

Canopy Management of Hybrid Winegrapes to Improve Quality

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Cluster exposure is paramount in cool climate growing regions in order to improve Brix, reduce acidity, and improve the concentration of important flavor and aroma compounds. While many growers place a strong emphasis on improving cluster exposure through canopy management techniques such as shoot thinning, hedging, and leaf removal in *vinifera* winegrape production, these practices are often not implemented in hybrid vineyards due to the lower prices received for these grapes on a per ton basis. However, research in other cool climate growing regions has indicated that implementing canopy management techniques in hybrids can improve fruit quality.

In the Finger Lakes region of New York, we've been investigating the impact of shoot thinning, cluster thinning, hedging, and harvest date on both new hybrid cultivars (Noiret, Corot noir) as well as older hybrid cultivars (Marechal Foch, Vignoles) in cooperative studies with a number of commercial vineyards in a project funded by the New York Farm Viability Institute.

The impact of shoot thinning (no shoot thinning vs. shoot thinning to five primary shoots per foot of canopy) and harvest date (Sept. 11 vs. Sept. 18 in 2007; Sept. 10 vs. Sept. 23 in 2008) were studied on Marechal Foch vines trained to umbrella kniffen on 7 x 8 ft (vine x row) spacing. Yield was reduced by shoot thinning from 4.1 to 3.3 tons/acre in 2007, and from 7.0 to 5.3 tons/acre in 2008. Shoot thinning and later harvest generally improve Brix, reduced titratable acidity, and improved berry anthocyanin concentration. In triangle tests performed by a sensory panel, wine made from the shoot-thinned treatment in 2007 was preferred by tasters compared to wine made from the control treatment. Additionally, of the wines from the shoot-thinned treatments, the later harvest wine was preferred by the sensory panel over the earlier harvest in 2007. In 2008, the sensory panel preferred the wines from the fruit harvested on Sept. 23 over wines made from fruit harvested on Sept. 10, while shoot thinning did not have as great an impact as in the previous year.

While there is little additional cost in delaying harvest by a week or two, shoot thinning is another trip through the vineyard that involves additional labor, as well as lost revenue due to lower yields. Through timing shoot thinning in several hybrid vineyards, we've estimated the cost of the practice to be approximately \$175 dollars per acre. When lost yield is taken into account, an additional \$195 per ton in 2007, and \$233 per ton in 2008 was required to ensure the same net revenue on a per acre basis for the grower (see Table 1), resulting in an additional per bottle cost at the winery of \$0.27 in 2007 and \$0.32 in 2008.

Table 1: Required price per ton and additional cost per bottle to cover the costs of shoot thinning in Marechal Foch in 2007 and 2008.

	Before Shoot Thinning	After Shoot Thinning (2007)	After Shoot Thinning (2008)
Cost/acre	\$1,420	\$1,595	\$1,595
Yield (tons/acre)	4.1 (2007) 7.0 (2008)	3.3 (thinned -0.80 t/a)	5.25 (thinned -1.75 t/a)
Net revenue/acre	\$1,040 (2007) \$2,780 (2008)	\$1,040 (to maintain constant welfare)	\$2,780 (to maintain constant welfare)
Price/ton	\$600	\$795 (needed for same rev, grower no worse off)	\$833 (needed for same rev, grower no worse off)
Add'l \$/bottle <i>(can make 60cs/ton)</i>		\$0.27	\$0.32

Data from T. Martinson and T. Preszler