

RESEARCH AND DEVELOPMENT FUND PROJECT SPOTLIGHT

CoolVeg Foundation

Mobile Forced-Air Evaporative Cooling Chamber for Smallholder Farmers and Produce Vendors

Project Summary

This project will develop and field-test forced-air evaporative cooling chambers for storing fruits and vegetables. These chambers are designed for both stationary and transportation applications in arid regions.

Project Description

Cooling fruits and vegetables immediately after harvest is a crucial yet often neglected stage in the post-harvest supply chain in low-income communities. Leaving produce in field conditions, often around 35°C, for just one hour can reduce shelf-life by about one day. Forced-air cooling rapidly cools produce during this critical stage. However, the high equipment costs and energy consumption of conventional refrigeration are barriers to deploying these technologies in low-income communities. Evaporative cooling-based systems are effective in arid climates, use simpler equipment, and are four times less energy-intensive than conventional refrigeration.

This project will develop and deploy a system that combines the rapid cooling of forced-air cooling with the low cost and energy efficiency of evaporative cooling. The modular system can be tailored to a user's storage needs and mounted on a vehicle. This allows it to be affordably deployed near the farm gate, used in transportation, and increase produce shelf-life for vendors. Pilot chambers will be designed and deployed in Nigeria and India to evaluate their effectiveness and ability to meet the needs of target users.



R&D Partner

CoolVeg Foundation

Organisation Founded

October 2023

Technology

Solar walk-in cold room

Project Location

USA, Nigeria and India

