

# Apricot

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**Scientific Name and Introduction:** The apricot is native to central and western China. Apricots were brought to Italy about 100 B.C., to England in the 13<sup>th</sup> century, and to North America by 1720. Most of the apricots in the U.S. are grown in California, with much smaller amounts grown in Washington and Utah.

**Quality Characteristics and Criteria:** Fruit size, shape, freedom from defects (including gel breakdown and pit burn) and decay are all important quality criteria. High consumer acceptance is attained for fruit with high (> 10%) SSC and moderate TA (0.7 to 1.0%). Apricots with 2 to 3 lb-force (8.9 to 13.3 N) flesh firmness are ready-to-eat. Most cultivars soften very fast making them susceptible to bruising and subsequent decay.

**Horticultural Maturity Indices:** In California, harvest date is determined by changes in skin ground color from green to yellow. The exact yellowish-green color depends on cultivar and shipping distance. Apricots should be picked when still firm because of their high bruising susceptibility when fully-ripe and soft.

**Grades, Sizes and Packaging:** Apricots are always harvested by hand, usually into picking bags or plastic totes. Apricots are generally handled in half bin or totes and hand-packed. In some cases, apricots are dry-dumped onto a padded packing line belt. Apricots are tray-packed in single and double layers, or volume-filled (about 10 kg net). Apricots should be uniform in size, and not more than 5% by count of the apricots in each container may vary more than 6 mm when measured at the widest part of the cross section.

**Optimum Storage Conditions:** Apricots are seldom stored in large quantities, although they keep for 1 to 2 weeks (or even 3 to 4 weeks depending on the cultivar) at -0.5 to 0 °C with RH of 90 to 95%. Susceptibility to freezing injury depends on SSC, which varies from 10 to 14%. The highest freezing point is -1.0 °C.

**Controlled Atmosphere (CA) Considerations:** The major benefits of CA during storage/shipment are to retain fruit firmness and ground color. CA conditions of 2 to 3% O<sub>2</sub> + 2 to 3% CO<sub>2</sub> are suggested for moderate commercial benefits; the extent of benefits depends on cultivar. Exposure to < 1% O<sub>2</sub> may result in development of off-flavors and > 5% CO<sub>2</sub> for > 2 weeks can cause flesh browning and loss of flavor. The addition of 5 to 10% CO<sub>2</sub> as a fungistat during transport (< 2 weeks) may improve the potential for benefit from CA. Pre-storage treatment with 20% CO<sub>2</sub> for 2 days may reduce incidence of decay during subsequent transport and/or storage in CA or air.

**Retail Outlet Display Considerations:** Cold table display is recommended because of their fast ripening. Ripening before consumption should ideally be done at temperatures of 18 to 24 °C.

**Chilling Sensitivity:** Chilling sensitive cultivars develop and express chilling injury symptoms, i.e., gel breakdown, flesh browning and loss of flavor, more rapidly at 5 °C than at 0 °C. Storage at 0 °C is necessary to minimize incidence and severity of chilling injury on susceptible cultivars.

**Rates of Ethylene Production and Sensitivity:** Ethylene production rate increases with ripening and storage temperature from < 0.1 µL kg<sup>-1</sup> h<sup>-1</sup> at 0 °C (32 °F) to 4 to 6 µL kg<sup>-1</sup> h<sup>-1</sup> at 20 °C (68 °F) for firm-ripe apricots and higher for soft-ripe apricots. Exposure to ethylene hastens ripening (as indicated by softening and color changes from green to yellow). Also, ethylene may encourage growth of decay-causing fungi.

**Respiration Rate:**

Temperature	mg CO <sub>2</sub> kg <sup>-1</sup> h <sup>-1</sup>
0 °C	4 to 8
10 °C	12 to 20
20 °C	30 to 50

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.

**Physiological Disorders:**

*Gel Breakdown or Chilling Injury:* Develops in cold storage, particularly at 2.2 to 7.6 °C when apricots are stored for a long time period. This physiological problem is characterized in early stages by the formation of water-soaked areas that subsequently turn brown. Breakdown of tissue is sometimes accompanied by sponginess and gel formation. Fruit stored at these temperatures have short market-life and lose flavor.

*Pit Burn:* Flesh tissue around the stone softens and turns brown when the apricots are exposed to temperatures above 38 °C (100 °F) before harvest. This heat injury increases with higher temperatures and longer durations of exposure.

**Postharvest Pathology:**

Brown rot is caused by *Monilia fructicola* and is the most important postharvest disease of apricot. Infection begins during flowering. Fruit rots may occur before harvest, but often occur postharvest. Orchard sanitation to minimize infection sources, pre-harvest fungicide application and prompt cooling after harvest are control strategies.

Rhizopus Rot, caused by *Rhizopus stolonifer*, occurs frequently in ripe or near-ripe fruit held at 20 to 25 °C (68 to 77 °F). Cooling fruit and holding below 5 °C (41 °F) is very effective for controlling this fungus.

**Quarantine Issues:** Apricots are currently exported from California to Canada and Mexico and imported from Chile and New Zealand. California apricot shipments to Canada, except British Columbia, are not restricted. For export to British Columbia and Mexico, apricots must be free of oriental fruit moth (*Grapholita molesta/Cydia molesta*). Apricot shipments require a phytosanitary certificate (PC) and a clear statement that the fruit were produced and inspected in accordance with the system approach guidelines agreed to by APHIS and the CFIA.

For export to Mexico, a PC stating that the fruit are free of Western fruit tree leaf roller (*Archips argyrospilus*), navel orangeworm (*Amyelois transitella*), oblique banded leaf roller (*Choristaneura rosaseana*), orange tortrix (*Argyrotaenia citrana*), carob moth (*Spectrobates ceratoniae*), omnivorous leaf roller (*Platynota stultana*), and peach twig borer (*Anarsia lineatella*) is needed. Additionally, a clear statement is required that the fruit were produced and inspected in accordance with the Mexico work plan.

A copy of the work plan for the exportation of apricot fruit from United State to Mexico can be obtained from the PPQ regional office in Sacramento. The work plan is only valid for the current season.

Methyl bromide fumigation is required on apricot imported from Chile, but not from New Zealand. In some cases, apricots may be pre-cleared. For this the shipments must be accompanied by a PPQ Form 203 signed by the APHIS inspector on site in Chile.

**Suitability as Fresh-cut Product:** Fresh-cut apricot wedges should be kept at 0 °C (32 °F) and 90 to 95% RH to maintain quality for 2 to 5 days, depending on cultivar and ripeness.

**Special Considerations:** The greatest hazard in handling or shipping apricots is decay, mainly brown rot and rhizopus rot. Quick cooling of apricots to temperatures of 4 °C (39.2 °F) or lower and holding them as near to 0 °C (32 °F) as possible will retard ripening, softening and decay.

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