Reducing food loss and waste in CARICOM

Food loss and waste reduces access to adequate healthy food at the individual, community, national and global level and waste precious natural resources such as land and water. Many economic, social and policy factors contribute to this problem. FAO is working with the countries of the Caribbean Community (CARICOM) to tackle the biggest source of food loss and waste: postharvest losses.

The FAO estimates that a third of global food is lost or wasted (FAO 2011). Within the Caribbean Community (CARICOM), hundreds of thousands of dollars in food are wasted every year due to poor practices or inadequate facilities for storage and/or packaging.

Why focus on postharvest food loss and waste?

In Latin America and the Caribbean, the single largest proportion (56%) of the food lost or wasted occurs in the production and consumer segments of the food supply chain, i.e. postharvest (Figure 1). Concentrating on this source will provide significant impact on overall reduction of food loss and waste.

KEY FACTS

What is food loss & waste?

Food loss refers to a decrease in the quantity or quality of food that occurs between harvest and consumers. Food loss in the production and distribution segments of the food supply chain is mainly caused by weaknesses in the food production and distribution system, including the institutional and legal frameworks. Food waste refers to the discarding or alternative (non-food) use of food that was fit for human consumption, by choice or neglect, for example after the food has been left to spoil or expire.

Critical loss points

Five Critical Loss Points have been identified in the supply chains of vegetable & animal commodities:

- Agricultural production
- Postharvest handling and storage
- Processing
- Distribution
- Consumption

FAO’s work in CARICOM

TCP/SLC/3404 “Reduction of Postharvest Losses along the Food Chain in the CARICOM Sub-region” responded to a request from CARICOM for capacity building to measure and address losses in high-value crops.
Figure 1. Food Loss (%) in Latin America and the Caribbean

- Production (28%)
- Marketing and distribution
- (17%) Handling and storage
- (22%) Processing (5%)
- Consumer (28%)

Limited data on postharvest food losses (PHLs) from some CARICOM Member countries indicate that losses can range between 25% and 55% in commodities such as cassava and tomato, and at times up to 100% for pumpkin exports (IICA 2013). FAO’s work in addressing PHLs thus responds directly to the region’s need to improve on the measurement of these losses and develop necessary methods and strategies to reduce them.

What is FAO’s contribution to reducing postharvest food losses in the CARICOM region?

From 2013 to 2015, FAO implemented a regional project under its Technical Cooperation Programme titled “Reduction of Postharvest Losses (PHL) along the Food Chain in the CARICOM Sub-region” (TCP-SLC-3404) in collaboration with the Ministries of Agriculture in the region. This resulted in PHL assessment of three supply chains in three countries; development and dissemination of regionally relevant tools and methodologies for PHL assessment; capacity building for agricultural technical officers on tools for assessing and reducing PHLs; and piloting projects for the development and transfer of knowledge of some technical solutions.

Research and documentation of postharvest losses

In recent years, the FAO Methodology for the Evaluation of Food Losses and Waste (FAO, 2012) has been tested and validated globally. In the Caribbean, Majeed Mohammed and Kelvin Craig applied the methodology to measure the magnitude of PHLs of cassava, mango and tomato crops in Guyana, St. Lucia and Trinidad and Tobago in 2013-2014. Using field-based measurements at identified critical loss points – the farm, wholesale or pack-houses and retail markets – the extent of loss was demonstrated, as well as causes of loss and waste.

Losses of fresh table ripe mangoes in Trinidad and Tobago, Guyana and St. Lucia totalled 17%, 32% and 23% respectively. These were equivalent to total economic losses of US$13,286, US$901,798 and US$82,483 respectively. Losses of tomatoes measured at the end of the postharvest handling system in Trinidad and Tobago, Guyana and St. Lucia were 27%, 34% and 20%, corresponding to economic losses of US$1.9 million, US$7.9 million and US$166,579, respectively.

Using this analysis, realistic and effective solutions for the reduction of losses in the three value chains were developed (Table 1). The results indicate the magnitude and manner to which harvesting; postharvest handling, storage and ripening; transportation; and conditions at retail sale points each contribute to deterioration of the fruits and vegetables. Steps to reduce these losses are crucial for the growth and development of crop-based industries in the Caribbean.
Table 1. Solutions to address / reduce harvest and postharvest losses at key critical loss points in three crops

<table>
<thead>
<tr>
<th>Crop</th>
<th>Critical Loss Points (CLP)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Farm (production / harvest)</td>
</tr>
</tbody>
</table>
| Cassava | 1. Use hand-lifter to reduce physical damage  
2. Cover tubers within ½ h after harvest and/or place under shade  
3. For transportation, use plastic crates that are stackable and ventilated | 1. Wash, trim and sort to remove defective tubers  
2. Apply wax on tubers  
3. Seal-package in polyethylene bags and store at 4 -5 °C | 1. Maintain ‘cool chain’ in supermarkets  
2. In public market: display in covered area or covered with moist cloth or jute bags  
3. Keep tubers moist and clean to reduce advent of vascular streaking |
| Mango | 1. Harvest fruits at ¾ stage of maturity, use picking pole with collecting bag  
2. Leave one inch stem attached; recut after 4-5 h to reduce latex stains  
3. Place fruits single layer in plastic crates | 1. Wash in chlorinated water (500 ppm), rinse and air dry  
2. Sort and grade for size, cultivar, colour and absence of defects  
3. Ripen fruits at 20°C and 90% relative humidity | 1. Display fruits on counter in single layer  
2. Place fruits in covered area  
3. Handle with care to minimize physical damages |
| Tomato | 1. Harvest at breaker stage of maturity  
2. Harvest at the natural fracture line with stem and calyx attached  
3. Place fruits in shallow light coloured plastic crates | 1. Sort, grade and size fruits  
2. Ripen fruits at 20C and 90% relative humidity  
3. Place ripe fruits in plastic crate cushioned at the bottom | 1. Display fruits for sale in covered area to prevent heat injury  
2. In supermarkets do not store fruits below 7 °C to avoid chilling injury  
3. Remove damaged and diseased fruits to limit cross contamination |

Training

During 2014 and 2015, approximately 500 Producers; Research, Extension and Marketing Officers; Packinghouse Operators; Produce Managers; Food Service Officers, from 13 CARICOM countries, were trained to increase their knowledge and capacity to utilize the FAO methodology to estimate PHLs in two commodities of export / local importance in the country (Table 2).

The technical persons who were trained, utilized postharvest management and marketing aspects, as well as the calculation of marketing costs and estimation of losses value to gain a more complete understanding of the system-wide nature of the quality of deterioration and subsequent losses, in order to formulate appropriate solutions for quality management and loss reduction strategies at various CLPs along the crop value chain.
### Table 2. Training of Trainers for assessing postharvest losses in 13 CARICOM countries

<table>
<thead>
<tr>
<th>Country</th>
<th>Crops for PHL training</th>
<th># persons trained</th>
</tr>
</thead>
<tbody>
<tr>
<td>Antigua and Barbuda</td>
<td>Onion, tomato</td>
<td>35</td>
</tr>
<tr>
<td>The Bahamas</td>
<td>Onion, hot pepper</td>
<td>24</td>
</tr>
<tr>
<td>Barbados</td>
<td>Cassava, tomato</td>
<td>42</td>
</tr>
<tr>
<td>Belize</td>
<td>Corn (dry), onion</td>
<td>27</td>
</tr>
<tr>
<td>Dominica</td>
<td>Dasheen, plantain</td>
<td>71</td>
</tr>
<tr>
<td>Grenada</td>
<td>Cassava, soursop</td>
<td>44</td>
</tr>
<tr>
<td>Guyana</td>
<td>Cassava, pineapple</td>
<td>42</td>
</tr>
<tr>
<td>Jamaica</td>
<td>Irish potato, onion</td>
<td>15</td>
</tr>
<tr>
<td>St. Kitts and Nevis</td>
<td>Sweet potato, tomato</td>
<td>41</td>
</tr>
<tr>
<td>St. Lucia</td>
<td>Pineapple, plantain</td>
<td>25</td>
</tr>
<tr>
<td>St. Vincent &amp; the Grenadines</td>
<td>Sweet potato, dasheen</td>
<td>54</td>
</tr>
<tr>
<td>Suriname</td>
<td>Papaya, yardlong bean</td>
<td>40</td>
</tr>
<tr>
<td>Trinidad and Tobago</td>
<td>Pumpkin, cassava</td>
<td>41</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td></td>
<td><strong>501</strong></td>
</tr>
</tbody>
</table>

### Pilots

During 2015, pilot interventions were instituted in Jamaica and Trinidad and Tobago to reduce postharvest losses in the potato and cassava chains, respectively. The approach comprised of intensive training of farmers, packinghouse operators and retailers in loss reduction strategies at each critical loss point; this was complemented with the provision of necessary equipment to reduce the losses such as plastic crates for harvesting and transport; steel tables for sorting; and cooling equipment for the storage of harvested produce until ready for marketing.

![Image](https://example.com/image.png) ©FAO/ S. ROSE

### Next Steps

Food security campaigns in CARICOM have traditionally focused on hunger prevention and not the reduction of food loss or waste. There is now greater awareness of the magnitude of food loss and waste among CARICOM countries. Within the context of the levels of hunger that exist, these concerns have translated into concrete actions that are reflected by several countries in their 2016-19 Country Programming Frameworks (CPF). The proposed approach to address these issues includes the development and implementation of relevant policies and strategies along the lines of, and in keeping with, global initiatives on food losses and waste.
One such initiative is Save Food, a global joint effort of the FAO, the United Nations Environment Programme (UNEP), Messe Düsseldorf, and Interpack (the leading global trade fair for packaging and processes). The goal of the Initiative is to fight food loss and waste, through a global alliance of all stakeholders.

Together with members from industry, politics and civil society, Save Food aims to drive innovations, promote dialogue and create debates in order to generate solutions across the value chain ("field-to-fork") by involving actors on six fronts:

- Correcting the policy framework.
- Optimizing agricultural practices.
- Shaping food production more sensibly.
- Promoting improved / innovative packaging and process technology.
- Motivating retailers.

The Save Food Strategy for reducing food loss and waste has four components:
- Creating awareness
- Establishing creative networks
- Developing fundamental programmes
- Supporting concrete investment programmes and projects
The Save Food Initiative thus gives priority to interventions that prevent food loss and waste from occurring in the first place, followed by interventions that can lead to reduced loss and waste. The initiative also supports cost-effective and environmentally friendly reuse (such as for animal feed) and recycling (as compost) of lost and wasted food.

While the issue of food waste is high on the political agenda in industrialized countries, it is expected to constitute a growing problem in developing countries such as CARICOM States, given the changes that food systems in these countries are undergoing because of such factors as rapid urbanization, expansion of supermarket chains, and changes in diets and lifestyles. The proposed strategy for the Caribbean would therefore address food waste reduction taking into consideration the need for unique approaches and interventions that differ from those for tackling losses.

References and resources:


