

Salsify

Fabio Mencarelli

Istituto Tecnologie Agroalimentari, Università della Tuscia,
Via DeLellis, 01100 Viterbo, Italy

Scientific Name and Introduction: Salsify (*Tragopogon porrifolius* var. *sativus* (Gaterau) Br.-Bl.) belongs to the *Compositae* family. It is also called vegetable oyster and oyster plant. It is a biennial that produces an edible taproot. The root is light yellow outside and white inside, 15 to 30 cm (6 to 12 in) long with a diameter of 2 to 2.5 cm (0.75 to 1 in). Black salsify (*Scorzonera hispanica* L.) belongs to the same family. Its taproot is larger, more cylindrical in shape, brown-black on the outside, and white inside. Both are rich in iron, vitamins (B₁, B₂, and E) and inulin, asparagin, and the glycoside larinin. Inulin is poorly digested by humans, and can be used as a bulking ingredient in foods formulated with artificial sweeteners (see Jerusalem artichoke) and as a source of fructose (Kierstan, 1978).

Quality Characteristics and Criteria: There are no U.S. or international standards. There are many recommendations, but they are not mandatory. Taproots must be sound, clean, fresh, and without any foreign smell or taste. They must be full-bodied, straight and unbranched. They should not be woody. Color must be uniform, light-yellow or brown-black.

Horticultural Maturity Indices: Harvest is based on root size and time from seeding; usually after 150 to 210 days.

Grades, Sizes and Packaging: No official grades exist; sizing is based on length and diameter. Package in plastic liners or trays wrapped with plastic film to minimize water loss.

Pre-cooling conditions: Pre-cooling is not necessary.

Optimum Storage Conditions: Under refrigerated conditions, salsify roots can be stored for 3 to 4 mo at 0 °C (32 °F) with 95 to 98% RH (Hardenburg et al., 1986). In the absence of refrigeration, roots are also commonly stored in clamps (Hak, 1993).

Controlled Atmosphere (CA) Considerations: Black salsify can be stored in 3% CO₂ + 3% O₂ for 6 mo at 0 °C (32 °F) with excellent results (Stoll, 1974).

Retail Outlet Display Considerations: The skin is very delicate, and they easily lose water if they are not in plastic lined trays. Misting with water is beneficial.

Chilling Sensitivity: Not chilling sensitive. Store as cold as possible without freezing.

Ethylene Production and Sensitivity: Produces very low ethylene and has low sensitivity to ethylene.

Respiration Rates:

| Temperature | mg CO ₂ kg ⁻¹ h ⁻¹ |
|-------------|---|
| 0 °C | 22 to 28 |
| 5 °C | 33 to 53 |
| 10 °C | 40 to 57 |
| 20 °C | 193 |

To get mL 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 metric ton per day.

Physiological Disorders: Freezing is a risk during storage.

Postharvest Pathology: The most frequent diseases in the field are *Albugo tragopogonis*, causing russet spotting on leaves, and powdery mildew (*Erysiphe cichoriacearum* DC.) which compromises quality.

Quarantine Issues: None.

Suitability as Fresh-cut Product: No current use as fresh-cut product.

References:

- Anonymous. 1989. Guide to food transport. Mercantila Pub., pp. 216
- Cantwell, M. 1997. Properties and recommended conditions for storage of fresh fruits and vegetables. Postharvest. Univ of Calif., Davis CA.
- Graifenberg A. 1990. Scorzobianca. In: Orticoltura, V.V. Bianco and F. Pimpini (eds) Patron Press, Bologna, Italy, pp. 345-349.
- Hak, P.S. 1983. Kuilbewaring van fabrieksaardappelen, suikerbieten, rode bieten, schorseneren en winterpeen. Bedrijfsontwikkeling 14:799-801.
- Hardenburg, R.E., A.E. Watada, and C.Y. Wang. 1986. Salsify. In: USDA Hndbk. No. 66, pp. 69.
- Kierstan, M.P.J. 1978. Production of fructose syrups from inulin-containing plants [Jerusalem artichokes, chicory, salsify extracts]. Biotech. Bioeng. 20:447-450.
- Muller-Lemans, H. 1991. Tragopogon porrifolium, die Haferwurzeln-eine Literaturübersicht. Gartenbauwissenschaft 2:53-58.
- Peiris, K.H.S., J.L Mallon and S.J. Kays. 1997. Respiration rate and vital heat of some specialty vegetables at various storage temperatures. HortTechnology 7(1):46-49
- Stoll, K. 1974. Storage of vegetables in modified atmospheres. Acta Hort. 38:13.