



Effects of pre-bloom leaf removal on growth of berry tissues and must composition in two red *Vitis vinifera* L. cultivars

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- It is generally accepted that berry size has important consequences for juice composition. But, as the authors point out, “studies specifically designed to test the relationship between berry size and juice composition are lacking”. A previous work that compared small-scale wine lots made out of small berries versus large berries showed no significant difference in composition or sensory scores of the resulting wines.

- The effect of leaf removal on berry size is not entirely clear. Some studies have reported no change. Others have found that early leaf removal might restrict berry growth. In a previous study by the same authors, they found that leaf removal near bloom effectively reduced yield - but not berry size - in high-yielding cultivars. In contrast, other studies suggest that leaf removal may *increase* cluster weight and yield. The authors specifically designed the current experiment to find out if and how leaf removal affected berry size, as well as its various components: skin, flesh, and seeds.

- They worked with two varieties growing in the Po Valley (Italy) - Barbera and Lambrusco. In 2006, when the vines reached stage H (flowers separated), they removed the 6 basal leaves, as well as any laterals developed on those first six nodes (LR). There was also a non-leaf removed control (C).

• Results .

		Effect of early LR on:	BARBERA	LAMBRUSCO
VINE	Fruitset		↓	↓
	Yield per shoot (g)		↓	↓
	Berries/cluster		↓	↓
	Berry mass (g)		↓	—
	Leaf area / Fruit weight		↑	↑
BERRY TISSUES	Pulp mass (g/berry)		—	—
	Skin mass (g/berry)		↑	↑
	Seed mass (g/berry)		↑	—
JUICE	Brix		↑	↑
	TA		↓	↓
	pH		↑	—
	Anthocyanins		↑	↑
	Total phenols		↑	—

Only significant effects shown ($p < 0.05$)

- Discussion highlights:

- _ the fact that leaf area-to-fruit ratios increased in the leaf-removal treatments indicate that the subsequent growth of laterals and the reduction in yield more than compensated for the leaf loss involved in the LR operation;
- _ variety played an important role in whether LR affected berry size. Early LR reduced berry size in Barbera, but not in Lambrusco;
- _ regardless of whether berry size was affected, it was obvious that early LR led to an overwhelmingly higher relative skin mass;
- _ the above statement suggests to the authors that berry size *per se* is not an inherent quality factor, and that, instead, the factors that affect the relative amounts of the berry components themselves (skin, seed, flesh) play more of a role in determining quality;
- _ the authors believe that the improved microclimate after LR may have influenced the increased growth of the berry skin, and in turn, its higher anthocyanin concentrations.

In conclusion, pre-bloom leaf removal is an effective technique to decrease yield - mainly through reduced fruitset - and to improve fruit composition - mainly through an increase in leaf-to-fruit ratio and an increase in relative skin weight. The authors recommend this practice for situations of large crops with compact clusters, therefore more susceptible to rot.

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