Significance to the Horticulture Industry

Methyl Salicylate

Evaluating Methyl Salicylate Lures on Natural Enemies, Pests and Meristem Damage in Red Maple Fields. Alexander M. Butcher, Dalila Rendon, Sinaiah Harrington, and Jana C. Lee. *Journal of Environmental Horticulture 42(3):101–108*

Red maples, *Acer rubrum,* is a widely popular landscaping tree in the United States. The Willamette Valley of Oregon is home to large acreages of red maple production. A witches' broom symptom has been causing increased labor costs and insecticide applications in Willamette Valley red maple production for the past decades. The exact causal agent has not been determined; however, it is believed to be associated with an arthropod pest. While not a study designed to identify the culprit, our data provides evidence of an association between aphid abundance and instances of witches' broom symptoms. This study also provides evidence that methyl salicylate lures can help to reduce these symptoms and aphid abundance early in the season while augmenting late season populations of the predatory minute pirate bug, *Orius*. This data can help guide future work to identify the cause of witches' broom symptoms and provides evidence for the efficacy of a safer alternative to chemical sprays.

Phytophthora Cinnamomi

Leaf Discoloration in *Rhododendron* Species Exposed to *Phytophthora Cinnamomi* Corresponds with Future Mortality. Anna Cryan, Yu Liu, Juliana S. Medeiros, and Jean H. Burns. *Journal of Environmental Horticulture 42(3):109–116*

Plant pathogens present unique challenges within the horticulture industry, as they cost billions of dollars in plant mortality annually. The ease with which pathogens of the genus *Phytophthora* are spread within nursery environments severely compromises the health and production of *Rhododendron* and many other woody plants. Thus, the ability to quickly identify diseased plants within large populations of *Rhododendrons* is crucial to nurseries. Our results indicate that rapid photo assays using a cell phone camera and free ImageJ software correlates with experimental pathogen inoculation. Furthermore, our work confirms the use of phosphite treatment as a strategy to reduce leaf discoloration when *Rhododendrons* are exposed to *Phytophthora cinnamomi*. While identification of root rot and other pathogens in *Rhododendrons* is already possible, our work provides a tool for rapid leaf discoloration quantification that is repeatable, quantitative, and inexpensive. The high degree of accessibility of these tools, including cell phone cameras and free software, suggest that this tool might be useful in applications such as citizen science projects, industry, and horticulture.

Potted *Radermachera*

Nitrogen Requirement and Nitrogen Form Preference by *Radermachera hainanensis* and *R. sinica* Plug Seedlings. Tsung-Cheng Wang, Tzu-Yao Wei, and Der-Ming Yeh. *Journal of Environmental Horticulture 42(3):117–123*

Excessive fertilizer application not only increases production costs but also contributes to water pollution. Nitrogen significantly influences photosynthesis and the growth rate of plants. The proper nitrogen concentration requirements and the nitrate to ammonium ratio have yet to be determined for *Radermachera* species, which are widely used as ornamental foliage plants or in outdoor landscapes in tropical or subtropical regions. These woody plant species have a longer production cycle, and proper nitrogen fertilizer management for seedling trays can accelerate production. In this research, two species of *Radermachera* were treated with nine nutrient solution nitrogen concentrations and five nitrate to ammonium ratios to determine the proper nitrogen requirements for *Radermachera*. The information acquired from this study should contribute to a better understanding of nitrogen effects on photosynthesis and to accelerate growth, achieving uniform young *Radermachera* seedlings.

Responses of Growth and Photosynthesis in Potted *Radermachera hainanensis* and *R. sinica* to Various Medium Water Contents. Tsung-Cheng Wang, Tzu-Yao Wei, and Der-Ming Yeh. *Journal of Environmental Horticulture 42(3):124–130*

Effective water management plays a crucial role in the production of potted plants. *Radermachera hainanensis* and *R. sinica* have been widely used as ornamental foliage plants or outdoor landscapes in tropical or subtropical regions. However, scientific reports on their irrigation are lacking. This research contributes valuable insights into water management by employing the WET (Water content/Electrical conductivity/Temperature) sensor to measure the effects of volumetric medium water content on photosynthesis and growth of these two *Radermachera* species. The results are expected to provide valuable guidance for nursery management of potted *Radermachera*. These two *Radermachera* species, characterized by various pinnate-compound leaves and varying leaflet sizes, could serve as a promising model for studying the fundamental aspects of hydraulic architecture, including water relationships, gas exchange, and their distribution across different habitats.

Wild Lime

Sexual and Asexual Propagation of Wild Lime (*Zanthoxylum fagara* L. Sarg.), a Native Florida Plant with Ornamental and Ecological Value. Lindsay Mikell, Sandra B. Wilson, S. Christopher Marble, Wagner Vendrame, and Edzard van Santen. *Journal of Environmental Horticulture 42(3):131–139*

The demand for attractive native plants for commercial and residential landscapes is rising. In the past five years, the nursery industry in Florida reported a critical need for reliable and efficient propagation systems to produce a diverse palette of native species that support ecologically

friendly gardening. The results presented herein show that wild lime (*Zanthoxylum fagara)* can be efficiently propagated by seed or cuttings, supporting its wider use in Florida and beyond. As a host plant to several swallowtail (*Papilio*) butterfly species, wild lime could possibly be a candidate for micropropagation along with other important pollinator species. Ongoing studies are underway to investigate other underutilized native species with potential for introduction to the ornamental industry. Propagation and production research along with associated marketing will remain key to their availability and demand.