

Small Fruit and Ornamental Genetic Research for the Mid-South

ARS LOCATION:

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PROJECT OBJECTIVES:

Develop improved fresh market and processing muscadine grape germplasm and cultivars possessing enhanced vigor, environmental stress tolerance, expanded harvest seasons, high yield capacity, disease and insect pest resistance, and improved fruit quality and nutraceutical value to support the southeastern United States muscadine grape industry.

MAJOR ACCOMPLISHMENTS (2007–2010):

Muscadine grapes are the only cultivated grape native to North America and, due to disease pressure from various fungi and bacteria, the only type of grape widely grown throughout the southern United States. Muscadines have always been highly prized for their unique and pleasant flavors, but more recently are being sought out by consumers for their nutraceutical properties which are associated with high concentrations of phenolic compounds such as resveratrol. Fruit from selections developed in the Mississippi breeding program and germplasm from various other programs continue to be screened for fruit quality and nutraceutical properties. The major focus of the breeding program, however, continues to be the development of new fresh-market cultivars with greater productivity and disease resistance, and berries having improved fruit properties including larger berry size, thinner and more palatable skins, higher sugar content, and a higher percentage of dry picking scars.

Accomplishment #1:

Four elite new productive and disease resistant fresh-market muscadine strains developed in the breeding program MS 12-6 and MWS 12-40 (purple fruited), and MS 12-78 and MS 12-115 (bronze fruited) possess improved fruit and eating quality, developed from the breeding program have been identified as candidates for release as new fresh market grape cultivars for the southeastern United States.

Accomplishment #2:

Production studies were initiated in 2010 on both research plots and grower farms to evaluate muscadine grape cultivar response to different pruning techniques. Early results suggest it may be possible to increase yields in some cultivars by leaving shoots spaced 0.5 to 1 meter during pruning.

This work relates to NGWI priorities by providing a new muscadine grape cultivar with improved disease resistance and fruit quality and by identifying improved management techniques for improving productivity and profitability to growers.

TECHNOLOGY TRANSFER/OUTREACH:

Several project activities to transfer information on muscadine grapes are conducted annually. An annual muscadine grape field day is conducted at McNeil, MS, where growers are given the opportunity to learn about muscadine grape production practices and about existing and new cultivars. Presentations are also being given at annual grower association meetings in the southeast United States to provide updates on research and information on new cultivars and improved production practices.

EXTERNAL SUPPORT:

No external support was obtained for this project from 2007–2010.

COLLABORATORS:

Dr. Dennis Gray, University of Florida; and Dr. Penny Perkins-Veazie, North Carolina State University.

PUBLICATIONS:

- Stephen J. Stringer, Donna A. Marshall, Blair J. Sampson, and James M. Spiers. 2008. Performance of Muscadine Grape Cultivars in Southern Mississippi. HortTechnology, 18: 726 - 733.
- Stephen J. Stringer, Penny Perkins-Veazie, and Donna A. Marshall. 2009. Nutraceutical Compound Concentrations of Muscadine (*Vitis rotundifolia* Michx) Grape Cultivars and Breeding Lines. 2009. Acta Horticulturae 841: 553-556