

## Increased food security through minimized postharvest loss

Over the next decades, growing global population, climate change and rising food prices will have significant yet uncertain impacts on food security. Food and Agriculture Organization of the UN predicts that annually 1.3 billion tons of food are globally wasted. Under the circumstances, reduction of postharvest losses of horticultural and agricultural produce can be critical in enhancing food security.

Heavy losses of harvested fruits and vegetables continue to occur in many countries in the region, including Sri Lanka, mostly because of improper postharvest handling and diseases. Excessive supply of seasonal fruits to the market, than the demand, during peak harvests also results in considerable losses due to over-ripening, disease and deterioration. In monetary terms, any loss of fruit or vegetable after harvest is greater than losses in the field because the cost of harvesting, storage and transport etc. must be added to the cost of production.

### Postharvest Technology

Postharvest technologies are essential to minimize qualitative and quantitative losses of fruits and vegetables. Postharvest technologies constitute interdisciplinary science and technology applied to harvested produce for preventing losses, extending storage, value addition, product distribution, marketing, and meeting food and nutritional requirements of people. A range of postharvest technologies is available and the choice must be depending on their suitability and affordability. Cold storage is costly but most effective for extending storage life, delaying fruit ripening and suppressing diseases. Sri Lanka, being a middle-income country, could afford to establish cold storage facilities at least in major fruit and vegetable production areas. Generally, a decrease in temperature slows down commodity metabolism. Significant quality improvements can be achieved by cooling fruits immediately after harvest and maintaining appropriate temperature through the handling chain. The storage temperature also varies with the commodity, for instance 15 °C suits for banana and mango. Ethylene controls many processes associated with the quality of fruits and vegetables. Ethylene is used to trigger ripening of fruits. On the other hand, ethylene stimulates deterioration and senescence. Ethylene control technologies are therefore crucial for quality maintenance of freshly harvested produce.

### Disease and disorders

Disease and disorders contribute substantially to postharvest losses and are generally aggravated by physical injuries, bruising and impact damage during handling, transportation, storage and marketing. Effective, integrated and safe disease management and quarantine strategies

are essential to overcome postharvest losses and supply high quality fresh produce. Field application of fungicides for tree crops such as mango and avocado, commencing from flowering and continuing up to two-weeks before harvest, would help management of postharvest diseases. Application of effective biocontrol preparations or safer fungicides, recommended for postharvest usage, may also be considered, if necessary. Hot water dips represent a useful, safer and affordable disease control method for fruits.

### Postharvest loss

Sri Lanka is blessed with a wide variety of fruit species. The local fruit industry has made some progress over the past decades in establishing commercial scale cultivations for some popular fruits. Increased production would permit a portion to be exported after local consumption, if the harvest is properly managed. The country has expertise in postharvest aspects and management of pest, disease and disorders of fruit and vegetable crops. Research continues to develop postharvest handling practices, new technologies and management strategies for pest, disorders and diseases. A flaw of the system is that research findings rarely reach the stakeholders. Postharvest technologies, commodity handling and disease management practices, however, are hardly utilized by the local industry allowing a large proportion of fruits and vegetables to be wasted annually.

Surveys have revealed that substantial postharvest losses of fruits and vegetables occur at the hand of the wholesaler or the middleman who totally controls commodity supply to the retailer. Many of them are reluctant to practice appropriate postharvest handling methods, technologies or safer modes of transport for fresh produce distribution. The commodity selling price is also decided by the same group, often placing an extra burden to the consumer. A previous Sri Lankan government failed miserably in trying to convince the wholesaler to use plastic containers for long distance transport of fresh fruits and vegetables instead of gunny bags. This shows the need of much stronger political and policy intervention to get the country's fruit and vegetable handling sector in to globally accepted postharvest handling practices and technologies for extending shelf life and reducing wastage. In my opinion, stringent legislation is also needed in place to prevent unnecessary wastage of harvested horticultural and agricultural fresh produce from non-utilization of appropriate postharvest practices, technologies or disease management strategies. This is important as fresh fruits and vegetables are key components in the country's economy.

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