Viticulture - Characteristics of the vine - Vine species

TERMS
- Ampelography: the study of the vine, coming from the Greek ampelos, meaning “the vine.”
- Dicotyledon: known as dicots, seed has two embryonic leaves, flower parts in 4s, and had netted leaf vines.
- Palmate: major veins come together at one point, resembling an open hand.
  - Others include:
    - Pinnate: like a feather, veins branch off main vein and
    - Parallel: veins runs parallel beginning to end, grass.

VITACEAE
- Plants show a tendency towards trailing and twining.
- Family the vine belongs to.
- Dicot class of flowering plants.
- Woody vines.
- Palmate leaves with coarse margins.
- Tendrils opposite leaves.
- Genera: 9-14
- Species: roughly 900
- Oddball group not closely related to much else.

GENUS
- Vitis:
  - Wine and table grapes.
  - Contains some 60 different species, few are suitable for wine-making grape.
- Parthenocissus:
  - Virginia Creeper and Boston Ivy.
  - Secretes calcium oxalate to aid adherence.

V. VINFERA
- Originated in southern Europe and southwestern Asia.
- Between 5,000 - 10,000 varieties.
- Only species of vine to survive the ice ages in Europe.
- Vigour and ripening period is variable.
- Adaptable to many soil types.
- Not resistant to phylloxera. Can only be planted ungifted in phylloxera-free areas.
- Resistance to nematodes is poor.

V. LABRUSCA
- The North American Concord Grape, Catawba, and hybrids Agawam, Alexander, and Oraka.
- 80% of North America production.
- Known as “slip skin” as the skin of the berries easily slip off when squeezed instead of crushing the pulp.
- Tendrils are present on every node of the cane.
- “Foxy” musk.
- Among the vines transported to Europe carrying phylloxera.
- Majority of varieties are red.
- Near harvest and fully ripe, they will easily separate from the pedical.
- Large, thick leaves of the vines that have a hairy underside with dense brown or white hairs.
- Natural resistance to phylloxera but not as high as other species so is not often used for commercial rootstock.
- Found from Nova Scotia to Georgia, westward to Mississippi River.
- Can withstand severe continental conditions.
- Not often used as a parent for rootstock production.

V. RIPARIA
- The River Bank Grape or Frost Grape.
- Native to America.
- Largest geographical range of any vitis North American species.
- Entire eastern half of America except for south and great plains.
- Thrives along exposed areas with good sun exposure and adequate soil moisture.
  - riverbanks, forest clearing, fence lines, roadsides
- Mature vines have loose, fissured bark, may attain several inches in diameter.
- Leaves are alternate, often with opposite tendrils or inflorescences.
• Lacks foxy character of Lambrusco but usually quite sour and herbaceous.
• Cold hardiness. Has been known to withstand temps as low as -57C/-70F.
• Foliage is typically resistant to mildew and black rot.
• Roots resistant to phylloxera.
• Berries often sensitive to mildew and block rot in prolonged wet and humid conditions.
• Unsuitable on its own for viticulture
  - high acid, herbaceous aromas, small berries, intense juice pigment.
• Uses as grafted rootstock:
  - Often used to control vigor on highly fertile soils.
  - Suffers from iron deficiency (chlorosis) on chalky soils.
  - Phylloxera resistant, adaptation to various soil types.
  - Low in vigor, encourages early ripening.
• Used extensively in grape breeding to transfer cold hardiness and disease resistant genes.
  - French-American hybrid grapes
  - Effort to make a commercially viable wine grape that can survive climate of Upper Midwest.

V. AESTIVALIS
• The Summer Grape
• Eastern North America: Ontario - Vermont - Oklahoma - Florida - Texas.
• Vigorous vine. Green leaves, densely hairy below.
• Does not propagate well through dormant cuttings, limiting its usefulness in commercial viticulture.
• Does not tolerate highly calcareous soils.
• Several cultivars selected including Norton.
  - Believed to be the oldest American grape cultivar in production.
  - Official state grape of Missouri.
• Inter-specific hybrids made with V. Aestivates have several useful traits
  - Lower acidity, neutral, “vinifera-like” flavor, good tannin structure, excellent disease resistance.

V. ROTUNDIFOLIA
• The Fox Grape, Muscadine
• Native to the south of North America.
• Well adapted to warm and humid climate. Thrives on summer heat.
• Very tough skin and highly pigmented.
• Rich sources of polyphenols and other nutrients for potential health benefits.
• Over 300 cultivars (varieties) grown in the southern states.
• Grows best in fertile sandy loam and alluvial soils. Well drained not subject to drought or water logging.
• Resistant to pests and diseases, Pierce’s disease, most resistant to phylloxera.
• Mostly made sweet though drier styles exist.
• One of nature’s richest sources of polyphonic antioxidants.

V. RUPESTRIS
• The Rock Grape
• Native to the southern and western North America.
• Self-supporting bushy plant that does not grow well in the shade. Shrub-like. Rarely climbs.
• Found on creek beds on light soils.
• Heavy use of grazing and herbicides have killed much of the population.
• Used for breeding French-American hybrids and many rootstocks (Rupestris St. George)
• St. George once used in Europe but fails to provide lime tolerance needed in Europe.
• Moderate phylloxera resistance, poor nematode resistance, but roots and grafts easily.
• Rootstocks are vigorous, deep rooting system, good phylloxera resistance, but very susceptible to chlorosis.
• Good choice for poor soils with limited water availability.

V. COIGNETIAE
• The Crimson Glory Vine
• Native to Asia.
• Found in Russia Far East, Korea (up to 1300m altitude), and Japan (mountainous regions).
• Very vigorous with purple shoots.
• Large, simple leaves. First green, then red-orange in the autumn.
• Clusters are large with small berries and large purple seeds.
• Used in East Asia as an ornamental plant.
• Korea and Japan wines. Bitter at first, softened with the addition of sugar. Rich in color and extract.
V. AMURENSIS

- The Amur Grape. Name comes from Amur Valley in Russia and China.
- Native to Asia.
- Very resistant to frost but is not tolerant to drought.
- Strong resistant to anthracnose and ripe rot.
- Moderately strong resistance to downy mildew and powdery mildew.
- Can tolerate winter temps down to -45C and the root zone of the soil to -16C.
- Widely used for ornamental vertical gardening.
- Widely crossed with other species (usually v. vinifera)
  - Produces cold hardy, early ripening wine and dessert grapes for cold climates.
- Can tolerate urban conditions (smoke, dust, gases)
- Vines require 700mm rain so they do not perform well in dry conditions without irrigation.
- Well suited to wetter areas normally too cool and wet for grapes (NW Europe, N Russia, Pacific NW).
- Relative resistance to disease, early ripen, evolved to a short growing season, partial phylloxera resistance.
- Prefers loose acidic soil and cannot tolerate excessive lime.
- Very acidic to sweet depending on ripeness, thick skins, 22-23% sugar at ripeness, berries can be sour.

V. VULPINA

- The Frost Grape, Winter Grape, or Fox Grape.
- Vulpina, latin meaning “fox-like” or belonging to a fox. Foxes were attached to this vine.
- Frost grape refers to the fact berries become more sweet once it is exposed to frost.
- Eastern America from New York to Minnesota.
- High-climbing woody vine with a thick truck and red tendrils. Max height 83 feet.
- Does not do well in cold temperatures below -23F.
- Further ripening between September and October.
- Very round and tart/acidic becomes sweet after a frost due to a drop in acidity levels as the grape decomposes.
- Found in moist or dry soils in woods, flood plains, and ravines.

V. BERLANDIERI

- The Fall Grape
- Native to southern America and Mexico.
- Grows on chalky slopes and limestone hills of Texas.
- Vigorous and deep rooting, has a high resistance to chlorosis.
- Cuttings have a very poor ability to root so it is rarely used as a pure species.
- Poorly adapted to grafting.
- Often hybridised with V. riparia and V. rupestris to produce lime-resistant rootstocks that graft and root.