

# SERA 14 REPORT

## Muscadine Grape Research & Extension in North Carolina

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### 2007 EASTER FREEZE

As you know, NC fruit crops were hard hit by the freeze event that occurred Easter weekend. In response, we met with growers May 1 at one of the Duplin Winery vineyards in Duplin County to discuss the damage we were seeing and recommendations for managing damaged vines. This same information was presented to the board of the NC Wine & Grape Council in early May and a report was posted to the NCSU Cooperative Extension Freeze Damage Information Website (<http://ces.ncsu.edu/disaster/freeze>). In all, four additional updates were posted to that website as our knowledge of the damage grew and our recommendations were altered accordingly. In July, a summary of our experience was reported at the ASHS Annual Meeting in Scottsdale, AZ:

*Muscadine grape cold injury assessment in post-budbreak period and recommendations for vine re-training [abstract].* Connie Fisk, Stephanie Romelczyk and Barclay Poling, Department of Horticultural Science, NC State University, Raleigh, NC.

Unseasonably warm temperatures during early March 2007 stimulated early bud break in North Carolina's muscadine vineyards (485 ha), particularly in early breaking cultivar Carlos which makes up about 90 percent of the state's muscadine crop. Carlos shoot and bud damage was dependent on growth stage and minimum low temperature. In the state's southeastern coastal plain, Carlos had already broken bud in mid-March and by April 8<sup>th</sup> new shoots were at the first to fourth leaf development stage. Minimum temperatures ranged from -4.4° C s to -8.8° C, depending on vineyard location. Further inland, Carlos vines were less advanced and sustained only moderate bud/shoot injury by comparison to the southeastern counties in the state. Two year Carlos vines in areas with temperature minimums of -4.4, or lower, commonly had splits or cracks in the cordons, and growers were advised to remove the injured cordons, and to train new shoots from

the head of the vine as replacement arms. The splits in cordons (and trunks) can be prime sites for disease infection, especially Macrophoma rot (*Botryosphaeria dothidea*). In 1 year and 2 year vines with splits in the trunks, suckers emerging from the base of the vine in early May were used for trunk replacement. In a separate experiment where dormant Carlos vines had been hand pruned to 200, 300, or 400 count buds, cold injury from the Easter freeze was far more severe in hand pruned vines than in vines that were mechanically hedged in late winter, and had in excess of 1,000 count buds per vine after pruning.

## MUSCADINE RESEARCH

Stephanie Romelczyk, MS Student with Dr. Barclay Poling

Interest in horticultural crops such as the muscadine grape (*Vitis rotundifolia* Michx.) has grown due to recent shifts in agriculture. The muscadine, a native fruit to the Southeast, is grown where Pierce's disease (caused by *Xylella fastidiosa* Wells et al.) limits bunch grape (*Vitis vinifera* L.) production. Most growers choose to mechanically prune muscadines due to the low returns on wine grapes and the high cost of labor. However, such pruning practices may reduce long-term vine vigor and juice quality. The objective of this study was to observe and to quantify how different pruning severity levels affect vine vigor, fruit quality, and disease incidence on 'Carlos' muscadine grapes. Four pruning severity levels were established on four- or five-year-old vines: the retention of 200, 300, or 400 nodes and simulated mechanical pruning ("SMP"). The treatments were applied in the winter of 2006 and 2007 at three locations in North Carolina: Duplin county, Scotland county, and Orange county. In 2007, a severe freeze occurred, so studies on node fruitfulness based on cane origin were also conducted.

Expected completion date: December 2007

Graduation date: May 2008

## MUSCADINE EXTENSION ACTIVITIES

Interest in muscadine grape production has continued to grow and several new growers have plans to plant next spring. In addition to interest in the health benefits, retailers' interest in buying local produce is leading to an increase in acreage. Our largest fresh grower estimates that we are only supplying 20% of WalMart's demand for fresh muscadines, and the rest they're shipping up from GA. To address the apparent need, we have organized several meetings this year focused on fresh production ("Fresh Market Muscadines," March 15, Duplin Cooperative Extension, Kenansville, NC; "2007 Muscadine Field Day," September 12, Horticultural Crops Research Station, Castle Hayne, NC) and also organic production of muscadines as Dole Food Products in Kannapolis, NC has demonstrated their interest in this market segment with hopes of transporting the product into the NE United States and playing off its health benefits.

This has been a busy year for muscadines in the media. Through funding for promotion of fresh muscadines, the NCDA&CS put together a press release and brochure that

they sent out to all area newspapers. Since then, I have given several telephone interviews and have appeared on PBS (UNC-TV) twice promoting the industry. Also, the National Institutes of Health issued a press release titled "Unique Grape Skin Extract Inhibits Prostate Cancer Cell Growth in the Laboratory" that is receiving a lot of attention and calls continue to come in for "unbiased" information regarding the health benefits of muscadine grapes.

I have also been very involved with the NC Muscadine Grape Association this year, through their Strategic Industry Planning process and in organizing the speakers and topics for both their winter and annual meetings (again with substantial focus on fresh and organic production). Other than that, most of my time is still spent out in the counties, working with Agents, performing site evaluations and freeze damage assessments, etc. I have one Extension publication in the review process, with Bill Cline and his technician Benny Bloodworth, titled "Propagating Muscadine Grapes" that is expected to be available next season as an NCSU AG web-based publication.

### FUTURE WORK

I am still working to update the Muscadine Grape Production Guide for North Carolina (Poling, 2003), and the NC Muscadine Grape Association has requested that we put together something similar to the North Carolina Winegrape Grower's Guide (Poling et al., 2007). In addition, I am writing a Horticulture Information Leaflet (HIL) on organic muscadine production.

On the research side, we have received funding from the NC Wine & Grape Council to investigate the influence of training systems, levels of pruning severity and long-term effects on yield and quality in Carlos muscadine grape. We will begin to establish that trial next spring as well as a small plot of four cultivars of fresh market interest. The fresh market plot will allow us to look at cultural methods to improve fresh fruit quality and also to look at the effects of water quality and usage on fresh fruit quality and safety (so that we can help to develop GAPs for this growing industry).