

Trunk Disease Survey in the Sierra Foothills: Preliminary Results

Kendra Baumgartner, USDA-Agricultural Research Service
Renaud Travadon, USDA-Agricultural Research Service
Vicken Hillis, University of California, Davis
Jonathan Kaplan, California State University, Sacramento
Mark Lubell, University of California, Davis
Funded by the USDA-NIFA Specialty Crops Research Initiative

Issue

Trunk, or wood-canker, diseases, including *Botryosphaeria* dieback, Esca, *Eutypa* dieback, and *Phomopsis* dieback, present a serious challenge to winegrape growers. Many vineyards in California are likely infected and yield losses in severely symptomatic vineyards can reach over 90%. The overall economic impact of losses to *Eutypa* alone just in California has been estimated at 14% of gross producer value. Trunk diseases take a long time to develop and often become symptomatic only years after infection has already occurred, at which point management options are limited. While preventative management practices are available, grape growers may be hesitant to use them due to uncertainties about cost-effectiveness and future risk of infection.

Key Findings

Grape growers in the Sierra foothills (crush district 10) use delayed pruning in order to prevent trunk disease far more than they do double pruning or pruning-wound protectants. For all three practices, the majority of growers begin using the practice in vineyards between 8 and 12 years old. Growers rated all three practices positively for effectiveness in maintaining adequate yields and rated delayed pruning positively in terms of cost-effectiveness. In contrast, growers rated double pruning and pruning-wound protectants negatively in terms of cost-effectiveness.

Methodology

We conducted a survey of attendees at a trunk disease management workshop, organized and hosted by Lynn Wunderlich, Viticulture Farm Advisor in the central Sierra, held in Plymouth, CA on November 20th, 2013. We used Turning Point, an electronic audience response system, to conduct the survey. UCCE Viticulture farm advisors and industry representatives helped design the survey. Up to 43 individuals responded to any given survey question.

Similar surveys are being conducted in other winegrowing regions of California in the winter of 2013-2014. We are also conducting economic cost-benefit studies to better understand the long-term costs and benefits of different management practices in a range of scenarios. Combined, this research will provide us with a better understanding of the long-term efficacy of these management practices and the incentives motivating grower decision-making. We hope that this information will, in turn, provide growers and other managers a better understanding of how best to deal with trunk diseases.

Detailed Results

We asked winegrape growers from the Sierra foothills about three practices known to be effective in preventing trunk diseases: delayed pruning, double pruning, and the application of pruning-wound protectants. We first asked growers how often they have used (or advised, for those in an advisory role) each of the practices in the last five years. As seen in Figure 1, delayed pruning is by far the most common practice; over 75% of growers use delayed pruning either often or always. By contrast, about half of all growers use double pruning either never or rarely and over 75% of growers use pruning-wound protectants either never or rarely.

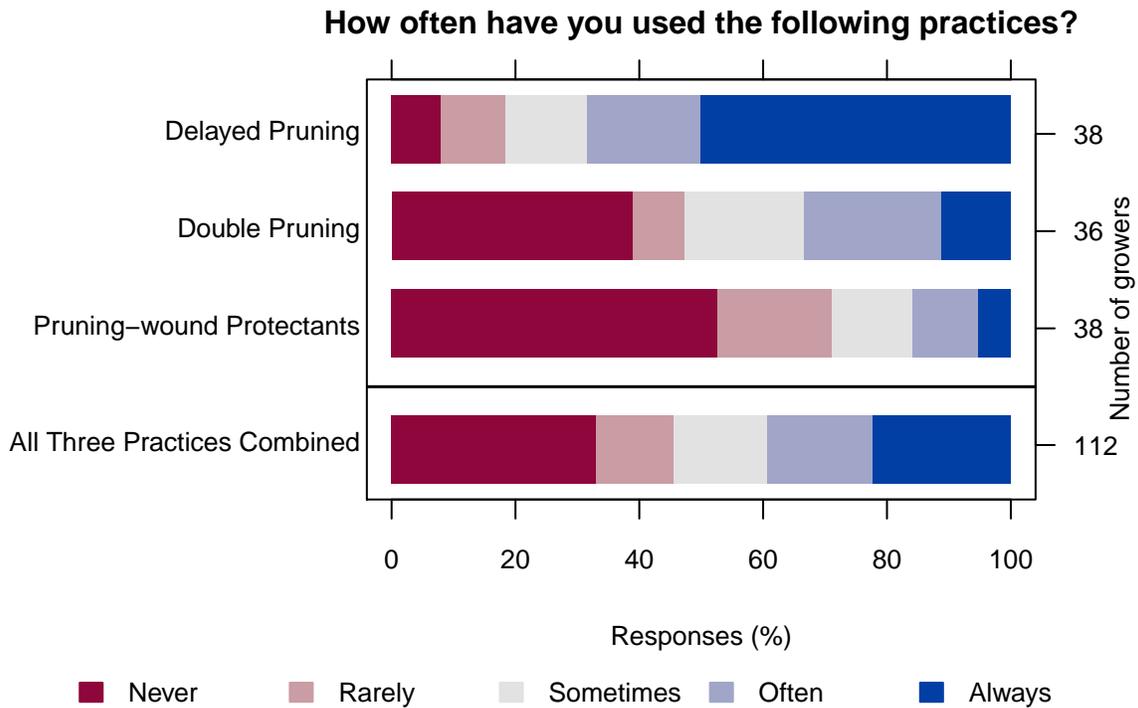


Figure 1 – Percentage of responses to the following question: In the last five years, how often have you used (or advised) delayed pruning, pruning-wound protectants, and double pruning to manage trunk diseases? Answer options ranged from "Never" to "Always" (shown at the bottom of the figure). Total number of responses to each question is shown on the right, labeled as number of growers.

We also asked growers what the typical age of a vineyard was when they first started using each of the practices. Because these practices are most effective when used as preventative measures before infection occurs, the age of the vineyard at first use is an indication as to whether the practices are being used optimally. Symptoms typically become apparent in vineyards eight years or older even when infection occurs much earlier. As seen in Figure 2, for all three practices, a majority of growers reported typical first use to be in vineyards greater than eight years old. It's highly likely, therefore, that some growers start to use these preventative practices after infection has already occurred.

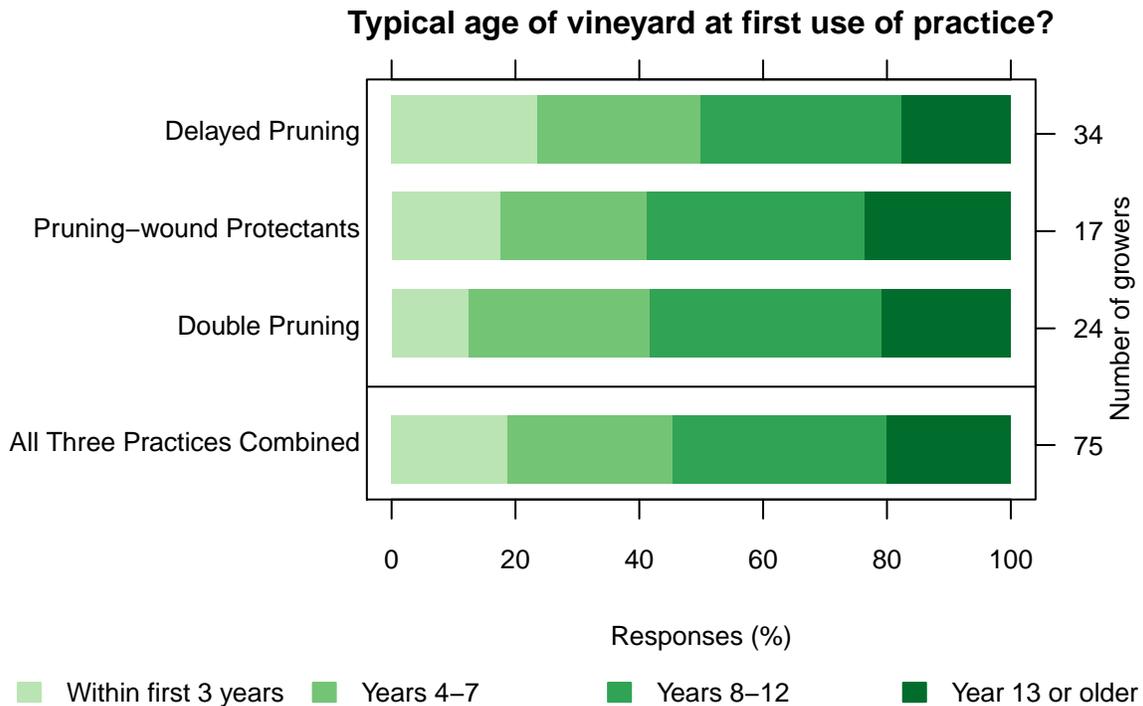


Figure 2 – Percentage of responses to the following question: In the last five years, what was the typical age of the vineyard when you started using (or advising) delayed pruning, pruning-wound protectants, and double pruning to manage trunk diseases? Answer options ranged from "Within first 3 years" to "Year 13 or older" (shown at the bottom of the figure). Total number of responses to each question is shown on the right, labeled as number of growers.

Finally, we asked growers to evaluate the efficacy of each of the practices for two different criteria: maintaining adequate yield and cost-effectiveness. As seen in Figure 3, growers rated all three practices positively for maintaining yield and rated delayed pruning positively for cost-effectiveness. For example, about 90% of growers rated double pruning positively for maintaining yield. In contrast, growers rated double pruning and pruning-wound protectants negatively for cost-effectiveness. In particular, about 40% of growers rated double pruning as very cost-ineffective.

How effective is the practice in achieving the following goals?

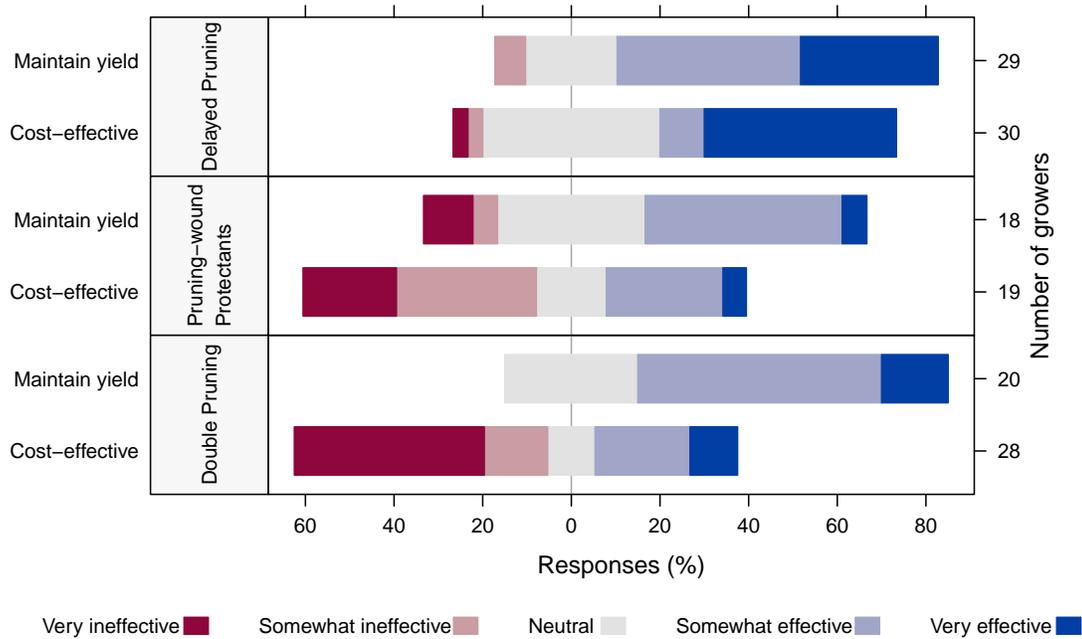


Figure 3 – Percentage of responses to the following question: In the last five years, how effective was each practice in terms of: maintaining yields / cost-effectiveness? Answer options are shown at the bottom of the figure. Total number of responses is shown on the right, labeled as number of growers.