Significance to the Horticulture Industry

Mites on Roses

Evaluation of *Rosa* Species Accessions for Resistance to Eriophyid Mites. K. M. Solo, S. B. Collins, L. G. Schneider, M. R. Hajimorad, F. A. Hale, J. B. Wilkerson, A. S. Windham, D. H. Byrne, and M. T. Windham. *Journal of Environmental Horticulture* 37(4):108–112.

Rose rosette virus (RRV) has destroyed many roses and is vectored by the eriophyid mite, *Phyllocoptes fructiphilus*. This mite feeds only on *Rosa* species. Efforts have been made to screen roses for virus resistance, create new rose crosses to develop resistant roses, and develop disease management procedures, but looking for resistance in the vector/ host relationship has remained uninvestigated (Byrne et al. 2019). This study evaluated 18 *Rosa* species, plus multiple accessions of *R. foliolosa, R. nitida, R. palustris, R. roxburghii,* and *R. rugosa*, for resistance to eriophyid mite populations under field conditions. The data showed large variation in mite numbers and were not statistically different due to a relatively small sample size per rose species, environmental conditions, and possible design issues in the experiment. This paper outlines those issues and suggests a plan that may more accurately identify whether resistance to the mite exists in *Rosa* species. Identification of *Rosa* species resistant to eriophyid mite populations would be useful for developing roses resistant to the vector of RRV.

Nutrient Leaching

Fertilizer Source and Irrigation Depth Affect Nutrient Leaching During Coleus Container Production. Kayla R. Sanders, Jeffrey S. Beasley, Edward W. Bush, and Stacia L. Conger. *Journal of Environmental Horticulture* 37(4):113–119.

It is well accepted that nutrient leaching from nursery container production is associated with increased eutrophication and negative environmental impacts to surrounding water bodies and ecosystems. As a result, nursery managers should consider practices not only to generate profit, but also to minimize environmental impact. Fertilization and irrigation are primary practices affecting nutrient leaching in the nursery industry; however, there is little research regarding the use of traditional water-soluble fertilizers and more recently available controlled-release fertilizers and their interactions with varying irrigation depths, especially in areas with humid, subtropical climates. Therefore, this research provides critical information to nursery managers on how to tailor their fertilization and irrigation strategy to reduce nutrient leaching without slowing nursery container production of short-cycle crops such as coleus. Our findings indicate applying controlled-release fertilizer is a simple, recommended management practice to reduce nutrient leaching losses and produce salable plants. If traditional water-soluble fertilizer is applied, decreasing irrigation depth is recommended as a means to reduce nutrient leaching losses.

Research Priorities

Research Priorities of the Environmental Horticultural Industry Founded through Consensus. James S. Owen, Jr., Anthony V. LeBude, Jill Calabro, Jennifer K. Boldt, Jennifer Gray, and James E. Altland. *Journal of Environmental Horticulture* 37(4):120–126.

A national cross section of stakeholders, nursery and greenhouse specialty crop producers convened in New Mexico to create a roadmap directing research objectives and public funding for environmental horticulture production (EHP). Scientists and the leadership of the Horticultural Research Institute were present as active listeners to enable reporting of stakeholder findings. Total public funding of over $116 million annually is directed toward EHP research in the U.S. Currently, there is a 36% gain per year on the rate of return (ROR) for specialty crops research investments indicating that research dollars directed toward EHP provides economic benefit for producers (Alston and Pardey 2000). Due to their applied nature, however, research findings and their benefits may take years or even decades to be realized because adoption and change lag behind the status quo (Alston and Pardey 2008). Additionally, social and long-term benefits from completed research that "spill over" across state and regional boundaries (Alston et al. 2000) and across sectors have not heretofore been a focus for EHP research. The roadmap laid out here should be used to direct public nursery and greenhouse specialty crops research funding to maximize ROR across EHP, as well as, provide direction and guidance for other funding agencies to use for determining what stakeholders (i.e., specialty crop producers) and constituents including allied companies and support networks envision as necessary priorities to invest their research dollars.

Rust on Switchgrass

Evaluation of Variation in Switchgrass (*Panicum virgatum* L.) Cultivars for Rust (*Puccinia emaculata*) Resistance. Qunkang Cheng, Alan S. Windham, Kurt H. Lamour, Arnold M. Saxton, and Mark T. Windham. *Journal of Environmental Horticulture* 37(4):127–135.

Switchgrass is used as an ornamental grass and as a biofuel feedstock. Leaf rust, caused by *Puccinia emaculata Schwein*., may reduce the crop yield by up to 55% (Skyes et al. 2016). Researchers have reported on rust resistance in agronomic cultivars/populations or ornamental cultivars (Gustafson et al. 2003, Jacobs et al. 2004, Uppalapati et al. 2013). This research focused on evaluating agronomic and ornamental cultivars for their susceptibility to rust isolates collected in seven states from either agronomic and/or ornamental plantings. The team found that some ornamental cultivars were more resistant than agronomic cultivars and cultivars resistant to some rust isolates were susceptible to other isolates of rust. This study provides information on how more durable resistant cultivars can be developed and explain why resistance may fail at some locations.

Social Benefits

An Update of the Literature Supporting the Well-Being Benefits of Plants: Part 3 - Social Benefits. Charles R. Hall and Melinda J. Knuth. *Journal of Environmental Horticulture* 37(4):136–142.

This paper is the third of a four-part series that provides a review of the substantial body of peer-reviewed research that has been conducted regarding the economic, environmental, and health and well-being benefits of green industry products and services. While the first article focused on the emotional and mental health benefits that plants provide, the second article focused specifically on the physiological health benefits provided by plants. This article provides an overview of the benefits that plants provide to society at large and the role they play in addressing critical societal issues. This research should be strategically incorporated into both industry-wide and firm-specific marketing messages that highlight how quality of life dimensions are affected in order to enhance the perceived value and relevance of green industry products for gardening and landscaping consumers in the future.