



Food and Agriculture  
Organization of the  
United Nations



# Reducing food losses in fresh dasheen (*Colocasia esculenta*) leaves

Technical brief

# The dasheen plant

Dasheen, or taro (*Colocasia esculenta*), is a large herbaceous perennial. Both the root and the leaves of this plant can be eaten and are used in many types of cuisine around the world. The large green leaves of the dasheen or taro plant are a rich source of iron and are widely consumed in developing regions across the globe.

Dasheen leaves are held on the end of long, thick, succulent petioles, or stalks, that emerge directly from the underground corm. The petiole is attached near the centre of the underside of the leaf. The leaves face upward or outward and are positioned perpendicular to the upright petiole.

Good harvest and post-harvest handling practices are critical to maintaining the quality of dasheen leaves.



*A dasheen field.*

## Harvest indices for dasheen leaves

Harvesting is recommended 45–50 days after planting, when the leaves are fully expanded but still tender and succulent. The highly perishable immature rolled leaves are preferred over the mature leaves and fetch a higher price. Regular harvesting increases yield, allowing growers to obtain about six harvests per plant. Harvesting normally ends when the size of the young leaves is reduced because the plant loses vigour.





*Mature dasheen leaf and petiole or stalk.*

## Harvesting of dasheen leaves

Dasheen leaves are harvested during the coolest time of the day, in the early morning, when the leaves are fully hydrated, crisp and fresh. The tender young shoots are cut from the plant using a sharp stainless-steel knife. Hand-snapping of the leaf petiole is not a recommended practice as it creates a jagged surface that is conducive to infection.

Once harvested, the highly perishable leaves and petioles must be handled with care to avoid physical injury such as tearing, bruising, wilting and brown stains. They must also be protected from direct exposure to the sun or air currents.

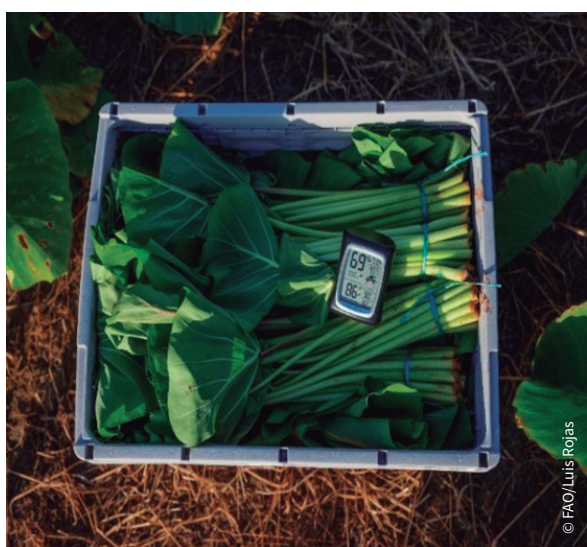
## Post-harvest diseases

Bacterial soft rot and watery soft rot are the most common post-harvest diseases of dasheen leaves. Bacterial soft rot pathogens enter the leaf or petiole tissue at the time of wounding. Watery soft rot, caused by a fungus in the rainy season or in poorly drained fields, appears as water-soaked spots on the outer leaves, which eventually coalesce into a leaky soft tissue mass.

## Field handling

Given their high surface-to-volume ratio and high respiration rates, dasheen leaves must be rapidly cooled immediately after harvest. This is done by transferring the leaves to shallow ventilated packing containers with smooth surfaces and covering them with clean, light-coloured cotton cloths that are dampened with potable water. Evaporation of the water from the dampened cloth lowers the temperature and increases the relative humidity within the packing container around the leaves, resulting in a cooling effect.

This cooling effect allows the leaves to maintain their characteristic green colour, freshness and visual appeal, thereby enhancing their overall market quality. Temperature and relative humidity management also help to minimize water loss and wilting and ensure that the internal tissues of the petioles remain intact (i.e. they do not become spongy and dry, or “pithy”). Thereafter, the covered, packed containers of dasheen leaves should be transferred to a field shed and located away from direct sunlight to maintain the cool and humid holding conditions until they are ready to be transported to the packing centre.



*Bundled harvested dasheen leaves packed in a shallow ventilated container.*



*Bundled harvested dasheen leaves covered with a light-coloured damp cloth under field shade prior to transportation.*

## Transport from field to packing centre

Within half an hour of harvest, the dasheen leaves covered with the clean damp cloths should be transported to the packing centre in a vehicle equipped with a hood or covered with a tarpaulin to prevent direct exposure to the sun and to air currents during transportation.

## Cleaning, sorting and grading

Freshly cut dasheen leaves must be properly washed, sorted and graded to ensure a uniform appearance in accordance with market quality requirements and consumer expectations. Only high-quality, tender, uniform green leaves and petioles are packaged for sale to market outlets. Leaves that show signs of decay or brown spots must be discarded. Torn and wilted leaves with bruised, discoloured and spongy petioles can, however, be sold in fresh markets at a reduced price.

## Hydrocooling

The cleaned leaves are hydrocooled by submerging them in potable ice water (near freezing) containing 100 ppm sodium hypochlorite (a bacteriostatic agent) for 10–15 minutes, or alternatively by showercooling or immersing them in potable tap water. Hydrocooling with sodium hypochlorite prevents leaf and stem wilting and the spread of diseases, in particular bacterial soft rot. The treated hydrocooled leaves must be drained and then air-dried using an oscillating fan for 5–10 minutes prior to packaging.



*Hydrocooling dasheen leaves using tap water at ambient temperature*



*Hydrocooling of dasheen leaves*





*High-quality dasheen leaves being chopped for meal preparation.*



*Wilted dasheen leaves with bruised stalks.*

## Packaging

Cleaned, air-dried dasheen leaves are best packaged in perforated low-density polyethylene bags. Perforations in the bags ensure adequate ventilation to remove respiratory heat, prevent the accumulation of gases and extend the shelf-life of dasheen leaves. If they are packaged in non-ventilated bags, respiratory heat and gases accumulate, resulting in tissue breakdown and rapid decay.

## Storage

Packaged dasheen leaves refrigerated at 6 °C to 8 °C and 90–95 percent relative humidity have a shelf-life of 6–8 days. If stored under ambient conditions at a temperature greater than 27 °C and a relative humidity greater than 90 percent, the leaves and petioles rapidly wilt, turn yellow and decay within one day. Dasheen leaves should not be stored with ethylene-producing fruits such as mangoes, papayas or bananas, as ethylene catalyses the rapid deterioration of the leaves.

## Cost and returns analysis

In the survey data collected under project FVC/GLO/230/MUL, post-harvest losses in dasheen leaves subjected to the conventional practice of harvesting and marketing under ambient conditions were

measured at 15.4 percent and valued at TTD 3466.<sup>1</sup> Losses in dasheen leaves subjected to hydrocooling and refrigerated storage were recorded at 4.2 percent with a net profit of TTD 5669.19. Therefore, the reduction of post-harvest losses by 11.2 percent, from 15.4 percent to 4.2 percent, provided the grower with an overall gain of TTD 2203.19.

**Table 1 | Cost and returns of applying improved practice in the post-harvest handling of dasheen leaves**

<b>Economic variables</b>	<b>Hydrocooling and refrigerated storage – <i>improved method</i></b>	<b>No hydrocooling and storage under ambient conditions – <i>conventional method</i></b>
Market price for dasheen leaf/kg	4.00	2.75
Initial quantity (kg)	1500	1500
Post-harvest losses	60 kg or 4.20%	200 kg or 15.40%
Total quantity sold (kg)	1440	1300
<b>Revenue (TTD)</b>	<b>5760.00</b>	<b>3575.00</b>
Unit cost of cooling (TTD)	15.00	1.00
Lifespan of cooling (uses)	240	1
Unit cost/use (TTD)	0.06	1
Total cost/load (TTD)	7.81	70
<b>Transportation</b>		
No. of containers transported	125	70
Average weight of containers (kg)	20	40
Total capacity of truck (kg)	2500	2800
Transportation fuel costs (TTD)	50.00	25.00
<b>Labour cost per container</b>		
Handling/loading (TTD)	14.00	14.00
Cleaning/sanitation (TTD)	14.00	0.00
Tracking to ensure returns (TTD)	5.00	0.00
<b>Container maintenance costs (TTD)</b>	19.00	0.00
<b>Total costs (TTD)</b>	<b>90.81</b>	<b>109.00</b>
<b>Net profit (TTD)</b>	<b>5669.19</b>	<b>3466.00</b>

Source: Survey data collected under project FVC/GLO/230/MUL.

1. Exchange rate (6 May 2025) for Trinidad and Tobago dollars (TTD): TTD 1=USD 0.15

# Key messages

- Harvest dasheen leaves early in the morning, when temperatures are cooler, to reduce wilting. Use clean, sharp knives to avoid leaf damage.
- Carefully wash the leaves to remove any dirt or debris, paying attention to avoid bruising or tearing the leaves during this process.
- Immediately after harvesting, cool the leaves by covering the containers with a light-coloured damp cloth to remove the field heat, and pack in shallow containers. Keep the containers in a cool shaded area.
- During transportation from field to packing centre, make sure that the leaves are kept cool and protected from direct sunlight, air currents and physical damage.
- After sorting and grading, hydrocool by submerging in ice-cold water containing 100 ppm sodium hypochlorite for 10–15 minutes.
- Air-dry the leaves before packaging in perforated plastic bags. Avoid overpacking to prevent crushing of the leaves.
- Store the leaves under conditions of high humidity (around 90–95 percent) and a temperature of 6 °C to 8 °C to maintain freshness.
- Avoid storing leaves in the presence of ethylene-producing fruits such as bananas, papayas and mangoes, because ethylene can contribute to the rapid deterioration of the leaves.



**Cover photograph:** © FAO/Luis Rojas  
Some rights reserved. This work is made available under the  
Creative Commons Attribution - 4.0 International licence (CC BY 4.0).