

Cane pruning to improve production efficiency and canopy quality of Vignoles and Noiret

Introduction

Vine balance is influenced by a variety of factors including climate and canopy management. The variable climate in Kentucky can pose challenges to maintaining vine balance. However, controlling canopy management methods can offset climatic challenges. The predominant vine pruning method used in Kentucky is spur pruning. This method of pruning is successful, however, achieving long-term vine balance can be difficult. Vine decline is common and frequent cordon replacement is necessary on lower vigor vines and vines that are spaced 8 ft. apart (industry standard) when spur pruned.

❖ The aim of this study is to investigate the influence of vine spacing (cane length) on vine growth metrics in Noiret and Vignoles.

Methods

Planting and first year training: Vines were planted at 4.0, 4.5, and 5.0 feet in-row spacing in 2015. First year training included selection and training of a single shoot and removal of all flowering clusters as soon as they appeared.

Treatments: Each treatment (4.0, 4.5, and 5.0 foot spacing) was established in 45 ft panels and replicated 4 times.

Mature vine training: in 2016 all vines pruned to one single directional cane tied to the fruiting wire. All suckers were removed from the trunk, as soon as they appear starting 10-12" below the fruiting wire.

Vine growth metrics measured for each vine:

- Yield = Tons/acre, cluster weight, clusters/shoot
- Vegetative growth = Ravaz index (yield/pruning weight), vine size (lbs of pruning weight/ft of row, internode length).
- shoot density = Buds/ft. of cane, shoots/ft. of row, shoots/ft. of cane, % gaps in the fruiting wire
- Fruit Chemistry = Brix, pH, TA

Methods and preliminary results

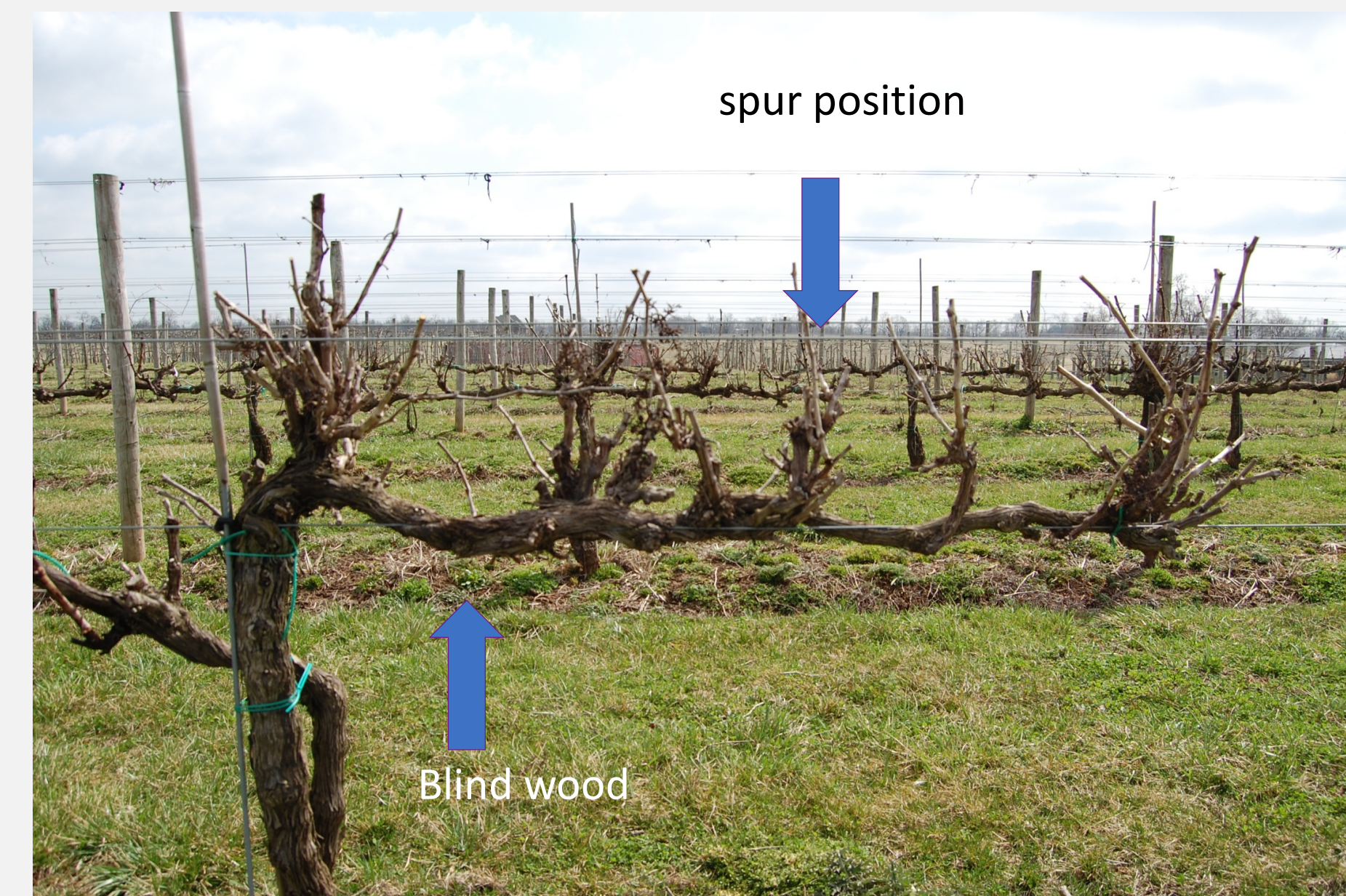


Figure 1. Spur pruned bi-lateral cordon exhibiting vine decline and blind wood



Figure 2. Cane pruned vine. Bilateral 1-yr-old fruiting canes are indicated by arrows



Figure 3. Treatment vine before unilateral cane pruning was applied

Preliminary results

Table 1. Effects of spacing on growth metrics of Noiret and Vignoles

Vintage	Cultivar	Spacing (ft)	Tons/Acre	Cluster Wt (lb)	Clusters/shoot	Ravaz index
2017-2019	Noiret	4.0	4.51	.37	1.54	2.60
		4.5	4.24	.34	1.60	2.42
		5.0	4.76	.40	1.64	3.10
2017-2019	Vignoles	4.0	3.35	.25	1.70	2.37
		4.5	3.32	.25	1.80	2.50
		5.0	3.26	.25	1.94	2.65

*Results were not statistically significant ($P > 0.05$)



Figure 4. Treatment vine after unilateral cane pruning was applied

Discussion

- Yields were commercially acceptable for all treatments. Observations suggest that the 5.0-foot spacing produced slightly higher yields in Noiret due to increased cluster weight and clusters per shoot.
- Vine vigor as measured by lbs. of pruning weight per foot of row was reduced in the 5-foot in-row spacing treatment while similar pruning weight was recorded in the 4.0 and 4.5-foot treatments for both Noiret and Vignoles. The reduction in pruning weight, combined with higher yields recorded in the 5.0-foot spacing, led to improved ratio of fruit weight to pruning weight defined as the Ravaz index..

Discussion & Conclusion

- Using fruiting canes in lengths between 4.0-5.0 feet in length did not result in an excessive number of blind nodes. These vines expressed commercially acceptable uniformity of shoot density and yield, while expressing extremely high fruit quality.
- *Although all variables analyzed were not statistically significant, field observations imply there are marketable differences in the canopy manipulations applied. Further statistical analysis and data collection will be explored in the 2021 growing season.