



Effect of shoot number on the leaf area and crop weight relationship of young Sangiovese grapevines

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In: American Journal of Enology and Viticulture. 59(4):422-424. 2008

- The trial took place in Napa in 1994 on a 5 year-old Sangiovese/3309 C trained to a lyre system. After pruning all vines to 14 two-bud spurs (28 potential shoot positions), shoots on each vine were removed to leave 12, 20, or 28 shoots per vine (4, 6.7 and 9.3 shoots per meter of cordon, respectively).

• Results:

- 1) As shoot number per vine increased, shoot length decreased. The longest shoots (12-shoot treatment, or 12SH) were twice as long as the shortest shoots (28-shoot treatment, or 28SH);
- 2) As the number of shoots increased, the percentage of total leaf area on lateral shoots decreased. The range was 41% lateral leaves in 12SH vs. 23% in 28SH;
- 3) Shoot number did not affect total leaf area. (The authors mention other studies, however, in which decreasing shoot number decreased leaf area);
- 4) Shoot number did not affect pruning weight;
- 5) Yield per vine ranged from 2.9 kg/vine in 12SH to twice that amount in 28SH (6.0 kg/vine);
- 6) The ratio of leaf area to fruit weight ranged between 0.8 m²/kg (28SH) and 1.6 m²/kg (12SH). Since 1.2 m²/kg is a commonly recommended leaf area to fruit ratio, the vines thinned to 20 shoots (about 7 shoots per meter) came closest to this optimal value, whereas the vines on 12SH would be considered “undercropped” by the above standard, and those on 28SH “overcropped” [Editor’s note: Were the vines truly undercropped or overcropped? Was sugar content of the fruit affected? How about anthocyanin levels?]. The authors did not address fruit composition;
- 7) The ratios of crop to pruning weight (*Ravaz index*) were 3.9, 5.5, and 8.4 for the treatments 12SH, 20SH, and 28SH, respectively. Since the recommended Ravaz index ranges between 5 and 10, only treatments 20SH and 28SH were within this desirable range.

The current results in divided-trellised vines support what others found in single-canopy vines: that attempts to change yield by adjusting pruning do more than just change yield. They also change *shoot length, leaf area per shoot, leaf area to crop ratio*, and the proportion of leaf area comprised of *primary leaf area*. Parameters unchanged include: *total leaf area* and *pruning weight* per vine. As the authors point out, when we observe a quality change in response to a change in the number of shoots retained, the underlying cause “may, in fact, be a change in crop weight per leaf area, or as importantly, in the amount of lateral leaf area in the canopy”.

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