



JOURNAL OF THE NACAA

ISSN 2158-9429

VOLUME 17, ISSUE 1 – JUNE, 2024

Editor: Linda Chalker-Scott

Errickson, W.¹, Waller, T.², Bakacs, M.³, Cuite, C.⁴

¹*Agriculture and Natural Resources Agent, Rutgers University, Freehold, New Jersey, 07728*

²*Agriculture and Natural Resources Agent, Rutgers University, Millville, New Jersey, 08332*

³*Agriculture and Natural Resources Agent, Rutgers University, North Brunswick, New Jersey, 08902*

⁴*Associate Professor/Associate Extension Specialist, Rutgers University, New Brunswick, New Jersey, 08901*

Native Plant Needs Assessment of Nursery and Landscape Professionals

Abstract

Demand for increased native plant use in ornamental landscapes throughout the United States is growing. However, barriers exist for widespread adoption among nursery growers and landscape professionals. A state-wide needs assessment survey was conducted in New Jersey to assess the green industry's interest in increasing production of native plants and the specific educational resources they would require to achieve this objective. Top priorities included science-based information regarding native alternatives to common landscape species, deer-resistant native plants, and new cultivars of native plants as well as IPM practices, stress tolerance, and propagation protocols for native plant species.

Abbreviations: Integrated pest management (IPM)

Keywords: Extension, horticulture, landscape, native plants, needs assessment, nursery, ornamental, survey.

Introduction

Native plants are becoming increasingly popular choices for low-input ornamental landscapes in residential and commercial applications. The American Society of Landscape Architects surveyed their stakeholders and found that the top project types with the highest expected consumer demand included native plants, native/adapted drought tolerant plants, and low-maintenance landscapes (ASLA, 2018). Additionally, a survey conducted in 2023 by the National Garden Club found that 18- to 34-year-olds purchased plants native to their region at a higher percentage than any other age group, suggesting that this market trend will continue, as the younger demographic ages and continues to purchase ornamental plants (NGA, 2023).

However, there are currently several barriers to increased wide-spread adoption of native plants at the production level (Rihn et al., 2022). Commercial nurseries are hesitant to increase their production of native plants without a strong and reliable market demand (Wilde et al., 2015). Specific propagation protocols for native plant species are limited (Norcini, 2007), as are field trials comparing their performance in various growing conditions. Native plant markets also tend to be regionalized, meaning that plants native to a certain eco-region may not be as marketable in another area of the country, thus limiting the potential customers for certain species. Insect and disease control programs specifically developed for native plant producers must also be refined to focus on integrated pest management (IPM) and disease prevention strategies that do not undermine the ecological benefits of producing native plant species.

Many nurseries and independent garden centers in New Jersey are currently growing or offering at least some native plants in response to this increasing demand. However, supplies are still limited and there are specific best management practices associated with growing, marketing, and maintaining native plants that need further development.

To determine which priorities were most important to the green industry in New Jersey, Rutgers Cooperative Extension developed and disseminated a state-wide native plant needs assessment survey. The survey received responses from 44 nursery and

landscape professionals (N=44) and is helping to guide future resource development based on the most important topics identified by these stakeholders.

Methods

An online survey was developed in Qualtrics to assess the needs of the New Jersey nursery and landscape industry regarding native plants. The survey included 22 questions focused on topics such as the size and type of operation, their current knowledge of native plants, the percentage of their operation that was currently dedicated to growing native plants, their perceived customer demand for native species, their interest in expanding their native plant offerings, and what specific information would be most useful for them to increase their production and sales of native plants.

A QR-code and link to the survey was sent out to Extension email lists for nursery and landscape professionals, posted on the Rutgers Plant and Pest Advisory blog, distributed at tabling events at industry trade shows, and sent out through email lists of state-wide nursery and landscape trade organizations.

Participation was limited to commercial operations in the state of New Jersey and the survey included a separate line of questions for nursery growers and landscape professionals. A screener question asked participants if they operated a commercial nursery or landscape operation in the state of NJ. A positive response was required to proceed to the rest of the survey.

Results

The survey took approximately 5 minutes to complete and received responses from 44 nursery and landscape professionals (N=44) who provided their input, helping guide future resource development based on the most important topics identified by these stakeholders. Respondents were asked whether they operated a nursery, a landscape operation or both, and were assigned questions according to their responses.

To gauge the current knowledge level of participants regarding native plants, participants were asked a series of questions ranking how knowledgeable they were about specific topics. Respondents who operated nurseries, but not landscaping businesses, indicated their highest level of knowledge was on the environmental benefits of using native plants in their work, while they were least knowledgeable about the cost saving benefits of using native plants (Table 1). Respondents who operated landscaping operations, but did not have a nursery, also indicated their highest level of knowledge was on the environmental benefits of using native plants, while their least knowledgeable topic was native plant propagation. Participants who operated both a nursery and a landscaping business reported the highest overall knowledge rating for the three groups, and also indicated they were most knowledgeable about environmental benefits of native plants, while their least knowledgeable topic was managing insects of native plants.

Table 1. Knowledge about native plants. Responses measured on a scale of 1 to 5, with 1 indicating not knowledgeable at all, and 5 indicating very knowledgeable. Nursery (n=11); Landscape (n=11); Both (n=8).

	Nursery	Landscape	Both
Propagation methods of native plants	4.00	2.27	3.78
Managing insect pests on native plants	3.70	3.09	3.50
Market potential/customer demand of native plants	3.60	3.09	3.75
Disease management of native plants	3.70	3.09	3.88
Fertility requirements of native plants	3.40	3.27	4.38
Cost saving benefits of native plants	3.30	3.91	3.78
Deer resistance of native plants	3.40	3.91	4.13
Which plants are native to NJ	3.90	3.55	4.56
Proper site conditions for growing native plants	4.00	4.27	4.50
Environmental benefits of using native plants in your work	4.30	4.82	4.67
All topics average	3.73	3.53	4.09

Nursery growers - highlights

- The size of nursery operations ranged from 1.2 to 3,000 acres with greenhouse space ranging from 500 sq. ft. to 425,000 sq. ft.
- Most growers were wholesale only (61%), while 33% sold both wholesale and retail, and 6% operated as retail only (n=18).
- In terms of production methods, 35% produce plants via container production, 22.5% utilize pot-in-pot, 20% greenhouse production, 17.5% in-ground field production, and 5% other (n=19).
- Respondents indicated a mean of 37% of their total nursery sales (in dollar value) coming from native plants, with a range of 0% to 100% (n=17).
- Customer demand for native plants from nursery growers was described as very high (19%), somewhat high (6%), moderate (44%), somewhat low (25%), or very low (6%) (n=16).
- Ninety-three percent of respondents indicated that they were either moderately, very, or extremely interested in increasing the amount or diversity of native plants they offer in the nursery, while 7% were slightly interested, and 0% were not interested at all (n=15).
- Deer resistance ratings, new cultivars of native plants and marketing/promotion, were all ranked as the highest priorities for information that would be helpful to help increase the amount or diversity of native plants that are grown in the nursery (n=20) (Figure 1).

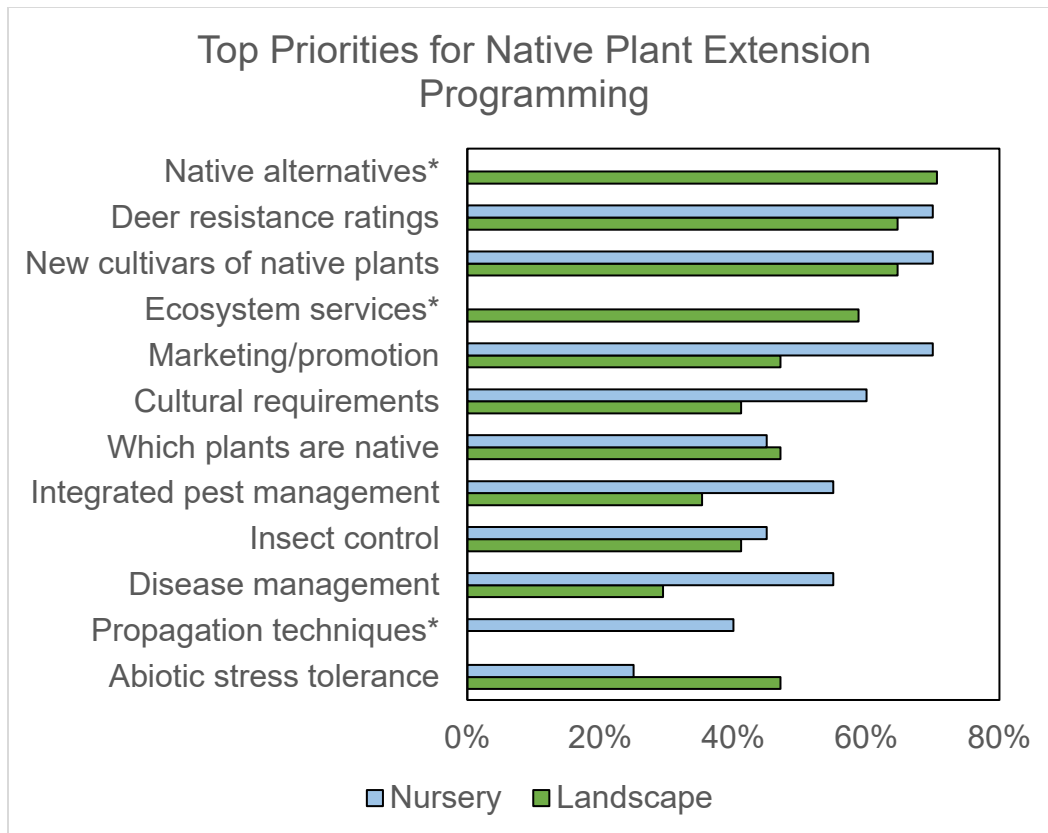


Figure 1. Percent of respondents who indicated each topic was a high priority for Native Plant Extension Programming. *Indicates only one group asked about that topic. Landscape Professionals (n=17). Nursery Growers (n=20).

Landscape professionals - highlights

- Landscape operations ranged in size from managing 5 acres to managing 640 acres, with a range of 0 to 500 acres containing native plant species (n=16).
- Respondents indicated a mean of 33% of their total landscaping income coming from planting and managing native plants in the landscape with a range of 2% to 75% (n=16).
- Customer demand for native plants from landscape professionals was described as very high (7%), somewhat high (33%), moderate (20%), somewhat low (40%), or very low (0%) (n=15).
- Sixty-two and a half percent of respondents indicated that they were definitely interested and 25% were probably interested in increasing the amount or diversity of native plants they offer to their landscaping customers, while 12.5%

were slightly interested, and 0% were probably not or definitely not interested (n=16).

- Landscape professionals identified the following topics as their top priorities for topical information that would be helpful to support them in increasing the amount or diversity of native plants being managed by their respective operations: native alternatives to common landscape plants, native species and their level of deer resistance, new cultivars of native plants, and ecosystem services of native plants (Figure 1) (n=17).
- Nursery growers and landscape professionals collectively indicated that their preferred format for receiving educational or technical information was email (35%), Rutgers Plant and Pest Advisory Blog (31%), printed materials/hard copy (15%), website (15%), other (webinars/seminars) (4%) (n=26).

Discussion

This state-wide industry survey received responses from a range of nursery and landscape operations, representing small, medium, and large businesses. The production methods for nursery growers also varied, including container, in-field, pot-in-pot, and greenhouse producers. Despite the differences in their sizes and production methods, the nursery and landscape professionals that participated in this survey indicated a high level of interest in increasing the amount or diversity of native plants that they could offer to their customers. A survey by Brzuszek and Harkess (2009) similarly targeted commercial nursery owners and horticultural professionals from six different states in the Southeastern United States to evaluate market demand and potential opportunities for increasing sales of native plants. Responses from the Southeast indicated that the primary reasons for nurseries carrying native plants were client request, ecological reasons, and adaptability to difficult site conditions. They conclude that the market for native plants could increase if more wholesale nurseries increased their offerings of native plants and suggest that additional educational articles and presentations highlighting new cultivars of native plants, their culture, and

ornamental and environmental uses would further support the industry. Another survey of landscape architects from the Southeastern United States indicated that their primary reason for using native plants in their work was related to native species being best adapted to their site conditions, while their main reason for not using more native plants was because they had too few sources or limited quantities available. They further indicated that their primary sources of information on native plants were nursery/grower catalogs, magazines, and Extension (Brzuszek et al., 2007). These results from the Southeast correspond with some of the priorities outlined in the present study and underscore the importance of providing commercial nurseries and landscape professionals with Extension resources to increase their production of native plant species.

The respondents who operated both a commercial nursery and a landscaping operation had the highest average overall knowledge score, compared to individuals who only operated either a nursery or landscaping business. All three groups indicated they were most familiar with the environmental benefits of using native plants on the knowledge rating section of the survey. However, the responses for least knowledgeable topics varied among the three groups. Nursery growers were least knowledgeable about cost saving benefits, fertility requirements, and deer resistance of native plants, while landscapers were least knowledgeable about propagation methods, market potential, and insect control of native plants. Respondents who operated both a nursery and landscaping business were least knowledgeable in insect management, propagation, market potential, and cost saving benefits of native plants. These data align with previous research that suggests the limited available information on these topics may be causing a barrier to increased native plant production in nursery and landscape operations (Rihn et al., 2022), but also suggests that Extension programs may have to emphasize certain science-based topics related to native plants, depending on which specific green industry stakeholders they are working with, to best address these knowledge gaps.

Survey responses also identified top priorities from nursery and landscape professionals to support them in offering additional native plant options to their customer base. These

priorities include science-based information regarding native alternatives to common landscape plants. Native alternatives could include those that provide habitat in built landscapes, for example species that support pollinators or are host plants for caterpillars of butterflies and moths. Also needed are alternatives to ornamental plants that are invasive in natural areas, especially as neighboring states adopt policies regulating the sale of invasive species that pose a threat to local ecosystems (Laws of Delaware, 2021; Pennsylvania Department of Agriculture, 2024).

Additional priorities from respondents included the level of deer resistance of different native species and new cultivars of native plants as well as IPM practices, stress tolerance, and propagation protocols for native plant species. Knowing which priorities are perceived as most important to each of these groups, and identifying the overlapping priorities, will influence future Extension programs. These results suggest several potential directions for native plant Extension programs, including but not limited to field trials of new shrub cultivars and their level of deer resistance that can be used in place of common landscape plants, fact sheets on native plants and their level of deer resistance, native plant replacements for common landscape plants, and IPM programs specific for native plants that support insect biodiversity.

Previous research and field trials on native plants can be used as models to assist in the design of these programs. The University of California Davis conducted field trials on ten different native plants that were underutilized in the commercial horticulture market and found several species that had potential for low-water-use urban landscapes in their region (Reid and Oki, 2008). In the Mid-Atlantic, the Mt. Cuba Center has been conducting field trials on various species of native plants and evaluating their performance for ornamental landscapes, including *Amsonia* (Hoadley and Reilly, 2024), *Carex* (Hoadley, 2022), and wild *Hydrangea* (Hoadley, 2021). Extension could use these studies as a framework to create standardized methods for future trials to further evaluate native plants at replicated regional locations, and to share this information with stakeholders.

While deer damage may occur on any plant species, given high deer populations and resource scarcity, there are existing Extension resources on native plants that demonstrate some degree of deer resistance (Tangren, 2019), as well as more comprehensive deer resistant plant lists that include both native and non-native plant species (Nitzsche, 2010). Additional research is needed to evaluate the proposed deer resistance for each species in different regions with varying degrees of deer pressure.

Though certain native plants grown in the proper site conditions may have low insect or disease problems, native plants are not immune from pest damage, especially when grown in larger commercial nursery settings. As such, IPM programs that target common pests of native plants would benefit growers and help to increase their native plant offerings. The red-headed flea beetle (RHFB) (*Systema frontalis*) is an example of a pest that can cause significant damage to broadleaved ornamental plants. RHFB is particularly problematic in container nurseries and one of its preferred hosts is the native shrub *Itea virginica* (Lauderdale and Frank, 2022). Existing Extension resources for commercial nursery and landscape professionals can serve as a starting point to develop comprehensive IPM programs for native plant growers and may be especially important for new growers who may not be familiar with the insect and disease issues that can affect native species.

Limitations of this survey warrant discussion to contextualize the results. The responses may be biased towards those willing to fill out the survey in addition to those who have an interest in native plants. Caution is also warranted in making broad generalizations based on these results as the survey responses represent a small fraction of the actual landscapers and nurseries in operation. Regardless, the results are helpful for providing information for future Extension programming, when taken in conjunction with other needs assessment exercises.

Conclusion

Based on this direction from stakeholders, Extension programming can be developed to effectively meet these needs and support the green industry in their production and marketing of native plants.

Acknowledgements

The authors would like to acknowledge the New Jersey Agricultural Experiment Station (NJAES), the Rutgers School of Environmental and Biological Science (SEBS), the NJ Department of Agriculture, and the USDA Specialty Crop Block Grant program for their support of this work.

Conflicts of Interest

The authors declare no conflicts of interest.

Literature Cited

American Society of Landscape Architects. 2018. *ASLA Survey: Demand High for Residential Landscapes with Sustainability and Active Living Elements*.

<https://www.asla.org/NewsReleaseDetails.aspx?id=62172>

Brzuszek, R.F. and R.L. Harkess. 2009. Green industry survey of native plant marketing in the southeastern United States. *HortTechnology* 19:168-172.

<https://journals.ashs.org/horttech/view/journals/horttech/19/1/article-p168.xml>

Brzuszek, R.F., R.L. Harkess, and S. Mulley. 2007. Landscape architects' use of native plants in the southeastern United States. *HortTechnology* 17:78-81.

<https://journals.ashs.org/horttech/view/journals/horttech/17/1/article-p78.xml>

Hoadley, S. 2022. *Carex for the Mid-Atlantic Region. Mt. Cuba Center Research Report*.

https://issuu.com/mtcuba/docs/22034-carex_report-final121922?fr=sMWI3ZDU2ODU5NjY

Hoadley, S. 2021. Wild hydrangea for the Mid-Atlantic Region. *Mt. Cuba Center Research Report*. https://issuu.com/mtcuba/docs/21050-hydrangea_research_report-final2?fr=sNWNIMzQ1MjM2MzM

Hoadley, S., and L. Reilly. 2024. *Amsonia* for the mid-Atlantic region. *Mt. Cuba Center Research Report*. https://issuu.com/mtcuba/docs/23032-amsonia_report-final-sbh?fr=xKAE9_zU1NQ

Lauderdale, D., and S. Frank. 2022. Red-headed flea beetle management in container nurseries. *North Carolina State Extension Publication*. <https://content.ces.ncsu.edu/red-headed-flea-beetle-management-in-container-nurseries>

Laws of Delaware. 2021. Chapter 29: *Invasive and Potentially Invasive Plants*. [83 Del. Laws, c. 8, § 1; 83 Del. Laws, c. 347, § 2; https://delcode.delaware.gov/title3/c029/index.html](https://delcode.delaware.gov/title3/c029/index.html)

National Gardening Association. 2023. *National Gardening Survey, 2023 Edition*. <https://gardenresearch.com/view/national-gardening-survey-2023-edition/>

Nitzsche, P., P. Perdomo, and D. Drake. 2003. *Landscape Plants Rated by Deer Resistance*. Rutgers Cooperative Extension. <https://njaes.rutgers.edu/deer-resistant-plants/>

Norcini, J. 2007. Native plants: an overview. *UF/IFAS Extension Publication* ENH1045. <https://edis.ifas.ufl.edu/publication/EP297>

Pennsylvania Department of Agriculture. 2024. *Controlled Plant and Noxious Weed List*. Plants, Land, and Water. https://www.agriculture.pa.gov/Plants_Land_Water/PlantIndustry/NIPPP/Pages/Controlled-Plant-Noxious-Weed.aspx

Reid, K.S., and L.R. Oki. 2008. Field trials identify more native plants suited to urban landscaping. *California Agriculture* 62(3). <https://escholarship.org/uc/item/8nm499k2>

Rihn, A.L., M.J. Knuth, B.J. Peterson, A.P. Torres, J.H. Campbell, C.R. Boyer, M.A. Palma, and H. Khachatryan. 2022. Investigating drivers of native plant production in the United States green industry. *Sustainability* 14: 6774. <https://doi.org/10.3390/su14116774>

Tangren, S. 2019. Deer resistant native plants. *University of Maryland Cooperative Extension*. <https://extension.umd.edu/resource/deer-resistant-native-plants/>

Wilde, H.D., K.J.K. Gandhi, and G. Colson. 2015. State of the science and challenges of breeding landscape plants with ecological function. *Horticulture Research* 2: 14069. <https://doi.org/10.1038/hortres.2014.69>