

Watercress

Stephen Morris and Jenny Jobling

Morris and Jobling are with the Sydney Postharvest Laboratory, Food Science Australia, North Ryde, New South Wales, Australia.

Specific Name and Introduction

Watercress (*Nasturtium officinale* R.Br.) has been known in Europe and Asia for thousands of years, and it is now grown in many countries worldwide. It is a member of the Brassicaceae (Cruciferae) family and is used as a leafy salad vegetable. It has attractive dark green leaves, a strong flavor and is rich in vitamins. Watercress is typically grown in running water (Snowdon 1991).

Horticultural Maturity Indices

Leaves should be harvested when full size and still bright-green.

Quality Characteristics and Criteria

Watercress should be bright green and not limp. The leaves of watercress quickly become yellow and slimy when improperly handled.

Grades, Sizes, and Packaging

There are no U.S. grade standards. Watercress is sold in bunches and can be packed in waxed cartons with top ice (Hruschka and Wang 1979). It can also be packaged in boxes with plastic liners.

Precooling Conditions

Watercress should be precooled promptly after harvest either by hydrocooling or vacuum-cooling (Hruschka and Wang 1979).

Optimum Storage Conditions

Watercress can be stored for 2 to 3 weeks at 0 °C (32 °F) with >95% RH (Hruschka and Wang 1979). Shelf-life is reduced to 2 to 3 days if stored under low RH.

Controlled Atmosphere (CA) Considerations

The rate of yellowing can be reduced by storing in atmospheres >7% CO₂ with not less than 5% O₂ (Aharoni et al. 1989).

Retail Outlet Display Considerations

Contact with melting ice and water sprays help in preventing dehydration. Careful handling is necessary to avoid crushing or bruising the delicate leaves.

Chilling Sensitivity

Watercress is not sensitive to low temperature and should be stored as cold as possible without freezing.

Ethylene Production and Sensitivity

Watercress produces only low amounts of ethylene in response to wounding: $<0.1 \mu\text{L kg}^{-1} \text{h}^{-1}$ at 20 °C (68 °F). However, exposure to ethylene reduces shelf-life due to increased rate of yellowing (Philosoph-Hades et al. 1989).

Respiration Rates

Temperature	mg CO ₂ kg ⁻¹ h ⁻¹
0 °C	16 to 28
5 °C	47 to 53
10 °C	95 to 125
15 °C	139 to 210
20 °C	300 to 344
25 °C	334 to 420

Data from Smith (1957) and Hruschka and Wang (1979).

To get mL CO₂ kg⁻¹ h⁻¹, divide the mg kg⁻¹ h⁻¹ rate by 2.0 at 0 °C (32 °F), 1.9 at 10 °C (50 °F), and 1.8 at 20 °C (68 °F). To calculate heat production, multiply mg kg⁻¹ h⁻¹ by 220 to get BTU ton⁻¹ day⁻¹ or by 61 to get kcal tonne⁻¹ day⁻¹.

Physiological Disorders

Watercress is very susceptible to dehydration and crushing of leaves.

Postharvest Pathology

Harvested watercress is highly perishable. In warm conditions, the stems can become slimy as a result of bacterial soft rot caused by *Erwinia carotovora*. It is therefore important that watercress be cooled promptly after harvest (Snowdon 1991).

Quarantine Issues

There are no known quarantine issues.

Suitability as Fresh-Cut Product

Watercress can be used as part of mixed salads.

Special Considerations

Care must be taken to maintain high RH or storage life is substantially shortened.

References

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