Postharvest Expert Meeting "Strengthening the Engagement of Knowledge Institutes in ARD Policy Processes"

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Priorities for Reducing Postharvest Losses in the OECS

Ronald Pilgrim - Post-Harvest Technologist
Caribbean Agricultural Research and Development Institute (CARDI)

OECS Brief

- **OECS is the acronym for Organisation of Eastern Caribbean States.**
- **It is a nine member grouping comprising Antigua and Barbuda, Commonwealth of Dominica, Grenada, Montserrat, St Kitts and Nevis, St Lucia and St Vincent and the Grenadines. With Anguilla and the British Virgin Islands associate members.**
- **These islands are located in the Caribbean Sea between North and South America.**

They have with a

- **Tropical Climate**
- **Total land area = 3,070 km^2**
- **Total Population = 636,000**
- **Population density = 207.1 per km^2**

Impact of Postharvest Losses

- **The farming sector of the OECS comprises mainly of small farmers owning between 0.5 – 5 hectares of land. They make up about 90% of the farming population.**

- **Fruits, vegetables, root and tuber crops (cassava, sweet potato, yam, tannia and eddoe) are important household food security and income generating crops for farmers in the OECS countries.**

- **Postharvest losses in the OECS can range from 25 - 100% amounting annually to > 7.5 - 37.6 M euro (US$10-50M) resulting in low farmer income, rural poverty, unemployment, poverty and other related societal ills such as crime and drug related activities.**

Main crops exported from the OECS

Fruits	Roots & Tubers	Vegetables
Banana (*Musa spp.***)**	**Yam (***Dioscorea Spp.***)**	**Hot Pepper (***Capsicum spp.***)**
Plantain (*Musa spp.***)**	**Sweet potato (***Impomoea batatas***)**	**Pumpkin (***Curcurbita spp.***)**
Avocado (*Persea americana***)**	**Dasheen (***Colocasia esculenta var. esculenta***)**	**Eggplant (***Solanum melongena* L.**)**
Mango (*Mangifera indica***)**	**Tannia (***Xanthosoma sagittifolium)*	**Okra (***Hibiscus esculentus* **L.)**
Breadfruit (*Artocarpus altilis***)**	**Eddoe (***Colocasia esculenta var.antquorum***)**	
Citrus spp. (oranges,lemons, limes, grapefruit**)**	**Cassava (***Manihot esculenta***)**	
Pineapple (*Ananas comosus***)**	**Ginger (***Zingiber officinale***)**	
Golden apple (*Spondias Cytherea***)**		
Soursop (*Annona muricata.***)**		
Sugar apple (*Annona sqamosa.***)**		
Papaya (*Carica papaya***)**		
Waternut (*Cocos nucifera***)**		

Fresh produce Lives

AFTER HARVEST, FRESH PRODUCE CAN:

BREATHE

RELEASE HEAT

GET TOO HOT

CHANGE COLOUR

GET TOO COLD

GROW

LOSE WATER

SUFFOCATE

BECOME DISEASED

CHANGE COMPOSITION

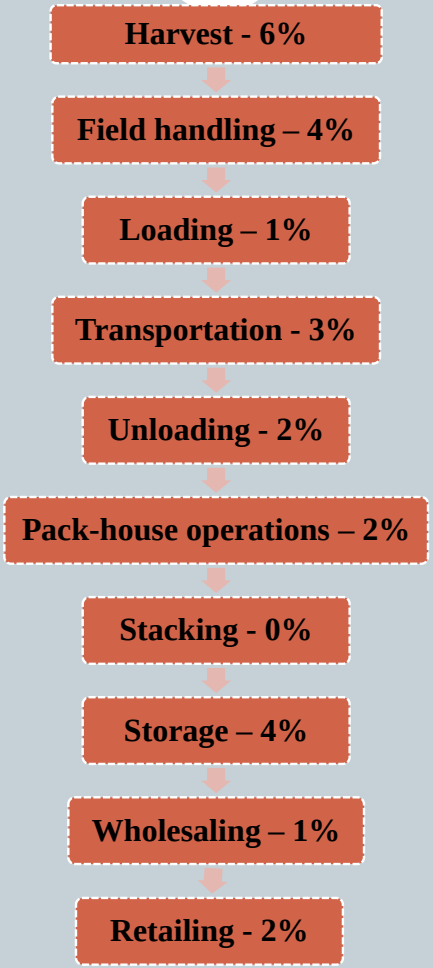
DIE

Postharvest Losses

Most of the postharvest losses are mainly due to the following:

- **Improper harvesting**
- **Bad field handling practices (such as injury to the commodity when placed in field containers).**
- **Bad handling practices during loading and unloading**
- **Loose packing causing vibration damage during transportation**
- **Weak package resulting in damage from weight pressure**
- **Over-heating due to product left in direct sunlight or undesirable storage conditions such as high temperature or humidity**
- **Incompatibility of products during storage**
- **Transportation**

Average Percentage losses at different stages of the postharvest value chain



Priorities for Reducing Postharvest Losses

As the commodity moves from the point of harvest to its final destination, the major priorities for reducing postharvest losses were identified at the various steps along the postharvest value chain. These include:

1. Harvesting

Major Challenges:

- **Difficulty of harvesting fruits from tall trees > 5 m**
- **Use of inappropriate harvesting tools results in the fruit skin being damaged and also impact damage of fruits falling to the ground.**
- **Mechanical damage of root and tuber crops during harvesting**

Solutions:

- **Pruning of fruit trees to facilitate ease of picking.**
- ***Use of improved and appropriate picking tools**
- **Harvesting root and tuber crops under ideal (right) soil conditions**

***Though many types of picking tools have been tried they have been proven to be inappropriate and cumbersome**

Priorities for Reducing Postharvest Losses

2. Field handling practices

Losses during field handling operation will vary according to the type of product.

Major challenges:

- **Contamination harvested produce placed on the ground**
- **Product damage resulting in the use of inappropriate field containers**
- **Delays in the removal of harvested produced from the field**
- **Adverse weather conditions**

Solution:

- **Observance of proper sanitation practices**
- **Placing harvested produce in appropriate field containers such as ventilated field crates**
- **Prompt removal of harvested produce from the field to a cooler area**
- **Avoid field handling activities during periods of heavy rains**

Priorities for Reducing Postharvest Losses

3. Pack-house operations

The number of activities carried out in the pack-house will vary according to the type of product.

Major challenges:

- **Lack of appropriate pack-house facilities**
- **Lack of adequate amenities such as potable water and electricity**
- **Over-handling of the product by pack-house operators**
- **Insect pest infestation and fungal infection**

Solutions:

- **Upgrading of pack-houses to include:**
  - ✓ **improvement of pack-house facilities**
  - ✓ **Provision of adequate potable water supply and electricity**
- **Efficient handling operations**
- **Appropriate post-harvest treatments**

Priorities for Reducing Postharvest Losses

4. Transport

Transportation occurs when the product is moved from one point to another i.e. from the field to the market / pack-house or from the pack-house to retail outlet / port of exit. Post harvest losses can occur between all points.

Major challenges:

- **Lack of proper supervision during the loading and unloading operation**
- **Instability of the load during transportation**
- **Exposure of the produce to the elements such as the sun and rain**

Solutions:

- **Proper supervision during loading and unloading**
- **Secure and stabilise load on the transport**
- **Protection the load during transpotation at the same time allowing adequate ventilation**

Priorities for Reducing Postharvest Losses

5. Temperature Management

Significant losses due to deterioration of product quality can be reduced by implementing proper temperature management procedures along the postharvest chain.

Major Challenges:

- **At the field level, delays in moving harvested produce from the field**
- **Inappropriate cool storage facilities at the field level and pack-houses**
- **Inadequate cooling of produce during transportation**

Solutions:

- **Quick removal of harvested produce from the field**
- **Avoid parking loaded vehicle with produce in the direct rays of the sun**
- **Establish cool storage facilities on transportation vehicles, pack-houses and ports of exit**

Priorities for Reducing Post-harvest Losses

6. Delays (Waiting)

Fresh produce deterioration begins from the time the crop is harvested. Any delays along the post-harvest chain from harvest to consumption will therefore result in significant post-harvest losses.

Major Challenges:

- **Delays in moving the produce from the field to the pack-house**
- **Delays in cooling the product**
- **Delays in loading at the points of exit**

Solutions:

- **Quick removal of produce out of the field to a cooler environment**
- **Establishment of cool storage holding facilities at the ports to facilitate early arrival of produce or late arrival of transportation carriers at the port of exit .**

Priorities for Reducing Postharvest Losses

7. Storage

Temperatures are not maintained from on-farm storage when being transported to their final destination resulting in increase postharvest losses as the commodity heats up.

Major Challenges:

- **Fresh produce storage facilities are non-existent on most farms. Where they exist, they are inappropriate**
- **Pack-houses are not equipped with adequate cool storage facilities**
- **Cool chain is not maintained from harvest to final destination.**
- **Cool storage holding facilities are non-existent at the port, although attempts have been made in the past for their establishment.**

Solutions:

- **Maintaining the cool chain from harvest to the final destination**
- **Establishment of proper cool storage holding facilities at the ports of exit.**

Priorities for Reducing Postharvest Losses

8. Pest & Diseases

These pest and diseases infect the crop during the production stage. The symptoms are latent and not noticeable during field and pack-house handling operations but express themselves during storage or when environmental conditions are conducive along the chain for their development.

Major Challenges:

- **Lack of pest and disease control at the production level**
- **Lack of appropriate postharvest treatment chemicals**
- **Inadequate / non-existent treatment facilities**
- **Food safety issues**

Solutions:

- **Integrated pest and disease management at the production level**
- **Use of acceptable consumer postharvest treatments**
- **Information with respect to food safety issues**

Crops requiring specific attention in the OECS

1. Mango

Major problems:

- **Anthracnose**
  (Colletotricum gloeosporioides)

- **Fruit fly infestation**
  (*Anestrepha spp*.)

Crops requiring specific attention in the OECS (Cont'd)

2. Golden Apple

Major problems:

- **Fruit fly infestation (***Anastrepha spp.)*
- **Anthracnose** *(Colletotricum gloeosporioides)*

Crops requiring specific attention in the OECS (Cont'd)

3. Breadfruit

Major problem:

- **Harvesting**
- **Storage - short shelf-life**

Crops requiring specific attention (Cont'd)

4. Dasheen

Major problem:

- **Dasheen corm rot**

  Caused by a fungi complex – *Botryodiplodia theobormae* and bacterial soft rot (*Erwinia chrysanthemi*)

Priorities for Reducing Postharvest Losses

Key Policy Issues

Specific policy interventions for reducing postharvest losses in the OECS:

- **Strengthening the postharvest capability/capacity of the Ministries of Agriculture**
- **Improvement in the transportation system to facilitate regional trade**
- **Institute on-going postharvest training programmes for farmers, pack-house operators and extension officers**
- **Technical support related to the following areas:**
  - **pack-house design**
  - **package design and materials**
  - **refrigerated transport**
  - **Enforcement of grading and quality standards**
  - **pesticide residue monitoring**
- **Formation of a postharvest information network system**

Thank You