

Significance to the Horticulture Industry

Beach Vitex Review

Beach Vitex (*Vitex rotundifolia*): Medicinal Properties, Biology, Invasive Characteristics and Management Options. Matthew M. Cousins, Jeanne Briggs, and Ted Whitwell. *Journal of Environmental Horticulture* 35(4):128–137.

Beach Vitex (BV) is a low-growing, salt tolerant, shoreline shrub that belongs to the Lamiaceae family. It was introduced as a landscape plant in North and South Carolina to reduce beach erosion after major hurricanes in the mid 1980s. It has become an invasive plant on primary dunes, reducing native plant populations and possibly interfering with sea turtle nesting activities. Medicinal studies have indicated the potential of BV for cancer therapy. Casticin, a flavonoid found in extracts of BV fruits, has demonstrated an ability to inhibit growth of human cancer cells. BV may also be used in the treatment of allergies, antibiotic-resistant bacteria, and pain. Rotundial (found in BV leaves) is an insect repellent more powerful than DEET. BV produces a thick, waxy cuticle containing large amounts of diverse n-alkanes. These compounds are transferred to the surface of sand particles where they cause intense hydrophobicity in the substrate. This could be responsible for the establishment and maintenance of clonal monocultures by preventing BV seedling establishment. Effective control methods explored to date incorporate imazapyr herbicide as a foliar or cut stem treatment. All control studies of BV have indicated that multiple seasons of retreatment may be required for successful eradication.

Boxwood Blight Fungicides

Sensitivity of *Calonectria pseudonaviculata*, the Pathogen of Boxwood Blight, to Strobilurin and Demethylation Inhibitor Fungicides in Connecticut. K. Maurer, R. S. Cowles, and J. A. LaMondia. *Journal of Environmental Horticulture* 35(4):138–145.

Boxwood (*Buxus* L.) is a very important ornamental plant in landscapes in the United States and has a significant share of wholesale ornamental plant sales. The horticultural and landscape industries depend on the economical production and maintenance of healthy boxwood plants. The pathogen causing boxwood blight, *Calonectria pseudonaviculata*, first occurred in 2011 in Connecticut and North Carolina and has since spread to at least 21 states and three Canadian provinces. It has been found in landscapes, commercial production nurseries, garden centers, and in wholesale distribution. Total losses in Connecticut alone amount to an estimated \$5.5 million (LaMondia 2015). Boxwood blight is difficult and costly to control with fungicides. Because of the requirement for repeated application of fungicides, the development of resistance is a real threat. Therefore, the assessment of the potential for development of resistance (or reduced fungicide sensitivity) is important to develop an effective spray program and to be able to avoid fungicide resistance. The use of multiple fungicide active ingredients in mixtures or rotational application as well as best management practices should be targeted.

Green Roof Substrates

Shallow Substrates Support the Growth of Contrasting Plant Types Installed in Irrigated, Arid-Climate Green Roofs. Lauren Forrest, Rachel Gioannini, Dawn M. VanLeeuwen, and Rolston St. Hilaire. *Journal of Environmental Horticulture* 35(4):146–155.

Green roofs make many positive impacts on the environment, including reduced air temperatures, slowing storm water, filtering pollutants from the atmosphere and providing wildlife habitat. Most research done into suitable growing media for green roofs has been done in climates with more precipitation and humidity than the arid environment of the Chihuahuan desert where this experiment was conducted. Substrate depth plays a significant role in green roof design in arid climates, where evaporation is high. This research demonstrates that hens and chicks and iceplant taxa were successful in 10 and 15 cm substrate depths in a simulated green roof setting. Nursery personnel wishing to grow these taxa in arid green roofs could use substrate depths of 10 cm or deeper.

Hazelnut Rooting

The Effects of Relative Humidity and Substrate Moisture on Rooting of Hybrid Hazelnuts from Hardwood Stem Cuttings. Tyler Rusnak and Lois Braun. *Journal of Environmental Horticulture* 35(4):156–160.

Farmers, scientists, and policy-makers have become increasingly aware of the negative effects that cultivation can have on a landscape. In particular, regions of the Midwest dominated by corn/soybean monocultures often see increased soil erosion and runoff of agricultural chemicals into water. Of particular concern are nitrates from fertilizers, which are implicated in the contamination of ground water and hypoxia in the Gulf of Mexico. One solution to mitigate these problems involves planting perennial crops such as hybrid hazelnuts in riparian buffer zones to reduce erosion and agricultural runoff year round. American hazelnuts (*Corylus americana* Walter) are cold hardy, eastern filbert blight- (EFB) resistant native woody suckering shrubs whose native habitat extends as far south as Louisiana and as far north as Quebec and Manitoba (USDA 2017). Current commercial varieties of European hazelnuts (*C. avellana* L.), on the other hand, are neither resistant to EFB nor cold hardy for the Midwest. High performing hybrid genotypes retain the desirable EFB resistance and cold hardiness but are difficult to propagate asexually, which is typically done through mound layering or hardwood stem cutting, with micropropagation methods currently under development. This study sought to identify optimal relative humidity (RH) ranges in which to successfully propagate hardwood stem cuttings in low-cost humidity tents. Results indicated that moderate RH levels (50% to 70%), which were maintained by watering, on average, 16% to 48% of the days, yielded the highest rooting percentages, indicating daily monitoring is not needed.

Liquid Mulch

Efficacy of Bio-based Liquid Mulch on Weed Suppression and Water Conservation in Container Nursery Production. Kate Shen and Youbin Zheng. *Journal of Environmental Horticulture* 35(4):161–167.

Weeds control is a major issue either in horticultural crop production or in landscape maintenance. This research demonstrated that a newly-developed bio-based liquid mulch could be used to control weeds and conserve water if the shrinking issue could be resolved. The liquid mulch dried and shrunk within a couple of days of application. This caused a gap of approximately 10 to 15 mm (0.39–0.59 inch) between the wall of the pots and the actual dried mulch.

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