers, resellers, and end users (farmers).

For manufacturers, efficient production requires reliable suppliers for machinery and raw materials.

Resellers must navigate the market by sourcing Urea briquettes, efficient transportation, and storage.

Success across manufacturing, reselling, and user segments is driven by key partnerships and careful consideration of costs.

Gender assessment 4

Climate impact 7

Technology from

ProPAS

Commodities

Rice

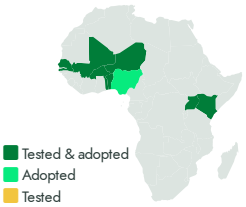
Sustainable Development Goals

2 ZERO HUNGER | 8 DECENT WORK AND ECONOMIC GROWTH | 13 CLIMATE ACTION

Categories

Production, Practices, Soil fertility, Yield improvement

Tested/adopted in



Where it can be used

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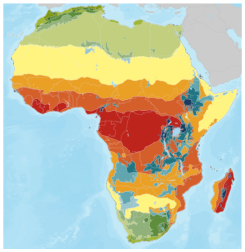
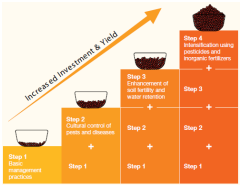


Target groups

Farmers

Stepwise Climate Smart Investment Pathway

Accessible best agricultural practices for everyone



The Stepwise approach is a method that divides costly best practices into affordable packages for farmers. It takes into account agro-ecological factors and farmer needs to guide phased investments. This gradual investment is anticipated to boost coffee yields progressively.

International Institute of Tropical Agriculture (IITA)
IITA Uganda Climate Smart Agriculture (CSA Program)

This technology is TAAT1 validated.

5·4 Scaling readiness: idea maturity: 5/9; level of use: 4/9

IP
Open source / open access

Problem

- **High Costs**: Farmers often can't afford recommended best practices.
- **Agro-ecological Variables**: Tailoring farming practices to specific conditions can be complex.
- **Climate Change**: Farmers lack resources to implement climate-resilient practices.

Solution

- **Affordable Packages**: Stepwise breaks down costly practices into affordable steps.
- **Tailored Guidance**: It provides advice based on local conditions and farmers' goals.
- **Incremental Investments**: It guides farmers to make gradual investments, leading to increased yields over time.

Gender assessment 4

Climate impact 7

Technology from

ProPAS

Commodities

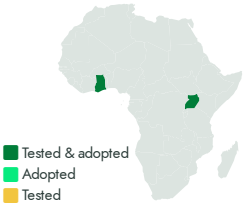
Coffee

Sustainable Development Goals

Categories

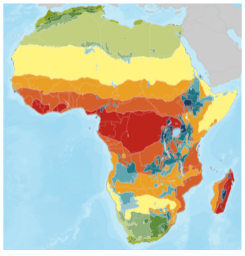
Production, Practices,
Pest control (excluding weeds),
Weed management

Tested/adopted in



Where it can be used

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



Value-added Processing of Bananas and Plantain

Banana and Plantain Processing for a Healthier Diet

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

Banana flour has a growing demand as a wheat substitute

International Institute of Tropical Agriculture (IITA)
Patchimaporn Udomkun

This technology is TAAT1 validated.

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

1,500 USD

Banana flour production machinery that can process 100 kg per hour

10000—60000 USD

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

1,500 USD

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

IP

Open source / open access

Problem

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

Solution

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

Key points to design your business plan

For Processor

Equipment

Choose equipment based on the products you plan to make. For banana chips: slicer, fryer, deoiler, packaging machine. For banana flour: peeling machine, slicer, blanching and soaking machine, dryer, grinding machine, packaging machine.

- Banana pulp presses: $1,500 (0.5 ton/hr) to $4,000 (2.5 tons/hr)
- Banana flour machinery: $15,000 (100 kg/hr) to $300,000 (5 tons/hr)
- Fried banana chips production: $10,000 to $60,000

Raw Material Source

Ensure high-quality, disease-free bananas and plantains, sourced locally or imported if needed.

Potential Customers

Target food manufacturers, bakeries, confectioneries, cosmetic and pharmaceutical companies. Explore niche markets like banana wine and banana-based cosmetics.

Gender assessment 4

Climate impact 7

Technology from

ProPAS

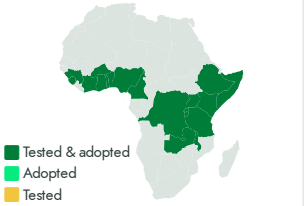
Commodities

Sustainable Development Goals

Categories

Transformation, Equipment, Post-harvest handling, Agrifood processing

Tested/adopted in



Where it can be used

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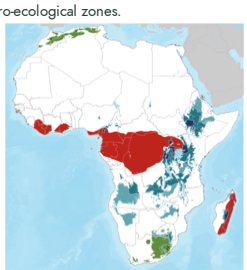


Target groups

Processors

Flow-Through and Recirculatory Water Systems for Fish Tanks

Enhance fish farming efficiency with sustainable water systems, reducing resource wastage and ensuring robust fish growth.

Flow-through tanks with single use of water

Recirculatory Aquaculture Systems involve advanced setups for fish farming in tanks. They maintain essential conditions like oxygen levels and water temperature. Water is continuously filtered, ensuring a clean and healthy environment for the fish.

This technology is TAAT1 validated.

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

Cost: $$$ **22000 USD**

Pumping and piping for recirculation system (130 m3)

44000 USD	**1.5—5 USD**	**IP**
Recirculation System (130 m3) treatment	Settling of square meter pond construction	Open source / open access

Problem

- Challenges in maintaining water quality and oxygen levels for successful fish farming
- Need for effective waste management and control of pollutants in aquaculture systems
- Dependence on reliable water sources and electricity infrastructure for flow-through systems
- Cost and complexity of installing recirculatory systems compared to conventional methods

Solution

- Efficient use of limited land and water resources for higher density fish culture
- Maintenance of peak water quality conditions despite dense stocking rates
- Continuous water filtration and purification, leading to a healthier environment for fish
- Conversion of waste products into non-toxic substances for potential use in crop cultivation
- Flexibility in location choice based on water availability and electricity access

Key points to design your business plan

- Maximize fish production, minimize costs, and ensure premium product quality with RAS technology.
- Improve efficiency, reduce environmental impact, and drive economic growth in your community.
- Collaborate with agricultural institutions for effective implementation.
- Explore complementary technologies for enhanced efficiency, such as All Male Tilapia
- Fingerlings with Greater Yield and Uniformity and Fast Growing and Hybrid African Catfish.

Gender assessment 4

Climate impact 7

WorldFish
Bernadette Fregene

Technology from

ProPAS

Commodities

Fish

Sustainable Development Goals

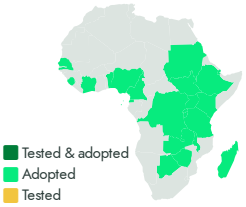
Categories

Production, Equipment, Aquaculture Systems

Best used with

- All Male Tilapia Fingerlings with Greater Yield and Uniformity ›
- Fast Growing and Hybrid African Catfish ›

Tested/adopted in



Where it can be used

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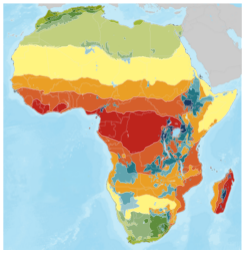


Hapa Nets for Fingerling

Hapa Nets for Mass Fingerling Hatchery Production

Collection of fingerlings from hapa

The "Hapa Nets for Mass Fingerling Hatchery Production" technology is cage-like enclosures in ponds to manage fish breeding and growth. Made of affordable materials, these nets enhance fingerling production by protecting fish from predators and controlling breeding conditions. They are adaptable to various aquaculture species and water bodies, improving overall production efficiency.

This technology is TAAT1 validated.

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

Cost: $$$ **1 USD**

Per square meter

150—900 fingerlings per square meter

Production in hapa

8—20 fish farmers

Number of fish farmers in a single hatchery

IP

Open source / open access

Problem

- Inadequate supply of high-grade fingerlings from improved fish breeds
- Poor and uneven growth rates, and high fingerling mortality in open ponds
- Predation by birds, reptiles, amphibians, and aquatic insects
- Difficulty in monitoring and managing brooders, hatchlings, and juveniles

Solution

- Safeguarding brooders, hatchlings, and juveniles from predators and other fish.
- Easing the management of brooder, fry, and fingerlings, enabling closer monitoring and adjustment of breeding, feeding, or aeration regimes.
- Increasing fertilization rates, promoting even growth of fish seed, and reducing mortality, leading to higher production of fry and fingerlings per unit area.
-

Key points to design your business plan

- The Hapa Nets for Mass Fingerling Hatchery Production technology streamlines fingerling production.
- It offers a cost-effective solution for fish farmers, optimizing breeding conditions and improving fingerling survival rates.
- Construction materials typically cost around US $1 per square meter, with finer meshes incurring additional expenses.
- Monthly fingerling production in hapa nets ranges from 150 to over 900 fingerlings per square meter.
- This technology is available in various African countries, including Zambia, Uganda, Togo, Tanzania, Sudan, and many others.
- Collaboration with agricultural development institutions and agro-dealers is essential for successful implementation.
- Integration of complementary technologies like All Male Tilapia Fingerlings and Hybrid African Catfish can further enhance efficiency and productivity.

Gender assessment 4

Climate impact 7

WorldFish
Bernadette Fregene

Technology from

ProPAS

Commodities

Fish

Sustainable Development Goals

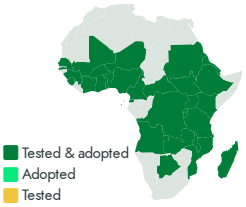
Categories

Production, Equipment, Aquaculture Systems

Best used with

- All Male Tilapia Fingerlings with Greater Yield and Uniformity ›
- Fast Growing and Hybrid African Catfish ›

Tested/adopted in



Where it can be used

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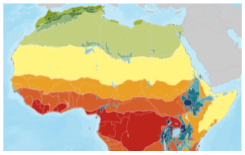
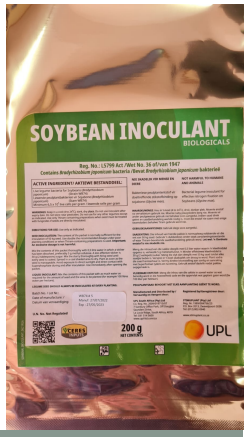


Soybean inoculant Rhyzobium inoculant range, various strains

N-fixing bacteria to reduce chemical fertilizer use

Stimuplant 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.



Stimuplant company, UPL
Florent Clair

This technology is pre-validated.

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

Cost: $$$ **15—25 USD**
Product cost /ha

ROI: $$$ **35 %**
Yield increase

IP
Open source / open access

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 business plan

- Rhyzobium Inoculant technology ensures cost-effective and sustainable farming, enhancing yields and soil health while reducing reliance on expensive fertilizers.
- It promotes economic benefits and contributes to environmentally friendly agriculture.
- Key partners required are suppliers of Rhyzobium Inoculant.
- The cost structure ranges from 15 to 25 USD per hectare, depending on the crop and country.
- Storage requirements are minimal, with only 100g/ha needed on average, stored ideally at 4 to 24°C and away from pesticides.
- Estimating profitability is essential for assessing the impact of the product's use.

Gender assessment 4

Climate impact 7

Commodities

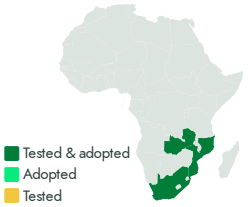
Soybean, Groundnut, Cowpea, Common bean

Sustainable Development Goals

Categories

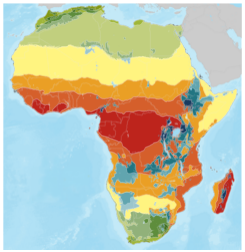
Production, Inputs, Inoculant

Tested/adopted in



Where it can be used

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



Target groups

Farmers

Multi-Crop production system Intercropping Strategies for Banana and Plantain

Improved system production for better yield

Banana with common bean understory (Credit: B. Dhed'a)

International Institute of Tropical Agriculture (IITA)
Godfrey Taulya

Intercropping, growing bananas or plantains alongside other plants, offers farmers numerous benefits but also poses challenges like nutrient competition, disease spread, and careful handling during planting and harvesting to avoid root damage.

This technology is TAAT1 validated.

5·7 Scaling readiness: idea maturity: 5/9; level of use: 7/9

IP

Open source / open access

Problem

- Competition for nutrients and water
- Weed proliferation
- Soil degradation and erosion
- Vulnerability to pests and diseases
- Dependency on external inputs
- Susceptibility to extreme weather
- Loss of biodiversity

Solution

- Allows for early yields before banana crops, while suppressing weeds.
- Canopies and roots protect against soil erosion.
- Legume intercrops provide nitrogen through biological fixation.
- Biomass from intercrops serves as mulch and organic nutrients.
- Intercropping diversifies farmers' income sources.
- Reduces disease spread, Enhances soil health.
- Strengthens food systems' resilience....

Key points to design your business plan

Utilizing Intercropping Strategies for Banana and Plantain enhances farmer income, food security, and sustainable agriculture by diversifying crops, reducing chemical usage, and promoting biodiversity.

To effectively implement this technology, farmers require education, access to information, high-quality seeds, ongoing extension support, affordable inputs, and partnerships for distribution.

No licenses are needed, and integration with complementary technologies can optimize outcomes.

Gender assessment 4

Climate impact 7

Technology from

ProPAS

Commodities

Banana/Plantain

Sustainable Development Goals

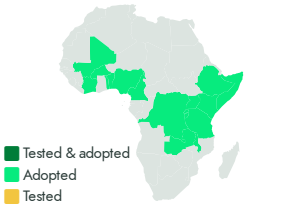
Categories

Production, Practices, Weed management, Soil fertility

Best used with

- Biofortified Beans for Improved Nutrition ›
- Orange-Fleshed Sweet Potato (High provitamin A) ›
- Disease resistant cassava varieties ›
- New rice for Africa varieties ›

Tested/adopted in



Where it can be used

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

KABAMANOJ F1 Orange maize hybrid

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

The new maize variety KABAMANOJ F1 addresses challenges like drought, diseases, and climate change effects. With its short cycle of 80 to 100 days, it matures early, increasing resilience to tough climatic conditions. Registered with ECOWAS, it adapts well to the African climate, offering significant potential for food security and agricultural sustainability.

UPL
Florent Clair

This technology is pre-validated.

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

Cost: $$$ **110 USD/ha**
Seed cost

170 USD/ha	**560 USD/ha**	**IP**
Operation cost	Benefit	Unknown

Problem

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

Solution

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

Key points to design your business plan

For Seed Multipliers:

- Foundation or Registered Seed is crucial for effective seed multiplication, with no requirement for a licensing purchase.
- Potential customers include wholesale distributors, development projects, government agencies, and NGOs, emphasizing the importance of strong partnerships with distributor networks.

For Users:

- The cost structure involves a fixed price of 110 USD/ha for Kabamanoj F1 Orange Maize seeds.
- Consideration of delivery costs and import duties from Kenya is necessary.
- Estimating the profitability gained from implementing the technology is essential for users.

Gender assessment 4

Climate impact 5 1

Commodities

Maize

Sustainable Development Goals

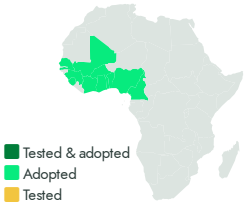
2 ZERO HUNGER

3 GOOD HEALTH AND WELL-BEING

Categories

Production, Improved varieties, Yield improvement, Drought tolerance

Tested/adopted in



Where it can be used

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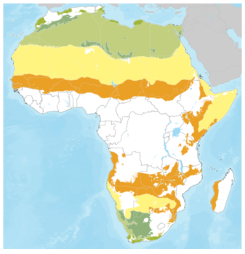


Target groups

Farmers, Seed companies

Local Production of Quality Affordable Poultry Feed

Cutting Costs, Boosting Nutrition

This practice involves blending various ingredients to create a balanced feed ration for chickens, optimizing their growth and production. The basic formulation includes maize or wheat, soybeans, bran, oil press cake, fish and bone meal, poultry supplement, limestone, and salt. The feeds are further processed into mash for chicks or pelleted for larger birds.

Un poulet se nourrissant d'asticots riches en protéines

International Livestock Research Institute (ILRI)
Tunde Amole

This technology is TAAT1 validated.

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

Cost: $$$ **3,000—36,000 USD** per machine

ROI: $$$ **60 %** reduction of feed cost

100—200 kg feed production per hour

5 years life span

IP Open source / open access

Problem

- Limited access to safe and low-cost poultry feed inhibits enterprise profitability and expansion.
- Dependence on expensive purchased feeds restricts small-scale farmers from scaling their operations.
- Balancing the ration with the right combination of nutrients is essential for poultry health and productivity.
- Leveraging locally available ingredients for feed production can reduce costs and enhance profitability.

Solution

- Utilizing locally available and seasonal materials for feed production.
- Blending local energy and protein ingredients with purchased additives to create formulated feeds.
- Reducing feed costs through free-ranging practices and using local by-products.
- Implementing proven technologies to improve local meat and egg supplies.

Key points to design your business plan

- The Local Production of Quality Affordable Feed Technology promotes sustainability in poultry farming by reducing feed expenses, fostering economic development, and advocating for eco-friendly practices.
- Essential collaborators include suppliers of feed ingredients, equipment manufacturers, distributors, and agricultural consultants.
- Given the technology's availability in various countries like Zimbabwe, Zambia, Uganda, and others, it's crucial to consider delivery expenses and potential import duties.
- Machinery costs vary, with equipment capable of processing 1 ton of poultry feed per hour priced at approximately USD 36,000, while machines processing 100 to 200 kg per hour cost around USD 3,000.
- Profitability assessment is essential, with processed cassava peel mash offering a cost-effective alternative to grains in poultry feed, reducing costs by up to 50%.

Gender assessment 4

Climate impact 6

Technology from

ProPAS

Commodities

Poultry

Sustainable Development Goals

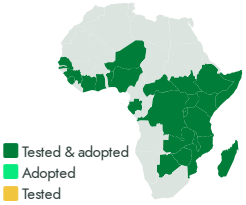
Categories

Pre-production, Equipment, Animal feed production

Best used with

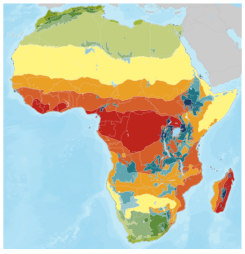
- Cassava Peels for Animal Feed Production ›

Tested/adopted in



Where it can be used

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



Target groups

Low-Cost Cage and Free-Range Containment

Safeguarding Chickens and reducing Costs

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

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

International Livestock Research Institute (ILRI)
Adeniyi Adediran

This technology is TAAT1 validated.

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

Cost: $$$ **350 USD**
Initial cost to raise 150 to 200 chickens

ROI: $$$ **50 %**
Benefit from selling birds

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

20 m²
floor space for 100 birds.

IP
Open source / open access

Problem

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

Solution

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

Key points to design your business plan

- The Low-Cost Cage and Free-Range Containment technology enables affordable and sustainable poultry farming practices.
- It empowers smallholder farmers for commercial production while promoting environmental conservation and organic poultry production.
- An estimated US $350 can raise 150 to 200 chickens under a free-run system, providing a cost-effective investment opportunity.
- The technology is accessible across multiple countries through agricultural extension services, research institutions, and local farming communities.
- Integration with complementary technologies like Biosecurity for Disease Prevention further enhances operational efficiency.

Gender assessment 4

Climate impact 5

Technology from

ProPAS

Commodities

Poultry

Sustainable Development Goals

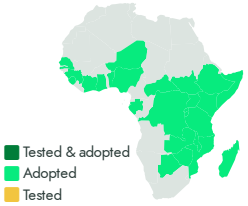
Categories

Production, Equipment, Production System

Best used with

- Biosecurity for Disease Prevention ›

Tested/adopted in



Where it can be used

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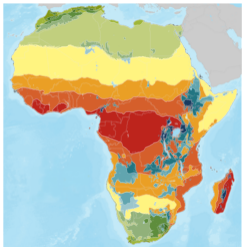
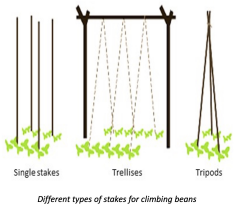


Low-Cost Staking for Climbing Beans

Empowering Beans, Sustaining Growth!

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



Different types of stakes for climbing beans

This technology is TAAT1 validated.

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

Cost: $$$

300 %	20,000—50,000 stakes per hectare	2 meters	~200,000 plants	IP
Increase in yields compared to bush beans	Staking density for highest yields	Height of stakes for highest yields	Plant population per hectare	Open source / open access

Problem

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

Solution

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

Key points to design your business plan

- The Low-Cost Staking for Climbing Beans technology reduces cultivation costs with innovative staking methods.
- It enhances bean yields, improving farmers' productivity and income.
- Job creation, particularly in rural areas, is promoted through increased bean cultivation.
- The technology advocates for eco-friendly practices, reducing the need for deforestation in stake production and supporting environmental conservation.
- Recommended species for staking include Acacia angustissima, Alnus acuminata, Bamboo, Calliandra calothyrsus, Gliricidia sepium, Sesbania sesban, Vernonia amygdalina, and Elephant Grass (Pennisetum atropurpeum).
- Accessible through agricultural extension services, research institutions, local farming communities, and organizations focused on sustainable agriculture and rural development.
- Integration with complementary technologies like Climbing Bean with High Yield and N Fixation can further enhance operational efficiency.

Gender assessment 4

Climate impact 7

Alliance

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

Justin Mabeya Machini

Technology from

ProPAS

Commodities

Common bean

Sustainable Development Goals

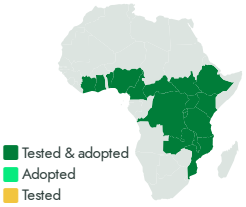
Categories

Production, Practices, Yield improvement, Production system

Best used with

- Climbing Bean with High Yield and N Fixation ›

Tested/adopted in



Where it can be used

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

Maize-legume rotation and intercropping

Maize-legume: Savings in Soil, Growth in Profit

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

This technology is TAAT1 validated.

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

ROI: $$$ **0.5—1 tons**

maize grain yields increase in yield/ha

30—70 kilograms

of nitrogen carried over from soybean to maize crops

IP

Unknown

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 business plan

Using the maize-legume rotation and intercropping technology enhances crop productivity, promotes sustainable agriculture, and contributes to food security and economic sustainability.

In order to use the technology efficiently, you should :

- Evaluate your farm's compatibility for mixed cultivation and choose suitable varieties tailored to local conditions.
- Obtain high-quality maize and legume seeds.
- Secure mineral fertilizers and legume inoculants if needed.
- Enhance outcomes by forging partnerships with agricultural development organizations, fertilizer providers, and agricultural service firms to offer assistance and facilitate distribution.

Gender assessment 4

Climate impact 7

AATF
Jonga Munyaradzi

Technology from

ProPAS

Commodities

Maize

Sustainable Development Goals

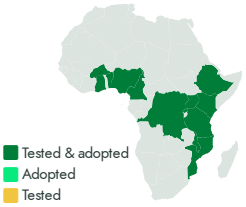
Categories

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 ›

Tested/adopted in



Where it can be used

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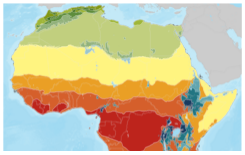


Advanced Weed Management Mechanical and Chemical Weed Management

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

Weed Management for Optimal Yield

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

This technology is TAAT1 validated.

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

250—500 USD
Mechanical weeders/unit

ROI: $$$ **35 %**
Net profit from implementing the technology in Ethiopia

27 USD
Pre-emergent herbicide and labor/Ha

46 USD/ha
Equipment and labor

743 USD
Net profit per Ha from implementing the technology in Ethiopia

IP
Open source / open access

Problem

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

Solution

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

Key points to design your business plan

- Increased agricultural productivity, crop yields, and weed management efficiency
- Reduced labor and costs
- Enhanced food security and economic growth in farming communities
- Promotion of sustainable practices and better livelihoods for farmers
- Consideration of costs for herbicides, mechanical weeders, and maintenance
- Importance of training and delivery expenses
- Potential for higher profits with the implementation of weed management strategies

Gender assessment 4

Climate impact 7

Alliance

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

Justin Mabeya Machini

Technology from

ProPAS

Commodities

Common bean

Sustainable Development Goals

+ 1 more

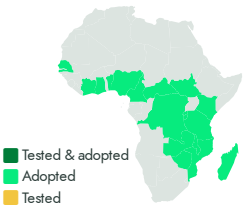
Categories

Production, Equipment, Weed control

Best used with

- Integrated Management of Insects, Diseases and Weeds ›

Tested/adopted in



Where it can be used

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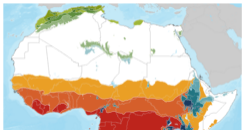


Conservation agriculture Minimal Tillage and Surface Mulching of Soils

Conservation Agriculture for Sustainable Farming

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

ICARDA
Science for resilient livelihoods in dry areas

International Center for Agricultural Research in the Dry Areas (ICARDA)
Zewdie Bishaw

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

Cost: $$$ **740 USD/ha**

Three-year average total production under CA

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

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 business plan

- Technology boosts crop yields, ensuring food security and profitability for farmers.
- Minimizes soil disruption and conserves moisture, reducing water and fertilizer needs.
- Prevents erosion and chemical runoff, promoting environmental sustainability.
- Lowers input costs and increases resilience to climate variability, benefiting farmers economically and environmentally.
- Accessible through agricultural extension services, research institutions, and local farming communities.
- Integration with complementary approaches, such as heat and drought-tolerant wheat varieties, is recommended for optimal results.

Gender assessment 4

Climate impact 7

Technology from

ProPAS

Commodities

Wheat

Sustainable Development Goals

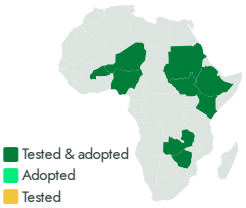
Categories

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

Best used with

- Yellow Rust and Stem Rust Resistant wheat ›
- Hessian Fly Resistant Wheat Varieties ›

Tested/adopted in



Where it can be used

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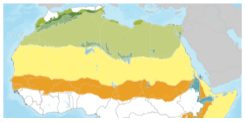


Motorized Crop Residue Processing for Animal Feed

Powered Crop Residue Processing for Livestock Feed Enhancement

Use of motorized stover cutter (left) and mobile chopper (right)

This technology is a motorized equipment for processing millet and sorghum residues into animal feed. It's self-powered, cost-effective, and easily transportable, requiring only two operators. By efficiently processing crop residues, it integrates crop and livestock enterprises, enhancing resource efficiency. The machine can process 1 to 1.5 tons of stover per hour.

This technology is TAAT1 validated.

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

Cost: $$$ **1250-1700 USD/unit**

Self-contained stover chopping and crushing machine

10 years	**22,000 USD**	**1,000 - 1,500 USD**	**IP**
Lifespan	Production value in 6 months	Alternative motorized cutters that can handle all types of cereals	Unknown

Problem

- Manual processing of millet and sorghum stem residues is time-consuming.
- Unutilized residues are often burned, leading to soil carbon depletion and air pollution.
- Traditional feeding methods result in sub-optimal animal diets and digestion.
- Storage and preservation of feed face challenges.
- Dryland areas in Sub-Saharan Africa lack sufficient feed biomass due to low rainfall.

Solution

- Efficiently processes crop residues into feed or mulch
- Reduces wastage and maximizes livestock nutrition
- Enhances animal health and productivity
- Improves soil health and agricultural sustainability
- Compacts feed materials effectively, enhancing flavor and nutritive value
- Particularly beneficial for low rainfall regions in Sub-Saharan Africa

Key points to design your business plan

For Manufacturers:
- To succeed, identify reliable suppliers for manufacturing machines and raw materials, considering transportation costs, import duties, and taxes.
- Potential customers include animal feed processing projects, farmers' cooperatives, and associations.

For Resellers:
- To enter the market effectively, identify reliable equipment sources, arrange transportation, and assess storage facilities.
- Costs vary by technology size, with self-contained stover chopping and crushing machines ranging from USD 1,250 to USD 1,700, and alternative cutters from USD 1,000 to USD 1,500. Consider additional expenses for transportation, import duties, and taxes.
- Target customers include farmers, development projects, and farmer cooperatives.

For Users:
- Key partners include sellers of crop residue processing for animal feed.
- Costs range from USD 1,000 to USD 1,700 for the technology, with potential additional expenses for transportation, import duties, and taxes.
- Optimal results can be achieved by integrating the technology with Dual-purpose Varieties for Crop and Livestock Integration.

ICRISAT
INTERNATIONAL CROPS RESEARCH INSTITUTE FOR THE SEMI-ARID TROPICS

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

Technology from

ProPAS

Commodities

Sorghum/Millet

Sustainable Development Goals

2 ZERO HUNGER | 13 CLIMATE ACTION | 15 LIFE ON LAND

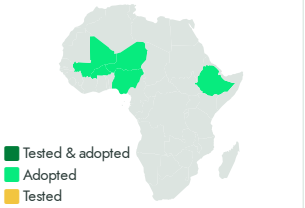
Categories

Pre-production, Equipment, Animal feed production

Best used with

- Dual-purpose Millet Varieties for Crop and Livestock Integration ›

Tested/adopted in



Where it can be used

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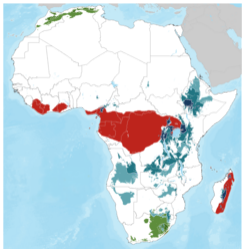


Gender assessment 4

Climate impact 6

Motorized Crop Residue Processing for Animal Feed

https://e-catalogs.taat-africa.org/com/technologies/motorized-crop-residue-processing-for-animal-feed

Last updated on 22 May 2024, printed on 22 August 2024

Enquiries techs@taat-africa.org

Disease Diagnosis Nuru for in-field Pest

Crop Care in Your Pocket: Nuru App, Your Farming Companion

PlantVillage Nuru is an innovative smartphone app that uses artificial intelligence for offline diagnosis of crop damage by diseases and pests. It offers instant diagnoses and guidance on disease and pest control, empowering farmers to enhance agricultural productivity and food security.

Penn State University
David Hughes

This technology is TAAT1 validated.

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

IP

Open source / open access

Problem

- Farmers often struggle to identify crop damage caused by diseases and pests, which can lead to reduced crop yields and economic losses.
- Many farmers lack access to expert advice and information on how to manage and control crop diseases and pests effectively.
- Language barriers can make it challenging for farmers to access relevant information and guidance on crop protection.

Solution

- PlantVillage Nuru offers instant offline diagnosis of crop damage symptoms caused by diseases and pests using artificial intelligence and machine learning.
- The app connects users to a network of nearby users and provides information on how to control the identified diseases and pests, offering expert advice and solutions.
- The app is available in multiple languages, making it accessible to a wider range of users and overcoming language barriers.
- The app employs machine learning and object recognition, allowing it to continuously improve and enhance its accuracy in diagnosing crop issues.

Key points to design your business plan

- PlantVillage Nuru enables swift offline diagnosis of crop damage, aiding farmers in proactive pest and disease management.
- The technology is provided as a public good, free for download with no licensing fees.
- Cost structure involves potential facilitation through phone provision and training sessions.
- Profit estimation is necessary to gauge the financial benefits of implementing this practice.

Gender assessment 4

Climate impact 7

Technology from

ProPAS

Commodities

Maize, Cassava, Other root/tuber

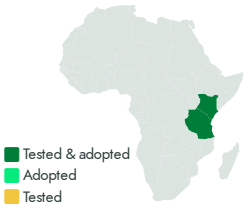
Sustainable Development Goals

Categories

Production, Digital applications,

Advisory and information service

Tested/adopted in



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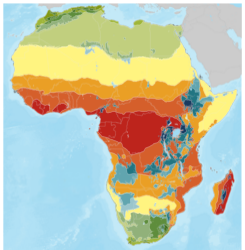


Target groups

Farmers

Best practices in pasture management Pasture Improvement

A pasture planted in Brachiaria, a highly productive perennial grass

Revitalize Your Pastures, Sustain Your Livestock

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

International Livestock Research Institute (ILRI)
Tunde Amole

This technology is TAAT1 validated.

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

Cost: $$$ **400—600 USD**

Pasture establishment with improved perennial grasses/ha

IP

Open source / open access

Problem

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

Solution

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

Key points to design your business plan

- Technology enhances pasture productivity, reducing dependence on expensive feed and operational costs.
- Nutrient-rich forage promotes animal health and productivity, while sustainable practices preserve soil health and biodiversity.
- Equipping users with valuable skills opens economic opportunities and ensures long-term agricultural viability.
- Establishment costs range from USD 400 to 600 per hectare, covering land preparation, weed control, fertilizer, and seed expenses spread over several years.
- Operating costs are approximately USD 40 per hectare per year.
- Additional feed value from pasture improvement ranges between USD 150 and 200 per year.
- Typical input rates for seeds are 10 to 25 kg per hectare, and fertilizers are 50 kg per hectare.
- Success story involves Brachiaria spp., which increases milk production and weight gain in animals.
- Partnerships with private seed companies, cooperatives, and seed growers are crucial for successful implementation.

Gender assessment 4

Climate impact 7

Technology from

ProPAS

Commodities

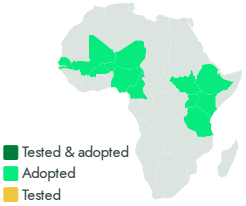
Small livestock

Sustainable Development Goals

Categories

Production, Practices, Animal feed management

Tested/adopted in



Where it can be used

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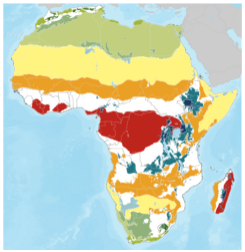


Target groups

Farmers

Banana Peels as Feed and Organic Resource

From Waste to Resource

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

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

International Institute of Tropical Agriculture (IITA)
John Derera

This technology is TAAT1 validated.

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

Cost: $$$ **3,500 USD**

A single belt 0.37 kWatt peeler

16,000 USD

Larger multi-channel 2.0 kWatt machines

IP

Open source / open access

Problem

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

Solution

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

Key points to design your business plan

- Peels as Feed and Organic Resource technology reduces reliance on expensive commercial feed.
- It promotes sustainable practices by efficiently utilizing agricultural by-products like peels, reducing waste.
- Composting peels enhances soil health, boosts crop yields, and aids in carbon sequestration, contributing to climate resilience.
- Budget estimation involves considering costs of machinery (e.g., single belt peeler: $3500, multi-channel machines: $16,000), delivery expenses, and profitability from technology implementation.
- Collaboration with agricultural development institutions is essential to facilitate widespread adoption of the technology.

Gender assessment 3

Climate impact 7

Technology from

ProPAS

Commodities

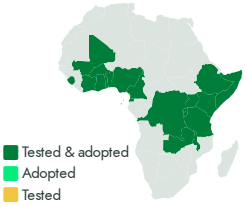
Banana/Plantain

Sustainable Development Goals

Categories

Pre-production, Practices, Post-harvest management

Tested/adopted in



Where it can be used

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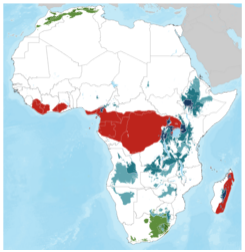


Target groups

Breeders

Pond Liners to Save Water and Ease Maintenance

Preserving Water, Pond Liners for Sustainable Fish Farming.

Pond liners, made of materials like PVC or polyethylene, act as synthetic geomembranes, preserving water, enhancing biosecurity, and simplifying pond maintenance. They are adaptable to various pond sizes and shapes, with plastic liners being robust but slightly harder to install in smaller ponds.

Excavated pond with liner

WorldFish
Bernadette Fregene

This technology is TAAT1 validated.

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

Cost: $$$ **500 USD**
a 15m x 10m x 1m pond.

ROI: $$$ **50 %**
reduction in water-related costs

2 - 3.5 USD/square meter
Sheet plastic

IP
Open source / open access

Problem

- Water seepage on porous soils like sands and silts causes significant water loss in ponds.
- Evaporation, especially in hot climates, further reduces water availability for fish farming.
- Algal blooms due to excessive nutrient levels can degrade water quality, affecting fish health and productivity.
- Inefficient nutrient cycling between water and sediment occurs without pond liners, necessitating intensive maintenance.
- Sandy soils and regions with limited access to freshwater are particularly vulnerable to water loss, worsening water scarcity for fish farmers.

Solution

- Prevents water loss and reduces evaporation by creating impermeable barriers.
- Enhances water quality by preventing algal blooms and promoting nutrient cycling.
- Facilitates pond construction in areas with porous soils or limited freshwater access.
- Offers flexibility in pond size and shape, accommodating different landscapes.
- Provides options for different liner materials, thicknesses, and installation techniques to suit diverse needs.

Key points to design your business plan

- Technology reduces water seepage and evaporation, conserving resources and cutting aquaculture costs.
- Promotes responsible water management, maintaining optimal water levels and preventing contamination.
- Aids in mitigating climate change impacts by conserving water and reducing emissions.
- Consider variable investment costs and delivery expenses for effective implementation.
- Context-specific methods should be identified for land leveling and water lifting.
- Key figures include plastic sheet costs, ranging from USD 2 to 3.50 per square meter.
- Plastic liner with sealing and installation costs around USD 500 for a 15 m x 10 m x 1 m pond.
- Rubber sheet lining can decrease water loss by up to 50%.
- Collaboration with aquaculture stakeholders is crucial for successful implementation.

Gender assessment 3

Climate impact 7

Technology from

ProPAS

Commodities

Fish

Sustainable Development Goals

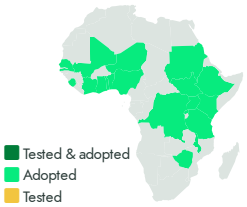
6 CLEAN WATER AND SANITATION

12 RESPONSIBLE CONSUMPTION AND PRODUCTION

Categories

Production, Equipment, Water management

Tested/adopted in



Where it can be used

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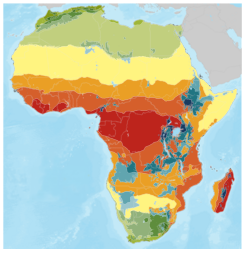


Target groups

Fish Farmers

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.

International Institute of Tropical Agriculture (IITA)
Jonga Munyaradzi

This technology is TAAT1 validated.

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

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

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

0.7 - 1.6 Ton per hectare
Grain yield increase

349 USD
Gross margin per hectare

IP
Open source / open access

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 business plan

For Seed Multiplier:

- Pre-emergence herbicide technology transforms crop productivity sustainably, benefiting farming communities and global nutrition.
- Adhering to local regulations is crucial for agro-input companies.
- Identifying reliable suppliers is key for efficient production.
- Wholesale distributors, projects, and agencies are potential clients.
- Strong partnerships with distributors are essential for success.

For Users:

- Pre-emergence herbicides boost crop productivity and sustainability by curbing early weed growth.
- Consider delivery and import costs for project sites across Africa.
- Budget for herbicides and labor, with specific rates depending on the blend used.
- Cost analysis shows increased grain yield and revenue with herbicide use.
- Collaborate with institutes and suppliers for support and distribution.

Gender assessment 4

Climate impact 5 1

Technology from

ProPAS

Commodities

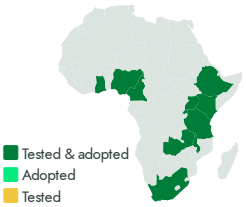
Maize

Sustainable Development Goals

Categories

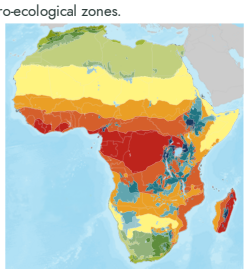
Production, Practices, Weed management

Tested/adopted in



Where it can be used

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



Target groups

Farmers

SAH cassava Semi Autotrophic Hydroponics for Cassava Multiplication

A rapid quality seed delivery technology for cassava

SAH for Cassava Multiplication is an innovative technology using controlled environments for cost-effective and adaptable cassava propagation. It fosters robust root growth, reduces diseases, and yields high-quality plantlets, expediting access to new cassava varieties and boosting overall productivity in farming.

International Institute of Tropical Agriculture (IITA)
Mercy Elohor Diebiru-Ojo

This technology is TAAT1 validated.

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

Cost: $$$ **10,000 USD**
Setup up for a 40 sq. meter facility

ROI: $$$ **80 %**
over one year

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

Problem

- Traditional methods are time-consuming.
- Conventional propagation prone to pests and diseases.
- Seed and tissue culture methods have low multiplication ratios.
- Stem cuttings may be more susceptible to pests and diseases when planted in open fields.

Solution

- SAH enables rapid access to new cassava varieties.
- Creates a controlled environment for healthy root growth.
- SAH significantly improves ratios compared to seed and tissue culture.
- Planting materials from SAH are more resilient and less susceptible to pests and diseases in open fields.

Key points to design your business plan

This technology is beneficial for two main groups: manufacturers (multipliers), and end users (farmers):

To efficiently multiply plantlets, one must construct a growth chamber, obtain seeds from disease-free cassava varieties, and organize marketing and delivery through existing suppliers.

Users benefit from quick access to high-quality planting materials, and partnerships with plantlet multipliers are key.

Gender assessment 4

Climate impact 7

Technology from

ProPAS

Commodities

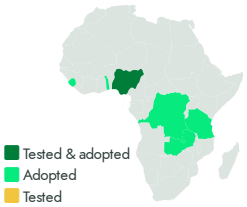
Cassava

Sustainable Development Goals

Categories

Production, Practices, Seed system

Tested/adopted in



Where it can be used

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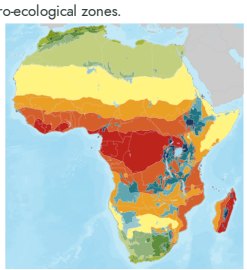


Target groups

Farmers

ZECC Zero Energy Cooling Chamber for Vegetables

Cut Post-Harvest Losses for Vegetables

The Zero Energy Cooling Chamber (ZECC) is a brick chamber that cools through evaporation. It has double walls with sand in between, and the walls are kept wet for cooling. This chamber can reach temperatures between 10 and 15°C with about 95% humidity, which helps extend the shelf life of perishable crops.

This technology is pre-validated.

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

Cost: $$$ **400 USD**

a 2 cubic meter ZECC

IP

Open source / open access

Problem

- **High Post-Harvest Losses:** Up to 50% of fruits and vegetables spoil before reaching consumers, causing food waste and income loss for farmers.
- **Reduced Availability of Nutrient-Dense Foods:** Post-harvest losses mean fewer fruits and vegetables for consumers, impacting their health and nutrition.
- **Limited Access to Cooling Technologies:** Many rural areas lack electricity and affordable cooling methods, making food preservation challenging.

Solution

- **Extends Shelf Life:** ZECC significantly extends the shelf life of vegetables (e.g., up to 8 more days for tomatoes, 11 days for peppers, 5 days for amaranth).
- **Environmentally Friendly:** ZECC is an eco-friendly storage solution that operates without electricity.
- **Low-Cost and Accessible:** ZECC offers an affordable and accessible cooling method, ideal for farmers in rural areas.

Key points to design your business plan

Farmers using ZECC can expand their business by offering higher-quality, longer-lasting produce, accessing new markets, and selling at better prices by reducing waste.

Essentials for ZECC:

- **Materials:** Locally source bricks, sand, jute cloth, and plastic crates.
- **Training:** Learn ZECC construction, maintenance, and usage best practices.
- **Support:** Seek help from agricultural experts for guidance.
- **Water Supply:** Ensure a steady water source for cooling.
- **Cost:** Building a 2 cubic meter ZECC costs around $400, including materials and labor. Minimal ongoing costs, mainly for water, are quickly offset by increased income from reduced losses and better-quality produce.

Gender assessment 4

Climate impact 4 1

World Vegetable Center

World Vegetable Center
Mathieu Ayenan

Commodities

Vegetable crop

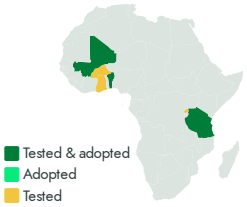
Sustainable Development Goals

1 NO POVERTY · 2 ZERO HUNGER · 3 GOOD HEALTH AND WELL-BEING · 12 RESPONSIBLE CONSUMPTION AND PRODUCTION

Categories

Prevention & storage, Practices, Post-harvest management

Tested/adopted in



Where it can be used

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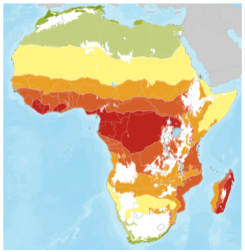


Target groups

Farmers, Sellers

Biochar Biomass Charcoal for Soil improvement

Biochar, a powerfully circular way to fight climate change

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.

Sasakawa Africa Association

Moshood Sulaiman

This technology is pre-validated.

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

305 USD

For 500 Kg capacity

5—10 Tones

Recommended Biochar quantity for 1 hectare

IP

Open source / open access

Problem

- Poor soil fertility and health
- High greenhouse gas emissions from agricultural practices
- Soil erosion and nutrient leaching
- Limited contributions to climate change mitigation efforts

Solution

- Biochar reduces the need for farmers to burn residues, while also creating a valuable soil amendment that can improve soil,
- Reduce water usage, lower methane emissions, and
- Save on input costs for expensive and polluting chemical fertilizers.

Key points to design your business plan

Biochar technology is an innovative approach to sustainable farming, enhancing soil health, improving crop yields. To integrate it into your business:

- The equipment to produce Biochar costs around 305 USD and is available in Nigeria.
- Farmers can purchase Biochar directly, with prices. Approximately 5-10 tons per hectare are required for optimal soil enhancement.
- Key partners for implementing Biochar technology include equipment sellers, agricultural service providers.

Gender assessment 3

Climate impact 7

Commodities

Sustainable Development Goals

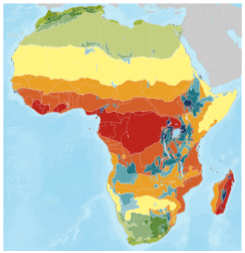
Categories

Production, Pre-production, Inputs, Fertilizer, Combustible

Tested/adopted in

Where it can be used

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

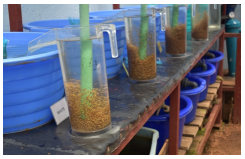


Target groups

Farmers

SOP Standard Operating Procedure for Tilapia hatcheries

SOP for a productive, high value and market-oriented aquaculture sector.



WorldFish
Bernadette Tosan Fregene

Standard Operating Procedures (SOPs) provide clear, step-by-step instructions for performing routine tasks in fish farming. They ensure consistent and high-quality operations, covering important areas like daily care, water quality, and fish health management.

This technology is pre-validated.

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

IP

Open source / open access

Problem

- Low production capacities mainly due to poor management of broodstocks,
- Low survival rates of the produced fries/fingerlings,
- Poor growth rates and others

Solution

SOPs allows fish farm owners to reduce:

- The likelihood of a disease outbreak,
- Mass fish mortality,
- Significant financial losses due to the loss of fish, and
- SOPs are a useful tool that maintain farm quality standards.

Key points to design your business plan

Fish farmers benefit from adopting SOPs for tilapia hatcheries, which standardize processes, leading to increased farm productivity and profitability. Key steps to integrate SOPs include:

- Assessing economic viability,
- Providing comprehensive training, and
- Collaborating with experts and suppliers for ongoing support.

Gender assessment 3

Climate impact 2

Commodities

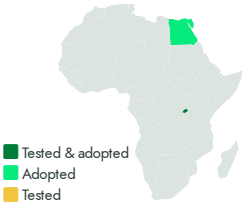
Fish

Sustainable Development Goals

Categories

Production, Practices, Water management, Yield improvement

Tested/adopted in



Where it can be used

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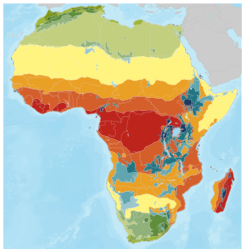


Target groups

Fish Farmers

KABANA 6H/NARITA7 hybrid High yielding and disease tolerant banana

long lasting banana nicknamed 'kiwangazi' by farmers.

The KABANA 6H/NARITA7 banana hybrid is a high-yielding variety resistant to black Sigatoka, banana weevils, and nematodes. It can produce 57.7 kg per bunch with a potential yield of 60 tons/ha/year. Developed by IITA and NARO, it's a practical solution for farmers, particularly in Uganda, enhancing plantation longevity and economic return. Proper agronomic practices are recommended...

This technology is pre-validated.

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

Cost: $$$ **2,542 USD**
all cost per hectare per year

ROI: $$$ **47.8 %**

57.7 kg per bunch
Real-life yield

60 tons/ha/year
Potential yield

IP
Plant variety protection

Problem

- **Decreased Yield**: Banana plantations have been facing a decline in yield due to various factors.
- **Black Sigatoka Disease**: This leaf spot disease significantly reduces banana yield.
- **Pest Infestation**: Banana weevils and nematodes cause root damage and reduce plantation longevity.
- **Short Plantation Lifespan**: Pests and diseases have been reducing the lifespan of banana plantations, particularly in Uganda.

Solution

- **Disease Resistance**: It's tolerant to black Sigatoka, a leaf spot disease, which helps in maintaining the yield.
- **Pest Resistance**: The hybrid is resistant to banana weevils and nematodes, addressing the issue of pest infestation and root damage.
- **Longevity**: The resistance to common pests and diseases increases the lifespan of banana plantations, solving the problem of short plantation lifespan.

Key points to design your business plan

For Seed Multipliers

- Multiply KABANA 6H/NARITA7 seeds to enhance yields, food security, and reduce poverty.
- Source seeds from Uganda, Kenya, Tanzania.
- Potential customers: wholesale distributors, development projects, government agencies, NGOs.

For Resellers

- Sell KABANA 6H/NARITA7 to enhance food security and reduce poverty.
- Source in bulk from Uganda, Kenya, Tanzania.
- Potential customers: local retailers, development projects, producers, cooperatives.

For Users

- Use KABANA 6H/NARITA7 to improve yields and enhance food security.
- Source from sellers of KABANA 6H/NARITA7.
- Estimate profit from using this product.

Gender assessment 4

Climate impact 4

IITA and NARO
Michael Batte/Alex Barekye

Commodities

Banana

Sustainable Development Goals

1 NO POVERTY

2 ZERO HUNGER

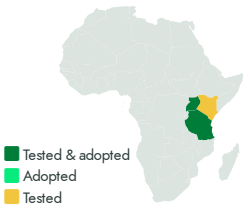
Categories

Production, Improved varieties, Disease resistance, Yield improvement

Best used with

- Propagation of Banana and Plantain Disease-Cleaned Suckers ›
- Intercropping Strategies for Banana and Plantain ›
- Spacing and Stand Management in Banana and Plantain ›
- Value-added Processing of Bananas and Plantain ›
- Banana Peels as Feed and Organic Resource ›

Tested/adopted in



Where it can be used

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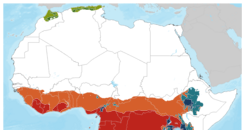


NextGen Advisory Digital Advisory tool for Farmers

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

24—36 %

Wheat yield increased

IP

Unknown

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 business plan

NextGenAgroadvisory is a digital application that revolutionizes wheat, maize and teff farming by offering personalized management recommendations.
To utilize this technology:

- Access the NextGenAgroadvisory app from Google Play or the Web App on your smartphone, tablet, or computer.
- Cost Structure Considerations: The app is available for free download and use. However, farmers should consider the costs associated with acquiring smartphones and data plans necessary to run the app effectively.
- Allocate resources for training to ensure that farmers and extension agents can efficiently utilize the app.
- Factor in the costs associated with implementing the recommendations provided by the app, such as investing in fertilizers and weed management technologies.

Gender assessment

Climate impact

EXCELLENCE IN AGRONOMY
Adapt Intensify Grow

Excellence in Agronomy
Lulseged Tamene

Technology from

CASH from EiA

Commodities

Wheat, Teff, Maize

Sustainable Development Goals

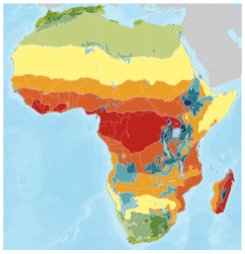
Categories

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

Tested/adopted in

Where it can be used

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



Target groups

Development institutions, Farmers,

RiceAdvice Lite Digital Advisory for Rice

Empowering Rice Farmers with RiceAdvice Lite

Android or web-based decision support tool - RiceAdvice Lite provides field-specific recommendations on optimal sowing window and fertilizer management, and other good agricultural practices for irrigated and rainfed lowland rice.

This technology is **pre-validated**.

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

IP

Unknown

Problem

- Fertilizer misuse
- Suboptimal rice management
- Impact on productivity and sustainability
- Risk to millions of people's food security

Solution

- Site-specific fertilizer recommendations
- Optimal planting times

Key points to design your business plan

To use this technology,

- Download and Install: Access the RiceAdvice Lite app from Google Play (https://play.google.com/store/apps/details?id=com.cocapacity.riceadvicelite) on your smartphone or tablet. You can also use Web App (https://lite.riceadvice.info/seekadvice).
- Consider the cost of using the tool, including training, android phone, and data expenses.
- Estimate profit.

Gender assessment **3**

Climate impact **1**

EXCELLENCE IN AGRONOMY
Adapt Intensify Grow

Excellence in Agronomy
Ali Ibrahim

Technology from

CASH from EiA

Commodities

Rice

Sustainable Development Goals

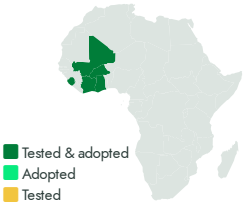
2 ZERO HUNGER

6 CLEAN WATER AND SANITATION

Categories

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

Tested/adopted in



Where it can be used

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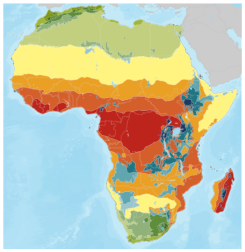


Target groups

Development institutions, Farmers, Governments

AKILIMO Digital Decision Support Tool

We know cassava

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

This technology is pre-validated.

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

ROI: $$$ **2567 %**

Problem

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

Solution

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

Key points to design your business plan

AKILIMO is a digital tool offering personalized advice for cassava farming. To use it:

1. **Download & Install**: Get the AKILIMO app from Google Play Store or use the Web App.
2. **Consider Costs**: Account for smartphone, data plan, training, and implementation costs.
3. **Evaluate Profit**: Implement AKILIMO's recommendations and assess the profit gained.

Gender assessment 5

Climate impact 7

EXCELLENCE IN AGRONOMY
Adapt Intensify Grow

Excellence in Agronomy
Barbra Sehlule Muzata

Technology from

CASH from EiA

Commodities

Cassava, Maize, Rice

Sustainable Development Goals

9 INDUSTRY, INNOVATION AND INFRASTRUCTURE

17 PARTNERSHIPS FOR THE GOALS

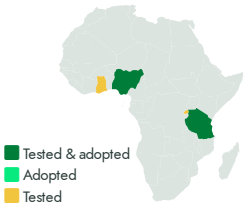
Categories

Production, Digital applications

Best used with

- "Six Steps" cassava weed management ›

Tested/adopted in



Where it can be used

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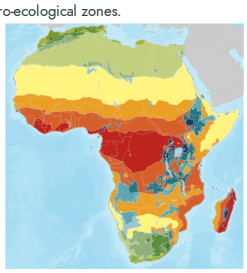

Target groups

Farmers