**Search for Excellence in Environmental Quality, Forestry, and Natural Resources**

**Situation:**

Residential landscapes impact natural resources as habitat loss decreases biodiversity, irrigation stresses water resources, inappropriate fertilization reduces water quality, and misapplied pesticides harm non-target organisms. While many Floridians and land developers are aware of these issues, landscape aesthetics remain prioritized over mitigating their effects.

In 2021, a developer of a master-planned community of 33,000 to 37,000 homes identified a need to reduce water use and protect nearby bodies of water. With water use permits limiting the amount of water that could be used in the community, the developer contacted University of Florida/Institute of Food & Agricultural Sciences (UF/IFAS) Extension for advice. Members of UF/IFAS Extension gathered green industry and built environment professionals, including nursery growers, compost suppliers, builders, developers, landscape architects, NGOs, and academics, to study and develop economically feasible strategies that could be implemented in residential landscapes to reduce water use and attract wildlife.

This collaborative group conducted a large-scale quantitative research project that doubled as a Living Laboratory demonstration garden. The purpose of the effort was to evaluate if compost amendments in urban soils could reduce irrigation needs while maintaining acceptable aesthetics. For plant materials, we specifically used native plants for their adaptability to local climates and their ability to support native pollinators. We found that incorporating compost treatments resulted in greater and more consistent visual quality of native plants compared to using urban-only soil. We also observed approximately double the number of flowers and pollinators in compost plots versus urban-only soils. A 79% reduction in irrigation use was also realized with no detectable impact on plant quality.

In true Extension fashion, we disseminated these research results to green industry professionals, municipalities, and built environment professionals which consist of builders, developers, and landscape architects. To reach these audiences we partnered with the Outside Collaborative to deliver research updates and tours of the Living Laboratories at their 2022 and 2023 annual conference. The Outside Collaborative is a group of professionals whose aim is to tackle issues like water conservation, land preservation, and biodiversity through innovative landscaping practices. We’ve also presented to decision-makers at multiple outlets, including the 2024 Florida Association of Counties Innovation & Policy Conference and the 2024 Florida Local Environmental Resource Agencies.

The remainder of this application will focus on the outreach component of this collaborative project.

**Objectives:**

* Educate green industry, allied fields, and academics on the land development process
* Educate built-environment and green industry professionals on sustainable development and landscaping efforts
* 75% of surveyed attendees of the Outside Collaborative Conference (OCC) will self-report knowledge gain in land development process
* 75% of surveyed attendees of the OCC will self-report knowledge gain in sustainable landscaping efforts
* 30% of surveyed attendees of the OCC will intend to
  + Adopt compost amendments,
  + Reduce irrigation, and/or
  + Select and install native plants
* Lead to behavior adoption in at least one master-planned community
* Spur conversations between UF/IFAS Extension, green industry professionals, municipalities, and master-planned communities about resource-efficient and biodiverse landscapes

**Program Activities:**

* UF/IFAS Extension Lake County partnered with the UF/IFAS Program for Resource Efficient Communities, University of Central Florida, green industry partners, and developers to conduct a research educational session and tour at the annual statewide OCC held in Lake Nona, Florida.
* Lectures - Our team delivered two 90-minute lectures on preliminary research findings of water-conserving and pollinator-attracting sustainable landscaping
* Tours - We guided OCC participants through our Living Laboratory research sites and model home landscapes, where we discussed soil remediation, arthropod food webs, and drought-tolerant landscaping.
* Online learning - Lectures were posted to YouTube.
* Presented twenty-minute to one-hour-long presentations to multiple professional audiences using lecture-style PowerPoint presentations.

**Teaching Methods:**

* Taught traditional lecture style with PowerPoint presentations.
* Provided in-field tours of the Living Laboratory research plots and alternative landscapes of model homes. Participants rotated through six stations. Tour length was approximately four hours.
* Edited and disseminated the New Yard Pattern Book to guide builders, landscape architects, and green industry professionals
* For marketing, we utilized social media posts, e-mails to industry groups/academics, and a YouTube video.

Table 1. Participants per educational event

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| --- | --- | --- |
| Year | Event | Number of Attendees |
| 2022 | Outside Collaborative Annual Conference | 205 |
| 2023 | Outside Collaborative Annual Conference | 175 |
| 2023 | South Lake Advanced Landscape Standards - Builders, Developers, & Municipalities | 9 |
| 2023 | Wellness Way – Builders, Developers, Environmental Agencies, & Municipalities of Lake County | 65 |
| 2024 | Florida Association of Counties Innovation & Policy Conference | 70 |
| 2024 | Florida Local Environmental Resource Agencies | 24 |
| 2024 | US Compost Council Annual Conference | 40 |
| Total Participants | | 588 |

**Results:**

Below are the survey results for the 2022 & 2023 OCC.

* 98% of 55 respondents increased their knowledge of land development processes
* 99% of 119 respondents indicated that they were encouraged to contribute to sustainable development and/or landscaping efforts
* 98% of 119 respondents increased their knowledge of sustainable landscape approaches
* 98% of 42 respondents were provided with new ideas for entrepreneurial opportunities
* 85 participants responded to the following question about specific landscape installation practices,
  + 36% intend to adopt compost amendments
  + 41% intend to reduce irrigation
  + 35% intend to select and install native plants
  + 36% already do these practices
* In 2024, one developer adopted a master-managed landscape plan using the methods taught. The build-out for this community is estimated at 33,000-37,000 homes. A developer in Nassau County is working towards the adoption of similar practices, and Lake and Seminole County Commissioners are considering incorporating these approaches in their landscaping codes.

**Impacts**

For the next phase of 300 homes being built by the master-planned community, native plant-dominated landscapes are being installed along with compost amendments.

According to recommendations from the UF, when compared to a conventional turfgrass-dominated landscape, these 300 alternative landscapes could annually save:

* 1.6 to 4.1 thousand kg of nitrogen
* 270 kg of phosphorus in mineral fertilizers
* 151 to 553 thousand liters of water per day
* 42 thousand kg of CO2 emissions

In this master-planned community, a water manager position is planned to further limit water consumption. The local utility is considering incentives for the application of compost prior to landscape installation.

Furthermore, the extension agent and an extension specialist were invited to present these efforts to the Urban Biodiversity & Design International Conference and the Extension Agent is scheduled to present at an international conference for Extension educators in April 2025. The project has been featured in newspaper and magazine articles, and in a televised news story broadcast to three metro markets, Orlando, Tampa, and Ocala, with a total population of 5.9 million.

**Evaluation:**

* A Qualtrics survey using a Likert 5-point scale was administered to OCC attendees two- and six-weeks post-event. The survey response rate was 31%, 119 of 380 participants.
* Our team conducted follow-up conversations via phone, in-person, and in online meetings with interested developers, municipalities, and green industry professionals post-event. Communication efforts are ongoing.
* Out of the presentations given from 2022 - 2024 to different audiences of decision-makers, we only surveyed the attendees of the OCC. Our educational programs have been presented to fast-paced audiences where time is exceptionally valuable. As a result, our team believed that administering a survey was not a feasible expectation for some audiences under the limited time we had for presentations.