The John T. Beggar Award Committee presents the following student paper which was submitted in competition for the 1975 award:

The Origin and Development of Muscadine Grape Varieties

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The muscadine grape belongs to the genus *Vitis* and the subgenus *Muscadina*. The two species in this subgenus are *Vitis rotundifolia Michx.* and *Vitis munsoniana* Simpson, of which *V. munsoniana* is less common. In 1700, the genus *Vitis* was described and named by Joseph Pitton de Tournefort. Later, in 1803, a French botanist, Andre Michaux, described the muscadine grape, as *Vitis rotundifolia.*

The majority of muscadine varieties are *Vitis rotundifolia* and have a diploid chromosome number of 40. *Vitis rotundifolia* grapes have several common names, including Bullace, Bull grape, Muscadine, and Scuppernong. The 'Scuppernong' variety was the first cultivar to be brought under cultivation. Until recently, it has been the most popular variety; so popular, in fact, that all light or "bronze" muscadines are commonly referred to as "Scuppernongs." Muscadine grapes grow well in most of the southeastern states, thriving best in well-drained, moderately fertile soils. They are sensitive to climate and zero °F often kills vines and sets the northern limits of productivity.

Muscadines have attractive skin colors and a roselike aroma. The fruits are delicious when eaten fresh. The fruits can be made into wines, preserves, jams, pies, jellies, marmalades, and unfermented juices. Wines made from light-colored grapes are often referred to as "Scuppernong," while those made from dark varieties are labeled as "Muscadine."

Vitis rotundifolia vines are usually dioecious. In 1946 the first self-fertile (perfect flowered) varieties were released. The vine itself is a vigorous liana with adherent bark, conspicuous tendrils and continuous pith. The leaves are simple, alternate, suborbicular or ovate. The flowers are yellowish-green with a nectarifercous cup. Berries range from ⅜″ to 1¼″ in diameter and may have as few as 23 per pound.

The 'Scuppernong' was the first variety to be brought under cultivation. This vine was found growing wild in northeastern North Carolina, probably in Tyrell County, by Amados and Barlowe, in 1584. Sir Walter Raleigh's Colony wrote: "In 1584 we departed from England and found Roanoke Island, North Carolina, on the 4th of July, and the smell was as sweet as some delicate garden — grapes grew abundantly, and we think the like is not to be found."

In 1810, Dr. Calvin Jones, editor of the Raleigh, North Carolina newspaper *The Star,* named it 'Scuppernong' because of the numerous plantings along the Scuppernong River and also as a compliment to James Blount, who lived near that river and whose excellent articles on "the white grape" attracted much attention at that time. As early as 1809, extensive plantings were made in North Carolina, some as large as 600 acres. The fruit was processed into wine. This activity gradually faded with the establishment of the California wine industry and with prohibition in the 1920's.

Table 1. Muscadine varieties names before 1909.

Variety	Origin	Date
Scuppernong	Amados and Barlowe, Tyrell Co., N.C.	1584
Flowers	William Flowers, Robeson County, N. C.	1816
Thomas	Drewy Thomas, Marion, S.C.	1845
Hopkins	John Hopkins, Wilmington, N.C.	1845
Mish	W. H. Mish, Washington, N.C.	1846
Pee Dee	Dr. H. Williamson, Darlington, S.C.	1859
James	B. M. James, Pitt County, N.C.	1866
Memory	T. S. Memory, Whiteville, N.C.	1868
Tender-pulp	D. P. High, Whiteville, N.C.	1868
Sugar	T. S. Memory, Whiteville, N.C.	1870

Variety qualifications are based on the physical characteristics of the vine and fruit. Disease resistance and vigor are rated from excellent to poor. Clusters may range from 1 to 40 berries. The color of the fruits range from greenish to bronze, and from reddish-purple to black. Skins are classed as thin, medium, or thick. Persistence of the berry to the cluster, dessert quality, percentage soluble solids, as well as time of ripening, are important characteristics.

Prior to the breeding work in Georgia in 1909, ten varieties from the wild were listed as shown in Table 1. From 1890 to 1900, Dr. T. V. Munson conducted a breeding program in Denison, Texas, to develop *V. rotundifolia* x *V. euvitis* hybrids. In 1891, he crossed ('Post-Oak' x 'Herbemont') x 'Scuppernong' and named two selected progenies: 'La Salle' and "San Jacinto.' In 1898, Munson crossed 'San Jacinto' x 'Brillant' and named four selected progenies – 'San Alba,' 'San Melaska,' 'San Monta,' and 'San Rubra.' These "hybrids" were later discovered to be direct *rotundifolia* seedlings, or "false hybrids."

Table 2. Early muscadine varieties developed by the Georgia Experiment Station.

Variety	Parents	Origin
Hunt	White male x Flowers	1919
Irene	Black male x Thomas	1919
Stuckey	Black male x Scuppernong	1920
November	Black male x Scuppernong	1920
Spalding	White male x Flowers	1920
Qualitis	Black male x Thomas	1920
Howard	Irene x white male	1929
Lucida	Irene x white male	1933
Brownie	San Monta x white male	1933
Dulcet	Irene x white male	1934
Yuga	San Monta x white male	1934
Creek	Seedling of San Monta	1938
Dawn	Seedling of San Monta	1938

The Georgia Experiment Station conducted its first breeding program from 1909 to 1938, under the director of H. P. Stuckey and later J. G. Woodroof. The varieties named are shown in Table 2. The Georgia Experiment Station conducted its second muscadine breeding program from 1951 to 1968, under the direction of Mr. B. O. Fry, Table 3.

Table 3. Recent muscadine varieties from the Georgia Experiment Station.

Variety	Parents	Origin
Higgins	Yuga x white male	1955
Fry	Georgia 19-13 x USDA 19-11	1964
Jumbo	Higgins x USDA 19-11	1964
Cowart	Higgins x Ga. 28	1968

Prior to 1946, all varieties were self-sterile (imperfect flowers). As a result of cooperative breeding work between the USDA and the North Carolina Agricultural Experiment Station, under the direction of Charles Dearing, C. F. Williams, W. B. Nesbitt, and V. H. Underwood, twenty-one muscadine varieties had been introduced by 1971. These varieties appear in Table 4.

The United States Department of Agriculture, Crops Research Division, conducted a muscadine breeding program at the Horticultural Field Station near Meridian, Mississippi, from 1946 to 1967, with N. H. Loomis as the plant breeder. The primary objective of the program was to develop perfect-flowered varieties with good

Table 4. Twenty-one muscadine varieties originated in North Carolina.

Variety	Parents	Origin
Tarheel*	Luola x U68 RLW x Eden (Munsoniana)	1946
Topsail	Latham x Burgaw	1946
Willard	Stanford x (Scuppernong x New Symrna)	1946
Wallace	U26 R5 B4 x Willard	1946
Stanford	Seedling of San Jacinto	1946
Pender	Latham x Kilgore x U19 R7 B2 x Scuppernong x male	1946
Orton	Latham x Burgaw	1946
Onslow	(Scuppernong x male) x Burgaw	1946
New River	Seedling of San Jacinto	1946
Kilgore	Seedling of Labama	1946
Cresswell	Unknown parentage	1946
Cape Fear	Burgaw U20 R36 B4 x (Scuppernong x Kilgore)	1946
Burgaw	Thomas x U19 R7 B2 x (Scuppernong x New Smyrna)	1946
Dearing	Luola x Burgaw	1957
Albermarle	Topsail x Burgaw	1961
Magnolia	Topsail x Burgaw	1961
Roanoke	Lucida x Topsail	1961
Chowan	Cresswell x Burgaw	1962
Pamlico	Lucida x Burgaw	1962
Carlos	Topsail x Tarheel x Howard x NC 11-13	1970
Noble	Thomas x Tarheel	1971

*Oldest self-fertile (perfect-flowered) variety.

dessert and culinary properties, as well as superior vine vigor and productivity. The muscadine varieties named at Meridian, Mississippi are given in Table 5. These have been tested by the Mississippi Agricultural Experiment Station.

Table 5. Muscadine varieties originated by the USDA Meridian, Mississippi program.[1]

Variety	Parents	Origin
Magoon	Thomas x Burgaw	1959
Bountiful	Creek x seedling of Topsail	1967
Chief	Creek x seedling of Topsail	1967
Southland	Thomas x seedling of Topsail	1967

[1]These varieties have also been tested by the Mississippi Agricultural Experiment Station, Mississippi State University.

Private breeding has resulted in several new muscadine varieties. Owen's Vineyard and Nursery of Gay, Georgia, has several thousand seedlings being tested under the management of Robert Owen. The 'Nevermiss' variety was originated by Aubrey Owen in 1945. This variety was patented in 1946 and assigned to H. G. Hastings Company.

Ison's Nursery and Vineyard of Brooks, Georgia, also has an advanced breeding program under the director of Mr. B. O. Fry, formerly of the Georgia Agricultural Experiment Station. In 1974, he released three new varieties through the Ison's Nursery. These are 'Watergate' (female), 'Redgate' (self-fertile), and 'Sugargate' (female).

Due to its outstanding plant survival and resistance to disease, *Vitis rotundifolia* is a desirable parent in a breeding program. *Vitis rotundifolia* will hybridize with *V. munsoniana, V. vinifera, V. labrusca, V. cordifolia, V. aestivalis* and with the varieties, 'Winchell' and 'Concord.' The dry fruit stem scar trait of some *V. rotundifolia* clones can be transferred to *V. vinifera* plants. The transfer of desirable traits from *V. rotundifolia* to bunch grapes at the diploid level seems possible. Hybrids of *V. rotundifolia* with Euvitis species are generally sterile. But — a few fertile offspring have been produced. These are being used in further work at the University of California and elsewhere.

References

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