

SERA014 Progress Report 2005

Winegrape Varieties for the Piedmont Region of North Carolina¹

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Season Summary

The 2004 growing season proved to be a more successful year than 2003, when rain and cloudy conditions through the bloom/fruit set period resulted in poor set and yields with many varieties. Fruit set was much better in 2004, and to prevent over-cropping we cluster thinned according to shoot length at fruit set using these guidelines: a) shoots 12" or shorter – 0 clusters, b) shoots >12"-18" - 1 cluster, and c) shoots >18" – 2 clusters. Due to Andy Allen's departure in June 2004 for a position with the Mid-America Viticulture and Enology Center in Mountain Grove, Missouri, it became necessary for our department to make arrangements to make sure that this research was continued through harvest and that appropriate reports were submitted to the NC Grape Council, Inc., and the Viticulture Consortium East. Dr. Barclay Poling, Professor and Extension Specialist (Muscadines and Strawberries), assumed a leadership role for this project in early July, and complete data was taken on vine yields as in 2003. Weather during harvest remained favorable, and for many varieties/selections, overall yields were significantly higher in 2004 than 2003. Fortunately, we concluded our harvest of *vinifera* varieties before we were impacted by Hurricane Ivan in mid-September. We were encouraged by the yield of Chardonnay cl. 96 that had 5.34 tons/acre (15 vines harvested per variety/selection), but disappointed in Viognier (Table 1).

Dr. Dan Carroll, Professor, Department of Food Science, assumed responsibility for generating the information on °Brix, pH, and Titratable Acidity, for the fourteen

varieties/selections, that appear in Table 1. There were only a few varieties in 2004 that had sugar levels below 19 °Brix, and most were in the range of 19-21 °Brix (Table 1). The Upper Piedmont has warmer night temperatures than the North Carolina Foothills and Mountains, and one of the goals of this trial is to identify *vinifera* varieties that will hold their acidity while achieving a 22+ °Brix level. Thus far, we have been impressed by Tannat in regards to fruit chemistry, and its yields exceeded 3 tons/acre in both 2003 and 2004. However, as Dr. Carroll has noted, this is a young vineyard and several more seasons of research data are definitely needed to more accurately describe the yield potential and fruit quality (for winemaking) of these 14 varieties/selections for the Upper Piedmont.

¹ Upper Piedmont Research Station, Reidsville, North Carolina (36.35 Latitude 79.70 Longitude, 890 ft elevation)

² After Andy Allen's departure in June, 2004, we had the excellent vineyard support of Ashley D. Johnson, Ag. Res. Tech. I, and Rocco Schiavonne, Ag Res. Tech. III, Department of Horticultural Sciences, North Carolina State University, as well as the much appreciated lab assistance of Joanna Foegeding, Research Analyst, Department of Food Science, North Carolina State University.

Table 1. A comparison of the characteristics of 14 winegrape varieties/selections for harvest dates, yield performance and fruit quality components for the 2003 and 2004 seasons at the Upper Piedmont Research Station (Reidsville, NC)¹

Variety	Harvest Date 2003	Harvest Date 2004	Tons/Acre 2003	Tons/Acre 2004	% Change in yield '03 to '04	°Brix '03	°Brix '04	pH '03	pH '04	Titrateable Acidity ² '03	Titrateable Acidity '04
Cabernet franc cl. 332	Sept 03	Sept 13	1.33	1.87	40.7%	16.5	20.0	3.80	4.01	0.57	0.48
Chardonnay cl. 76	Aug 29	Aug 25	0.78	2.61	234.7%	19.6	19.6	4.00	3.78	0.53	0.65
Chardonnay cl. 96	Aug 27	Aug 25	2.06	5.34	159.8%	18.9	20.4	3.88	3.81	0.61	0.59
Merlot	Sept 03	Sept 01	3.41	4.64	36.2%	17.8	20.3	3.81	3.95	0.52	0.38
NC74CO44-32	Sept 08	Sept 01	2.94	2.80	-5.0%	20.6	24.1	3.70	3.43	0.71	0.67
NY 73.0136.17 ³	Sept 24	Sept 01	2.95	4.02	36.4%	17.4	17.4	3.75	3.64	0.69	0.67
Petit Verdot	Sept 24	Sept 21	2.12	3.19	50.1%	19.1	22.6	3.86	3.87	0.72	0.61
Sangiovese	Sept 08	Sept 13	3.10	4.26	37.2%	15.5	18.6	3.66	3.82	0.64	0.50
Seyval blanc	Aug 25	Aug 20	2.12	5.29	147.0%	20.1	20.0	3.74	3.74	0.61	0.53
Syrah	Sept 08	Sept 21	3.36	2.68	-20.3%	15.6	17.6	3.75	3.97	0.63	0.46
Tannat	Sept 24	Sept 05	4.27	3.32	-22.3%	19.7	20.7	3.76	3.51	0.80	1.09
Tempranillo	Aug 29	Sept 13	2.96	1.73	-41.6%	16.2	18.5	4.03	4.19	0.80	0.67
Traminette ³	Sept 24	Aug 25	1.42	3.54	149.3%	19.9	19.0	3.86	3.70	0.51	0.71
Viognier	Aug 29	Sept 01	1.21	0.74	-38.7%	18.6	21.0	3.98	4.13	0.62	0.50

¹ Winegrape vineyard planted in 2001 to test various varieties/selections for adaptability to Upper Piedmont, NC; spacing is 7 ft in-the-row and 10 ft between rows; low bilateral cordon training with pruning to 17-18, 2-node spurs spaced roughly 4-5" apart per vine (or 8-9 spurs per cordon); canopy management practices consisted of shoot positioning, thinning and selective leaf removal on the north side (the VSP trellis requires extensive canopy management techniques because it is not designed to handle the vigor of NC growing conditions). All varieties are on 3309C rootstock.

² Titrateable Acidity as % tartaric acid.

³ There was a problem with the early harvest of NY 73.0136.17 (as well as Traminette) in 2003 - a big rainfall just before the harvest on Sept 8, and both varieties had lost between 0.5-1.0 °Brix. Because both varieties had rather small crops, they seemed to be more affected than the others which we harvested on the Sept. 8. In retrospect, they should have been harvested on Sept 15. Regarding NY 73.0136.17, Andy Allen has recently observed that this selection on low-wire cordon (VSP) trellis is not performing as well as where this selection is planted on high-wire cordon trellis in Missouri.

MUSCADINE GRAPE

Disease Research and Extension Activities at Castle Hayne, North Carolina

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RESEARCH

Fungicide Trials: Replicated spray plots on the cultivars Triumph and Fry are under evaluation for control of fungi causing muscadine fruit diseases, including powdery mildew (*Uncinula necator*), black rot (*Guignardia bidwellii*), bitter rot (*Greeneria uvicola*, *syn. Melanconium fuligineum*), ripe rot (*Glomerella cingulata*; *Colletotrichum gloeosporioides* and *C. acutatum.*), and Macrophoma rot (*Botryosphaeria dothidea*). Control of the angular leaf spot fungus (*Mycosphaerella angulata*) is also under evaluation. Fungicide test results will be published in *F&N Tests*, and in a future issue of this proceedings.

Cultivar Trials: Twenty-one cultivars established in replicated plots at Castle Hayne are being harvested for the first time in 2005, and will be evaluated for susceptibility to common pathogens. We will also evaluate overall vine health, yield, size and time of ripening. Cultivars include: Alachua, Black Fry, Carlos, Darlene, Doreen, Fry, Granny Val, Higgins, Ison, Jumbo, Late Fry, Nesbitt, Noble, Pam, Scarlett, Southern Home, Sugargate, Summit, Supreme, Sweet Jenny and Triumph.

EXTENSION

Two significant on-line publication efforts were made in 2005. The first was development of the *2005 Southeast Regional Muscadine Grape Integrated Management Guide*. This is a comprehensive document for cultural practices, disease, insect and weed control, and will be updated annually:

<http://www.smallfruits.org/SmallFruitsRegGuide/index.htm>

The second is the updated version of the *Crop Profile for Grapes in North Carolina*. This is a revision of earlier work that now includes expanded lists of pesticides labeled with note on usage, and also includes a new section on worker activities:

<http://pestdata.ncsu.edu/cropprofiles/docs/ncgrapes.html>

DISEASE OUTLOOK/FUTURE WORK

Clean planting stock: Both Pierce's disease (*Xylella fastidiosa*) and Crown gall (*Agrobacterium tumefaciens*) are bacterial diseases of concern. As acreage expands, we would like to emphasize the use of disease-free, true-to-type cuttings for propagation.

Extension education programs: The NC muscadine industry is expanding rapidly as demand for grapes outstrips production. Much of the new acreage is being planted by new growers who have no experience with woody perennial crops or fruit production. Selection of planting site, cultivar, fungicide, sprayer type, and other choices must be made correctly for these new growers to have successful vineyards. We will accelerate agent training, publication output, and farm visits to meet these needs.

Entomological Activities on Grapes at North Carolina State University

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Program emphasis on grape insects and their management in North Carolina center on two pests, the Asian Ambrosia beetle and the grape root borer.

Asian Ambrosia Beetle monitoring and trapping in 2005 resulted in grower awareness of a potential pest and significantly reduced the risk of any economic damage. Annual monitoring and application of strategic management and specific control tactics to vineyards should provide effective management of the Asian Ambrosia Beetle and reduce the risk of losses. Populations were not as high, nor damage as severe to vinifera grapes grown in Piedmont North Carolina as they were in 2004. This insect and its impact vary from year to year. We found the ethanol pepsi liter bottles satisfactory in our monitoring study. However we did collect several beetle species. Results are shared in annual reports to the North Carolina Grape Council and my program, in a power point presentation, in a poster display and in a colored insect management sheet. Several county agents were trained and contributed to a survey, distribution and economic impact with this project.

Grape root borer studies continue in two test sites (Pine Level and Winston Salem). Adult flights were late and high in 2005. Sex pheromone tapes were more effective than the rubber spetas. Unitraps proved effective over sticky wing traps. We badly need the tapes in the market place again. The Leno cloth, bark mulch and the Earth skin were evaluated. All seemed to have some effect on pupal skin counts and vine vigor and fruit production. At the Lake Wheeler site we compared Lorsban drench, Lorsban drench with Earth Skin and Earth Skin alone to untreated vines. The Earth Skin plots had almost no pupal skins, while Lorsban alone and the untreated vines had

many pupal skins. Vine vigor, aerial root ratings and fruit load in the treatments were superior to the untreated and favorable to the standard treatment with Lorsban.

We continue to collaborate in the southeast in the development of a regional wine and fresh market grape production and IPM guide. We also have poster displays on the grape root borer, the Asian Ambrosia beetle, the Glassy winged sharpshooter and other phloem feeders and Grape Insect Management. Japanese beetles were troublesome in western North Carolina and sharpshooters and leafhoppers remain of concern. Our grape and wine industry is developing rapidly in North Carolina and we anticipate more opportunities for Extension and applied insect research as state, university and private support allow.