

PERMITTING, SIZE, AND FAMILIARITY DRIVE TREE SPECIFICATION FOR LANDSCAPE ARCHITECTS

Grant Thompson, PhD, PLA



FREE EVENT

Virtual Forum:
Urban Tree Supply

 Aug 6, 2024

 9 am - 4 pm

 Online



 Chesapeake Bay Program
Science. Restoration. Partnership.



 Chesapeake Bay Trust

RDg...
PLANNING • DESIGN

LEARNING OUTCOMES

1. Offering consulting services profitably requires meeting permitting requirements which may include approved tree lists, minimum tree sizes, and staff familiarity with management.
2. Tree lists may be mismatched with what is available in the nursery trade. Tree lists may also reflect currently appropriate trees without considering future climate trajectories.

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PROFESSIONAL BACKGROUND




LOW DIVERSITY LANDSCAPES: MANY HUMAN DRIVERS

Ambio
<https://doi.org/10.1007/s13280-023-01876-7>

PERSPECTIVE

Conceptualizing the human drivers of low tree diversity in planted urban landscapes

Deborah R. Hilbert , Andrew K. Koeser, Michael G. Andreu, Gail Hansen, Lara A. Roman, Mack Thetford, Grant L. Thompson

Few results

Many options

Progressive sieve model

Continental biodiversity, thousands of species

THE SIEVE: LIMITING FACTORS

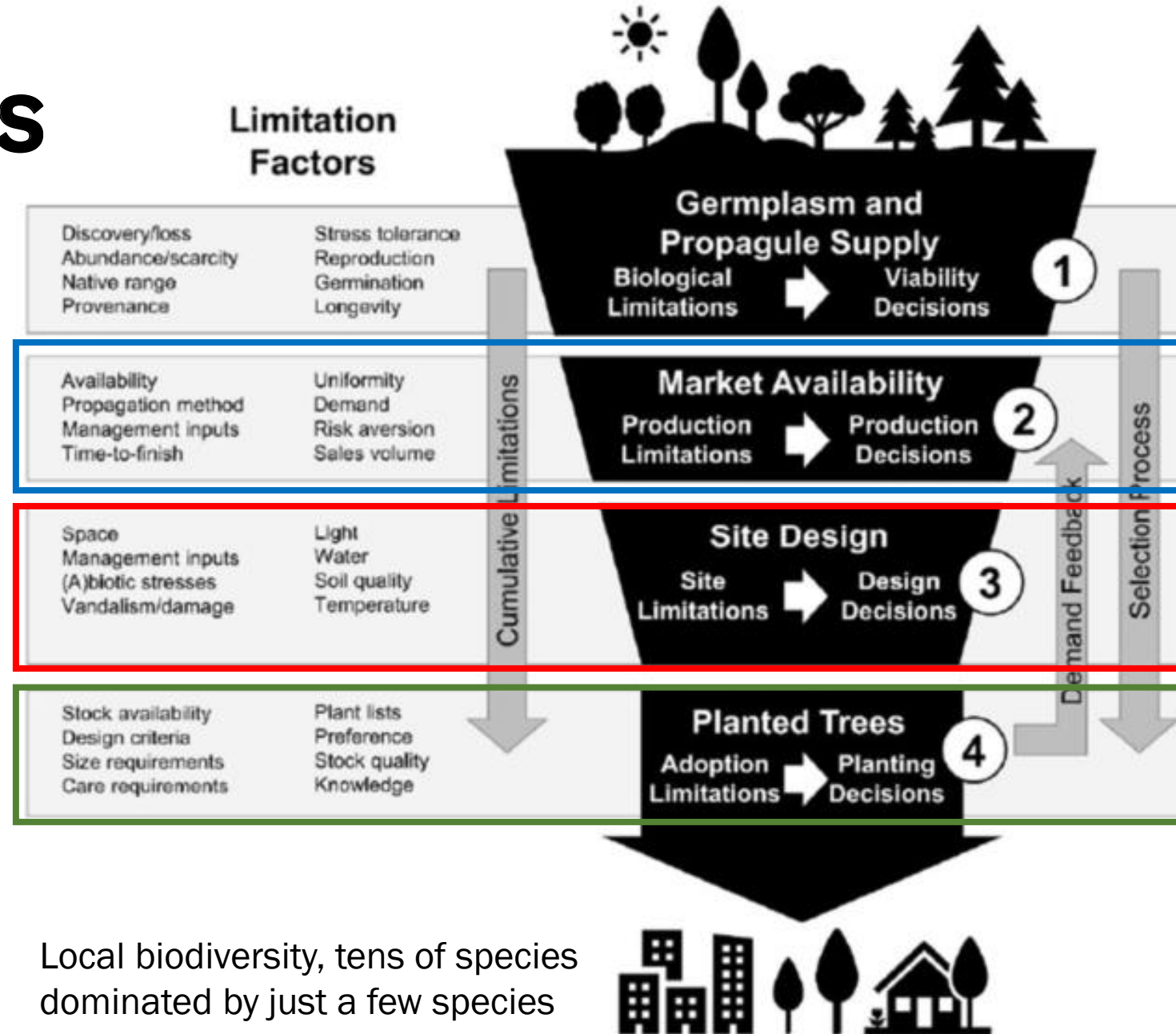
Nursery availability



Planting designer choice



Code requirements



LANDSCAPE ARCHITECTS: PLANT SPECIFIERS AND SO MUCH MORE

Many roles.... planning through design and construction.

Besides client and public facing roles, internally, projects must be delivered **on time and on budget** to be a profitable business.

Additional review, negotiations, and redesign to meet client, municipal, or other approval processes result in **additional project time and fee used, reducing profitability.**



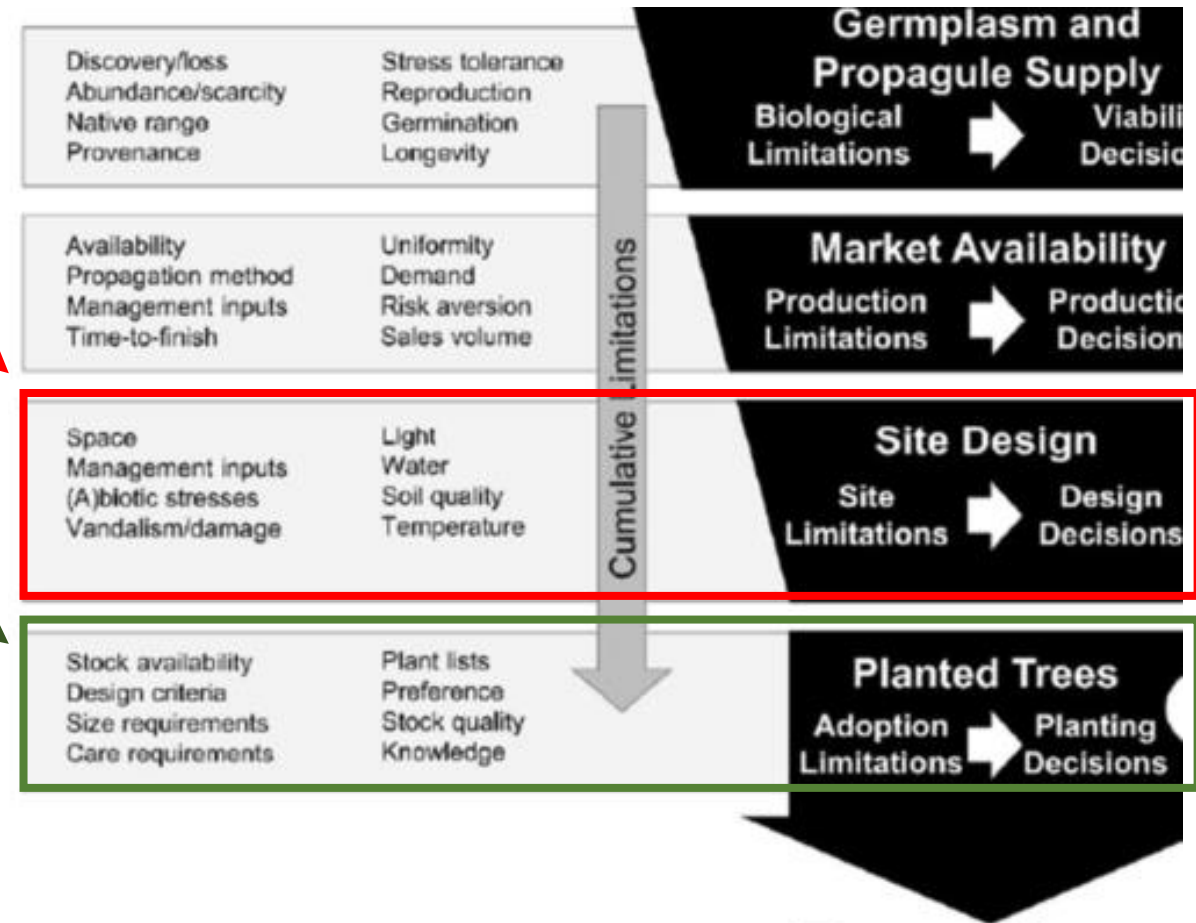
Des Moines University Medicine and Health Science Campus



LANDSCAPE ARCHITECTS: EXPERIENCE & GUIDELINES / REQUIREMENTS

Plant specification for projects is made based on site constraints, project experience, and observations of existing landscapes.

Take into consideration planting guidelines / requirements in states, municipalities, home-owner-associations, or other regulatory frameworks. What is negotiable vs. what is required?



*Is it worth the time to negotiate? Do I have fee for that?
Can I afford additional time in delays to the project schedule?*



THE EXAMPLE: DES MOINES, IA – PROJECT REQUIRES SITE PLAN REVIEW SUBMISSION



Disclaimer:

I live and work in area, have relationships with city staff, serve on the state urban tree council, and serve on board of directors for regional non-profit tree planting org.

Comments are not critical of DSM... just an example, this could be anywhere, though geography might affect discussion specifics.



THE CODE: MUST, SHALL, MAY

Size requirements

7.4.2 TREE TYPES **Species requirements**

- A. Permitted Tree List** Tree plantings required by this article must comply with the recommended species list approved by the city department of public works forestry division. Exceptions to this list may be approved by the city forester.
- B. Mix of Species.** Planted trees shall be a diverse combination of permitted species, where possible.

Condition requirements

Note:

This process is similar for any community; review of municipal code to understand requirements.

- D. Plant Size Requirements.** Plant material shall be sized according to [Table 135-7.2-1](#) of this article unless otherwise noted in this article.

TABLE 135-7.2-1. PLANT MATERIAL SIZE AT INSTALLATION

Plant Material Type	Minimum Size
Street Tree	1.5 inch caliper and 8 ft in height
Shade/Overstory Tree	1.5 inch caliper and 8 ft in height
Ornamental/Understory Tree	1.5 inch caliper and 6 ft in height
Evergreen/Coniferous Tree	6 ft in height
Shrubs - Deciduous	3 gallon container or 15-18 inch balled & burlapped; and 18-24 inches high x 15-18 inches wide
Shrubs - Evergreen	3 gallon container or 15-18 inch balled & burlapped; and 18-24 inches high x 15-18 inches wide
Ornamental Grasses	3 gallon container or 15-18 inch balled & burlapped; and 18-24 inches high x 15-18 inches wide
Groundcover	1 gallon container and 3 inches high by 12 inches wide

- E. Condition and Selection of Planting Materials.** The plant materials used shall be free from visible signs of disease, infestation, or physical defect at the time of planting. Plant materials shall:
 1. Be appropriate for the conditions of the location, including sun and wind exposure, air quality, salt exposure, soil type, expected moisture content of soil, and slope.

THE LIST: RECOMMENDED TREE SPECIES

“The Recommended Species List uses only 50+ of those species that are acceptable for use AND are commonly available from the tree growers” – City Forestry Plan

Note:

The recommended tree list includes species that are suitable for sites and region, are desirable for diversity, may be forward looking for climate change, and are familiar to staff for performance and management.

OVERSTORY	
Over 45' at maturity; DO NOT plant under utilities	
SCIENTIFIC NAME	COMMON NAME
Acer saccharum	Sugar Maple - P
Abies concolor	White Fir - P
Aesculus flava	Yellow Buckeye - S, P
Aesculus alabra	Ohio Buckeye - S, P

SCIENTIFIC NAME	COMMON NAME
Picea glauca	White Spruce - P
Pinus ponderosa	Ponderosa pine - P
Pinus banksiana	Jack pine - P
Pinus strobus	Eastern White Pine - P
Platanus occidentalis	American Sycamore - P
Platanus x acerifolia	London Planetree - S, P
	Eastern Cottonwood - P
	Bigtooth Aspen - P
	Quaking Aspen - P
	American Elm - P
	Douglas Fir - P
	White Oak - S, P
	Swamp White Oak - S, P
	Scarlet Oak - S, P
	Northern Pin Oak - S, P
	Southern Red Oak - S, P
	Shingle Oak - S, P
	Overcup Oak - S, P
	Bur Oak - S, P
	Chinkapin Oak - S, P
	Nuttall Oak - S, P
	Pin Oak - S, P
	Willow Oak - S, P
	Chestnut Oak - S, P
	Northern Red Oak - S, P
	Shumard Oak - S, P
	Post Oak - S, P
	Black Oak - S, P
	Black Locust - P
	White Willow - P
	Weeping Willow - P
	Corkscrew Willow - P
	Japanese Pagoda - S, P
	Bald Cypress - S, P
	Pond Cypress - S, P
	Northern White Cedar - P
	American Linden - S, P
	Littleleaf Linden - S, P
	Bigleaf Linden - S, P
	Silver Linden - S, P
	Eastern Hemlock - P
	Elm cultivar(s) - S, P
	Smoothleaf Elm - S, P
	ACCOLADE® Elm - S, P
	New Horizon Elm - S, P
	Lacebark Elm - S, P
	Japanese Zelkova - S, P

Quercus alba	White Oak - S, P
Quercus bicolor	Swamp White Oak - S, P
Quercus coccinea	Scarlet Oak - S, P
Quercus ellipsoidalis	Northern Pin Oak - S, P
Quercus falcata	Southern Red Oak - S, P
Quercus imbricaria	Shingle Oak - S, P
Quercus lyrata	Overcup Oak - S, P
Quercus macrocarpa	Bur Oak - S, P
Quercus muelenbergii	Chinkapin Oak - S, P
Quercus nuttallii	Nuttall Oak - S, P
Quercus palustris	Pin Oak - S, P
Quercus phellos	Willow Oak - S, P
Quercus prinus	Chestnut Oak - S, P
Quercus rubra	Northern Red Oak - S, P
Quercus shumardii	Shumard Oak - S, P
Quercus stellata	Post Oak - S, P
Quercus velutina	Black Oak - S, P
Robinia pseudoacacia	Black Locust - P

Nyssa sylvatica	Blackgum - S, P
Picea abies	Norway Spruce - P

Ulmus parvifolia	Lacebark Elm - S, P
Zelkova serrata	Japanese Zelkova - S, P

THE LIST: RECOMMENDED TREE SPECIES

They list 85 overstory spp.

“The Recommended Species List uses only 50+ of those species that are acceptable for use AND are commonly available from the tree growers” – City Forestry Plan

Let's find out

Note:

This discussion is not about appropriateness of tree list. Designers must apply what's provided.

OVERSTORY	
Over 45' at maturity; DO NOT plant under utilities	
SCIENTIFIC NAME	COMMON NAME
Acer saccharum	Sugar Maple - P
Abies concolor	White Fir - P
Aesculus flava	Yellow Buckeye - S, P
Aesculus alabra	Ohio Buckeye - S, P

SCIENTIFIC NAME	COMMON NAME
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	Eastern Cottonwood - P
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	Quaking Aspen - P
	American Elm - P
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	Black Oak - S, P
	Black Locust - P
	White Willow - P
	Weeping Willow - P
	Corkscrew Willow - P
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Quercus lyrata	Overcup Oak - S, P
Quercus macrocarpa	Bur Oak - S, P
Quercus muhlenbergii	Chinkapin Oak - S, P
Quercus nuttallii	Nuttall Oak - S, P
Quercus palustris	Pin Oak - S, P
Quercus phellos	Willow Oak - S, P
Quercus prinus	Chestnut Oak - S, P
Quercus rubra	Northern Red Oak - S, P
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Robinia pseudoacacia	Black Locust - P

Nyssa sylvatica	Blackgum - S, P
Picea abies	Norway Spruce - P

Ulmus parvifolia	Lacebark Elm - S, P
Zelkova serrata	Japanese Zelkova - S, P

PUBLIC PROJECTS: BIDS AND LOW BIDS

Public projects will go to bid – lowest (responsible / qualified) bidder wins the job; ostensibly responsible use of public funds.

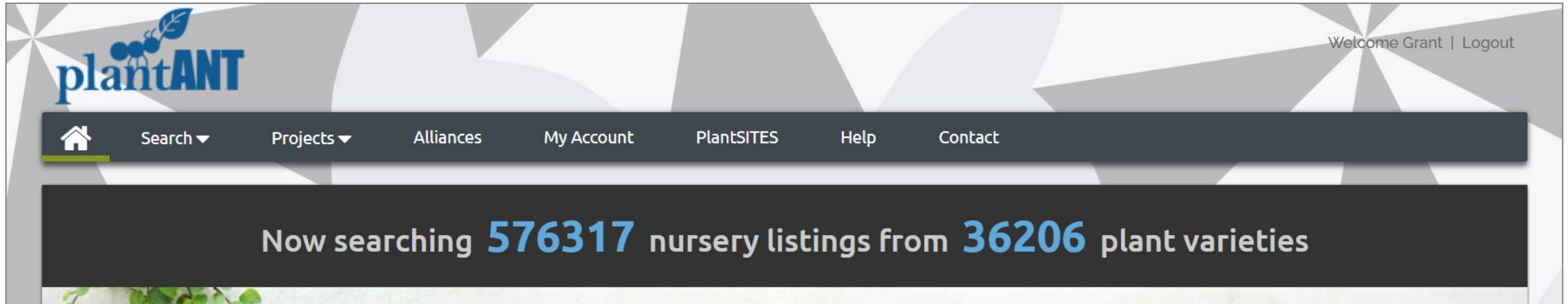
Often the job includes more than landscape (buildings), such that the job winner is selected because of other aspects that plant material quality.

Even true for private work, where there's more flexibility in contractor selection.

Must source plant materials.



BROKER WEBSITE: SEARCH PLANT AVAILABILITY FROM MULTIPLE NURSERIES



The screenshot shows the top navigation bar of the plantANT website. On the left is the plantANT logo, which includes a stylized plant icon. On the right, it says "Welcome Grant | Logout". Below the logo is a dark grey navigation bar with a home icon and the following menu items: Search (with a dropdown arrow), Projects (with a dropdown arrow), Alliances, My Account, PlantSITES, Help, and Contact. Below the navigation bar is a large dark grey banner with white text that reads: "Now searching **576317** nursery listings from **36206** plant varieties".

A contractor looking to bid on a project or to build it might use a brokerage site, personal network, or look up local nurseries to supply plants for a project.

Note:

This is not the only broker website, but it is a large one in geography and listings.



Find Plants
Search wholesale grower inventories for plants, palms and trees.

Plant Name:

Zip: State:

Distance (Miles): of Zip

Show further nurseries that service my area.

Show results as: List Images

Plant Results (Botanical Names in Bold)

There are no results for "**quercus velutina**" within your search distance.

JKPLANTS.COM
305-562-7131
305-773-0109
Homestead · FL

Specify search radius from site

Site aggregates multiple broker listings

<i>Quercus nuttallii</i>	Nuttall Oak - S, P
<i>Quercus palustris</i>	Pin Oak - S, P
<i>Quercus phellos</i>	Willow Oak - S, P
<i>Quercus prinus</i>	Chestnut Oak - S, P
<i>Quercus rubra</i>	Northern Red Oak - S, P
<i>Quercus shumardii</i>	Shumard Oak - S, P
<i>Quercus stellata</i>	Post Oak - S, P
<i>Quercus velutina</i>	Black Oak - S, P
<i>Robinia pseudoacacia</i>	Black Locust - P

Search for desired species

Alliances

- Nursery Report
- Louisiana Nursery & Landscape Association
- Northeast Texas Nursery Growers Association
- Northeast FNGLA Chapter
- BuyNCPlants.com by NCNLA
- NC Greenprints
- JoCoPlants



SITES v2

Reference Guide

For Sustainable Land Design and Development

Credit 5.6: Use regional materials

3–5 points

INTENT

Reduce energy use for transportation; increase demand for regional materials, plants, and soils; and promote regional identity by supporting the use of local resources.

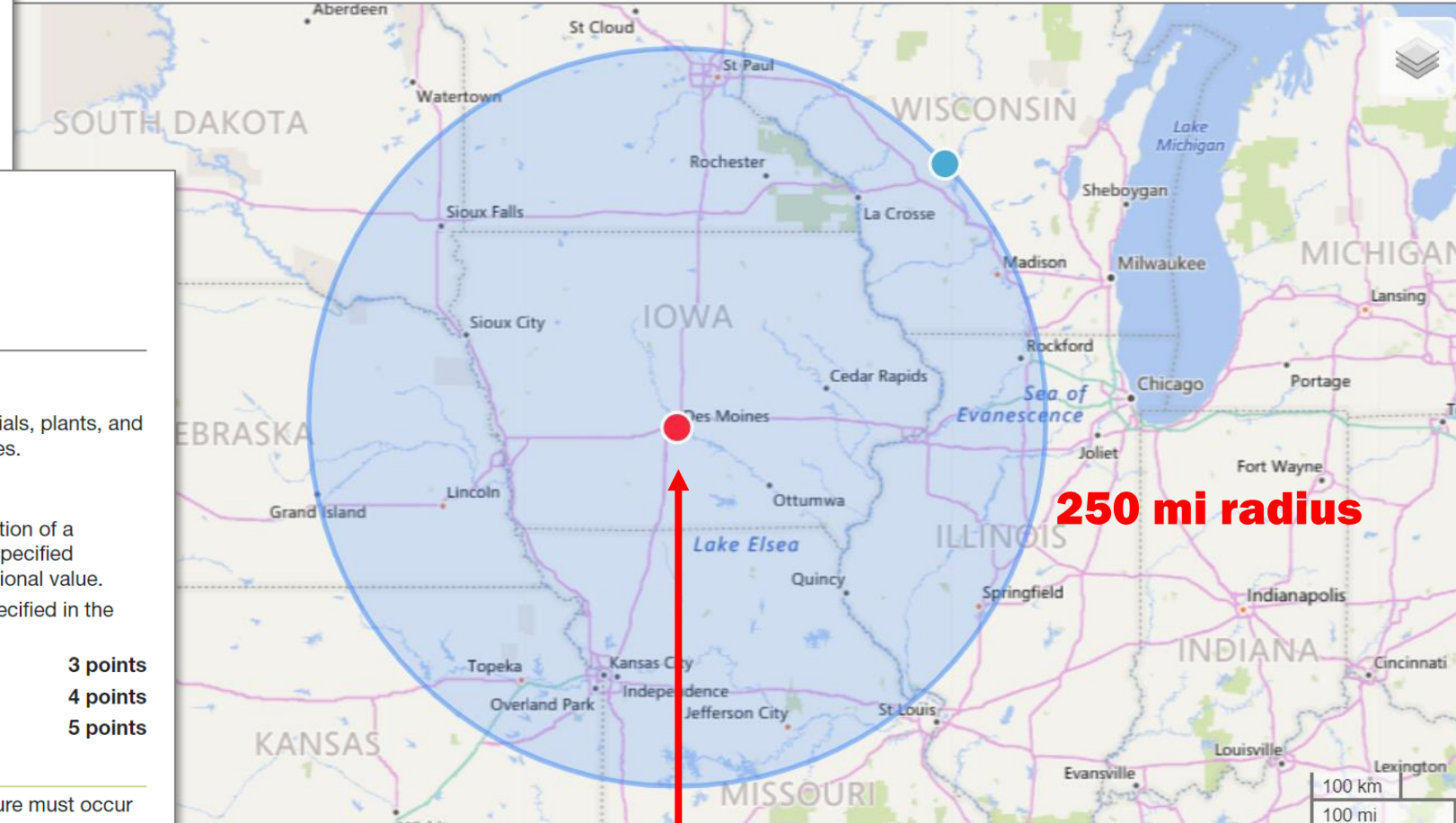
REQUIREMENTS

Percent calculations are based on cost or replacement value. If only a fraction of a material is extracted, harvested, recovered, and manufactured within the specified distances, then only that percentage (by weight) shall contribute to the regional value.

- Use materials, plants, and soils that are sourced within the distances specified in the table below such that they constitute at least:
 - 30 percent of total materials cost **3 points**
 - 60 percent of total materials cost **4 points**
 - 90 percent of total materials cost **5 points**

Material Type	Distance Requirements
Soils, compost, and mulch	Extraction, harvest or recovery, and manufacture must occur within 50 miles (80.47 kilometers)
Boulders, rocks, and aggregate	Extraction, harvest or recovery, and manufacture must occur within 50 miles (80.47 kilometers)
Plants	All growing facilities and suppliers for the plant must be within 250 miles (402.34 kilometers)
All other materials	Extraction, harvest or recovery, and manufacture must occur within 500 miles (804.67 kilometers)

Procuring close to the jobsite is a best practice regardless of SITES, closer sources likely cost less (freight, distance, fuel) and likely would result in lower transportation greenhouse gas emissions.



250 mi radius

All growing facilities and suppliers for the plant must be within 250 miles (402.34 kilometers)

Plant Name:

Zip

Find Plants

Search wholesale grower inventories for plants, palms and trees.



Show results as: List Images

Search results (Botanical Names in Bold)

quercus velutina, Black Oak

Click on the plant listing below to view the nursery information.

quercus velutina Black Oak

Dist	Nursery	Container	Description / Features / Specs	Price
234mi	Pea Ridge Forest Hermann, MO	Field Grown	1.5in Cal	\$120.00 each
234mi	Pea Ridge Forest Hermann, MO	Field Grown	1.75in Cal	\$135.00 each
234mi	Pea Ridge Forest Hermann, MO	Field Grown	2in Cal	\$150.00 each
234mi	Pea Ridge Forest Hermann, MO	Field Grown	2.5in Cal	\$175.00 each
234mi	Pea Ridge Forest Hermann, MO	Field Grown	3in Cal	\$205.00 each
234mi	Pea Ridge Forest Hermann, MO	Field Grown	3.5in Cal	\$220.00 each
234mi	Pea Ridge Forest Hermann, MO	Field Grown	4in Cal	\$250.00 each

Plant Name:

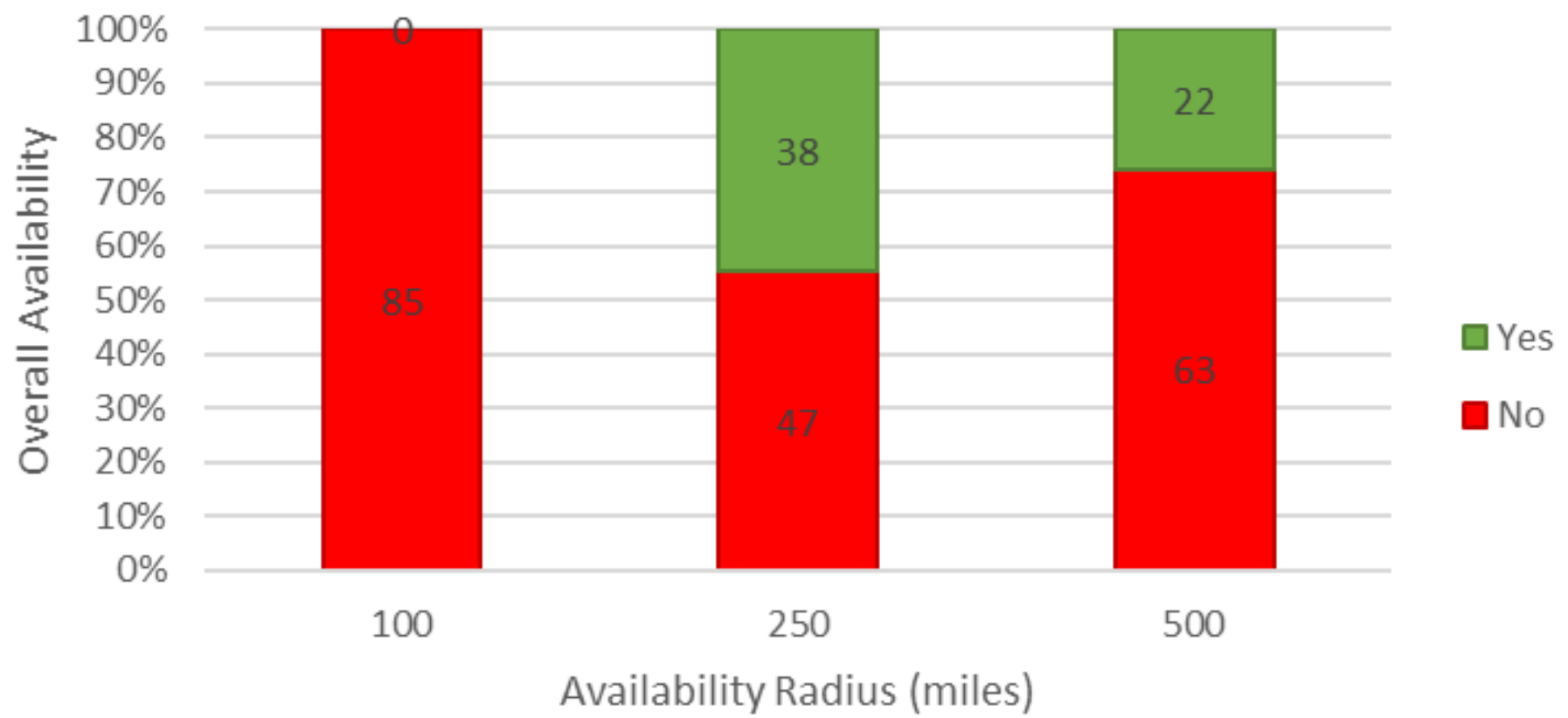
Zip
Distance (Miles):
 of Zip
 Show further nurseries that service my area.

What is the availability of the city's tree list?

Plant Name:

 Zip State

PlantANT species availability in 1.5" Cal or greater from Zip 50310



Plant Name:

 Zip State
 Distance (Miles)

 Show further nurseries

What availability city?

<input type="checkbox"/>	Hermann, MO				
<input type="checkbox"/>	234mi	Pea Ridge Forest Hermann, MO	Field Grown	4in Cal	\$250.00 each

SEARCHABLE BROKER SITE: DISCUSSION

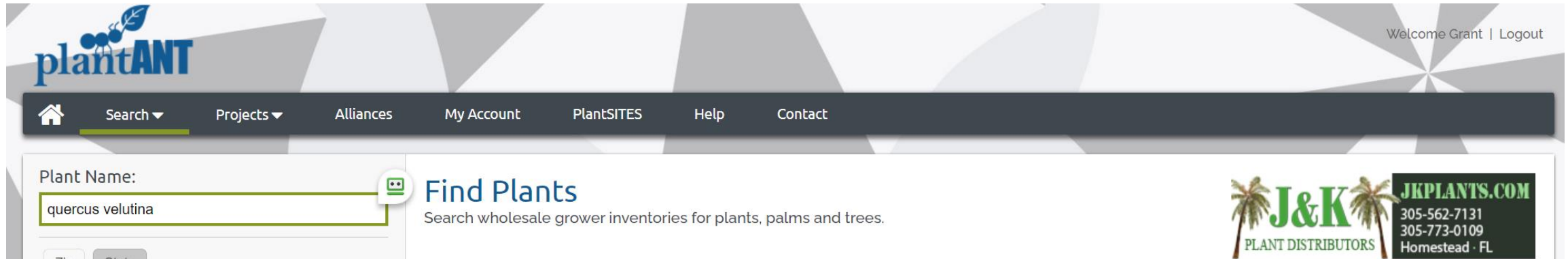
The screenshot shows the top section of the plantANT website. On the left is the plantANT logo. On the right, it says "Welcome Grant | Logout". Below this is a dark navigation bar with icons and text for Home, Search, Projects, Alliances, My Account, PlantSITES, Help, and Contact. Below the navigation bar is a search area with a text input field containing "quercus velutina" and a "Find Plants" button. To the right of the search area is a logo for J&K Plant Distributors, which includes the text "JKPLANTS.COM", "305-562-7131", "305-773-0109", and "Homestead · FL".

Possible explanations:

1. Nursery desert - Nurseries in search radius don't exist
2. Not listed - Nurseries in search radius aren't listed on broker site
3. Not available - Nurseries don't have available inventory listed now
4. Wrong size - Availability different sizes than required
5. Not supplied - Nurseries don't stock searched species
6. Not applicable - Broker site was not right tool



SEARCHABLE BROKER SITE: DISCUSSION



Possible explanations:

Exist. Possibly more?

Communication issue

Timing issue

Depends on size

Supply / list issue

Perhaps; better one?

1. ~~Nursery desert~~ - Nurseries in search radius don't exist

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SEARCHABLE BROKER SITE: DISCUSSION



plantANT

Welcome Grant | Logout

Search Projects

Plant Name:
quercus velutina

J&K PLANT DISTRIBUTORS JKPLANTS.COM
305-562-7131
305-773-0109
Homestead · FL

Learning Objective 2

Tree lists may be mismatched with what is available in the nursery trade. Tree lists may also reflect currently appropriate trees without considering future climate trajectories.

Possible explanations:

Market for more?

Communication issue

Timing issue

Depends on size

Supply / list issue

Perhaps; better one?

~~1. Nursery desert - Nurseries in search radius don't exist~~

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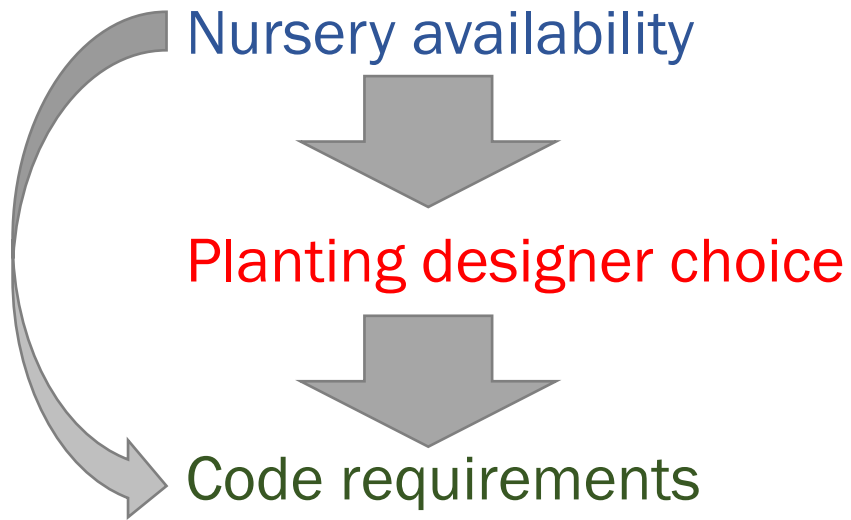
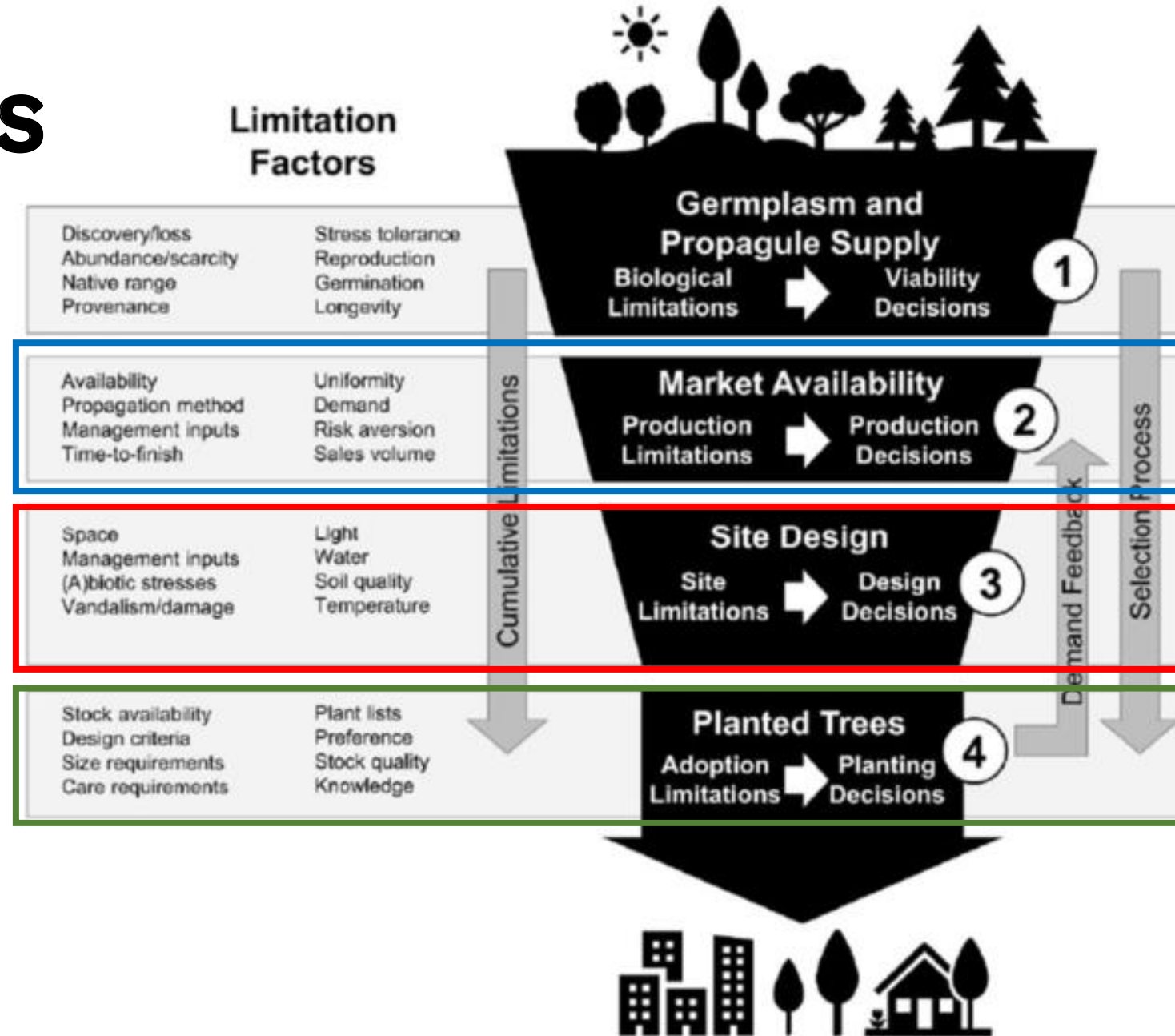
4. Wrong size - Availability different sizes than required

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THE SIEVE: LIMITING FACTORS



POSSIBLE SOLUTIONS

1. Stronger coordination across nursery industry to advertise inventory availability – searchable, current, and local / regional.
2. Greater flexibility in municipal requirements and collaboration with design community that recognizes availability constraints that does not come at the cost of the designer for additional run-around to meet requirements or source material.

Grant Thompson, PhD, PLA
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