

Research in Plain English

Palissage Reduces Cluster Zone Lateral Shoots Compared to Hedging

Research in Plain English provides brief, non-technical summaries of journal articles by Cornell faculty, students, and staff.

Authors: Justin France, Ming-Yi Chou, and Justine Vanden Heuvel

[Catalyst: Discovery into practice, October 2018. DOI 10.5344/catalyst.2018.17010](#)

Summary by Janet van Zoeren

The Takeaway.

- Palissage is a technique that involves tucking shoots down into the canopy or wrapping them along a top catch wire. It can be a viable alternative to hedging for vineyards using the vertical shoot position (VSP) trellis system.
- Tucking shoots down into the canopy increased yield compared to hedging (in one out of the two years of the study).
- Wrapping the vine tips reduced the number of laterals in the fruiting zone compared to hedging (in one out of the two years of the study).
- Both tucking and wrapping shoots decreased the prevalence of Botrytis symptoms (in one out of the two years of the study).
- Future studies are needed to determine the time cost, as well as any long-term yield and/or fruit quality benefits, of switching from hedging to a palissage method of vine-vigor management.



Tucking shoots back down into the canopy (top) and wrapping them along the top catch wire (bottom). Photos by J. Vanden Heuvel.

Background. In the northeastern US, a common concern of vineyard managers is how to manage vine vigor in order to improve fruit quality and reduce disease pressure. Hedging, or the removal of all material above the top catch wire, is a common solution used for vines on a VSP trellis. However, hedging removes the apical meristem of the shoot, and so is likely to encourage the vine to produce more lateral shoots, as well as removing significant quantities of leaf area which may affect the vines' yield and fruit chemistry/quality.

Palissage, or the tucking and wrapping of shoot tips instead of trimming them, has been anecdotally reported to reduce lateral counts in the fruit zone. *The study*

looked at whether wrapping or tucking the shoots would more effectively control vegetative growth compared to the traditional hedging method, and whether there would be any further benefits to disease management, yield, or fruit quality.

Experiment. The research took place in 2015 and 2016 on Riesling grapevines, in a commercial vineyard in the Finger Lakes region of New York. All vines were trained using vertical shoot positioning. 2016 was a drought year in the Finger Lakes region so the results of the study differed between years.

Three different treatments were applied: (1) tucking the tips of long shoots downward into the canopy, (2) wrapping the tips of long shoots sideways at the top of the canopy, and (3) hedging the vines (control). Wrapping and tucking were each done once during the growing season, when growing shoots reached 50 cm above the top trellis wire. Hedging was done twice, according to standard vineyard practices.

The effects of these treatments on four outcomes was tested: (1) vegetative and reproductive growth, (2) yield, (3) disease pressure, and (4) juice and wine characteristics.

Results. Using palissage decreased the number of laterals, and increased cluster weight. Both tucking and wrapping decreased the number laterals, especially in the upper third of the canopy. Tucking increased the diameter of the shoots in 2016, as well as increasing the number of layers in the canopy, causing some increased shading throughout the canopy. This indicates an over-all positive result of palissage reducing lateral formation. However, tucking may create a denser canopy due to putting the shoots back down into the fruiting zone, which may shade the fruit and delay ripening.

In the second year of the study, both tucking and wrapping increased cluster weight, berry weight, and berry number per cluster. Tucking increased the total yield per vine by 28% compared to hedging. Wrapping had no overall effect on yield. In the first year of the study, yield was the same across all treatments.

Palissage decreased the number of Botrytis-infected berries. There was no effect of palissage on Botrytis severity, but both palissage techniques decreased the incidence (or number of infected berries) compared to hedging. No other diseases were evaluated in this study.

Palissage changed the aroma of the final product, but it is unclear specifically how. In the first year of the study, tucking led to lower Brix levels and higher titratable acidity compared to hedging. Wrapping had no effect on fruit quality either year, and there was no difference among any treatments in the second year of the study. However, sensory panelists were able, using aroma only, to group wines according

to the vineyard treatments. This result indicates that there were distinct differences among wines made from the three vine management treatments. It is unclear what the causes of those differences are.

Conclusions and practical considerations. The study provides tentative positive results for the use of palissage in vertical shoot position trellised vines. Palissage techniques showed a tendency toward increased yield (tucking), decreased laterals (wrapping), and decreased disease pressure (both) when compared to hedging. However, no result is conclusive across years, possibly due to the drought in 2016.

The study leaves room for future work, to help growers understand the advantages and disadvantages of each management technique. For example, a future study could take into consideration the amount of labor hours necessary for palissage vs. hedging. Also, future studies could follow the long-term benefits of palissage, as well as more specifically analyzing the fruit quality and wine sensory preference differences between grapes from vines that were hedged, tucked or wrapped. The Vanden Heuvel lab has now completed three years of a four-year study on the impact of palissage on Cabernet Franc.

Janet van Zoeren is the extension support specialist with the statewide viticulture extension program, based at Cornell AgriTech at NYSAES in Geneva, NY.