Table Grape Production

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What is a “Table Grape?” (Wikipedia)

- Grapes most sold as table grapes are:
  - Sultana (Thompson Seedless), Flame, Muscat, Almeria and Concord
- Primary use is for fresh consumption
- May have other uses:
  - Raisins
  - Juice
  - Wine
  - Other processing
Table Grapes

- Thin skin so that you can easily bite into them
- no seeds or very small seeds
- focus with wine grapes is producing a smaller number of high-quality grapes,
- higher yield is a major goal for table grapes.
Table Grapes

• Most table grape production worldwide is based on *Vitis vinifera*
  • this species lacks the cold hardiness and disease resistance that makes growing it viable in most states east of the Rocky Mountains.

• Eastern table grapes are interspecific hybrids of *V. vinifera* and another American grape species, most often *Vitis labrusca.*
  • *Vitis labrusca* grapes have a pulp that does not adhere to the skins (slipskin)
    • most well-known *V. labrusca* cultivar is ‘Concord’
  
• berry texture is not crisp and is very different than that *V. vinifera* table grape cultivars.
Thompson Seedless Grape

- *Vitis vinifera*
- Most widely planted white table grape grown in California
  - >10,000 ha grown for table grape use in CA
- Most versatile grape variety
  - ~ 70% for raisins
  - ~ 14.5% for table
  - ~ 14% for wine, juice, distillation
  - ~ 1.5% for canning

http://iv.ucdavis.edu/Viticultural_Information/?uid=132&ds=351
Flame Seedless

- The Flame Seedless (Vitis vinifera)
  - hybrid of Thompson Seedless, Cardinal, and several other Vitis vinifera cultivars
  - heavy-bearing table grape cultivar
  - keeps well in storage
  - produces large clusters of medium-large red grapes with a sweet flavor.
- Vigorous vine
  - requires a long growing season
Table vs. Wine Grapes

• Table:
  • Larger berries
  • May be seedless
  • Thicker pulp
  • Thinner skins
  • Not as sweet
  • Often non-slipskin

• Wine:
  • Small berries
  • Many seeds
  • Thicker skins
  • Higher juice content
  • Slipskin

Table grapes and wine grapes may be the same variety. Table grapes are often harvested earlier than wine grapes.
Slipskin vs. non-slipskin berries

• Slipskin:
  • Skin of the berry separates readily from the pulp when ripe.
  • Tends to be more juicy

• Non-slipskin:
  • Skin of berry adheres to the pulp.
  • Pulp may be firm, crunchy
How do you get seedless fruit?

**Parthenocarpy**
- Development of a fruit without of the ovule
  - Banana
  - Some figs
  - Some persimmons

**Stenospermocarpy**
- Production of abortive incompletely developed seeds with normal development of the berry
Seed Traces in Grapes

• Degree of seedlessness varies among seedless varieties
  • Most have seed traces that:
    • Vary in size from very small to large & noticeable
    • Vary in hardness of seed coats
  • Climate affects seed trace size
    • Concord Seedless produces fully developed seeds in warm years
Wine vs. Table Grape Trellising

Wine grapes
• grown with vertical trellises which help to manage the foliage and grape exposure to the sun
  • helps to concentrate the flavor by its growth
  • managing vine vigor is very important

Table Grapes
• grown in a way to minimize clusters from touching other clusters, stems or leaves.
• A trellis system that lets the grapes hang independently is better for producing ideal table grapes.
Training Systems for Table Grapes

• Uniform exposure to sunlight, air circulation, spray penetration
• Clusters do not rub against vine or trellis
• Ease of management

Modified Munson System
Table Grape Varieties

Seeded
• Concord and Sunbelt (B)
• Buffalo (B)
• Catawba (R)
• Delaware (R)
• Fredonia B)
• Golden Muscat (W)
• Niagara (W)

Seedless
• Concord Seedless (B)
• Marquis (W)
• Venus (B)
• Reliance (P)
• Mars (B)
• Saturn (R)
• Faith (B)
• Hope (G)
• Gratitude (W)
• Joy (B)
American Bunch Grapes: Concord types

- **Alwood**: similar to Concord, larger berries, productive, above average disease resistance
- **Concord**: blue fruit, vigorous vines, productive, medium-size clusters, uneven ripening in clusters
- **Fredonia**: early Concord-type, ripens ~ 2 weeks earlier, table & wine
- **Sunbelt**: Concord-type, productive, more uniform ripening in clusters, recommended as a replacement for Concord
American Bunch

- **Catawba**: purple-red fruit, med. Large clusters, spicy flavored, widely used for sparkling wines

- **Cayuga White**: American hybrid, very productive, light green fruit, good disease resistance

- **Cynthiana (Norton)**: small to medium clusters having small to medium grapes, fair disease resistance, high acidity in fruit, red wine
American Bunch

**Niagara:** light green fruit, attractive, productive, vigorous vines, foxy flavor, large slipskin berries

**Noiret:** American hybrid Steuben X Chancellor, red wine

**Steuben:** medium to large clusters, medium size berries, spicy flavor
Muscadine Grapes

• Carlos: bronze, self-fertile, vigorous, high yields, medium size fruit, cold hardy, disease resistant

• Doreen: self-fertile, bronze, vigorous vines, productive

• Magnolia: bronze fruit, self-fertile, high yields, good sugar level, wet picking scar, relatively cold tolerant
Muscadine Grapes

• Nesbitt: black, self-fertile, mid to late season ripening

• Tara: bronze fruit, self-fertile, early ripening, dry stem scar, good fruit rot resistance, high yields
Muscadine Grapes

- Noble: black fruit, self-fertile, high yields, good sugar levels in fruit, disease resistant

- Scuppernong: bronze fruit, female flowers, cold hardy, midseason ripening
Seedless Grapes

- **Marquis**: from Cornell, greenish-white fruit, productive, large clusters with large spherical berries, melting texture, slipskin, excellent flavor

- **Vanessa**: from Minnesota, red fruit, medium size clusters, firm flesh
Seedless Grapes

• Joy: Univ. of AR, blue fruit, non-slipskin, thin skin, fruity flavor

• Jupiter: Univ. of AR, large clusters of large, reddish-brown berries with a mild muscat flavor, non-slipskin, crisp flesh texture

• Neptune: Univ. of AR, large, attractive conical clusters with yellow-green non-slipskin berries having a moderately thick skin
Seedless Grapes

- **Faith**: Univ. of AR, blue fruit, non-slipskin, early maturing

- **Gratitude**: Univ. of AR, green berries, non-slipskin, thin skin, flavor neutral, thin skin, flavor neutral (similar to most *V. vinifera* varieties)

- **Hope**: Univ. of AR, green fruit, fruit flavor, high yields, non-slipskin, moderate vigor
Do grapes last longer if stored on the stem?

Short answer: Yes. Grapes spoil faster once they’re plucked off the stem. This is because removing the stem leaves a hole in the grape's skin. Here's how to make sure your grapes are fresh:

Step 1: Only remove them from the stem once you’re ready to eat them.

Step 2: Make sure the stems are still firm, not mushy.

Step 3: Purchase grapes when they are in season, which is during the fall.

The fresher you buy them, the longer they’ll last.
• Store grape boxes immediately:

• 30 – 32 F with 90 – 95 percent relative humidity.

• Do not store grapes near a cooling unit’s direct air path to avoid accelerated dehydration.
  • good air circulation is one of the best ways to keep grapes in optimum condition
    • When buying in volume, gently stack grape boxes in the cooler so that air can circulate around them rather than directly on them.

• Like most berries, grapes tend to absorb odors. Try to avoid storing them next to green onions and leeks.

• Never store or display grapes where they will come in direct contact with water, ice or iced products, as the moisture will decrease their shelf life.
The best ways to store your grapes:

- Place them, unwashed, into an airtight container and put them in your refrigerator.
  - can last for just over a week
- Storing your grapes in the back of the fridge, where the air is colder, can go a long way to help.
- Best way to store them, though, is to freeze them
  - can last much longer this way and are still quite versatile
  - make excellent ice cubes for a fun, fruity cool down
  - can also be added to fruit salads or eaten as snacks.
  - Freezing and thawing fruit can change its texture, so it's best to use them while they're still frozen.
Compassion

• Newest seedless grape in the series of table grapes from Arkansas.
• Attractive green berry with a notably firm, crisp texture.
• Exquisite fruity flavor includes some aspects of muscat.
• Non-slipskin, typically without traces of seeds.
• Vines are moderate in vigor with consistent production and overall vine adaptation.
• *Propagation of this variety is prohibited by law*
Faith

- Blue, non-slipskin, seedless grape
- Ripens early, late July to early August in Arkansas.
- Largely neutral flavor with slight fruity flavor in some observations.
- Berries average 4 g, and cluster weight ranges from 150 to 250 g, medium in size.
- Soluble solids content averages 19% and skin is edible. Fruit cracking was usually not found after summer rainfall during ripening or at maturity.
- Vines usually have moderate vigor and yield and exhibit good cold hardiness in Arkansas.
- Should complement ‘Jupiter’ for the early local market for table grapes.
- Negative aspects include:
  - uneven set of berries in some years resulting in reduced cluster fill,
  - occasional seed traces that can harden in some years
  - slight skin astringency noted occasionally.

https://grapes.extension.org/arkansas-table-grape-cultivars/
Gratitude

• Exceptional crisp texture
• Seedless, green (white) berries.
• Berry weight averages 3.5 g and clusters can weigh up to 500 g.
• Harvest is usually late August in central Arkansas
• Moderate yields.
• Skin is very thin
• No seed traces were found most years.
• Soluble solids content averages 19%.
• Flavor is neutral, similar to Vitis vinifera table grapes.
• Fruit cracking was not observed, an exceptional characteristic for a crisp, thin-skinned variety grown in an area with rainfall near maturity and harvest.
• Clusters are usually very tight.
• Negative characteristics include:
  • occasional winter injury to vines
  • tight cluster fill.

https://grapes.extension.org/arkansas-table-grape-cultivars/
Hope

- White (green) seedless non-slipskin grape
- Fruity flavor
- High yields. Berries average 3 g.
- Seed traces are seldom seen.
- Soluble solids content averages 19%
- Texture is soft.
- Only slight fruit cracking was seen following rainfall.
- Harvest usually August 20th in central Arkansas.
- Clusters are usually very tight and range from 300 to 330 g.
- Yields were usually 35 to 50 lb/vine.
- Vines are moderate in vigor.
- Negative observations:
  - excessively tight clusters
  - moderately thick skin.

https://grapes.extension.org/arkansas-table-grape-cultivars/
Joy

- Blue, non-slipskin, seedless grape
- Exceptional fruity flavor.
- Skin is very thin
- Fruit cracking during rainy periods near or at harvest has rarely been seen.
- Berry weight averages 3 g
- Clusters weight is usually near 300 g.
- Average harvest date August 11th in Arkansas.
- Vine yield moderate to high
- Vines have moderate vigor along with consistently good vine health.

Shortcomings include:
- a very soft texture,
- occasional variable berry set resulting in some “shot” berries
- shatter of ripe berries at maturity noted in some years
- Occasional hard seed traces

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Jupiter

- Reddish-blue colored, non-slipskin seedless grape
- Mild Muscat flavor. It is a non-slipskin
- Crisp flesh texture.
- Skins relatively thin
- Fruit cracking is not common.
- Relatively large individual berries & clusters
- Yields may run as high as 10+ tons per acre
- May occasionally produce a noticeable, soft seed trace.
- Vine is moderately vigorous
- Has moderate resistance to common fungal diseases.
- One of the hardier Arkansas cultivars.

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Mars

• Reddish-blue colored, slipskin seedless grape with a foxy flavor (a flavor often associated with Vitis labrusca grapes).
• Berries are medium in size.
• Skins are thick
• Fruit cracking is seldom a problem.
• Yields can be 10 or more tons per acre.
• Extremely cold hardy V
• Very vigorous growth habit.
• Most disease resistant of the Arkansas cultivars.

https://grapes.extension.org/arkansas-table-grape-cultivars/
Neptune

• Seedless, non-slipskin white grape
• Has a fruity flavor, but is not foxy.
• Clusters fairly large and loose enough to deter much bunch rot.
• Berry size is medium
• Yields are moderate, in the 5 tons per acre range.
• Moderate cold hardiness is for a table grape.
• Vine vigor medium to low vigor
• Fruit is resistant to cracking, which can be a problem on other cultivars in years where rainfall during harvest is present.

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Reliance

• Red, seedless cultivar
• Very cold hardy in the northern United States
• Very good, fruity flavor
• Fruit color may vary from year to year
• Very susceptible to fruit cracking near harvest because of its thin skin
• Berries are small to medium in size with medium to large clusters.
• Seed traces are almost never found
• Yields moderate
• Vine vigor is moderate and it has moderate resistance to common fungal diseases.

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Saturn

- Red, seedless, non-slipskin cultivar
- Strong fruity flavor
- Crisp flesh
- Stores well
- Has some issues with cold hardiness and disease susceptibility that limit its commercial viability
- Berry size medium with medium to large clusters.
- Yields low to moderate (around 4 tons per acre)

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Venus

- Mostly seedless, slipskin, dark-colored grape
  - has a foxy, Muscat flavor
  - attractive clusters
  - reliable producer
  - Berries medium in size
  - Clusters are medium to large in size and tightly packed
  - Berries often have a noticeable seed trace.
  - Yields can be high, up to 10 tons per acre for ‘Venus’.
  - Vine is moderately cold hardy and has a moderate vigor
  - Has some resistance to common fungal diseases.

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Sunbelt

- Parentage of ‘Sunbelt’ is Concord O.P. (open pollinated).
- Often referred to as the “Southern Concord”
- Blue juice grape that is very similar to ‘Concord’
  - displays even ripening under hot conditions.
  - Taste and growth habit are very similar to ‘Concord’.
  - Berries are seeded and large.
  - Clusters tend to be small. Yields low to moderate (4 to 5 tons per acre)
  - Vine displays good cold hardiness and moderate vigor
  - Moderate to high resistance to common fungal diseases

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Marquis

- Mid-season, white, slipskin seedless
- Developed at Cornell University, patented in 1999
- Large fruits, large clusters
- Excellent flavor
- Good winter hardiness
- Primarily grown for use as a table grape, but is also known to produce a delicate white wine.
- Woody, deciduous, upright to slightly trailing vine
- Blooms mid-season
- Ripens late mid-season
- Ripe fruit is characterized as having a very mild labrusca character, later ripening into a richer fruity American flavor.

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Vanessa

• Developed by the Horticultural Research Institute of Ontario in 1965
• Vines are vigorous & moderately productive
• Medium-sized clusters
• Fright deep red berries with moderate bloom,
• Firm flesh
• Crisp texture
• Flavor is mildly aromatic but not of Labrusca type
• Considered among the best of red seedless grapes.
Canadice

- Canadice produces compact clusters with medium size, pink to light red seedless berries. A slipskin variety with tender and edible skin with a distinct but not overpoweringly labrusca flavor.
Concord Seedless

- A sport of Concord
- Clusters and berries smaller than Concord.
- Fruit matures earlier than Concord
- Good flavor
  Perfect for pies and preserves.
Einsett Seedless

- Einset Seedless produces medium-sized clusters with oval, bright red berries with a light waxy bloom. Tender to firm flesh with Labrusca and strawberry character, medium-sized soft seed remnant is not usually noticeable.
Glenora

- Glenora is a high quality seedless variety that produces medium-sized blue berries with mild and pleasant flavor