



NATIONAL
HORTICULTURE
FOUNDATION.

ANNUAL REPORT

2022

WWW.NATIONALHORTICULTUREFOUNDATION.ORG

The National Horticulture Foundation embraces the opportunity to seek out and provide support to projects relevant to the nursery and landscape industry along with addressing issues related to a diverse and changing horticulture industry.

Led by our vibrant network of business professionals, the Foundation is dedicated to seeing the industry thrive and survive well into the future.

TABLE OF CONTENTS

President’s Letter.....	Page 3
Financial Highlight.....	Page 4-5
Research	Page 6 - 9
Scholarship Recipients.....	Page 10-12
New Scholarship Opportunity.....	Page 13
Graduate Assistantship.....	Page 14
Endowment Holders.....	Page 15-19
2022 Board of Directors.....	Page 21
Contribution Form.....	Page 22



A LETTER FROM NHF PRESIDENT

Looking back on 2022, I can only think about how grateful NHF is to have such strong industry support. Through challenging financial markets and talks of recessions, the horticulture industry continues to entrust our board to be good stewards of NHF's money. NHF takes the role of investing in the future of horticulture seriously. I can guarantee you, as an industry, we will continue to have challenges, and NHF will be there seeking solutions through research and education. We will continue to look for ways to raise the level of support we can offer the industry and remain relevant. It is my pleasure to be serving my two-year term as NHF President. Let me share with you just a glimpse of what 2022 brought to our Foundation.

In December 2021, Green Plants for Green Buildings (GPGB) and NHF announced the Interior Industry Growth Fund (IIGF). The Fund was established through an initial financial gift from GPGB and merging NHF's Fund for Interior Horticulture Research and Education (FIHRE Fund) which was founded in 2001 but maintained a relatively small balance. In the first 30 days of the Interior Industry Growth Fund's creation, 40 generous and future-minded entrepreneurs investing towards the sustainability and growth of our industry committed \$335,000.

NHF and its financial advisors will manage this all-new endowment. As with any endowment in NHF, the capital will never be spent and will grow through future contributions. Organizers hope to grow the IIGF to \$1,000,000 so that annual earnings can be used exclusively on interior landscape industry research, education, and marketing projects.

With a broader look, NHF strives to fund research that deals explicitly with horticulture-related issues from each industry segment. In 2022, we provided almost \$60,000 in funding to two projects: Using Mulch to Reduce Dependence on Preemergence Herbicides and Improve Weed Control in Nurseries and continued funding for the issue of Lethal Bronzing affecting our Palm industry.

We are dedicated to helping the academic community tackle industry challenges. We want to see your business continue to be successful and the industry grow stronger.

This year, the NHF also provided more than \$34,000 in scholarships to students pursuing a career in horticulture. Our mission is to provide a pathway for these students so they can help make this industry thrive in the future.

NHF has been serving the industry since 1987. We talk a lot about how a foundation's path is never about striving to reach a destination...it is about the long-term journey that continues with the help of industry experience and support. It is an investment in the industry's future and a clear understanding of the importance of giving. Our board seeks out new ways to continue to give back. Our portfolio has weathered wavering financial markets and continues to be strong. We continue to monitor our investment strategies so we will always be able to provide funding for the nursery and landscape industry annually.

In closing, I would like to share a quote about giving by Robert Louis Stevenson - "Don't judge each day by the harvest you reap, but by the seeds you plant." Thank you for helping NHF plant the seeds that will keep our industry growing and thriving. We all are responsible for giving back to the industry that has been so good to us. Choose now to become an annual supporter of NHF. You can make an impact with any size of the gift. A successful harvest is right around the corner.

Sincerely,

Mike Marshall, NHF President
Marshall Tree Farm

FINANCIAL STABILITY 2022

The Foundation's focus has broadened to reach new audiences over the years, yet it has never lost sight of the importance of research and education. The Foundation is comprised of three investment funds: NHF's Main Portfolio, NHF's Advisory Solutions and NHF's Graduate Assistantship managed by the University of Florida Foundation



NHF’s goal is to make a difference for the industry through research and education. NHF seeks to support research with positive outcomes and a greater return on investment for the green industry. Whether understanding how to improve plant quality and longevity during transportation, increase purchasing motivation of consumers to increase demand for horticulture products, the industry will always have challenges to overcome and NHF stands ready to help.

In 1996, we received a large contribution from the estate of James H. Davis which launched our scholarship program and grew into three different scholarship offerings. In 2022, FNGLA’s NE Chapter moved its scholarship fund into the Foundation. We are able to fund approximately 25 students on an annual basis. As these funds continue to grow , more students will be able to benefit from NHF’s scholarship money.

National Horticulture Foundation COMBINED Portfolio Performance

NHF Funds are overseen by NHF’s investment subcommittee and managed by Edward Jones

2022 CONTRIBUTIONS	\$443,745.24
2022 SUPPORT FOR RESEARCH AND SCHOLARSHIPS	\$100,050.00

ASSETS HELD AT EDWARD JONES	2020	2021	2022	Since 2009
BEGINNING BALANCE	\$2,928,122.32	\$3,205,431.04	\$3,444,861.30	\$1,301,644.17
PERSONAL RETURE OF RETURN %	11.91%	12.26%	-14.36%	6.84%
ENDING BALANCE	\$3,205,431.04	\$3,444,861.30	\$3,201,911.78	\$3,375,137.17

National Horticulture Foundation Graduate Assistantship

Graduate Assistantship Funds are managed by the University of Florida’s Foundation.

CONTRIBUTIONS	\$525,000
ENDOWMENT PAYOUT	\$273,629

Fiscal Year 2022 Performance

Balance as of July 1, 2021	\$687,278
Contributions	\$0
Net Investment Return	(\$21,996)
Endowment Payout	(\$23,367)
Balance as of June 30, 2022	\$641,915

The National Horticulture Foundation’s complete financial reports are available upon request from the NHF office.

NHF RESEARCH 2022-2023

Research provides
sound science for
everyday decision
making.

NHF strives to fund research that deals explicitly with horticulture-related issues from each industry segment.

In 2022, we provided \$65,800 for research projects:

- **Transmission of lethal bronzing phytoplasma by *Haplaxius crudus***
Dr. Brian Bahder/University of Florida – Fort Lauderdale, FL
- **Using Mulch to Reduce Dependence on Preemergence Herbicides and Improve Weed Control in Nurseries**
Dr. Chris Marble, University of Florida
- Funding a speaker presentation at the Building Owners and Managers Association (BOMA) International Real Estate Conference Boosting Occupant Wellness and Productivity with Biophilic Design Case Studies from Visionary Corporations.
- Funding to complete and obtain CEU certification credits for a new presentation, How to Specify Living Walls, certified with the American Institute of Architects, the International Design Continuing Education Council, BOMA and several other specifiers and influencers of living walls.

Not all projects are completed at the time of annual report, included are preliminary results from one researcher. All project are required to provide an annual report and are then archived on our website.

RESEARCH ARCHIVES

Looking for more information on the research projects supported by NHF since 1987, visit www.nationalhorticulturefoundation.org/research



Using Mulch to Reduce Dependence on Preemergence Herbicides and Improve Weed Control in Nurseries (Preliminary Report)

November 9, 2022

Chris Marble and Ping Yu
UF/IFAS Mid-Florida Research and Education Center, Apopka, FL

Project Overview and Objectives:

Preemergence herbicides provide many benefits to growers but can result in crop injury. Recent data suggest that new branded cultivars of loro-petalum, ligustrum, nandina, and many others are much more sensitive to herbicides compared with older varieties. Mulch materials have shown promise for weed control, but more information is needed to optimize their use for nursery growers. Two mulch materials (rice hulls and pine bark nuggets) will be evaluated at different depths, use patterns, and in combination with preemergence herbicides to determine weed control efficacy, release rates from fertilizers, and improvements in crop safety to increase growers' profitability. The specific objectives of this project are to answer questions pertaining to the use of mulch as a weed management tool for container nursery growers. Experiments are currently being conducted to answer the following questions:

- 1) Can mulch reduce injury from preemergence herbicides?
- 2) Will a mulch application reduce the release rate of a controlled release fertilizer (CRF)?
- 3) Can mulch be applied in lieu of hand-removal to reduce spread and survival of small weeds or liverwort?
- 4) If mulches and herbicides are combined, should mulch be applied before or after PRE application?

Progress to date:

Objective 1: Experiments are scheduled to be conducted beginning in early Spring 2023 and will be completed and results provided to NHF in the final report.

Objective 2: One experimental run was completed and another ongoing to determine if the use of ricehulls or pinebark negatively affect the growth of pentas (*Pentas lanceolata*) when fertilizer is applied via topdressing, subdressing, or incorporated. In this study, a standard pinebark substrate was used as the potting mix and then fertilizer was applied via one of the three methods but the same rate and type of fertilizer was used in all cases (Osmocote 17-5-11 at a rate of 36 grams per pot). For pentas, the plants were potted, fertilized, and then the mulch was applied at a 1 inch depth. Weed control was assessed in separate pots by sowing 25 seeds of bittercress (*Cardamine flexuosa*). All pots were kept inside a greenhouse and irrigated once daily for 15 minutes supplying 0.25 inches of water. The data collected on pentas included growth index (plant height + width + perpendicular width) every two weeks and shoot dry weight was determined at the conclusion of the trial by clipping plants at the soil line and drying shoots in a forced air oven. Soil pH and EC were also measured every two weeks using a Hanna pH/EC meter with the Virginia Tech pour through method. For bittercress, coverage was rated in each pot on a 0 to 100 scale where 0 = 0% of the pot was covered with bittercress and 100 = 100% of the pot was covered with bittercress every two weeks and shoot dry weights were collected in the same manner as described above.

The experiment was designed as a completely randomized 3 (mulch) × 3 factorial (fertilizer placement) factorial with 8 single pot replications per treatment. Data were subjected to ANOVA and means were separated using Tukey's Honest Significance Difference test at $p = 0.05$.

For the first experimental run, the difference in pentas shoot dry weights indicated that all plants grew similarly regardless of fertilizer placement or mulch type

(Table 1). For bittercress, there were significant differences in the growth attributed to the interaction between the mulch type and fertilizer placement (Table 2). Bittercress with top-dressed fertilizer placements had lower coverage and dry weights as compared to subdressed or incorporated. However by week 12, mulch was the only significant factor (Table 2). Both rice hulls and pinebark suppressed growth of the bittercress with rice hulls providing 100% growth reduction, and pine bark providing a 78% reduction in growth (Table 2). Electrical conductivity data showed that while EC values were at times higher in the subdressed treatment, there was no significant effect on plant growth. Results to date indicate that fertilizer placement nor mulch type have an affect on pentas growth. This allows growers to use the fertilizer placement and mulch that is most convenient for them in their operations while still obtaining optimal weed control with mulch. Regardless of fertilizer placement, use of mulch may reduce bittercress growth by 78% to 100%, but a greater reduction in bittercress growth may be achieved with pinebark if the fertilizer is topdressed. This study is currently being repeated to validate the results and to allow for better analysis of additional data.

Objective 3: An experiment is currently underway (initiated in October, 2022) to evaluate the use of mulch to control weeds following emergence. In this

trial, trade gallon (3.0L) pots were seeded with either bittercress (*Cardamine flexuosa*) or Oxalis (*Oxalis stricta*) seedlings. Following emergence, pots were thinned to 5 weeds per pot. Weeds were then allowed to grow to one of two growth stages, 1) cotyledon to 1 leaf (reached approximately 14 days after sowing) or 2) 2 to 4 leaf growth stage (reached approximately 21 days after sowing). When the targeted growth stages were reached, pots were mulched rice hulls at either 0, 0.25, 0.5, or at a 1 inch depth. Counts were then conducted at 4 weeks and then are scheduled to be conducted again at 10 weeks to determine how many seedlings survived and emerged through the mulch in each treatment. To date, almost all weeds for both species in both growth stages have emerged through the mulch layer when applied at 0.25 or 0.5 inches. However, weed counts are still at an average level of 0 when mulch was applied at 1 inch, indicating that neither species can emerge through a 1 inch layer of rice hulls. This indicates that for growers who have weeds that are already emerged and plan to topdress with ricehulls, handweeding may not be necessary if mulch is applied at a level of at least 1 inch. The trial is still ongoing and final results will be shared in our final report, as well as with additional data on liverwort.

Table 1. Growth of pentas over 12 weeks as affected by mulch type and fertilizer placement.

Mulch	Fertilizer placement ^b	Growth Index and Dry Weight ^a		
		4 WAT	8 WAT	D.W. (g) ^c
Rice hull	Incorporated	31.3	51.0 a	31.1
	Subdressed	33.3	53.7 a	38.4
	Topdressed	29.9	48.6 a	33.6
	Mean	31.5	51.1 AB	34.4
Pinebark	Incorporated	32.7	51.8 a	36.7
	Subdressed	30.8	45.8 ab	33.4
	Topdressed	27.7	30.0 b	37.9
	Mean	30.4	42.5 B	36.0
No mulch	Incorporated	31.5	56.3 a	44.8
	Subdressed	33.1	52.4 a	38.9
	Topdressed	32.2	54.0 a	40.5
	Mean	32.3	54.2 A	41.4

ANOVA^d

Mulch	0.5756	0.0134	0.2545
Placement	0.3786	0.0723	0.9892
Mulch x Placement	0.7280	0.1905	0.7500

^aGrowth index was taken at 4 and 8 weeks after treatment (WAT) by averaging plant height and two width measurements.

^b36 g of controlled release fertilizer was applied to each pot.

^cDry weight was taken at 12 weeks after potting.

^dANOVA shows the results of analysis of variance. Means within a column followed the same lower case letter within each mulch type are not significantly different based on Tukey's Test (0.05). Means followed by same uppercase letter are not significantly different based on the same statistical test.

Table 2. Growth of bittercress over 12 weeks as affected by mulch type and fertilizer placement.

Mulch	Fertilizer placement ^b	Percent Cover and Dry Weight ^a		
		4 WAT	8 WAT	D.W. (g) ^c
Rice hull	Incorporated	0.0 b	0.0 a	0.0 a
	Subdressed	0.3 a	0.0 a	0.0 a
	Topdressed	0.0 b	0.0 a	0.0 a
	Mean	0.1 B	0.0 C	0.0 B
Pinebark	Incorporated	0.8 a	22.5 a	1.7 a
	Subdressed	0.8 a	21.0 a	1.8 a
	Topdressed	0.0 b	0.0 b	0.0 b
	Mean	0.5 B	14.5 B	1.2 B
No mulch	Incorporated	12.5 a	100.0 a	8.0 a
	Subdressed	12.0 a	95.0 a	5.9 a
	Topdressed	0.3 b	31.8 b	2.7 b
	Mean	8.3 A	75.6 A	5.5 A

ANOVA ^d			
Mulch	0.0001	0.0001	0.0010
Placement	0.0040	0.0006	0.0515
Mulch x Placement	0.0022	0.0071	0.1679

^aPercent cover was based on 0 to 100% scale where 100% = 100% of the pot surface covered with bittercress.

^b36 g of controlled release fertilizer was applied to each pot.

^cDry weight was taken at 12 weeks after potting.

^dANOVA shows the results of analysis of variance. Means within a column followed the same lower case letter within each mulch type are not significantly different based on Tukey's Test (0.05). Means followed by same uppercase letter are not significantly different based on the same statistical test.

Objective 4: Experiments were completed evaluating the use of herbicides in combination with mulch, and evaluating the timing of herbicide applications in relation to mulch application timing. In this experiment, pots were mulched with either no mulch, rice hulls, or pinebark, and then treated with either isoxaben (Gallery), prodiamine (Barricade), or left not treated. Herbicides were applied both before and after mulch application to determine if timing had any effect on herbicide performance.

Results showed that rice hulls outperformed pinebark, providing 94% control of bittercress compared to 62% control when pinebark was used. The use of herbicides increased the efficacy of pinebark mulch, increasing control to over 90% but no added benefit was obtained with ricehulls as rice hulls alone (with no herbicide) provided 94% control, at least through a 10 week period. In regards to timing, applying the herbicide before or after mulch was applied made no significant difference (Figure 1). Over 90% control was achieved in all cases. Results overall indicate that mulch tends to outperform the use of a single preemergence herbicide application, but when combining the two methods, herbicides could be used either before or after the mulch is applied and growers should still see excellent weed control. Further studies are planned with additional herbicides and weed species to see if results are consistent across a wide weed spectrum.

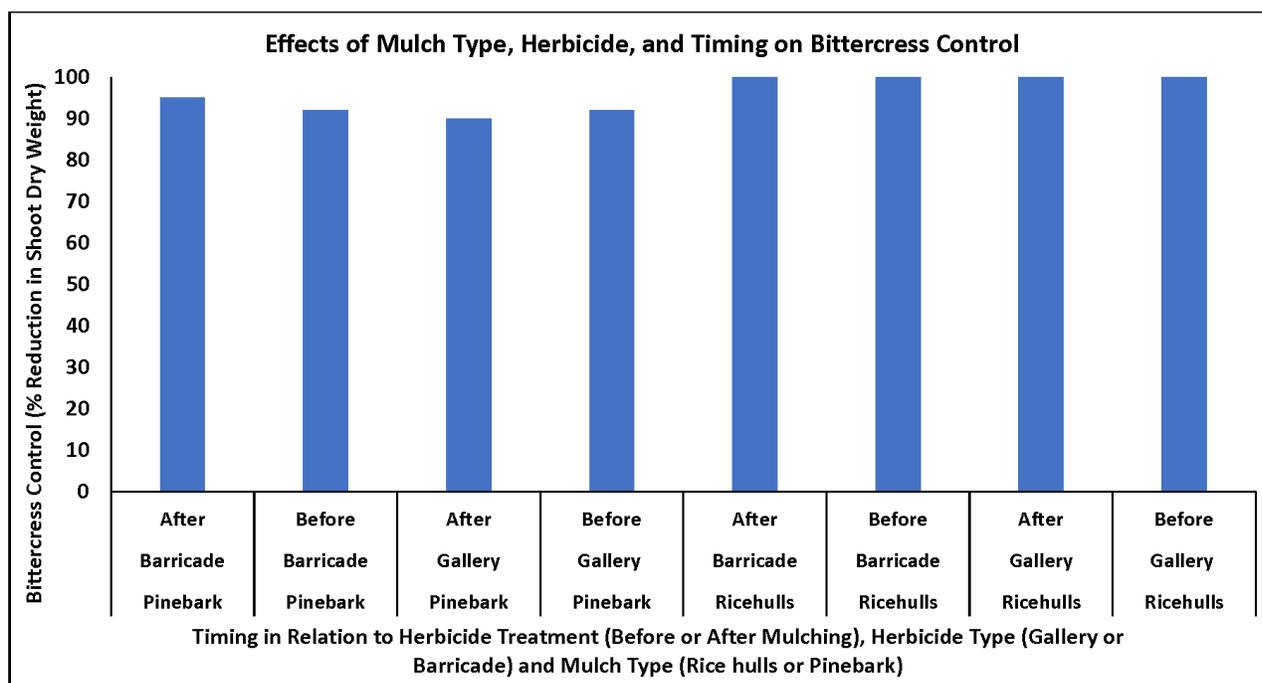


Figure 1. Results from experiments addressing Objective 4.

NHF SCHOLARSHIPS 2022-2023

On an annual basis, NHF's scholarship program continues to establish pathways for qualified students in need of financial support. It allows students to gain experience and expertise, earn post high school degrees and become active members and leaders in the horticulture industry.

Scholarships are available through the

- James H. Davis Memorial Scholarship Fund
- Hoskin/McDougald Fund,
- NHF General Scholarship Fund.

Annual Deadline for all scholarships is January 15th. Scholarships are announced in April for the following Fall/Spring Semesters





Meet Our 2022/2023 Scholarship Recipients



Sarah Da Silva
Benevenuto,
University of Florida

A UF graduate student, Sarah is keeping centered on her research with a focus on practices and strategies used to address pests and diseases

that threaten agricultural productivity, crop quality, and food security. After finishing graduate school, she would like to become a professor of horticultural sciences on a prestigious university. Having her research program, she is working towards improving pests and disease management that continues to be a major challenge to the agricultural industry worldwide and improve the lives of those involved in crop production. Her desire is to combine her skills and knowledge acquired during her academic years with a passion in plant science to inspire future generations to become involved as well. She hopes to make positive contributions to agriculture and raise awareness about the challenges that agriculture is facing and will deal with in the future on producing food to feed an increasing global population.



Hayden Bracken,
Kansas State University

As an incoming freshman, Hayden has taken many classes related to horticulture throughout her high school career like; Agriscience, Plant and Soil Sciences, Floriculture, and Horticulture currently

in her senior year. Since her sophomore year, she has been interested in horticulture and has wanted to pursue it as a career. It wasn't until her senior year that she really nailed down what exactly she wanted to do and has now decided to go into production / greenhouse management. Her goal is to move to the West Coast and work at greenhouses or gardens that are in that area. Ultimately, she would like to own her own greenhouse. Both of her grandmother's gardens played an impact on her and inspired her to spend time growing her own plants like golden pathos and wandering jew, as well as many different types of cactuses.



Melanie Cabrera,
University of Florida

Growing up in an agricultural town in Cuba, Melanie was always surrounded by nature. She found herself fascinated by plants aesthetically and scientifically. She was often dissuaded from pursuing an agricultural career and told to study something "more prestigious". As she witnessed the clear impact of her parents' medical careers, she accepted that pursuing an MD would be a respectable and meaningful path. While she excelled in studying anatomy and physiology on the pre-med track her first year of college, she became increasingly involved with collecting, propagating, and selling plants as a hobby. One day as she was preparing for an interview for the competitive UF Medical Honors Program, she confronted her motive for a career in medicine with honesty: she realized that the love she had for medicine was truly a dedication to science and helping others - desires that could also be fulfilled by a career in agriculture. She switched her major to Plant Science with an emphasis in Breeding and Genetics and started working in a plant molecular biology lab as well as with the coleus breeding program at UF. Melanie has enjoyed every second of work and is constantly fascinated by all the things she has learned.



Natalie Chavez,
Colorado State
University

Natalie started by taking classes in Environmental Horticulture (EH) at her community college, along with joining the environmental

horticulture club where she met some of the most inspirational and down-to-earth people. Clearing out weeds from the potted plants, they were caring for, hardly felt like a hassle-in fact, she enjoyed spending more time with the plants and had the opportunity to observe their structure closer. Every fall, the EH club provides a plant sale sponsored by Sierra Oro Farm Trail, a community association of farmers and horticulturists.



Now, she has applied to Colorado State University to attain a Bachelor of Science. After graduation, she wants to work under a company that protects the environment while creating aesthetically pleasing spaces for clients.



Caroline Gordon,
University of Florida

Over the course of Caroline's first year and a half of college she had some incredible opportunities to explore her interests and passions through coursework, clubs, and employment. She has enjoyed several classes centered around botany, horticulture, and landscape management within her major of Landscape Architecture. This has led her to add a minor in Environmental Horticulture to her degree! A large factor in this choice was her experience as a student and then teaching assistant for the class Environmental Plant Identification and Use. She found through both taking and teaching in this class that she has a deeper interest in horticultural studies than her major covers, so she made the decision to add a minor as a course of study to her degree. She has greatly enjoyed her experience in the Environmental Horticulture Club at UF and has learned so much from the horticultural opportunities that the club offers its members.



Luis Jonathan Clavijo Herrerra,
University of Florida

Luis Jonathan Clavijo Herrerra is a graduate research assistant pursuing his Ph.D. degree in the Horticultural Sciences Department of the University of Florida. He would like to share with you a little bit of his journey, and how he discovered that horticulture not only provides food to the world, but also open many doors. He is originally from Bolivia. In 2012, after trying two times, Luis got the opportunity to study at Zamorano University, in Honduras, a Latin American institution focused on agricultural sciences. Originally planning to join the Agroindustry program, he discovered his passion for horticulture and plant sciences during his undergraduate studies, and even

more important, he realized this was an opportunity to contribute to the improvement of the life quality of farmers and people. He obtained his bachelor's degree in 2015. That same year, his connection with horticultural sciences opened the first of many doors for him, and I got the opportunity to complete an internship at the University of Florida, where he learned about the importance of scientific research for boosting horticultural production.



**Yuvraj Khamare,
University of Florida**

After graduation, Yuvraj's plan to work as a successful weed scientist with an agrochemical company or academia, helping to find and develop new methods of weed management.

He intends to implement this passion for educating and communicating with the public in his professional career. He hopes to elucidate the often-murky topic of weed management, helping the public to become more competent in the uses and management of weeds in their gardens and landscapes.



**Kollier Miller,
Texas Tech**

While Kollier Miller started out with little knowledge of the horticultural industry, he quickly learned to appreciate the industry. His goal as he began applying for colleges was to

choose engineering as his major. However, he found out about the Landscape Architecture program at Texas Tech University. As he learned more about the Landscape Architecture program, he found it more interesting. Landscape Architecture gave him the opportunity to learn skills in many of the engineering fields. In fact, a landscape architecture degree would allow me to do everything an engineer would do, except build bridges. He loves math and critical thinking and likes to work through problems that others find difficult, and he thought this major would allow him to pursue these interests. After graduation, he would like to work for a landscape architecture firm and one day start his own firm.



**Dipiza Oli, Montana
State University**

While applying for the scholarship, Oli was working in The Standard Nursery and fully appointed as a Gardening and Landscaping Supervisor/ Project Manager in the US Mission (American Embassy) with more

than 30 gardeners under my supervision. They have a large tunnel where they produce their plants through different propagation techniques in all seasons. Most of her work consists of symptomatic and asymptomatic disease diagnosis and providing the best solution for sustainability of soil and plants on daily basis to the US Government owned and leased property in Kathmandu. She performs Tree Risk assessment, removal of trees that are more than 50 years old with their arborist team and Pruning in the US Mission, Nepal. She is currently working on her Master's degree in Horticulture, Plant Science and Plant Pathology at Montana State University.



**Vania Maria Pereira,
University of Florida**

After graduation Vania plans to follow the research path in academia, botanical garden, or industry level. She is passionate about the research of natives and new species. Driven by the

excitement of unfolded knowledge and the challenges of different species. She has been studying and working in the Horticulture field since 2015 and still feels as it is the first day every day. Keeping a learning mindset as we still have so much to explore and understand regarding plant species, practices, and techniques. I qualify for this grant due to my passion for this field and its challenges. With the help of the National Horticulture Foundation, she would be able to focus more on her research and install experiments that will directly benefit Florida native growers and Florida ecosystems. Understanding more about palm production and the potential of the pharmaceutical plant production field. Together we will create a better and more aware world on the importance of native plants in our lives.



**Nadia Phillips,
University of
Minnesota**

Nadia is working on her Plant Science B.S. Plant Breeding Major And Horticultural Minor at the University of Minnesota College of Food, Agricultural

and Natural Resource Sciences Undergraduate

Through my position at the USDA-ARS Cereal Disease Lab, she is currently exploring her Plant Science major in a real-world setting. Situated on the St. Paul campus at the University of Minnesota, they work with the largest cereal crops and the diseases that affect them. This includes wheat, barley, oats, and their disease's host plants. Nadia works within the Rouse lab, where we specialize with the wheat fungal disease wheat stem rust. She plans to continue working for the USDA lab throughout her time at the University and aim to intern with the USDA plant breeders her sophomore year. She is pursuing a Plant Breeding track for her Plant Science Bachelor of Science degree. She originally was planning on pursuing Floriculture, or Landscape Design, as she had a great passion for the arts and creating beautiful displays with plants for all to cherish. However, her time at the Cereal Disease Lab has opened her eyes to the bigger picture of Plant Sciences. to create sturdy, disease resistance plants that anyone can care for, horticulturally and agriculturally.



**Meredith Preve, Nigara
Community College**

Meredith Rose Preve considers herself a bonafide, crazy plant lady, and diehard environmentalist of her social circle. I attended public school until the age of 13, before leaving to pursue homeschool,

where she was afforded the opportunity to explore the academic topics that were of especial interest to me. In my late teens, I assisted closely with her family's small stationery business. as lead designer and in marketing and sales capacities as well. Throughout this time,

she acquired a lot of foundational knowledge about the business sphere, and she also began feeling a strong draw towards all things botanical, most clearly evidenced in her growing houseplant collection, which by then was numbering over 250 specimens. Concurrently, she is becoming deeply invested in the declining biological state of the world, leading to my first crack at a massive, native-only pollinator habitat garden in my backyard.



**Katelyn Wissinger,
Virginia West
Community College**

After graduation, Katelyn is interested in pursuing a career in production and sale of plants. She will be able to utilize the skills and

knowledge she has gained in her post- secondary education to strengthen the future of the local horticulture community-working with local farms, greenhouses, or garden centers. Being part of the production side of horticulture means that she will always be hands on with the plants being sold. She hopes to gain an in-depth knowledge of what happens behind the scenes that puts vegetable starts and cell packs of pansies in people's yards. She can actively play a role in improving people's lives and shares a passion for plants from the very beginning - when the seed is planted. Working at a local greenhouse or garden center will allow her to be closely connected to the community and enable her to expand people's perception of what it means to garden.

Not pictured:

- Rachel Chazotte, University of Florida;
- Erin Hajostek, Palm Beach State College;
- Annabella Lyndon, University of Florida;
- Colton Michellini, Ball State University

New SCHOLARSHIP 2022-2023



FNGLA NE Chapter's New Endowment within NHF will support the Billy Barwald Memorial Scholarship

The Billy Barwald Scholarship was established in 2016 by the Northeast Chapter of the Florida Nursery, Growers and Landscape Association (FNGLA) to commemorate Billy's dedication, enthusiasm and many years of service in the horticultural industry. Billy created and ran Barwald Landscaping for over 60 years and in 1990 he started the Flying Dragon Citrus Nursery with his son, Michael, in Jacksonville Florida.

He also was the third Landscape Architect registered in the State of Florida. Billy was a charter member of the 1953 establishment of the Florida Nursery and Growers Association (now FNGLA) and was elected to the FNGLA's Hall of Fame in 2010. It is fitting that the Billy Barwald Scholarship invests in a new generation of young professionals to further the horticultural industry for years to come.

- Student must have resided prior to enrollment in horticultural program within the boundaries of one of the following Florida counties: St. Johns, Duval, Clay, Nassau or Baker. Intended college of choice must be in the state of Florida, but not limited to the previously listed stated counties for a minimum of one year.
- Maintain a minimum cumulative unweighted grade point average of 2.5.
- Student must be enrolled full-time in a college horticulture program or agriculture related field with the intent to graduate in that field.
- Award recipients are eligible to reapply for a scholarship annually.

For questions regarding the scholarship opportunities, visit the NHF website or contact Linda Reindl, NHF Executive Director
Phone: 407-295-7994
Email address: lreindl@fngla.org

GRADUATE ASSISTANTSHIP 2022

In 2010, NHF's graduate assistantship program generated the level of funding needed for its first graduate-student project. NHF's Board of Directors serves as an advisory committee and provides direction and supervision to each graduate student and faculty member involved.



"I am so incredibly grateful for the National Horticulture Foundation and its support of my assistantship through both my master's and my Ph.D. I have gained incredibly valuable experience, skills, knowledge, and connections because of this assistantship. It has opened so many doors and given me so many opportunities. It has completely changed my life, and I am deeply grateful."

Shea Keene, University of Florida/NHF's graduate assistantship recipient graduated December 2022. She has received the assistantship for both her master's and Ph.D.

A little bit about Shea, in Shea's words:

After my qualifying exams wrapped up in mid-December 2020, I took a brief break to spend some time with family before hitting the ground running in the spring semester. After working almost entirely remotely for roughly 9 months, I was finally back in the lab doing hands-on work. I resumed collecting volatiles from my sweet violets, and started seed germination experiments. I was also serving as President of the Environmental Horticulture Graduate Student Association (EHGSA) for the second year in a row. I oversaw the production of 4,000+ coleus plants for EHGSA's annual spring plant sale, which had been cancelled the previous year because of COVID. We completely overhauled the sale format to adhere to COVID safety guidelines, developing a pre-order option with contactless pickup and by-appointment-only greenhouse shopping, and set up websites for both options. The sale was a huge success—our 2021 sale profits were the highest in EHGSA's history!

Over the summer, I worked on developing a method to analyze phenolic acids using liquid chromatography-tandem mass spectrometry (LC-MS-MS). This method was used not only in my own research with Viola, but also in some of my colleagues' research on basil and petunia. Additionally, I performed LC-MS-MS analysis on ubiquinone in Arabidopsis for collaborative research with Dr. Gilles Basset's lab in the Horticultural Sciences Department, which resulted in two publications in 2021.

During the fall semester, I found myself even busier! I welcomed a new undergraduate research assistant into our lab, and she has been a tremendous help with my research. In addition to my own research, I worked on two collaborative volatile projects, one with the Agronomy Department and the other with the Food Sciences Department. Then in December as the semester neared its end, I reached a different type of milestone: I turned 30!

When I think about what 2022 will hold, I am filled with excitement. I will finish up the last of my experiments, write my dissertation, and then...I'll be done! After six years, my graduate school journey will finally come to a close.

Post-graduation, I plan on working in some aspect of the horticultural industry. I am particularly interested in Florida's cannabis industry, but will keep my options open.

New Contributions In 2022

NHF's New Interior Industry Growth Fund

Guided by a vibrant network of business professionals, Green Plants for Green Buildings and NHF are dedicated to positioning the interior landscape industry to thrive well into the future. In 2021/2022, The Interior Industry Growth Fund was created and grown to just over \$300,000 in contributions.

Made up of several endowments within the Foundation's portfolio, the **Interior Industry Growth Fund** will provide a permanent source of funding for research initiatives, professional education, and targeted marketing to influencers and decision-makers. Thoughtful investment in the IIGF will help to future-proof the interior landscape industry.

Endowments making up the Interior Industry Growth Fund

Builder Level

\$25,000-\$34,999

Mangum Family

Benefactor Level

\$20,000-\$24,999

McRae Anderson

Dick Ott Endowment

National Interior Network

Senneff Family

Patron Level

\$15,000-\$19,999

Architectural Supplements and Feinman

Family Fund

Founder Level

\$10,000-\$14,999

Blondies Treehouse

Botanical Designs Legacy

Cityscapes

Green Plants for Green Buildings

Gsky Plant Systems

John Mini - Distinctive Landscape LTD

NewPro Containers

Oasis Plantscapes/Dehaven & Whitting

Joel and Teri Pesapane Family

Planterra Family Fund

Scott & Diane Barron Family

Endowment Level

\$5,000-\$9,999

Amlings Interior Landscape

Good Earth Plantscapes

Green Oak

Grundy's Plantscaping

Les and Catherine Love

Parker Interior Plantscape

Plant Solutions, Inc.

Raimondi Horticulture Group and Family

Giver Level

\$1,000-\$2,499

Air Strength Canada/I Plants Magazine

Anything Groes

Batch-O Blooms

Buckingham Greenery

Greenery Office Interiors

Interior Plantscapes

Plants in Design

Plantscaping

Donations

Foster Plants

Seattle Plant Company

Foliage Design Systems

Special Thanks to Endowment Holders

An endowment is a special "pot" of donated money intended to provide a steady stream of income for research and educational purposes over a long term.

For over 30 years, the National Horticulture Foundation (NHF) has been an innovator, investing in the horticulture industry. Whether through research or education, NHF continues to deliver results to a broad base of industry members.

There is never a gift that is too small and it's never too early to start your industry legacy by creating your own endowment. NHF is so proud to have the support of industry members.

Platinum Level

\$100,000 +
Hoskin/McDougald Scholarship Endowment
Hughes Memorial Fund Endowment
Interior Industry Growth Fund
James H. Davis Memorial Scholarship Fund
June and Richard Rosacker Endowment
Richard Fuhr Endowment

Gold Builder Level

\$50,000 +
FNGLA Action Chapter Endowment
FNGLA Northeast Chapter Endowment
Olive Hill Greenhouses Endowment
Phillip Matalon/Fancy Flora Endowment
Raymond P. Oglesby Endowment
TPIE Golf Classic/Allied Division

Silver Builder Level

\$35,000-\$49,999
Agri-Starts Inc. Endowment
Dorothy and Richard Entorf Endowment
Florikan Endowment
Jason R. Zala Memorial Scholarship Fund

Builder Level

\$25,000-\$34,999
Bolusky Family Endowment
FNGLA Broward Chapter Endowment
Theo & Christina Bryant Endowment
Jose Costa Memorial Endowment
Mangum Family Endowment
Marshall Tree Farm Endowment
Palm Beach Growers Classic Endowment

Benefactor Level

\$20,000-\$24,999
Hackney Nursery Endowment
Dick Ott Endowment
National Interior Network Endowment
McRae Anderson Endowment
Senneff Family Endowment
Tropical Plant Industry Exhibition

Patron Level

\$15,000-\$19,999
Albert & Mildred Kraft Endowment
Architectural Supplements & Feinman Family
Endowment
Cialone Family Endowment

Florida Nurserymen And Growers Association
Florida Potting Soils Endowment
Mike and Cecilia Rimland Endowment
Past Presidents' Endowment
Peckett Family Endowment
Verlite Co. Endowment

Founder Level

\$10,000-\$14,999
Anthony Frumento Endowment
Batson's Greenhouse Endowment
Botanical Designs, LLC
Central FL Marketing Research Endowment
Cityscapes Endowment
FNGLA - Treasure Coast Chapter Endowment
Frank H. Abrahamson Endowment
Green Plants for Green Buildings Endowment
Gsky Plant Systems, LLC Endowment
Howard Freilich - Blondies Treehouse Endowment
Joel and Teri Pesapane Family Endowment
John Mini - Distinctive Landscape LTD
Ned & Kim Bradford Endowment
New Pro Containers Endowment
Oasis Landscapes/Dehaven & Whitting Endowment
Planterra Fund
Prolific Plants Endowment
R.A. Chris Christiansen Endowment
Kevin & Theresa Riley (Rockledge Gardens) Endowment
Scott & Diane Barron Family Endowment
Shannon Rinck Memorial Endowment
The Scotts Spathiphyllum Endowment
Wekiwa Gardens Endowment
Van Donnan Endowment

Endowment Level

\$5,000-\$9,999
Agri-Starts II, Inc. Endowment
Amilings LLC
Bernecker Nursery Inc. Endowment
Bryan Mitchell Endowment
Charles A. Conover Endowment
Charles MacLean Memorial Endowment
Costa Farms Endowment
Farm Life Tropical Foliage Of Homestead Endowment
FNGLA Lake Region Endowment
Foliage Design Systems Endowment
Good Earth Plantscape Endowment
Grandview Botanicals Endowment
Green Oak Endowment
Green Star Foliage, Inc. Endowment
Grundy's Landscaping/Sean Campbell Endowment

Helen and Harold Martin Endowment
Hermann Engelmann Endowment
Hughes Memorial (Budwood Contributions)
John E. Brown Endowment
Kerry's Bromeliad Nursery Endowment
Leafscape Connell Family Endowment
Lerio Corporation Endowment
Les & Catherine Love Endowment
Liners Unlimited
M. Leider Endowment
Mercer Botanicals Endowment
Michele Melnyk Endowment
Moore's Greenhouse's
New and Emerging Pests Endowment
Parker Interior Plantscape
Parrish Family Endowment
Plant Solutions, Inc.
Raimondi Horticultural Group Inc.
Robert M. McColley Endowment
Robert T. Mellen Endowment
Robert R. and Sue Roberson Endowment
Southeast Growers Endowment
Spathiphyllum Growers' Endowment
Suncoast Nursery Inc. Endowment
Sunshine Foliage World Endowment
Tran Trex Foliage Endowment
Twyford Laboratories Endowment
Whistling Pines Inc. Endowment

Sponsor Level

\$2,500-\$4,999
A & L Southern Agricultural Labs
Botanics Wholesale
Jack Christmas
Donaldson Greenhouses
Eiichi Yoshida
Excelsa Gardens Inc.
Florida Plant Growers
FNGLA Highlands Heartland Chapter
FNGLA Pinellas Chapter
FNGLA Manasota Chapter
Frye Farms
Dr. Alfred B. Graf
Lake Placid View Foliage
Living Colors Nursery
Mike and Jo Raimondi
Morning Dew Tropical Plants, Inc.
N.G.M. Productions, Inc.
Silver Krome Gardens
Stepping Stone Nursery, Inc.
Sunshine Tropical Foliage

Universal Enterprise Supply

Giver Level

\$1,000-\$2,499
Air Strength Canada/I Plants Magazine
Anything Groes
Arvida Nurseries Corp of Kendall
Batch of Blooms
Benchmark Foliage, Inc.
Blalock Foliage Inc.
Buckingham Greenery
Combustion Service Co., Inc.
Cultivate Wealth Management
Deroose Plants, Inc.
Driftwood Gardens, Inc.
Everett L.Conklin
FNGLA Coastal Spring Chapter
Frederick C. Brummer
Frederick Gloeckner
Greenery Office Interiors
James Vosters, Sr.
Jerry Soowal/Broward Chapter
Joseph Hill
Happy Plants
Harry Ustler
Harry M. Smith Endowment
Hawaiian Sunshine Nursery
Raymond C. Hogshead
I G I Marketing
Illinois Landscape Contractors Assoc.
Imperial Builders & Supply, Inc.
Interior Plantscapes
Landmark Plastic Corporation
Landscape Services Professionals
Larry Cobia
John S. Masek
Milestone Agriculture
Nancy Carlisle Interior Plantings
New Christie Ventures
O.F. Nelson
Roger Kjalgren
Pixley Greenhouses
Plantique, Inc.
Plants In Design. Inc.
Plantscapes, Inc.
Plantscaping, Inc.
Professor Alex Laurie
Strickland Regis
The Jungle Nursery
Traymax Inc.
David and Karen Wheeler

Ways Industry Contributed In 2022

Leaving a Legacy

Endowments are great ways to leave a legacy! It is an opportunity to leave a lasting impression on the industry, such as when one retires.

In 2022, industry members used this way to celebrate Ben Bolusky. After nearly 24 years at the helm of the Florida Nursery, Growers, and Landscape Association, Ben Bolusky retired in June 2022. Ben started the Bolusky Family Endowment in the National Horticulture Foundation because he believed in supporting industry research and education and continued to add to his endowment on a yearly basis. Ben has made a significant impact on Florida's nursery and landscape industry, he has helped strengthen the partnerships with UF and academic communities and had been a great cheerleader for NHF. Industry members got together and raised \$19,395.00 to add to the Bolusky Family Endowment.

Giving Life Insurance

If your Life Insurance policy is fully paid up, a charitable contribution is generally the replacement cost of the policy, or cost basis, whichever is less.

A policy that is not fully paid up may also be given, and a charitable contribution is allowed for approximately the cash surrender value or the cost basis if less. Donors can either make this a gift of existing life insurance or a new life insurance policy.

In early 2022, NHF received a gift to add to the Richard and Dot Entorf Endowment that currently existed in NHF. It was just over \$38,000 from a life insurance policy that was created during their time in the industry. We lost an industry leader when Dot passed away in 2021 but she never forgot how good the industry had been to her and the importance of giving back. She planned years ago to add NHF's name as a beneficiary in her will. NHF wanted an opportunity to say thanks to the estate of Dot Entorf. Gifts like these keep the family name present within our industry family forever.

Ways Industry Contributed In 2022



Dorothy "DOT" Ann Entorf
July 14, 1933 – July 3, 2021

Dot was a VERY successful wife, daughter, sister, mother, grandmother, businesswoman & friend. As former owner of Whistling Pines nursery in Apopka, FL, Dorothy Entorf adored pine trees. In fact, her family requested in lieu of flowers at her funeral that one should donate living Pine trees in Dot's name to any national forest. In an article written in the Florida Foliage magazine back in 1985, Dot Entorf was one of a few women in horticulture to be highlighted.

Then in a predominately male-driven industry, these women stood out for their confident voice which can persuade and convince others, self-assurance in the decisions they made, strong-willed in their beliefs. The article tells of how it was a little hairy for her to start a business. Loan officers were reluctant to finance her plans and owning a business had many learning curves. Her first goal for Whistling Pines was to increase its sales. They needed a more aggressive sales force, but she learned early on that she needed to be attentive to the needs of her customers, not irritating. "You have to learn to just be a bit careful." It takes an enthusiastic person to begin a company and Dot had enthusiasm. What made her decide to begin her own company? When her daughter began college, Dot did, too. After completing two years, she and her husband moved to Florida. The area, at that time, did not have a four-year university where Dot could finish her degree. She decided it was the full-time involvement she had enjoyed most while continuing her education. Dot had been thinking about a business and when the opportunity became available, she decided to jump into it. Whistling Pines grew to two locations, having both fiberglass and glass houses as well as shade cloth structures. Whether it was growing, retailing or interiorscaping, women like Dot were taking on active roles in these fields and making a difference.

Remembering The Industry

There is never enough time with the ones we loved. Endowments can be a way to celebrate industry members' achievements. It is an opportunity to again leave a lasting impression on the industry and honor the ones the industry has lost.

In lieu of sending flowers to the family, the family asked that donations be made to the Cialone Family Endowment.

Phil truly paved the way for many in the foliage industry. Phil's career in the foliage industry was one of leadership and innovation. Beginning in the late 1960's and going through the 1990's. Phil was constantly looking for ways to make the industry better. Whether serving



ictured from left to right: The Cialone Brothers - Phil Cialone, Paul Cialone, and Joe Cialone

Phil Cialone | August 9, 1940 - September 16, 2022

as a leader in the Foliage Division of FNGA or dealing with county commissioners, he was always looking out for the best interests of industry members. These efforts lead to shade houses being treated as temporary structures, taking a huge burden from those growers whose plants required shade.

He was a great supporter of the Cooperative Extension Service, the University of Florida and the programs they provided to the plant industry.

Growing FORWARD

2022

Board of Directors

A conservative approach, taken by the NHF Board of Directors, has allowed the portfolio value of NHF's fund to grow to \$4 million and weathered an ever-fluctuating financial market. Due to careful planning, the nursery and landscape industry will reap the rewards of the board's stewardship far into the future.



NHF Officers



IMMEDIATE PAST PRESIDENT
George Hackney
Hackney Nursery Inc.
george@hackneynursery.com



PRESIDENT
Mike Marshall
Marshall Tree Farm
michael@marshalltrees.com



SECRETARY/TREASURER
Austin Bryant
Heart of Florida Greenhouses
heartplants@yahoo.com

Board of Directors



Board Member
David G. Liu
Foliage Design Systems
david@foliagedesign.com



Board Member
Dr. Joseph Cialone
Tropical Computers, Inc.
jcialone@comcast.net



Board Member
John Mendoza
jhmendoza@aol.com



Board Member
Kevin Riley
Rockledge Gardens, Inc.
kevin@rockledgegardens.com



Board Member
Manny Rodriguez
Plants In Design
manny@plantsindesign.com



Board Member
Ed Bravo
Big Tree Plantation
ejb.btp@gmail.com



Board Member
William "Mick" Ross
Ross Garden Design
mick@rossgardensignusa.com



Board Member
Dr. John Peterson
Retired University of Florida
drhort@yahoo.com



Board Member
Dr. Wayne Mackay
University of Arkansas
mackay@uark.edu



Board Member
Dr. Liz Felter
Mid Florida REC/Apopka
lfelter@ufl.edu



Board Member
Dr. Dean Kopsell
University of Florida
dean.kopsell@ufl.edu



Executive Director
Linda Reindl
FNGLA
lreindl@fn gla.org

Carve Your Imprint on the Industry's Future



Contact Name: _____
Company/Firm Name: _____
Address _____
City _____ State _____ Zip _____
Phone _____
Email _____

Payment Information:

I pledge \$10,000 \$5,000 \$2,500 \$1,000
 Other _____

Name of Fund/Endowment Contributing to:

Enclosed is my payment: _____

Please make checks payable to the
National Horticulture Foundation.

Gifts are tax deductible.

I want my gift to support:

- Research grants**
- Student scholarships**
- Graduate assistantship programs**
- No Preference**
- Other** _____

Ready to make that donation right now?
Make it right from your smartphone,
just follow these three simple steps!

Step 1 Send a new text message to 41444

Step 2 Text GREENYEAR
<space> pledge amount
<space> your name

Step 3 Click the link in the reply message to fulfill your pledge



Building the Future of the Horticulture Industry Through Research, Graduate Assistantships, Scholarships and Education.

National Horticulture Foundation, 1533 Park Center Drive, Orlando, FL 32835.

If you have additional questions, contact Linda Reindl, lreindl@fngla.org or call 407/295-7994 or 800/375-3642.