

Celeriac

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Scientific Name and Introduction

Celeriac (*Apium graveolens* var. *rapaceum* Mill. Gaudin) is a member of the Umbelliferae (Apiaceae) family. The harvest portion is a bulbous tuber with a crisp texture and a white flesh that has a nutty, celerylike flavor. It is also known 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 meets market needs for size.

Grades, Sizes, and Packaging

Common packaging is 9.1-kg (20-lb) cartons, though 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.

Precooling Conditions

Celeriac can benefit from precooling since it retains quality best when stored at 0 °C (32 °F). However, since celeriac has a relatively low respiration rate, the benefits of precooling must be balanced with the desired storage time before marketing and consumption.

Optimum Storage Conditions

Celeriac can be stored for 6 to 8 mo at 0 to 2 °C (32 to 36 °F) with RH of 97 to 98%. Storage life can be under 4 mo if temperature exceeds 3 °C (38 °F). High RH of 90 to 98% is needed to prevent moisture loss, which results in shriveling. Freezing injury can occur if celeriac is stored at temperatures below -1 °C (30 °F) and is manifested as water-soaked areas or softening.

Controlled Atmosphere (CA) Considerations

CA storage is not recommended for celeriac. Storage in low-O₂ and high-CO₂ atmospheres increased decay during 5 mo storage (Weichmann 1976, 1977). However, storage in 2% O₂ with

2 to 3% CO₂ 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

Ethylene production is low, <0.1 μL kg⁻¹ h⁻¹ at 20 °C (68 °F). However, celeriac may be slightly sensitive to ethylene. Therefore, celeriac should not be stored with other fruit or vegetables that produce high levels of ethylene.

Respiration Rates

Temperature	mg CO ₂ kg ⁻¹ h ⁻¹
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

Data from Morris (2001).

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 per ton per day or by 61 to get kcal per tonne per day.

Physiological Disorders

Ethylene exposure may result in toughening of the root.

Postharvest Pathology

Decay may become a problem if celeriac is stored in a warm, humid environment.

Suitability as Fresh-Cut Product

No current potential is apparent.

References

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Acknowledgments

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The editors of this Handbook will appreciate your input for future editions of this publication. Please send your suggestions and comments to HB66.Comments@ars.usda.gov.