



Impact of Shoot Thinning and Harvest Date on Yield Components, Fruit Composition, and Wine Quality of Marechal Foch

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Background. Marechal Foch is an interspecific hybrid red wine grape variety widely planted in eastern wine regions of the United States and Canada, due to its early ripening and cold-hardiness. However, winemakers report vegetal aromas in wines produced from these grapes in some years, and the vines tend to over-crop due to fruitfulness of non-count shoots. Also, Marechal Foch wines can be high in acidity and low in astringency. Minimal viticultural management of Foch is common due to its low price in the marketplace. To determine if low cost viticultural practices could improve the aroma, astringency and basic fruit chemistry of Foch wine, we investigated the impact of shoot thinning and delaying harvest on Marechal Foch grapes grown in the Finger Lakes region on yield parameters, basic juice chemistry, grape and wine phenolic composition, and levels of key volatiles and sensory attributes in resulting wines.



Experimental design. 32-year-old Marechal Foch vines located at a commercial winery in Penn Yan, N.Y., were used for the study in 2007 and 2008. Vines were drip-irrigated and spaced at 2.1 m x 2.4 100 m (vine x row) in north-south oriented rows and trained to the Umbrella Kniffen system. The vines were either shoot thinned (15 primary shoots were retained per meter, and all secondary, tertiary, and non-count shoots were removed) in May or not thinned (control). Two harvest times were used, early or late—a time difference of approximately two weeks. Yield, pruning weights, and canopy light exposure were measured. Wines were made from the fruit, using conventional red winemaking practices. Berry and wine pH, TA (titratable acidity), anthocyanins, and tannins and wine ethanol and aroma compounds were measured. Wines were subjected to sensory analysis with trained sensory panels.

Results. The shoot thinning treatment resulted in predictable changes to basic fruit chemistry and color: cluster light exposure increased, yield decreased, and Brix and anthocyanins

increased in response to shoot thinning. Delaying harvest also increased Brix and anthocyanins. Finished wines from both late harvest and shoot thinned treatments had lower concentrations of herbaceous smelling C6 alcohols. However, sensory evaluation revealed that only the late-harvest wines were considered more “fruity” than control wines. Although shoot-thinning resulted in some chemical differences, they did not translate into sensory differences. Interestingly, although modest tannin levels were present in the grapes, finished wines contained effectively no tannin. Similar results had been previously observed with Corot noir, suggesting that the low tannin concentrations of hybrid wines may be due to limited tannin extractability during winemaking, rather than an absence of tannin in the grapes.

Conclusions:

- Shoot thinning did not affect fruitiness in Marechal Foch wines.
- Later harvest wines were more "fruity" than their early harvest counterparts for both shoot thinned and control vines.
- The extractability of tannins during winemaking was very low compared to most viniferas (2 to 4%).
- Future work on increasing tannin content of hybrid red wines should focus on improving tannin extractability from grapes or optimizing the timing of tannin additions.

The bottom line: While there are some operational benefits to shoot thinning, later harvest had a larger impact on the sensory impacts of Marechal Foch wines.