

# #Future Green Collar: Engaging Young People with Careers in Horticulture

Susan Capley, New Orleans Botanical Garden, New Orleans, Louisiana  
Sarah Masterton, Longwood Gardens, Inc., Kennett Square, Pennsylvania  
Kathryn Masuda, Atlanta Botanical Garden, Atlanta, Georgia  
Mary Meyer, Minnesota Landscape Arboretum, Chaska, Minnesota  
Dana Render, Trees Atlanta, Atlanta, Georgia  
Sue Wagner, Morton Arboretum, Lisle, Illinois  
Susan Yoder, Seed Your Future, Martinsville, Indiana



# **Inspiring the Next Generation: STEM Pathways**

**Sue Wagner**  
**Vice President Education and Information**  
**The Morton Arboretum**

# Guiding Questions

- Why inspire the next generation to take action for plants? (strategy/theory of change)
- What experiences can we create that result in learners engaging in our gardens' missions, and for some, choosing a green collar career? What is the impact we are looking to measure? How do we know we are successful?
- We (public gardens) can't do this alone. . . who are our partners in this effort?



# Why inspire the next generation to take action?





# How do we...

- Expand our reach as an institution?
- Inspire and engage the next generation in careers?

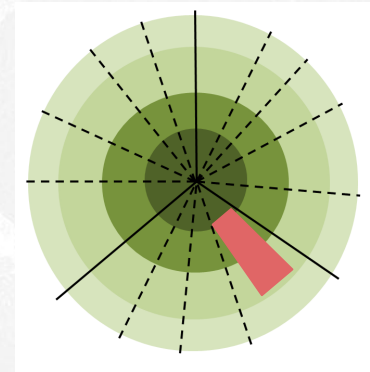


# Engagement





# Youth Volunteer Program



Question	Pre-Survey	Post-Survey
I like to be in nature	3.935 (N=93)	4.220 (N=91)
Being in a natural environment makes me feel peaceful	3.989 (N=92)	4.110 (N=91)
My actions can make the natural world different	3.688 (N=93)	3.897 (N=91)
People should help the environment	4.785 (N=93)	4.791 (N=91)



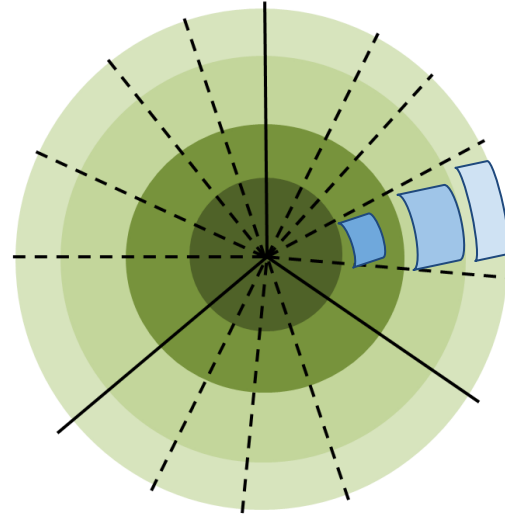
# Program Evaluation Results



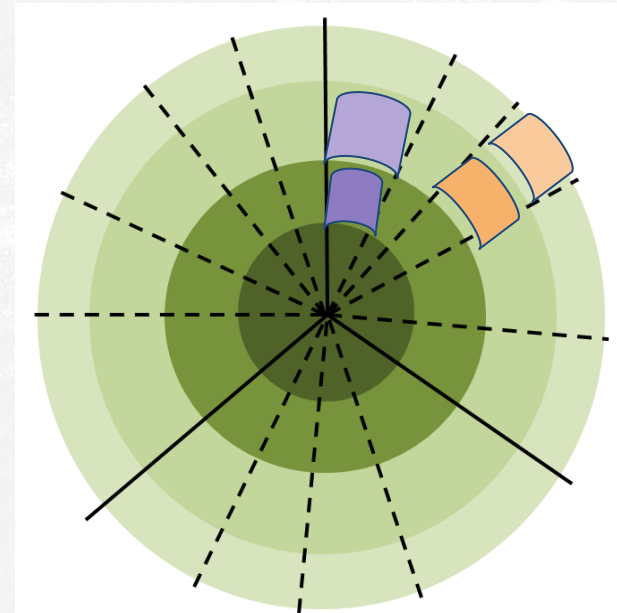
- Structured learning opportunities support participants:
  - Personal goals for learning and wellness
  - Connections to nature
  - Connections with a like-minded community
- Positive responses to online format



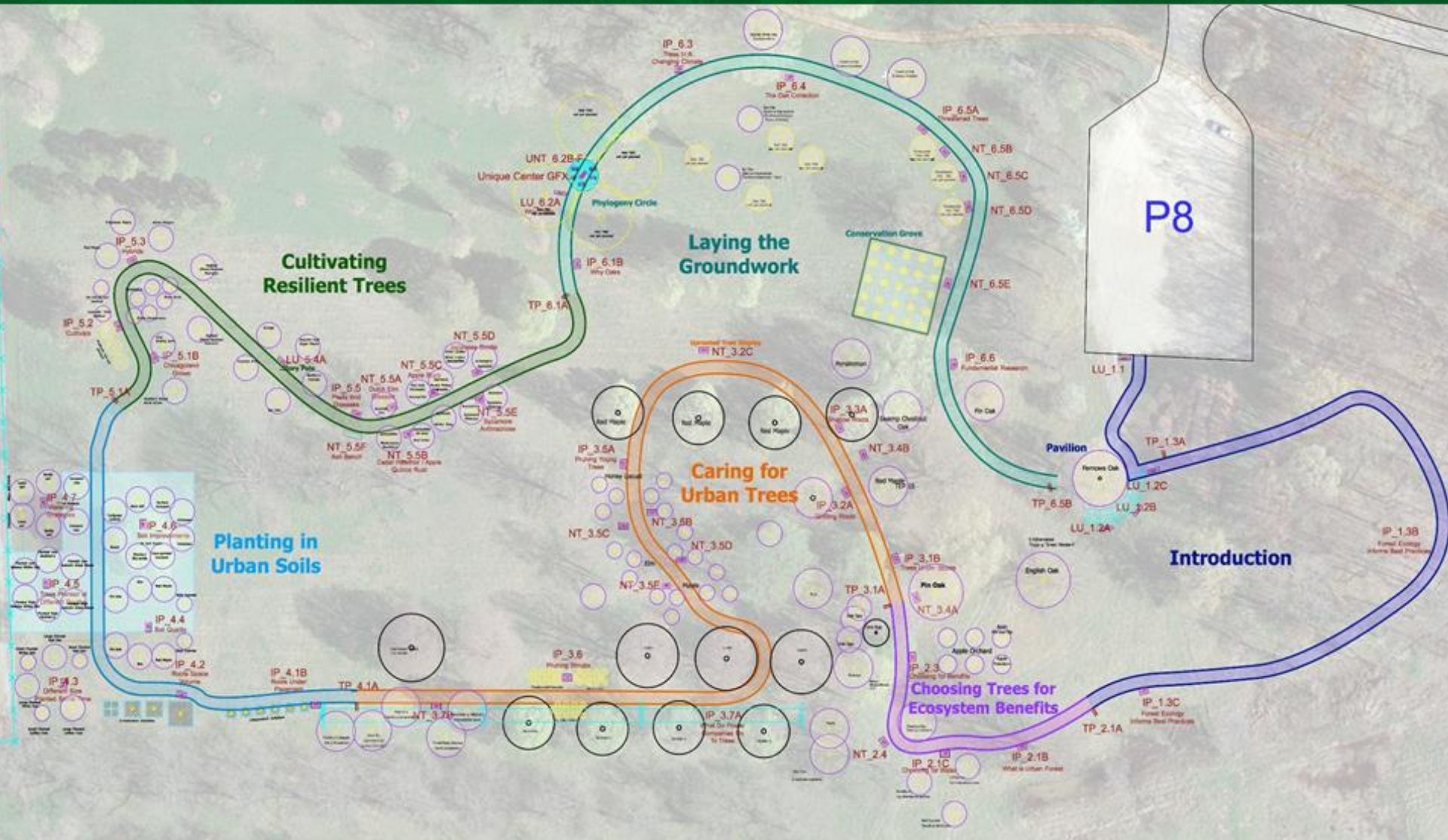
# Summer Science Camp



# Schools/Teachers





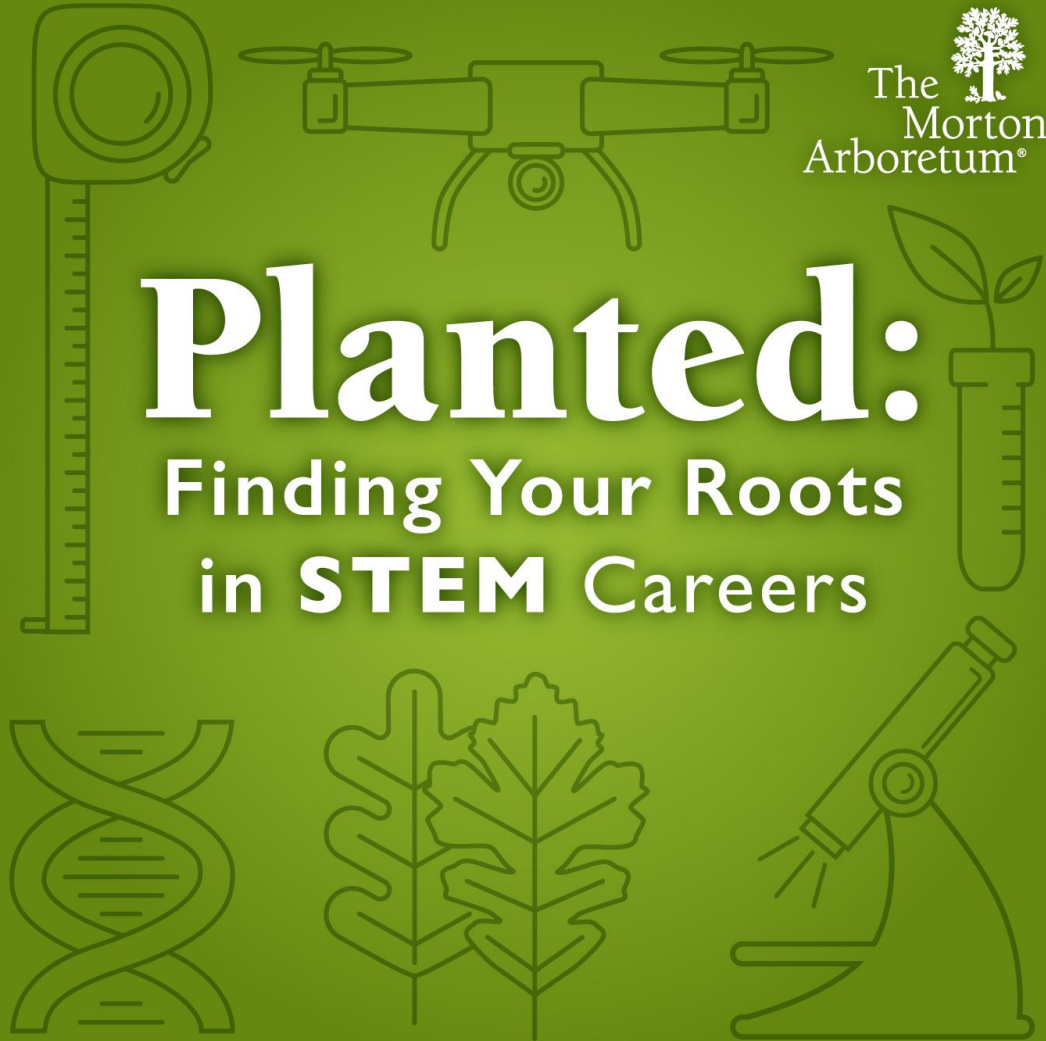






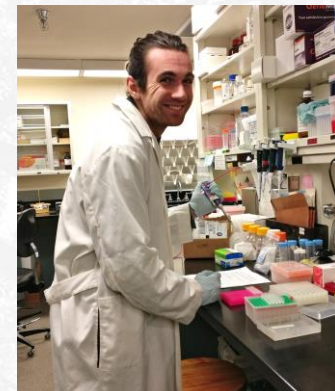
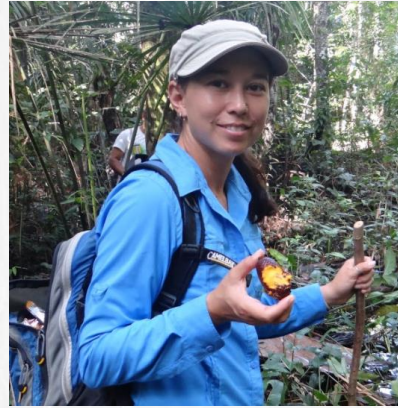
# Planted:

Finding Your Roots  
in **STEM** Careers





# The Journey to a Plant Career







### Dr. Chelsie L. Romulo

Assistant Professor at the University of Northern Colorado

Country of Origin: United States

Current Employment: University of Northern Colorado

#### Interesting Career Highlights

- Co-authored over 7 different scientific articles for research journals.
- For her dissertation, she would travel deep into the Amazon and meet with local people to understand the sustainability of an important non timber forest product.
- Current research projects includes: Climate Change's impact on inland fish and the harvest and conservation of *Maunitia flexuosa* fruit in the Peruvian Amazon.
- She has presented her research at numerous international conferences.

Harry Potter or Lord of the Rings: Lord of the Rings!

#### Education

**Undergraduate:** B.S in Biology and Animal Science from California Polytechnic State University

**Masters:** M.S in Natural Resource Management from Virginia Polytechnic State University

**PhD:** Environmental Science and Policy from George Mason University. Dissertation: Sustainability and conservation of the ecologically, culturally and economically important palm tree in Peruvian Amazon.

#### Career in a sentence:

I am a scientist and I study how people use natural resources, and specifically ways that we can manage resources sustainably.

#### PODCAST Episode and Questions

##### Episode 6: North Stars in Your Journey

- What do electric eels, bee keeping, and tree climbing have in common?
- What did you want to be when you grew up?
- Who in your journey helped shape your direction?
- How have your teachers/professors shaped your journey?
- What should someone look for in a mentor?
- What is the coolest thing you've done in your career?
- What was a typical day like during your dissertation research?
- What advice you do have for people starting in their career?

## Blame:

rt

e: *Utricularia*  
*ulariaceae*



rt from New York City EcoFlora.



a gibba in Fresno, CA by Barry Rice.



s of *Utricularia vulgaris* L. from The Morton



Caption: Range map of *Utricularia gibba* in North America. Green=Species present. Yellow=Present, but rare. Blue=Exotic and present. Orange=Extirpated.  
<http://bonap.net/Napa/TaxonMaps/Genus/State/Utricularia>

#### Ecological Profile

- Habit: Bladderwort has 'bladders' that are used to catch other aquatic organisms, like mosquito larvae and water fleas. The plant flowers in July to mid-September, generally with yellow petals.
- Habitat: Bladderwort lives in ponds, muck flats, bogs, low swales, and along shores of lakes. The common bladderwort can be found throughout North America, ranging from southern Texas to northern Canada.
- Species dependent: Bladderwort is eaten by wetland mammals, including ducks and turtles, and provides shelter for small critters like frogs and salamanders.

#### Plants and People

- Bladderwort helps control populations in ecosystems by consuming insects and small fish.

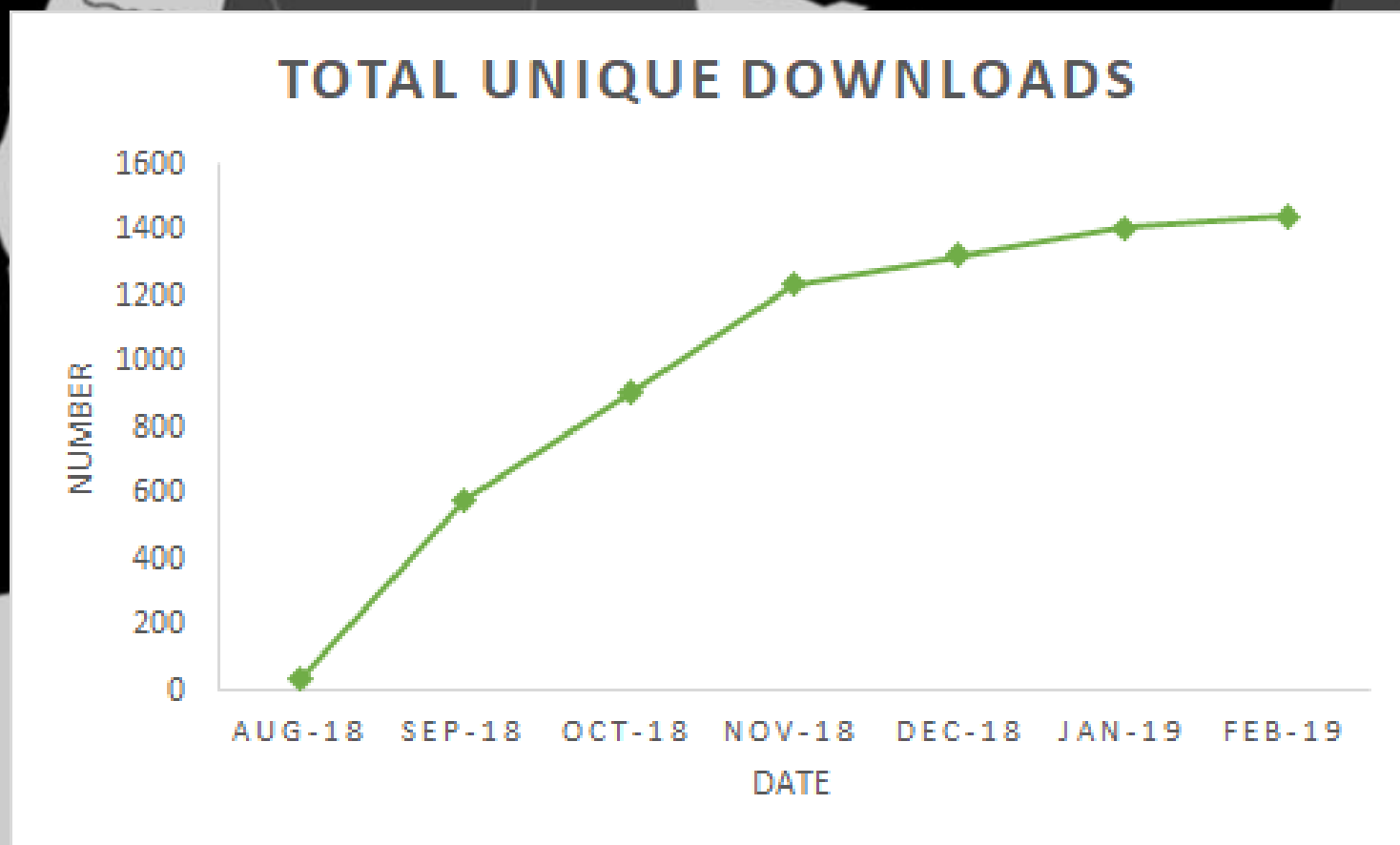
#### IUCN Threat Level

- Threat identified: 2 species of bladderwort are endangered. *Utricularia ceciliai*, which is found in India, and *Utricularia troupinii*, found in Rwanda. There are only 12 known specimens of *Utricularia troupinii*.

#### Cool Facts

- The scientific name is derived from the Latin for "small bottle."
- Researchers at the University of Buffalo have found that *Utricularia gibba* discards some of its DNA that it no longer needs. *Utricularia gibba* has 80 million base pairs of DNA, much less than it should have. For comparison, a tomato plant has up to 780 million base pairs.

# Our Reach



# Canopy Career Chronicles: Online Resources for Youth and Teachers



## Canopy Career Chronicles



Help students “see themselves” in the characters + break down stereotypes of scientists

- Characters aren’t perfect; they don’t always have straight paths
- Each of the characters have diverse backgrounds, interests, and goals
- Stories emphasize creativity, collaboration, and hands-on / outdoor work





**Dina, The Conservation Advocate**

**Themes:**

- Helping communities
- Jack-of-all-trades
- Science in action



**Danny, The Arboriculture Scientist**

**Themes:**

- Translating science into practice
- Trying different careers
- Experimenting and gathering data

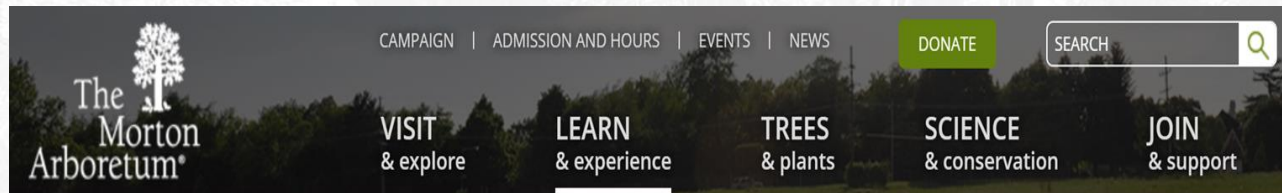


**Sasha, The Horticulturist**

**Themes:**

- Hands-on, outdoor work
- Learning by doing
- Problem-solving with plants
- Teamwork

# Website Interface



## LEARN & experience

Search Courses

Adults

Youth and family programs

- Dina's Story
- For Children
- For Families
- For Teens
- Summer Science Camps
- Little Trees
- All youth & family

School groups

Youth groups and scouts

Educators

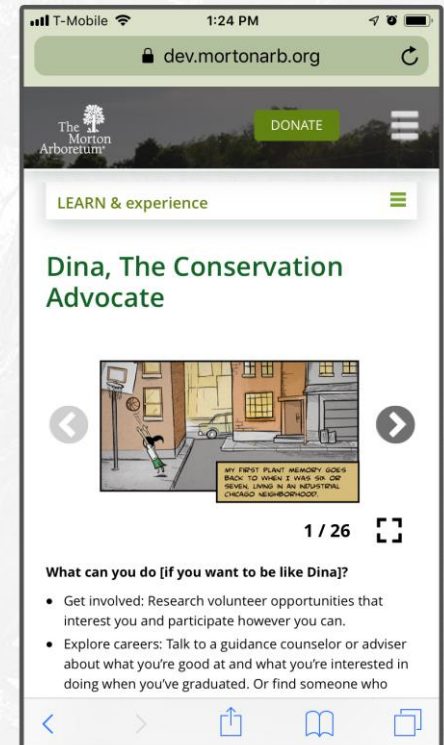
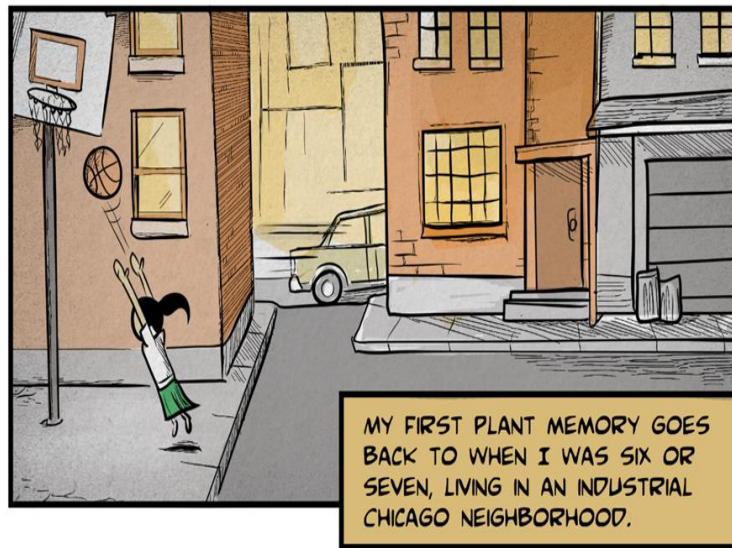
### Not All Classrooms Have Walls

Learn by doing! Try classes for adults or children, from photography and art to gardening and bird-watching to tree expertise and conservation training.

[ENROLL NOW](#)

Home - [LEARN & experience](#) - [Youth and family programs](#) - [Dina, The Conservation Advocate](#)

## Dina, The Conservation Advocate





# Youth Tree Team



**Dana Render**  
Director of Education

# Trees Atlanta

**Mission:** To protect and improve Atlanta's urban canopy through planting, conserving, and educating.

Workspaces Include:

- BeltLine Arboretum
- 242 Distinct Atlanta Neighborhoods
- 10 surrounding cities





# Youth Tree Team

- Started in 2016 based on a model created by Keeping Indianapolis Beautiful
- **Purpose:** Increase Trees Atlanta's missional value to the City of Atlanta
- **Focus:** Expose youth to environmental careers, create work readiness, and bring diversity to green collar careers



# Youth Tree Team

## Outcomes

- Forestry and Horticulture (greenspace engagement)
- Soft skill development
- Financial literacy and accountability
- Unity with community
- Environmental stewardship





# Youth Tree Team

## Structure

7 Weeks (June/July) - Paid

- 7:30am - 12:30pm
- Morning warm-ups/team building
- Maintenance program rotation
- Enrichment Days
- Final project/presentation (New in 2018)
- Budget coaching (New in 2018)
- Resume/cover letter creation (New in 2018)
- Public speaking practice (New in 2018)
- Performance evaluation



# Youth Tree Team

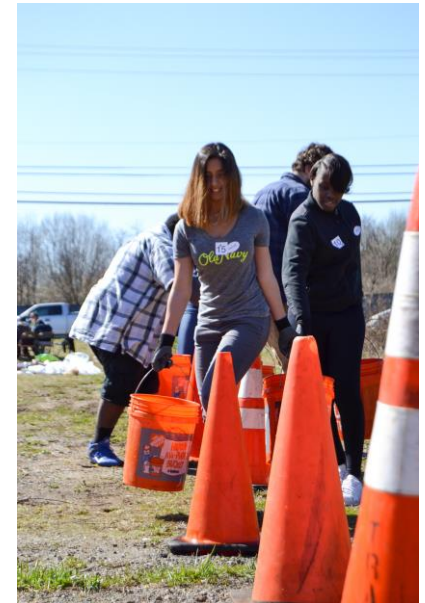
## Selection Process

Stage 1: Application

Stage 2: Challenge Day

Stage 3: Volunteer Planting

Stage 4: Face-to-Face Interview





# Youth Tree Team

## Team Composition

Atlanta area high school students/recent grads (14 - 18 years old)

Year	Total Applicants	Total Participants	Total High Schools
2016	53	12	3
2017	80	20	13
2018	52	24	12
2019	135	32	18



*Ratio of those who apply to those who end up with an interview averages 45 - 50%*

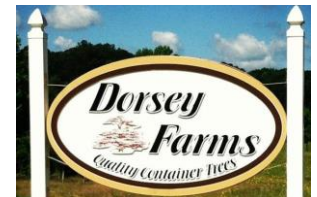
# Youth Tree Team

## Partners

Professional Development Partners provide enrichment activities



ATLANTA BOTANICAL GARDEN





# Youth Tree Team

## Measuring Success

- Program completion
- Job satisfaction
- Curiosity in “Green” jobs
- Knowledge Retention
- Deliverables



# Youth Tree Team

## Feedback

*“[sic] I recommend working at Trees Atlanta Youth Tree Team to anyone looking to build a good work ethic, friendships, money or maturity. ”*

*“The Youth Tree Team has taught me that even maintaining one tree or pulling invasive species can help to better out Earth.”*

*“My experience with Trees Atlanta was amazing.”*

*“[I would recommend YTT to a friend because] You get to help your community while also making great friends and working with nature. It’s just a such a unique experience that no other organization really offers”*

*“I learned a lot about the importance of preserving nature and making sure it is maintained. I also gained various outdoor work skills that can help me in the future.”*







# Atlanta Botanical Garden High School Internship Program

Kathryn Masuda  
Youth Programs Manager





# Program Details

- Goal: introduce high school students to careers in botany and prepare them for entering the workforce.
- 7 weeks, Wednesday – Friday, 9 a.m. – 4 p.m.
- 10 interns from Metro Atlanta Schools
- Paid!





# Why an Internship Program?

- Diversify ages of children reached
- Build relationships with high schools



# Intern Recruitment

- Biggest challenge!
- More marketing in second year
- Optional Teen Volunteer Day
- Group Interviews
  - Q&A
  - Plant Identification
  - Garden Project





# Mornings with their Mentor



Interns and Mentors asked for more time together in the program evaluations.



# Afternoon Learning

- Interview skills
- Financial planning
- Resume building
- Team building
- Communication style personality test
- Forest bathing
- Cooking
- Soil expert
- Arborist





# Field Trips



# Group Project

- Year one: planning activities for Friends for Refugee Summer Program
- Year two: planning a Teen Festival at Atlanta Botanical Garden!





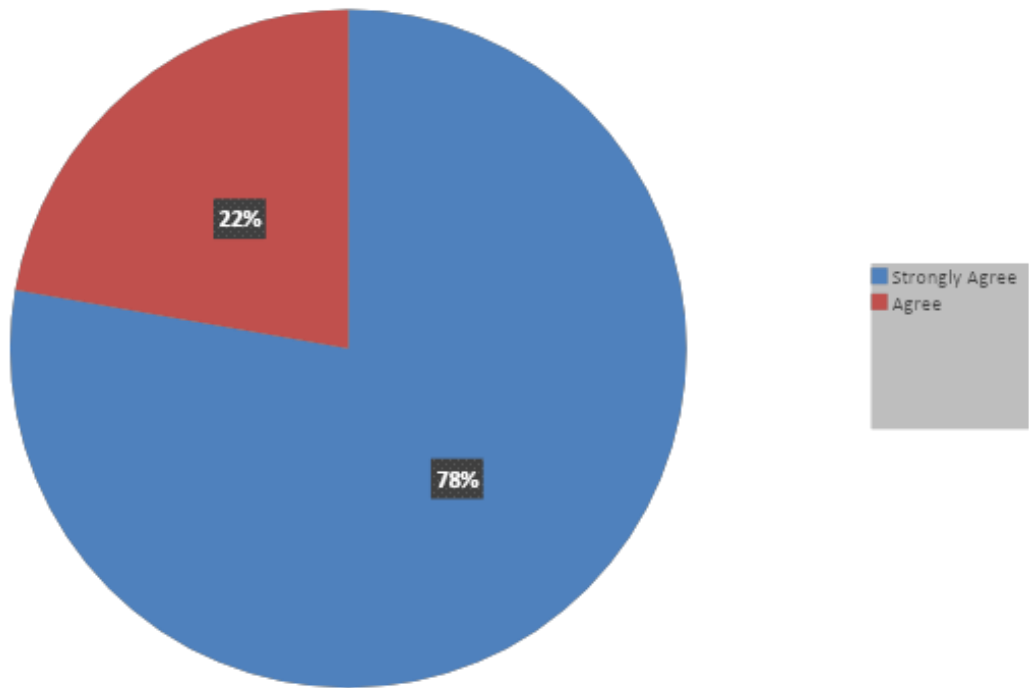
# Intern Check-ins

- Personal Journals
- Daily discussions
- Set program goals with mentor
- Intern evaluation



# Student Surveys

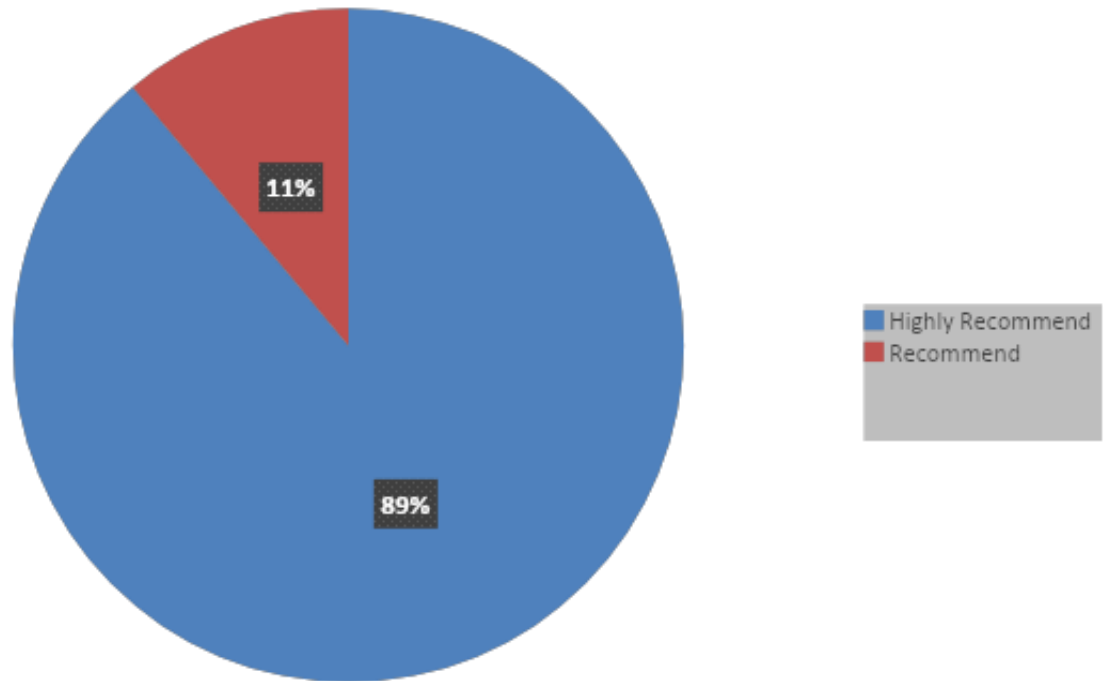
I feel that I am better prepared to enter the workforce after completing this program.





# Student Surveys

Would you recommend this internship to other students?





# Program Survey Results

Do you have an interest in the field of botany after internship?

- 9 out of 10 students said “yes”
  - “Yes, because I did not like it a first, but by learning new plants and flowers its interesting.”
  - “Yes I want to work with plants in my future”
  - “Yes because I feel like this internship has opened my eye a little more to science, biology, and more so plant life. I think there is a possibility that I may choose a career that has something to do with plants.”





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# CAREER TOURS IN HORTICULTURE AND PUBLIC GARDENS

Susan L. Capley, New Orleans Botanical Garden

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NEW ORLEANS  
BOTANICAL GARDEN  
CITY PARK

# Minnesota Landscape Arboretum & New Orleans Botanical Garden Career Tours

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**Why are Career Tours important?**

- **Decreased enrollment in plant science degrees**
- **Horticulture industry needs quality employees**
- **Public Gardens need plant science professionals**
- **We want young adults to grow up appreciating public gardens and pass that on to their future generations**





# Minnesota Landscape Arboretum Tour

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**Six key garden stops to target specific careers**

- 1. Landscape Architect**
- 2. Plant curator**
- 3. Plant breeder**
- 4. Integrated pest management specialist**
- 5. Plant pathology**
- 6. Arborist**

**Ending with a video from  
[www.seedyourfuture.org](http://www.seedyourfuture.org)**



# Activity: Plant Blindness

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NEW ORLEANS  
BOTANICAL GARDEN  
CITY PARK

# Minnesota Landscape Arboretum Tour

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- The Minnesota Landscape Arboretum Conduct about one tour per month
- High school and community college students
- Flexibility in scheduling
- Charge a nominal fee
- Group size is twenty-five per group





# How Our Career Tour Started

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NEW ORLEANS  
BOTANICAL GARDEN  
CITY PARK

# New Orleans Botanical Garden

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## Our tour:

- The history of our garden
- Our facilities, how we pay the bills
- Emphasize careers in Public Gardens
- Types of public gardens
- The benefits of public gardens and green spaces
- Volunteerism









# Children Love Gardens

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**School tours K-3rd, Little Acorns 18 mos - 5 yrs, Growing Gardeners 5 yrs-9 yrs and events average about 3200 children a year! Middle school & high school 200**



**NEW ORLEANS  
BOTANICAL GARDEN**  
CITY PARK

# Who requests career tours?

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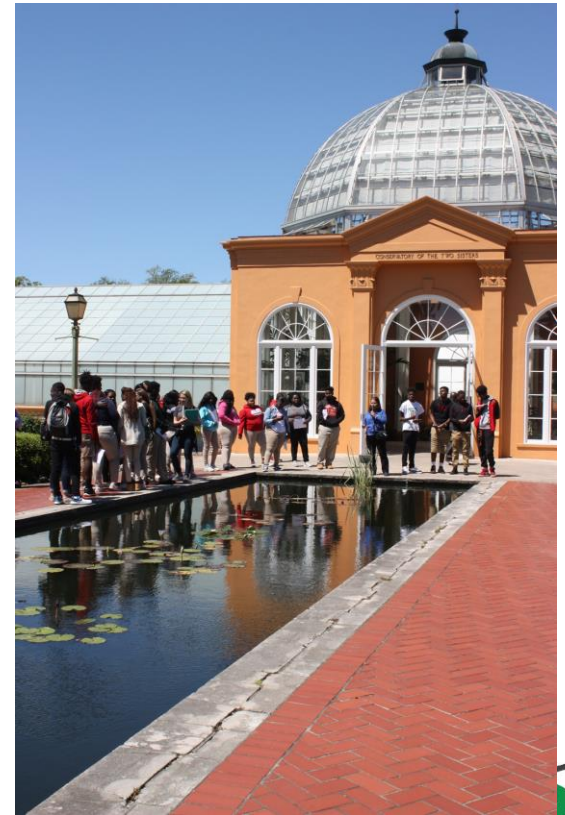
- Universities; New Orleans, some summer groups from around the country that are volunteering in New Orleans
- High School: New Orleans, South Louisiana, Regional-Mississippi, Alabama and High School groups from the country that are here doing volunteer work in New Orleans
- Jr. High: New Orleans and suburbs



# How do they hear about this tour?

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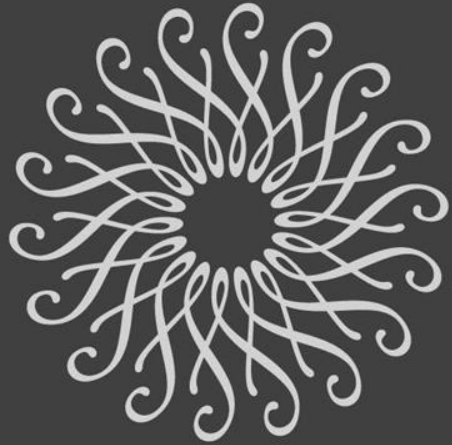
- Web-site
- Repeat teachers
- Phone call inquiries
- NEW-Postcards sent to schools





**I hope they fall in love with plants, whether it be through a career in public gardens, becoming a volunteer, planting a garden at home, but most importantly, by introducing public gardens to their future children and grandchildren**





LONGWOOD  
GARDENS

Discover - Longwood Gardens

Sarah Masterton

VP Education, Longwood Gardens

# The Discover Program

Why:

- Mission
- Careers in horticulture
- Accessibility
- Two way learning
- The Goal: prepare the students for success in the workplace and for independent living







# Our Partner

Chester County Intermediate Unit



The Chester County Intermediate Unit provides services to the 12 school districts in Chester County. This includes services to nearly 86,000 public and non-public school students and over 6,000 educators.





# How does it work?

- Operates twice per year: January - May and September - December
- Up to 10 students per time
- Students are supported by a Job Coach from CCIU
- Placements in the garden: teams and types of work







"I'm so grateful to Longwood, they have had such an incredible and long relationship with the Discover Program. I'm a strong believer in building a community around people with disabilities. This relationship tugs at my heart and makes me feel really proud of where we live,"



"I've tried lots of new things and it makes me happy when I'm outside. I'd like to do a job where I work outside."



# What We Learned

- Partnerships are key and need to be maintained and managed
- Communication internally in your organization helps everyone understand the why and the impact
- Celebrate and share success stories
- The organization gains as well as the students





# Seed Your Future

APGA 2019



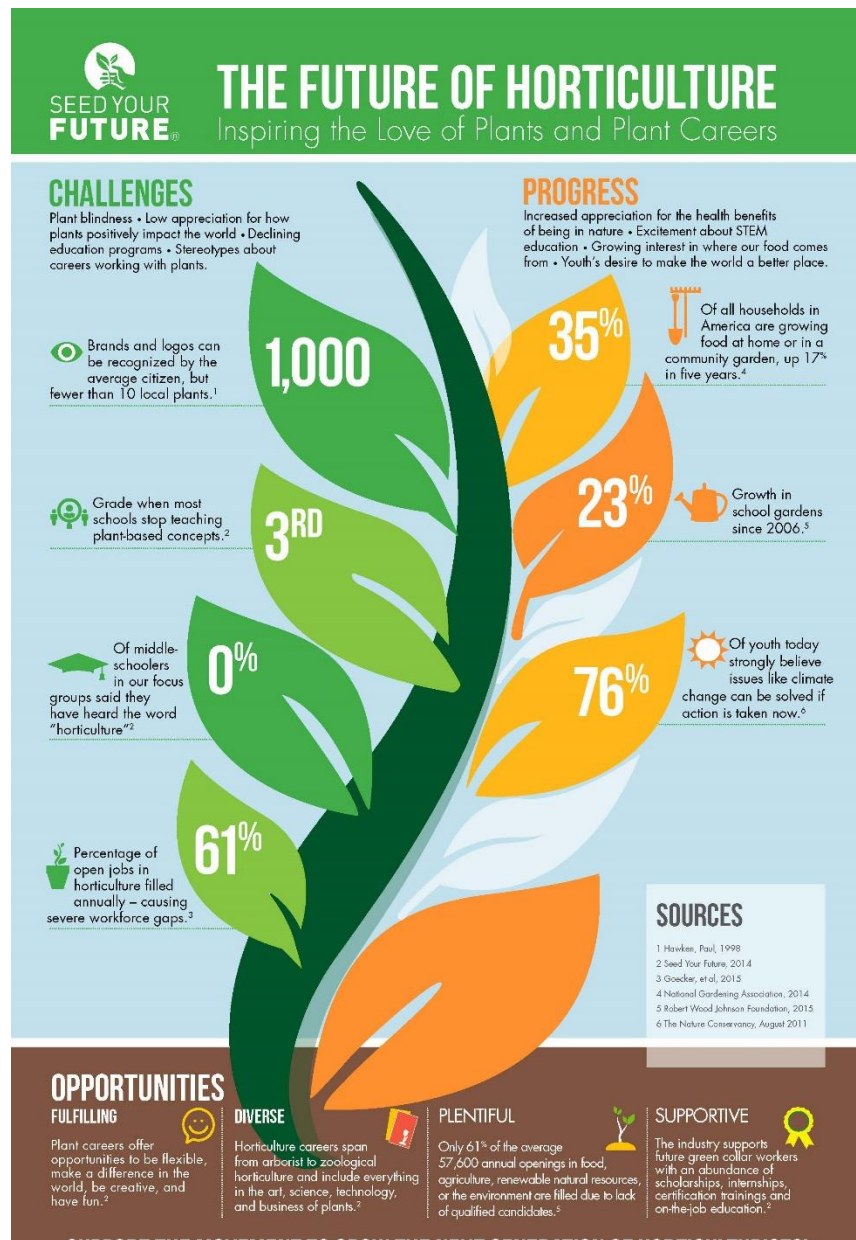
# Seed Your Future

Our Mission:

*Promote horticulture and inspire people to pursue careers working with plants.*



# Why?







**MAJORITY DON'T KNOW OR  
UNDERSTAND HORTICULTURE**



MARKETING

# Horticulture is Weird — Plantology is Cool!

#ILoveMyPlantJob  
#SeedYourFuture  
#FutureGreenCollar  
#AmoMiTrabajoDePlantas  
#ILoveMyPlantJob



Sponsored Educational Materials

## Teachers

Teachers Home  
Lessons and Ideas  
Books and Authors  
Top Teaching Blog  
Teacher's Tool Kit  
Student Activities

The Teacher Store  
Books Clubs  
Book Fairs  
Scholastic Education  
Classroom Magazines

About Us

**BLOOM!**  
Powered by Seed Your Future

**Lessons and Activities  
About Horticulture**  
Science & ELA Standards-Aligned  
Grades 6–8

CLASSROOM MATERIALS

DIGITAL LEARNING MODULE

STUDENT CONTEST & SWEEPSTAKES

Turnkey Teaching Resources





## Connecting With Nature

Grades 6-8



## Who's Who in Horticulture

Grades 6-8



## Plant Purpose and Placement

Grades 6-8



Student  
Magazine

Grades 6-8



Grades 6-8



Grades 6-8



Grades 6-8

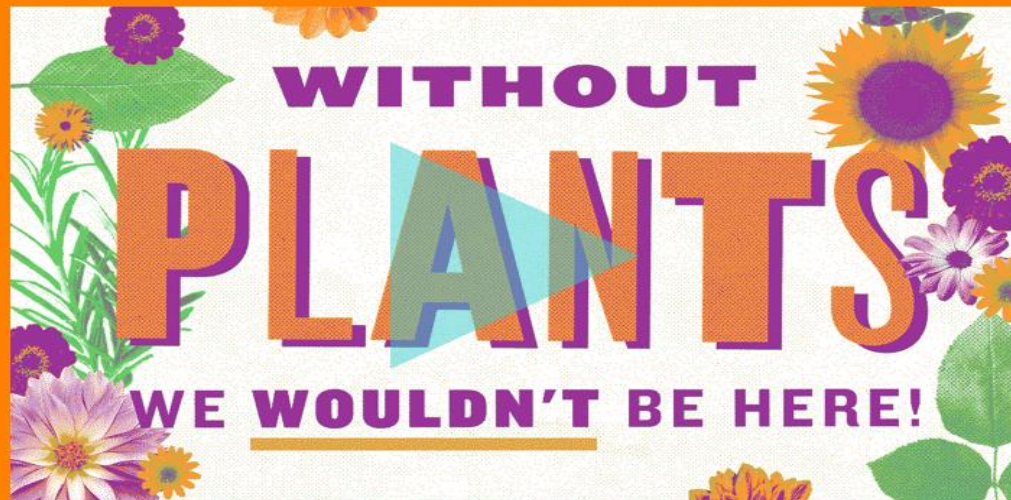
Classroom  
Poster

Grades 6-8



# Plant Power Digital Learning Module

Students will use a video, digital interactive, and quiz to delve deeper into the world of horticulture.



[Enter the Learning Module](#)





# BLOOM!

**Horticulture offers countless careers. Check out these real-life professionals who spend their days working with plants and keeping the world green.**

## Landscape Architect

Designing outdoor spaces for homes, cities, and businesses is the work of a landscape architect. These licensed pros are trained in horticulture, architectural practices, and urban planning.

## Urban Forester

Cities need trees, but those trees need more maintenance than the ones in a forest. The urban forester might work for a city government, a utility company, or a tree service company keeping trees trimmed and healthy.

## Florist

Bringing beauty and delight to people is the work of florists. These pros know their flowers and spend their days designing and constructing arrangements for countless occasions.

## Extension Agent

An expert and adviser, the extension agent helps people by translating the latest horticulture research into usable information for home gardeners and business owners.

## Drone Specialist

The green-collar industry is on the cutting edge of technology. Among the many professionals working in high tech are drone specialists. These pilots fly drones to conduct surveys of fields and forests.

## Botanist

The ultimate expert on plant biology, a botanist is dedicated to examining the power of plants. Botanists might spend their days teaching, conducting research on plants, or advising businesses on horticulture practices.

**SCHOLASTIC**

# Career Profiles



## **Bloom!** Plant Mash-Up! Sweepstakes & Contest



### **"Pealily"**

"My hybrid will be a cross between a Runner Peanut and Water Lily. The Pealily solves hunger and water shortage problems. Discarded peanut husks/shells from the Pealily can be used for fertilizer and compost. The leaves from the Pealily can be used to construct biodegradable baskets for starting/planting other edible crops."

*Hannah S., 4th grade, Sarasota, FL.*

**Lesson Plans  
Activities  
Contests**

# **BLOOM!** Plant Mash-Up!

ALAMEDA COUNTY FAIR CONTEST



## **"Green Tea & Garlic Hybrid"**

"The green tea and garlic work together to create a super food that is amazing for your immune system, but bad for your breath."

*Anna B., 8th grade.*

# **BLOOM!** Plant Mash-Up!

ALAMEDA COUNTY FAIR CONTEST



## **"Fuchsia Lemon Tree & Sugar Cane Hybrid"**

"This plant is a tree that makes lemonade! When you squeeze the flower, then squeeze the lemon, the juice falls out of the sugar cane and you get lemonade! It reduces plastic cups and machinery and pollution, and it's a healthier way to make lemonade!"

*Troy K., 5th grade.*









## BOOM! Plant Mash-Up!

ALAMEDA COUNTY FAIR CONTEST



### "Garnoroot: Coneflower & Garlic Hybrid"

"My plant is called 'Garnoroot'. It has the flowers of coneflower and roots of garlic. It can benefit others because the aroma of the flowers can calm people and give them a sense of peace. The liquid that spills when the bulb is cut open can be drunk to cure sickness and disease and you can rub the liquid on wounds to reduce swelling, redness, burns, and discoloration."

Sahana G., 7th grade.



## FIBERS FROM PLANTS

like cotton, hemp, flax are used to create

**FABRICS FOR CLOTHING.**



## A heart of spinach?

**SCIENTISTS USED THE PLANT TO GROW A VASCULAR SYSTEM THAT**  
could help repair damaged organs.

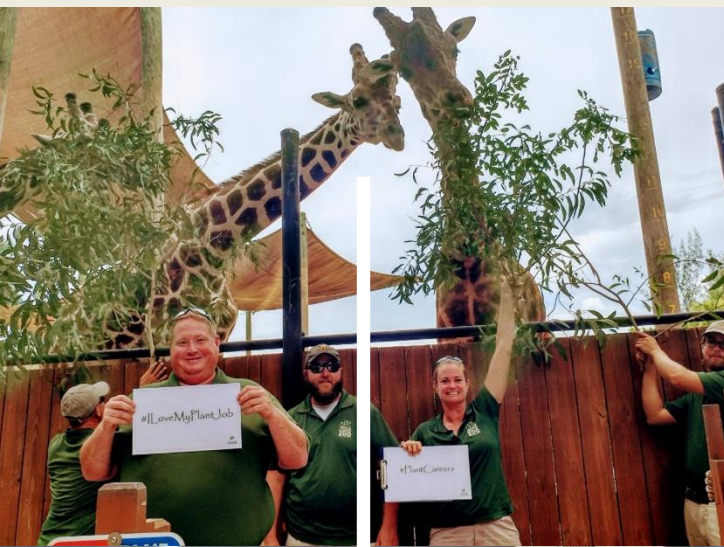
Horticulture contributes

**196 & 2**  
**BILLION DOLLARS & MILLION JOBS**

**TO THE U.S. ECONOMY ANNUALLY.**











@SeedYourFuture @WeAreBLOOM



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# Q&A Panel

# Thank You!!

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