



Sweet Cherry

Recommendations for Maintaining Postharvest Quality

Elizabeth J. Mitcham, Carlos H. Crisosto and Adel A. Kader Department of Pomology,
University of California, Davis, CA 95616

Maturity Indices

Skin color and soluble solids content (SSC) are the main criteria used to judge fruit maturity. Minimum maturity in California requires that the entire cherry surface have a minimum of light red color and/or 14 to 16% SSC, depending on the variety. The red mahogany stage is recommended for harvest of Brooks, Garnet, Ruby, Tulare and King varieties.

Quality Indices

Taste is related to SSC, titratable acidity (TA) and the ratio of SSC/TA. Freedom from cracks, bird pecks, shrivelling, decay or misshapen fruit (doubles, spurs). Green fleshy stems are often associated with freshness and quality.

Optimum Temperature - $-0.5 \pm 0.5^{\circ}\text{C}$ ($31 \pm 1^{\circ}\text{F}$)

Optimum Relative Humidity

90-95%; high humidity is particularly important to maintain green stem color.

Rates of Respiration Production

Temperature	0°C (32°F)	5°C (41°F)	10°C (50°F)	20°C (68°F)
ml CO ₂ /kg·hr	3 - 5	5 - 9	15 - 17	22 - 28

To calculate heat production multiply ml CO₂/kg·hr by 440 to get Btu/ton/day or by 122 to get kcal/metric ton/day.

Rates of Ethylene

< 1 µl/kg·hr at 20°C (68°F)

Responses to Ethylene

Cherry response to ethylene is minimal. Ethylene does not accelerate cherry ripening.

Responses to Controlled Atmospheres (CA)

CA reduces respiration rate and thereby increases postharvest life. Elevated CO₂ suppresses decay development. Modified atmosphere packaging within boxes has been very successful. Successful atmospheres are generally within the following ranges:

3 to 10% O₂

10 to 15% CO₂

< 1% O₂ can result in skin pitting and off-flavours

> 30% CO₂ can result in brown skin discoloration and off-flavours.

Flavor volatiles may be reduced following several weeks of CA storage resulting in fruit of good visual quality but poor sensory quality.

Physiological & Physical Disorders

Pitting. An indentation in the surface of the fruit caused by the collapse of cells under the skin. Thought to result from impact injury.

Bruising. Results from compression and impact of the fruit.

Postharvest life is closely related to respiration rate. Respiration rate increases as a result of increased temperature and physical injury.

Pathological Disorders

Brown Rot. Caused by *Monilinia fruticola*, disease can begin in the orchard or postharvest. Pre and postharvest control measures are necessary.

Grey Mold. Caused by *Botrytis cinerea*, a fungus that continues to grow slowly at 0°C (32°F).

Rhizopus Rot. Caused by *Rhizopus stolonifer*, a fungus that is found in fruit exposed to temperatures of 5°C (41°F) or greater.

Proper temperature management (rapid cooling to optimum storage temperature) can completely control Rhizopus Rot and significantly reduce Brown Rot and Grey Mold. Eliminating injured and diseased fruit from the packed box is important. Fungicide treatments, pre and postharvest are often beneficial.

