Significance to the Horticulture Industry

Cycad Seed Germination

Breaking Seed Dormancy and Improving Seedling Growth of *Encephalartos altensteinii* Lehm. using Seed Hydration-dehydration Treatment and Acid Scarification. Ntuthuko Mabuya, Muhali Olaide Jimoh, John October and Charles Petrus Laubscher. *Journal of Environmental Horticulture 43(1):19–29*

Breaking morpho-physiological seed coat dormancy of difficult to germinate seeds such as *Encephalartos altensteinii* due to low seed viability and complex dormancy conditions is of utmost importance to the horticulture industry. As documented in the literature, research on seed germination for cycads have focused mainly on *Zamia* and *Cycas*, and there is limited research done on the seed germination of the native African genus *Encephalartos*. Findings from this study have established suitable pre-treatments that could improve the germination percentage and reduce the germination period of *E. altensteinii*. This will assist in developing a propagation protocol for this vulnerable species. These results will benefit horticulturists, plant enthusiasts and researchers by increasing the propagation of this species or its vulnerable relatives, allowing for reintroduction into the wild or for commercial purposes.

Green Gentification

An Update of the Literature Supporting the Economic Benefits of Plants: Part 3 – The Downside of Increased Housing Prices. Yeongseon Baik, Liqing Li, Charles R. Hall, and Macy Fetchel. *Journal of Environmental Horticulture 43(1):1–10*

This article is the third of a series that provides a review of the substantial body of peer-reviewed research that has been conducted regarding the economic benefits of green industry products and services, with this article focusing on the socio-economic variables related to the prediction of green gentrification, as well as the implications and suggestions for the policy-making process for preventing it. A previous series documented the health and well-being benefits including emotional and mental health benefits, physiological health benefits, the benefits that plants provide to society at large and the role they play in addressing critical societal issues, and an overview of resources available for green industry firms to find more detailed information on these plant-related health and well-being benefits. Industry firms should be armed with the economic benefits described in this new series to strategically incorporate these benefits into both industry-wide and firm-level marketing messages that highlight how local and regional economies are affected in order to enhance the perceived value and relevance of green industry products for municipal leaders and gardening and landscaping consumers in the future.

Health Benefits of Gardening

Finding the Third Space through Gardening: Strengthening Relationship Mutuality and Lowering Stress in the Caregiver and Care Recipient who has a Disabling Injury or Illness through Gardening. Michelle Camicia, Katelynn Campbell, Samantha Avecilla, and Anita Catlin. *Journal of Environmental Horticulture 43(1):11–18*

The results of this study demonstrate the value of gardening in the caregiver/care recipient relationship. By embracing the therapeutic potential of gardening, the horticulture industry can align its products and services with the growing interest in wellness and caregiving. Given the high prevalence of family caregivers globally, this illustrates an opportunity to increase demand for products tailored to meet the needs of individuals with a disability, such as ergonomic tools, accessible garden beds, and container gardening, an area where there is opportunity for discovery of innovative solutions to promote access to gardening for this population. Horticulture therapy might be introduced in programs that serve the community of people living with a disability, optimized by industry partnerships to supply plants, materials, and equipment for such programs. Gardening for people with disabilities and their caregivers may be introduced into training programs for horticulture therapists. In addition to boosting sales, the horticulture industry can position the industry as a key contributor to improving physical and mental well-being in people with a disabling condition and their caregivers.

Mustard Seed Meal

Mustard Seed Meal and Mulches for Weed Control in Greenhouses. Ryan Hill, Lloyd Nackley, and Marcelo Moretti. *Journal of Environmental Horticulture 43(1):41–48*

Effective weed control is needed during production of ornamental plants to reduce competition for water, nutrients, light, and space. Organic weed control options are especially needed in greenhouses where chemical tools are restricted. This work explores the novel combination of two organic weed control methods, mulches and mustard seed meal (MSM). Individual effects and interactions between the two weed control methods on efficacy and safety were assessed on slow-growing woody plants, revealing additive benefits from use of the two methods. This research also reveals some of the difficulties in establishing crop tolerances for MSM and shows greater weed control efficacy from hazelnut shell mulch when compared to MSM. This work also suggests potential new areas for research in the effect of watering frequency on weed control and MSM efficacy.

Snowbrush Ceanothus Nodulation

Nodulation of Snowbrush Ceanothus in Three Soilless Substrates. Asmita Paudel, Macie Sanders, Youping Sun, and Xin Dai. *Journal of Environmental Horticulture 43(1):49–55*

Snowbrush ceanothus (*Ceanothus velutinus* Dougl. Ex Hook.), commonly found in arid regions, has shiny evergreen leaves and clusters of white flowers. It plays an important role in soil-building through nitrogen fixation in symbiosis with nitrogen-fixing actinobacteria. Understanding its nodulation process using soil containing *Frankia sp*. is necessary for the horticulture industry to optimize snowbrush ceanothus growth and nutrient uptake. Additionally, the evaluation of different soilless substrates (calcined clay, peat-based mix, and perlite) on the growth and nodulation of snowbrush

ceanothus provides insights for substrate selection and management practices in nurseries and landscapes.

Snowbrush Ceanothus Fertilization

Effects of Nitrogen Fertilizer on the Growth and Development of *Ceanothus velutinus*. Prakriti Nepal, Asmita Paudel, Zirui Wang, and Youping Sun. *Journal of Environmental Horticulture 43(1):30–40*

Snowbrush ceanothus (*Ceanothus velutinus* Dougl. Ex Hook.) is an evergreen shrub with shiny leaves and creamy white flowers. It is an actinorhizal plant that forms a symbiosis with nitrogen-fixing actinobacteria (*Frankia*) and plays a crucial ecological role in enhancing soil fertility. Understanding the nutrition requirements of snowbrush ceanothus is essential for its nursery production and landscape use. This research evaluated the growth and development of snowbrush ceanothus under various nitrogen concentrations and provides valuable insights for developing best practices to manage the nutrition required for plant production while maintaining environmental stewardship.