GLOBAL YOUTH INSTITUTE PAPER CHALLENGE

Improved Revised version of my primary Global Paper Challenge

Student Name : Harriet Blessing Onyango

School Name: Loresho Senior school

Location: Nairobi -Kenya

Topic: Reducing Post harvest Lost by Educating Youth

Country focus: Nigeria (Oyo state)

Title: tangible impact Solution to improved Food security

NOTE : ONE SOLUTION RECOMMEDATION ;*-is*

(*To reduce post harvest loss , to enhance Food security)*

1**. Problem Statement and Local Focus**

First Let us look at the feasibility study

the Core Retail Challenge in Oyo State

Recent agricultural field data indicates that tomato producers and traders across Oyo State face an average post-harvest loss yield rate of 17.3% to 21.9%. Nationally, tomato spoilage rates peak at 48.33% due to high water content and ambient temperature gluts. While international interventions target rural farm gates, the most visible bottleneck occurs at urban retail distribution hubs like Bodija Market and Oja'ba Market in Ibadan, Oyo State.

In these markets, informal female traders sell highly perishable produce under open-air thermal stress. Because Nigeria's national electrical grid experiences frequent, unpredictable collapses, traditional plug-in refrigeration is financially and structurally impossible for smallholder market women. Consequently, traders face severe financial losses, forcing them into sunset "distress pricing" to clear wilting stock.

The Climate and Humidity Obstacle

To address this, low-cost humanitarian efforts often suggest the standard double-clay "Zeer pot" (using wet sand for evaporative cooling). However, this technology faces a severe geographical barrier:

The Northern Baseline: Sand-filled Zeer pots work optimally in dry, arid states like Kano or Sokoto, dropping internal temperatures by 8°C to 15°C due to low ambient humidity.

The Oyo State Reality: Oyo State has a tropical rainforest climate with a high relative humidity index. Because the air is already saturated with water vapor, natural evaporation from sand stalls entirely. The trapped moisture creates a damp microclimate that breeds destructive fungal mold, ruining the food.

2**.For Promble solving solution well developed i recommend Proposed Innovation and Technical Upgrade**

Improving an Existing Technology

Rather than proposing an expensive, foreign appliance that local traders cannot maintain, this initiative introduces a climate-adapted Solar-Charcoal Hybrid Cooling Unit engineered for the humid tropics.

"**Specific Engineering Modifications:**

The Charcoal Matrix:

We replace standard sand with locally sourced, crushed coarse charcoal between the pots. Charcoal features far superior air permeability, acts as a natural desiccant, and has high antimicrobial properties that stop fungal mold growth.

Solar Mechanical Airflow:

We install a salvaged 5-volt DC computer fan on the top cover, wired directly to a small, smartphone-sized 5-watt solar panel. The total component cost is under $4 USD (~$6,000 NGN), utilizing recycled electronic waste.

Battery-Free Dynamics:

The fan requires zero batteries. It spins only when the sun shines hot—the exact hours when ambient heat peaks and forced mechanical airflow is required to drive evaporation through the sticky air.

Structural Aerodynamics:

The unit sits on a 1-meter bamboo or scrap-metal stand, maximizing ambient cross-winds to boost natural evaporation by 8%.

3, Global, Regional and local Comparison

"**The Lesson from Kenya comparison to Nigeria**

Kenya successfully relies on school-level 4K Clubs operating in cooperation with the Kenya Agricultural and Livestock Research Organisation (KALRO) to teach youth how to build passive charcoal cooling structures. My project mirrors this structural engine but introduces an electronic upgrade.

Narrowed Local Focus:

Unlike broad, country-wide policy papers that fail due to macro-economic inflation, this paper deliberately focuses on Oyo State's unique climate parameters, proving that post-harvest solutions must adapt to local geography to be viable"

4. Implementation and Funding Strategy

The Localized Youth Deployment Network

Implementation completely bypasses slow government channels by deploying directly through three existing, active youth organizations within Oyo State

Oyo State Youth Entrepreneurship in Agribusiness Project (YEAP): Older youth act as manufacturers. They partner with traditional female clay artisans in local pottery hubs (like Ilora and Fiditi) to source pots, crush charcoal, and assemble the low-voltage solar circuits.

School-Level Young Farmers Clubs (YFC): Secondary school students act as deployment agents. They launch an "Adopt-a-Market-Woman" campaign, hand-delivering student-built pots to vegetable sellers at Bodija Market and teaching them how to maintain them.

Youth Empowerment and Reintegration Project (YERP):Digital track youth serve as data technicians. They run weekly smartphone field audits to record produce freshness and manage repair logistics.

Financial and Funding Framework

Seed Funding:

Tapped from existing, unutilized vocational training budget allocations within the Oyo State Ministry of Agriculture and Natural Resources.

Institutional Alignment:

We incorporate micro-matching research grants from the International Institute of Tropical Agriculture (IITA) and IAR&T in Ibadan.

The Micro-Sustain Loop:

The first wave of pots is distributed for free via the school clubs. Subsequent units are sold at a highly subsidized token cost of ₦5,000 (~$3 USD). This revenue flows back into the Young Farmers Clubs' bank accounts to buy more raw materials, creating a self-sustaining financial cycle.

"**5. Impact of my Recommendation on Stakeholders**

Short-Term Impact

For Market Women: Fresh vegetable and tomato shelf life increases from 48 hours to 9 days. Distress pricing stops completely, immediately protecting daily retail profits, economically empowered to achieve sustainable development goal 1 and 2 to end poverty and hunger also enhance tangible impact in food security.

For Youth Builders: Public school students receive immediate, practical STEM and thermodynamic experience, moving from abstract classroom theory to applied climate engineering.

Long-Term Impact

For Community Wealth: Market women achieve a permanent 30% to 40% income boost, establishing generational financial stability to fund their children's long-term education, bringing impact to stake holder by enhancing sustainable development goal equality for education

For Green Infrastructure: Builds a completely decentralized, zero-carbon cold chain across Oyo markets without placing any demand on Nigeria's fragile national electrical grid."cold chain across Oyo markets without placing any demand on Nigeria's fragile national electrical grid to achieve sustainable development goal 13 ,on Climate Action

6**. Appropiate Cultural Integration and Local Acceptance**

Preserving Heritage: Sourcing clay pots directly from traditional artisan clusters in Ilora and Fiditi channels economic capital back into ancient, multi-generational female craft economies.

Traditional Governance: To foster community trust, youth present the initial hybrid pots to the Ìyál’ójà (Market Mother). Her formal cultural blessing eliminates local suspicion and ensures rapid adoption among market traders.

Ẹ̀mí Ìfọwọ́sowọ́pọ̀: The deployment relies on the Yoruba cultural value of communal cooperation (Ìfọwọ́sowọ́pọ̀), positioning youth as active community helpers supporting local market mothers.

7**. Maintenance and Longevity**

Short-Term Maintenance

Daily Protocol: Traders pour clean water onto the charcoal layer twice a day (morning/afternoon) and wipe dust off the solar fan blades.

Lab Support: In the event of minor wiring faults, school club students pull components back to their secondary school science labs for free, immediate repair.

Long-Term Longevity and Scalability

Material Durability: Clay and charcoal do not break down over time, giving the core storage unit a physical lifespan of 5 to 10 years. Damaged clay is 100% biodegradable and returns harmlessly to the soil.

Scalability Blueprint: Because school clubs, traditional pottery crafts, and intense humidity coexist all along the West African coast, this pilot serves as a plug-and-play blueprint for states like Ogun, Ondo, and neighboring coastal countries.

8. Youth Empowerment Metrics

Short-Term Impact

Skill Acquisition: Youth transition from memorizing textbook equations to mastering solar circuitry, value-chain logistics, and real-world climate-smart engineering.

Civic Engagement: Secondary school club members evolve from passive learners into active neighborhood problem solvers.

Long-Term Impact

Mindset Revolution: Climate smart Agriculture is successfully rebranded from an image of backbreaking field labor into a prestigious, high-tech, and dignified green agribusiness career.

Employment Pipelines: Club members graduate with proven technical, agricultural, and digital data skills, building a sustainable talent pipeline for future green economy jobs for youth and women to increase food security systems globally.

NOTE

Nigerian Social economic impact

If only 20% of rural Nigeria households adopted to this simple technology through local clubs outreach,the national security food supply system , would increase by million of tonnes,for local family who used to post harvest Lost their food ,it means a 300% increase in their profit, for they can wait for a while to control fair price in Niche market.

"Since they have cooling infrastructure in place "

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Shuaibu, A., et al. Assessment of Tomato Post-Harvest Losses in Selected Nigerian Markets. Journal of Agricultural Value Chains, 2026.



Dr.Harriet Blessing portfolio :

Dr Harriet Blessing **(young scientist researcher**) is Agriculture leader and the head girl president captain in grade ten,16 yrs old ,at Loresho Senior Day School ,in Nairobi -kenya, **Ambassador Agent of Change** , youth champion and campaigner moderator and **public speaker** advocacy in Climate smart agriculture to enhance Food security system by reducing food loss/ waste..

Harriet is running her initiative ,she is the CEO, Founder of , **FoodForImpact"** (too good to throw away) food redistribution from more concentrated area (the rich)to low concentrated Area (the poor). using **Psychology behaviorial science** in schools, institutes and community to enhance food security by companioning **our habit change of eating** in non informal sector ,re-introducing indeginous method of storage in informal sectors reducing food waste/loss in our Dining table,in our Market place in our post harvest farms , practicing wastepreneurship to enhance Food security and **climate Smart Agriculture**

Harriet gained national recognition at the 2nd KALRO Scientifc Conference for her outstanding research on reducing food waste and post-harvest losses. Her project demonstrated innovative approaches to enhancing **food security** by encouraging responsible food consumption, sustainable development goal **(SDG12)** ,minimizing post-harvest losses, and empowering young people to become active contributors to sustainable agriculture.

Harriet is also the Winner of the World Food Prize Kenya Youth Institute 2026, earning the honour of representing Kenya at the Global Youth Institute in Des Moines, Iowa, USA. Through this international platform, **she joins young leaders from around the world in discussing innovative solutions to global food security system challenges.**

She is the author of two books, Silencing Echoes of Hunger and Sovereignty of Farmers, which advocate for ending hunger, empowering farmers, strengthening climate Smart Agriculture and sustainable agriculture, and inspiring communities to take action toward achieving food security and climate adaptation change

Harriet's vision is **"A World Where There Is Zero Hunger and Food Im pact for All."** She believes that every young person has the potential to create lasting change through, public speaking, research, innovation, leadership, and service. Her mission is to inspire communities to adopt sustainable food systems, reduce food waste,and champion Climate resilient in Africa and the world. Dr . Harriet Blessing(young scientist researcher) envelope

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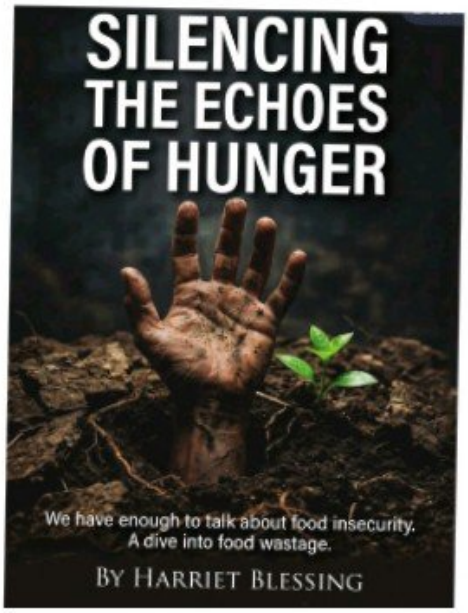
2ND KALRO SCIENTIFIC CONFERENCE AND INNOVATION EXPO 2026
THEME: Innovations for sustainable Agri-food systems,climate change resilience and improved livelihood


DialogueNEXT
AFRICA
ON 22ND OCTOBER 2026 DURING, 🌎 FOOD PRIZE DIALOGUE SUMMIT I REQUEST 3 MEET,TO SPEAK ON BEHALF OFALL GLOBAL YOUTH INSTITUTE,I HAVE MY SPEECH READY (how to enhance Food security by reducing food loss/waste)


SILENCING
THE ECHOES
OF HUNGER
We have enough to talk about food insecurity.
A dive into food wastage.
BY HARRIET BLESSING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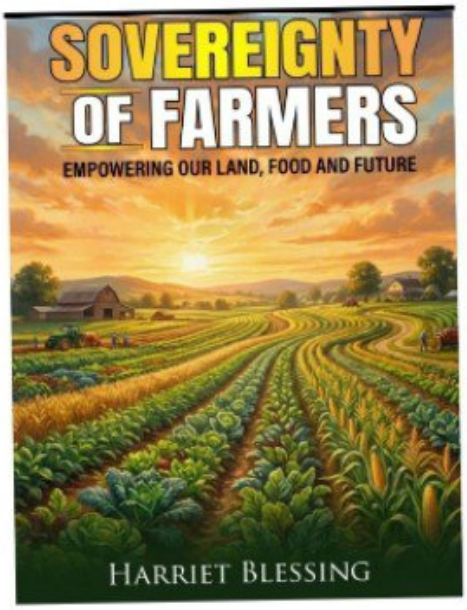
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OF FARMERS
EMPOWERING OUR LAND, FOOD AND FUTURE
HARRIET BLESSING

