Susceptibility of pruning wounds to grapevine trunk diseases

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Introduction
Grapevine trunk diseases, caused by fungal pathogens that infect pruning wounds, affect vine health and longevity. Trials were conducted to evaluate the duration of pruning wound susceptibility throughout the pruning season, and to compare commonly planted cultivars in terms of wound susceptibility.

Field trials
- Vines were pruned early June, mid July and late August (Fig 1).
- Wounds were inoculated with Eutypa lata (eutypa dieback) or Diplodia seriata (botryosphaeria dieback) spores at intervals up to 16 weeks after pruning, in McLaren Vale and Wagga Wagga, respectively.
- After 12 months, canes were harvested and pathogens re-isolated.

Figure 1. Field trial; a) pruning; b) inoculating pruning wounds; c) E. lata isolated from canes on agar medium; d) D. seriata isolated from canes on agar medium.

Results
- Regardless of pruning time, wounds were highly susceptible to infection by both pathogens for first 2 weeks after pruning (Figs 2 & 3).
- Inoculation 4 or more weeks after pruning led to lower incidence of infection, particularly by E. lata.

Figure 2. Incidence of Eutypa lata recovery from Shiraz canes pruned on 4 June (Early), 16 July (Mid) and 27 August (Late) 2013 and inoculated with 500 spores at 1, 7, 14, 28, 42 or 56 days after pruning. NIC = non-inoculated control. Bars = standard error of the mean.

Figure 3. Incidence of Diplodia seriata recovery from Cabernet Sauvignon canes pruned on 12 June (Early), 22 July (Mid) and 22 August (Late) 2014 and inoculated with 1000 spores at 1, 7, 14, 28, 42, 56, 84 or 112 days after pruning. NIC = non-inoculated control. Bars = standard error of the mean.

Detached cane assays
Methods
- In the greenhouse, single node cuttings of cvs Shiraz, Cabernet Sauvignon, Merlot, Chardonnay, Sauvignon Blanc and Semillon were inoculated with E. lata or N. luteum at intervals up to 14 days after pruning (Fig 4).
- After 4 weeks, canes were harvested and pathogens re-isolated.

Figure 4. Detached cane assay; a) single node cutting, b) inoculating cuttings inserted into polystyrene boards floating on water; c) N. luteum isolated from cane segments on agar medium.

Results
- All cultivars were susceptible to infection by both pathogens.
- For all cultivars, susceptibility decreased with time of inoculation after pruning (Figs 5 & 6).
- There was no difference between cultivars.

Figure 5. Incidence of Eutypa lata recovery from detached canes which were pruned and then inoculated with 500 spores at 1, 7 or 14 days after pruning. Bars = standard error of the mean.

Figure 6. Incidence of Neofusicoccum luteum recovery from detached canes which were pruned and then inoculated with 500 spores at 1, 7 or 14 days after pruning. Bars = standard error of the mean.

Conclusion
Grapevine pruning wounds were susceptible to infection by trunk disease pathogens, regardless of the pruning time, particularly for the first 2 – 4 weeks. Duration of susceptibility was greater for Cabernet Sauvignon inoculated with D. seriata than it was for Shiraz inoculated with E. lata. All the commonly grown cultivars in Australia assessed were susceptible to infection. Field trials are being repeated, and future research will evaluate wound susceptibility in other regions. Results will provide decision support for managing grapevine trunk diseases.

Acknowledgements
This research was funded by Wine Australia. Thanks to Cathy Todd, Ian Bogisch, Ian Riley, Lee Bartlett and Georgina Elena for technical assistance.