

**Annual report to Virginia Wine Board
Report covering period July 1 – December 31, 2008**

TITLE: Wine grape cultivar evaluations

Principal Investigator: Tony K. Wolf

Wine Board Proposal #: 07-1411-01 2007-2008 Fiscal year

Award amount: \$12,438 (\$3,712 to Wolf and \$8,726 to Pattison)

Background/Progress:

Current status: The evaluation of 19 wine grape varieties at the Southern Piedmont AREC (Blackstone) was in its 5th year of crop yield production in 2008. We have collected sufficient viticultural data to conclude the experiment and the project will be terminated after collecting cane pruning weights in March 2009. Part of the reason for terminating the experiment is that Dr. Jeremy Pattison, the small fruits specialist at the SPAREC has relocated to North Carolina State University and the prospects for refilling that position in the near-term are poor.

General observations on harvest, 2008: Choosing when to harvest plots at Blackstone has always been a logistical challenge and the 2008 season illustrated the nature of the challenge that exists each year in the following ways:

- Coordinating berry sampling with SPAREC staff in order to gauge fruit maturity
- Coordinating picking date with Bruce Zoecklein so as to optimize wine-making potential of fruit
- Balancing loss of fruit to wildlife (raccoons principally) and desire to have crop yield data of optimally mature fruit
- Coordinating picking date with available labor at Winchester and Blackstone and making four-hour drive to pick when the decision is made
- Balancing effects of rain on berry splitting and rot versus desire to further ripen crop

The management of the vineyard during 2008 was excellent and good datasets were collected on variety fruitfulness and phenology in the spring. Disease management (excepting Pierce's Disease) was excellent and there was no evidence of powdery mildew which has affected some varieties in previous years.

Fruit chemistry at harvest of 2008 was variable. Varieties that have performed well in the past (see summary, below) tended to do reasonably well in 2008 and "problem" varieties continued to illustrate problems. A relatively dry summer was abruptly and inconveniently ended with a 5-inch rainfall the last week of August 2008. A vineyard assessment made on 29 August revealed that both Petit Verdot and Vidal blanc were already showing berry splitting; both varieties subsequently rotted in entirety. Additional rains, rot and some persistent raccoon feeding took a toll on fruit although we were able to harvest enough fruit of all other varieties for small-lot wine-making and harvest fruit chemistry evaluations.

Soluble solids concentrations at harvest were not as high as in the very dry 2007 season, but most varieties achieved acceptable levels (Table 1) which were in balance with fruit pH and titratable acidity (Table 2). As in previous years, wines are being made in the Department of Food Science and Technology at Virginia Tech, and those wines will be shared with industry members through round-table extension meetings.

Pierce's Disease (PD) has been a significant factor in vine attrition at the Blackstone vineyard. The incidence of PD in 2006 and 2007, as well as in 2008 is illustrated by the mapping data in Figure 1. Soil-applied insecticide (Admire-Pro) was applied to 3 of the 6 replicates of each variety in June 2007 (two applications), and repeated in 2008. The insecticide is systemic and may offer some reduction in the leafhopper transmission of the Pierce's Disease bacterium. The overall incidence of PD was lower in 2007 than in 2006 (Fig. 1); however, the Admire-Pro insecticide did not appear to have a bearing on PD incidence. The number of PD-affected vines remained the same between 2007 and 2008; however, many of the previously affected vines failed to survive until ratings in late-summer 2008, increasing the number of dead vines counted in the annual assessment (Figure 2).

Summary: Our preliminary findings, based on harvests to-date are as follows:

- Disease pressure has been greater in this environment than in our experience at Winchester. Chardonnay, for example, is very difficult to keep free of powdery mildew, although we succeeded in this goal during 2008. Disease and insect management have greatly improved, however, and the oversight provided by Dr. Jeremy Pattison at Blackstone has been responsible for that improvement.
- Aleatico and Tempranillo performed poorly, but for different reasons. Aleatico ripens unevenly and is highly susceptible to bee and green June bug injury, perhaps owing to its aroma. Many of the Tempranillo vines were lost within the first several years of planting to crown gall or other causes. While this might have been due to poor nursery stock, the fruit of apparently healthy vines was susceptible to rot. For these reasons, we removed Aleatico and Tempranillo. The recently named variety, Noiret (NY73.0136.17) has also performed poorly from the standpoint of primary fruit chemistry. At full ripeness (about 19°Brix) the fruit lack flavor.
- Varieties that have performed well from a viticultural standpoint include: Petit Manseng, Norton, Cabernet Sauvignon, Rousanne and Viognier. Others, including Petit Verdot, Tannat, Traminette, and Mourvedre may perform very well with aggressive crop management.
- With the exception of Norton, all varieties have expressed some incidence of Pierce's Disease (PD) and this will continue to be a threat in the southern Piedmont if winter temperatures remain above average.
- Wines have been made, but have not been formally evaluated from this effort.
- We do not intend to continue viticultural data collection from the vineyard beyond the 2008 season.

Table 1. Fruit soluble solids concentration (Brix) for varieties/clones at the Southern Piedmont Agricultural Research and Extension Center, Blackstone, Virginia over four seasons (2005-2008).

Variety (clone)	2005	2006	2007	2008	Mean
Cabernet franc ("#313")	18.3	19.1	22.6	19.9	20.0
Cabernet franc (#1)	20.5	19.6	22.6	21.2	21.0
Cabernet Sauvignon (#337)	20.3	18.8	22.1	20.3	20.4
Chardonnay (#96)	21.8	20.5	22.7	22.4	21.9
Mourvedre	20.8	17.7	20.8	21.4	20.2
Muscat blanc	19.1	. ^b	20.3	20.3	19.9
Norton	22.2	21.4	23.2	21.4	22.1
NY73.0136.17 (Noiret)	17.3	17.3	19.1	19.2	18.2
Petit Manseng	25.2	23.2	26.1	23.7	24.6
Petit Verdot	21.7	20.3	23.5	. ^c	21.8
Rousanne	21.8	18.5	22.7	21.2	21.1
Tannat	21.5	21.1	23.6	21.5	21.9
Tempranillo	19.5	18.3	. ^a	. ^a	. ^a
Tinta cao	20.5	19.1	21.9	21.2	20.7
Touriga nacional	18.9	18.6	21.4	17.7	19.2
Traminette	19.8	17.8	20.6	18.7	19.2
Vidal blanc	21.7	19.0	22.8	. ^c	21.2
Viognier	22.9	21.6	24.0	23.1	22.9

- ^a Vines were removed in 2007 due to attrition or poor performance.
- ^b Missing data due to lack of fruitfulness.
- ^c Missing data due to extensive fruit rots prior to harvest.

Table 2. Fruit harvest date and primary fruit chemistry of varieties/clones being evaluated at the Southern Piedmont Agricultural Research and Extension Center, Blackstone, Virginia in 2008.

Variety (clone)	Harvest date	Brix	pH	Titrateable acidity (g/L)	Berry weight (g)
Cabernet franc ("#313")	2 Oct 2008	19.9	3.81	3.68	1.47
Cabernet franc (#1)	2 Oct 2008	21.2	3.81	3.61	1.60
Cabernet Sauvignon (#337)	2 Oct 2008	20.3	3.71	4.29	1.28
Chardonnay (#96)	3 Sep 2008	22.4	3.48	5.34	1.38
Mourvedre	22 Sep 2008	21.4	3.85	3.26	1.70
Muscat blanc	29 Aug 2008	20.3	3.58	4.19	1.60
Norton (GDC training)	2 Oct 2008	21.4	3.77	5.62	1.00
NY73.0136.17 (Noiret)	19 Aug 2008	19.2	3.12	7.29	1.37
Petit Manseng	17 Sep 2008	23.7	3.28	5.97	0.97
Petit Verdot	. ^a	. ^a	. ^a	. ^a	. ^a
Rousanne	3 Sep 2008	21.2	3.53	5.33	1.82
Tannat	2 Oct 2008	21.5	3.56	4.99	1.50
Tinta cao	2 Oct 2008	21.2	3.74	4.46	1.40
Touriga nacional	12 Sep 2008	17.7	3.57	4.66	1.57
Traminette	17 Sep 2008	18.7	3.49	4.49	1.80
Vidal	. ^a	. ^a	. ^a	. ^a	. ^a
Viognier	3 Sep 2008	23.1	3.59	4.93	1.46

.^a Missing data due to berry splitting and subsequent fruit rots.