Cooling options and business models in the developing world

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Presentation Overview

- GCCA/WFLO/PEF
- Cold Chain Innovations
  - On-Farm
  - Cold Storage
  - Transportation
  - Trends
- Case Study: Nigeria
- Common Challenges
- Conclusion
Global Cold Chain Alliance (GCCA) & The Postharvest Education Foundation (PEF)

GCCA
- International Association of Refrigerated Warehousing
- World Food Logistics Organization
- Controlled Environment Building Association
- International Association of Refrigerated Transportation

WFLO Mission: WFLO delivers education and research to the industry and empowers economic development by strengthening the global cold chain.

PEF Mission: To provide innovative educational programs and information to motivate and empower people to reduce postharvest losses and food waste
On-Farm Cooling Options

Low-Cost Options
- Use of Shade
- Evaporative Cooling

Use of Reusable Plastic Crates (not a cooling option, but important)
- PEF White Paper No. 13-01, April 2013
Use of Shade
Evaporative Cooling (ZECC)
Cold Storage Solutions

- Cool-Bot Equipped Rooms
- Solar-Powered Cold Rooms
- Modern Small-Scale Cold Storage
Solar Powered Cold Storage

- Aldelano
- Dgrid
- Solercool
- ColdHubs
Solar Powered Cold Storage + Financing

InspiraFarms

- Affordable leasing options
- 3-year preferred payment terms
Small-Scale Traditional Cold Storage Facility
Refrigerated Transportation Options

Primary and Secondary Distribution

- Reefer Trucks/Vans
- Airflow and shade
- Solar powered boxes
- Electric Trailers
Nonrefrigerated Transport

Importance of Shade and Airflow
Solar Powered Trailers
Electric Trailers
Case Study: ColdHubs

- Capital cost: US$20,000 to $50,000 or more per unit (depends on capacity)
- Operating cost: labor
- Customers pay a fee per crate
- Low environmental impacts

Additional Support Services
- Packing into plastic crates
- Refrigerated transport
- Links to markets
Trends: The Future of Cold Chain Development in Emerging Economies

- Leapfrogging
- Automation
- Liquid Nitrogen
- Uberization of Transport
Leapfrogging
Automation
Liquid Air Technologies

Dearman Engine
Uberization of Transport

The Future of Trucking is here

Trucker Path
Find truck stops, parking, weigh stations & more

Truckloads
The marketplace that connects carriers with quality freight
Common Cold Chain Development Challenges

- Focus on innovation; not paired with education
- Lack of understanding of the business case
- Focus on storage with little regard for the beginning of the chain
- Not enough outside opinions to ensure suitable investment
- Return on investment needs to be clearly calculated and understood
- Refrigeration systems: ammonia, Freon, and phase-out of R22
Clean Cooling Systems Development Requirements

- Appropriate cooling, cold storage and cold chain technologies
- Vetted business models for small, medium and large scale enterprises
- Access to reasonably priced equipment, tools, supplies
- Trained technicians for maintenance and repairs
- Enabling support - finance options, basic infrastructure
- Incentives such as duty free imports, low interest rates, corporate tax breaks
- Educational support - training opportunities and rural extension systems