

# Celeriac

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**Scientific Name and Introduction:** Celeriac (*Apium graveolens* var. *rapaceum* Mill. Gaudin) is a bulbous tuber with a crisp texture and a white flesh with a nutty, celery-like flavor. It is also referred to as celery root or apio and can be used fresh or cooked. It must be peeled to remove the rough light-brown skin if used fresh. California is the primary source of U.S. celeriac.

**Quality Characteristics and Criteria:** The primary quality characteristics are a firm texture and tender flesh. Roots with a soft, spongy texture should be avoided.

**Horticultural Maturity Indices:** Celeriac is harvested when it has met market needs for size.

**Grades, Sizes and Packaging:** Common packaging is 9.1 kg (20 lb) cartons, although 15.9 kg (35 lb) cartons are also used. There are no defined grading categories for celeriac; it is graded and packed based on relative size.

**Pre-cooling Conditions:** Celeriac would benefit from pre-cooling since it retains quality best when stored at 0 °C (32 °F). However, since celeriac has a relatively low respiration rate, the benefits of pre-cooling must be balanced with the desired storage time before marketing.

**Optimum Storage Conditions:** For long-term storage of 6 to 8 mo, celeriac should optimally be stored at 0 to 2 °C (32 to 36 °F) with RH of 97 to 98%. Storage-life can be < 4 mo if temperature exceeds 3 °C (38 °F). It is also important to maintain high RH of 90 to 98% to prevent moisture loss that results in shriveling. Freeze injury can occur if celeriac is stored < -1 °C (30 °F) and is manifested as water-soaked areas and/or softening.

**Controlled Atmosphere (CA) Considerations:** CA storage is not very effective for prolonging storage-life or maintaining quality of celeriac. In some studies, low O<sub>2</sub> atmospheres did not reduce losses, and high CO<sub>2</sub> (5 to 7%) increased decay during 5 mo storage (Weichmann, 1976; 1977). However, storage in 2% O<sub>2</sub> + 2 to 3% CO<sub>2</sub> may be beneficial (Cantwell, 2001).

**Retail Outlet Display Considerations:** Water sprinkle and top ice are beneficial.

**Chilling Sensitivity:** Celeriac is not chilling sensitive and should be stored as cold as possible without freezing.

**Ethylene Production and Sensitivity:** Rates of ethylene production are < 0.1 μL kg<sup>-1</sup> h<sup>-1</sup> at 20 °C (68 °F). However, celeriac may be slightly sensitive to ethylene. Therefore, celeriac should not be stored with other fruits or vegetables that produce high levels of ethylene.

## Respiration Rates:

Temperature	mg CO <sub>2</sub> kg <sup>-1</sup> h <sup>-1</sup>
0 °C	5 to 8
5 °C	11 to 15
10 °C	18 to 28

15 °C	32 to 38
20 °C	41 to 49

To get mL kg<sup>-1</sup> h<sup>-1</sup>, divide the mg kg<sup>-1</sup> h<sup>-1</sup> 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<sup>-1</sup> h<sup>-1</sup> by 220 to get BTU per ton per day or by 61 to get kcal per metric ton per day. Data are from Morris, 2001.

**Physiological Disorders:** Celeriac can be slightly sensitive to ethylene exposure, which may result in toughening of the root.

**Postharvest Pathology:** Decay may become a problem if celeriac is stored in a warm, humid environment. Therefore, it is important to follow the above storage recommendations to reduce losses due to decay.

**Quarantine Issues:** None.

**Suitability as a Fresh-cut Product:** No current potential is apparent.

**Special Considerations:** None.

**References:**

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