Significance to the Horticulture Industry

Below-Ground Insect Pests

Nursery Management of Two Major Below-Ground Feeding Plant Pests: Root Mealybug, *Rhizoecus sp.* and Rice Root Aphid, *Rhopalosiphum rufiabdominalis* (Sasaki) (Hemiptera: Pseudococcidae and Aphididae). Stanton Gill and Brian Kunkel. *Journal of Environmental Horticulture* 39(4):131-137.

Root mealybug (*Rhizoecus* sp.) and rice root aphids (*Rhopalosiphum rufibdominalis*) are below-ground feeding insects that are difficult to control and have become major pests of horticulture trade plants, including green-roof plants, ornamental plants and cannabis crops. Our research identified several newer, reduced risk conventional and bio-insecticides that were effective preventatively and curatively. Preventative applications of flonicamid and flupyradifurone can effectively protect plants from root mealybug infestations. Additionally, our results showed chlorantraniliprole (Acelepryn), cyantraniliprole (Mainspring), pymetrozine (Endeavor), *Beauveria bassiana* (Mycotrol), flonicamid (Aria), and flupyradifurone (Altus) all provided curative control of root mealybugs found infesting *Sedum*. Our rice root aphid trial showed that chlorantraniliprole and cyantriliprole, M-306, *Beauveria bassiana*, MBI-203 and pymetrozine all significantly reduced rice root aphid populations at 28 days after initial application. We also found that rice root aphid had several predators active, including the mealybug destroyer, [*Cryptolaemus montrouzieri (Coleoptera: Coccinellidae]*, rove beetle species (Coleoptera: Staphylinidae), and *Stratiolaelaps scimitus*, in the Acari: Mesostigmata: Laelapidae family. These root zone predators may contribute to an IPM (Integrated Pest Management) approach in suppressing populations. Insecticide efficacy against rice root aphids and potential impact on natural enemies should be investigated in future studies.

Biocontrol Agent Survival

Survival of SSG, an Endophytic *Burkholderia* Biocontrol Agent, on the Boxwood Leaf Surface. Ping Kong. *Journal of Environmental Horticulture* 39(4):138-142.

Boxwood blight is a destructive and fast-growing disease threatening *Buxus* in the nursery, landscape, and plant sale industries. Chemical control remains the most used and effective method in response to the disease outbreak, but the cost and environmental footprints of chemicals also remain a serious concern to growers. Recently identified biocontrol agents for the management of boxwood blight have shown promise to reduce dependence on chemical control. However, the stability of microorganisms for field applications is poorly understood. This research investigated the impact of wet periods and temperatures on the survival of a potent blight biocontrol agent, *Burkholderia* strain SSG, on boxwood plants after the BCA was sprayed on plants. This study would assist those developing formulations to maximize the performance of the biocontrol agent under field conditions.

Honeybees on Crepe Myrtle

Factors Influencing Honeybee (*Apis mellifera* L.) Visits to Crepe Myrtle (*Lagerstroemia* sp.). Taryn Bazhaw, David Drake, Johanna Delgado-Acevedo, and Derald A. Harp. *Journal of Environmental Horticulture* 39(4):143-149.

Crepe myrtle is one of the most important landscape shrubs and small trees for southern landscapes. First identified in Richardson, TX in 2004, a new insect, crepe myrtle bark scale (CMBS) has become a serious pest of crepe myrtle throughout the southeastern U.S., and control methods are limited to either mechanical removal in late winter using either a soapy water scrub or power washing, or the use of systemic insecticides that are translocated throughout the plant, including the pollen. This study confirms the preferential feeding habits of honeybee on crepe myrtle flowers. Honeybees prefer heavy blooming crepe myrtle cultivars, and worker bees will collect and feed on crepe myrtle pollen throughout the bloom cycle, starting shortly after bloom opening and continuing until no blooms remain. During the bloom period, honeybees will visit crepe myrtles preferentially over other pollinator-friendly plants. Understanding these feeding habits will allow informed treatment decisions that provide control of pests while minimizing damage to honeybees.

Lavandula Propagation

Media, Growth Regulator, and Cultivar Influence Adventitious Rooting of *Lavandula* x *intermedia* Cuttings. Derek Reed, Thayne Montague, and Catherine Simpson. *Journal of Environmental Horticulture* 39(4):150-159.

Lavender production for essential oil is a growing industry within West Texas. However, due to costs associated with propagation of lavender cuttings, economics often limits grower expansion. Therefore, this research investigated asexual propagation methods designed to increase rooting percentage and root quality of hybrid lavender (lavandin) cuttings. Tip cuttings of three lavandin cultivars ('Grosso', 'Provence', and 'Hidcote Giant') were exposed to differing media, plant growth regulators (PGR), and PGR concentrations. Results indicate rooting these lavandin cuttings in a peat moss/sand medium produced cuttings with the greatest rooting percentage, and the longest roots. However, although rooting percentage and root quality response of 'Grosso', 'Provence', and 'Hidcote Giant' cuttings generally increased in response to exposure to PGR and greater PGR concentrations, overall response of lavandin cuttings to PGR, and PGR concentration varied with cultivar. Currently, there is limited literature available which discusses propagation of lavandin by cuttings. However, this research adds critical information to this insufficient body of work, and updates propagation practices which will greatly increase adventitious rooting success of these lavandin cultivars.

Native Grasses

Versatile Native Grasses and a Turf-Alternative Groundcover for the Arid Southwest United States. Worku Burayu and Kai Umeda. *Journal of Environmental Horticulture* 39(4):160-167.

Identifying locally acceptable plant species that can be grown and managed with minimum amounts of water, fertilizer and pesticides coupled with low maintenance requirements will help the Arizona green industry, golf courses, and landscape designers to save water, reduce energy, labor, and money. Locally adaptable and versatile native grasses and alternative groundcovers can be important sustainable landscape plants that have aesthetic value and many ecosystem benefits, such as increasing soil organic matter, reducing erosion, capturing pollutants, sequestering CO_2, and removing excessive nitrogen from runoff water. The contributions of these studies will increase awareness and knowledge about the characteristics and performance of the species and potentially be adopted and implemented by golf course superintendents, municipal and school facilities managers, and commercial and residential landscapers. Adoption and installation of these water saving native

grasses and a groundcover that are visually pleasing into residential and commercial landscapes can reduce water use while maintaining a sustainable green environment. Implementation of best management practices and technologies will result in reduced fertilizer, irrigation, and pesticides use. It enhances conservation of resources and increased business opportunities for seed suppliers and sod producers to provide new plant species. Ultimately, landscapes that integrate native grasses and kurapia can contribute to biodiversity and save labor costs by reducing the needs for reseeding, resodding, or replanting.

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