Muscadine Grapes: Factors Influencing Product Quality

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The botanical genus *Vitis* includes two subgenera, *Euvitis* ("bunch grapes") and *Muscadinia* (Winkler et al. 1974). *Euvitis* encompasses a large number of grape species including *Vitis vinifera* or the Old World Grape, which is the basis of the California wine, table grape, and raisin industry. A native American species, *Vitis labrusca*, is grown extensively in Canada and the cooler areas of the United States. It is the basis for much of the juice, jelly, and wine industry in these areas. 'Concord' is probably the best known cultivar of *V. labrusca*.

Various hybrid cultivars have been developed by interbreeding species of *Euvitis*. For example, the French-American hybrids have become very popular in eastern winegrowing. They have resulted from crossing of *V. vinifera* with various American grape species. These hybrids are an attempt to combine the fruit quality of *V. vinifera* with the inherent disease resistance of native American species.

*Muscadinia* has two American species, *Vitis rotundifolia* Michaux (commonly called muscadine) and *Vitis munsoniana* Simpson (Winkler et al. 1974). However, virtually all commercial plantings are cultivars of *V. rotundifolia*.

Muscadines are indigenous to southeastern United States and are tolerant to the warm, humid growing conditions. Adams (1978) indicates the first American wines were made from these grapes by French Huguenots in Florida around 1562–1564. The oldest and best-known muscadine cultivar is "Scuppernong" which was described before the year 1700. Muscadines are adapted to the moderate winters of the southern region and do not survive where temperatures below −12°C

6
are common [Poling et al. 1984; U.S. Department of Agriculture (USDA) 1965].

Muscadines differ in many ways from bunch grapes. Muscadine berries grow in nearly round clusters, containing 4–16 berries or more. The berries are round or oval, and the larger types may be up to 26 mm in diameter. They weigh from 3 to 10 g depending upon the cultivar. Berries are either light-skinned (green, pearly white, or bronze) or dark-skinned (red to almost black). The skin has been described as tough or leathery, and the pulp as meaty to melting and juicy (USDA 1965). The flavor of most cultivars is quite distinctive with a sweet, musky quality usually present. Many cultivars tend to “shatter” or drop their berries from the vine when ripe. This is a desirable characteristic for grapes that are mechanically harvested.

CULTIVARS

Development of new cultivars is an ongoing process. Many cultivars described in early publications (Armstrong et al. 1934; USDA 1965) are no longer grown commercially to any significant extent. Indeed, Scuppernong itself is now difficult to find in commercial vineyards. It has a comparatively low yield and the fruit ripens unevenly. A number of new cultivars with more desirable horticultural characteristics have been developed and released in the past decade and are now widely planted throughout the South. Table 6.1 provides a summary of important characteristics of some muscadine cultivars commonly grown in the southern region. Several southern states have developed cultivar recommendations based on their specific growing conditions.

Most commercial muscadine vineyards are planted to light-skinned cultivars. In North Carolina, for example, about 96% of the bearing vines are those of light-skinned cultivars (Anon. 1982). Along with fresh market use, the dark-skinned cultivars are used to produce red-pigmented products such as wines, juices, and jellies.

Breeding programs exist in a number of research institutions in the South (e.g., Alabama, Arkansas, Florida, Georgia, and North Carolina), and a few private breeders are also active. Selection and development of grape cultivars (muscadine, bunch, and hybrids) which are well suited for growing under southern conditions are worthy and necessary long-range goals for the continuing development of the industry.

The newer muscadine cultivars possess the strong, typical muscadine flavor. It appears desirable to expand the range of muscadine wines by breeding and/or selecting cultivars that have more subdued