Turnip

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Scientific Name and Introduction

Turnip *(Brassica campestris*, Rapaceum group) is often confused with rutabaga or swede (*B. napus*, Napobrassica group). Turnips have a small, white-fleshed root, often with the surface of the top half purple. Leaves are hairy. Roots can be grown in warm soils, >25 °C (>77 °F) (Peirce 1987). (In contrast, rutabagas have large, yellow-fleshed roots and large, smooth leaves, and they grow in cool soils.) There are also yellow-fleshed turnips. Common turnip varieties are 'Purple Top,' 'White Globe,' 'White Egg,' and 'Golden Ball.'

Quality Characteristics and Criteria

High-quality turnips are firm and are free of growth cracks, woodiness, rot, injury, and pithiness.

Horticultural Maturity Indices

Root diameter and freedom from woodiness are maturity indices for turnips. If sold as topped turnips, roots should be at least 4.4 cm (1.75 in) in diameter.

Grades, Sizes, and Packaging

Grades of U.S. No. 1 and U.S. No. 2 are based primarily on external appearance, size, and defects. U.S. Grade 1 roots are well trimmed, firm, fairly smooth and clean, and free from injury, growth cracks, woodiness, water core, dry rot, and soft rot. The roots should have a minimum diameter of 4.4 cm (1.75 in). Turnips are sold bunched with tops not less than 15 cm (6 in) long, short-trimmed roots with tops not more than 10 cm (4 in) long, and topped turnips with tops removed to not more than 2 cm (0.75 in). Some roots are waxed, but most are packaged as fresh roots and leaves or topped, and packed in vented plastic film or mesh 11.4- or 22.7-kg (25- or 50-lb) bags or 0.45-kg (1-lb) bags packed 12 per carton.

Precooling Conditions

Turnips can be cooled in the wash water, but a temperature differential of 10 °C (50 °F) or more should be avoided to prevent cracking.

Optimum Storage Conditions

Turnips can be held 4 to 5 mo at 0 °C (32 °F) with 90 to 95% RH.

Controlled Atmosphere (CA) Considerations

Unknown.

Retail Outlet Display Conditions

Turnips should be stored and displayed under high RH and refrigerated to slow shrivel. They can be misted.

Chilling Sensitivity

Turnips are not sensitive to chilling and should be stored as cold as possible without freezing.

Ethylene Production and Sensitivity

Turnips produce no detectable ethylene and are insensitive to ethylene.

Respiration Rates

Temperature	mg CO_2 kg^{-1} h^{-1}
0 °C	6 to 9
5 to 6 °C	10
10 °C	13 to 19
15 to 16 °C	21 to 24
20 to 21 °C	24 to 25

Data from Smith (1957) and Scholz et al. (1963).

To get mL CO_2 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 per ton per day or by 61 to get kcal $tonne^{-1}$ day^{-1}.

Physiological Disorders

Turnips can develop growth cracks from overmaturity or boron deficiency, brown heart from boron deficiency, and pithiness from water stress (Snowdon 1992). Root shriveling and loss of firmness can occur from storage at >2 °C (36 °F) or at low RH.

Postharvest Pathology

Dry rot or phoma rot *(Leptospharia maculans),* watery soft rot *(Sclerotina minor* or *S. scerotiorum),* alternaria rot *(Alternaria brassicae),* rhizoctonia rot *(Thanatephorus cucumeris),* gray mold *(Botrytis cinerea),* and bacterial soft rot *(Erwinia crotovora* ssp. *carotovora)* can occur in harvested roots, generally resulting from field infection.

Quarantine Issues

There are no known quarantine issues.

Suitability as Fresh-Cut Product

Turnips may be peeled and diced as a fresh market pre-cut product (Snowdon 1992).

Special Considerations

Turnips are susceptible to freezing damage when held at 0 °C (32 °F). Storage at warmer temperatures, >5 °C (41 °F), accelerates weight loss and development of soft rot. Waxing roots with a water-miscible, carnauba-based wax slightly delays weight loss and intensifies the purple color of the roots (Perkins-Veazie and Collins 1991).

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