Urban Tree Nursery Resources

Presented to Chesapeake Bay Forestry Workgroup

Nov 4, 2026

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Jehane Samaha
Urban Nursery Specialist

ISA municipal arborist PD-2675AM

In Philadelphia!

Background in public gardens, community science, urban forestry consulting, climate change research, tree planting nonprofit work, 'fancy tree' propagation.

- Link between RNGR and UCF programs
  - RNGR: Reforestation, Nurseries, and Genetic Resources
  - UCF: Urban and Community Forestry
- Provide trainings and networking
  - urban tree supply + quality
  - diverse, climate-ready tree species



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Outline

- What is RNGR?
- Who is on the team?
- Identified opportunities
  - Contract growing
  - Partnerships
  - State nurseries
  - Non-profit nurseries
  - Increased communication





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What is RNGR?

- Reforestation, Nurseries, and Genetic Resources (RNGR)
- Unique, innovative team working across the Forest Service
- Science-based resources to improve plant and tree materials
- Facilitate nursery meetings and networking
- Technology we develop is used worldwide



Pohnpei UCF Nursery, FS Micronesia



St. Thomas VIDA Nursery, U.S. Virgin Islands

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Quality Nursery Production Requires Skill and Knowledge

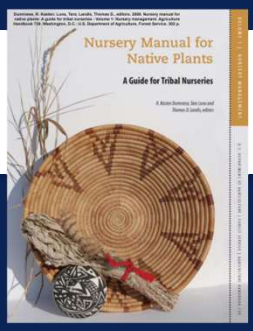
- Plant physiology, morphology, and phenology
- Genetics
- Environment
- Soil quality
- Water management
- Seed technology
- Species characteristics
- Ecotype differences
- Culturing techniques
- Pest Management
- Storage and handling
- Customer relations
- Admin. and budgeting

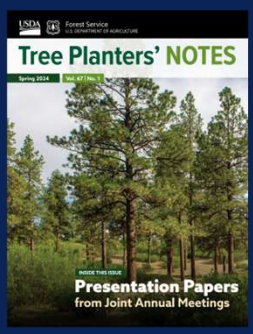


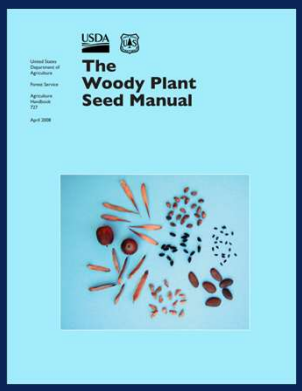
University of Guam GPEPP Nursery

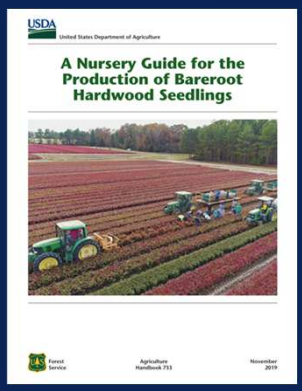
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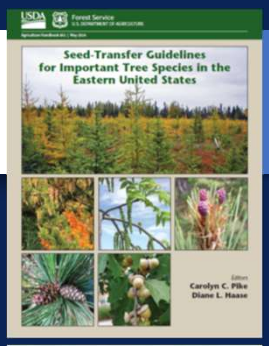
Publications

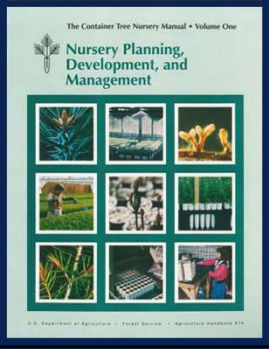












Technical information generated by RNGR often serves as the authoritative standard

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Online Resources
RNGR.net

Managed by Southern Regional Extension Forestry (SREF)

- Publications
- Directories
- Calendar
- Links
- RNGR Contact Information
- Native Plant Network

Averages a visit and a download every 11 minutes!

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National RNGR team: Washington Office



Sara Wilson
National Nursery & Reforestation Specialist (ID) SPTF



Kayla Herriman
National Seed Specialist (OR) NFS



Lindsay Colegrove
National Nursery Specialist (NC) NFS

National RNGR team: National Specialists



Jeremy Pinto
National Tribal Nursery Specialist (ID) SPTF



Paul Rhoades
National Nursery Pest Specialist (GA) SPTF



Jehane Samaha
National Urban Nursery Specialist (PA) SPTF



Vic Vankus
Director, National Seed Lab (GA) SPTF

National RNGR team: Regional Specialists



Carrie Pike
Eastern Regeneration Specialist (IN) SPTF



Emily Rhoades
Southern Nursery Specialist (GA) SPTF

Western Nursery Specialist (WA) SPTF

Tropical Nursery Specialist (CA) SPTF

National RNGR team: International Programs (IP), R&D, Southern Regional Extension Forestry (SREF)



Matt Horning
Program Manager, IP



Daniel Drummond
IT Developer & Mobile Apps Director, SREF



Andrea Watts
Editor
Tree Planters' Notes

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Barriers to increasing urban tree species diversity:

1) Plant material availability
2) Client/ resident preference
3) Regulations
4) Unknown tree performance in the landscape

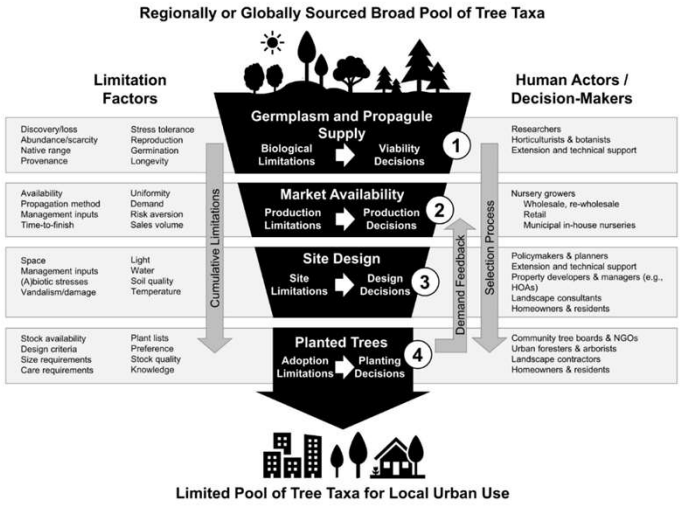


Figure 1. *Biology, economics, policy, and social preferences all interact to create a limited number of tree species available for planting in the urban forest.*

Koeser, A.K., L.J. Brewer, D.R. Hilbert, G.L. Thompson, and A.B. Salisbury. 2022. Growing Diverse Urban Forests: Green Industry Perspectives. University of Florida, Balm, Florida. 10 pp.

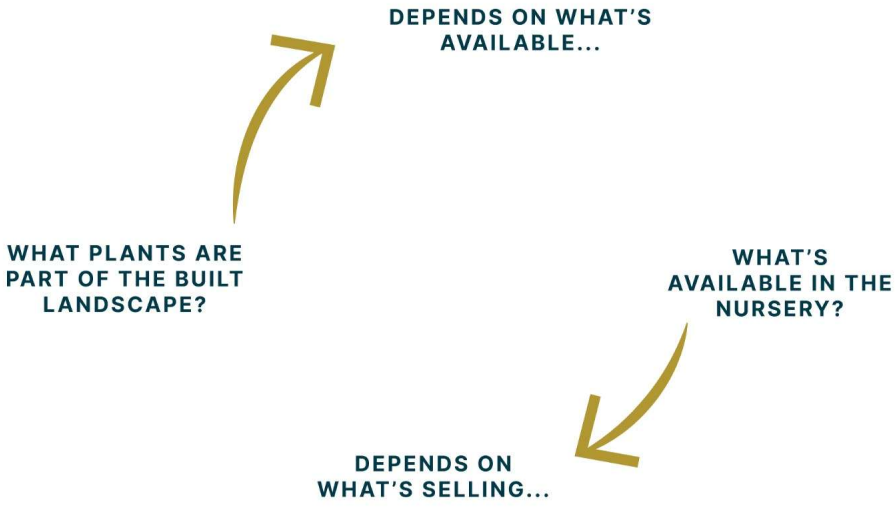
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STATUS QUO



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STATUS QUO



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A NEED TO ADAPT

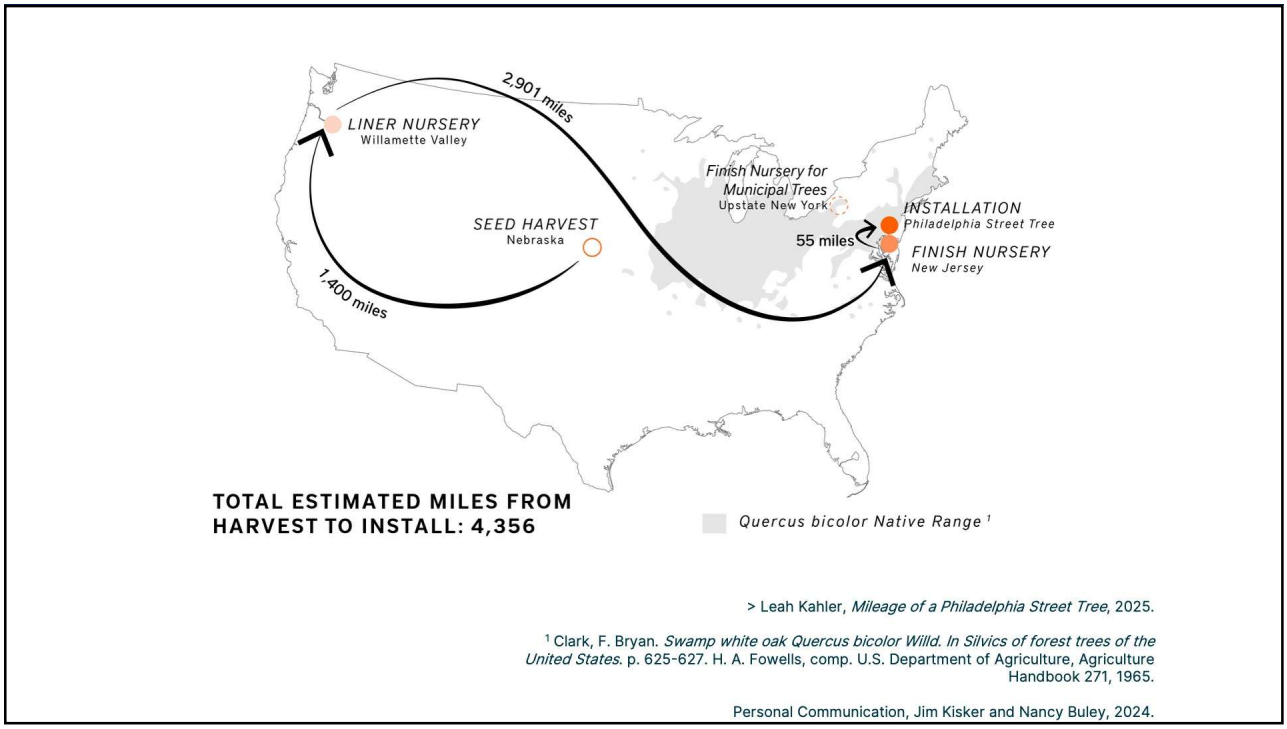


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STATUS QUO



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> Leah Kahler, *Mileage of a Philadelphia Street Tree*, 2025.

[1] Clark, F. Bryan. *Swamp white oak Quercus bicolor Willd. In Silvics of forest trees of the United States*. p. 625-627. H. A. Fowells, comp. U.S. Department of Agriculture, Agriculture Handbook 271, 1965.

Personal Communication, Jim Kisker and Nancy Buley, 2024.

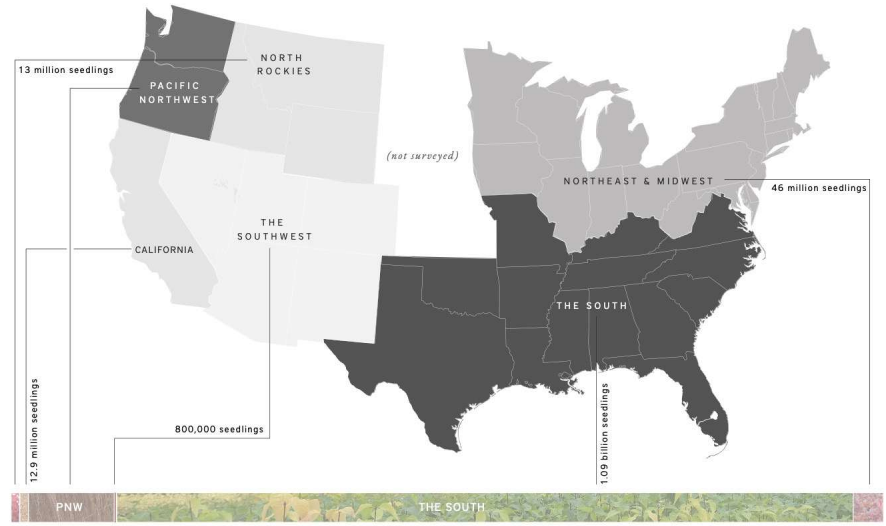
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> Leah Kahler, 2024.

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SNAPSHOT OF THE US NURSERY INDUSTRY FOR REFORESTATION



> Leah Kahler, Adapted from American Forest Regional Factsheets (2024).

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LET'S WORK TOGETHER TO SHIFT INDUSTRY.

The nursery industry is **HIGHLY RESPONSIVE** To consumer demand.

Build relationships with reputable growers in your region.

Discuss your desired plant material with your grower **far in advance**.

Write **performance-based** specs

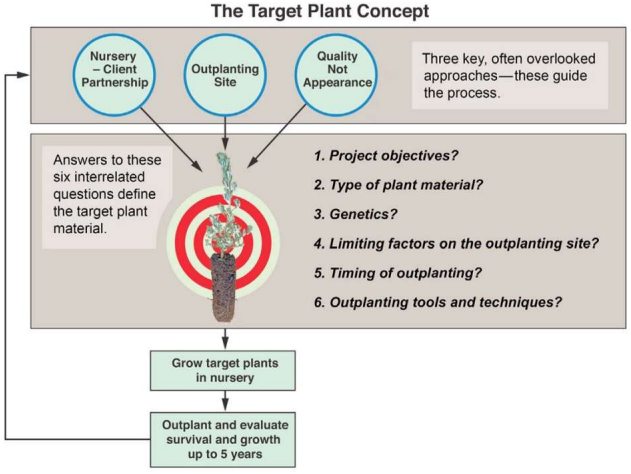
Utilize **contract growing**

DESIGN

CD'S

BIDDING

INSTALLATION



Pinto, Jeremy. USDA Rocky Mountain Research Center, 2025.

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Outline

- What is RNGR?
- Identified opportunities
  - **Contract growing and Procurement**
  - State nurseries
  - Non-profit nurseries
  - Partnerships and increased communication





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Contract growing

- Nursery-Client partnership to achieve Target Plants
- Reduce risk for growers and buyers
- Adapt funding cycles
  - Reactive to proactive
- Share your examples with your peers (and me, please!)
- Email Jehane.samaha@usda.gov for samples
- Check out the recorded June 2024 Urban Forest Connections webinar on contract growing

Scan QR code to access webinar recording:



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FLEXIBLE SPECIFICATIONS ARE TOOLS FOR ADAPTATION

LET GO of the need for FOLIAR PERFECTION.
Chew marks mean life.

ADJUST EXPECTATIONS
- Size
- Form
- Uniformity
- Cultivars

STAY FIRM ON
- Good root structure
- Genetics
- Sourcing



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Procuring trees: step by step

- Nursery catalog(s)
- Categorize available trees:
  - Size (small, medium, large, XL)
  - Growth form (upright, spreading)
  - Native/ non-native
  - Desired benefits
  - Disservices, issues, diseases
- Also, use Dirr book of trees, FL fact sheets, Cornell resources, percentages in your city, invasiveness do-not-plant lists.
- Convene staff (and experts in your network!) to review



Illustrations by Jehane Samaha

USDA Forest Service

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Procuring trees: step by step

- Match site information to species choices
- Sum your totals:
  - Within budget?
  - Size class ratios?
  - Species ratios meet 5-10-15 diversity goals?
- Plan for uncertainty
  - Order extras
  - Have a holding yard or extra homes available for trees



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Procuring trees: step by step

- Ask nursery for timing
  - Pre-order deadline
  - Final order deadline
  - Cancellation policy/ deadline
  - Delivery



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Procuring trees: step by step

- Ensure trees meet quality standards
  - Clear specifications in contract
  - Tag your trees
  - Inspect on delivery
  - Keep mortality and establishment data



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Inspecting stock, tagging trees

- Some nurseries will tag for you
- Great for staff learning, quality control, and relationship building with grower to tag your own.
- NYC Parks has an excellent tagging guide, email me for a copy



Photo by Eva Monheim



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Reasons to reject tree stock

- Girdling/ circling roots
- Weak graft union
- No central leader/ codominance
- Very crooked trunk
- Incorrect size for project
- Poorly compartmentalized wounds
- Health/ disease issues





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SUCCESS STARTS BELOW THE SURFACE







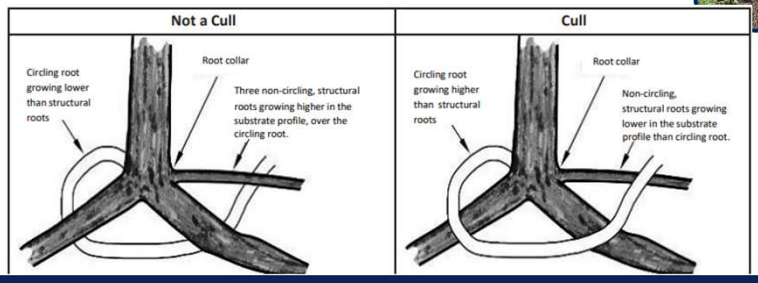
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Stock type and nursery practices affect root quality

- Standards and specifications against:
  - J roots
  - Girdling roots
  - Buried root flares/collars
- "Reject or Correct?"







Photos courtesy of Portland OR Urban Forestry
Diagram from Florida Grades and Standards for Nursery Plants 2022

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UTRQA: Urban Tree Root Quality Alliance

UTRQA (Urban Tree Root Quality Alliance)

led by Jim Grob (jamesgrobwa@gmail.com) and Sarah Low (sarah.low@oregonstate.edu). To be added to the email list and receive meeting invitations, email both of them.

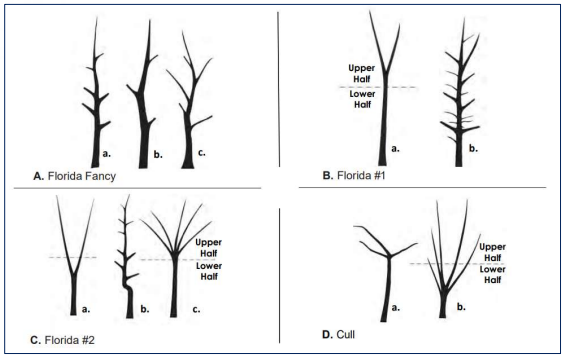
A group of 90+ folks including profs from various universities (Oregon State, Cal Poly, Virginia Tech, SUNY ESF, Utah State, Vineland Institute), nursery owners, container manufacturers, and urban foresters interested in improving the root quality of trees, and their specifications for urban tree planting. Of particular interest is eliminating the issues commonly associated with slick wall plastic pots.

to just peruse meeting recordings, here are all the videos:
https://media.oregonstate.edu/playlist/dedicated/1_bbvxcpy5/1_ry2dpjs1

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Florida Grades and Standards: Trunk Structure Quality

- Florida Fancy
  - Central leader, intact terminal bud.
- Florida #1
  - 2 equal leaders in top half
- Florida #2
  - 2 equal leaders in bottom half, multiple leaders in top half, crooked trunk.
- Cull
  - Multiple leaders in bottom half.



Florida Grades and Standards for Nursery Plants 2022

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ANSI Z60.2 2025: American Standard for Nursery Stock

- Standardized container sizes
- How to measure caliper
- Root ball requirements

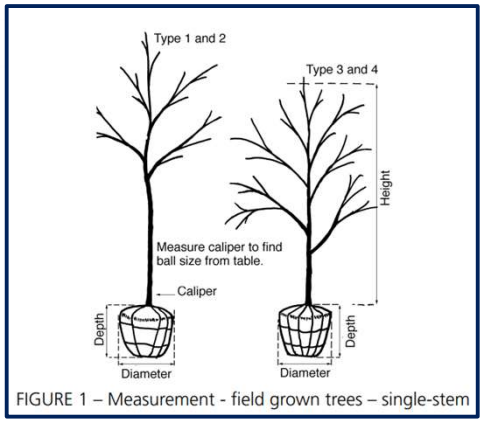


FIGURE 1 – Measurement - field grown trees – single-stem

ANSI Z60.1 2014

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ANSI STANDARDS: NOT THE END-ALL-BE-ALL

WHAT ANSI DOES

- Provides common language
- Provides ***minimum*** quality requirements

WHAT ANSI DOESN'T DO

- Describe ***high*** quality
- Describe root structure or health
- Account for carbon costs of travel or working conditions at nurseries
- Describe genetic source or diversity



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Procuring trees: step by step

- Communicate back to nursery (not just about issues, also about what went well!)



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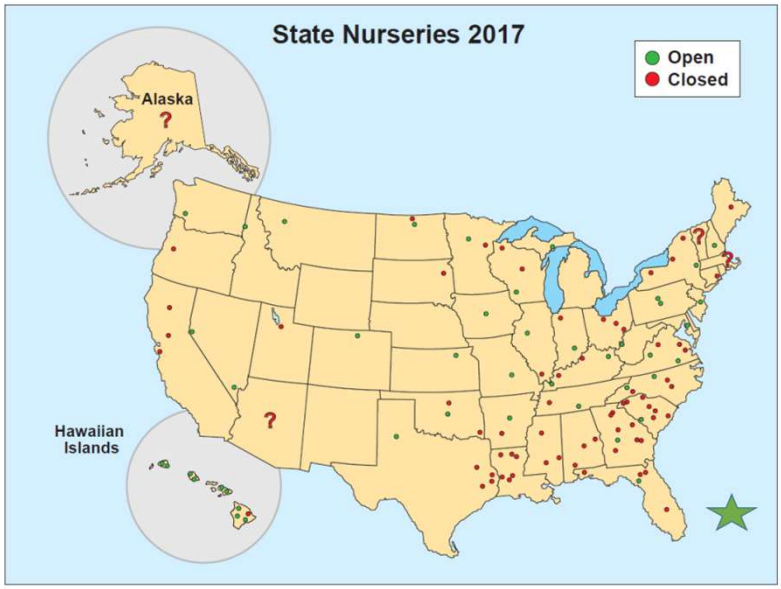


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State nurseries

At one time nearly every state had at least 1 nursery

Now 30 states have at least 1 nursery



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State Nurseries

- Can state nurseries provide liners without competing with private nursery industry?





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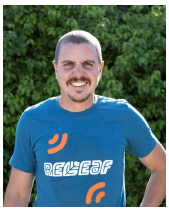
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New: Non-Profit Nursery Network

- For non-profit and municipal tree nursery managers
- Monthly meetings
- Steering committee:


Megan Palomo
Tree Pittsburgh


Max Blaustein
Phila Parks and Rec


Jake Roeckle
Forest ReLeaf


Jehane Samaha
RNGR



Join the

Non-Profit Nursery Network

A network to connect non-profit and municipal tree nursery managers through collaboration, resource sharing, and mutual support.

Monthly zoom meetings
Every 3rd Thursday
2:00pm EST

Scan for registration link or email:
megan@treepittsburgh.org

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Thinking about starting a NEW municipal nursery?

- What nursery type will match in-house goals?
  - Material holding yards
  - Tree production
- **Cost-benefit analysis**, vs. buying from an existing nursery
  - Land access/ site constraints
  - Control of species and stock type availability
  - Workforce development

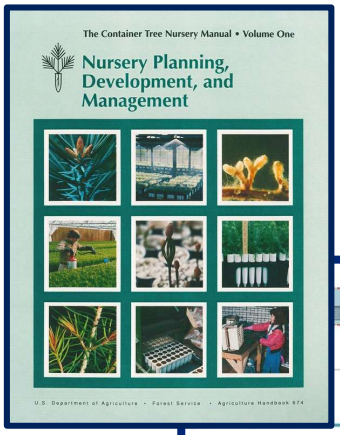


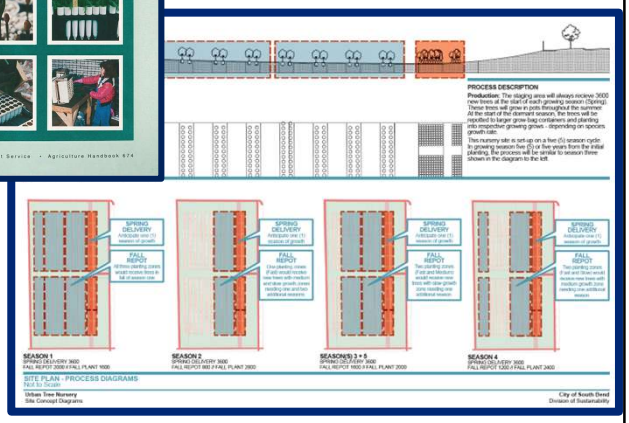
Photo by Jessica Farmer, Seattle Trees for Neighborhoods

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Nursery Management Resources

Nursery planning





City of South Bend IN, draft nursery diagram

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Outline

- What is RNGR?
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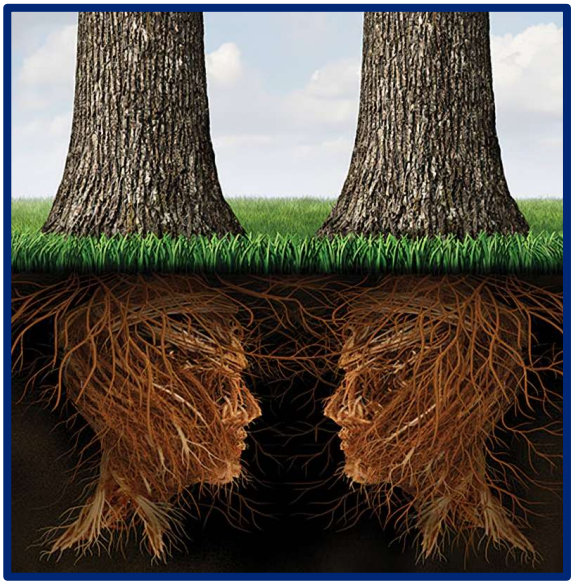


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Partnerships

- Growers
- Planters
- Industry
- NGOs, Non-Profits
- Government agencies
- Arboreta/ botanic gardens
- Zoos
- Universities

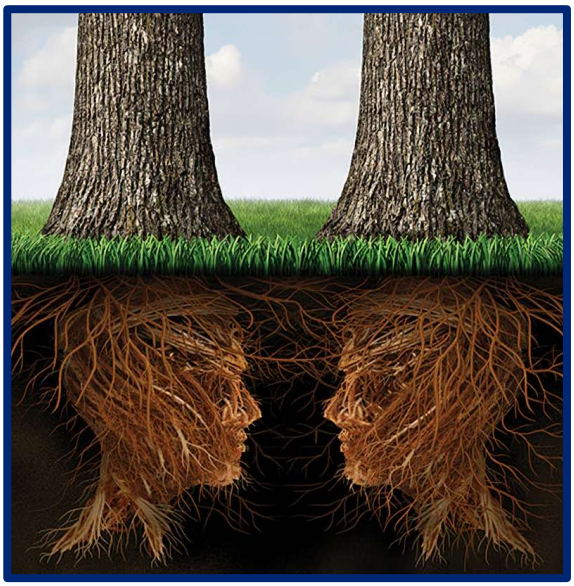


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Partnerships

- Tell me your stories of innovative nursery partnerships! Collecting case studies.

- What about…
  - Collective tree purchasing
  - States handling procurement, giving away trees rather than funds to buy them



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Nursery relationships: Find your nurseries!

- Nursery trade shows
- Word of mouth
- Searching online
- Spreadsheet!
  - Location
  - Contact
  - Catalog link
  - Specialties (natives, regions, cultivars)
  - Stock types/ sizes
  - Order minimums, shipping fees
  - Order deadline dates
  - Conversation notes and dates



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Nursery Directory

Add your nursery!
RNGR.net

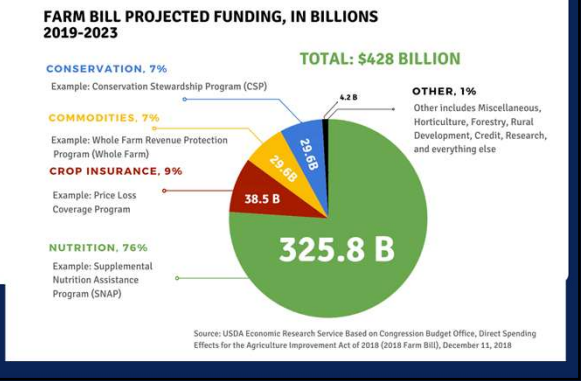
- Private nurseries currently provide majority of trees to (mainland) urban areas
- RNGR nursery database update needed to identify urban stock
- New urban directory project contracted to **Morton Arboretum** will capture current urban nursery status



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Farm Bill Funding

- In May 2026, the Farm Bill (H.R. 7567) Passed the House
- Sec 8305, "Reforestation, Nursery, and Seed Orchard Support"
  - Expands **technical assistance and workforce development** training for nursery and tree establishment programs, and creates a **grant program** for State, Tribal, and private nurseries **to improve nursery production capacity**.
  - Authorizes $5 million in appropriations for each of fiscal years 2027 through 2031.
  - Funds to support **seed collection, storage, and nurseries**, prioritizing projects in vulnerable forests and critical watershed areas.
- Still needs to pass the Senate



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Thank You!

RNGR.net
Jehane.Samaha@usda.gov

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Polls

- Does state procure trees directly?
- Any state nursery or municipal nursery production, or all purchased?
- What technical support do your partners need (to work more smoothly with nurseries?)
- How many municipal owned nurseries?
- What species do you want that you can't get?
- Does your state have a landscape and nursery association, do you partner with them?

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