

Water Convolvulus

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Scientific Name and Introduction: Water convolvulus (*Ipomoea aquatica* Forsk.) is also called ung choi and kang kong. It 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 Southeast Asia. Young stems and leaves are consumed after frying or boiling. It has a high protein and carotenoid content. It is grown both in 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; kong xin cai, water spinach, water cabbage, and pake boong.

Quality Characteristics and Criteria: It should have tender tips, and the diameter in 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, turgid and with no black streaks due to folding and 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.

Horticultural Maturity Indices: Young plants are either up-rooted, 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. It is sold in bunches 0.45 to 0.9 kg (1 to 2 lb) packed in fiberboard cartons holding 9 to 18 kg (20 to 40 lb).

Pre-Cooling Conditions: Room-cooling is normally used, although vacuum-cooling is possible.

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.

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).

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: Water convolvulus 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: Water convolvulus produces about 2 µL kg⁻¹ h⁻¹ C₂H₄ 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) CO₂ kg⁻¹ h⁻¹ at 27 °C (81 °F). Heat production is 11,000 to 33,000 BTU ton⁻¹ day⁻¹ or 3,050 to 9,150 kcal tonne⁻¹ day⁻¹.

Physiological Disorders: Chilling injury is the main disorder.

Postharvest Pathology: White rust can be a problem in Southeast Asia and occasionally alternaria rot (*Alternaria ipomoeae-aquatica*). 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.

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).

Suitability as Fresh-cut Product: Water convolvulus is sold in Southeast Asian markets as part of a meal pack for stir-frying.

Special Considerations: None.

References:

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