

Apple: Gala

Recommendations for Maintaining Postharvest Quality



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MATURITY INDICES

- Ground color change from green to light-green or white may be the most useful indicator of maturity for harvesters
- Beginning of starch degradation may also indicate harvest time

QUALITY INDICES

- Firmness, crispness, lack of mealiness
- Flavor, including soluble solids, titratable acidity and flavor volatiles
- Freedom from defects such as bruising, decay, stem or blossom-end cracks, bitter pit, insect injury, etc.
- Percent blush on the apple (visual quality only)

OPTIMUM TEMPERATURE

$0 \pm 1^\circ\text{C}$ ($32 \pm 2^\circ\text{F}$)

Cool rapidly, this apple softens quickly.

OPTIMUM RELATIVE HUMIDITY

90 to 95%

RATES OF RESPIRATION

6.5 to 8 ml/kg-hr at 0°C (32°F)

To calculate heat production multiply ml $\text{CO}_2/\text{kg}\cdot\text{hr}$ by 440 to get BTU/ton/day or by 122 to get kcal/metric ton/day.

RATES OF ETHYLENE PRODUCTION

Ethylene can accelerate senescence and loss of firmness. A reduction in ethylene concentration may reduce susceptibility to scald.

RESPONSES TO ETHYLENE

4 to 12 $\mu\text{l}/\text{kg}\cdot\text{hr}$ at 0°C (32°F)

RESPONSES TO CONTROLLED ATMOSPHERES (CA)

The following atmospheres have been successful for Gala apples:

- 1 to 2% carbon dioxide (1.5 to 2% oxygen)
- Maintains firmness and acidity
- Reduces susceptibility to bitter pit and storage scald
- Can store up to 4 or 5 months in CA

Additional research may determine more optimum atmospheres.

Produce Facts



PHYSIOLOGICAL DISORDERS

Storage Scald. Information is incomplete; however, Gala appears to be slightly to moderately susceptible to scald. DPA may be needed for storage in air for longer than 2 months. CA storage reduces scald incidence.

Bitter Pit. Bitter pit has been observed on Gala apples. Large fruit from young, vigorous trees are most susceptible. Preharvest calcium sprays are most effective to reduce bitter pit. Postharvest calcium dips are also beneficial.

Calcium Rates for Postharvest Dips:

- 2 to 3% solid flakes (77% CaCl₂)
- 1.5 to 2% calcium chloride (CaCl₂)
- 0.5 to 0.8% calcium ion (Ca⁺²)

PATHOLOGICAL DISORDERS

Gray Mold, Blue Mold.

- Avoid fruit injury
- Sanitize water systems with chlorine
- Cool fruit quickly

Mucor Rot. Some orchards have Mucor fungus in the soil. Sanitation to keep soil out of drench water is important. Do not place fruit from the orchard floor into storage bins. Chlorine will not effectively control this organism and there are no effective fungicides. Mucor continues to grow slowly even at 0°C (32°F).

SANITATION OF WATER SYSTEMS

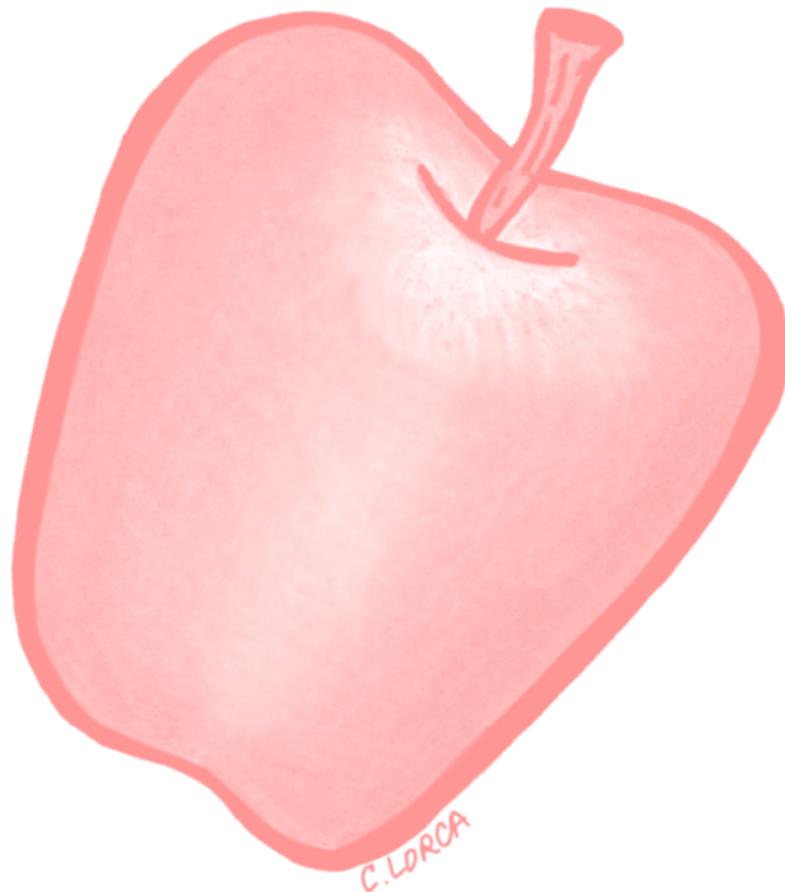
Sanitation of water systems used to handle apples is important to prevent spread of disease organisms to healthy fruit. Chlorine at 50 to 100 ppm is very effective but the level of available chlorine and solution pH (7.0) must be monitored frequently and adjusted. Sodium will accumulate when liquid sodium hypochlorite is used and can burn apple tissues. We recommend water systems be changed once a day to reduce the risk of burn to apple skins. Gala is very sensitive to sodium burn.

POSTHARVEST PHOTO GUIDE

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BITTER PIT



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