Assessment of Vine Quality and Pruning Techniques in Oklahoma Vineyards

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Abstract

Pruning is one of the most important jobs for a viticulturist. Proper pruning can improve fruit quality and stabilize production over time. By consistently limiting the number of shoots and leaves via dormant pruning, one is also working to produce the maximum crop without delaying maturity year after year. Failure to prune can lead to improper ripening, reduced cane maturity, reduced productivity of buds the following season, and a decrease in root mass. Therefore, pruning needs to regulate the number and positions of shoots on a vine which in turn regulates cluster number and size. In April 2014, 26 vineyards throughout Oklahoma were surveyed for grapevine quality and pruning techniques. Measurements of spur diameter, internode length, and spurs retained per linear foot of row were taken. Data shows that among all cultivars observed, few spurs were within the desired range of 0.8 to 1.3 cm diameter. This indicates potential problems such as poor vigor (possibly due to own-rooted vines), poor nutrition, lack of adequate water, poor weed management, too much crop load in previous year, or leaving too many shoot/canes the previous years. Less of a problem was spur internode length. Although within the broad parameters of 2.5 to 10 cm, most cultivars in Oklahoma fell in the lower part of that range. The number of spurs per linear foot by cultivar was too many in most vineyards in Oklahoma. The desired range is ~2.5 spurs per linear foot of canopy; however, most observed were greater than 3 and most over 4. Overall, there were deficiencies identified in vine quality and pruning techniques that could be improved to deliver better grape crops in the future.

Introduction

The purposes of this project were to:

1. Identify quality improvements needed in Oklahoma Vineyards and pathways to implement them through educational programs.

2. Identify geographically the grape cultivars grown throughout Oklahoma's eco-regions.

3. Grow high quality grapes which can be made into high quality juices and/or wines.

4. Provide additional subject matter for incorporation into educational and extension programming.

The primary goal of this project is to gather unbiased, accurate information on Oklahoma's commercial vineyards in order to identify areas of positive improvement including: educational program content for current and future growers, variety selection by eco-region, and industry growth.





Fig. 1, 2. Dr. Stafne assessing vineyard quality and pruning technique in Oklahoma, April 2014.

Materials and Methods

Two primary data sheets modified from those developed by the Texas AgriLife Extension Great Vineyards Program were used to assess each vineyard. Five to six vineyards were visited in each of five different regions on the state. Each vineyard was visited twice, once in April 2014 and again in July 2014, to assess grapevine quality and pruning techniques. Measurements of spur diameter, internode length, and spurs retained per linear foot of row were taken, as well as other subjective measures.

Results and Discussion

Data shows that among all cultivars observed, few spurs were within the desired range of 0.8 to 1.3 cm diameter (Fig. 3). This indicates potential problems such as poor vigor (possibly due to own-rooted vines), poor nutrition, lack of adequate water, poor weed management, too much crop load in previous year, or leaving too many shoot/canes the previous years. Less of a problem was spur internode length. Although within the broad parameters of 2.5 to 10 cm, most cultivars in Oklahoma fell in the lower part of that range (Fig. 4). The number of spurs per linear foot by cultivar was too many in most vineyards in Oklahoma. The desired range is ~2.5 spurs per linear foot of canopy; however, most observed were greater than 3 and most over 4 (Fig. 5).





Fig. 3. Mean spur diameter (cm) by cultivar over all locations from Oklahoma vineyards. Only cultivars planted in at least two vineyards were analyzed.

Fig. 4. Mean spur internode length (cm) by cultivar over all locations from Oklahoma vineyards. Only cultivars planted in at least two vineyards were analyzed.



Fig. 5. Mean number of spurs per linear foot of row by cultivar. Only cultivars planted in at least two vineyards were analyzed.



Fig. 6, 7. Examples of poor pruning practices observed in Oklahoma vineyards. Too many spurs (left) and lack of education (right) lead to poor pruning and fruit production and quality.

Conclusions

Overall there is a great deal to be concerned about regarding viticulture in Oklahoma (See Fig. 6,7). The primary concern is the long-term sustainability of vineyards throughout the state. Some of the more striking examples in 2014 are the lack of attentive management, poor pruning practices, lack of adequate pest control, poorly balanced vines and overall poor site selection. Many of these can be improved over time. Under current conditions, very few vineyards are well-run and are profitable.

Relevant Links

Final Report of the Oklahoma Vineyard Quality Project (<u>http://www.grapes.okstate.edu/PDFs/vineyard-quality-</u> <u>survey</u>)

Presentation of Final Report of the Oklahoma Vineyard Quality Project (<u>http://www.grapes.okstate.edu/PDFs/ForGrapeResearchData/ok-vineyard-quality-project</u>)

Texas AgriLife Extension Great Vineyards Program (<u>https://winegrapes.tamu.edu/greatvineyard.html</u>)





