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Efficacy of Propiconazole for Prevention of Sassafras Mortality from Laurel Wilt Disease Using a Tree Micro-Injection and Micro-Infusion Delivery System..... 2



Abstract. Laurel wilt is a lethal disease of American Lauraceae caused by *Harringtonia lauricola*. Propiconazole is a systemic fungicide which arrests fungal growth among a variety of plant hosts. Propiconazole as a preventive treatment against laurel wilt in sassafras (*Sassafras albidum*) has not been evaluated. We treated sassafras trees with propiconazole using the Arborjet QUIK-jet[®] Micro-Injection[™] and TREE I.V. Micro-Infusion[™] systems (Arborjet, Inc., Woburn, MA, USA) and challenged trees by inoculating them with *H. lauricola*. Out of 7 trees treated using the QUIK-jet Micro-Injection system, 6 (86%) survived 52 or more weeks following inoculation with *H. lauricola*, while only 11% of inoculated control trees (1 of 9) survived over this period. All trees not damaged by hurricanes ($n = 13$) treated with propiconazole using the TREE I.V. Micro-Infusion system survived significantly longer than untreated control trees after inoculation with *H. lauricola*; 10 of 13 trees (77%) survived with < 50% crown loss, and 8 of 13 trees (62%) appeared entirely healthy 54 weeks post-inoculation. In the TREE I.V. Micro-Infusion system trial, 15 of 19 control trees (79%) had either died or lost $\geq 50\%$ of living crown 54 weeks post-inoculation with *H. lauricola*. Results indicate sassafras trees treated with propiconazole using the Arborjet QUIK-jet Micro-Injection and TREE I.V. Micro-Infusion systems are significantly less likely to die within one year of infection with *H. lauricola*; however some trees may exhibit significant crown decline ($\geq 50\%$) over this period.

Keywords. Ambrosia Beetle; Bioassay; Fungicide Infusion; Fungicide Injection; *Harringtonia lauricola*; Propiconazole; *Raffaelea lauricola*; Redbay; *Sassafras albidum*; *Xyleborus glabratus*.

G.M. Moore and A. Chandler

The Potential of Yellow Gum (*Eucalyptus leucoxylon* F. Muell.) as an Urban Street Tree: An Assessment of Species Performance in the City of Greater Melbourne, Australia 16

Abstract. Background: In contrast to trees from northern hemisphere genera, there has been little research into the selection and vegetative propagation of Australian native tree species for use as street trees. *Eucalyptus leucoxylon* F. Muell. is one of a few eucalypts occurring in south-eastern Australia with bright coloured flowers and is highly regarded as an ornamental tree that flowers readily. It is propagated from seed, but progeny typically show seedling variability and diversity. *Eucalyptus leucoxylon* was identified as the most widely planted eucalypt in the streets of the city of greater Melbourne, Australia. Methods: This research assessed 300 *E. leucoxylon* street trees growing across the city of greater Melbourne for their performance against arboricultural criteria relating to canopy structure and density, straightness of the trunk, health (assessed on canopy, trunk, and branch condition, production of exudates, and presence of fungal fruiting bodies), flower colour, and root systems. Results: The results showed that *E. leucoxylon* was a suitable street tree species with most specimens showing good habit, vigour, and health. Discussion: The trees had traits such as live crown ratio, height, flower colour, and capacity to cope with pruning that are considered appropriate for a street tree. Their dense canopies and high live crown ratios provide shade that can reduce the urban heat island (UHI) effect. Conclusion: This suggests the species has the potential to be a successful street tree not only in Australia, but in other parts of the world where it has been grown successfully in forestry plantations.

Keywords. Arboricultural Criteria; Eucalyptus; Flower Colour; Live Crown Ratio; Street Tree Performance; Urban Forest.

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Abstract. Background: In Singapore, determining the level of infestation by lebbek borer (*Xystrocera globosa*)(Olivier, 1795)[Coleoptera: Cerambycidae] is the crucial first step in control of this pest in rain tree (*Albizia saman* [Jacq.] Merr.)(Fabales: Fabaceae). Current assessment methods rely on symptoms such as canopy colour, defoliation, dieback, and actual estimation of borer population via counting of larvae or exit holes created by adults. Currently, there is a lack of systematic approach to integrate different tree health indicators and symptoms to quantify infestation level. This gap poses challenges in assessment of treatment efficacy as managers could not quantitatively determine whether infestation level has changed following treatment. Thus, this study aimed to develop a visual assessment method that can integrate all mentioned symptoms to quantify infestation level. Methods: We surveyed a total of 388 rain trees and used principal component analysis (PCA) to investigate the correlation between *X. globosa* infestation and different borer infestation symptoms. Borer Infestation Score (BIS) formula was developed based on the linear combinations of the statistically significant principal component. Results: Infestation level was strongly associated with bark peeling, exit holes, and proximity of bark peeling and/or exit holes to trunk base and weakly associated with defoliation, dieback, and canopy colour. Developed BIS formula generated numerical values that distinguished between noninfested and infested trees, reflected infestation level in surveyed areas and temporal progression of infestation. Conclusions: Described integrated visual assessment method can be executed quickly on field. BIS formula generates quantitative scores easy to be interpreted, tracked, and compared.

Keywords. *Albizia saman*; Borer Infestation Score; Integrated Pest Management; Integrated Visual Assessment; Rain Tree Borer Infestation; Tree Health; Urban Forestry; *Xystrocera globosa*.