Worldveg technologies Toolkit

3 TECHNOLOGIES | CREATED ON JUL 7, 2025 BY TAAT PROFILING TEAM | LAST UPDATED JUL 24, 2025

TECHNOLOGIES IN THIS TOOLKIT

- **Long Peppers Varieties Resistant to Diseases**
- **ZECC**: Zero Energy Cooling Chamber for Vegetables
- **Hot and Aromatic Round Pepper for Culinary and Processing Use**

https://taat.africa/utp

Long Peppers Varieties Resistant to Diseases

Strong Against Disease, Hot on the Market.

These long pepper varieties, developed by the World Vegetable Center, tackle low productivity, disease losses, and seed import reliance. With yields of 6.8–18.01 t/ha, disease resistance, and 70–85 days to maturity, they ensure stable domestic production, support food security, and strengthen local seed systems in dryland areas.

World Vegetable Center

World Vegetable Center
Derek Barchenger

This technology is pre-validated.

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

Inclusion assessment 4

Climate impact 7

Problem

- Low-yield local varieties and climate stress limit national pepper production.
- Frequent disease outbreaks reduce yields and burden extension services.
- Heavy pesticide use poses health and environmental risks.
- Imported seeds drive up costs and weaken seed sovereignty.

Solution

- **Boosts yields** to close production gaps (6.8–18.01 t/ha).
- **Resists major diseases**, easing pressure on extension services.
- **Open-pollinated**, enabling local seed production.
- **Adapted to savannas**, supporting climate resilience efforts.

Key points to design your project

This high-yielding, disease-resistant cayenne variety from WorldVeg thrives in hot, disease-prone zones with yields up to 18.01 t/ha—ideal for boosting farmer income and food security.

To scale it:

- **Source seed from WorldVeg** and register locally.
- **Target dry, high-risk zones** where current varieties fail.
- **Engage seed multipliers** to produce and maintain purity.
- **Distribute via agro-dealers** in small and bulk packs.
- **Set up demos and farmer training** through extension.
- **Promote with local media** to drive adoption.
- **Link farmers to processors** to unlock market value.
- **Monitor adoption and impact** for scale-up decisions.

Cost: $$$ **2336 USD**
All production cost for 1 hectare

ROI: $$$ **up to 434 %**
over 10 harvests

6.8–18.01 t/ha over 10 harvest

70–85 days Days to Maturity after Transplanting

Officially released in Benin in 2025

12 939 USD Total revenue

IP Open source / open access

Commodities

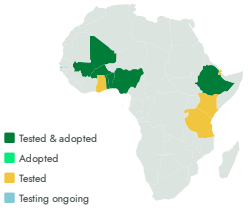
Chili peppers

Sustainable Development Goals

Categories

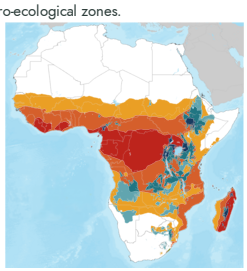
Production, Improved varieties, Disease resistance, Yield improvement

Tested/adopted in



Where it can be used

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



Target groups

Breeders, Farmers, Seed companies, Sellers

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.

World Vegetable Center

World Vegetable Center
Mathieu Ayenan

This technology is pre-validated.

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

Inclusion assessment 4

Climate impact 4 1

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 project

ZECC empowers women by boosting income and reducing labor, is climate-friendly by operating without electricity, and supports SDGs through improved food security, gender equality, and sustainable agriculture.

- **Initial Assessment:** Assess post-harvest practices and identify ZECC sites through field visits and farmer engagement. Requires transportation, survey tools, materials, and local experts.
- **Awareness and Training:** Conduct workshops and training on ZECC benefits and usage, distribute informational materials, and provide hands-on training. Needs training venues, materials, trainers, facilitators, and demo models.
- **Construction of ZECC:** Source local materials (bricks, sand, jute cloth, plastic crates), mobilize skilled labor, and involve farmers in construction. Requires materials, labor, and tools.
- **Monitoring and Evaluation:** Regularly visit to monitor ZECC use, collect data, and provide technical support. Needs monitoring tools, data forms, and transportation.
- **Scaling Up:** Expand ZECC to more farmers, facilitate knowledge sharing, and partner with cooperatives and NGOs. Requires additional materials, funds, and communication channels.
- **Reporting and Feedback:** Compile reports, gather farmer feedback, and plan for future improvements. aNeeds reporting templates, feedback tools, and a final review meeting.

Cost: $$$ **1200 USD**
a chamber for 250 kg of tomato

ROI: $$$ **21.46 %**
over 3 year

10 – 15 degree celsius
temperature inside ZECC

1500 USD
Extra-income over 3 years

IP
Open source / open access

Commodities

Vegetable crop

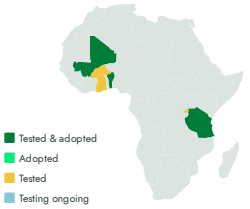
Sustainable Development Goals

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

Categories

Prevention & storage, Equipment, Conservation and Storage System

Tested/adopted in



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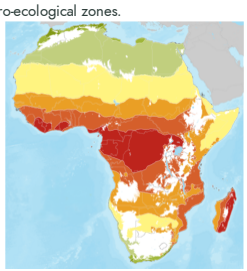

Target groups

Farmers, Sellers

Hot and Aromatic Round Pepper for Culinary and Processing Use

Intense Heat, Rich Aroma, Market Ready!

World Vegetable Center

World Vegetable Center
Derek Barchenger

These spicy and flavorful peppers grow well in hot regions and meet local taste preferences. They can support nutrition programs, income generation, and rural development goals. A practical option for seed distribution and public farming initiatives.

This technology is pre-validated.

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

Inclusion assessment 4

Climate impact 7

Problem

- **Reduced Production:** Yield losses limit supply of high-heat, aromatic peppers and reduce farmer incomes.
- **Health Risks:** Heavy pesticide use threatens public health and environment.
- **Weak Seed Systems:** Poor pipelines block delivery of improved, uniform pepper varieties.
- **Low Productivity:** Low farm output limits rural development impact.

Solution

- **Disease Resistance:** Increases pepper production nationally.
- **Less Pesticide Use:** Protects health and the environment.
- **Early Maturity:** Supports farmer income growth.
- **Heat and Aroma:** Meets market and consumer demand.
- **Climate Adaptability:** Fits national food security and climate plans.

Key points to design your project

These disease-resistant round pepper varieties from WorldVeg are adapted to hot, disease-prone environments and offer reliable yields with consistent fruit quality—ideal for improving farmer income, nutrition, and climate resilience.

To integrate them into a project:

- Source seed from WorldVeg and begin local registration.
- Target areas with high disease pressure and poor-performing local varieties.
- Engage trusted cooperatives or seed multipliers to ensure quality seed production.
- Distribute through agro-dealers in appropriate package sizes for smallholders and larger farms.
- Set up demonstration plots and train farmers through local extension networks.
- Promote adoption using local languages and trusted communication channels.
- Connect producers with traders and processors to strengthen market access.
- Monitor uptake, yield performance, and market outcomes to guide scaling.

Cost: $$$ **2336 USD**
All production cost for 1 hectare

ROI: $$$ **up to 434 %**
over 10 harvests

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over 10 harvest

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Open source / open access

Commodities

Chili peppers

Sustainable Development Goals

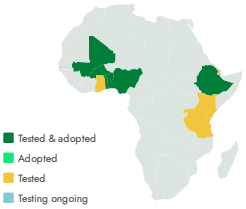
Categories

Production, Improved varieties, Disease resistance, Yield improvement

Best used with

Zero Energy Cooling Chamber for Vegetables
See all 1 technologies online

Tested/adopted in



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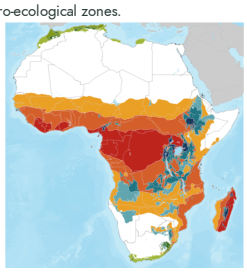

Target groups

Breeders, Farmers, Processors, Seed companies

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https://taat.africa/utp

ABOUT US

TAAT

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

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

TAAT Technologies

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

TAAT Clearinghouse

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

TAAT e-catalogs

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

TAAT Technology Toolkits

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

CONTACT

Chrys Akem – TAAT Program Coordinator: +234 8169020531
Dr Solomon Gizaw – Head, TAAT Clearinghouse: +251 900461992
taat-africa@cgiar.org | https://e-catalogs.taat-africa.org

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