

Grape (American)

Penelope Perkins-Veazie

Perkins-Veazie was with the South Central Agricultural Laboratory, Agricultural Research Service, U.S. Department of Agriculture, Lane, OK. She is now with the Department of Horticultural Science, North Carolina State University, N.C. Campus, Kannapolis, NC.

Scientific Name and Introduction

American grapes (*Vitis labrusca* L.) are grown in areas of the United States where *V. vinifera* has marginal survival, usually because of lack of cold hardiness. Juice, wine, and table grape varieties have been developed from *V. labrusca*. The best known grape cultivars are 'Concord,' 'Catawba,' 'Delaware,' 'Niagara,' 'Venus,' 'Himrod,' and 'Reliance.'

Quality Characteristics and Criteria

High-quality grapes are free of injury, decay, cracking, and sunscald; appear and feel turgid; have a dry stem scar; and are fully colored. The rachis should be green and berries are firmly attached to pedicels. Bunches should be compact, but berries not too tightly packed.

Horticultural Maturity Indices

For fresh market, berries should be harvested when soluble solids content (SSC) is 14 to 18%.

Grades, Sizes, and Packaging

No standard packaging is used with American grapes. Grapes are usually packed as intact or trimmed clusters (rachis and berries) in bulk in lugs, in quart-size vented plastic containers, or in plastic slit bags of 2 lb (0.9 kg).

Precooling Conditions

Forced-air cooling to lower the temperature to below 2 °C (36 °F) within a day of harvest is recommended.

Optimum Storage Conditions

American grapes can be held 4 to 7 weeks at -0.5 to 0 °C (31 to 32 °F) with 85 to 90% RH (Ginsburg et al. 1978). Exposure to temperatures above 0 °C (32 °F) can greatly increase shatter and decay, especially in tightly packed clusters.

Controlled Atmosphere (CA) Considerations

CA is not currently used for American grapes.

Retail Outlet Display Conditions

Store and display grapes at the coldest refrigeration temperature possible. Delays in cooling greatly increase shatter and decay (Lutz 1939).

Chilling Sensitivity

American grapes are not known to be chilling sensitive.

Ethylene Production and Sensitivity

Stimulation of *Botrytis cinerea* (gray mold) growth can occur on berries and stems in the presence of ethylene. Ethylene production from American grapes is less than $0.1 \mu\text{L kg}^{-1} \text{h}^{-1}$.

Respiration Rates

Temperature	mg CO ₂ kg ⁻¹ h ⁻¹
0 °C	3
4 to 5 °C	5
10 °C	8
15 to 16 °C	16
20 to 21 °C	33
25 to 27 °C	39

Data from Lutz (1939).

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

Disorders encountered on American grapes include sunburn, shrivel from low-RH storage, and bleaching or stipple near berry pedicels from SO₂ application (Morris et al. 1992).

Postharvest Pathology

American grapes are susceptible to gray mold (*Botrytis cinerea* Pers.), ripe rot (*Colletotrichum gloeosporioides* [Penz.] Penz. & Sacc.), macrophoma rot (*Botryosphaeria dothidea* [Moug. Ex Fr.] Ces & de Not.), powdery mildew (*Uncinula necator* [Schw.] Burr.), blue mold (*Penicillium*), alternaria (*Alternaria alternata* [Fr.] Keissl), and aladosporium rot (*Cladosporium herbarum* Pers.:Fr.) (Hewitt 1988). Undeveloped berries can show infection by black rot (*Guignardia bidwelli* [Ellis] Viala & Ravaz).

Quarantine Issues

None.

Suitability as Fresh-Cut Product

No information at this time.

Special Considerations

Sulfur bisulfite pads used with plastic liners can extend shelf-life by 2 to 4 weeks, but many cultivars are sensitive to SO₂ injury. Handle clusters carefully during and after harvest to prevent cracking or berry loosening at pedicels.

References

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