Summary 174

VITICULTURE & ENOLOGY
UNIVERSITY OF CALIFORNIA DAVIS

Effect of leaf removal on grape yield, berry composition, and stilbene concentration

By: L. Bavaresco, M. Gatti, S. Pezzutto, M. Fregonie, and F. Mattivi

In: American Journal of Enology and Viticulture. 59(3):292-298. 2008

• Leaf removal is a cultural practice normally performed to improve spray coverage and improve the fruit microclimate. When performed at *fruit set*, it tends to reduce cluster density, whereas when performed at *veraison*, it tends to increase sugars, flavors, and flavonoids, and to decrease acidity and gray mold attack. The above is true if the canopy is dense, since leaf removal did not seem to show any positive effect on low-density canopies. Finally, since the flavonoid and the stilbene synthesis pathways are related, it is possible that leaf removal may affect, in addition to flavonoids, the accumulation of stilbenes with health properties, such as resveratrol.

• The goal of this study was to evaluate the effect of leaf removal performed at veraison on *yield*, *fruit composition*, and *stilbene concentration* of 3 different cultivars over the course of 4 years.

• The 3 cultivars were the most common varieties grown in the Italian appellation of origin "Colli Piacentini": Barbera, Croatina (red), and Malvasia di Candia aromatica (white). The 4 years were 1999-2002. The main weather highlights were that 1999 was the coldest of the four; 2000 was the warmest and driest; and 2002 was the wettest.

• 1) **Effect on yield.** Leaf removal had either no effect on yield (Barbera) or it depressed it somehow, due to lower cluster weights (Croatina and Malvasia di Candia aromatica).

• 2) **Effect on fruit composition**. The effect of leaf removal on *Brix* was unclear and fluctuated, depending on the year. The effect on *TA* was also fluctuating - for instance, in Croatina, leaf removal caused an increase in TA in 2001 and 2002, but a decrease in 2000. Finally, leaf removal had no effect on *pH*.

• 3) **Effect on stilbene production**. The authors monitored *trans-resveratrol*, *cis-piceid*, and *trans-piceid*. Results were extremely variable depending on both variety and year, and no patterns can be drawn.

• In brief, the authors emphasize the important role of both variety and climate when deciding whether to remove leaves, and are able to make the following recommendations:

- *for Barbera*: in cool years, it benefits from leaf removal, in terms of better ripening and more trans-piceid, whereas in warm years the practice seems useless;
- *for Croatina*: leaf removal can be useful in very dry years to improve ripening and decrease cluster compactness, but it will not help to increase stilbenes, irrespective of climate;
- *for Malvasia di Candia aromatica*: leaf removal can be useful in mid-warm years because it reduces cluster compactness without reducing sugars, acidity or stilbenes.

Don't you wish leaf removal were more predictable!

Author: Bibiana Guerra, Editor: Kay Bogart. This summary series funded by J. Lohr Vineyards & Wines