

Proposal: Wine Production Assessment of Grape Cultivars, Clones and Advanced Selections from Plots in Southwestern and Northwestern Michigan State University

Research Period: Harvest Season, 2003-September 30, 2004

Funding Period: January 1, 2004-September 30, 2004

Objectives: As stated in the proposal, "The primary objective of this effort is to find untested cultivars, clones of valued cultivars, and new breeding selections that can produce good wine when grown in Michigan".

Role of this season in multi-year effort: An effort to assess new and/or untested grapevine material for adaptation to Michigan's diverse viticultural climates must be of an on-going nature. First, every year is different and factors potentially limiting in one year can likely differ within a portion of the state's viticultural production and will certainly differ among them. This has been borne out by experiences in 1991, 1992, 1994, 1997, 1998, 2001 and 2002 in SW Michigan and again in 2003 and 2004 in NW Michigan. Second, assessment by individual entrepreneurs may not achieve broad dissemination. Finally, no commercial operation will be willing to produce the myriad of small batches and collect the detailed information necessary for critical evaluation of genotypes, so resulting data, even if adequately disseminated can be, at best, anecdotal. Our view is this anecdotal assessment is the second phase of the on-going effort to employ new, advanced material for this industry.

Summary of Expenditures: Has been made to Ms. Linda Jones, MGWIC by Ms. Lorri Busick, Executive Assistant, Department of Horticulture, Michigan State University.

Results and Conclusions:

- 1) The severe, late-winter freeze of 2003 reduced cropping levels to near zero for the plots at the NW Research Station; no harvest data were collected.
- 2) 21 *vinifera* and 11 mixed species white wine cultivars were vinified in 2003. Harvest was late due to the late, cool season with no *vinifera* harvested before 9/30 and Riesling and Voignier harvested on 10/28. Hybrids of interest ripened well and included Chardonel, Traminette and Hibernial. Two Chardonnay clones (Colmar and California) were harvested for sparkling wine production.
- 3) Three Riesling clones were harvested @ Fenn Valley Vineyards. There were also three training systems vinified as a factorial field assessment.. In the cellar 14 additional treatments were used on a Riesling blend that employed 10 different yeast strains and 3 different pre-press maceration times. The wines will be given first evaluation this fall after crush.
- 4) Nine red wine cultivars plus one advanced selection (NY 73.136.17) were vinified in 2003. The latest of these was Chambourcin @ 11/3.
- 5) After removal of the majority of the Pinot noir clones (see Interim Report, 2004) nine clones were harvested on 10/21. All fruit was superior in ripeness based on previous experiences (range of °Brix was 21.6 to 23.6 with pH and TA ranges @

- 3.44 to 3.72 and 6.7 to 9.1, respectively). Sparkling clones (Espiguette, UDC 2A and UCD) 4 were harvested 9/23 very near 17 °Brix.
- 6) Clones of Cabernet Sauvignon were harvested on 11/4 and were still @ low sugar (19.8-20.8).
 - 7) 24 wines from the complex trial on Cabernet Franc were vinified. The trial contains 6-training systems and 4-cropping levels (see proposal).
 - 8) Final red wines produced were from Merlot on 2-rootstocks and 3-wines from hybrids @ the Horticulture Teaching and research Center.
- There are 13 tables of detained data on these wines that are available upon request. As these are young wines, the white wines will be the first likely to be evaluated. Reds are still maturing prior to bottling.

Communications: The specifics of these events were given in the Interim Report.

Funding Partnerships: None, except that we have been fortunate to receive gifts of a Michigan barrel from St. Julian, have purchased bottles and corks @ cost from Fenn Valley, and received small gifts from the Vintners Club (\$1200) Taster's Guild of Jackson, MI (\$1200) and \$500 each from Friends of Kresge Art, Michigan Landscape Society, and Michigan Historical Society.

Tables & Figures: Table 1 of the 13 tables organized is included to show the nature of our efforts.

Overview of Methods Employed

When the grapes were harvested, they were analyzed immediately for %soluble solids, titratable acidity and pH. The target Brix levels for the wines were as follows:

Wine Style	Target °Brix
Dry White	20 to 22°B
Dry Red	22 to 23°B
Sparkling	19.5 to 20.5°B

If incoming grapes were below these levels they were chaptalized either with Dextrose or Fructose to desired target levels. All fermentations went to desired completion. Once fermentations were completed all wines were racked three times. All wines were cold stabilized in a 4°C room at the time of the first racking.

Red Wines

All red wine grapes were crushed and fermented with Pasteur Red yeast at the rate of 1gram per gallon. The musts had skin contact for ten days. All fermentations were completed to dryness, were pressed and immediately inoculated with malolactic bacteria, Christian Hansen *Viniflora oenos* at the rate of 0.025g/gal. All red wines completed MLF. The wines were racked three times. No oak in any form was used in their processing. Differences in % alcohol levels can be attributed to discrepancies in estimating must volume due to fermentation occurring on the skins.

White Wines

All white wines from the Southwest Michigan Research and Extension Center and from the Horticulture Teaching and Research Center were crushed and pressed. Due to the severe winter freeze in early 2003, no fruit was harvested or vinified from the NWHES in that vintage. There was no period of skin contact. All white wines were fermented with Cotes des Blancs yeast, usually to dryness. Some wines retained residual sugar in the range of 1.0g/L up to 5.0g/L depending on the cultivar. Once fermentation was complete, all white wines were racked and cold stabilized in a 4°C room. At the time of the second racking all white wines were fined with Bentonite at the rate of 10mL per gallon.

Sparkling Wines

All sparkling wines were whole cluster pressed and fermented with Premier Cuvee yeast. All fermentations went to complete dryness. Once fermentation was complete all white wines were racked and cold stabilized in a 4°C room. At the time of the second racking all sparkling wines were fined with Bentonite at the rate of 10mL per gallon.

Table 5. Wine data of Riesling Clones, Treatments and Tons/Acre grown at Fenn Valley during 2003.

Clone, Treatment, Tons/Acre	Harvest Date	HARVEST									
		SS	pH	TA	Residual Sugar (g/L)	Total Acidity (g/L)	pH	%alcohol	Volatile Acidity (g/L)	%MLF	
198 LowCordon	10/28/03	17.4	3.23	13.1	0.1	7.68	3.44	11.4	0.30	0	
198 VSP	10/28/03	18.2	3.25	12.2	0.6	9.0	3.38	11.8	0.66	0	
198 Sylvoz	10/28/03	18.4	3.23	13.12	0.7	8.47	3.43	11.8	0.54	0	
21 Low Cordon	10/28/03	16.2	3.17	13.87	0.4	9.07	3.21	11.9	0.60	0	
21Sylvoz	10/28/03	15.4	3.19	13.88	0.3	8.77	3.40	10.7	0.24	0	
21 VSP	10/28/03	16.8	3.21	13.73	0.7	8.36	3.11	11.4	0.30	0	
21 Scott Henry	10/28/03	17.0	3.27	13.01	0.6	8.55	3.48	11.5	0.44	0	
110 Sylvoz	10/28/03	17.6	3.26	12.83	0.2	8.47	3.46	11.6	0.60	0	
110 VSP	10/28/03	18.0	3.27	11.85	0.6	8.62	3.45	11.7	0.30	0	
110 Low Cordon	10/28/03	18.2	3.25	13.43	0.4	8.66	3.62	11.7	0.30	0	
Blend QA-23	10/28/03	17.3	3.22	12.9	0.5	8.61	3.61	13.2	0.30	0	
Blend W15	10/28/03	17.3	3.22	12.9	0.3	8.70	3.54	11.6	0.45	0	
Blend R2	10/28/03	17.3	3.22	12.9	0.4	8.43	3.57	13.3	0.42	0	
Blend 58-W3	10/28/03	17.3	3.22	12.9	0.4	7.80	3.58	11.5	0.30	0	
Blend ICV-GRE	10/28/03	17.3	3.22	12.9	0.1	8.10	3.52	11.8	0.24	0	
Blend P. Cuvee	10/28/03	17.3	3.22	12.9	0.7	8.25	3.59	11.5	0.36	0	
Blend ICV-D47	10/28/03	17.3	3.22	12.9	0.6	8.62	3.53	11.6	0.33	0	
Blend Cote de Blanc	10/28/03	17.3	3.22	12.9	0.2	8.40	3.54	12.0	0.18	0	
Blend Cote+AR2000	10/28/03	17.3	3.22	12.9	1.2	8.92	3.19	12.1	0.15	0	
Blend Cote+Beta	10/28/03	17.3	3.22	12.9	1.5	9.0	3.22	12.1	0.24	0	
Blend S.C. Control	10/28/03	17.3	3.22	12.9	0.7	8.32	3.51	11.8	0.30	0	
Blend 4hr S.C.	10/28/03	17.3	3.22	12.9	0.7	8.25	3.30	11.4	0.18	0	
Blend 24hr S.C.	10/28/03	17.3	3.22	12.9	0.7	8.60	3.37	11.5	0.33	0	