Small Fruit News

the
Southern Region
Small fruits consortium

NC State University
Clemson University
The University of Georgia
The University of Tennessee
VA Polytechnic Institute and State University

Volume 6, No. 3 October 2006

In this Issue:

Special Reports

Performance of Southern Highbush Blueberries in High Density Pine Bark Beds in South Georgia During 2006

D. Scott NeSmith

The 2006 growing season at the University of Georgia Blueberry Research Farm in south Georgia near Alapaha was generally characterized by a very good crop across most cultivars and selections, contrasting sharply to the previous season which was plagued by poor pollination and fruit set. There were significant freezing temperatures at Alapaha during 2006 (Table 1), some of which occurred during the flowering period of some selections. Chill hours (hours < 45 F calculated from Oct. 1 thru Feb. 15) were 832 for the location which were slightly above average.

Table 1. Below freezing minimum temperatures for selected dates at the UGA Blueberry Research Farm near Alapaha, Ga. during 2006.

Date	Minimum Temperature (F)
February 8	27.0
February 10	25.2
February 12	26.2
February 13	24.6
February 14	23.2
February 27	28.8
March 27	29.7

Southern highbush blueberry selections are grown under high density production systems in bark beds at Alapaha the first 3 to 5 years to facilitate rapid evaluation. The production systems consist of raised beds filled with pine bark, overhead irrigation, bird netting, and a plant spacing of 3 ft. x 5 ft. Frost protection using overhead sprinklers was conducted on the nights of February 13 and 14 at Alapaha in the bark beds. Table 2 presents performance data for several selections that were planted in 2003, thus, 2006 was the third cropping season for these plants. These plants were lightly hedged after harvest in 2005. Generally all selections and the standard cultivars had suitable plant vigor in this system. All selections flowered at least 7 days earlier than usual and ripening dates were earlier as well. There was little damage from the freezing temperatures in the bark beds. 'Star' was early ripening, and yields were good. 'O'Neal' yields were low, and fruit were small and lacked firmness. 'Rebel' (released in 2005) was early ripening, and yield was 30% greater than 'Star', although berry size was a smaller than 'Star'. TH-707 was the highest yielding selection in this test, and ripening date was later than 'Star', but earlier than 'O'Neal'. The selections TH-710 and TH-730 had very high yields and ripened just after 'Star'. TH-730 had good berry size along with the high yields. The berry weight data presented are averages over all harvests.

Cumulative yield is shown for selections in Figure 1 and weekly yield is depicted in Figure 2. These data show that in general selections started ripening at a similar time, although final yield was different. 'Star' had concentrated ripening, but lower yields than all selections except 'O'Neal'. 'Rebel' and TH-730 had heavy crops which caused harvest to be protracted a bit. TH-707 and TH-710 had yield peaks about a week after 'Star'. With the plant spacing used in this test (2904 plants per acre), some of the yields were very high on a per acre basis. 'Star' yield was 18,000 lbs/acre, 'Rebel' was 26,000 lbs/acre, TH-710 and TH-730 were over 32,000 lbs/acre, and TH-707 yield was over 36,000 lbs/acre.

While these data are from only one year, they suggest very high yields are possible for southern highbush plants grown in a vigorous system. Considering these plots were only established in 2003, the data also indicate precociousness is obtained with these selections as well under such a system. Plants require annual pruning to maintain manageable size of plants, but in a warm climate like south Georgia, pruning immediately after harvest gives enough time for sufficient regrowth for next year's production.

Table 2. Yield, flowering and ripening dates, and ratings of some fruit and plant characteristics of southern highbush blueberry cultivars grown in a high density bed at Alapaha location during 2006. Plants were established in 2003.

Selection or Variety	Yield (lb/plant)	Date of 50% flowering	Date of 50% ripening	Berry wt. (g)	Berry scar rating	Berry color rating	Berry firmness rating	Berry flavor rating	Plant vigor rating
Star	6.2	Feb 27	May 4	1.79	8.0	7.5	7.5	7.0	8.0
O'Neal	2.7	Feb 26	May 12	1.23	6.8	7.0	6.8	7.5	7.0
Rebel	9.0	Feb 24	May 3	1.60	8.0	7.5	7.5	6.8	8.0
TH-707	12.5	Feb 27	May 10	1.36	7.5	7.5	8.0	7.5	10.0
TH-710	11.4	Feb 24	May 8	1.67	8.0	7.5	8.5	7.5	9.0
TH-730	11.3	Mar 1	May 6	1.79	7.5	7.5	7.5	7.5	8.5

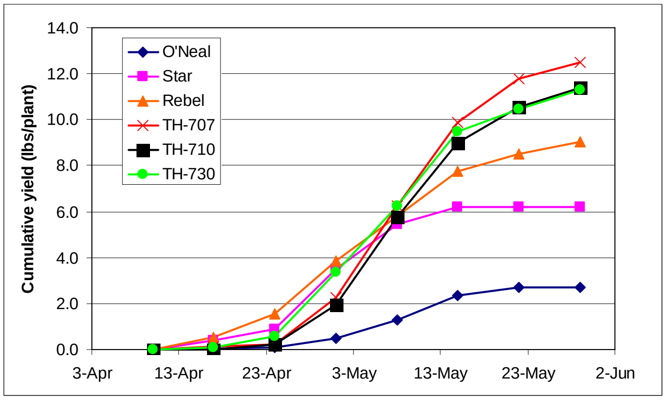

Figure 1. Cumulative yield for southern highbush selections grown in high density pine bark beds at Alapaha, Ga. during 2006.

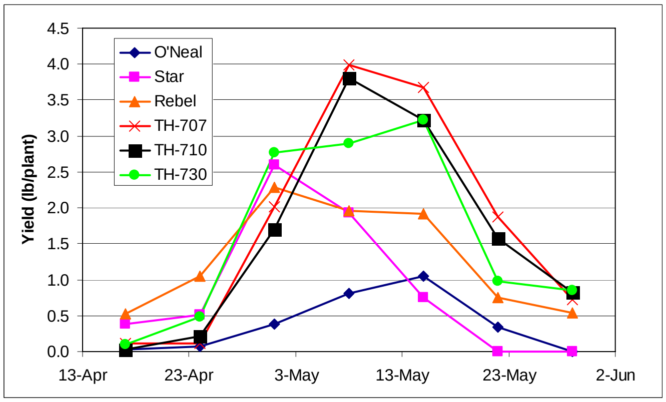

Figure 2. Weekly yield for southern highbush selections grown in high density pine bark beds at Alapaha, Ga. during 2006.

Bramble Chores
Fall 2006

Gina Fernandez
NC State University, Raleigh, NC

Plant growth and development

- Primocanes continue to grow but slow down.
- Flower buds start to form in leaf axils on summer-fruiting types.
- Carbohydrates and nutrients in canes begin to move into the roots.
- Primocane leaves senesce late fall.
- Primocane fruiting types begin to flower in late summer/early fall and fruit matures until frost in fall.

Harvest

- Harvest primocane fruiting raspberries.

Pruning and trellising

- Spent floricanes should be removed as soon as possible.
- Optimal time to prune is after the coldest part of the winter is over. However pruning can start in late fall if plantings are large (late winter for smaller plantings).
- Start trellis repairs after plants have defoliated.

Weed management

Many spring and summer weed problems can be best managed with fall- and winter-applied preemergent herbicides. Determine what weeds have been or could be a problem in your area. Check with your state's agricultural chemical manual and local extension agent for the best labeled chemicals to control these weeds.

Insect and disease scouting

- ❑ Continue scouting for insects and diseases and treat with pesticides if necessary (follow recommendations in your state).
- ❑ Remove damaged canes from field as soon as possible to lessen the impact of the pest.

Planting
- ❑ Growers in southern areas can plant in the fall.
- ❑ In cooler areas, prepare list of cultivars for next spring's new plantings. Find the commercial small fruit nursery list at www.smallfruits.org

Nutrient management
- ❑ Take soil tests to determine fertility needs for spring plantings.
- ❑ If soil is bare, plant an overwintering cover crop (e.g. rye) to build organic matter and slow soil erosion.

Marketing and miscellaneous
- ❑ Order containers for next season.
- ❑ Make contacts for selling fruit next season.
- ❑ Plan on attending national, regional or state bramble meetings.

UGA Horticulture Department Awarded $313,000 from USDA Integrated Organic Program (IOP)

Mark Rieger

The UGA Horticulture Department was awarded $313,000 from the USDA Integrated Organic Program (IOP) to study organic small fruit production. The grant focuses on blueberry and primocane blackberry and raspberry production using high tunnels to shift production to more lucrative marketing windows during the year. UGA will study southern highbush blueberry, and a subcontract to the University of Arkansas will cover the primocane blackberry and raspberry research. Both universities will certify organic plots of land on experiment station property for detailed studies, and both will work with organic growers during the outreach phase of the research. Mark Rieger wrote the grant and has coordinated initial efforts at UGA, but will be leaving UGA in September. Marc van Iersel has assumed responsibility for the grant in Rieger's absence. Curt Rom will coordinate efforts at Arkansas. Rieger was also awarded a USDA Higher Education Challenge Grant ($145,000) to develop a teaching certificate program in organic agriculture, which will dovetail with the IOP grant. Blueberry and muscadine grape will be included in the teaching program, and possibly strawberry as the program develops further. For more information on these programs, contact Marc van Iersel (mvanier@uga.edu).

NC State Hires a New Enologist

Trevor Phister is the Food Science Departments new Enologist with a 75% Research: 25% Extension appointment. Trevor came to NC State from Drexel University in Philadelphia where he was an Assistant Professor in the department of Bioscience and Biotechnology. His research interests focus on the detection and control of wine spoilage organisms, specifically *Brettanomyces*. His extension program will use various outlets such as short courses and web based programs to provide North Carolina winemakers information structured to increase the competitiveness of the industry both regionally and nationally. Trevor received a B.S. in Microbiology from the University of Iowa, a Masters degree from Clemson University and a Ph.D. in Food Science from the University of Minnesota. He went on to do post-doctoral research in the Department of Viticulture and Enology at the University of California-Davis were he studied the microbial ecology of wine fermentations and helped a number of wineries implement molecular biology methods for the detection of *Brettanomyces* and other spoilage yeasts.

Past, Present and Future of the Virginia Wine Industry

Tony K. Wolf
Director and Professor of Viticulture
AHS Agricultural Research and Extension Center
Virginia Tech
Winchester, Virginia

The cultivation of grapevines in Virginia can be traced to attempts to grow "European" grapes at Jamestown colony nearly 400 years ago, the goal being to reduce England's wine dependence on its contentious, continental neighbors. *Acte 12*, for example, was an optimistic piece of legislation passed by the Virginia House of Burgesses in 1619 that required every household to plant and maintain ten vines per year. Those fledgling attempts to cultivate non-indigenous vines were confounded by diseases, insects and weather to which the imported vines were poorly adapted. About the time of the American Revolution, colonists had begun to gravitate towards American species of grape for wine-making, eschewing the more temperamental European grapes. Thomas Jefferson is credited, among other reasons, for his viticultural efforts at his home, Monticello, at Charlottesville, where his vineyard has been painstakingly re-established over the past decade. While Jefferson too failed with

European grapes, he did raise the consciousness of the wine potential of native-American selections. Based on American grapes, of which Virginia hosts no less than eight species, a flourishing grape and wine industry materialized in Virginia, and the state became a major wine producer towards the end of the 19th century. The combination of Prohibition and the subsequent development of wine industries in other states, notably California, led to a decline in Virginia's prominence in wine making until the emergence of the present industry in the late 1970s. There is an interesting sidebar to Virginia's role in wine production in the 20th century. Canandaigua Industries Company, based in New York State, opened Richard's Wine Cellars in Petersburg, Virginia in 1951, just six years after the founding of the parent company. Richard's was a production facility, sourcing grapes principally from more southerly states. Richard's Wild Irish Rose was a principal product and the annual production of several million gallons per year from this facility gave Virginia the distinction of being a top wine-producing state well into the 1980s. Canandaigua Industries Company went on to become Constellation Brands, Inc., the world's largest wine company.

The Virginia wine industry gained renewed momentum during the 1970s and 1980s. Much of the growth since the 1970s is due to favorable state legislation which recognized that wine is an agricultural product. The Virginia farm winery act was created in 1977-1978, with important aspects passed in 1980. The legislation provided certain tax breaks for development of farm wineries, but also required that at least 51% of the grapes used in the winery must be grown at the farm. An additional 25% of the grapes used may be purchased elsewhere within the state, and the remaining 24% may be obtained from out of state. An additional incentive to growth of the Virginia wine industry was the creation in 1985 of the Virginia Winegrowers Advisory Board (VWAB). The VWAB provided an advisory role to the Virginia Department of Agriculture and Consumer Services and was funded by a portion of the state tax ($0.40 per liter) levied on Virginia wines. The VWAB was dissolved in 2005 and re-created as the Virginia Wine Board, with essentially the same funding mechanism. An industry strategic plan, *Vision 2015*, was crafted in 2004 with principal goals of doubling Virginia's wine market share (about 4% in 2004) and making measurable national impact in wine sales by 2015. Virginia Tech hired an enologist, Bruce Zoecklein, and a viticulturist, Tony Wolf, in 1985 to assist with technical issues related to grape and wine production.

Virginia had six farm wineries in 1979. Today there are more than 100. Grape acreage and corresponding wine production have shown similar growth trends (Figure 1). Today there are approximately 2600 acres of grapes under cultivation. Grape production in 2006 was 5600 tons.

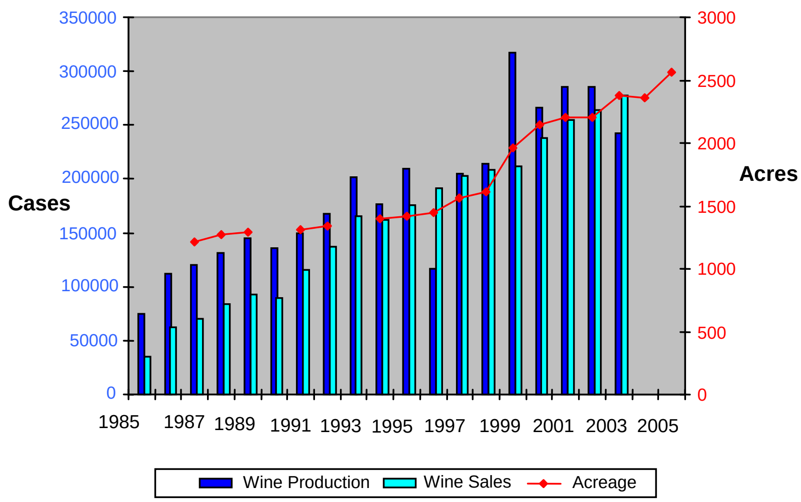

Figure 1. Virginia grape and wine statistics. Wine (cases per year) production and sales are shown on the left axis. Grape acreage (red line) is shown on the right. Wine data are not available for 2004 or 2005.

While grapes are grown throughout Virginia (Figure 2), much of the growth occurred in the northern and western piedmont. There are several reasons for that distribution, including proximity to wine-buying customers and demonstrated suitability of those areas for grape cultivation.

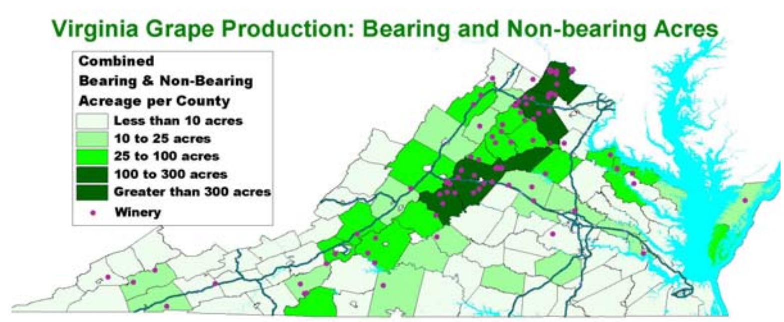

Figure 2. Distribution of vineyards and wineries in Virginia as of 2004. Illustration courtesy of John Boyer, Department of Geography, Virginia Tech.

Vinifera cultivars currently constitute about 80% of Virginia's current grape acreage. 'Chardonnay,' 'Cabernet franc,' and 'Cabernet Sauvignon' represent the three most abundantly planted cultivars. Interspecific hybrid cultivars comprise 16% of the acreage, with 'Chambourcin' being the predominant representative of this group. The balance of acreage comprises native-American grapes, used for both table and wine production. An important wine grape in this category is 'Norton' (*V. aestivalis*), of which over 100 acres are grown in the state.

The challenges to grape and wine production in Virginia remain abundant and complex, but not insurmountable. Our humid, continental climate is conducive to fungal diseases, and powdery mildew, downy mildew, black rot and botrytis are chronic threats. The state does, however, have some climatic good fortune. Virginia avoids much of the damaging winter cold temperatures that affect more northerly states, although winter cold temperatures remain a chief limitation to production of cold-tender varieties in the western regions of the state. The dip in wine production and sales in 1996/1997, for example, reflects a 43% reduction in state yields between 1996 and 1997, due to cold damage from a February 1996 freeze. Virginia is also on the Pierce's Disease threshold. Pierce's Disease is caused by a bacterium that does not survive and cause disease in grapevines in regions with relatively cold winters. The disease does occur on the Eastern Shore and in southside Virginia, but has not yet been detected in vineyards in the central or northern part of the state.

The future for wine and wine grape production in Virginia is bright, despite some current issues which restrict wineries' ability to self-distribute wine. Competitive growers will need to carefully examine costs of production while continuing to strive for high quality, sustainable crop yields. To that end, larger vineyards will likely increase their use of mechanization. Vineyard site selection, which has focused on minimizing climatic and biotic threats, will increasingly seek to match specific varieties with specific soils and mesoclimates to increase grape and wine potential. Climate change will undoubtedly affect the distribution of certain diseases and insect pests, and it may alter our recommendations about the varieties that should be grown at a particular site. Sites or regions that were once considered too cold or too short-seasoned for grape production may, in some cases, see increased opportunity.

Technical information on Virginia grape production can be found at Virginia Tech's grape information base: http://faculty.vaes.vt.edu/vitis

Small Fruit News

Volume 6, No. 3 October, 2006

Editor and Contributor.......................Tom Monaco

Published four times/year. Small Fruit News is available on the Southern Region Small Fruit Consortium (SRSFC) web site www.smallfruits.org. To subscribe to an electronic notification service of new Small Fruit News issues on the web, send your e-mail address to brendaw@uga