



Ung Choi: Postharvest Quality-Maintenance Guidelines

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Water convolvulus, also called ung choi and kang kong, is a member of the morning-glory family (Convolvulaceae) and is in the same genera as sweet potato. It is thought to be native of India and is now widely consumed as a vegetable throughout South-east Asia. Young stems and leaves are prepared by frying or boiling. Ung choi has a high protein and carotenoid content. It is grown in both ponds and moist soil. Common varieties include types with large or small leaves, green or greenish-yellow leaves, and stems that are white or green. There are many common names besides the three given above, including kong xin cai, water spinach, water cabbage, and pake boong.



Ung choi, *Ipomoea aquatica* Forsk.

Horticultural Maturity Indices

Young plants are either uprooted or cut near the water surface (flooded culture) or ground level (moist soil culture) when about 30 cm (12 in) long and tied into bundles. Plants with roots attached are less perishable (Cornelis et al. 1985).

Grades, Sizes, and Packaging

There are no U.S. or international grades. Ung choi is sold in bunches of 0.45 to 0.9 kg (1 to 2 lb), packed in fiberboard cartons holding 9 to 18 kg (20 to 40 lb). Polyethylene bags are often used to sell bunches at the retail level.

Quality Characteristics and Criteria

Ung choi should have tender tips, and the diameter at the middle of the stem should be 8 mm (0.3 in) or more. There should be no insect or disease injury or blemishes; leaves should be uniformly dark green, smooth, healthy, and turgid, with no black streaks due to folding or mechanical injury; stems should be tender (Tisbe and Cadiz 1967). Plants should be free of dirt and residue, and stems should have a minimum of fibers.

Controlled Atmosphere (CA) Considerations

Tissue browning is promoted by 3% CO₂ at 1°C (33°F) but prevented by higher CO₂ concentrations at 20°C (68°F) (Ose et al. 1999).

Optimum Storage Conditions

Tentative data suggest a storage life of 10 to 12 days at 12 to 14°C (54 to 57°F) with 90 to 95% RH.



Harvesting ung choy.



Cleaning and bunching ung choy.

Pre-Cooling Conditions

Room-cooling is normally used, although vacuum-cooling is possible.

Retail Outlet Display Considerations

Display at 10 to 14°C (50 to 57°F) with misting. Do not place on ice or top ice.

Chilling Sensitivity

Ung choy is injured below 10 to 14°C (50 to 57°F). Symptoms include darkening and wilting of leaves, darkening of the stems, and increased susceptibility to bacterial disease. Darkening symptoms develop after about 4 days at 1°C (33.8°F).

Ethylene Production and Sensitivity

Ung choy produces about 2 $\mu\text{L kg}^{-1} \text{h}^{-1} \text{C}_2\text{H}_4$ at harvest; the rate declines during storage. Production can then increase to about the same level when leaves senesce and turn yellow. Ethylene exposure induces premature leaf senescence and yellowing.

Respiration Rates

Respiration rate is 50 to 150 mg (28 to 85 μL) $\text{CO}_2 \text{ kg}^{-1} \text{h}^{-1}$ at 27°C (81°F). Heat production is 11,000 to 33,000 BTU $\text{ton}^{-1} \text{day}^{-1}$ or 3,050 to 9,150 kcal $\text{tonne}^{-1} \text{day}^{-1}$.

Physiological Disorders

Chilling injury is the main disorder. Dehydration can occur at the retail level, and polyethylene bags reduce water loss.

Suitability as Fresh-Cut Product

Ung choy is sold in Southeast Asian markets as part of a meal pack for stir-frying. The vegetable can be oven- or sun-dried or freeze-dried, though with some loss in vitamins (Shin et al. 2014).

Postharvest Pathology

White rust, and occasionally alternaria rot (*Alternaria ipomoeae-aquaticae*), can be problems in Southeast Asia. Cercospora leaf spots are also found (Ho and Edie 1969). Postharvest diseases are not generally a problem, although bacterial rot does occur. Rapid cooling, good temperature management, and sanitation reduce the problem significantly.

Special Considerations

None.

Quarantine Issues

Peach aphid is sometimes found. Although sweet potato weevil may not be able to complete its life cycle in this vegetable, larvae have been found in the hollow stems, and therefore it is regarded as a host (Austin 1991).

References

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