

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

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Commodities

Vegetable crop

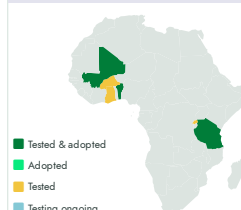
Sustainable Development Goals



Categories

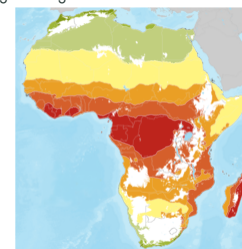
Prevention & storage, Equipment, Conservation and Storage System

Tested/adopted in



Where it can be used

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



Target groups

Farmers, Sellers



This technology is **pre-validated**.

9-8



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

Gender 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.

Cost: \$\$\$

400 USD

a 2 cubic meter ZECC

10 – 15 degree celsius

temperature inside ZECC

95 %

humidity inside ZECC



Open source / open access



ZECC

<https://e-catalogs.taatafrica.org/technologies/zecc-zero-energy-cooling-chamber-for-vegetables>

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