Grape

Grape breeding

Although a large market for grape products exists in our state, the species used to produce traditional table and wine grapes, *Vitis vinifera* and its hybrids, is not adapted to grow in our semi-tropical climate. Consequently, nearly all wines and other products consumed are imported. However, several species of bunch and muscadine grapes are native to Florida; in fact, the southeastern U.S. is the center of the greatest genetic diversity of grapes worldwide.

Floridians have capitalized on these native species and FAES breeders have developed improved varieties from them. These improved bunch and muscadine grapes are used today for jellies, jams and wines, and, although they occupy only a fraction of the existing market, they produce millions of dollars in revenue. Florida grape varieties have some significant advantages compared to the common table wine grape varieties. They are resistant to many diseases, principally Pierce's disease (PD), a disease that devastates *V. vinifera.* Soon molecular genetic research will produce further improved varieties and possibly enable traditional wine grape production in our state.

Bunch and muscadine grapes differ substantially. Bunch grape has 38 chromosomes and produces fruit that is harvested on clusters of 30 to 100 berries. Muscadine grape has 40 chromosomes and produces fruit on small clusters of 2 to 10 berries; typically, berries are harvested singly. The two grapes are difficult to hybridize because of the chromosome differences, so there are very few bunch/muscadine hybrids; the best-known such hybrid is the FAES variety **Southern Home**. Modern muscadine varieties tend to be more disease resistant than bunch grape varieties, and their fruit has a distinct, fruity flavor. Bunch grape, on the other hand, is more difficult to grow because of disease problems, but produces wine that corresponds more closely to conventional standards. Thus, there are distinct market niches for both types of grape. Bunch grape varieties with conventional wine quality would probably stimulate the largest acreage increases if disease-resistant varieties could be developed.

Until the 1980s, nearly all research effort was focused on development of disease-resistant bunch grape varieties. The varieties were developed through hybridization of local grape species with the table wine grape, *Vitis vinifera.* The common trait of the resulting hybrids is that they are resistant to PD. Collectively, the PD-resistant varieties are considered a distinct race (termed "Florida Hybrid Bunch Grape") because of their combination of quality and PD resistance. In the late 1970s, muscadine breeding began to be emphasized. Developments of biotechnological procedures to facilitate genetic improvement of grape began at the Leesburg site in 1984 and continue at Apopka, Florida. The program has been responsible for a number of pivotal technological advances for grape and has been awarded two U.S. patents for work in genetic transformation.

Florida Grape Varieties Produced at FAES

Hybrid Bunch Grape Variety	Date of Release
Lake Emerald	1954
Blue Lake	1960
Norris	1966
Stover	1968
Liberty	1976
Tampa rootstock	1982
Conquistador, Suwannee, Daytona	1983
Orlando Seedless	1986
Blanc du Bois	1987
Florilush rootstock	1994
Muscadine Grape Varieties	**Date of Release**
Dixie (with NC State Univ.)	1976
Welder	1977
Alachua	1990
Southern Home*, Florida Fry	1994

** Southern Home is a hybrid between bunch and muscadine grape, but it resembles a muscadine.*