**S-1087 Annual Report 2024**

**Basic Information**

**Project No. and Title:** [S1087 : Sustainable Practices, Economic Contributions, Consumer Behavior, and Labor Management in the U.S. Environmental Horticulture Industry](https://nimss.org/projects/18711)

**Period Covered:** 10/01/2024 to 02/29/2025

**Date of Report:** 01/03/2025

**Annual Meeting Dates:** 02/22/2024 to 02/23/2024; 08/22/2024

**Participants**

● Melinda Knuth (Chair, NCSU)

● Daniel Tregeagle (Secretary, NCSU)

● Ben Campbell (UGA)

● Julie Campbell (UGA)

● Charlie Hall (TAMU)

● Hayk Khachatryan (UF)

● Alicia Rihn (UT-K)

● Ariana Torres (Purdue)

● Xuan Wei (U Maryland)

● Shouli Zhao (UK)

**Accomplishments**

* Reviewed the 2019 survey instrument, meet with survey sub-committee, and update survey instrument based on current needs to assist with the new 2024 survey design and data collection event.
* Provide industry statistics related to production methods and marketing (including practices and channels) through extension outlets, reports and presentations.
* Several (approx. 7) peer reviewed journal articles, 7 academic presentations, 9 extension and/or industry presentations, and 10 mass media outreach articles related to marketing ornamental plants, native plant production and alternative pest control methods in the Green Industry in 2024.
* Submitted a small grant proposal to the Association of Specialty Cut Flower Growers (ASCFG) Competitive Research Grant program. If awarded, the research project will conduct a cost and returns analysis for high tunnel cut flower production and a consumer preference study to understand price sensitivity, seasonality, and benefits of specialty cut flowers.
* Submitted an internal UMD grant proposal to understand the current perceptions, attitudes, and preferences of microgreen cultivation among small and middle-sized farmers, especially urban farmers.
* Submitted an internal UMD grant proposal to explore the aspects of the supply and demand for native plants concurrently in DELMARVA.
* Started preparing the MD Green Industry summary report using existing survey data and will incorporate the latest 2024 data once it becomes available.

Please see meeting minutes for additional accomplishments.

**Impacts**

* The results from this project have provided valuable input into the decision-making activity of nursery and greenhouse professionals regarding expansion plans, the selection of which plants to grow and in what quantity, the determination of which production methods to use, and the appropriate outlets to target for their output.
* Increased the wholesale value of nursery and greenhouse crops through increased sales and profits to retail outlets and consumption by end-users and businesses.
* Nursery/greenhouse and landscape worker productivity may be enhanced by training and education in methods that are well understood and retained by English and Spanish speaking workers.
* Increased adoption of water and energy conservation practices for nursery/greenhouse operations through analysis of benefits and costs with tools developed.
* Enhanced profitability of nursery and greenhouse firms through better financial benchmark information published regionally and nationally.
* Enhanced nursery product portfolio selection achieved through recommended procedures for unit cost analysis. Increased sales of environmentally friendly ornamental plant products and related services.
* Enhanced eﬀectiveness of state promotional programs based on plant evaluations and analysis of public awareness.
* Provided comprehensive consumer research studies to document demographic and preference trends for more eﬀective marketing strategies.
* Reduced water, chemical and fertilizer use by nursery growers due to greater adoption of conservation technologies and practices. Fostered the use of sustainable processes that will result in improved farm incomes while improving environmental quality by reducing the carbon, water, and chemicals used in nurseries and greenhouses.
* Webinars conducted by committee members have reached over 2500 people, with an estimated economic benefit in excess of 9.3 million reported by participants.

**Publications**

* Bumgarner, N., A. Rihn, J. Campbell, and S. Dorn. 2024. Growing the next generation of horticulture customers and stakeholders through industry and Extension outreach collaborations. Journal of Environmental Horticulture. 42(1): 23-30.
* Fields, J.S., Nackley, L.L., Shreckhise, J.H., Bampasidou, M., Contreras, R., Kantrovich, A., Knuth, M.J., Owen, J.S. and White, S.A., 2024. How Natural Resources, Consumer Perceptions, and Labor Are Transforming the US Nursery Industry. HortTechnology, 34(4), pp.424-429. https://doi.org/10.21273/HORTTECH05410-24
* Knuth, M., A.L. Rihn, B.K. Behe, and C.R. Hall. 2024. Plant purchasers perceptions of mental health and optimism for the future. Environment and Social Psychology, 9.4.
* Knuth, M., A.L. Rihn, A. Torres, B. Behe, C. Boyer, S. Barton, and H. Khachatryan. 2024. Social media use by U.S. green industry firms. Journal of Environmental Horticulture. 42(2): 75 - 84.
* Knuth, M., Wei, X., Zhang, X., Khachatryan, H., Hodges, A., and Yue, C. 2024. Defining preferred turfgrass features for lawn choice for Floridian homeowners. Journal of Urban Management. https://doi.org/10.1016/j.jum.2024.07.005
* Marques, JR., Rosales, C., Ulloa, M.C., Torres, A.P., Karam, A.A., and Mohammed, R. 2024. Olive Market Analysis in Nineveh Plains, Iraq. USAID Publication.
* Torres, A., A.L. Rihn, S. Barton, and B. Behe. 2024. Perceptions and socio-economic status influence purchases of native plants. HortTechnology, 34(2): 153-160. 2024.
* Rihn, A. L., Knuth, M. J., Huddleston, P. T., & Behe, B. K. 2024. Comparison of Online and Instore Plant Buyers. Journal of Environmental Horticulture, 42(4), 173-180. https://doi.org/10.24266/0738-2898-42.4.173
* Rihn, A.L., M.J. Knuth, B.K. Behe, and C.R. Hall. 2024. Assessing the relationship between plant types purchased and consideration of future consequences to generate marketing messages for ornamental plants. Journal of Environmental Horticulture, 42(1):31-39.
* Rihn, A. L., Behe, B. K., Knuth, M., and Huddleston, P. 2024. Blooming Business: How Consumer Satisfaction Shapes Online Plant and Cut Flower Spending. HortTechnology, 34(4), 481-484. https://doi.org/10.21273/HORTTECH05427-24
* Rihn, A.L., A. Torres, B. Behe, and S. Barton. 2024. Unwrapping the native plant black box: Consumer perceptions and segments for target marketing strategies. HortTechnology. 34(3): 361- 371.
* Rihn, A., B. Behe, M. Knuth, P. Huddleston. 2024. Blooming business: how consumer satisfaction shapes online plant and cut flower spending. HortTechnology, 34(4):481–484. <https://doi.org/10.21273/HORTTECH05427-24>
* Traldi R, Torres AP. 2024. It’s all about the economics: Navigating the challenges and opportunities of agricultural diversification in the U.S. Corn Belt. Agriculture and Human Values.
* Ulloa MC, Marques JMR, Velasco JE, Philocles S, Torres AP. 2024. Characterizing The US Market for Salad Mixes Through the Lens of Environmental Preferences. HortScience.
* Velasco, J.E., Marques, J.R., Torres, A.P., Marshall, M.I., and Deering, A. 2024. U.S. Consumer Food Safety Concerns for Fresh Vegetables: A Cluster Analysis. Food Control.
* Wei, X., Knuth, M. and Khachatryan, H., 2024. The Role of Consumers’ Knowledge of Native and Pollinator-friendly Plants and Their Prioritization of Plant Characteristics in Purchase Decisions. HortScience, 59(7), pp. 941-948. https://doi.org/10.21273/HORTSCI17637-23