Present Status, Issues and Future Trends in Fruit and Vegetable Handling, Distribution and Marketing in Sri Lanka

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Sri Lankan Agriculture and Food security in a Nut Shell

- An agriculture based country
- Agriculture contribution to GDP 11.9% in 2010
- One third of the employment is also in the agricultural sector.
- Present vegetable consumption is 94g/day (34kg/year) need to be increased at least to 80kg per year (225g/day).
- Present fruit consumption is 30g/day (11kg/year) need to be increased >40kg

- Population- 20.8 million
- Estimated fresh fruit requirement - 995,712 t, (assuming 20% wastage)
- Fruit and vegetable cultivation: 20% of the agricultural lands
- Very high special variability of agro-ecology: 46 agro-ecological zones.
- Types of fruits and vegetables produce:
  - Tropical: mainly in the Low country dry zone (2/3rd of the country).
  - Temperate: Mainly in the upcountry wet zone

Fruits and Vegetables Distribution Channels

1. Traditional through Economic Centers (98%)
2. Super markets (<1-2%)
3. Export (<0.7%)

Complicated system, large number of turning points, rough handling, transport in open or closed trucks, and tractor trailers
Farmer
↓
Middleman/Middlemen
↓
Economic Center (EC)
↓
Middleman/men
↓
Retailer
↓
consumer

- There is no proper pricing system
- Wholesalers get-together and decide the price

If supply is in excess:
- Very low price
- Very high Postharvest losses
- No temporary storage facilities

There are twelve Economic Centers established in the country
But only three are running at their full capacity
The main Economic Center at Dambulla handles about 4,000 t per day.

2. Major supermarket chains (03)

Farmer
↓
Collection center [Cold Storage]
↓
Transport in cold trucks
↓
Supermarket outlet
↓
Consumer

Present status of postharvest losses

Average losses of fruits and vegetables under traditional distribution chain – 30-40%

Stepwise Postharvest Losses of Produce Throughout the Handling Chain (Sarananda, 2005)

<table>
<thead>
<tr>
<th>Crop</th>
<th>Producer</th>
<th>Collector</th>
<th>Wholesaler</th>
<th>Retailer</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Fruits</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Banana</td>
<td>2</td>
<td>4</td>
<td>8</td>
<td>6</td>
<td>20</td>
</tr>
<tr>
<td>Papaya</td>
<td>6</td>
<td>10</td>
<td>20</td>
<td>10</td>
<td>46</td>
</tr>
<tr>
<td>Pineapple</td>
<td>2</td>
<td>4</td>
<td>8</td>
<td>4</td>
<td>18</td>
</tr>
<tr>
<td>Lime</td>
<td>4</td>
<td>8</td>
<td>16</td>
<td>12</td>
<td>40</td>
</tr>
<tr>
<td>Avocado</td>
<td>2</td>
<td>12</td>
<td>5</td>
<td>22</td>
<td>41</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Vegetables</strong></th>
<th>Producer</th>
<th>Collector</th>
<th>Wholesaler</th>
<th>Retailer</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Beans</td>
<td>4</td>
<td>6</td>
<td>13</td>
<td>7</td>
<td>30</td>
</tr>
<tr>
<td>Carrot</td>
<td>3</td>
<td>6</td>
<td>12</td>
<td>4</td>
<td>25</td>
</tr>
<tr>
<td>Leeks</td>
<td>5</td>
<td>6</td>
<td>12</td>
<td>7</td>
<td>30</td>
</tr>
<tr>
<td>Cabbage</td>
<td>4</td>
<td>7</td>
<td>9</td>
<td>5</td>
<td>25</td>
</tr>
<tr>
<td>Tomato</td>
<td>5</td>
<td>10</td>
<td>15</td>
<td>10</td>
<td>40</td>
</tr>
<tr>
<td>Okra</td>
<td>3</td>
<td>10</td>
<td>13</td>
<td>20</td>
<td>46</td>
</tr>
<tr>
<td>Eggplant</td>
<td>2</td>
<td>5</td>
<td>6</td>
<td>7</td>
<td>20</td>
</tr>
<tr>
<td>Capsicum</td>
<td>6</td>
<td>7</td>
<td>10</td>
<td>12</td>
<td>35</td>
</tr>
</tbody>
</table>

Contd.

Tomato from farm gate to wholesale Colombo (direct transportation -27% (Dharmase, 2009).
2. Supermarket chains:
Have cold chains and loss is very low 2-6% (Perera et al., 2004; Abeysekara, undated)

- Supermarket chains maintain relatively high quality but the cost of handling is 50% greater than the traditional distribution (Abeysekara, undated).
- Prices 15-25% higher
- Due to cost limitations, the supermarket chains are not very much interested in running vegetable stalls.
- They maintain it to increase the availability of items for their customers. (Perera et al., 2004)

Still the supermarket chains satisfy a minimum share of about 1-2% of the fresh fruit and vegetable supply of the country due to poor purchasing power of clients at present.

Supermarket outlets are available only in city centers.
Urban population is about 15.1%

- Per capita income at present US$ 2399. Projected to be increased to 4000 by 2015.

Farmers are getting 20% more income in the supermarket chains than traditional chains due to direct purchase, skipping the middleman (Abeysekara, undated).

Minimize the waste after harvest to a significantly low level, make more food available for human consumption.

3 Export distribution chain

The export demand cannot be supplied due to;
- Poor quality - Poor pre and postharvest handling practices
- No continuous supply
- High cost of production

In Export channels more controlled at each step

Farmer:
- Maturity is controlled
- Collected to a rigid container

Collector:
- Transport in plastic crates
- Temperature controlled ??
- Transport early as possible
### Comparison of four distribution chains

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Trad. chain</th>
<th>Government assisted chain</th>
<th>Exporter chain</th>
<th>Supmkt Chain</th>
</tr>
</thead>
<tbody>
<tr>
<td>Price</td>
<td>very low</td>
<td>reasonable</td>
<td>high</td>
<td>high</td>
</tr>
<tr>
<td>Quality of produce</td>
<td>very low</td>
<td>moderate</td>
<td>very high</td>
<td>high</td>
</tr>
<tr>
<td>PH loss</td>
<td>30%-40%</td>
<td>10%-20%</td>
<td>5%-10%</td>
<td>2-6%</td>
</tr>
<tr>
<td>PH diseases</td>
<td>very high</td>
<td>Moderate</td>
<td>very low</td>
<td>low</td>
</tr>
<tr>
<td>Consumer satisfaction</td>
<td>very low</td>
<td>moderate</td>
<td>very high</td>
<td>high</td>
</tr>
</tbody>
</table>

### Future challenges in the fruit and vegetable postharvest sector

- Reduction of present postharvest losses
- Improvement of postharvest handling systems
- Introduction of quality management
- Improvement of safety standards
- Promotion of export through better postharvest management
- Management of surplus production
- Changing consumption to frozen or preserved forms
- Promotion of functional foods for improved health
- Production and postharvest Mgt. under climate change

### Fruit and vegetable Imports and Exports

<table>
<thead>
<tr>
<th>Year</th>
<th>Impt. Qty(t)</th>
<th>Export. Qty (t)</th>
<th>Impt. Quantity (t)</th>
<th>Export. Qty (t)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2007</td>
<td>126,445</td>
<td>12,487</td>
<td>24635</td>
<td>11792</td>
</tr>
<tr>
<td>2008</td>
<td>237,675</td>
<td>19,398</td>
<td>26734</td>
<td>14415</td>
</tr>
<tr>
<td>2009</td>
<td>396,057</td>
<td>14,863</td>
<td>44795</td>
<td>13097</td>
</tr>
<tr>
<td>2010</td>
<td>500,482</td>
<td>11,528</td>
<td>51765</td>
<td>15809</td>
</tr>
</tbody>
</table>

| Total | 551,084 | 55473 |

### Locations of economic centers

- U: Up country (>1200m asml) T:10-27 °C
- M: Mid country (600-1200m asml) T:19-30 °C
- L: Low country (<600m asml) T:21-34 °C

- Average temperature
  - Dry zone → 28 0C
  - Intermediate zone → 24 - 26 0C
  - Wet zone → 24 0C
- Average Rainfall
  - Dry zone → < 1,750 mm
  - Intermediate zone → 1,750-2,500 mm
  - Wet zone → > 2,500 mm

**Thank you**